

Trimble ATS

Advanced Tracking Sensor (ATS) with target recognition capability for stakeless machine control and survey applications

Key Features and Benefits

- Dual function robotic total station for:
 - stakeless machine control
 - survey applications
- Fast and accurate
- Built-in search system
- Multiple target ID's
- Active target recognition for 100% secure lock on
- High accuracy dynamic tracking system

The Trimble ATS is a dual mode instrument founded on Geodimeter® technology, which allows you to increase accuracy and productivity on site. The Trimble ATS starts with the foundation of the Trimble 5600 Total Station and has enhanced features for high performance automatic machine tracking. In Surveying mode, the ATS offers maximum flexibility as a fast, efficient, single-person positioning system. In Advanced Tracking mode for machine control, the ATS combines with on-machine controllers and operator display to guide and control machinery and vessels performing construction tasks—without the need for stakes in the ground.

Who Uses the Trimble ATS?

The Trimble ATS is ideal for any company that does surveying for construction. It allows the surveyor to do all types of surveying and stakeout quickly and accurately. The ATS also drives a machine control system, which allows an operator to work single-handedly, with all the design and cut/fill information right in the cab.

Data Latency and Output Rate

Designed specifically for the high-speed, low-latency demands of machine control, the ATS in Advanced Tracking mode has a latency of less than 200 ms and selectable output rate between 1 and 6 Hz.

In addition, angle and distance data from the instrument are synchronized, providing a machine with precise, up-to-date information, increasing the accuracy and speed at which a machine works.

This low latency and data synchronization, combined with the instrument's turning speed, enable the ATS to track a machine driving as close as 30 m at a speed of 46 kph (28 mph), without losing lock.

In Surveying mode, output is optimized at 2 Hz with no synchronization. Surveying mode also



Very fast tracking capability for high productivity for precise machine control and survey applications

offers the same timesaving features found on the Trimble 5600 Total Station, including Autolock and Robotic operation modes.

Target Recognition

The programmable target recognition capability of the ATS allows operation of several instruments on the same site without signal interference. The ATS can be programmed to recognize one of four active targets, providing the freedom to operate four machines or surveys in the same part of the construction site without radio or reflective surface interference. Furthermore, the instrument has built-in search intelligence to locate the target if contact is temporarily interrupted by, for example, a passing vehicle.

Comprehensive Machine Control

The Trimble ATS can be used as part of the BladePro® 3D machine control

system to give the machine operator full control over the earthworks on a site. The BladePro 3D system has a display screen in the machine cab that shows the exact 3D position of the blade in relation to the design at that time. In addition, valve sensors can be added for fully automatic machine control. The slope and elevation of the blade are therefore controlled by the system, not by the machine operator, reducing error and avoiding expensive re-work.

The ATS can also be integrated into independent machine control systems, through the use of a proprietary command structure.

Invest in the future with the Trimble ATS Total Station system. With ATS on site, you'll experience increased accuracy and productivity—a must for anyone in the construction industry.

Trimble ATS

GENERAL TRIMBLE ATS

Control Unit (detachable):	33 key Alphanumeric keyboard 4 row illuminated LCD screen with 20 characters per row Standard memory of 5,000 pts Optional memory of 5,000 pts	Data communication interface:	Serial port (RS232 Standard) 9,600 baud Radio modem 4,800 baud Radio range approx. 1,600 m (1 mile) Output 100–500 mW (differs from country to country, depending on local legislation)
Tracklight (built-in):	A blinking guide-light which emits a red, white and a green sector. The white sector represents the measuring beam.	Telescope	Coaxial
Aiming:	Servo-drive. Endless fine adjustment	Magnification:	26 X (30 X optional)
Leveling		Focusing range:	1.7 m (5.6 ft) to infinity
Circular level in tribrach:	8'/2 mm	Field of view:	2.6 m at 100 m (8.6 ft at 330 ft)
Electronic 2-axis level in the LC-display with a resolution of:	6" (2 mgon)	Illuminated crosshair:	Yes
Centering:	Optical plummet in tribrach	Operating temperature:	–20°C to +50°C (–4°F to +122°F)
		Power Supply:	External rechargeable NiMH batteries 12 V, 3.5–10.5 Ah
		Input voltage:	12–14 VDC
		Power consumption:	4.8 W to 10.8 W
		Weight	
		Instrument including Tracker and built in radio:	7.4 kg (16.5 lbs)
		Tribrach:	0.7 kg (1.5 lbs)

