



Introducing the FOCUS 50 Total Station

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INTRODUCING



FOCUS 50

TOTAL STATION

FOR EVERY WAY YOU WORK

SPECTRA[®]
GEOSPATIAL



FOCUS 50 Total Station Three New Models:

- FOCUS 50 Autolock
 - FOCUS 50 Short Range Robotic
 - FOCUS 50 Long Range Robotic
- + Configurable angular accuracy

Agenda

- **Specs & Performance**
 - 3 Models of FOCUS 50
 - Specifications
 - System Compatibility: comms, controllers & software
 - Working with Bluetooth
- **Key Technologies**
 - MagDrive™
 - SurePoint™
 - Autolock™
- **Angular Accuracy, Certificates, and Firmware Updates**
- **FOCUS 50 & Origin Field Software**
- **Questions**



Specs & Performance



3 Models of FOCUS 50



	Autolock	Short Range Robotic	Long Range Robotic
Communication Method	Cabled Connection	Bluetooth (long range)	Bluetooth (short range) & 2.4 GHz Radio
Do you...?	<p>...prefer to work with someone always behind the instrument?</p> <p>e.g. always doing DR shots, or on a 2-person crew</p>	<p>...want to work robotically, but at shorter range?</p> <p>-and/or-</p> <p>... want to use 3rd party controllers' integrated Bluetooth?</p>	<p>...want to work robotically at maximum range/reliability?</p>

Specifications: EDM



Speed
Standard Mode

Prism: 1.2 s
DR: 1 - 5 s

Accuracy
Standard Mode

Prism: 1+2 ppm
DR: 2+2 ppm

Range

Prism: 5500 m
DR: 1300 m

Specifications: General

Display	Yes, Face 2 LE-Display
Battery	6.5 h 20 h with multi-battery adapter (external)
Environmental	IP65
Weight	5.9 kg (including battery & tribrach)
Tracklight	Standard on all models
Laser Pointer	Standard on all models
Warranty	2 year factory warranty Extended warranties also available
Service	2 year recommended preventative maintenance



System Compatibility

Data Collectors



Field Software

- Origin
- Survey Pro
- Layout Pro
- TPSDK
- Trimble Access



Survey Office Software

Also works with TBC



Connections Comparison by Model

	Autolock	Short Range Robotic	Long Range Robotic
<i>Cabled Connection</i>			
Ranger 5 * Ranger 7 ST10	✓	✓	✓
<i>Wireless Connection</i>			
Ranger 5 Ranger 7	✗	✓ Controller Bluetooth	✓ EM120 module on controller
ST10	✗	✓ Controller Bluetooth	✓ ST10 (Radio model)
3rd party	✗	✓ Controller Bluetooth	✓ SPDL radio paired with controller

*Requires USB A-to-C Adapter

Short Range Robotic Model Range Expectations over Bluetooth



Controller	Approximate Range (m)
Ranger 5	150 - 550
Ranger 7	100 - 350
ST10	50 - 100

Range can vary widely depending on:

- Radio traffic
 - Bluetooth, WiFi, radio, cell
- Line of Sight
 - If you are walking away from the total station, your body will block part of the signal and shorten the range
 - Holding the controller in your hand instead of using a bracket can also cause this effect
- Bluetooth module and antenna in both the total station and the controller
 - This is why range is controller-dependent
 - Note - as a first step troubleshooting radios, always try a new antenna on both the TS and Controller side

Key Technologies

- MagDrive™
- SurePoint™
- Autolock™



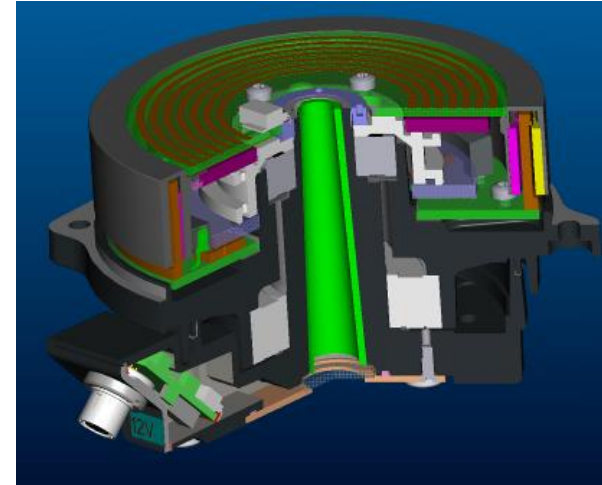
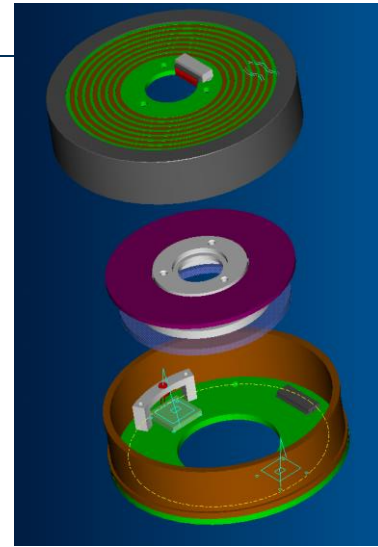
MagDrive™ Technology

Controls the HA/VA movement electromagnetically

Features

- Brushless, frictionless motor
- Integrated motor with angle sensors
- No gear, no clutch
- Accurate positioning
- Low power consumption

→ Drives are smooth, silent, and accurate!



