OVERVIEW

The spectra focus 35 total station is a motorized total station providing high speed, accuracy and precision in measurement. The FOCUS 35 robotic instrument moves the power of the observer from the instrument to the range pole, improving efficiency. The speed of observation and precise positioning of the FOCUS 35 Robotic Total Station is provided by patented StepDrive™ motion technology, which controls the horizontal and vertical motion of the motors, eliminating the need for traditional motion locks. The FOCUS 35 includes a tracking sensor that uses LockNGo™ FastTrack tracking technology, enabling the instrument to constantly lock onto the prism.The FOCUS 35 RX extended operation models feature market-leading battery life.

The FOCUS 35 is available in 1”, 2”, 3” or 5” accuracies and is controlled by the Spectra Geospatial Survey Pro™ field software using an onboard Windows CE touchscreen interface. The FOCUS 35 is also designed to be controlled externally by Ranger™, Nomad™, or T41® data collectors running Survey Pro field software, Layout Pro or FAST Survey on the Ranger or Nomad. Alternatively, bring your own controller and connect to the FOCUS 35 using Bluetooth or the SPDL Radio Bridge.

The FOCUS 35 is available in three models:

- Robotic
- LockNGo
- RX

All models include a motorized drive system at the instrument, and a tracking sensor to track the range pole and prism.

Model	StepDrive motion	LockNGo tracking	Wireless Communication	Onboard Screen	Battery System
ROBOTIC			2.4GHz radio, Short Range Bluetooth		Single
RX			2.4GHz radio	N/A	Dual
LockNGo			Long Range Bluetooth		Single

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 Robotic and RX uses an integrated 2.4 GHz radio modem, as does the Ranger 7 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 35 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 35, even in harsh outdoor conditions.

The FOCUS 35 and 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 GNSS receiver and Survey Pro software. This combination of technologies allows the user to take full advantage of the Spectra Geospatial GeoLock™, technology to keep locked on target.

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.

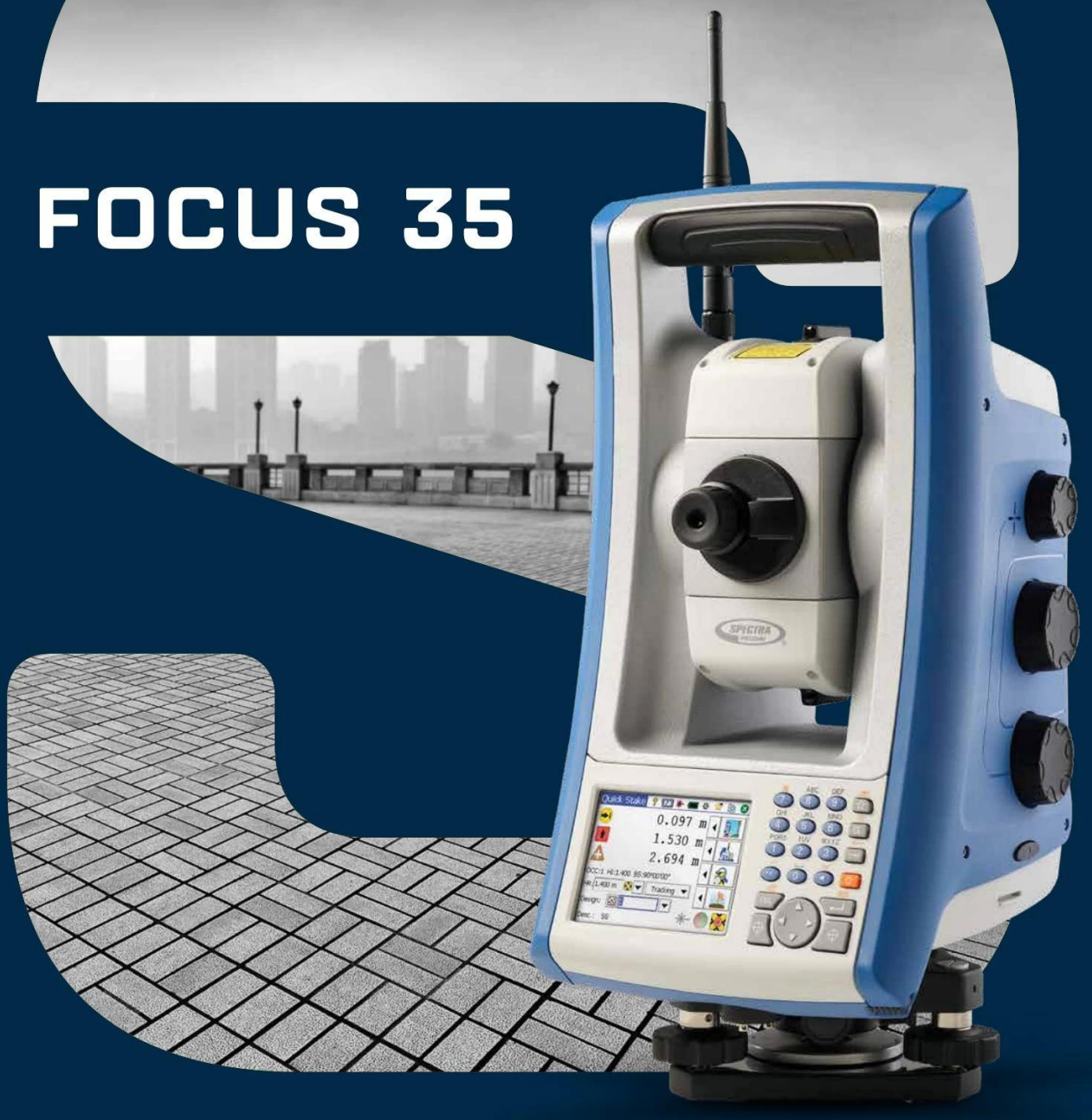
The FOCUS 35 robotic solution is best described as Simply More Powerful. Packaged in a modern, sleek, and streamlined design, it is easy-to-use, affordable and tough. FOCUS 35 Total Stations are designed to meet all your surveying needs.

