

KEY FEATURES

- DR Standard reflectorless measurement capability allows high accuracy measurement to vertical surfaces and inaccessible points without the risk and delay of a sending a person to dangerous locations.
- Trimble MagDrive™ servos provide unmatched instrument turning and tracking speeds
- Trimble SurePoint™ technology auto-corrects instrument pointing for mislevelment so you'll always capture accurate 3D information
- Unique Trimble MultiTrack™ technology allows operation with conventional prisms or active targets
- Servo controls and telescope focus are located on the instrument side panel, providing convenient, ergonomic, one handed operation
- Long battery life allows over six hours robotic operation on one smart lithium ion battery



THE VERSATILE SOLUTION FOR SITE MEASUREMENT, STAKEOUT, AND REFLECTORLESS MEASUREMENT NEEDS

With cable-free operation in Autolock, Servo or Robotic modes, the Trimble SPS610 Total Station is the straightforward solution for site measurement, stakeout, and reflectorless measurement needs. This versatility provides the contractor with an easy-to-set up, easy-to-use positioning sensor that increases productivity in the field.

The SPS610 Total Station takes very little setup time and requires only two known points to establish position and orientation. Not only does the SPS610 Total Station provide superior tracking, but the single-person robotic operation increases cost savings and productivity.

PRECISE MEASUREMENT

The Trimble SPS610 Total Station is a 5" instrument in both the horizontal and vertical angles. Available in Servo, Autolock, or Robotic models, it offers DR Standard for precise prism and reflectorless distance measurement and an Autolock and Robotic range of 300 meters in any direction from the instrument.

TRIMBLE MULTITRACK TECHNOLOGY

The SPS610 Total Station allows you to assign a unique target identifier to the target being used providing you with the confidence that the instrument will lock and track only the correct target. All other reflective objects and targets on the jobsite are ignored, guaranteeing no operation interruptions or incorrect measurements.

MARKET-LEADING TRIMBLE TECHNOLOGY

Exclusive MagDrive™ servos provide quiet, effortless operation and the fastest, most responsive and accurate tracking available today. Unique SurePoint™ technology autocorrects instrument pointing for mislevelment and internal calibrations in real time. You will never again record information only to find that your instrument wasn't level.

Tracking the target at short range or in areas where the rate of angular change is high always creates a challenge. Having fast servos allows the instrument to track more reliably. The Trimble SPS610 Total Station uses patented Trimble MagDrive fourth generation servo technology, which uses electro-magnets to eliminate direct drive and friction from the servo system. Combined with the USB communications network for the fastest command response time, the system delivers the fastest tracking, fastest turning, most responsive instrument available.

Total stations depend on being level to deliver accurate results. When an instrument is knocked, buffeted by wind, or subjected to ground vibration, its level is affected. Dual-axis compensation corrects the angle measurement system for mislevelment, but doesn't change the instrument's pointing to account for the associated errors. Patented Trimble SurePoint technology not only corrects the angles for mislevelment, it also continually adjusts the instrument's pointing to deliver the most accurate automated positioning available.

TRIMBLE SPS610 TOTAL STATION

DIRECT REFLECT REFLECTORLESS MEASUREMENT

The Direct Reflex reflectorless measurement capability allows you to quickly and safely measure hard-to-reach or unsafe places up to 150 m away. There is no need to walk the surface with a target. You'll realize significant increases in productivity when measuring bridges, culverts, concrete surfaces, and structures.

SPECIFICATIONS

Angle Measurement
 Horizontal Accuracy
 (Standard deviation based on DIN 18723). 5" (1.5 mgon)
 Vertical Accuracy
 (Standard deviation based on DIN 18723). 5" (1.5 mgon)
Angle Reading (least count)
 Standard. 1" (0.1 mgon)
 Tracking 1" (0.1 mgon)
Automatic level compensator. Dual-axis compensator
 ±6' (±100 mgon)

Distance Measurement
Accuracy (Standard Deviation)
Prism Mode
 Standard. ± (2 mm + 2 ppm) ± (0.01 ft + 2 ppm)
 Tracking ± (5 mm + 2 ppm) ± (0.032 ft + 2 ppm)

Dynamic Measurement Capability
 Synchronized angle and distance measurements. No
 Maximized position update rate 2.5 Hz

3D Positioning Accuracy
 Note: 3D positioning accuracy is based on the following parameters:
 Angle accuracy (horizontal and vertical position accuracies vary with range measured and vertical angle)
 Distance measurement accuracy (ppm error causes accuracy to vary with range measured)
 Tracker lock on accuracy
 Static or moving target

The following 3D positioning accuracies provide an indication of total system accuracy at commonly encountered ranges from the instrument on a horizontal sighting. On steeper sightings, horizontal accuracy increases and vertical accuracy decreases.

