



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

State of West Virginia
 Request for Quotation
 27 - Miscellaneous

Proc Folder: 361935

Doc Description: Surveying Equipment

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2017-10-20	2017-10-26 13:30:00	CRFQ 0313 DEP1800000005	2

BID RECEIVING LOCATION

BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Precision Laser Instrument, Inc.
 85 11th Street
 Ambridge, PA 15003
 304-546-0017 Jason Cobb

10/25/17 09:01:43
 Purchasing Division

FOR INFORMATION CONTACT THE BUYER

Brittany E Ingraham
 (304) 558-2157
 brittany.e.ingraham@wv.gov

Signature X

FEIN #

25-1872183

DATE

10/24/17

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION:

Addendum

Addendum No.01 issued to publish and distribute the attached information to the vendor community.

Request for Quotation

The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Department of Environmental Protection, Office of Special Reclamation to establish a contract for the purchase of surveying equipment with technical support, per the bid requirements, specifications, terms and conditions attached to this solicitation.

INVOICE TO		SHIP TO	
ENVIRONMENTAL PROTECTION OFFICE OF SPECIAL RECLAMATION 1159 NICK RAHALL GREENWAY FAYETTEVILLE WV25840 US		ENVIRONMENTAL PROTECTION OFFICE OF SPECIAL RECLAMATION 1159 NICK RAHALL GREENWAY FAYETTEVILLE WV 25840 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Robotic Total Station	1.00000	EA		\$12,623.00

Comm Code	Manufacturer	Specification	Model #
20121909	Spectra Precision		Focus 35

Extended Description :

Robotic Total Station
(Sokkia iX 503 Series or equal)

INVOICE TO		SHIP TO	
ENVIRONMENTAL PROTECTION OFFICE OF SPECIAL RECLAMATION 1159 NICK RAHALL GREENWAY FAYETTEVILLE WV25840 US		ENVIRONMENTAL PROTECTION OFFICE OF SPECIAL RECLAMATION 1159 NICK RAHALL GREENWAY FAYETTEVILLE WV 25840 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	GPS Base and Rover	1.00000	EA		\$17,161.00

Comm Code	Manufacturer	Specification	Model #
20121909	Spectra Precision		SP80

Extended Description :

GPS Base and Rover
(Sokkia GRX2 Series or equal)

INVOICE TO		SHIP TO	
ENVIRONMENTAL PROTECTION OFFICE OF SPECIAL RECLAMATION 1159 NICK RAHALL GREENWAY FAYETTEVILLE WV25840 US		ENVIRONMENTAL PROTECTION OFFICE OF SPECIAL RECLAMATION 1159 NICK RAHALL GREENWAY FAYETTEVILLE WV 25840 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
3	Data Collector	1.00000	EA		\$4,027.00

Comm Code	Manufacturer	Specification	Model #
20121909	Spectra Precision		Ranger 3

Extended Description :
Data Collector
(Carlson Surveyor 2 or equal)

Total \$33,811.00

SOLICITATION NUMBER: CRFQ DEP1800000005

Addendum Number: No.01

The purpose of this addendum is to modify the solicitation identified as ("Solicitation") to reflect the change(s) identified and described below.

Applicable Addendum Category:

- Modify bid opening date and time
- Modify specifications of product or service being sought
- Attachment of vendor questions and responses
- Attachment of pre-bid sign-in sheet
- Correction of error
- Other

Description of Modification to Solicitation:

This addendum is issued to modify the solicitation per the attached documentation and the following:

1. To modify the bid opening date:
Bid opening date WAS October 25, 2017 at 1:30 PM EDT
Bid opening date IS NOW October 26, 2017 at 1:30 PM EDT
2. To publish vendor questions and agency responses.

No other changes.

Additional Documentation: Documentation related to this Addendum (if any) has been included herewith as Attachment A and is specifically incorporated herein by reference.

Terms and Conditions:

1. All provisions of the Solicitation and other addenda not modified herein shall remain in full force and effect.
2. Vendor should acknowledge receipt of all addenda issued for this Solicitation by completing an Addendum Acknowledgment, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

ATTACHMENT A

3.1.1.2 Focus 35 robot and SP80 GPS each use a different battery however they use the same charger

3.1.1.3 Focus 35 robot does not have long range Bluetooth, however the 2.4g radio does not require a license and has a longer range

