DATASHEET

TRIMBLE S6 TOTAL STATION

KEY FEATURES

MultiTrack™ technology offers the choice between passive and active tracking

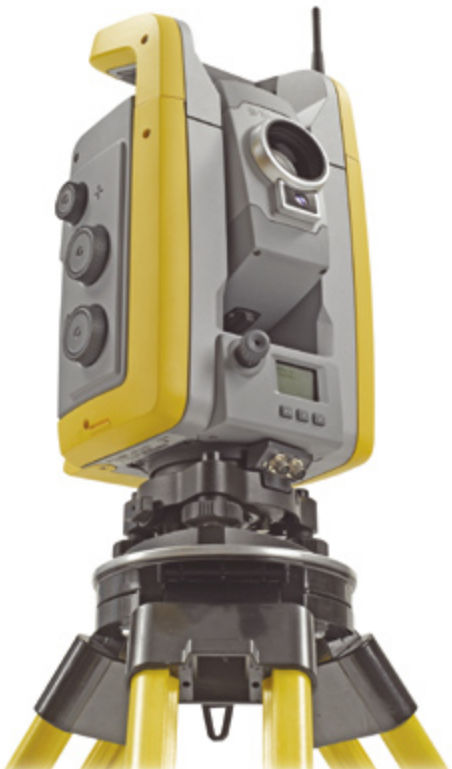
MagDrive™ servo technology gives incredibly fast, smooth performance

SurePoint™ accuracy assurance automatically corrects instrument pointing

Upgradable from servo to Autolock® function to Robotic

Integrate GPS technology with GPS Search/GeoLock and the Trimble® I.S. Rover

100% cable-free instrument and Robotic rover



MAGDRIVE SERVO TECHNOLOGY

The Trimble® S6 Total Station redefines instrument performance with unsurpassed integration of servos and angle sensors. The instrument's advanced error compensation provides fast, accurate measurements every time. With the smooth, silent servo motors of MagDrive servo technology, the Trimble S6 offers exceptional speed and accuracy.

CHOOSE TARGET MODE: ACTIVE OR PASSIVE

The Trimble S6 will lock and track a wide variety of targets and conventional prisms to exceptional range. Additionally, surveyors can choose between passive and active tracking with the new Trimble® MultiTrack™ Target. Its flexibility expands opportunities in all surveying applications.

Active Tracking with Target ID:
Always find your correct target

With the Trimble MultiTrack Target you will always find and lock to the correct target. Nearby reflective surfaces, including road signs, cars, warning vests and other on-site prisms, will not disrupt your surveys. Active tracking also offers longer range, and the 360 degree active LED rings ensure that your correct target is tracked from any angle.

GPS Search target location

GPS Search is a feature in Trimble Survey Controller™ field software that works with the Trimble MultiTrack Target to maximise Trimble S6 Total Station speed. GPS Search uses GPS positioning at the robotic rover to locate a prism anywhere, anytime, so that with a Trimble® I.S. Rover, or even a GPS card or Bluetooth® receiver, the Trimble S6 can lock onto the prism in just a few seconds.

HIGH CAPACITY INTERNAL BATTERY WITH INTELLIGENT SYSTEM CHARGER

The Trimble S6 runs for six hours in Robotic mode on one internal lithium-ion battery, with no cables needed. The battery is intelligent, so you can quickly check how much power each battery contains.

With three batteries in the multi-battery holder, you'll spare yourself the task of changing batteries during your work day. Recharge your Trimble S6 and GPS system batteries in the same charger.

SUREPOINT ACCURACY ASSURANCE

The Trimble S6 Total Station aims and stays … through windy weather, vibrations, handling, and sinkage, by actively correcting unwanted movement. This technology, Trimble's unique SurePoint accuracy assurance, ensures accurate pointing and measurement every time. Reduce aiming error and avoid costly re-measurement for supreme confidence in your results.

DIRECT REFLEX TECHNOLOGY

Direct Reflex (DR) technology from Trimble enables measurement without a prism even to exceptional distances. Hard-to-reach or unsafe targets are no obstacle for the Trimble S6. Measure quickly and safely without compromising accuracy.

COAXIAL OPTICS, EDM, TRACKER, LASER POINTER

Whether measuring in Face 1 or Face 2, or aiming manually or with the tracker, with Trimble S6 what you see is what you measure. The Trimble S6 optics by Carl Zeiss are fully coaxial for full measurement confidence.

