



Trimble SX10

SCANNING TOTAL STATION

IT'S A REVOLUTION. IN ONE STATION.

The Trimble® SX10 scanning total station redefines the capabilities of everyday survey equipment by providing the world's most innovative solution for surveying, engineering, and scanning professionals. The Trimble SX10 will change the way you work. This new, versatile solution is capable of collecting any combination of high-density 3D scan data, enhanced Trimble VISION™ imaging, and high-accuracy total station data, allowing you to capture exactly what you need, saving you time and money on every job.

Trimble's new Lightning 3DM enables the SX10 to capture both high-accuracy total station measurements and true high-speed 3D scans together in a single instrument providing a higher level of measurement performance than ever before. The system has been designed from the ground up leveraging trusted technologies like MagDrive™ and SurePoint™. Combining these with new technologies like advanced Autolock® allow the SX10 to deliver maximum accuracy, efficiency and detail. The complete integration of the SX10 with Trimble Access™ and Trimble Business Center software enable familiar and efficient survey workflows to get your crews up and running fast.

3D Scanning That's Superior in Every Way.

The Trimble SX10 measures dense 3D scan data at up to 26,600 points per second with high precision over the full measurement range of up to 600 m. With the Trimble SX10, point cloud data is captured and then automatically registered with your survey workflow. Whether you're capturing full dome scans from your station setup or simply augmenting your survey data with scans of specific areas of interest, be confident that all of the information you gather will drop right into your survey coordinate system.

VISION That's Even Better Than Ever.

The unique implementation of Trimble VISION technology onboard the Trimble SX10 gives you more power than ever to direct your survey with live video images on the controller as well as create a wide variety of deliverables from collected imagery. From the very beginning, you'll find it gives users in any setting a new, higher level of performance, including the ability to capture full dome panoramas in as little as three minutes. And it offers varying levels of imaging capabilities and resolutions, whether you're documenting your site, or capturing additional visual detail on your DR observations.

Get the Most Out of Your Field Data With TBC.

Back in the office Trimble Business Center lets you fully integrate Trimble SX10 data into your projects using the familiar workflows of the market leading survey office software. Enhanced point cloud management, automated extraction and interoperability to leading CAD and GIS packages ensures that you can satisfy even your toughest client demands.

Unparalleled Precision. Unrivalled Performance.

The Trimble SX10 scanning total station sets a new standard for accuracy, capability and performance. Whether you're performing a typical job or your most challenging survey projects, the SX10 gives you the confidence to do it all and do it well.

Key Features

- ▶ Combines surveying, imaging and high speed 3D scanning in one revolutionary solution
- ▶ Trimble's Lightning 3DM enables both high-accuracy total station measurements and high-speed scanning capability
- ▶ Scanning speeds of up to 26,600 points per second at ranges up to 600 m and the smallest spot size in the industry—a mere 14 mm at 100 m
- ▶ Improved Trimble VISION technology allows for fast and easy capture of high resolution site imagery
- ▶ Complete integration with familiar workflows of Trimble Access and Trimble Business Center Software



SURVEY PERFORMANCE

ANGLE MEASUREMENT

Sensor type	Absolute encoder with diametrical reading
Angle measurement accuracy ¹	1" (0.3 mgon)
Angle display (least count)	0.1" (0.01 mgon)

AUTOMATIC LEVEL COMPENSATOR

Type	Centered dual-axis
Accuracy	0.5" (0.15 mgon)
Range	±5.4' (±100 mgon)
Electronic 2-axis level, with a resolution of	0.3" (0.1 mgon)
Circular level in tribrach	8/2 mm

DISTANCE MEASUREMENT

Accuracy

Prism mode	Standard ²	1 mm + 1.5 ppm
	Tracking ^{2,3}	2 mm + 1.5 ppm
DR mode	Standard ²	2 mm + 1.5 ppm