3.1.1.7 Focus 35 does not have an anti theft deterrent system

3.1.1.8 Focus 35 Passive 360 prism doesn't require power at the prism for tracking capabilities

3.1.1.11 Focus 35 does work in the rain

3.1.1.15 Focus 35 has internal memory and SD Card is not necessary operation

3.1.2.7 SP80 has audible signals instead of voice message

3.1.2.8 SP80 is designed for a two meter drop to the ground

3.1.2.10 SP80 uses the Z-Blade technology

3.1.2.14 SP80 uses internal memory and does not need a SD card slot

3.1.3.2 Ranger 3 uses the 2.4g radio for long range communication which requires no licenses and has longer range.

3.1.3.9 Ranger 3 uses internal memory and has no need for SD cards for operation



FOCUS⁺ 35 Series Total Station

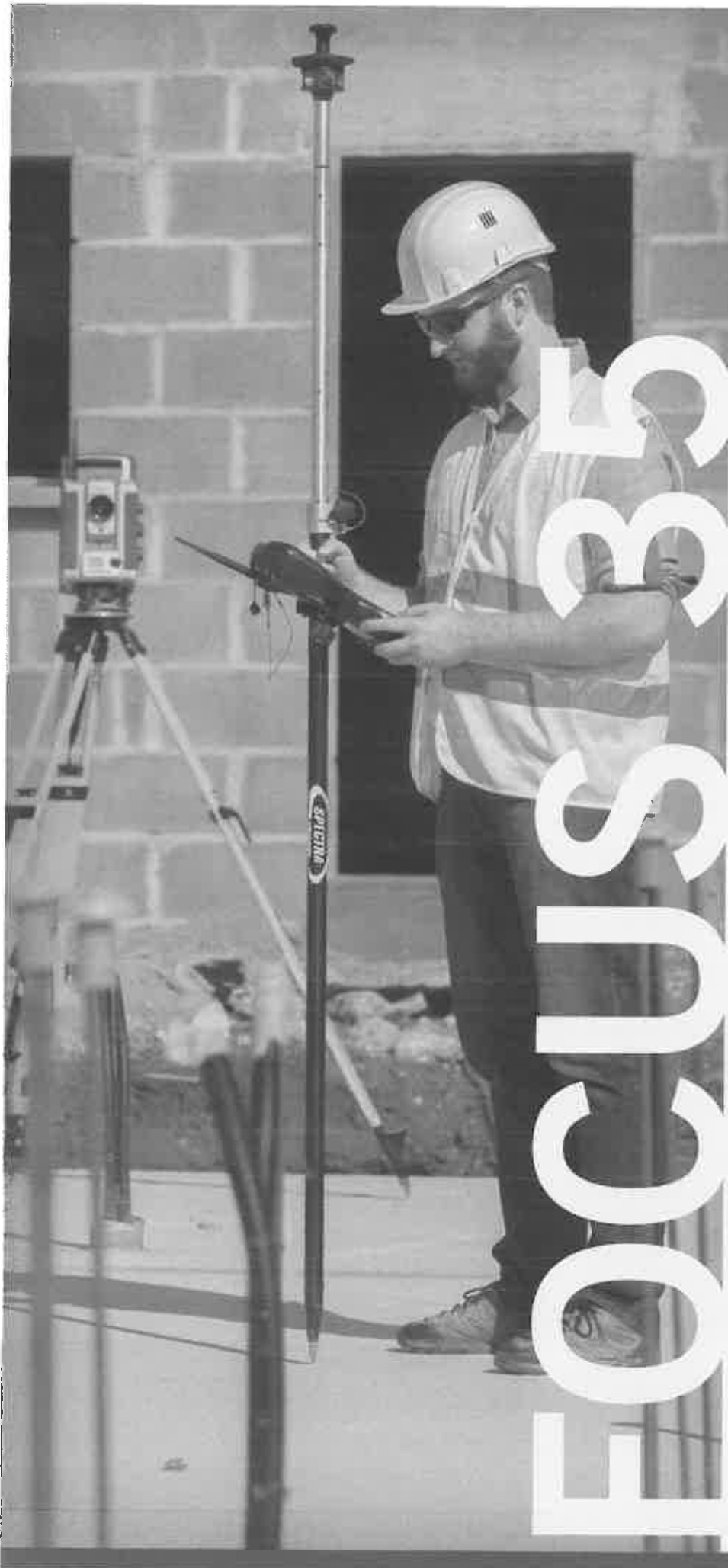


**Productive, Reliable and
Affordable Robotic Total Stations**



AFFORDABLE
RELIABLE
PRODUCTIVE

FOCUS⁺

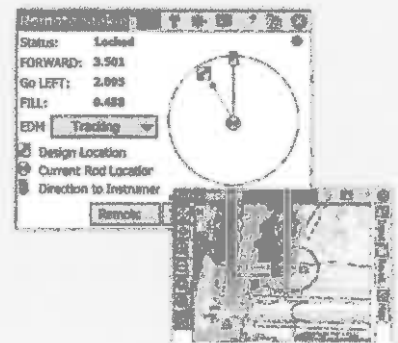


Featuring World Class Spectra Precision Field Software

Introducing the powerful Spectra Precision® FOCUS® 35 Series Total Stations. This fully robotic motorized solution provides improved speed, accuracy and precision in measurement. A robotic instrument moves the power of the observer from the instrument to the range pole improving the quality of your work.

