

# Trimble S5 Total Station

## Key Features

**Everything you need** to perform survey campaigns

**Measure further and faster** with the Trimble DR Plus EDM

Locate2Protect **real-time equipment management**

**Seamless integration** with the Trimble V10 Imagine Rover and GNSS receivers

Intuitive **Trimble Access Field Software**

Trimble Business Center Office Software for **quick data processing**



## TRUSTED PERFORMANCE

All you need to perform efficient surveying campaigns is available in the Trimble® S5 Robotic Total Station solution: An accurate and reliable instrument, DR Plus EDM, MagDrive™ technology, the popular Trimble TSC3 controller with Trimble Access™ field software and quick data processing with Trimble Business Center office software.

Trimble has been manufacturing the industry's leading robotic total stations for over a decade. You can depend on the Trimble S5 Total Station to keep you productive in the field no matter what you encounter.

### Trimble Technology

The Trimble S5 Total Station is built upon proven Trimble technologies like SurePoint™, MagDrive and our DR Plus EDM, helping you work more efficiently while maintaining the highest accuracy possible. Smooth and silent, Trimble MagDrive electro-magnetic technology means fewer moving parts, which reduces servicing requirements. Trimble SurePoint ensures accurate pointing and measurements by actively correcting for unwanted movements like wind, handling, and sinkage. The Trimble DR Plus EDM allows you to measure with fewer instrument set-ups and enhance your direct reflex performance.

### Manage Your Assets 24/7

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 jobsite or experiences unexpected equipment shock or abuse.

Trimble InSphere™ Equipment Manager system 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.

## Robotic and Autolock

The Trimble S5 Total Stations are available in robotic or Autolock®-only versions. The Trimble S5 robotic and Autolock versions have an optional TCU data collector with Trimble Access field software for convenient, simple operation in any environment.

## Integrated Surveying

The Trimble S5 Total Station provides the foundation for Trimble's Integrated Surveying™ solutions. With Integrated Surveying, you can seamlessly integrate complementary technologies on the job site, such as Trimble GNSS receivers and optical measurements.

## Powerful Field and Office Software

Choose from a variety of Trimble controllers operating the feature rich, intuitive Trimble Access field software. Streamlined workflows 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 software to help you check, process and adjust your optical, leveling, and GNSS data in one software solution. No matter what Trimble instruments you use in the field, you can trust that Trimble Business Center office software will help you generate industry-leading deliverables.

## Trimble S5 Configurations

EDM	Angle Accuracy	Servo Control	Active Track
DR Plus	1", 2", 3", 5"	Robotic, Autolock	Optional

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## 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)  
 Angle 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<sup>1</sup> . . . . . 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 (under standard clear conditions<sup>2,3</sup>)  
 1 prism . . . . . 2500 m (8202 ft)  
 1 prism Long Range mode . . . . . 5500 m (18,044 ft) (max. range)  
 Shortest range . . . . . 0.2 m (0.65 ft)  
 DR mode

	Good (Good visibility, low ambient light)	Normal (Normal visibility, moderate sunlight, some heat shimmer)	Difficult (Haze, object in direct sunlight, turbulence)
<b>White card (90% reflective)<sup>3</sup></b>	1,300 m (4,265 ft)	1,300 m (4,265 ft)	1,200 m (3,937 ft)
<b>Gray card (18% reflective)<sup>3</sup></b>	600 m (1,969 ft)	600 m (1,969 ft)	550 m (1,804 ft)

Reflective foil 20 mm . . . . . 1000 m (3280 ft)  
 Shortest range . . . . . 1 m (3.28 ft)  
 DR Extended Range Mode  
 White Card (90% reflective)<sup>4</sup> . . . . . 2000 m–2200 m

## EDM SPECIFICATIONS

Light source . . . . . Pulsed laserdiode 905 nm, Laser class 1  
 Beam divergence  
 Horizontal . . . . . 4 cm/100 m (0.13 ft/328 ft)  
 Vertical . . . . . 8 cm/100 m (0.26 ft/328 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 time 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/shortest focusing distance . 2.3x/0.5 m–infinity (1.6 ft–infinity)

### Telescope

Magnification . . . . . 30x  
 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)

### Power supply

Internal battery . . . . . Rechargeable Li-Ion battery 11.1 V, 5.0 Ah  
 Operating time<sup>5</sup>  
 One internal battery . . . . . Approx. 6.5 hours  
 Three internal batteries in multi-battery adapter . . . . . Approx. 20 hours  
 Robotic holder with one internal battery . . . . . 13.5 hours

### Weight

Instrument (Autolock) . . . . . 5.4 kg (11.35 lb)  
 Instrument (Robotic) . . . . . 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

Communication . . . . . USB, Serial, Bluetooth<sup>®6</sup>  
 Operating temperature . . . . . –20° C to +50° C (–4° F to +122° F)  
 Tracklight built in . . . . . Not available in all models  
 Dust and water proofing . . . . . IP65  
 Humidity . . . . . 100% condensing  
 Laser pointer coaxial (standard) . . . . . Laser class 2  
 Security . . . . . Dual-layer password protection, Locate2Protect<sup>9</sup>

## ROBOTIC SURVEYING

Autolock and Robotic Range<sup>3</sup>  
 Passive prisms . . . . . 500 m–700 m (1,640–2,297 ft)  
 Trimble MultiTrack™ Target . . . . . 800 m (2,625 ft)  
 Trimble Active Track 360 Target . . . . . 500 m (1,640 Ft)  
 Autolock pointing precision at 200 m (656 ft) (Standard deviation)<sup>3</sup>  
 Passive prisms . . . . . <2 mm (0.007 ft)  
 Trimble MultiTrack Target . . . . . <2 mm (0.007 ft)  
 Trimble Active Track 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-spectrum radios  
 Search time (typical)<sup>7</sup> . . . . . 2–10 sec

## GPS SEARCH/GEOLock

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

1 Standard deviation according to ISO17123-4.  
 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 Functionality and availability dependent on region.

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