DATASHEET

TRIMBLE S6 ToTaL STaTIon

key feaTures

MultiTrack ™ technology combines passive tracking with active Target ID

MagDrive ™ servo technology for 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

Choose TargeT Mode: aCTive or Passive

The Trimble® S6 Total Station combines passive prism tracking with active Target ID via the new Trimble ® MultiTrack technology. The instrument will lock and track a wide variety of targets and conventional prisms to exceptional range. Its flexibility expands opportunities in all surveying applications.

TargeT id

With the Trimble S6 you will always find and lock to the correct target via Target ID. Use multiple prisms on a site, and always lock to the one you need. Save time by eliminating lock onto false targets.

Magdrive servo TeChnology

The Trimble S6 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.

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.

gPs searCh/geoloCk

GPS Search lets you maximise Trimble S6 Total Station speed. GPS Search uses GPS positioning 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 system will locate the prism in just a few seconds.

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 . . . . . Dual-axis compensator ±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 . . . . . Dual-axis compensator ±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[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 ºC to +50 ºC (–4 ºF to +122 ºF)

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®

roBoTiC surveying

Range[3]
- Robotic . . . . . 500–700 m (1,640–2,297 ft)
- Autolock . . . . . 500–700 m (1,640–2,297 ft)

Shortest search distance . . . . . 0.2 m (.65 ft)

Autolock pointing precision at 200 m (656 ft) (Standard deviation) . . . . . .<2 mm (0.007 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

GPS Search/GeoLock . . . . . .360 degrees (400 gon) or defined horizontal

Solution acquisition time . . . . . 15–30 seconds[9]

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

Range . . . . . 500–700 m (1,640–2,297 ft)

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

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 ºC (–5 ºF) is 75% of the capacity at +20 ºC (68 ºF).*
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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