

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 Hz 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. Unrivaled 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 Hz 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



DATASHEET

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
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
	@ 200m on 18-90% reflectivity	1.5mm
	@ 300m on 18-90% reflectivity	2.5mm
Scanning Accuracy		
	Scanning Angular Accuracy	5" (1.5mgon)
	3D position Accuracy @ 100m ⁸	2.5mm

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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
Primary panorama	Area capture 90° x 45° (Horizontal angle x vertical angle) with 10 % overlap
	3 minutes, 40 images, 20 mm @ 50 m per pixel
	3 minutes, 48 images, 4.4 mm @ 50 m per pixel

CAMERAS SPECIFICATIONS

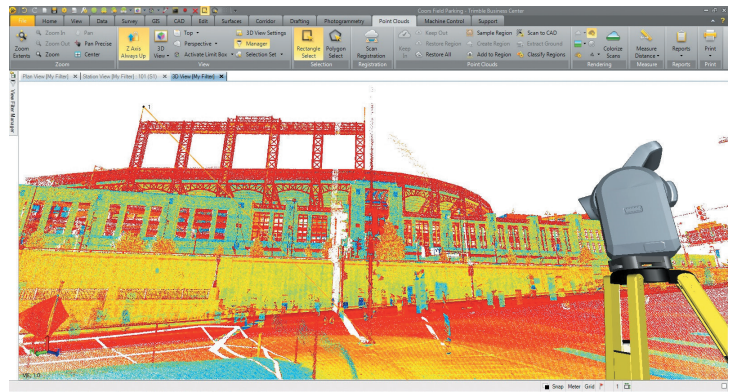
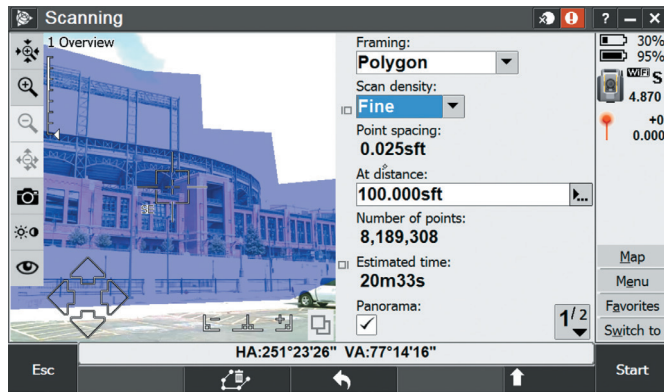
General Camera Specifications	
Resolution of each camera chip	5 MP (2592 x 1944 pix)
File format of images	.jpeg
Field of view max	57.5° (horizontal) x 43.0° (vertical)
Field of view min	0.65° (horizontal) x 0.5° (vertical)
Total zoom (no interpolation)	84 x
35 mm equivalent focal length	36–3000 mm
Exposure 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

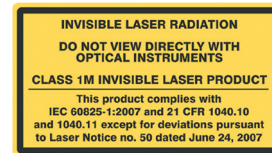
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SYSTEM SPECIFICATIONS		
SERVO SYSTEM		
	MagDrive servo technology	Integrated servo/angle sensor electromagnetic direct drive
	Clamps and slow motions	Servo-driven
CENTERING		
	Centering system	Trimble 3-pin
	Plummets	Built-in video plummet
		Split optics tribrach with optical plummet
POWER SUPPLY		
	Internal battery	Rechargeable Li-Ion battery 11.1 V, 6.5 Ah
Operating time ⁷		
	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.
- 8 Standard deviation of fitted position of a sphere target.

Specifications subject to change without notice.



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