MagDrive™ Technology

Controls the HA/VA movement electromagnetically

Intuitive Aiming

- Endless fine adjustment
- Multi Speed Tangents with Automatic Gear Changes

→ The slower/faster you turn the knob, the total station movement matches

→ The fine adjustment is really fine, one full turn at lowest speed takes more than a month!



SurePoint™

Compensator information is used to automatically correct the pointing of the telescope for all mislevelment and trunnion axis errors in real time during operation

Not a problem if instrument is disturbed slightly it will aim itself back at target

- Buttons pushed on instrument
- Contact with instrument when looking through telescope
- Wind
- Tilt of Tripod

How it works

Control loop is active all the time

- Always turns instrument to the current reference angle

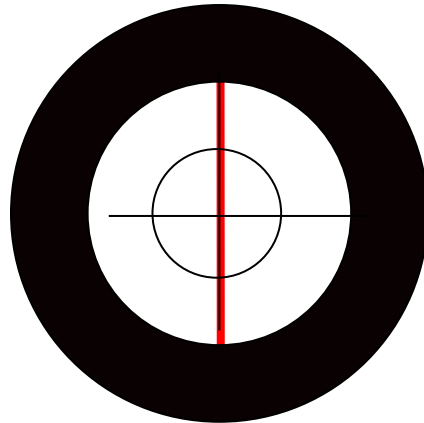
Reference angle only changed when

- Knobs are turned
- Position commands are given
- Instrument is turned firmly so that it enters friction mode

Collimation error the old way

What happens when you aim at a plumb line and turn the vertical knob?

- A old system will only turn the vertical motor
- The aim will not follow the plumb line but the horizontal angle will be compensated for this drift

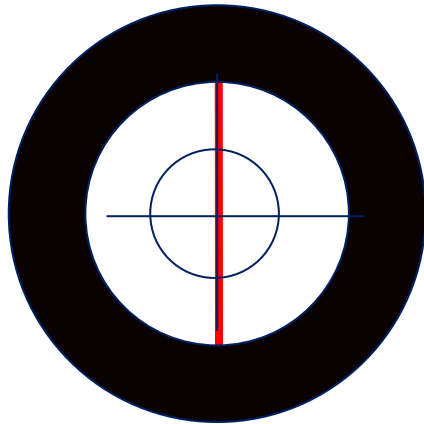


HA: 143.4001

VA: 0000000

Collimation error with SurePoint™

- SurePoint feeds the corrections back into the control loop when the vertical knob is turned
- SurePoint uses both motors and make the instrument follow the plumb line!



HA: 143.4532

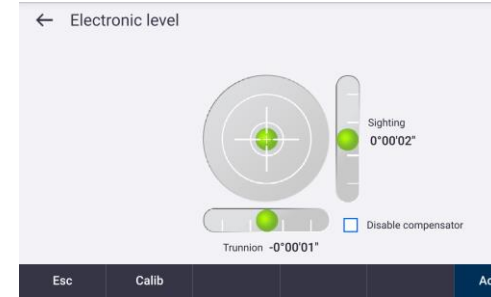
VA: 0000000

SurePoint™ In Action



The Setup

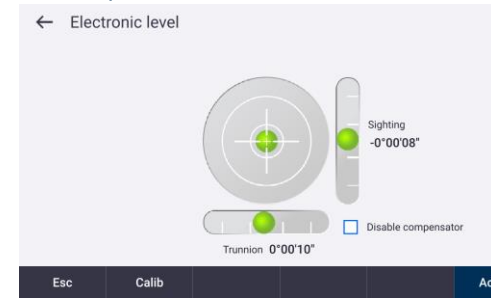
Total Station is levelled and aimed at the B/W target with the laser pointer turned on

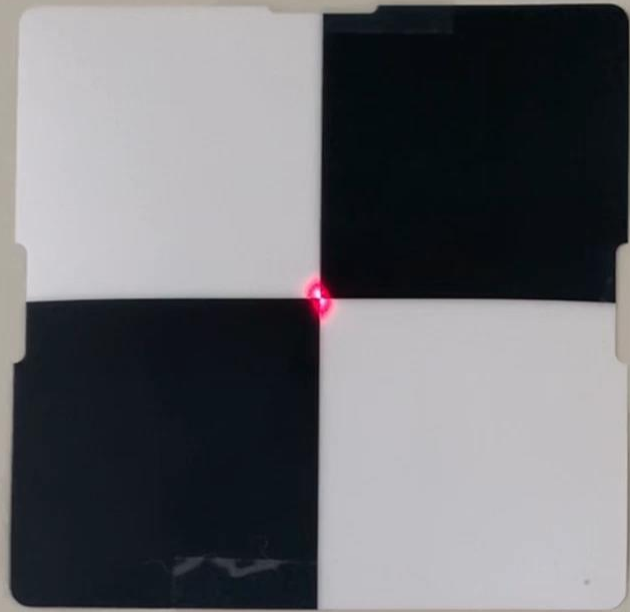


Next Slide

Move tribrach screw / total station out of level (but still in compensator range) → laser pointer moves off of the target center