Accessory

The FOCUS SPDL 2.4 Radio Bridge is a rugged lightweight custom accessory designed to allow communication between robotic total stations and bluetooth-enabled mobile devices.

SPECTRA GEOSPATIAL

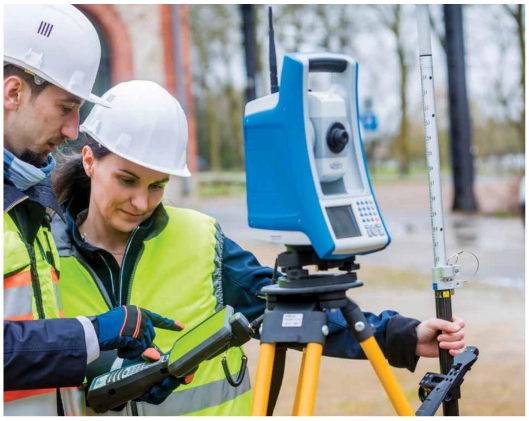
FOCUS 35



PRODUCTIVE, RELIABLE AND AFFORDABLE ROBOTIC TOTAL STATIONS

FEATURING WORLD CLASS SPECTRA GEOSPATIAL FIELD SOFTWARE

Get to know the powerful Spectra Geospatial® 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.



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.

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

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

FOCUS 35 + Ranger 7

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
All 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. Additionally, LockNGo is compatible with most standard passive prisms prism, making the FOCUS 35 an ideal solution for anyone that wants to continue using accessories they already own.

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 Robotic and RX FOCUS 35 models use an integrated 2.4 GHz radio modem as does the Spectra Geospatial Ranger™ 7 data collector. The 2.4 GHz radio modems provide interference-free long range robotic data communications. Once your robotic communications have been established you can control all the functions of the FOCUS 35 from the range pole (up to 800m away) as you move through the job site making measurements. Alternatively, the LockNGo model provides Class 1 long range Bluetooth for similar functionality up to 200m away [1]. 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 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 GNSS receiver and Survey Pro software. This combination of technologies allows the user to take full advantage of the Spectra Geospatial GeoLock™ technology to keep locked on target.

THE SPECTRA GEOSPATIAL 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 GNSS 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
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 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				
MODEL	**StepDrive motion**	**LockNGo tracking**	**Wireless Communication**	**Onboard Screen**	**Battery System**
ROBOTIC	✔	✔	2.4GHz radio, Short Range Bluetooth	✔	Single
RX	✔	✔	2.4GHz radio	N/A	Dual
LockNGo	✔	✔	Long Range Bluetooth	✔	Single

SPECTRA GEOSPATIAL

FOCUS® 35

PERFORMANCE

Angle measurement

Accuracy[1,2]
- 1": (0.3 mgon)
- 2": (0.6 mgon)
- 3": (1.0 mgon)
- 5": (1.5 mgon)

Angle reading (least count display)
- Standard: 1" (0.3 mgon)
- 1" model: 0.5" (0.15 mgon)
- Tracking: 2" (0.5 mgon)

Distance measurement[4]

Accuracy to Prism [3]
- 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: 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

	Good[6]	Normal[7]	Difficult[8]
KGC[5] (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	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

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

ROBOTIC SPECIFICATIONS

Robotic operation[4]
- 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.

GNSS Search GeoLock[10]
- GNSS Search GeoLock™: 360° (400 gon)
- Range: Full robotic operation range

COMMUNICATIONS

External foot connector
- USB cable connection
- External power supply

Wireless Communication
- Robotic Model
  - Internal/external: 2.4 GHz, frequency hopping, spread spectrum
  - Class 2 Short Range Bluetooth®
- RX Model
  - Internal/external: 2.4 GHz, frequency hopping, spread spectrum
- LockNGo Model
  - Class 1 Long Range Bluetooth®

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 Geospatial 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: 2.4 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 supply[9]
- Internal battery: Li-Ion, 10.8V / 6.5Ah
- Operating time with one internal battery: Approx. 6 hours
- Models with two internal batteries: Approx. 12 hours

Weight
- Instrument: 5.0 kg (11.0 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 (models with onboard data collection)
- Display: 3.5" TFT color touch-screen, 640x480 pixels, backlight
- Keyboard: Alphanumeric keypad
- Memory (data storage): 512 MB RAM, 4 GB Flash
- Field application software: Survey Pro and Layout Pro

Face 2
- Display: 6 lines, monochrome, 96x49 pixels, backlight
- Keyboard: 4 keys
- Instrument software functions: Change Face, Radio and Instrument Settings, Measurement Value Display, Leveling

1 RX models are not available in 1" accuracy.
2 Standard deviation based on ISO 17123-3
3 Standard deviation based on ISO 17123-4
4 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.
5 Kodak Gray Card, Catalog number E1527795.
6 Good conditions (good visibility, overcast, twilight, underground, low ambient light)
7 Normal conditions (normal visibility, object in the shadow, moderate ambient light).
8 Difficult conditions (haze, object in direct sunlight, high ambient light).
9 RX models have two internal batteries.
10 GeoLock is available inside of Survey Pro field software when used onboard a data collector.
11 Bluetooth range varies based on environmental conditions such as physical obstructions or interference from other nearby devices. Range also varies based on the transmitter strength and receiver sensitivity of both the controller and the FOCUS 35 total station.

CE

Bluetooth®