All robotic instruments include:

- Motorized drive system at the instrument
- A tracking sensor to track the range pole and prism
- A communication connection between the instrument and range pole and prism





StepDrive

The speed of observation and precise positioning of the FOCUS 35 robotic total station is provided by patented StepDrive™ technology. StepDrive controls the horizontal and vertical motion of the motors, so there is no need for traditional motion locks. Using the motorized drives it is possible to precisely turn to, and repeat angle measurements. This results in quick and reliable measurements which substantially increases your staking productivity.

LockNGo

The Robotic and LockNGo™ FOCUS 35 models include a tracking sensor that uses LockNGo technology enabling the instrument to constantly lock onto the prism. The benefit of LockNGo technology is the ability to follow the prism at all times and reduces downtime from not having to re-point the instrument on every observation.

Communication Link

To maintain contact between the FOCUS 35 instrument and the remote observer with the range pole and prism, the robotic solution must include a communication link. The FOCUS 35 uses an integrated 2.4 GHz radio modem as does the Spectra Precision Ranger™ 3 data collector. The 2.4 GHz radio modems provide interference free robotic data communications. Once your robotic communications have been established you can control all the functions of the FOCUS 35 from the range pole as you move through the job site making measurements. This makes it possible for a single surveyor to perform high accuracy stakeout, layout or topographic surveys by themselves. From high-order control surveys to topographic data collection or fast-paced construction layout, you can rely on a FOCUS 35, even in harsh outdoor conditions.

FOCUS 35 and Survey Pro

The FOCUS 35 and Spectra Precision Survey Pro provide you with world class solutions for any surveying application. An example of these features includes a unique robotic software technology that can be used when associating the FOCUS 35 with a low-cost GPS receiver and Survey Pro software. This combination of technologies allows the user to take full advantage of the Spectra Precision GeoLock™ technology to keep locked on target.

The Spectra Precision GeoLock technology

Offered in Survey Pro this technique allows a robotic total station to perform an aided search for an optical target using an initial GPS position. The remote instrument can then be directed towards the robotic roving operator using the GPS position and a subsequent search is quickly performed to re-acquire the target at the robotic rover. This technique greatly reduces wasted time, improving your field work efficiency.

FOCUS 35 and Layout Pro

Spectra Precision Layout Pro™ software and the FOCUS 35 together offer the convenience of carrying, managing, editing, and laying out your job site blueprint. This combination is a critical tool in the field of construction layout and is designed to make the layout process more productive, accurate and reliable. For example, use Layout Pro to guide the layout of the major points, add string dimensions on the print, as well as calculate diagonals and angles.

FOCUS 35 RX

The new FOCUS 35 RX models offer 12 hour extended operation through a unique dual battery system, eliminating any need to stop and change battery during a full day's work.

Features

- Available in: 1°, 2°, 3° and 5° angle accuracies
- Long-range, reflectorless distance measurement
- Available RX models with extended operation dual battery system
- Spectra Precision Survey Pro™ software on-board (available models)
- GeoLock™ GPS-assist technology



The FOCUS 35 solution is best described as **Simply More Powerful.** Packaged in a modern, sleek, and streamlined design, it is easy-to-use, affordable, and tough.

Models Overview

	StepDrive motion	LockNGo tracking	GeoLock	2.4GHz radio
Robotic	Standard	Standard	Standard	Standard
RX	Standard	Standard	Standard	Standard
LockNGo	Standard	Standard	N/A	N/A
StepDrive	Standard	N/A	N/A	N/A

FOCUS® 35 Total Station

PERFORMANCE

Angle measurement
Accuracy¹
 (Standard deviation
 based on ISO 17123-3)..... 1" (0.3 mgon),
 2" (0.6 mgon), 3" (1.0 mgon), or 5" (1.5 mgon)
Angle reading (least count display)
 Standard 1" (0.3 mgon)
 1" model 0.5" (0.15 mgon)
 Tracking 2" (0.6 mgon)

Distance measurement²

Accuracy to Prism
 (Standard deviation based on ISO 17123-4)
 Standard 2 mm + 2 ppm (0.007 ft + 2 ppm)
 1" model 1 mm + 2 ppm (0.003 ft + 2 ppm)
 Tracking 5 mm + 2 ppm (0.016 ft + 2 ppm)

Accuracy Reflectorless Mode

Standard
 <300 m (984 ft) ... 3 mm + 2 ppm (0.01 ft + 2 ppm)
 Standard
 >300 m (984 ft) ... 5 mm + 2 ppm (0.016 ft + 2 ppm)
 Tracking 10 mm + 2 ppm (0.033 ft + 2 ppm)

Measuring time

Prism Standard 2.4 sec.
 Prism Tracking 0.5 sec.
 Reflectorless Standard 3–15 sec.
 Reflectorless Tracking 0.7 sec.