→ SurePoint automatically moves the laser pointer back to the center





Autolock™

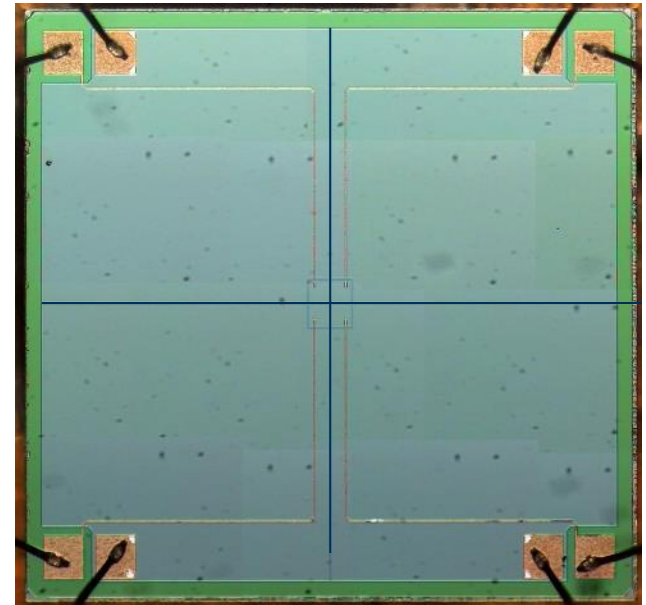
Autolock is the name for the tracking technology

The base model of FOCUS 50 is named Autolock after this technology

How it works

- FOCUS 50 sends out a signal (the prism is passive)
- The signal reflects off the prism and goes back to the FOCUS 50
- FOCUS 50 Tracker Sensor looks for the return signal
 - Tracker sensor has 4 quadrants
 - Once the total station detects a prism is within the tracker window, the servos will adjust the aiming until the signal is equally strong in all 4 quadrants

Tracker Sensor





Angular Accuracy, Certificates, and Firmware Updates

Choose the accuracy you need, now or later

All Models of FOCUS 50 are available in 1", 2", 3", or 5" angular accuracy

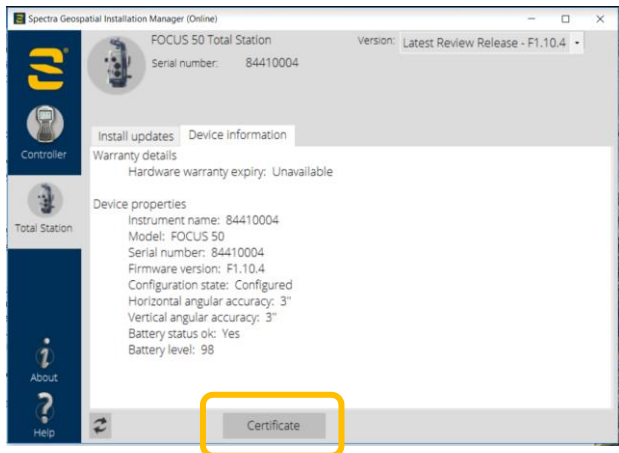
Change your mind? Upgrade at any time

How it works:

- In the factory, all instruments go through extensive testing and calibrations to ensure they achieve 1" angular accuracy
- Before delivering to you, a Spectra Geospatial Distribution partner applies an electronic configuration (firmware) to set the instrument performance

Certificate Delivery through SGIM

Instrument Certificates are delivered electronically, on demand, through SGIM



Instrument angular accuracy:
Configuration applied date:
Certificate generation date:

Certificate

SPECTRA GEOSPATIAL FOCUS 50 WITH SERIAL NUMBER 84450005
COMPLIES WITH THESE SPECIFICATIONS:

INSTRUMENT CONFIGURATION

Instrument angular accuracy: 3"
Configuration applied date: 15 September 2021
Certificate generation date: 22 September 2021

ANGLE MEASUREMENT

Accuracy (ISO 17123-3)
1" unit accuracy is 0.3 mgon = 3 cc (1")
2" unit accuracy is 0.6 mgon = 6 cc (2")
3" unit accuracy is 0.9 mgon = 9 cc (3")
5" unit accuracy is 1.5 mgon = 15 cc (5")

Automatic Level Compensator
Dual-axis with a working range of: ±5.4' (±100 mgon)

DISTANCE MEASUREMENT

Prism Mode
Accuracy (ISO 17123-4): 1 mm + 2 ppm (0.003 ft + 2 ppm)
Accuracy RMSE: 2 mm + 2 ppm (0.006 ft + 2 ppm)

