DATASHEET

Trimble SPS610 ToTal STaTion

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 Trimble MagDrive™ servos provide quiet, effortless operation and the fastest, most responsive and accurate tracking available today. Unique Trimble 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

Trimble SPS610 ToTal STaTion

direcT refleX 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 (492 ft) 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.

Powered by Trimble ScS900 SiTe conTroller SofTware

The power of the Trimble 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.

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.

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

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)

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

Atmospheric correction . . . . . 130 ppm to 160 ppm continuous

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 . . . . . 2.3×/0.5 m–infinity (1.6 ft–infinity)

Telescope
- Magnification . . . . . 30×
- 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 ºC to +50 ºC (–4 ºF to +122 ºF)
- 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

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 m (984 ft)
- Shortest search distance . . . . . 0.2 m (.65 ft)

Autolock pointing precision at 200 m (656 ft) (Standard deviation) . . . . . <2 mm (0.007 ft)

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 ºC (–5 ºF) is 75% of the capacity at +20 ºC (68 ºF).*
5 *Dependent on selected size of search window.*

Specifications subject to change without notice.

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