DATASHEET

Trimble Forensics SX10 Solution

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 26,000 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 Forensics Capture and Trimble RealWorks® Forensics
- Seamlessly works on Trimble T10 field tablet to operate the SX10
- Scanning, image capture and robotic control of the SX10 all accomplished with Capture
- View point cloud coverage in the field
- View and edit in 2D and 3D

Learn more:
forensics.trimble.com

Trimble

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

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IMAGING PERFORMANCE		
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
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 aperature	56 mm

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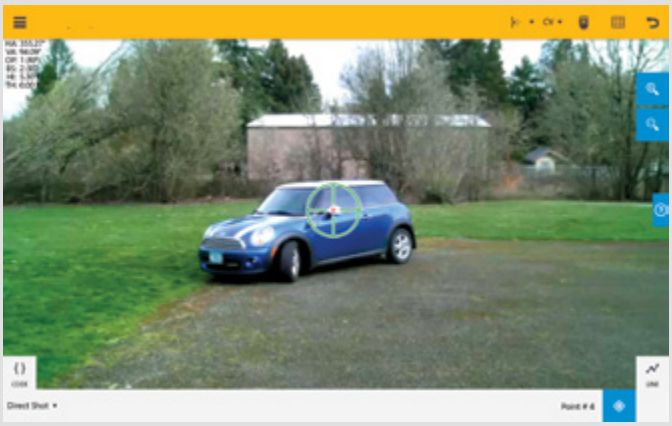
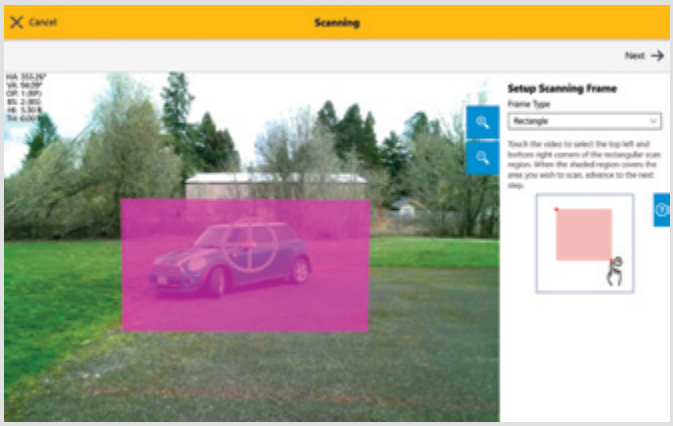
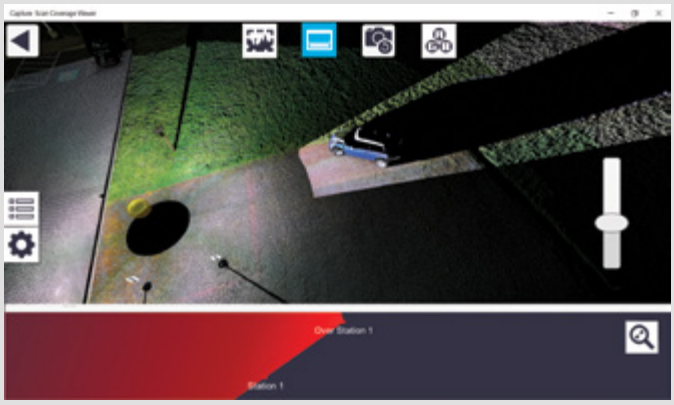


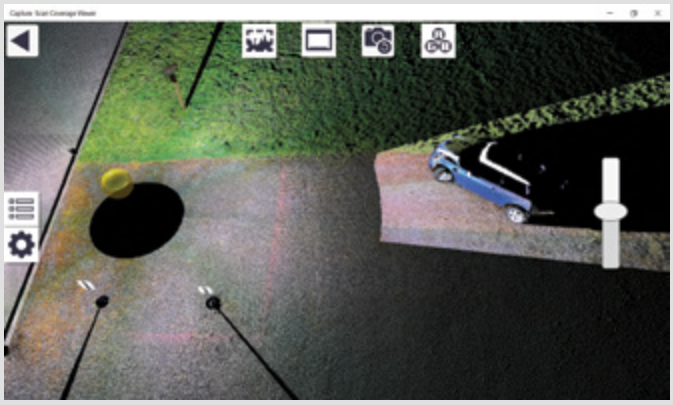
Camera view from SX10 within Capture for pointing cross hairs.



Rectangular scan setup for SX10 of object within Capture.



Scan coverage view within Capture showing keymap



Scan coverage view without keymap.

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.

Contact your local Trimble Authorized Distribution Partner for more information

NORTH AMERICA
Trimble Inc.
10368 Westmoor Dr
Westminster CO 80021
USA

EUROPE
Trimble Germany GmbH
Am Prime Parc 11
65479 Raunheim
GERMANY

ASIA-PACIFIC
Trimble Navigation
Singapore PTE Limited
3 HarbourFront Place
#13-02 HarbourFront Tower Two
Singapore 099254
SINGAPORE