SURVEYING MODE

Range*		Measuring time	
One prism:	2,000 m (1.2 miles)	Standard measurement:	3.5 sec
One prism long range mode:	2,800 m (1.7 miles)	Fast tracking:	0.4 sec
Triple prism:	2,800 m (1.7 miles)	Range in Robotic mode*:	Up to 700 m (2,300 ft) depending on type of RMT
Triple prism long range mode:	3,900 m (2.4 miles)	Range in Autolock mode*:	Up to 1000 m (3,200 ft) depending on type of RMT
Angle Measurement		Shortest search distance:	1.5 m (5 ft)
Accuracy (standard deviation based on DIN 18723):	1" (0.3 mgon)	Shortest possible range:	0.2 m (0.7 ft)
Automatic dual-axis level compensator range:	± 6' (100 mgon)	Positioning accuracy at 200 m (1 sigma):	<2 mm (0.007 ft)
Angle reading (least count)		Search time (typical):	<10 sec**
Arithmetic mean value (D-bar):	0.1" (0.01 mgon) (horizontal angle)	Search area:	360° (400 gon), or defined search window
Standard measurement:	1" (0.1 mgon)	Atmospheric correction:	–60 to 195 ppm continuously
Fast tracking:	2" (0.5 mgon)		
Distance Measurement			
Accuracy			
Standard measurement:	±(3 mm +2 ppm) ±(0.01 ft +2 ppm)		
Fast tracking:	±(10 mm +2 ppm) ±(0.03 ft +2 ppm)		
Light Source:	GaAs diode		

Notes:

* Range and accuracy are dependent on atmospheric conditions and background radiation. All specifications refer to the visibility condition "Standard clear" (23 km visibility in overcast or moderate sunlight conditions with no haze).

** Dependent on selected search window.

ATS MODE FOR MACHINE CONTROL AND DYNAMIC MEASUREMENT APPLICATIONS

Range to target 571233035:	Up to 700 m (2,300 ft)	Data output	
Search time (typical):	<10 sec**	Rate:	1–6 Hz selectable
Search area:	360° (400 gon), or defined search window	Timing:	± 1 ms
		Latency:	183 ms (including Georadio modem)
			83 ms (Direct RS232 connection)
		Synchronized measurement data:	<5 ms
Shortest range (with 571233035 target):	15 m (49 ft)	Accuracy to a target moving at 1 m/s (Standard deviation) ***	
Maximum acceleration of target on short distance		Horizontal:	± 2 mm + 14 ppm (0.007 ft + 14 ppm)
Radial acceleration:	9°/s ² (10 gon/s ²)	Vertical:	± 2 mm + 14 ppm (0.007 ft + 14 ppm)
Maximum velocity of target		Slope distance:	± 2 mm + 14 ppm (0.007 ft + 14 ppm)
Radial speed:	23°/s (25 gon/s)		
Axial speed:	6 m/s		

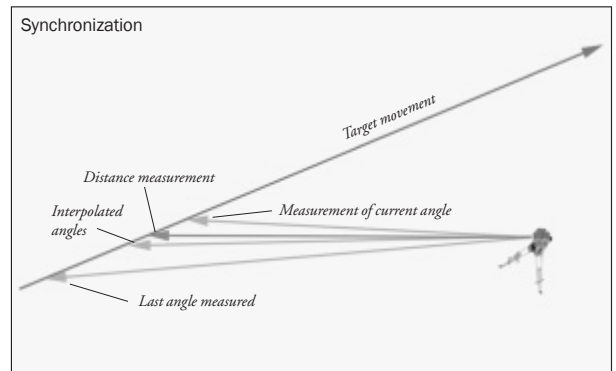
Synchronization and Latency

Synchronization

Synchronization of data from the angle and distance measurement sensors means that the output data is computed for a single instantaneous location of the moving machine, compared with standard total station instruments that are optimized for static prism measurement. This results in a higher 3D position accuracy for dynamic measurements or machine tracking applications.

Latency

The precise position of the machine at any given time is dependent on the age or latency of the positioning data received. If the age of the data is small and specific, the on board application software can compensate for the errors associated with the data age giving a more accurate location of the machine in real time.



Notes:

** Dependent on selected search window.

*** The accuracy stated is valid for a static target or a target moving at constant speed. During acceleration or retardation, or a target moving with high speed >15 kph (9.3 mph) the accuracy will decrease.

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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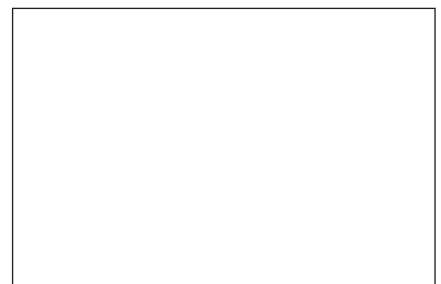
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