DATASHEET

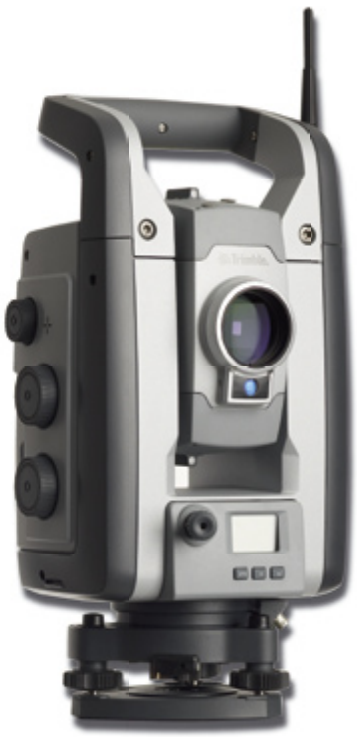
# TRIMBLE S8 TOTAL STATION

## KEY FEATURES

Escalates productivity in Integrated Surveying and specialized Engineering applications, including monitoring and tunneling

Creates business opportunities in new and diverse applications

One investment; unlimited potential



The Trimble® S8 Total Station serves both general surveying and specialized engineering applications. Ideal for one and perfect for the other, the flexible Trimble S8 Total Station with 1" angular accuracy and EDM precision of 1 mm + 1 ppm seamlessly switches between different project types. Always working, it secures your investment and ensures a fast return.

### A COMPLETE SOLUTION FOR ENGINEERING APPLICATIONS

The Trimble S8 Total Station is a key part of Trimble's complete solution for specialized Engineering applications, such as monitoring and tunneling[1]. Unique, optional features for Engineering include:

- **Trimble FineLock™ technology** is a smart tracker sensor with a narrow field of view. A Trimble S8 Total Station equipped with FineLock technology will detect a target without interference from surrounding prisms, achieving more reliable accuracy and greater density of mounted targets.

- Trimble FineLock technology is also offered as a **Long-Range FineLock** option reaching up to 2500 m with 1 cm accuracy.

- A Trimble S8 Total Station with a **Class 3R Laser Pointer** visually marks points in tunneling and mining.

- When monitoring reflective foil targets, **Automatic Servo Focus** sets the optical focus automatically for quicker aiming.

- **10 Hz high-speed synchronized data output** makes data collection in dynamic applications faster and more accurate. E.g., in railway monitoring, a trolley or ATV can move more quickly without compromising accuracy.

### INTEGRATED SURVEYING

The Trimble S8 Total Station supports Trimble's full Integrated Surveying™ solution. For typical surveying tasks, its optical measurements can combine with GNSS and Spatial Imaging data, plus the Trimble S8 can partner with the Trimble I.S. Rover. For engineering applications, data flow from the field to Trimble 4D Control software for real-time monitoring and postprocessing is seamless, and fast. From the office, multiple total stations can be managed and scheduled through a centralized control center.

### THE MOST ADVANCED TOTAL STATION PLATFORM

The Trimble S8 Total Station is built on Trimble's most advanced total station platform. It offers 1" angular accuracy and EDM precision of 1 mm + 1 ppm, plus the best features available from technology today to ensure unsurpassed efficiency, productivity, and profitability:

- **Trimble MagDrive™ servo technology:** Survey or monitor targets up to 40% faster. Frictionless motion reduces wear and tear for worry-free 24/7 operation and less maintenance. Silent movement ensures unobtrusive operation in urban or residential settings.

- **Trimble MultiTrack™ technology:** Choose between passive and active tracking . The Trimble MultiTrack Target ensures you always find and lock to the correct target fast. Nearby reflective surfaces, including other prisms, will not disrupt jobs.

- **Trimble SurePoint™ technology:** Measure accurately even after vibration and sinkage—the Trimble S8 actively corrects for unwanted movement. Avoid aiming errors and costly remeasurement.

### A PROTECTED INVESTMENT

The Trimble S8 Total Station is protected from theft and tampering by the Trimble eProtect™ security feature, which blocks unauthorized access to the instrument.

Trimble

*1 For Engineering solutions the Trimble S8 Total Station partners with Trimble Survey Controller™ field software and Trimble 4D Control software.*

**PERFORMANCE**

Angle measurement
Accuracy (Standard deviation based on DIN 18723) . . . . . 1" (0.3 mgon)
Angle reading (least count)
Standard . . . . . 1" (0.1 mgon)
Tracking . . . . . 2" (0.5 mgon)
Averaged observations . . . . . .0.1" (0.01 mgon)
Automatic level compensator
Type . . . . . Centered dual-axis
Accuracy . . . . . .0.5" (0.15 mgon)
Range . . . . . ±6' (±100 mgon)
Distance measurement
Accuracy (S. Dev.)
Prism mode
Standard . . . . . ±(1 mm + 1 ppm) ±(0.003 ft + 1 ppm)
Tracking . . . . . ±(5 mm + 2 ppm) ±(0.016 ft + 2 ppm)
DR mode
Standard measurement . . . . . ±(3 mm + 2 ppm) ±(0.01 ft + 2 ppm)
Tracking . . . . . ±(10 mm + 2 ppm) ±(0.032 ft + 2 ppm)
Measuring time
Prism mode
Standard . . . . . .2 s
Tracking . . . . . 0.4 s
Averaged observations . . . . . 2 s per measurement
DR mode
Standard . . . . . .3–15 s
Tracking . . . . . 0.4 s
Averaged observations[1] . . . . . 3–15 s per measurement
Range (under standard clear conditions[2,3])
Prism mode
1 prism . . . . . 3000 m (9,800 ft)
1 prism Long Range mode . . . . . 5000 m (16,400 ft)
3 prism . . . . . 5000 m (16,400 ft)
3 prism Long Range mode . . . . . 7000 m (23,000 ft)
Shortest possible range . . . . . 1.5 m (4.9 ft)
DR mode (typically)
Kodak Gray Card (18% reflective)[4] . . . . . >120 m (394 ft)
Kodak Gray Card (90% reflective)[4] . . . . . >150 m (492 ft)
Shortest possible range . . . . . 1.5 m (4.9 ft)