DR Mode
Accuracy RMSE: 2 mm + 2 ppm (0.0065 ft + 2 ppm)

RANGE

Prism Mode
1 Prism: 0.2 m - 5,500 m (0.65 ft - 18044 ft)

DR Mode
Kodak Grey (18%): 1 m - 600 m (3.28 ft-1969 ft)

For full specifications of this instrument, please refer to the datasheet available on www.SpectraGeospatial.com

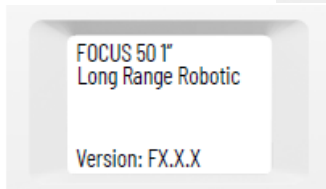
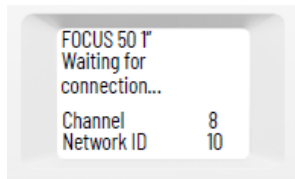
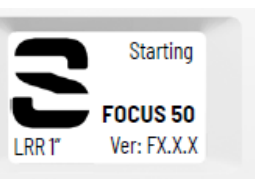
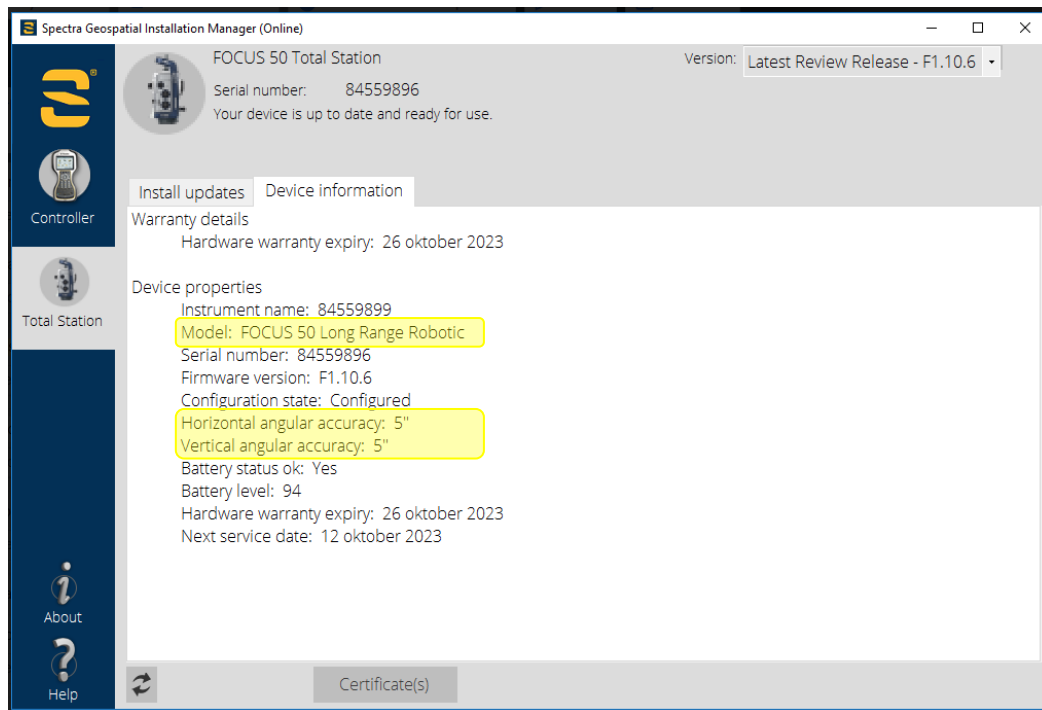
Manufacturing Inspection

Inspected by: Jan Friman
Inspection Date: 10 September 2021
Location: Danderyd, Sweden



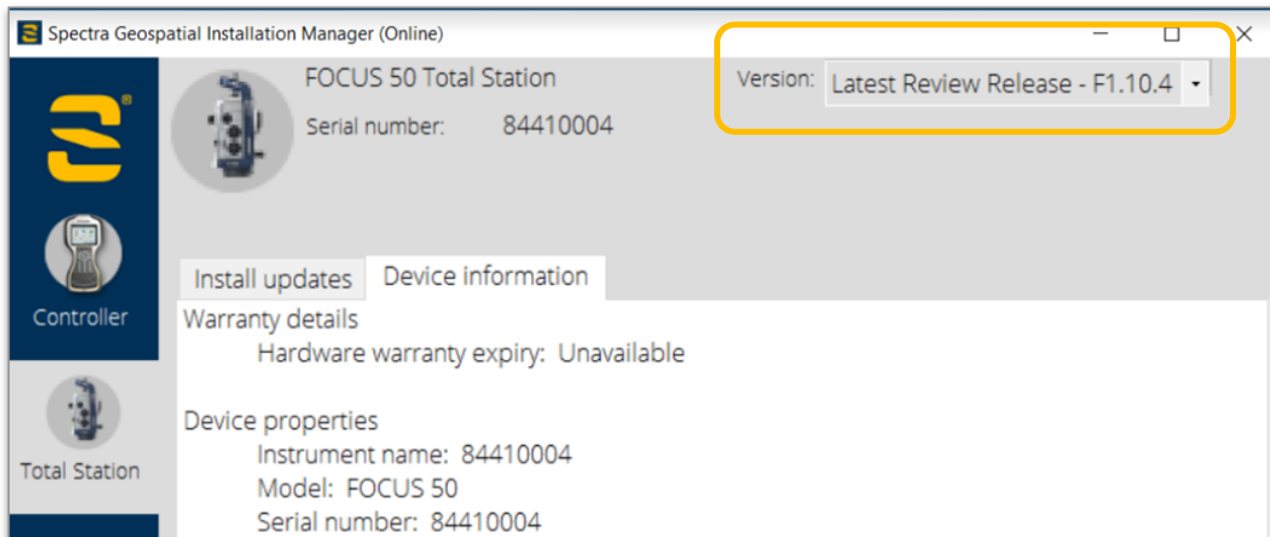
Where to find an instrument's configuration

