



Surveying

## Geodimeter® System 600



### Technical Specifications for Geodimeter® System 600 Total Stations

- 650S Pro, 640S Pro, 620S Pro, 610S Pro, 608S Pro
- 650M, 640M, 620M, 610M, 608M

# Geodimeter System 600 Servo PRO

Accuracy	650 Servo PRO	640 Servo PRO	620 Servo PRO	610 Servo PRO	608 Servo PRO
<b>Angle Measurement</b>					
Accuracy (Standard deviation based on DIN 18723)	0.3 mgon = 3" (1")	0.3 mgon = 3" (1")	0.5 mgon = 5" (2")	1.0 mgon = 10" (3")	1.5 mgon = 15" (5")
Angle reading (least count)					
Number of decimals can be specified by the user					
Arithmetic mean value (D-bar):	0.01 mgon = 0,1" (0,1")	0,01 mgon = 0,1" (0,1")	0,1 mgon = 1" (1")	0,1 mgon = 1" (1")	0,1 mgon = 1" (1")
	(horizontal angle)	(horizontal angle)			
Standard measurement:	0,1 mgon = 1" (1")	0,1 mgon = 1" (1")	0,1 mgon = 1" (1")	0,1 mgon = 1" (1")	0,1 mgon = 1" (1")
Fast tracking:	0,5 mgon = 5" (2")	0,5 mgon = 5" (2")	0,5 mgon = 5" (2")	0,5 mgon = 5" (2")	0,5 mgon = 5" (2")
Automatic level compensator					
Dual-axis compensator with a working range of:	±100 mgon = 10' (6')	±100 mgon = 10' (6')	±100 mgon = 10' (6')	±100 mgon = 10' (6')	±100 mgon = 10' (6')
<b>Distance Measurement</b>					
Accuracy M.S.E.					
Arithmetic mean value (D-bar):	±(1 mm + 1 ppm)	±(2 mm + 2 ppm)	±(2 mm + 2 ppm)	±(2 mm + 2 ppm)	±(3 mm + 3 ppm)
	±(0.003 ft + 1 ppm)	±(0.007 ft + 2 ppm)	±(0.007 ft + 2 ppm)	±(0.007 ft + 2 ppm)	±(0.01 ft + 3 ppm)
Standard measurement (STD):	±(2 mm + 2 ppm)	±(3 mm + 2 ppm)	±(3 mm + 2 ppm)	±(3 mm + 2 ppm)	±(5 mm + 3 ppm)
	±(0.007 ft + 2 ppm)	±(0.01 ft + 2 ppm)	±(0.01 ft + 2 ppm)	±(0.01 ft + 2 ppm)	±(0.016 ft + 3 ppm)
Fast standard (FSTD):	±(4 mm + 2 ppm)	±(8 mm + 2 ppm)	±(8 mm + 2 ppm)	±(8 mm + 2 ppm)	±(8 mm + 3 ppm)
	±(0.014 ft + 2 ppm)	±(0.025 ft + 2 ppm)	±(0.025 ft + 2 ppm)	±(0.025 ft + 2 ppm)	±(0.025 ft + 3 ppm)
Fast tracking - max 4m/sec. (TRK):	±(6 mm + 2 ppm)	±(10 mm + 2 ppm)	±(10 mm + 2 ppm)	±(10 mm + 2 ppm)	±(10 mm + 3 ppm)
	±(0.019 ft + 2 ppm)	±(0.032 ft + 2 ppm)	±(0.032 ft + 2 ppm)	±(0.032 ft + 2 ppm)	±(0.032 ft + 3 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)	0.2 m (0.7 ft)
Least count					
Arithmetic mean value (D-bar):	0.1 mm (0.0005 ft)	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)	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)	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)	10 mm (0.01 ft)
Measuring time:					
Arithmetic mean value (D-bar):	Users decision	Users decision	Users decision	Users decision	Users decision
Standard measurement (STD):	3.5 sec.	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.	1.3 sec.
Fast tracking (TRK):	0.4 sec.	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	Infrared GaAs diode
Beam divergence:	1.6 mrad (16 cm/100 m)	1.6 mrad (16 cm/100 m)	1.6 mrad (16 cm/100 m)	1.6 mrad (16 cm/100 m)	1.6 mrad (16 cm/100 m)
Atmospheric correction:	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously
<b>Range</b> (See page 3)	<b>Module 1</b> (Option)	<b>Module 2</b> (Option)	<b>Module 3</b> (Standard)	<b>Module 4</b> (Option)	<b>Module 5</b> (Standard)

## Specifications for Robotic Surveying

Range Robotic\*: Up to 700 m (2,300 ft) depending on type of RMT  
 Range Autolock\*: Up to 1000 m (3,200 ft) 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): 0.1 mgon = 1" (1")  
 Standard measurement: 0.1 mgon = 1" (1")  
 Fast tracking: 0.5 mgon = 5" (2")

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.

