



Trimble SX12

SCANNING TOTAL STATION



KEY FEATURES

Trimble® SX12 is the one instrument you need to handle any survey project by integrating surveying, imaging and 3D scanning capabilities into your everyday workflow.

Integrated System

- ▶ **Collect** survey data, VISION™ imagery, and high-speed scans easily with Trimble Access™ field software and the SX12's Lightning 3DM
- ▶ **Process** seamlessly with Trimble Business Center™ office software, or with Trimble RealWorks® Office Software for more advanced scan processing
- ▶ **Share** with anyone using web-based Trimble Clarity
- ▶ **Rely** on your equipment for years to come with the Trimble Service and Warranty guarantee

Our Smallest and Brightest Laser Pointer

- ▶ **Aim, measure, and mark** effortlessly. A green focusable laser pointer yields the smallest spot size in the industry, just 6 mm at 100 m, letting you work from longer range
- ▶ **Stay eye-safe** without compromising laser visibility

Learn more: geospatial.trimble.com/SX12

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° Density: 1 mrad, 50 mm spacing @ 50 m	Scan time: 12 minutes
Standard scan; Area Scan - 90° x 45° 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
	@ 200 m on 18-90% reflectivity	1.5 mm
	@ 300 m on 18-90% reflectivity	2.5 mm
Scanning Accuracy	Scanning Angular Accuracy	5" (1.5 mgon)
	3D position Accuracy @ 100 m ⁷	2.5 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

LASER POINTER

Color	Green, 520 nm
Eye Safety	Laser Class 1
Focusing	Automatic, Manual
Operating modes	Low-light, Standard, Extended Range Flashing
Laser Pointer Spot Size (Full Width Half Maximum)	
1.3 - 50 m	3 mm ± 1 mm
100 m	6 mm ± 1 mm
150 m	9 mm ± 1 mm

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 and Resolution	
Overview Panorama	Full dome 360° x 300° with 10% overlap 2.5 mins, 40 images, 15 mm @ 50 m per pixel
Primary Panorama	Area capture 90° x 45° with 10 % overlap 2.5 mins, 48 images, 3.5 mm @ 50 m per pixel

CAMERAS SPECIFICATIONS

General Camera Specifications

Resolution of each camera chip	8.1 MP (3296 x 2472 pix)
File format of images	.jpeg
Field of view max	57.5° (horizontal) x 43.0° (vertical)
Field of view min	0.51° (horizontal) x 0.38° (vertical)
Total zoom (no interpolation)	107 x
35 mm equivalent focal length	36–3850 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	15 mm @ 50 m

Primary Camera

Position	Parallel to measurement axis
One pixel corresponds to	3.5 mm @ 50 m

Telescope Camera

Position	Coaxial
Focusing	Automatic, manual
Focusing distance	1.7 m to infinity
One pixel corresponds to	0.69 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 ⁸		
	One internal battery	Up to 2.25 hours
	Three batteries in multi-battery adapter and one internal	Up to 7 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 Standard deviation of fitted position of a sphere target.
- 8 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 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