Range Prism Mode

1 prism 4000 m (13,123 ft)
 3 prisms 7000 m (22,966 ft)
 Foil Reflector 60 mm 300 m (984 ft)

Range Reflectorless Mode

	Good ⁴	Normal ⁵	Difficult ⁶
KGC ³ (18%)	400 m (1,312 ft)	350 m (1,148 ft)	300 m (984 ft)
KGC (90%)	800 m (2,625 ft)	600 m (1,969 ft)	400 m (1,312 ft)
Foil Reflector 60 mm	1,000 m (3,280 ft)	1,000 m (3,280 ft)	800 m (2,625 ft)
Shortest possible range	1.5 m (4.9 ft)		

Automatic level compensator

Type dual-axis
Accuracy 0.5" (0.15 mgon)
Working Range ±5.5' (±100 mgon)

EDM SPECIFICATIONS

EDM Laser and Principle

Light source Laser Diode 660 nm
 Principle Phase Shift

EDM Beam divergence

Horizontal 4 cm/100 m (0.13 ft/328 ft)
 Vertical 3 cm/100 m (0.10 ft/328 ft)
 Atmospheric Correction -150 ppm to 160 ppm
 continuously

GENERAL SPECIFICATIONS

Coarse Leveling

Electronic coarse leveling range ±3° (±3.3 gon)
 Circular level in tribrach 8/2 mm (8/0.007 ft)

Drives

Drive system Spectra Precision® StepDrive™ system

Rotation time maximum 90°/sec (100 gon/sec)
 Rotation time Face 1 to Face 2 3.7 sec.
 Positioning time 180° (200 gon) 3.5 sec.
 Clamps and slow motions StepDrive driven,
 endless fine adjustment

Centering

Centering system 3-pin
 Plummet Built-in optical plummet
 Magnification 2.4 x
 Focusing distance 0.5 m to ∞ (1.6 ft to ∞)

Telescope

Magnification 31x
 Aperture 50 mm (1.96 in)
 Field of view 1°30'
 Focusing distance 1.5 m to ∞ (4.9 ft to ∞)
 Illuminated crosshair Standard
 Tracklight built in Standard
 Trunnion axis height 196 mm (7.71 in)

Environmental

Operating temperature -20 °C to +50 °C
 (-4 °F to +122 °F)
 Dust and water proofing IP55

Power supply⁷

Internal battery Li-Ion, 11.1 V/5.0 Ah
 Operating time with one internal battery . . . Approx. 6 hours
 Models with two internal batteries Approx. 12 hours

Communications

External foot connector USB cable connection
 and external power supply
 Wireless communication Bluetooth® (optional)

Weight

Instrument 5.0 kg (11.0 lb)
 Tribrach 0.7 kg (1.54 lb)
 Internal battery 0.3 kg (0.66 lb)

ROBOTIC SPECIFICATION

Robotic Operation²

Maximum Robotic Range 300 m to 800 m
 (984 ft to 2,625 ft)
 Point precision at 200 m (656 ft) <2 mm (0.007 ft)
 Maximum Search Distance 300 m to 800 m
 (984 ft to 2,625 ft)
 Search Time (typical) 2–10 sec.

Communications

Internal/external 2.4 GHz, frequency hopping,
 spread spectrum

GPS Search GeoLock⁸

GPS Search GeoLock™ 360° (400 gon)
 Range Full robotic operation range

DATA COLLECTION

Control Units fixed on alidade

Face 1 (optional)
 Display 3.5" TFT color touch screen,
 320x240 Pixel, backlight
 Keyboard Alphanumeric keypad
 Memory (data storage) 128 MB RAM, 1 GB Flash
 Field App. Software Survey Pro and Layout Pro
 Face 2
 Display 6 lines, monochrome, 96x49 Pixel, backlight
 Keyboard 4 keys
 Instrument Software Functions Change Face
 Radio and Instrument Settings,
 Measurement Value Display, Leveling



CERTIFICATION

Class B Part 15 FCC certification, CE Mark approval.
 C-Tick.
 Laser safety IEC 60825-1 am2:2007
 Prism Mode: Class 1
 Reflectorless/Laser Pointer: Class 3R laser
 Bluetooth type approvals are country specific.

1 RX models are not available in 1" accuracy.

2 Standard clear: No haze, overcast or moderate sunlight with very light heat shimmer. Range and accuracy are dependent on atmospheric conditions, size of prism and background radiation.