Measuring time

Prism mode	Standard	1.6 s
DR mode	Standard	1.2 s

Range

Prism mode ⁴	1 prism	1 m – 5,500 m
DR mode	Kodak White Card (Catalog number E1527795)	1 m – 800 m
	Kodak Grey Card (Catalog number E1527795)	1 m – 450 m

Autolock and Robotic Range

Autolock range - traverse 50 mm ⁵	1 m – 800 m
Autolock range - 360 prism	1 m – 300 m ⁶ / 700 m ⁵
Angle accuracy ¹	1"

SCANNING PERFORMANCE

GENERAL SCANNING SPECIFICATIONS

Scanning principle	Band scanning using rotating prism in telescope
Measurement rate	26.6 kHz
Point spacing	6.25 mm, 12.5 mm, 25 mm or 50 mm @ 50 m
Field-of-view	360° x 300°
Coarse scan; full dome - 360° x 300° (horizontal angle x vertical angle) Density: 1 mrad, 50 mm spacing @ 50 m	Scan time: 12 minutes
Standard scan; area scan - 90° x 45° (horizontal angle x vertical angle) Density: 0.5 mrad, 25 mm spacing @ 50 m	Scan time: 6 minutes

RANGE MEASUREMENT

Range principle	Ultra-high speed time-of-flight powered by Trimble Lightning technology
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Range	Kodak White Card (Catalog number E1527795)	0.9 m – 600 m
	Kodak Gray Card (Catalog number E1527795)	0.9 m – 350 m

Range noise

@ 50 m on 18–90% reflectivity	1.5 mm
@ 120 m on 18–90% reflectivity	1.5 mm

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EDM SPECIFICATIONS		
	Light source	Pulsed laser 1550 nm; Laser class 1M
	Beam divergence DR mode	0.2 mrad
	Laser spot size at 100 m (FWHM)	14 mm
	Atmospheric correction	Available through field and office software
IMAGING PERFORMANCE		
	Imaging principle	3 calibrated cameras in telescope powered by Trimble VISION technology
	Cameras total field of view	360° x 300°
	Live view frame rate (depending on connection)	Up to 15 fps
	File size of one total panorama with overview camera	15 MB – 35 MB
Panorama measurement time/resolution		
Overview panorama	Full dome 360° x 300° (Horizontal angle x vertical angle) with 10% overlap	3 minutes, 40 images, 20 mm @ 50 m per pixel
Primary panorama	Area capture 90° x 45° (Horizontal angle x vertical angle) with 10 % overlap	3 minutes, 48 images, 4.4 mm @ 50 m per pixel
CAMERAS SPECIFICATIONS		
General Camera Specifications		
	Resolution of each camera chip	5 MP (2592 x 1944 pix)
	File format of images	.jpeg
	Field of view max	57.5° (horizontal) x 43.0° (vertical)
	Field of view min	0.65° (horizontal) x 0.5° (vertical)
	Total zoom (no interpolation)	84 x
	35 mm equivalent focal length	36–3000 mm
	Exposure modes	Auto, spot exposure
	Manual exposure brightness	±5 steps
	White balance modes	Auto, daylight, incandescent, overcast
	Temperature compensated optics	Yes
	Calibrated cameras	Yes
Overview Camera		
	Position	Parallel to measurement axis
	One pixel corresponds to	20 mm @ 50 m
Primary Camera		
	Position	Parallel to measurement axis
	One pixel corresponds to	4.4 mm @ 50 m
Telescope Camera		
	Position	Coaxial
	Focusing	Automatic, manual
	Focusing distance	1.7 m to infinity
	One pixel corresponds to	0.88 mm @ 50 m
	Pointing precision (std dev 1 sigma)	1" (HA: 1.5 cc, VA: 2.7 cc)
Plummet Camera		
	Usable range	1.0–2.5 m
	Resolution on ground - one pixel corresponds to	0.2 mm @ 1.55 m instrument height
	Accuracy	0.5 mm @ 1.55 m instrument height
GENERAL SPECIFICATIONS		
	Communication	WiFi, 2.4 Ghz Spread Spectrum, cabled (USB 2.0)
	IP-rating	IP55
	Operating temperature range	–20 °C to 50 °C
	Security	Dual layer password protection

