

# Robotic Total Stations - Spectra Precision® Focus 30®



Introducing the powerful Spectra Precision® FOCUS® 30 Total Station. The FOCUS 30 fully robotic motorized solution provides the same usability as a mechanical total station, but with 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 require:

- a 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

The speed of observation and precise positioning of the FOCUS 30 robotic total station is provided by patented StepDrive motion 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. Each FOCUS 30 model includes a tracking sensor that uses LockNGo tracking technology enabling the instrument to constantly lock onto the prism. The benefit of LockNGo is the ability to follow the prism at all times and reduce downtime from not having to re-point the instrument on every observation.

- StepDrive™ motion technology
- LockNGo tracking technology
- Featuring Spectra Precision® Survey Pro™ software on-board
- Three Robotic models 2", 3" and 5" accuracies
- Long-range, reflectorless distance measurement
- High-precision prism measurements
- GeoLock™ GPS-assist technology

To maintain contact between the FOCUS 30 instrument and the remote observer with the range pole and prism, the robotic solution must include a communication link. The FOCUS 30 uses an integrated 2.4 GHz radio modem, as does the Spectra Precision Ranger™ data collector. The 2.4 GHz radio modem provides interference-free robotic data communications. Once your robotic communications have been established you can control all the functions of the FOCUS 30 from the range pole as you move through the jobsite making measurements. This makes it possible for a single surveyor to perform high accuracy stakeout or topographic surveys by themselves. From high-order control surveys to topographic data collection or fast-paced construction stakeout, you can rely on a FOCUS 30, even in harsh outdoor conditions.

The FOCUS 30 total station is combined with Spectra Precision Survey Pro field software, providing you with world class software solutions for any surveying situation. An example of these features includes a unique robotic software technology that can be used when associating the FOCUS 30 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 GPS assist technology to keep locked on target. The Spectra Precision GeoLock field software 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 reacquire the target at the robotic rover. This technique greatly reduces wasted time, improving your field work efficiency. The FOCUS 30 robotic solution is best described as Simply Powerful. Packaged in a modern, sleek, and streamlined design, it is easy-to use, affordable and tough. FOCUS 30 Total Stations are designed to meet all your surveying needs.

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## Specifications Sheet

### PERFORMANCE

#### Angle measurement

Accuracy (Standard deviation based on ISO 17123-3)

2" (0.6 mgon), 3" (1.0 mgon), or 5" (1.5 mgon)

#### Angle reading (least count)

Standard

1" (0.1 mgon)

Tracking

2" (0.5 mgon)

#### Distance measurement<sup>1</sup>

Accuracy to Prisms (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

4,000 m (13,123 ft)

3 prisms

7,000 m (22,966 ft)

Foil Reflector 60 mm

300 m (984 ft)

#### Range Reflectorless Mode

Difficult<sup>4</sup>, Normal<sup>5</sup>, Good<sup>6</sup>

KGC (18%)

300 m, 350 m, 400 m

(980 ft, 1,150 ft, 1,310 ft)

KGC (90%)

400 m, 600 m, 800 m

(1,310 ft, 1,970 ft, 2,620 ft)

#### Shortest possible range

1.5 m (4.9 ft)

#### Automatic level compensator

Type

Dual-axis

Accuracy

0.5" (0.15 mgon)

Working Range

±6' (±111 mgon)

### 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 speed maximum

90°/sec (100 gon/sec)

Rotation time Face 1 to Face 2

3.7 sec.

Positioning speed 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

2.4x

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 supply

Internal battery

Li-Ion, 11.1 V/4.4 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 (12.1 lb)

Tribrach

0.7 kg (1.54 lb)

Internal battery

0.3 kg (0.66 lb)

### 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, 128 MB Flash

Field Application Software

Spectra Precision Survey 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

### 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

### ROBOTIC SURVEYING

#### Robotic Operation<sup>1</sup>

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<sup>3</sup>

GPS Search GeoLock

360° (400 gon)

#### Range

Full robotic operation range

### 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.

<sup>1</sup> 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.

<sup>2</sup> Kodak Gray Card, Catalog number E1527795.

<sup>3</sup> Spectra Precision GeoLock is available on data collectors after station setup.

<sup>4</sup> Difficult conditions (haze, object in direct sunlight, high ambient light).

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

<sup>6</sup> Good conditions (good visibility, overcast, twilight, underground, low ambient light).