3 Kodak Gray Card, Catalog number E1527795.

4 Good conditions (good visibility, overcast, twilight, underground, low ambient light)

5 Normal conditions (normal visibility, object in the shadow, moderate ambient light).

6 Difficult conditions (haze, object in direct sunlight, high ambient light).

7 RX models have two internal batteries.

8 Spectra Precision GeoLock is available on data collectors after station setup.



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www.spectraprecision.com

Please visit www.spectraprecision.com for the latest product information and to locate your nearest distributor. Specifications and descriptions are subject to change without notice.

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CONTACT YOUR LOCAL
 SPECTRA PRECISION DEALER





SP80 GNSS Receiver



The Most Connected GNSS Receiver

CONNECTED
RELIABLE
RIGGED

INNOVATIVE



SP80

SP80 GNSS Receiver

The Spectra Precision SP80 is a next generation GNSS receiver that combines decades of GNSS RTK technology with revolutionary new GNSS processing. Featuring the new 240-channel "6G" chipset combined with the patented Z-Blade technology, the SP80 system is optimized for tracking and processing signals from all GNSS constellations in challenging environments.

As the most connected GNSS receiver in the industry, the SP80 offers a unique combination of integrated 3.5G cellular, Wi-Fi and UHF communications with SMS, email and anti-theft technology.

These powerful capabilities, packaged in an ultra-rugged housing and patented antenna design with unlimited operation time (hot-swappable batteries), make SP80 an extremely versatile turnkey solution.

Key Features

- Patented Z-Blade technology
- 240-channel 6G ASIC
- Hot-swappable batteries
- Internal TRx UHF radio
- 3.5G cellular modem
- Built-in WiFi communication
- SMS and e-mail alerts
- Anti-theft technology
- Backup RTK
- RTK Bridge
- eLevel technology
- Trimble RTX correction services



*Patented
inside-the-rod
mounted UHF
antenna design*



Unique 6G GNSS-centric Technology

Patented Z-Blade processing technology running on a next generation Spectra Precision 240-channel 6G ASIC fully utilizes all 6 GNSS systems: GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS. Unlike GPS-centric technology which requires a minimum number of GPS satellites for GNSS processing, Z-Blades unique GNSS-centric capability optimally combines GNSS signals without dependency on any specific GNSS system, this allows SP80 to operate in GPS-only, GLONASS-only or BeiDou-only mode if needed. In addition, SP80 supports the recently approved RTCM 3.2 Multiple Signal Messages (MSM), a standardized definition for broadcasting all GNSS signals from space, regardless of their constellation. This protects the surveyor's investment well into the future by providing superior performance and improved productivity as new signals become available.

SMS and Email Messaging

SP80 has a unique combination of communication technologies including an integrated 3.5G GSM/UMTS modem, Bluetooth and Wi-Fi connectivity, and optional internal UHF transmit radio. The cellular modem may be used for SMS (text message) and e-mail alerts as well as regular Internet or VRS connectivity. SMS (text messages) can be used to monitor and configure the receiver. Likewise, SP80 can use all available RTK correction sources and connect to the Internet from the field using WiFi hotspots, where available. The internal UHF transmit/receive radio allows for quick and easy setup as a local base station. This saves time and increases the surveyor's efficiency.



Anti-Theft Protection

A unique anti-theft technology secures SP80 when installed as a field base station in remote or public places and can detect if the product is disturbed, moved or stolen. This technology allows the surveyor to lock the device to a specific location

and make it unusable if the device is moved elsewhere. In this case, SP80 will generate an audio alert and show an alert message on its display. Furthermore, a SMS or e-mail will be sent to the surveyor's mobile phone or computer and provides the receiver's current coordinates allowing tracking of its position and facilitating recovery of the receiver. SP80's anti-theft technology provides surveyors with remote security and peace of mind.

The Most Powerful Tool for Reliable Field Use

The SP80's rugged housing, created by Spectra Precision's engineering design lab in Germany, incorporates a host of practical innovations. Dual hot-swappable batteries can be easily exchanged in the field as a one hand operation for an interruption-free working day, ensuring surveyors remain productive until the job is done. The impact-resistant glass-fiber reinforced casing, designed to withstand 2m pole drops and waterproof to IP67, ensures that SP80 can handle the toughest outdoor conditions. The patented UHF antenna, set inside the rugged carbon fiber rod, extends the range of RTK radio performance at the same time as armoring protection. The sunlight-readable display offers instant access to key information like the number of satellites, RTK status, battery charge and available memory. With eLevel technology, the user is able to focus in one place when leveling and measuring as well as automatically store measurements when the receiver is level. These powerful design features combine to make SP80 the most capable, most reliable GNSS receiver, backed by a comprehensive standard 2 year warranty.