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SYSTEM SPECIFICATIONS

SERVO SYSTEM

	MagDrive servo technology	Integrated servo/angle sensor electromagnetic direct drive
	Clamps and slow motions	Servo-driven

CENTERING

	Centering system	Trimble 3-pin
	Plummets	Built-in video plummet
		Split optics tribrach with optical plummet

POWER SUPPLY

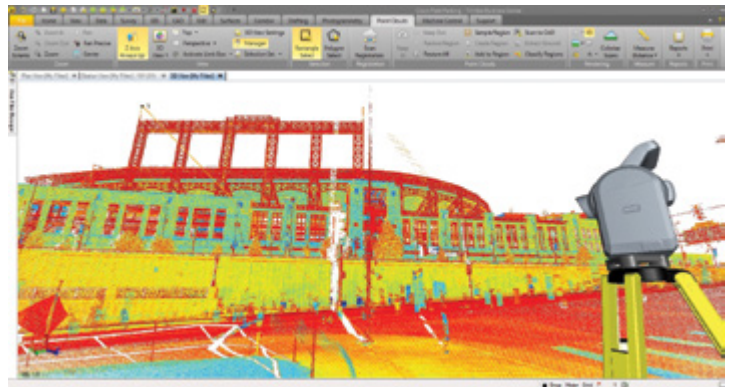
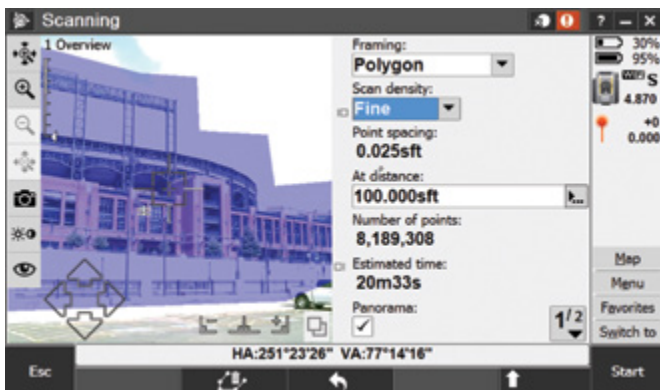
	Internal battery	Rechargeable Li-Ion battery 11.1 V, 6.5 Ah
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Operating time⁷

	One internal battery	Approx. 2–3 hours
	Three internal batteries in multi-battery adapter	Approx. 6–9 hours

WEIGHT AND DIMENSIONS

	Instrument	7.5 kg
	Tribrach	0.7 kg
	Internal battery	0.35 kg
	Trunnion axis height	196 mm
	Front lens aperture	56 mm



- 1 Standard deviation according to ISO17123-3.
- 2 Standard deviation according to ISO17123-4.
- 3 Single measurement, target static.
- 4 Standard clear conditions (No haze, Overcast or moderate sunlight with very light heat shimmer, visibility about 10 km).
- 5 Under perfect conditions (Overcast, visibility about 40 km, no heat shimmer).
- 6 Normal conditions (Moderate sunlight, visibility about 10 km, some heat shimmer).
- 7 The capacity in -20 °C is 75% of the capacity at +20 °C.

Specifications subject to change without notice.



Contact your local Trimble Authorized Distribution Partner for more information

NORTH AMERICA
Trimble Navigation Limited
10368 Westmoor Dr
Westminster CO 80021
USA

EUROPE
Trimble Germany GmbH
Am Prime Parc 11
65479 Raunheim
GERMANY

ASIA-PACIFIC
Trimble Navigation
Singapore Pty Limited
80 Marine Parade Road
#22-06, Parkway Parade
Singapore 449269
SINGAPORE