**EDM SPECIFICATIONS**

Light source . . . . . Laserdiode 660 nm; Laser class 1 in Prism mode
Laser class 2 in DR mode
Beam divergence Prism mode
Horizontal . . . . . .4 cm/100 m (0.13 ft/328 ft)
Vertical . . . . . .4 cm/100 m (0.13 ft/328 ft)
Beam divergence DR mode
Horizontal . . . . . .2 cm/50 m (0.066 ft/164 ft)
Vertical . . . . . .2 cm/50 m (0.066 ft/164 ft)
Atmospheric correction . . . . . –130 ppm to 160 ppm continuously

**GENERAL SPECIFICATIONS**

Laser pointer coaxial (standard) . . . . . .Laser class 2
Laser pointer non-coaxial (not available in all models) . . . . . .Laser class 3R
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 . . . . . 3.2 sec
Positioning speed180 degrees (200 gon) . . . . . 3.2 sec
Clamps and slow motions . . . . . Servo-driven, endless fine adjustment
Centering
Centering system . . . . . .Trimble 3-pin
Optical plummet . . . . . Built-in optical plummet
Magnification/shortest focusing distance . . . . . 2.3×/0.5 m–infinity
(1.6 ft–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)
Shortest focusing distance . . . . . 1.5 m (4.92 ft)–infinity
Illuminated crosshair . . . . . Variable (10 steps)
Autofocus . . . . . Standard
Tracklight built in . . . . . Not available in all models
Operating temperature . . . . . –20 °C to +50 °C (–4 °F to +122 °F)
Dust and water proofing . . . . . IP55
Power supply
Internal battery . . . . . Rechargeable Li-Ion battery 11.1 V, 4.4 Ah
Operating time[5]
One internal battery . . . . . Approx. 6 hours
Three internal batteries in multi-battery adapter . . . . Approx. 18 hours
Robotic holder with one internal battery . . . . . .12 hours
Weight
Instrument (servo/Autolock®) . . . . . 5.15 kg (11.35 lb)
Instrument (Robotic) . . . . . 5.25 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)
Communication . . . . . .USB, Serial, Bluetooth®[7]
Security . . . . . Dual-layer password protection

**ROBOTIC SURVEYING**

Autolock and Robotic range[3]
Passive prisms . . . . . 500–700 m (1,640–2,297 ft)
Trimble MultiTrack Target . . . . . 800 m (2,625 ft)
Autolock pointing precision at 200 m (656 ft) (standard deviation)[3]
Passive prisms . . . . . .<2 mm (0.007 ft)
Trimble MultiTrack Target . . . . . .<2 mm (0.007 ft)
Shortest search distance . . . . . .0.2 m (.65 ft)
Angle reading (least count)
Standard . . . . . 1" (0.1 mgon)
Tracking . . . . . 2" (0.5 mgon)
Averaged observations . . . . . .0.1" (0.01 mgon)
Type of radio internal/external . . . . . 2.4 GHz frequency-hopping,
spread-spectrum radios
Search time (typical)[7] . . . . . .2-10 s

**FINELOCK**

Standard (not available in all models)
Pointing precision at 300 m (980 ft)
(standard deviation)[3] . . . . . .<1 mm (0.003 ft)
Range to passive prisms (min–max)[3] . . . . . .20 m–700 m (64 ft–2,297 ft)
Minimum spacing between prisms at 200 m (656 ft) . . . . .<0.8 m (2.625 ft)
Long Range (not available in all models)
Pointing precision at 2,500 m (8,200 ft)
(standard deviation)[3] . . . . . .<10 mm (0.039 ft)
Range to passive prisms (min–max)[3,9] . . . . . .20 m–2500 m (64 ft–8,200 ft)
Minimum spacing between prisms at
2,500 m (8,200 ft) . . . . . .<10.0 m (32.808 ft)

**GPS SEARCH/GEOLOCK WITH THE TRIMBLE MULTITRACK TARGET**

GPS Search/GeoLock . . . . . 360 degrees (400 gon)
or defined horizontal and vertical search window
Solution acquisition time . . . . . 15–30 seconds[8]
Target re-acquisition time . . . . . .<3 seconds
Range . . . . . Autolock and Robotic range limits

*1 Repeats for defined number of measurements up to 99.*
*2 Standard clear: No haze. Overcast or moderate sunlight with very light heat shimmer.*
*3 Range and accuracy depend on atmospheric conditions, size of prisms and background radiation.*
*4 Kodak Gray Card, Catalog number E1527795.*
*5 The capacity in –20 °C (–5 °F) is 75% of the capacity at +20 °C (68 °F).*
*6 Bluetooth type approvals are country specific. Contact your local Trimble Authorized Distribution Partner for more information.*
*7 Dependent on selected size of search window.*
*8 Solution acquisition time is dependent upon solution geometry and GPS position quality.*
*9 Uses a combination of Standard and Long Range FineLock.*

*Specifications subject to change without notice.*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*TRIMBLE AUTHORIZED DISTRIBUTION PARTNER*

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