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[7]

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[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

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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
COMMUNICATION		
	Communication[7]	Wi-Fi, Wi-Fi HaLow™, 2.4 GHz Spread Spectrum, cabled (USB 2.0)
	Wi-Fi/WLAN operating frequencies	2412–2462 MHz
	Wi-Fi HaLow operating frequencies[7]	902–928 MHz
	FHSS Long Range Radio operating frequencies	2401.69–2469.89 MHz

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SYSTEM SPECIFICATIONS		
GENERAL SPECIFICATIONS		
	IP-rating	IP55
	Operating temperature range	-20 °C to 50 °C
	Security	Dual layer password protection
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[9]		
	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 aperature	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 Instrument configuration dependent. Regional availability may apply.
8 Standard deviation of fitted position of a sphere target.
9 The capacity in -20 °C is 75% of the capacity at +20 °C.

Specifications subject to change without notice.

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