



Trimble S7

TOTAL STATION

THE MOST PRODUCTIVE TOTAL STATION

Now you only need one instrument on the scene to perform all of your data capture. It's the Trimble® S7 Total Station.

This versatile total station combines scanning, imaging and forensic mapping into one powerful forensics solution. Law enforcement agencies rely on it to create 3D models, highly accurate visual site documentation, point clouds, and more.

The Trimble S7 is the ultimate system for efficient forensic mapping, allowing you to adapt to any situation and increasing your productivity in the field. Its powerful package of technologies, including SureScan, Trimble VISION™, FineLock™ and DR Plus, along with many other features, enable you to collect data faster and more accurately than ever before.

Integrated 3D Scanning

SureScan makes every day productive. It allows you to collect and process data faster by focusing on collecting the right points, not just more points. Use it to capture detailed, feature-rich scans. You can then use those scans to create digital terrain models (DTMs), perform volume calculations and make topographic measurements quickly and efficiently.

Improved Trimble VISION Technology

Trimble VISION gives you the power to direct forensic mapping with live video images on the controller and then create a wide variety of deliverables from the collected imagery.

Use VISION to capture measurements to prisms or reflectorless, with point-and-click efficiency, via video. VISION helps you capture any site quickly and add notes directly to the pictures in the field to ensure you never miss critical information. Back in the office, you can use Trimble VISION data for measurements, or to process 360-degree panoramas and high dynamic range (HDR) images for even clearer deliverables.

Superior Accuracy with Trimble DR Plus

Combined with Trimble's smooth, silent MagDrive™ servo, Trimble DR Plus range measurement technology provides extended range of Direct Reflex measurement without a prism. It enhances scanning performance and allows you to work quickly and accurately with fewer instrument set-ups.

Stay On Point

Thanks to Trimble SurePoint™, the Trimble S7 Total Station aims and stays on target through wind, handling, and sinkage. With its exclusive MultiTrack™ technology and Target IDn capabilities, forensic mappers can choose the type of target, passive or active, that best suits the scene conditions. By actively correcting for unwanted movement, Trimble SurePoint ensures you lock on that target.

For law enforcement, Trimble SurePoint is essential to reducing aiming error, avoiding costly re-measurement and getting the results you can confidently present in a court of law.

Manage Your Assets

With Trimble InSphere™ Equipment Manager, you can rest assured knowing your Trimble S7 has all of the latest updates. This practical, reliable software keeps track of all firmware, software and maintenance requirements so you don't have to.

Powerful Field and Office Software

With the Trimble S7 total station, you can choose from a variety of Trimble controllers operating the feature rich, intuitive Trimble Access field software. Streamlined workflows guide you at the traffic or crime scene, helping you get the job done faster with fewer distractions. Trimble Access workflows can also be customized to fit your needs.

Once your work at the scene is completed, Trimble Business Center helps you check, process and adjust your optical and GNSS data in one software solution.

Key Features

- ▶ Forensic mapping, imaging and 3D scanning in one powerful solution
- ▶ Improved Trimble VISION technology for video robotic control, scene documentation and photogrammetric measurements
- ▶ Locate2Protect real-time equipment management
- ▶ Trimble DR Plus for long range and superior accuracy
- ▶ Intuitive Trimble Forensics Capture field software
- ▶ Trimble Forensics Reveal software for scene creations and analysis



PERFORMANCE

Angle measurement

Sensor type Absolute encoder with diametrical reading
 Accuracy (Standard deviation based on DIN 18723) 1" (0.3 mgon)
 2" (0.6 mgon), 3" (1.0 mgon), or 5" (1.5 mgon)
 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)

Distance measurement

Accuracy (ISO)
 Prism mode
 Standard¹ 1 mm + 2 ppm (0.003 ft + 2 ppm)
 Accuracy (RMSE)
 Prism mode
 Standard 2 mm + 2 ppm (0.0065 ft + 2 ppm)
 Tracking 4 mm + 2 ppm (0.013 ft + 2 ppm)
 DR mode
 Standard 2 mm + 2 ppm (0.0065 ft + 2 ppm)
 Tracking 4 mm + 2 ppm (0.013 ft + 2 ppm)
 Extended range 10 mm + 2 ppm (0.033 ft + 2 ppm)

Measuring time

Prism mode
 Standard 1.2 sec
 Tracking 0.4 sec
 DR mode
 Standard 1–5 sec
 Tracking 0.4 sec

Measurement range

Prism mode^{5,6}
 1 prism 2,500 m (8,202 ft)
 1 prism Long Range mode 5,500 m (18,044 ft) (max. range)
 Shortest possible range 0.2 m (0.65 ft)
 DR mode

	Good (Good visibility, low ambient light)	Normal (Normal visibility, moderate sunlight, some heat shimmer)	Difficult (Haze, object in direct sunlight, turbulence)
White card (90% reflective) ³	1,300 m (4,265 ft)	1,300 m (4,265 ft)	1,200 m (3,937 ft)
Gray card (18% reflective) ³	600 m (1,969 ft)	600 m (1,969 ft)	550 m (1,804 ft)
Reflective foil 20 mm Shortest possible range	1,000 m (3,280 ft) 1 m (3.28 ft)		
DR Extended Range Mode White Card (90% reflective) ³	2,200 m		

Scanning

Range^{2,3} from 1 m up to 250 m (3.28 ft–820 ft)
 Speed⁴ up to 15 points/sec
 Minimum point spacing 10 mm (0.032 ft)
 Standard deviation 1.5 mm @ ≤50 m (0.0049 ft @ ≤164 ft)
 Single 3D point accuracy 10 mm @ ≤150 m (0.032 ft @ ≤492 ft)

