Trimble S7

TOTAL STATION

THE MOST PRODUCTIVE TOTAL STATION

The Trimble® S7 Total Station combines scanning, imaging and surveying into one powerful solution. Now you only need one instrument on the job site to perform all your data capture. Create 3D models, high accuracy visual site documentation, point clouds, and more using the Trimble S7, Trimble Access™ field software and Trimble Business Center office software.

The Trimble S7 is the ultimate system for efficient surveying, allowing you to adapt to any situation and increasing your productivity in the field. The combination of SureScan, Trimble VISION™, FineLock™ and DR Plus technology, along with many other features, means you'll be able to collect data faster and more accurately than ever before.

Integrated 3D Scanning

Save time in the field and in the office with Trimble SureScan technology. Now you have the flexibility to perform feature-rich scans every day. Efficiently capture the information you need to create digital terrain models (DTMs), perform volume calculations and make topographic measurements faster than with traditional surveying methods. SureScan technology enables you to collect and process data faster by focusing on collecting the right points, not just more points.

Improved Trimble VISION Technology

Trimble VISION technology gives you the power to direct your survey with live video images on the controller as well as create a wide variety of deliverables from collected imagery. Capture measurements to prisms or reflectorless with point-and-click efficiency via video. Quickly document your site and add notes directly to the pictures in the field to ensure you never miss that critical information. Back in the office, you can use your 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

Trimble DR Plus range measurement technology provides extended range of Direct Reflex measurement without a prism. Now you can measure further with fewer instrument set-ups and enhance your scanning performance. Trimble DR Plus, combined with the smooth and silent MagDrive™ servo technology, creates unmatched capability for quick measurements, without compromising on accuracy.

Manage Your Assets

Know where your total stations are 24 hours a day with Trimble L2P technology. See where your equipment is at any given time and get alerts if your instrument leaves a job site or experiences unexpected equipment shock or abuse.

Trimble AllTrak™ software lets you view usage and keep up-to-date on firmware, software and maintenance requirements. With Trimble L2P and AllTrak, you can rest assured knowing your equipment is up-to-date and where it should be.

Powerful Field and Office Software

Choose from a variety of Trimble controllers operating the feature rich, intuitive Trimble Access field software. Streamlined workflows like Roads, Utilities and Pipelines guide crews through common project types, helping to get the job done faster with less distractions. Trimble Access workflows can also be customized to fit your needs.

Back in the office, trust Trimble Business Center to help you check, process and adjust your optical and GNSS data in one software solution.

Key Features

- Surveying, imaging and 3D scanning in one powerful solution
- Improved Trimble VISION technology for video robotic control, scene documentation and photogrametric measurements
- Trimble L2P real-time equipment management
- Trimble DR Plus for long range and superior accuracy
- Intuitive Trimble Access Field Software
- Trimble Business Center Office Software for quick data processing
- Seamless integration with the Trimble V10 Imaging Rover and GNSS receivers

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
Standard[1] ..... 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 unlight, 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 ..... 1,000 m (3,280 ft)
Shortest possible range ..... 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)
Speed[4] ..... 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

Light source ..... Pulsed Laser diode 905 nm
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)

Laser class

EDM	Laser class 1
Laser pointer coaxial (standard)	Laser class 2
Overall product laser class	Laser class 2

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 streaming[8]	5 frames/sec

Power supply

Internal battery	Rechargeable Li-Ion battery 11.1 V, 5.0 Ah
Operating time[9]	
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 robotic[9]	
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

Operating temperature	–20 °C to +50 °C (–4 °F to +122 °F)
Storage temperature	–40 °C to +70 °C (–40 °F to +158 °F)
Dust and water proofing	IP65
Communication	2.4 GHz, USB, Serial, Bluetooth®[10]
Security	Dual-layer password protection, L2P[11]

Trimble S7 TOTAL STATION

AUTOLOCK AND ROBOTIC SURVEYING

Autolock and Robotic Range[6]
- 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-sprectrum 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 time[12] . . . . . 15–30 sec
Target re-acquisition time . . . . . <3 sec
Range . . . . . Autolock & Robotic range limits

1 Standard deviation according to ISO17123-4.
2 Target color, atmospheric conditions, and scanning angles will impact range.
3 Kodak Gray Card, Catalog number E1527795.
4 Target shape, texture, and color; grid size; and distance and angle to target; will impact speed.
5 Standard clear: No haze. Overcast or moderate sunlight with very light heat shimmer.
6 Range and accuracy depend on atmospheric conditions, size of prisms and background radiation.
7 Dependent on selected size of search window.
8 0.5 frames per second with remote operation.
9 The capacity in –20 °C (–5 °F) is 75% of the capacity at +20 °C (68 °F).
10 Bluetooth type approvals are country specific.
11 Functionality and availability dependent on region.
12 Solution acquisition time is dependent upon solution geometry and GPS position quality

Specifications subject to change without notice.

Contact your local Trimble Authorized Distribution Partner for more information

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