

Trimble X9

3D Laser Scanning System



An innovative, high-speed 3D laser scanning system with enhanced performance and function to increase efficiency and provide confidence in the field.

Proven

- Simple and efficient workflows suitable for all users
- Powerful Trimble FieldLink software to easily manage and validate projects in the field with auto-registration
- Smart auto-calibration and self-leveling optimized to increase productivity and function
- Durable, compact, and lightweight with backpack for easy transport and mobility

Versatile

- High-speed scanning up to 1 million pts/s to reduce scan times and effectively increase scan density
- Long range with accuracy and data quality to support a wider range of applications
- High sensitivity to capture difficult dark and shiny surfaces
- Flexible operation with tablet, phone or one-button workflow

Reliable

- Trusted auto-calibration and survey grade self-leveling for dependable data quality
- Automatic registration, refinement, and report to leave the field with confidence
- Laser pointed for georeferencing and single point measurements
- IP55 rating and wide operating temperature range for demanding environments
- Backed by 2-year standard warranty



Find out more at:

fieldtech.trimble.com/X9



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SYSTEM OVERVIEW

| | |
|-------------------|--|
| Trimble X9 | High-speed 3D laser scanner with combined servo drive/scanning mirror, integrated HDR imaging, automatic calibration, survey-grade self-leveling and laser pointer. |
| Trimble FieldLink | Easy to use software for automatic infield registration, georeferencing, 3D visualization, annotations, cloud-to-model analysis, floor analysis, processing and exporting. |

SCANNING PERFORMANCE

GENERAL

| | |
|---------------------------------|--|
| Scanning EDM Laser Class | Laser class 1, eye safe in accordance with IEC EN60825-1 |
| Laser Wavelength | 1530-1570nm, invisible |
| Field of View | 360° x 282° |
| Beam divergence / Beam diameter | 0.8 mrad/ 7.95 mm @ 10m |
| Scan Speed | Up to 1000 kHz |

RANGE MEASUREMENT

| | |
|----------------------------|--|
| Range Principle | High speed, digital time-of-flight distance measurement |
| Range Noise ^{1,2} | < 1.5 mm @ 30 m |
| Range ³ | 0.6 m – 150 m (High Speed max range 120 m) |
| High Sensitivity | Dark (asphalt) and reflective (stainless steel) surfaces |

SCANNING ACCURACY

| | |
|----------------------------------|--|
| Validation | Guaranteed over lifetime with auto-calibration |
| Range Accuracy ^{1,2} | 2 mm |
| Angular Accuracy ^{1,5} | < 16" |
| 3D Point Accuracy ^{1,5} | 2.3 mm @ 10 m, 3.0 mm @ 20 m, 4.8 mm @ 40 m |

SCANNING PARAMETERS

| SCAN MODE | DURATION ⁴ (MIN:SEC) | SPACING (MM) @ 10 M | SPACING (MM) @ 35 M | SPACING (MM) @ 50 M | NUMBER OF POINTS (MPTS) | MAX FILE SIZE (MB) |
|------------|---------------------------------|---------------------|---------------------|---------------------|-------------------------|--------------------|
| Indoor | 0:50 | - | - | - | 6.8 | 32 |
| Standard | 2:03 | 8 | 26 | 38 | 27.2 | 95 |
| | 3:33 | 5 | 18 | 25 | 61.2 | 204 |
| | 5:36 | 4 | 13 | 19 | 108.8 | 340 |
| High Speed | 1:27 | 8 | 26 | 38 | 27.2 | 175 |
| | 3:15 | 4 | 13 | 19 | 108.8 | 610 |
| | 6:08 | 3 | 9 | 13 | 244.8 | 1.250 |

IMAGING PERFORMANCE

| | |
|-------------------|--|
| Sensors | 3 coaxial, calibrated 10MP cameras |
| Resolution | 3840 x 2746 pixels for each image |
| Raw Image Capture | Fast - 15 images - 158 MP - 1 minute - with HDR 3 minutes Quality - 30 images - 316 MP - 2 minutes - with HDR 6 minutes |
| Settings | Auto Exposure and HDR Auto White Balance correction and indoor/outdoor presets |

AUTOMATIC LEVEL COMPENSATION

| | |
|-----------------------|--------------------------------------|
| Type | Automatic Self-leveling |
| Range | ± 10° (Survey Grade), ± 45° (Coarse) |
| Upside Down | ± 10° (Survey Grade) |
| Survey Grade Accuracy | < 3" = 0.3 mm @ 20 m |

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AUTOMATIC CALIBRATION

| | |
|-------------------------------|---|
| Integrated Calibration System | Full auto-calibration of range and angular systems when required with no user interaction or targets |
| Angular Calibration | Applies a correction to the collimation error, i.e., the deviation of the horizontal, vertical or sight axis |
| Range Calibration | Applies a distance correction in the albedo and the distance measurement |
| Smart Calibration | Monitors environmental temperature, ambient light, vibration, instrument temperature and vertical speed for optimum performance |

TRIMBLE REGISTRATION ASSIST

| | |
|----------------------------|--|
| Inertial Navigation System | IMU tracks instrument position, orientation and movement |
| Auto-Registration | Automatic scan orientation and alignment with last or pre-selected scan |
| Manual Registration | Manual alignment or split screen cloud to cloud |
| Visual Checks | Dynamic 2D and 3D viewing for QA |
| Refinement | Automatic registration refinement |
| Registration Report | Report with project and station average error, overlap and consistency results |