Range Position Accuracy Height Accuracy

Distance (m) / (ft)	Position Accuracy (m) / (ft)	Height Accuracy (m) / (ft)
50 / 164	0.002 / 0.006	0.001 / 0.003
100 / 328	0.003 / 0.010	0.003 / 0.010
200 / 656	0.006 / 0.020	0.005 / 0.016
300 / 984	0.008 / 0.026	0.008 / 0.026

POWERED BY TRIMBLE SCS900 SITE CONTROLLER SOFTWARE

The power of the SPS610 Total Station is unleashed through the software that drives it. Trimble SCS900 has been developed as a contractor's tool, to provide simple, easy-to-understand workflows that are dedicated to the construction jobsite. Combined with Trimble Intelligent Data Tracking technology, SCS900 will meet all of your stakeout, measurement, grade control, and quality control requirements.

DR Reflectorless Mode
 Standard measurement. ± (3 mm + 2 ppm) ± (0.01 ft + 2 ppm)
 Tracking ± (10 mm + 2 ppm) ± (0.032 ft + 2 ppm)

Measuring Time - Prism mode
 Standard 2 s
 Tracking 0.4 s

Measuring Time - DR Mode
 Standard 3-15 s
 Tracking 0.4 s

Range (under clear conditions^{1,2})
Prism Mode
 1 prism 3,000 m (9,800 ft)
 1 prism Long Range mode 5,000 m (16,400 ft) max range
 3 prism 5,000 m (16,400 ft)
 3 prism Long Range mode 7,000 m (23,000 ft) max range
 Shortest possible range. 1.5 m (4.9 ft)

DR Mode.
 Kodak Gray Card (18% reflective)³ >120 m (394 ft)
 Kodak Gray Card (90% reflective)³ >150 m (492 ft)
 Concrete. 80-150 m (262-492 ft)
 Wood construction 80-180 m (262-590 ft)
 Metal construction 80-120 m (262-394 ft)
 Light rock. 80-120 m (262-394 ft)
 Dark rock 60-80 m (197-262 ft)
 Reflective foil 20 mm 600 m (1,968 ft)
 Reflective foil 60 mm 1200 m (3,937 ft)
 Shortest possible range. 1.5 m (4.9 ft)

Light source
 Laserdiode 660 nm. Laser class 1 in Prism mode
 Laser class 2 in DR mode

Laser pointer coaxial (standard). Laser class 2

Beam divergence - Prism mode
 Horizontal 4 cm/100 m (0.13 ft/328 ft)
 Vertical 4 cm/100 m (0.13 ft/328 ft)
 Atmospheric correction. 130 ppm to 160 ppm continuous

Beam divergence - DR mode
 Horizontal 2 cm/50 m (0.066 ft/164 ft)
 Vertical 2 cm/50 m (0.066 ft/164 ft)

TRIMBLE SPS610 TOTAL STATION

Leveling

Circular level in Tribrach	.8/2 mm (8/0.007 ft)
Electronic 2-axis level in the LC- display	0.3" (0.1 mgon)
Servo system	MagDrive servo technology, integrated servo/angle sensor electromagnetic direct drive
Rotation speed	115 degrees/sec (128 gon/sec)
Positioning speed 180 degrees (200 gon)	3.2 sec
Clamps and slow motions	MagDrive servo-driven endless fine adjustment

Centering

Centering system	Trimble 3-pin
Optical plummet	Alidade optical plummet
Magnification/shortest focusing distance	2.3x/0.5 m–infinity (1.6 ft–infinity)

