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Trimble 5600 Total Station Series

Servo-driven, highly productive measuring system upgradable to Autolock and Robotic surveying

Key Features and Benefits

- Autolock and Robotic Surveying for increased productivity
- 4-speed servo
- Active search system
- Seamless data flow
- Choice of User Interfaces

The Trimble 5600 Total Station series gives you access to the best and most productive measuring methods available—for every measuring situation—for unassisted operation.

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Servo gives you a 30% productivity increase

The 5600 series is equipped with 4-speed servo operation that gives variable speed, faster, smoother and more accurate aiming. Servo is the platform for measurement automation and for further upgrades to increased productivity.

Upgrade to Autolock and the productivity increase is 50%

Autolock™ technology enables semi-robotic operation, with measuring and recording taking place at the total station. The 5600 series seeks out the RMT target (Active Remote Measuring Target), locks to it, and follows it during movement between points. No fine adjustments needed, no focusing, no problems working in the dark (the instrument will locate the target in any situation), and no work-related injuries from constant turning of the total station. In most cases the Autolock feature makes it possible to stake out and gather survey data as fast as the rodman can move.

Upgrade to Robotic and the productivity increase is 80%

Robotic operation offers the same advantages as Autolock—in addition, it allows you to work on your own. Robotic measuring offers more than increased productivity and reduced personnel costs. It also gives higher quality measurements — all the control initiation and registering take place at the measuring point, where any errors or discrepancies are quickly identified.

Combine Robotic with DR200+ to double productivity

The long-range Direct Reflex EDM system (DR200+) option on the 5600 series allows you to measure up to 600 meters against a white object and 200 meters against Kodak Grey (the international standard to determine the range of reflectorless total stations). That's 3.3 times further than any other reflectorless total station! And the range using a single prism is 5.5 kilometers. Combining DR200+ capability with robotic operation results in the ultimate total station.

True Integrated Surveying

There are situations where measuring by GPS is more productive than by using a conventional total station, and vice versa.

Trimble Integrated Surveying™ solutions offer you the best of both worlds. Simply move the control unit from one system to the other in a matter of seconds and go on with your survey. The software environment is identical and the data flow seamless.

Trimble Series 5600

ACCURACY	5601	5602	5603	5605
Distance Measurement				
Accuracy M.S.E.				
Arithmetic mean value (D-bar):	±(2 mm + 2 ppm) ±(0.007 ft + 2 ppm)	±(2 mm + 2 ppm) ±(0.007 ft + 2 ppm)	±(2 mm + 2 ppm) ±(0.007 ft + 2 ppm)	±(3 mm + 3 ppm) ±(0.01 ft + 3 ppm)
Optional	±(1 mm + 1 ppm) ±(0.003 ft + 1 ppm)			
Standard measurement (STD):	±(3 mm + 2 ppm) ±(0.01 ft + 2 ppm)	±(3 mm + 2 ppm) ±(0.01 ft + 2 ppm)	±(3 mm + 2 ppm) ±(0.01 ft + 2 ppm)	±(5 mm + 3 ppm) ±(0.016 ft + 3 ppm)
Optional	±(2 mm + 2 ppm) ±(0.007 ft + 2 ppm)			
Fast standard (FSTD)	±(8 mm + 2 ppm) ±(0.025 ft + 2 ppm)	±(8 mm + 2 ppm) ±(0.025 ft + 2 ppm)	±(8 mm + 2 ppm) ±(0.025 ft + 2 ppm)	±(8 mm + 3 ppm) ±(0.025 ft + 3 ppm)
Optional	±(4 mm + 2 ppm) ±(0.014 ft + 2 ppm)			
Fast tracking - max 4 m/s (8 knots) (TRK):	±(10 mm + 2 ppm) ±(0.032 ft + 2 ppm)	±(10 mm + 2 ppm) ±(0.032 ft + 2 ppm)	±(10 mm + 2 ppm) ±(0.032 ft + 2 ppm)	±(10 mm + 3 ppm) ±(0.032 ft + 3 ppm)
Optional	±(6 mm + 2 ppm) ±(0.019 ft + 2 ppm)			
Shortest possible range:	0.2 m (0.7 ft)	0.2 m (0.7 ft)	0.2 m (0.7 ft)	0.2 m (0.7 ft)
Least count				
Arithmetic mean value (D-bar):	0.1 mm (0.0005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)
Standard measurement (STD):	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)
Fast standard (FSTD):	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)
Fast tracking (TRK):	10 mm (0.01 ft)	10 mm (0.01 ft)	10 mm (0.01 ft)	10 mm (0.01 ft)
Measuring time:				
Arithmetic mean value (D-bar):	Users decision	Users decision	Users decision	Users decision
Standard measurement (STD):	3.5 sec.	3.5 sec.	3.5 sec.	3.5 sec.
Fast standard (FSTD):	1.3 sec.	1.3 sec.	1.3 sec.	1.3 sec.
Fast tracking (TRK):	0.4 sec.	0.4 sec.	0.4 sec.	0.4 sec.
Light source:	Infrared GaAs diode	Infrared GaAs diode	Infrared GaAs diode	Infrared GaAs diode
Beam divergence:	1.6 mrad (16 cm/100 m) (0.52 ft/328 ft)	1.6 mrad (16 cm/100 m) (0.52 ft/328 ft)	1.6 mrad (16 cm/100 m) (0.52 ft/328 ft)	1.6 mrad (16 cm/100 m) (0.52 ft/328 ft)
Atmospheric correction:	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously

ACCURACY	5601 DR200+	5602 DR200+	5603 DR200+	5605 DR200+
Distance Measurement (with or without reflector)				
Accuracy SDV				
5 - 200 m (16,4 ft - 656 ft)	±(3 mm + 3 ppm) ±(0.01 ft + 3 ppm)	±(3 mm + 3 ppm) ±(0.01 ft + 3 ppm)	±(3 mm + 3 ppm) ±(0.01 ft + 3 ppm)	±(3 mm + 3 ppm) ±(0.01 ft + 3 ppm)
beyond 200 m (656 ft) (without reflector)	±(5 mm + 3 ppm) ±(0.016 ft + 3 ppm)	±(5 mm + 3 ppm) ±(0.016 ft + 3 ppm)	±(5 mm + 3 ppm) ±(0.016 ft + 3 ppm)	±(5 mm + 3 ppm) ±(0.016 ft + 3 ppm)
Shortest possible range:	2 m (6.5 ft)	2 m (6.5 ft)	2 m (6.5 ft)	2 m (6.5 ft)
Least count				
Arithmetic mean value (D-bar):	0.1 mm (0.0005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)
Standard measurement (STD):	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)
Fast standard (FSTD):	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)	1 mm (0.005 ft)
Tracking (TRK):	10 mm (0.01 ft)	10 mm (0.01 ft)	10 mm (0.01 ft)	10 mm (0.01 ft)
Measuring time (with reflector)				
Arithmetic mean value (D-bar):	Users decision	Users decision	Users decision	Users decision
Standard measurement (STD):	2 sec.	2 sec.	2 sec.	2 sec.
Fast standard (FSTD):	2 sec.	2 sec.	2 sec.	2 sec.
Tracking (TRK):	0.4 sec.	0.4 sec.	0.4 sec.	0.4 sec.
Measuring time (without reflector)				
Arithmetic mean value (D-bar):	Users decision	Users decision	Users decision	Users decision
Standard measurement (STD):	2-10 sec.	2-10 sec.	2-10 sec.	2-10 sec.
Fast standard (FSTD):	2-10 sec.	2-10 sec.	2-10 sec.	2-10 sec.
Tracking (TRK):	0.4 sec.	0.4 sec.	0.4 sec.	0.4 sec.
Light source:	IR Laser Diode 850 nm	IR Laser Diode 850 nm	IR Laser Diode 850 nm	IR Laser Diode 850 nm
Beam divergence				
Horizontal:	0.4 mrad (4 cm/100 m) (0.13 ft/328 ft)	0.4 mrad (4 cm/100 m) (0.13 ft/328 ft)	0.4 mrad (4 cm/100 m) (0.13 ft/328 ft)	0.4 mrad (4 cm/100 m) (0.13 ft/328 ft)
Vertical:	0.8 mrad (8 cm/100 m) (0.26 ft/328 ft)	0.8 mrad (8 cm/100 m) (0.26 ft/328 ft)	0.8 mrad (8 cm/100 m) (0.26 ft/328 ft)	0.8 mrad (8 cm/100 m) (0.26 ft/328 ft)
Atmospheric correction:	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously

ACCURACY	5601 5601 DR200+	5602 5602 DR200+	5603 5603 DR200+	5605 5605 DR200+
Angle Measurement				
Accuracy (Standard deviation based on DIN 18723)	1” (0.3 mgon)	2” (0.5 mgon)	3” (1.0 mgon)	5” (1.5 mgon)
Angle reading (least count) Number of decimals can be specified by the user				
Arithmetic mean value (D-bar):	0.1” (0.01 mgon) (horizontal angle)	1” (0.1 mgon)	1” (0.1 mgon)	1” (0.1 mgon)
Standard measurement:				
Fast tracking:	1” (0.1 mgon) 2” (0.5 mgon)	1” (0.1 mgon) 2” (0.5 mgon)	1” (0.1 mgon) 2” (0.5 mgon)	1” (0.1 mgon) 2” (0.5 mgon)
Automatic level compensator				
Dual-axis compensator with a working range of:	6’ (±100 mgon)	6’ (±100 mgon)	6’ (±100 mgon)	6’ (±100 mgon)

RANGE 5600	MODULE 1 (OPTION)	MODULE 2 (OPTION)	MODULE 3 (STANDARD)	MODULE 4 (OPTION)	MODULE 5 (STANDARD)
Range using Geodimeter ® prism 571 125 021. Standard clear*					
With one prism:	2500 m (1.6 miles)	2000 m (1.2 miles)	1500 m (0.9 miles)	1800 m (1.1 miles)	1200 m (0.7 miles)
With one prism, long range mode:	3500 m (2.2 miles)	2800 m (1.7 miles)			
With 3 prisms:	3500 m (2.2 miles)	2800 m (1.7 miles)	2100 m (1.3 miles)	2500 m (1.6 miles)	
With 3 prisms, long range mode:	4600 m (2.9 miles)	3900 m (2.5 miles)	2900 m (1.8 miles)		
With 8 prisms:	4500 m (2.8 miles)	3800 m (2.4 miles)			
With 8 prisms, long range mode:	5800 m (3.6 miles)	5000 m (3.1 miles)			

RANGE 5600 DR200+	
Range using a reflector	
Range using Geodimeter prism 571 125 021. Standard clear * With one prism	5500 m (3.4 miles) (max.range)
Range using Plastic Reflector	1500 m (0.9 miles)
Range using Reflex Tape	800 m (0.5 miles)
Range Direct Reflex measurement (typically):	
Range Kodak Gray (18% reflective)	>200 m (656 ft)
Range Kodak White (90% reflective)	>600 m (1968 ft)
Concrete	200 - 300 m (656 - 984 ft)
Wood Constructions	150 - 300 m (492 - 984 ft)
Metal Constructions	150 - 200 m (492 - 656 ft)
Light Rock	150 - 250 m (492 - 820 ft)
Dark Rock	100 - 150 m (328 - 492 ft)

**Standard clear: No haze, overcast or moderate sunlight with very light heat shimmer. Range and Accuracy vary depending on weather conditions and variation of reflective quality on different type of surfaces.*

SPECIFICATIONS FOR ROBOTIC SURVEYING

Range Robotic*: Up to 1500 m (0.9 miles) depending on type of RMT
Range Autolock*: Up to 2200 m (1.3 miles) depending on type of RMT

Shortest search distance: 1.5 m (5 ft)

Positioning accuracy at 200 m (Standard deviation) <2 mm (0.007 ft)

Angle reading (least count)
- Arithmetic mean value (D-bar): 1” (0.1 mgon)
- Standard measurement 1” (0.1 mgon)
- Fast tracking 2” (0.5 mgon)

Measuring time
- Standard measurement: 5 – 10 sec.
- Fast tracking: 0.4 sec.

Search time (typical): <10 sec. **

Search area: 400 gon (360 degrees), or defined search window

** Range and accuracy are dependent on atmospheric conditions and background radiation.*
*** Dependent on selected search window.*

5600 DR200+

The principle of the new Direct Reflex Distance Meter.

