



# 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](https://geospatial.trimble.com/SX12)

**SURVEY PERFORMANCE**

**ANGLE MEASUREMENT**

Sensor type	Absolute encoder with diametrical reading
Angle measurement accuracy <sup>1</sup>	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 <sup>2</sup>	1 mm + 1.5 ppm
	Tracking <sup>2,3</sup>	2 mm + 1.5 ppm
DR mode	Standard <sup>2</sup>	2 mm + 1.5 ppm

**Measuring time**

Prism mode	Standard	1.6 s
DR mode	Standard	1.2 s

**Range**

Prism mode <sup>4</sup>	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<sup>®</sup> and Robotic Range**

Autolock range - traverse 50 mm <sup>5</sup>	1 m – 800 m
Autolock range - 360 prism	1 m – 300 m <sup>6</sup> / 700 m <sup>5</sup>
Angle accuracy <sup>1</sup>	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 <sup>7</sup>	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
<b>Laser Pointer Spot Size (Full Width Half Maximum)</b>	
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
<b>Panorama Measurement Time and Resolution</b>	
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 <sup>8</sup>		
	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.





**PT GPS LANDS INDOSOLUTIONS**  
 Jl. Ciputat Raya No. 4F, Kebayoran Lama  
 Jakarta 12240 - Indonesia  
 Telp : +62 21 72383381 Fax : +62 21 7238403  
 Email : info@gpslands.co.id  
 Website : www.gpslands.co.id

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