Telescope

Magnification	30x
Aperture	40 mm (1.57 in)
Field of view at 100 m (328 ft)	2.6 m (8.5 ft)
Shortest focusing distance	1.5 m (4.92 ft)–infinity
Illuminated crosshair	Variable (10 steps)
Trimble Tracklight® built in	Standard
Operating temperature	–20 °C to +50 °C (–4 °F to +122 °F)
Dust and water proofing	IP55
Focus type	Servo assisted on side cover

Power supply

Removable Internal battery	Rechargeable Lithium-ion battery 11.1 V, 4.4 Ah
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Operating time^{4,5}

One internal battery	Approximately 6 hours
Three batteries in multi-battery adapter	Approximately 18 hours
Trimble CU Robotic holder with one internal battery	Approximately 12 hours

Weight

Instrument (Servo/Autolock)	5.15 kg (11.35 lb)
Instrument (Robotic)	5.25 kg (11.57 lb)
Trimble CU controller	0.4 kg (0.88 lb)
Tribrach	0.7 kg (1.54 lb)
Internal battery	0.35 kg (0.77 lb)

Trunnion axis height	196 mm (7.71 in)
Handle	Detachable and eccentric for unrestricted sighting

ROBOTIC MEASUREMENT

Range

Robotic	300 m (984 ft)
Autolock	300–700 m (984–2,297 ft)
Shortest search distance	0.2 m (.65 ft)

Autolock pointing precision at 200 m (656 ft) (Standard deviation)	<2 mm (0.007 ft)
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Angle reading (least count)

Standard	1" (0.1 mgon)
Tracking	1" (0.1 mgon)
Averaged observations	0.1" (0.01 mgon)
Type of radio internal/external	2.4 GHz frequency-hopping, spread-spectrum radios

Search time (typical) ⁵	2–10 s
Search area	360 degrees (400 gon) or defined horizontal and vertical search window

TRACKER PERFORMANCE

(Autolock and Robotic Total Station only)

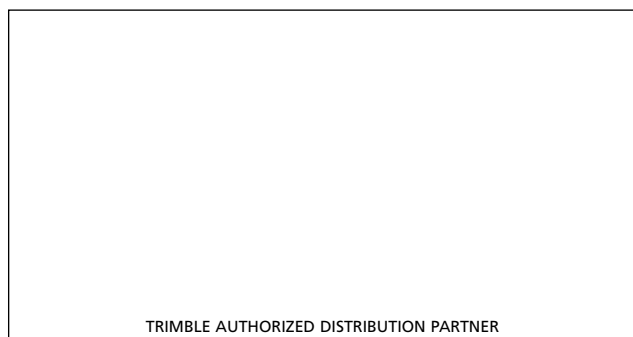
Coaxial with telescope	Yes
Passive tracking capability	Yes
Active target capability	Yes
Number of Target ID channels	8
Automatic lock on sighting prism	Yes

Note: USB Stick or CF Card can be connected to Robotic holder or docking cradle to transfer information from controller to stick or card

- 1 Standard clear: No haze. Overcast or moderate sunlight with very light heat shimmer.
- 2 Range and accuracy depend on atmospheric conditions, size of prisms and background radiation.
- 3 Kodak Gray Card, Catalog number E1527795.
- 4 The capacity at –20 °C (–5 °F) is 75% of the capacity at +20 °C (68 °F).
- 5 Dependent on selected size of search window.

Specifications subject to change without notice.

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TRIMBLE AUTHORIZED DISTRIBUTION PARTNER

NORTH AMERICA

Trimble Construction Division
5475 Kellenburger Road
Dayton, Ohio 45424
USA
800-538-7800 (Toll Free)
+1-937-245-5154 Phone
+1-937-233-9441 Fax

EUROPE

Trimble GmbH
Am Prime Parc 11
65479 Raunheim
GERMANY
+49-6142-2100-0 Phone
+49-6142-2100-550 Fax

ASIA-PACIFIC

Trimble Navigation
Singapore PTE Ltd.
80 Marine Parade Road, #22-06
Parkway Parade
Singapore, 449269
SINGAPORE
+65 6348 2212 Phone
+65 6348 2232 Fax



www.trimble.com