- Plug into SGIM > Device Information
- Within Origin > Instrument Settings
- In the Face 2 display
 - Splash Screen
 - Waiting for connection page
 - Firmware Page



Firmware Updates through SGIM

Firmware updates for the FOCUS 50 are built into SGIM → Easily update the instrument firmware



Service Certificates & Next Service Date

Service certificates also delivered through SGIM

Certificate(s) button will download both:

- Factory Certificate
- Preventative Maintenance certificate (if available)

Next Service Date can be found:

- In SGIM
- Onboard the instrument under "Service Info"

Spectra Geospatial Installation Manager (Online)

FOCUS 50 Total Station
Serial number: 88099983

Controller

Total Station

Install updates | Device information

Warranty details
Hardware warranty expiry: Unavailable

Device properties
Instrument name: 88099983
Model: Focus 50 Short Range Robotic
Serial number: 88099983
Firmware version: F1.10.6
Configuration state: Configured
Horizontal angular accuracy: 2"
Vertical angular accuracy: 2"
Battery status ok: Yes
Battery level: 55
Next service date: 25 May 2022

About
Help

Refresh

Certificate(s)



**FOCUS 50 &
Origin Field Software**

Modern Workflow

Origin increases productivity by:

- Map centric workflows
- Modern UI reducing clicks required to access features and carry out a job
- Auto connect to instruments to get the job started fast

Simple point selection and navigation, including multi-touch (pinch-to-zoom)

You can also add satellite imagery



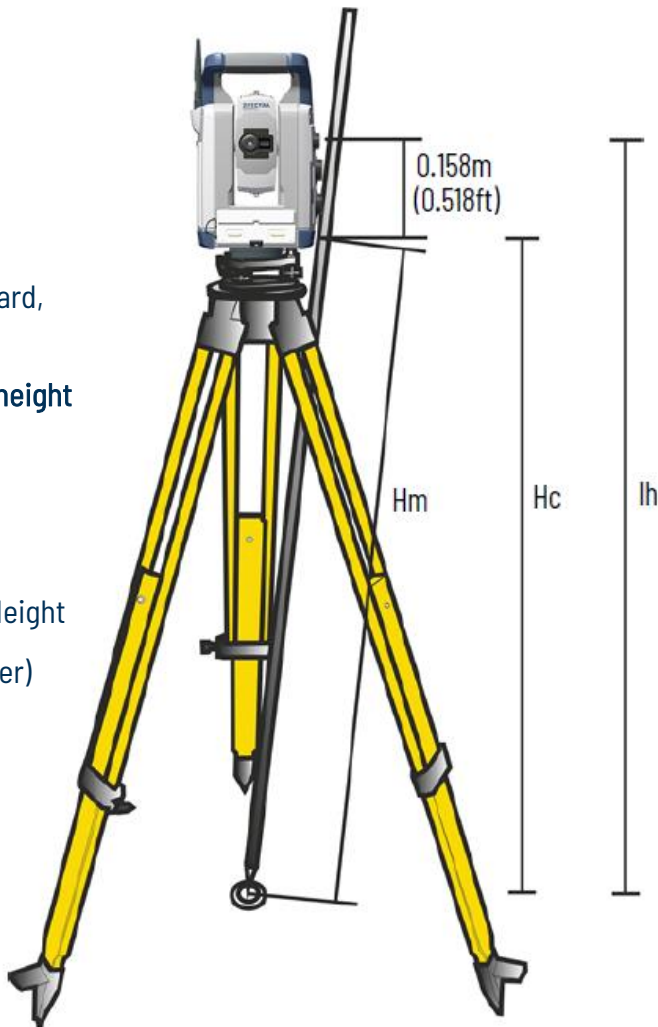
Simplified Instrument Height

Sometimes measuring instrument true height is a little hard, especially on rough ground

Use the “bottom notch” for an **easier and more accurate height** measurement!

