# FOCUS® 35 Series Total Station

NEW FOR 2015

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

AFFORDABLE
RELIABLE
PRODUCTIVE

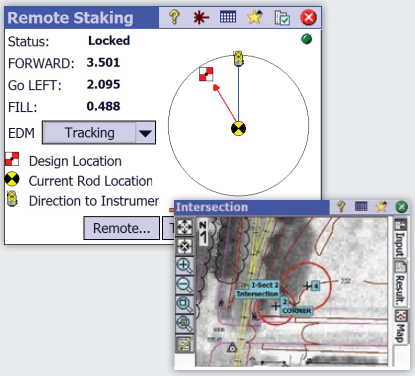
FOCUS®

## Featuring World Class Spectra Precision Field Software

Introducing the powerful Spectra Precision® FOCUS®v 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.

## Features

- Survey Pro™ and Layout Pro™ software
- GeoLock™ GPS assist technology
- 1”, 2”, 3” and 5” angle accuracy
- StepDrive™ motion technology
- LockNGo™ advanced tracking technology
- Windows CE Touchscreen
- Ultra lightweight at only 5 kg (11 lb)
- 2.4 GHz interference-free radio
- Spectra Precision Ranger 3XR data collector

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.

NEW FOR 2015

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## PERFORMANCE

### Angle measurement

Accuracy
(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 measurement[1]

Accuracy to Prism
(Standard deviation based on ISO 17123-4)
Standard . . . . . 2 mm + 2 ppm (0.007 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[3] | Normal[4] | Difficult[5] |
|---|---|---|---|
| KGC[2] (18%) | 400 m (1,312 ft) | 350 m (1,148ft) | 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. . . . . 90º/sec (100 gon/sec)
Rotation time Face 1 to Face 2 . . . . . 3.7 sec.
Positioning time180º (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. . . . . .1º30'
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 ºC to +50 ºC (–4 ºF to +122 ºF)
Dust and water proofing. . . . . IP55

### Power supply

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

### Communications

External foot connector . . . . . USB cable connection and external power supply
Wireless communication . . . . . Bluetooth®

### 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 Operation[1]

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 GeoLock[6]

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

## DATA COLLECTION

### Control Units fixed on alidade

Face 1
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 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.
2 Kodak Gray Card, Catalog number E1527795.
3 Good conditions (good visibility, overcast, twilight, underground, low ambient light)
4 Normal conditions (normal visibility, object in the shadow, moderate ambient light).
5 Difficult conditions (haze, object in direct sunlight, high ambient light).
6 Spectra Precision GeoLock is available on data collectors after station setup.

LASER RADIATION
AVOID DIRECT EYE EXPOSURE
CLASS 3R LASER PRODUCT
Wavelength: 630-680nm
Maximum output power: 5mW
This product complies with IEC 60825-1: 2007 and 21 CFR 1040.10 and 1040.11 Except for deviations pursuant to Laser Notice no.50, dated June 24, 2007

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