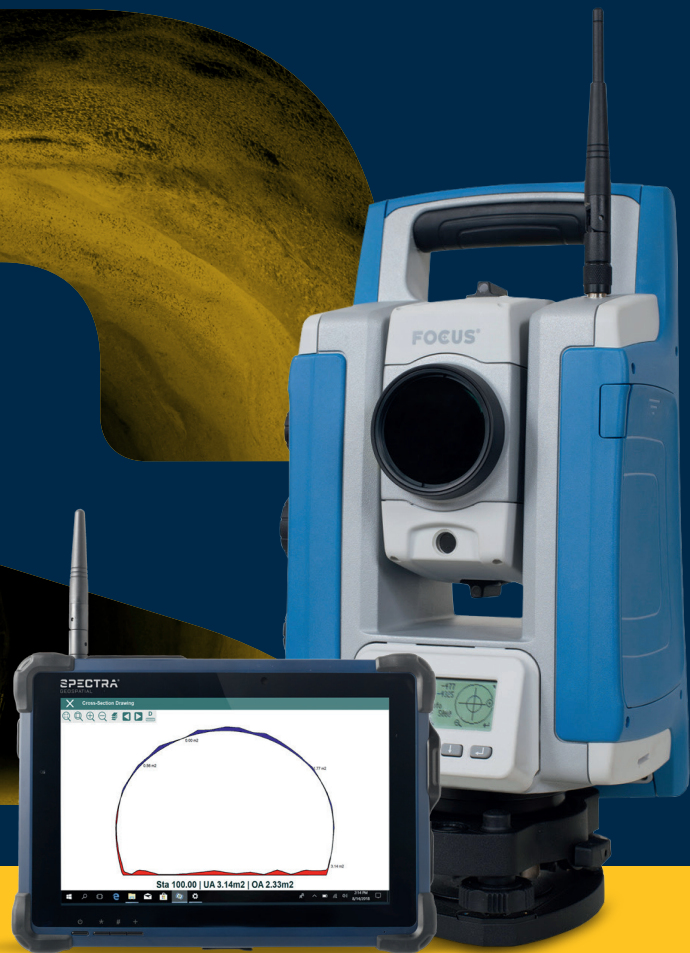


Tunneling Survey Solution

DATASHEET



**Productivity in the field
when you need it**

**All-in-one field and
office system**

**Simple, automated
field workflows**

**Streamlined reporting
workflow**

Combine the FOCUS 35 and ST10 with TcpTUNNEL, Get a performing tunnel survey solution.

Tunnel construction surveys require rugged hardware to handle the tough environmental conditions while maintaining accuracy throughout the project. Adding simple software workflows to make the data collection process efficient completes the survey solution. Spectra Geospatial and Aplitop have collaborated to provide this system to tunnel construction surveyors. Utilizing the FOCUS 35 robotic total station, Ranger 7 and/or ST10 tablet, and the TcpTUNNEL field and office software, tunnel surveyors around the world can benefit from two trusted names in surveying to complete their next project.

Applications

The complete system for tunnel construction surveys utilizing the speed and accuracy of the FOCUS 35 robotic total station, the durability and ease of the user Ranger 7 and ST10 tablet, and the simple and effective workflows in the TcpTUNNEL software platform.

This system is perfect for the following tunnel applications:

- Project definition by defining tunnel design elements such alignments and templates for use in field software
- Efficient tunnel drill and blast setout and reporting on the difference to design positions
- Automated data collection for the quality control of tunnel excavation process using cutting-edge tracking mode
- Accurate stake out of key design features and anchor bolts along tunnel alignment
- Graphical reporting of the differences between design and survey data to calculate over and underbreak volumes and areas

System Components

Spectra Geospatial FOCUS 35

The FOCUS 35 robotic total station provides high speed, accuracy and precision measurements. The FOCUS 35 robotic instrument moves the power of the observer from the instrument to the range pole, improving efficiency. The FOCUS 35 offers significant time savings for tunnel surveyors utilizing the LockNGo tracking technology to reduce the data collection time leading to increased productivity without sacrificing accuracy. From drilling and blasting to shotcrete and as-building, the FOCUS 35 is a leader in precision robotic total stations for tunnel surveys.