Measure the **Hm** (slope to bottom notch)

→ Origin software will automatically calculate the True Height
(You can always still measure/input **lh** directly if you prefer)



Station setup	
Instrument point name	1000
Code	ACP
Height (bottom notch)	1.462m
Key in instrument point	
Northing	?
Easting	?
Elevation	?
Control point	

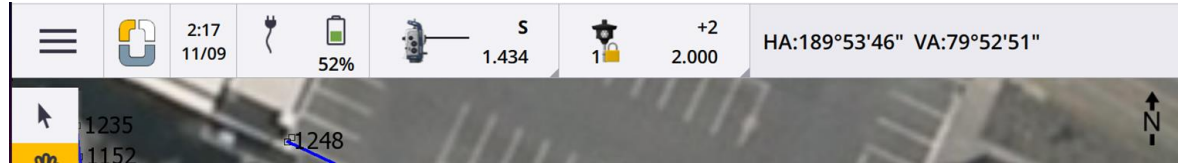
True height

✓ Bottom notch

Calculator

Units...

Status Bar

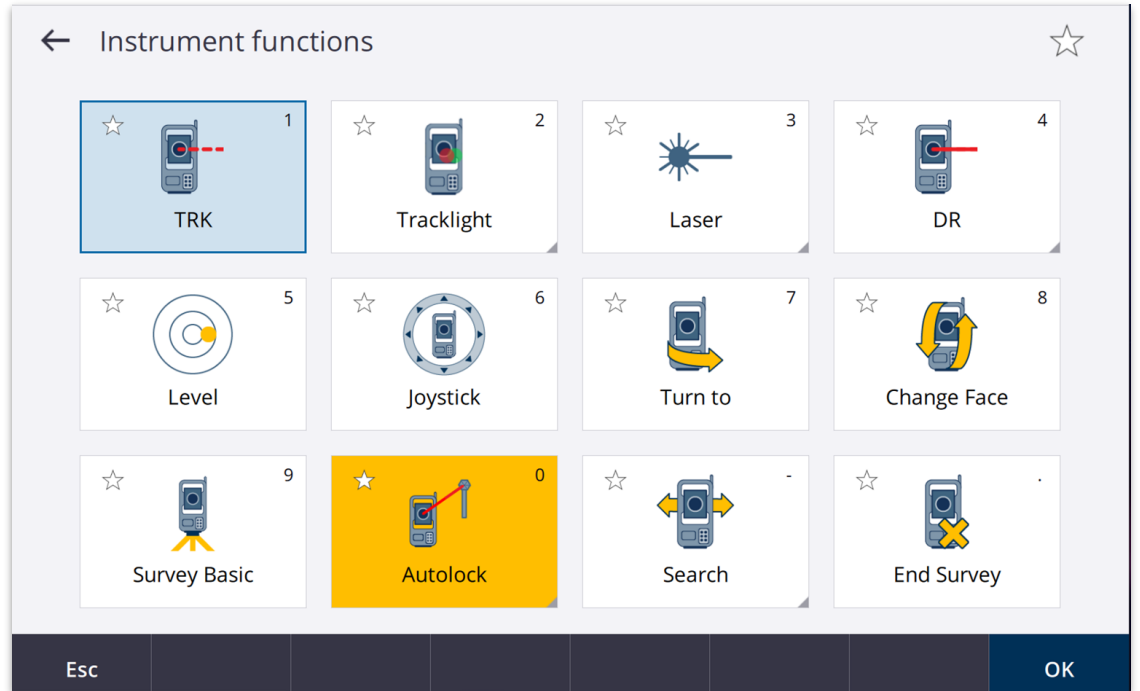
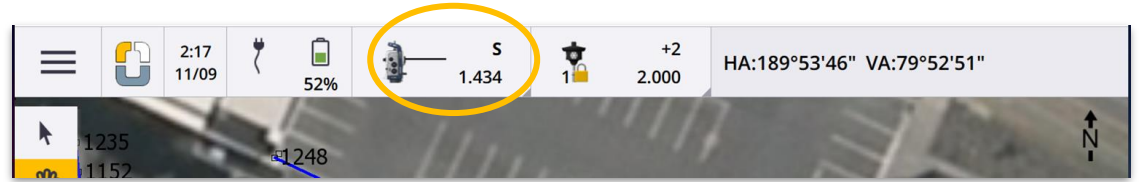


- Data controller & Instrument Battery level (in this case, a controller is plugged in)
- What instrument you are connected to
 - FOCUS 50
 - Solid straight line means you're locked on a prism
 - EDM in Standard mode
 - Instrument height 1.434 m
- Prism you're using
 - Target 1
 - Instrument is locked on (autolock)
 - K value = +2mm
 - Target height = 2m
- Current HA/VA (and SD if your EDM is in tracking mode)