The Spectra Precision Experience

With the most advanced and rugged field data collectors from Spectra Precision, surveyors get maximum productivity and reliability every day. Spectra Precision Survey Pro or FAST Survey software is specifically tailored for the SP80 GNSS receiver providing easy-to-use, yet powerful GNSS workflows, letting the surveyor concentrate on getting the job done. Spectra

Precision Survey Office Software provides a complete office suite for post-processing GNSS data and adjusting survey data, as well as exporting the processed results directly back to the field or to engineering design software packages. Combined with Spectra Precision field and office software, SP80 is a very powerful and complete solution.

SP80 Technical Specifications

GNSS Characteristics

- 240 GNSS channels
 - GPS L1C/A, L1P(Y), L2C, L2P(Y), L5
 - GLONASS L1C/A, L1P, L2C/A, L2P, L3
 - Beidou (Phase II) B1, B2
 - Galileo E1, E5a, E5b
 - QZSS L1C/A, L1-SAIF, L1C, L2C, L5
 - SBAS L1C/A, L5 (WAAS, EGNOS, MSAS, GAGAN, SDCM)
 - IRNSS L5
- Support for Trimble RTX™ real-time correction services
- Patented Z-Blade technology for optimal GNSS performance
 - Full utilization of signals from all 6 GNSS systems (GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS)
 - Enhanced GNSS-centric algorithm: fully-independent GNSS signal tracking and optimal data processing, including GPS-only, GLONASS-only or BeiDou-only solution (Autonomous to full RTK)
 - Fast Search engine for quick acquisition and re-acquisition of GNSS signals
- Patented SBAS ranging for using SBAS code & carrier observations and orbits in RTK processing
- Patented Strobe™ Correlator for reduced GNSS multi-path
- Up to 20 Hz real-time raw data (code & carrier and position output)
- Supported data formats: ATOM, CMR, CMR+, RTCM 2.1, 2.2, 2.3, 3.0, 3.1 and 3.2 (including MSM), CMRx and sCMRx (rover only)
- NMEA 0183 messages output

Real-Time Accuracy (RMS) ⁽¹⁾⁽²⁾

SBAS (WAAS/EGNOS/MSAS/GAGAN)

- Horizontal: < 50 cm
- Vertical: < 85 cm

Real-Time DGPS position

- Horizontal: 25 cm + 1 ppm
- Vertical: 50 cm + 1 ppm

Real-Time Kinematic Position (RTK)

- Horizontal: 8 mm + 1 ppm
- Vertical: 15 mm + 1 ppm

Network RTK ⁽⁶⁾

- Horizontal: 8 mm + 0.5 ppm
- Vertical: 15 mm + 0.5 ppm

Real-Time Performance

- Instant-RTK® Initialization
 - Typically 2 sec for baselines < 20 km
 - Up to 99.9% reliability
- RTK initialization range: over 40 km

Trimble RTX Initialization ⁽¹⁾⁽²⁾⁽⁷⁾

	Horizontal (RMS)	Initialization	GNSS
CenterPoint® RTX	< 4 cm	<30 mins, <5 mins	L1 + L2

Post-Processing Accuracy (RMS) ⁽¹⁾⁽²⁾

Static & Fast Static

- Horizontal: 3 mm + 0.5 ppm
- Vertical: 5 mm + 0.5 ppm

High-Precision Static ⁽⁸⁾

- Horizontal: 3 mm + 0.1 ppm
- Vertical: 3.5 mm + 0.4 ppm

Data Logging Characteristics

Recording Interval

- 0.05 - 999 seconds

Physical Characteristics

Size

- 22.2 x 19.4 x 7.5 cm (8.7 x 7.6 x 3.0 in)

Weight

- 1.17 kg (2.57 lb)

User Interface

- Graphical PMOLED display
- WEB UI (accessible via WiFi) for easy configuration, operation, status, and data transfer

I/O Interface

- RS232 serial link
- USB 2.0/UART
- Bluetooth 2.1 + EDR
- WiFi (802.11 b/g/n)
- 3.5G quad-band GSM (850/900/1800/1900 MHz) / penta-band UMTS module (800/850/900/1900/2100 MHz)

Memory

- 2 GB internal memory NAND Flash (1.5 GB user data)
- Over a year of 15 sec. raw GNSS data from 14 satellites
- SD/SDHC internal memory card (up to 32GB)

Operation

- RTK rover & base
- RTK network rover: VRS, FKP, MAC
- NTRIP, Direct IP
- CSD mode
- Post-processing
- RTK bridge
- UHF repeater
- UHF networking
- Trimble RTX (cellular/IP)

Environmental Characteristics

- Operating temperature: -40° to +65°C (-40° to +149°F) ⁽⁴⁾
- Storage temperature: -40° to +85°C (-40° to +185°F) ⁽⁵⁾
- Humidity: 100% condensing
- IP67 waterproof, sealed against sand and dust
- Drop: 2m pole drop on concrete
- Shock: ETS300 019
- Vibration : MIL-STD-810F