EDM SPECIFICATIONS (DR PLUS)

Light source Pulsed Laser diode 905 nm; Laser class 1
 Beam divergence
 Horizontal 2 cm/50 m (0.06 ft/164 ft)
 Vertical 4 cm/50 m (0.13 ft/164 ft)

SYSTEM SPECIFICATIONS

Leveling

Circular level in tribrach 8"/2 mm (8"/0.007 ft)
 Electronic 2-axis level in the LC-display with a resolution of 0.3" (0.1 mgon)

Servo system

MagDrive servo technology Integrated servo/angle sensor electromagnetic direct drive
 Rotation speed 115 degrees/sec (128 gon/sec)
 Rotation time Face 1 to Face 2 2.6 sec
 Positioning speed 180 degrees (200 gon) 2.6 sec
 Clamps and slow motions Servo-driven, endless fine adjustment

Centering

Centering system Trimble 3-pin
 Optical plummet Built-in optical plummet
 Magnification focusing distance 2.3×/0.5 m to infinity (1.6 ft to infinity)

Telescope

Magnification 30×
 Aperture 40 mm (1.57 in)
 Field of view at 100 m (328 ft) 2.6 m at 100 m (8.5 ft at 328 ft)
 Focusing distance 1.5 m (4.92 ft) to infinity
 Illuminated crosshair Variable (10 steps)
 Autofocus Standard

Camera

Chip Color Digital Image Sensor
 Resolution 2048 x 1536 pixels
 Focal length 23 mm (0.09 ft)
 Depth of field 3 m to infinity (9.84 ft to infinity)
 Field of view 16.5° x 12.3° (18.3 gon x 13.7 gon)
 Digital zoom 4-step (1x, 2x, 4x, 8x)
 Exposure Spot, HDR, Automatic
 Brightness User-definable
 Image storage Up to 2048 x 1536 pixels
 File format JPEG
 Compression ratio User-definable
 Video streaming⁸ 5 frames/sec

Power supply

Internal battery Rechargeable Li-Ion battery 11.1 V, 5.0 Ah
 Operating time⁹
 One internal battery Approx. 6.5 hours
 Three internal batteries in multi-battery adapter Approx. 20 hours
 Robotic holder with one internal battery Approx. 13.5 hours
 Operating time for video robotic⁹
 One battery 5.5 hours
 Three batteries in multi-battery adapter 17 hours

Weight and dimensions

Instrument 5.5 kg (11.57 lb)
 Trimble CU controller 0.4 kg (0.88 lb)
 Tribrach 0.7 kg (1.54 lb)
 Internal battery 0.35 kg (0.77 lb)
 Trunnion axis height 196 mm (7.71 in)

Other

Laser pointer coaxial Laser class 2
 Operating temperature -20 °C to +50 °C (-4 °F to +122 °F)
 Dust and water proofing IP65
 Communication 2.4 GHz, USB, Serial, Bluetooth^{®10}
 Security Dual-layer password protection, Locate2Protect¹¹

AUTOLOCK AND ROBOTIC SURVEYING

Autolock and Robotic Range⁵

Passive prisms 500–700 m (1,640–2,297 ft)
 Trimble MultiTrack Target 800 m (2,625 ft)
 Trimble ActiveTrack 360 Target 500 m (1,640 ft)
 Autolock pointing precision at 200 m (656 ft) (Standard deviation)⁵
 Passive prisms <2 mm (0.007 ft)
 Trimble MultiTrack Target <2 mm (0.007 ft)
 Trimble ActiveTrack 360 Target <2 mm (0.007 ft)
 Shortest search distance 0.2 m (0.65 ft)
 Type of radio internal/external 2.4 GHz frequency-hopping, spread-spectrum radios

Search time (typical)⁷ 2–10 sec

FINELOCK

Pointing precision at 300 m (980 ft)
 (standard deviation)⁶ <1 mm (0.003 ft)
 Range to passive prisms (min–max)⁶ 20 m–700 m (64 ft–2,297 ft)
 Minimum spacing between prisms
 at 200 m (656 ft) 0.8 m (2.625 ft)

GPS SEARCH/GEOLock

GPS Search/GeoLock 360 degrees (400 gon)
 or defined horizontal and vertical search window
 Solution acquisition time¹² 15–30 sec
 Target re-acquisition time <3 sec
 Range Autolock & Robotic range limits

- Standard deviation according to ISO17123-4.
- Dependent on selected size of search window.
- Target color, atmospheric conditions, and scanning angles will impact range.
- 0.5 frames per second with remote operation.
- Kodak Gray Card, Catalog number E1527795.
- The capacity in -20 °C (-5 °F) is 75% of the capacity at 20 °C (68 °F).
- Target shape, texture, and color; grid size; and distance and angle to target; will impact speed.
- Bluetooth type approvals are country specific.
- Standard clear. No haze. Overcast or moderate sunlight with very light heat shimmer.
- Functionality and availability dependent on region.
- Range and accuracy depend on atmospheric conditions, size of prisms and background radiation.
- Solution acquisition time is dependent upon solution geometry and GPS position quality.



Specifications subject to change without notice.

Todd Jester
Applied Forensics Specialist
330-787-1884 | CTJ@laserinst.com

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 Pty Limited
 80 Marine Parade Road
 #22-06, Parkway Parade
 Singapore 449269
 SINGAPORE