FEATURES & BENEFITS

- StepDrive™ motion technology
- LockNGo™ tracking technology
- Available in 1", 2", 3" and 5" angle accuracies
- Long-range, reflectorless distance measurement
- Available FOCUS 35 RX models with extended operation dual battery system
- High-precision prism measurements
- PIN code security locking system
- Onboard Long Range Bluetooth on LockNGo Model

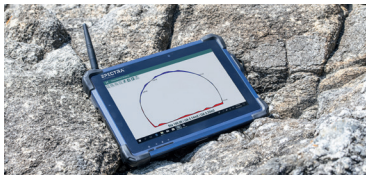
Ranger 7

With its large 7-inch touch screen, full keypad, and Windows 10 Pro operating system, Ranger 7 is built to hit the mark for surveyors requiring an easy-to-use, rugged data collector. It seamlessly runs with TcpTUNNEL field software and other Windows-based applications such as MS Office applications and Skype email.



ST10 Tablet

The ST10 tablet has a bright, high contrast, sunlight readable 10-inch screen to give you the area you need to easily see your data or manage map layers. Combined with its powerful processing capabilities you'll be more productive, achieve faster results and catch errors in the field, saving valuable time and money.

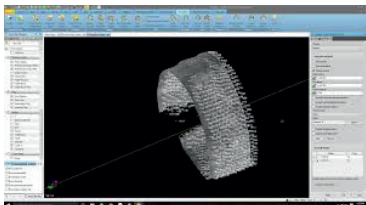


Survey Office

Office software is ideal for processing and analyzing GPS and GNSS, and optical survey data recorded in the field, and exporting it to a design package. The software provides numerous innovative and unique features, and it is easy to learn and use. Combine all survey data types in one software package for processing and deliverable creation.

Tunneling Module

With Tunneling module add on to Survey Office, create, edit, and modify tunnel designs using functionality specific to the industry offering a complete tunneling workflow. Interchange designs information between Survey Office and TcpTUNNEL software to ensure that field crews have the latest information for data collection.



aplitop

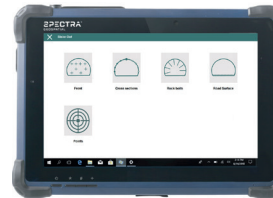
TcpTUNNEL field software



TcpTunnel performs automatic and unattended cross-section measurements for each station, defined by intervals of angle, arc length or height difference. Special points and road layers can be measured, and exclusion areas defined as well. It is also possible to measure a grid, in conventional or tracking mode, giving two corners or a range of horizontal and vertical angles.

The program allows the staking out of the tunnel face, points of the tunnel template, rock bolts, road surface and points of the project file. Theoretical and measured data, and also the differences, are shown for each option.

The application allows to compare graphically theoretical and measured cross-sections along the alignment, shown in different colors the under-break and over-break areas with their values for each point on the cross-section.



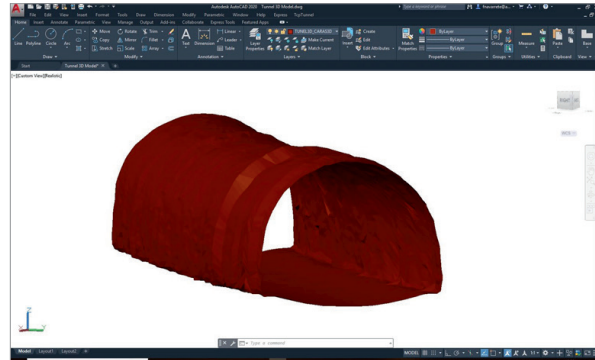
TcpTUNNEL CAD office software



This CAD application processes tunnel surveying data measured in the field running TcpTunnel or other programs. TcpTUNNEL is a plug-in software supported in many leading CAD packages such as AutoCAD and ZWCAD.

TcpTunnel CAD calculates from the points and alignment the cross sections, that can be filtered and edited, and allows you to compare with the tunnel template drawn as a polyline. You can also draw profiles in single or sheet mode with multiple customization options, as well as generate the 3D model of the tunnel.

The application also calculates infra or over-excavation areas and volumes, generating reports that are printed or exported to various formats.



System Requirements

- TcpTUNNEL
 - Can be installed on either Spectra Geospatial Ranger 7 or ST10 tablet
- Survey Office and TcpTUNNEL CAD

	Survey Office	TcpTUNNEL CAD
Operating System	Windows 8 and 10 in 64 bits	Windows 7, 8, 8.1, 10 in 32 and 64 bits
CAD	Not required	AutoCAD versions 2010 to 2021, ZWCAD 2018 to 2020
Hard Disk	5 GB or more	1GB of free disk space
Memory	Minimum 2 GB (recommended 8 GB)	Minimum 3GB
Processor	Dual-core 1.80 GHZ or better	Dual-core 2Ghz or better

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