Power Characteristics

- 2 Li-Ion hot-swappable batteries, 38.5 Wh (2 x 7.4 V, 2600 mAh)
- Battery life time (two batteries): 10 hrs (GNSS On, and GSM or UHF Rx On)
- External DC power: 9-28 V

Standard System Components

- SP80 receiver
- 2 Li-Ion batteries
- Dual battery charger, power supply and international power cord kit
- Tape measure (3.6 m / 12 ft)
- 7 cm pole extension
- USB to mini-USB cable
- Hard case
- 2 year warranty

Optional System Components

- SP80 UHF Kit (410-470 MHz 2W TRx)
- SP80 Field Power Kit
- SP80 Office Power Kit
- Data collectors
 - Ranger 3
 - T41
 - MobileMapper 50
 - Nomad 1050
- Field software
 - Survey Pro
 - FAST Survey
 - Survey Mobile (Android)
 - SPace control app for 3rd party devices (Android)

(1) Accuracy and TTFF specifications may be affected by atmospheric conditions, signal multipath, satellite geometry and corrections availability and quality.

(2) Performance values assume minimum of five satellites, following the procedures recommended in the product manual. High multi-path areas, high PDOP values and periods of severe atmospheric conditions may degrade performance.

(3) Long baselines, long occupations, precise ephemeris used

(4) At very low temperatures UHF module should not be used in the transmitter mode.

(5) Without batteries. Batteries can be stored up to +70°C.

(6) Network RTK PPM values are referenced to the closest physical base station.

(7) Receiver initialization time varies based on GNSS constellation health, level of multipath, and proximity to obstructions such as large trees and buildings.

Contact Information:

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Please visit www.spectraprecision.com for the latest product information and to locate your nearest distributor.

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SCAN THIS
CODE FOR MORE
INFORMATION





Ranger™ 3 Data Collector

Datasheet



Rugged and Full Featured

Features

- Large, bright, sunlight-readable color VGA screen
- Meets MIL-STD-810G standards
- IP67 rating
- SDHC card slot and USB connections
- 30+ hour rechargeable battery
- Windows Mobile 6
- Integrated Bluetooth, Wi-Fi, compass and GPS

Spectra Precision Ranger 3 Data Collector

The third generation Spectra Precision® Ranger™ Data Collector offers a large, bright touch-screen, full alpha-numeric, easy to operate keypad, and is packed with the features surveyors depend on. Built rugged, it meets rigorous MIL-STD-810G military standard for drops, vibration, humidity and extreme temperatures, and with an IP67 rating, it's designed to keep your investment and your data safe. The Ranger 3 comes standard with 8 GB of onboard memory for storing data. Move your data fast and easily using a SDHC card, Bluetooth, USB cable, USB memory stick, Wi-Fi, or WWAN modem.

- Optional 2.4GHz built-in radio provides real-time communications with your Spectra Precision FOCUS 35 robotic total station.
- Large 4.2 inch high resolution, field rugged touch screen that is designed for use outdoors in all light and weather conditions.
- Optional WWAN modem for network RTK and data connectivity. Connect to Spectra Precision Central for productive data synchronization and coordination.
- Full alphanumeric keyboard with direction keys and multiple Enter keys make for easy use and fast data entry, even when wearing gloves.
- Comes with Spectra Precision Survey Pro or Layout Pro field software for survey and construction professionals.



Ranger 3 Data Collector

Technical Specifications

Standard Software

Windows Mobile® 6.5 Professional operating system, including:

- Microsoft Office Mobile:
 - Word Mobile
 - Excel Mobile
 - PowerPoint Mobile
 - Outlook Mobile
- Internet Explorer Mobile
- SMS Text Messaging Support
- Notes / Tasks
- Task Manager
- Adobe Acrobat Reader
- Customized Camera and Flash control including geo-tagging through Microsoft Pictures & Videos software*
- Operating system language options (customer provisionable): Simplified Chinese, English, French, German, Japanese, Spanish
- Calculator
- Microsoft Pictures and Videos
- Flashlight mode
- control application
- Calendar / Contacts
- Windows Media Player
- Messenger
- SatViewer (GPS interface software application)

Spectra Precision Field Software

- Survey Pro
- Layout Pro
- FAST Survey

Standard Accessories (included)

- 28.9 Wh Li-Ion battery
- International AC power supply
- USB cable (mini)
- Stylus with spring tip (pkg of 2)
- Radio antenna for integrated 2.4 GHz radio modem*
- Screen protectors
- Audio port dust cover
- I/O port dust covers
- Standard soft case
- Hand strap
- Stylus tether