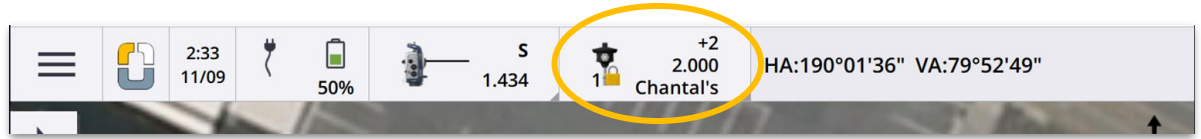
Instrument functions Easily toggle on/off

Click the FOCUS 50 icon at anytime to see all the instrument functions

Toggle them on/off as needed

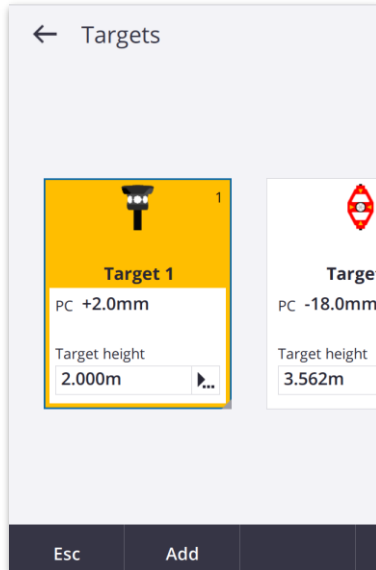


Targets

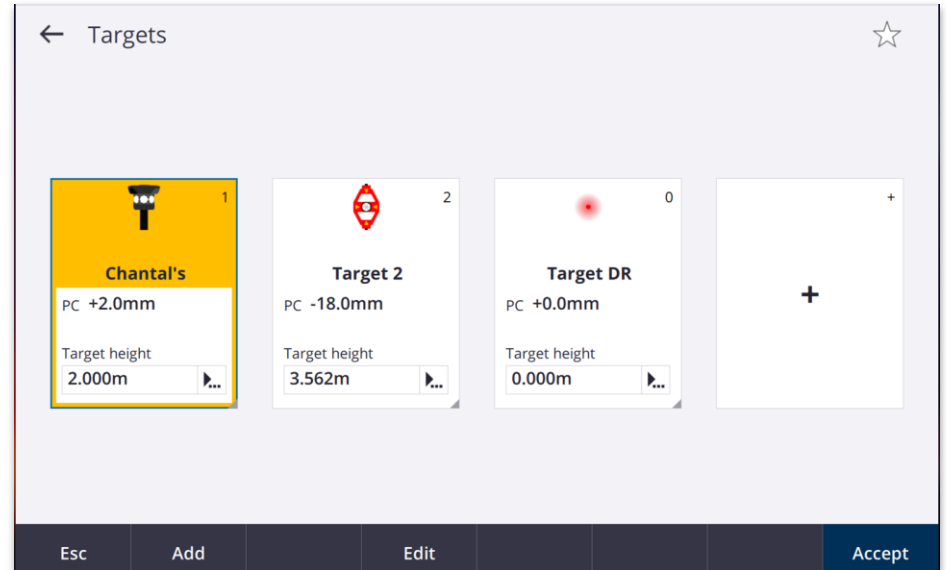


Click on the prism icon at the top to jump into your Targets

Default named Target 1, 2, ...



Can also add nicknames, I named mine "Chantal's"

