Trimble S7 Total Station

Key Features

Surveying, imaging and 3D scanning in one powerful solution

Improved **Trimble VISION technology** for video robotic control, scene documentation and photogrametric measurements

Locate2Protect **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

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 you 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.

Stay On Point

Reduce aiming error, avoid costly re-measurement and be confident in your results with Trimble SurePoint™. The Trimble S7 Total Station aims and stays on target through wind, handling, and sinkage, actively correcting for unwanted movement ensuring accurate pointing and measurement every time. With its exclusive MultiTrack™ technology and Target ID capabilities, surveyors can choose the type of target, passive or active, that best suits the job site conditions and be confident that they will find and lock to the correct target.

Manage Your Assets

Know where your total stations are 24 hours a day with Trimble Locate2Protect 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 InSphere™ Equipment Manager lets you view usage and keep up-to-date on firmware, software and maintenance requirements. With Trimble Locate2Protect and InSphere Equipment Manager, 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.

Trimble S7 Configurations

EDM	Angle Accuracy	Servo Control	Trimble VISION	FineLock	Scanning
DR Plus	1", 2", 3", or 5"	Robotic or Autolock®	Included	Included	Included

Trimble

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 (RMSE)
  Prism mode
    Standard[1,] . . . . .1 mm + 2 ppm (0.003 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)

	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)[2]	1,300 m (4,265 ft)	1,300 m (4,265 ft)	1,200 m (3,937 ft)
Gray card (18% reflective)[2]	600 m (1,969 ft)	600 m (1,969 ft)	550 m (1,804 ft)

  DR mode

    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] . . . . .2,000–2,200 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 @ ≤150 m (0.0049 ft @ ≤492 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 speed180 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[4]
 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, Locate2Protect[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.

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