INTEGRATED SURVEYING

Only a Trimble total solution offers field-proven optical and GPS integration from field to office. The Trimble controller of your choice connects without cables to your Trimble S6 or GPS system. It can be switched between sensors, collecting all data into one job file for seamless data transfer. Simply use the sensor that best suits your environment or job requirement.

Trimble

PERFORMANCE

Angle measurement
Accuracy (Standard deviation based on DIN 18723) . . . . . 2" (0.5 mgon)
3" (1.0 mgon), or 5" (1.5 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 . . . . . ±(3 mm + 2 ppm) ±(0.01 ft + 2 ppm)
Tracking . . . . . ±(10 mm + 2 ppm) ±(0.032 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)
>300 m (656 ft)
Standard measurement . . . . . ±(5 mm + 2 ppm)
±(0.016 ft + 2 ppm)
Measuring time
Prism mode
Standard . . . . . 1.2 s
Tracking . . . . . 0.4 s
Averaged observations[1] . . . . . 1.2 s per measurement
DR mode
Standard . . . . . 1–5 s
Tracking . . . . . 0.4 s
Averaged observations[1] . . . . . 1–5 s per measurement
Range (under standard clear conditions[2,3])
Prism mode
1 prism . . . . . 2500 m (8202 ft)
1 prism Long Range mode . . . . . 5500 m (18,044 ft) (max. range)
3 prism . . . . . 3500 m (11,482 ft)
3 prism Long Range mode . . . . . 5500 m (18,044 ft) (max. range)
Shortest possible range . . . . . 0.2 m (0.65 ft)
DR mode (typically)
Kodak Gray Card (18% reflective)[4] . . . . . >300 m (984 ft)
Kodak Gray Card (90% reflective)[4] . . . . . >800 m (2625 ft)
Concrete . . . . . 300–400 m (984–1312 ft)
Wood construction . . . . . 200–400 m (656–1312 ft)
Metal construction . . . . . 200–250 m (656–820 ft)
Light rock . . . . . 200–300 m (656–984 ft)
Dark rock . . . . . 150–200 m (492–656 ft)
Reflective foil 20 mm . . . . . 800 m (2,625 ft)
Reflective foil 60 mm . . . . . 1600 m (5,249 ft)
Shortest possible range . . . . . 2 m (6.56 ft)

EDM SPECIFICATIONS

Light source . . . . . Pulsed laserdiode 870 nm, Laser class 1
Laser pointer coaxial (standard) . . . . . Laser class 2
Beam divergence
Horizontal . . . . . 4 cm/100 m (0.13 ft/328 ft)
Vertical . . . . . 8 cm/100 m (0.26 ft/328 ft)
Atmospheric correction . . . . . –130 ppm to 160 ppm continuously

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)[5]
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[1]	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)
Concrete	80–150 m (262–492 ft)
Wood construction	80–180 m (262–590 ft)
Metal construction	80–120 m (262–394 ft)
Light rock	80–120 m (262–394 ft)
Dark rock	60–80 m (197–262 ft)
Reflective foil 20 mm	600 m (1,968 ft)
Reflective foil 60 mm	1200 m (3,937 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
Laser pointer coaxial (standard)	Laser class 2
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

GENERAL 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 . . . . . 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)

Tracklight built in . . . . . Standard

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[6]
  - 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]

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-sprectrum radios

Search time (typical)[8] . . . . . 2-10 s

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[9]

Target re-acquisition time . . . . . <3 seconds

Range . . . . . Autolock & Robotic range limits

TRIMBLE I.S. ROVER

(Integrated Trimble GPS/GNSS and Trimble S6 robotic rover)

Trimble S6 Robotic Total Station

Trimble GPS/GNSS System . . . . . Any Trimble R8, Trimble R6, or 5800 system

Controller . . . . . Trimble TSC2 or Trimble CU

A Trimble I.S. Rover comprising the Trimble R8 GNSS with the Trimble MultiTrack Target.

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 *Limited temperature range for high-precision ±(1 mm + 1 ppm): 5 °C to 45°C (41 °F to 113 °F).*
6 *The capacity in –20 °C (–5 °F) is 75% of the capacity at +20 °C (68 °F).*
7 *Bluetooth type approvals are country specific. Contact your local Trimble Authorized Distribution Partner for more information.*
8 *Dependent on selected size of search window.*
9 *Solution acquisition time is dependent upon solution geometry and GPS position quality.*

Bluetooth®

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