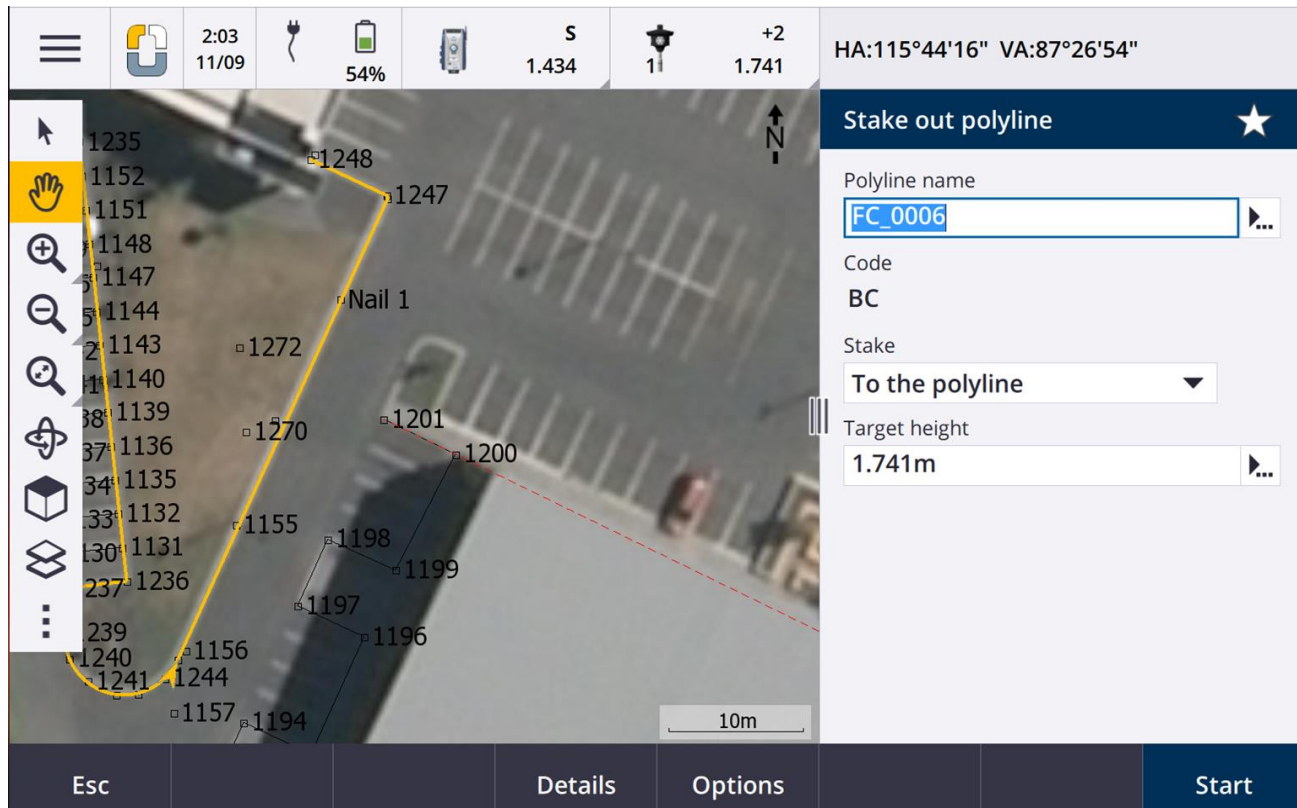
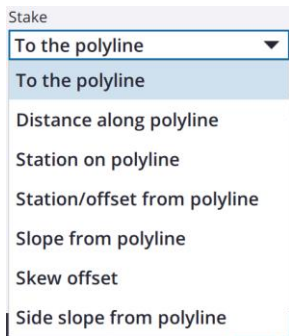


Stakeout (1/2)

Easily select points, lines, or even polylines to stake out

- Click polyline FC_0006
- Click "Stakeout"
- Side menu opens (shown)
- Click "Start"

Other Stake Options:



Stakeout (2/2)

Simply follow the arrow!

Note-the top status bar changed

The total station automatically entered tracking mode (EDM constantly streaming a distance)

The lock symbol next to the prism means we're tracking the prism using Autolock

The screenshot shows the software interface for a stakeout. At the top, a status bar includes a menu icon, a logo, the time 2:06 on 11/09, a battery level of 54%, a distance of 1.434, a target icon with *T, a lock icon with 1, and an elevation of +2 2.000. The main display is an aerial view of a site with a yellow path and a red dashed line. A list of points is visible on the left side of the view. A large arrow in a dashed circle is shown in the right-hand panel, pointing towards the target. Below the arrow, the distance is shown as < 8.476m. The right-hand panel also displays station information: Station 0+076.927m, H.Offset 8.476m, Go Left Relative to polyline, and V.Distance Cut 0.910m. The bottom of the screen has a navigation bar with buttons: Esc, Measure, Target, Turn, Options, and Accept.

...and lots more!

Roads, feature coding and automated linework, integrated surveying with GNSS...

To learn more about Origin, please visit spectrageospatial.com/origin/

Or reach out to your local Distribution Partner for a demo of Origin and the FOCUS 50 together

Origin incentive for Survey Pro, Survey Mobile users:

- All Survey Pro and Survey Mobile users can try one year of Origin subscription for free. This includes:
 - Origin Max, GNSS, & Total Station
 - Origin Roads
 - Origin LT
- Incentive to end on December 31st

The screenshot shows the Spectra Geospatial website homepage. At the top, there is a dark blue navigation bar with the Spectra Geospatial logo on the left, a search icon, a language dropdown set to 'English', and a 'PARTNERS' button. Below the navigation bar is a horizontal menu with links for HOME, PRODUCTS, APPLICATIONS, SUPPORT, NEWS & EVENTS, ABOUT US, CONTACT, and DEALER LOCATOR. The main content area features a large background image of a surveyor in a white hard hat and a high-visibility vest using a GNSS receiver. Overlaid on this image is a dark blue box containing the Spectra Geospatial Origin logo (a stylized 'G' with yellow and white) and the text: 'Spectra Geospatial Origin' followed by 'Survey and GIS data collection, calculation, mapping, storage, data management, and much more all in one modern software package'. Below this, there are two buttons: 'Survey' and 'Roads', with 'Roads' being highlighted in dark blue. At the bottom, there is a section titled 'Designed for Today, Built for Tomorrow' with a sub-headline: 'Spectra Geospatial Origin field software is the new, modern software professional surveyors need to handle a full range of projects quickly and efficiently. Intuitive and reliable. Origin offers an extensive range of features, including one-tap easy-to-use feature coding, powerful COGO computing, map layer manager, and map-centric'. A small image of a surveyor is visible on the right side of this section.

Thank You

Time for Questions