"Time of flight"

The measurement technique used in DR200+ is based on the pulse measurement principle, e.g. the time for a transmitted very short light pulse to travel to the Target and back again is measured. What differs from earlier distance meters using this principle is a unique method of taking the average of many pulses and determining the shape of the pulse before the transit time is calculated. In this way the influence of noise can be reduced to a large extent, and both the Range and the Accuracy can be increased considerably.

Combining Direct Reflex and Robotic.

By combining the two methods you have the ultimate one-person operating system. Imagine that all vertical objects within range are measured from behind the Instrument. Then simply move over to Robotic mode and measure the rest of the points. This will save a lot of time and the productivity will be further increased.

PRODUCT SUPPORT PROGRAMS

1. S_Dev

In this menu the requested accuracy can be entered. The system will accept values from 0.001 to 0.9 (1 mm to 0.9 m).

During the measurement you will be able to see the "count down" towards the keyed in value. If the requested value is not achieved, the distance measurement can be stopped and the achieved Standard deviation will be displayed.

S_Dev — the data, e.g SD=256.456
S_Dev=0.003
OK?

If OK the displayed distance will be used.

2. Meas. Method
(Measurement Method)

1= Reflector
2= No Reflector

Simply select the required method.

3. Dist. Interval (Direct Reflex mode only)
(Distance Interval)

From =
To =

In this menu you can select the measurement interval.

The system is set up by default as:

From = 2 m (6.56 ft)
To = 200 m (656 ft)

The user can change these default values. If the object to be measured is more than 200 m (656 ft) away you can change the "To=" value to e.g. 300 or 400 m (984 or 1312 ft). Another way to use this function is if you want to measure a small object on let us assume 50 m (164 ft). 150 m (492 ft) behind the object you have a white building. To avoid a result from the strong reflective building you can set the values to:

From = 2
To = 100

The system will look for an object within this given interval.

4. Pointer

The Laser Pointer is optional, and is fitted to the Top Coarse Sight position. Support programs are provided to e.g. Point at Spot using the servo control.

5. Weak signal

1 = On
2 = Off

When the signal becomes too weak, the Instrument will not display a result, because the accuracy will not be within the specification. Sometimes however you want to have a result anyway. In that case set the switch to 1 = On.

The accuracy will decrease to ±(10 mm + 3 ppm)(0.032 ft + 3 ppm) but, on the other hand, you will be able to measure using a very weak signal.

GENERAL SPECIFICATIONS

Aiming	Servo-drive. Endless fine adjustment
Levelling	
Compensator	Dual axis compensator
Working range	6' (±100 mgon)
Circular level in tribrach:	8'/2 mm (8'/0.007 ft)
Electronic 2-axis level in the LC-display with a resolution of:	6" (2 mgon)
Centering:	Optical plummet in tribrach
Telescope	Coaxial
Magnification:	26X (30X optional)
Focussing range:	1.7 m (5.58 ft) to infinity
Field of view:	2.6 m at 100 m (8.5 ft at 328 ft)
Illuminated crosshair:	Yes, variable (15 steps)
Operating temperature:	-20°C to +50°C (-5°F to +122°F)
Data input/output:	RS-232C Two-way communication

Batteries:	
Central unit:	rechargeable NiMH battery 12V, 1.6 Ah
External:	rechargeable NiMH battery 12V, 3.5 Ah
Power consumption:	0.5A – 1.0A depending on use of servo, tracker, radio and type of measurement mode.
Weight	
Instrument (incl. Geodimeter Control Unit):	6.4 kg (14.1 lbs)
Tribrach:	0.7 kg (1.5 lbs)
Internal battery:	0.4 kg (0.9 lbs)
Instrument for robotic surveying: (incl. Tracker and built in radio)	7.5 kg (16.5 lbs)

Control Unit options:

- **Geodimeter Control Unit**
- **GeodatWin Control Unit**
- **Zeiss Elta Control Unit (with Elta Software or Open System Software)**
- **Trimble Control Unit**

ORDERING INFORMATION

For further information please contact your nearest Trimble Authorized Distributor or Trimble Office.

You may also visit our website at http://www.trimble.com

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