GENERAL SPECIFICATIONS

WEIGHT AND DIMENSIONS

| | |
|--------------------------------|--------------------------------------|
| Instrument (including battery) | 6.045 kg (13.33 lbs) |
| Internal Battery | 0.35 kg |
| Dimensions | 178 mm (W) x 353 mm (H) x 170 mm (D) |

POWER SUPPLY

| | |
|------------------|---|
| Battery Type | Rechargeable Li-Ion battery 11.1V, 6.5Ah (Standard for Trimble Optical Instruments) |
| Typical Duration | 3.5 hours per battery (3 batteries included) |

ENVIRONMENTAL

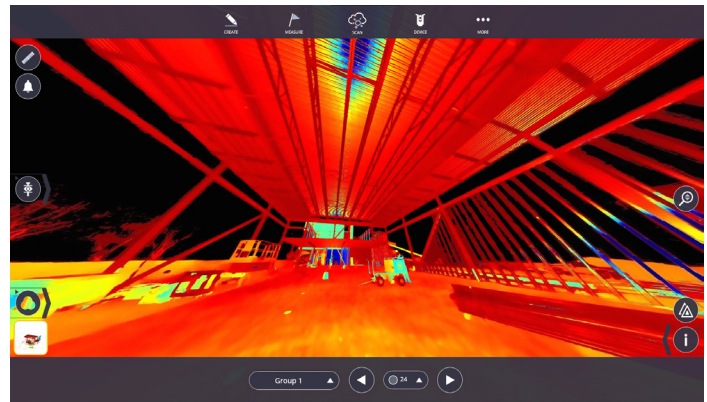
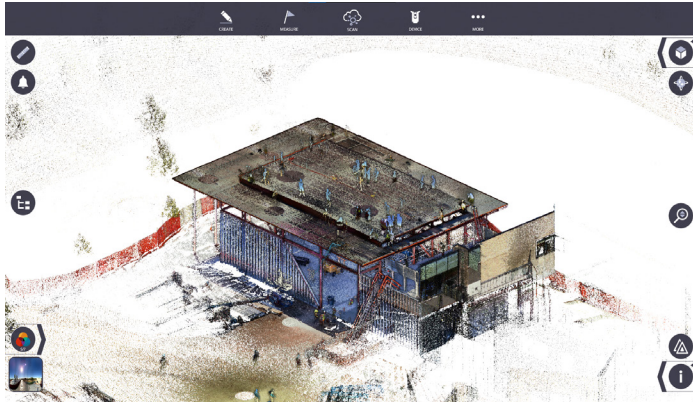
| | |
|----------------------------|-------------------------------------|
| Operating Temperature | -20 °C to 50 °C (-4 °F to 122 °F) |
| Storage Temperature | -40 °C to 70 °C (-40 °F to 158 °F) |
| Ingress Protection Rating | IP55 (dust protected and water jet) |
| Relative humidity | 95 % |
| Equipment pollution degree | 4 |

OTHERS

| | |
|--------------------------------|---|
| Laser Pointer | Class 2 laser with a wavelength of 620–650 nm |
| Remote Control | Trimble T10x tablet or comparable Windows® 10 tablet via WLAN or USB cable |
| Push Button | One-button scan operation |
| Communications / Data Transfer | WLAN 802.11 A/B/G/N/AC or USB Cable |
| Data Storage | Standard SD Card (32GB SDHC included) |
| Accessories | Backpack for easy transport and airline carry-on Lightweight carbon fiber tripod with bell connector Quick release adapter for X9 and carbon fiber tripod |
| Warranty | 2 year standard |

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TRIMBLE FIELDLINK SOFTWARE

SYSTEM REQUIREMENTS

| | |
|------------------|--|
| Operating System | Microsoft® Windows® 10 |
| Processor | Intel® 8th Generation Core™ i5 2.5 GHz processor or better |
| RAM | 16GB or better |
| VGA Card | Intel HD Graphics 620 or better |
| Storage | 512 GB Solid State Drive (SSD), 1 TB recommended |

FEATURES

| | |
|-----------------------------|---|
| Scanner Operation | Remote control or cable |
| Trimble Registration Assist | Automatic and manual registration, refinement and reporting |
| Data Interaction | 2D, 3D and Station View |
| In-field Documentation | Scan labels, annotations, pictures and measurements |
| Auto Sync | Automatic data sync from one-button operation |
| Georeferencing | Laser pointer for georeferencing and precision point measurement |
| Reports | Registration, Field Calibration and Diagnostics reports |
| Data Redundancy | Data stored on SD Card and tablet |
| Data Integration | Export formats to support Trimble and non-Trimble software File formats: TDX, TZF, E57, PTX, RCP, LAS, POD |

1 Specification given as 1 sigma.
 2 On 80% albedo. Albedo given @ 1550 nm
 3 On matte surface with normal angle of incidence.
 4 After automatic calibration and self-leveling within ± 10°.
 5 Durations for scan times include self-leveling time within ± 10°.
 6 Self-leveling will take ~ 10 seconds longer when scanner is not within ± 10°.
 7 Scan times can increase up to 45 seconds for full calibrations after startup or idle time until thermal stabilization.
 Full system checks occur every 30 min.

Contact your local dealer today

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