Hardware

Physical Specifications

- Size 141 mm x 278 mm x 64 mm (5.6 in x 10.9 in x 2.5 in)
80 mm (3.2 in) at handgrip
- Weight 1.04 kg (2.3 lb) including rechargeable battery
1.10 kg (2.4 lb) including rechargeable battery and internal 2.4 GHz radio-modem*
- Housing Polycarbonate (case), Hytrel® (overmold)

Environmental Specifications

Meets or exceeds:

- Operating Temperature -30 °C to 60 °C (-22 °F to 140 °F)
- Storage Temperature -40 °C to 70 °C (-40 °F to 158 °F)
- Temperature shock MIL-STD-810G, Method 503.5, Procedure I
- Humidity 90% RH temp cycle -20 °C/60 °C (-4 °F/140 °F)
MIL-STD-810G, Method 507.5
- Sand & dust IP6x: 8 hours of operation with blowing talcum powder (IEC-529)
- Water IPx7: Immersed in 1 m of water for 30 minutes (IEC-529)
- Drop 26 drops at room temperature from 1.22 m (4 ft) onto plywood over concrete
MIL-STD-810G, Method 516.6, Procedure IV
- Vibration General Minimum Integrity and Loose Cargo test MIL-STD 810G, Method 514.6, Procedures I, II
- Altitude 4,572 m (15,000 ft) at 23 °C (73 °F) and 12,192m (40,000 ft.) at -30 °C (-22 °F)
MIL-STD-810G, Method 500.5, Procedures I, II, III

Electrical Specifications

- Processor Texas Instrument Sitara® 3715 series ARM® Cortex™-A8 Processor (800 MHz)
- Memory 256 MB RAM
- Storage 8 GB non-volatile NAND Flash onboard
- Expansion SDHC memory slot, USB host
- Batteries 11.1 V, 2600 mAh, 28.9 Wh Li-Ion rechargeable pack
Battery life of 30+ hours under normal operating conditions¹. Full charge in 3.0 hours.
- Notification LEDs 3 x tri-colored notification LEDs
- Display 107 mm (4.2 in) landscape VGA display, 640 x 480 pixels sunlight-readable color TFT with LED backlight, resistive touchscreen
- Keyboard "ABCD" style keypad with 10-key number pad, directional buttons, and 4 programmable buttons
- Audio Integrated speaker and microphone with 3.5 mm stereo headset/microphone port
- I/O USB Host, USB Client
DC power port, 9-pin serial RS-232
- Wireless Integrated Bluetooth 2.0 +EDR, integrated Wi-Fi 802.11 b/g integrated quad-band GSM/GPRS/EDGE: 850/900/1800/1900 MHz, 2/6 Mbit/s 3G HSDPA GSM, Dual band CDMA2000 in Bands BC0 and BC1 (800/900MHz), WWAN* integrated 2.4 GHz frequency-hopping spread-spectrum radio modem*
- Camera*/GPS/Compass/
Accelerometer 5 MP auto focus camera with dual white light LED flash, LED flashlight function; integrated GPS (WAAS enabled); integrated compass; integrated accelerometer



Certifications

Class B Part 15 FCC certification, CE Mark approval and C-tick approval. RoHS compliant. Bluetooth type approvals and regulations are country specific.
MIL-STD-810G, IP67, MIL-STD-461, PTCRB, GCF compliant, Wi-Fi Alliance certified.
Country type certifications: USA, Canada, EU, New Zealand, Australia.
Pending certifications: Brazil, China (PRC), India, Japan, Republic of Korea, Russia, Taiwan, Thailand, UAE

Recycling Information

For product recycling instructions and more information, please go to:
www.spectraprecision.com/ev.shtml

1 Unit is idle with backlight turned on, no radios turned on, moderate temperatures.

* Only available on select models



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Addendum #1 – Vendor Questions Response
CRFQ DEP18*05
Surveying Equipment

- Q1. The line item for the robotic survey equipment does not indicate all the parts that may or may not come with the robotic survey instrument. Normally these are bundled with a Sokkia RC kit. The bid does not specify that.
- A1. Yes, this option shall be included. Refer to specifications, **3.1.1.8 Robotic Total Station** *must have remote tracking device that is non-GPS, Bluetooth equipped, for use in areas of canopy cover and areas of no signal.*
- Q2. The GPS equipment also does not specify if the GLONASS option is desired (which it normally is).
- A2. Yes, this option shall be included. Refer to specifications, **3.1.2.6 GPS Base and Rover** *must include Glonass-Russian Satellite signal capability.*

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: _____

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

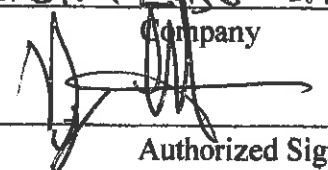
Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Precision Laser Instrument, Inc

Company


Authorized Signature
10/24/17

Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.
Revised 6/8/2012