# Geodimeter System 600 Mechanical

Accuracy	650 Mechanical	640 Mechanical	620 Mechanical	610 Mechanical	608 Mechanical
<b>Angle Measurement</b>					
Accuracy (Standard deviation based on DIN 18723)	0.3 mgon = 3" (1")	0.3 mgon = 3" (1")	0.5 mgon = 5" (2")	1.0 mgon = 10" (3")	1.5 mgon = 15" (5")
Angle reading (least count)					
Number of decimals can be specified by the user					
Arithmetic mean value (D-bar):	0.01 mgon = 0,1" (0,1")	0.01 mgon = 0,1" (0,1")	0.1 mgon = 1" (1")	0.1 mgon = 1" (1")	0.1 mgon = 1" (1")
(horizontal angle)					
Standard measurement:	0.1 mgon = 1" (1")	0.1 mgon = 1" (1")	0.1 mgon = 1" (1")	0.1 mgon = 1" (1")	0.1 mgon = 1" (1")
Fast tracking:	0.5 mgon = 5" (2")	0.5 mgon = 5" (2")	0.5 mgon = 5" (2")	0.5 mgon = 5" (2")	0.5 mgon = 5" (2")
Automatic level compensator					
Dual-axis compensator with a working range of:	±100 mgon = 10' (6')	±100 mgon = 10' (6')	±100 mgon = 10' (6')	±100 mgon = 10' (6')	±100 mgon = 10' (6')
<b>Distance Measurement</b>					
Accuracy M.S.E.					
Arithmetic mean value (D-bar):	±(1 mm + 1 ppm)	±(2 mm + 2 ppm)	±(2 mm + 2 ppm)	±(2 mm + 2 ppm)	±(3 mm + 3 ppm)
	±(0.003 ft + 1 ppm)	±(0.007 ft + 2 ppm)	±(0.007 ft + 2 ppm)	±(0.007 ft + 2 ppm)	±(0.01 ft + 3 ppm)
Standard measurement (STD):	±(2 mm + 2 ppm)	±(3 mm + 2 ppm)	±(3 mm + 2 ppm)	±(3 mm + 2 ppm)	±(5 mm + 3 ppm)
	±(0.007 ft + 2 ppm)	±(0.01 ft + 2 ppm)	±(0.01 ft + 2 ppm)	±(0.01 ft + 2 ppm)	±(0.016 ft + 3 ppm)
Fast standard (FSTD):	±(4 mm + 2 ppm)	±(8 mm + 2 ppm)	±(8 mm + 2 ppm)	±(8 mm + 2 ppm)	±(8 mm + 3 ppm)
	±(0.014 ft + 2 ppm)	±(0.025 ft + 2 ppm)	±(0.025 ft + 2 ppm)	±(0.025 ft + 2 ppm)	±(0.025 ft + 3 ppm)
Fast tracking - max 4m/sec. (TRK):	±(6 mm + 2 ppm)	±(10 mm + 2 ppm)	±(10 mm + 2 ppm)	±(10 mm + 2 ppm)	±(10 mm + 3 ppm)
	±(0.019 ft + 2 ppm)	±(0.032 ft + 2 ppm)	±(0.032 ft + 2 ppm)	±(0.032 ft + 2 ppm)	±(0.032 ft + 3 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)	0.2 m (0.7 ft)
Least count					
Arithmetic mean value (D-bar):	0.1 mm (0.0005 ft)	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)	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)	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)	10 mm (0.01 ft)
Measuring time:					
Arithmetic mean value (D-bar):	Users decision	Users decision	Users decision	Users decision	Users decision
Standard measurement (STD):	3.5 sec.	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.	1.3 sec.
Fast tracking (TRK):	0.4 sec.	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	Infrared GaAs diode
Beam divergence:	1.6 mrad (16 cm/100 m)	1.6 mrad (16 cm/100 m)	1.6 mrad (16 cm/100 m)	1.6 mrad (16 cm/100 m)	1.6 mrad (16 cm/100 m)
Atmospheric correction:	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously	-60 to 195 ppm continuously
<b>Range</b>					
	<b>Module 1</b> (Option)	<b>Module 2</b> (Option)	<b>Module 3</b> (Standard)	<b>Module 4 Module 5</b> (Option) (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)
1 prism long range mode:	3500 m (2.2 miles)	2800 m (1.7 miles)			
With triple prism:	3500 m (2.2 miles)	2800 m (1.7 miles)	2100 m (1.3 miles)	2500 m (1.6 miles)	1800 m (1.1 miles)
3 prism long range mode:	4600 m (2.9 miles)	3900 m (2.5 miles)	2900 m (1.8 miles)		
With eight prisms:	4500 m (2.8 miles)	3800 m (2.4 miles)			
8 prism long range mode:	5800 m (3.6 miles)	5000 m (3.1 miles)			

\*Standard clear: No haze, overcast or moderate sunlight with very light heat shimmer.



## General Geodimeter System 600

**Aiming**  
 600S Pro: Servo-drive. Endless fine adjustment  
 600M: Two-speed fine adjustment slow-motion screws

**Levelling**  
 Circular level in tribrach: 8/2 mm  
 Electronic 2-axis level in the LC-display with a resolution of: 2 mgon = 20" (6")

**Centering:** Optical plumb in tribrach

**Telescope**  
 Coaxial  
 Magnification: 26X (30X optional)  
 Focussing range: 1.7 m to infinity  
 Field of view: 2.6 m at 100 m (8.6 ft at 330 ft)  
 Illuminated crosshair: Yes, variable (15 steps)

**Operating temperature:** -20°C to +50°C (-5°F to +122°F)

**Data input/output:**  
 600S Pro: RS-232C Two-way communication  
 600M: Geo I/O Two-way, RS-232C Two-way

**Batteries:**  
 Central unit/Side cover: rechargeable NiMH battery 12V, 1.6 Ah  
 rechargeable NiMH battery 12V, 1.2 Ah  
 External: rechargeable NiMH battery 12V, 3.5 Ah

**Power consumption:**  
 600S Pro: 0.4A – 0.9A depending on use of servo, tracker, radio and type of measurement mode.  
 600M: 0.4 A – 0.6 A

Weight	600S Pro	600M
Instrument (incl. a Keyboard unit):	6.3 kg (14 lbs)	5.8 kg (12.8 lbs)
Tribrach:	0.7 kg (1.5 lbs)	0.7 kg (1.5 lbs)
Internal battery:	0.4 kg (0.9 lbs)	0.4 kg (0.9 lbs)
Instrument for robotic surveying: (incl. Tracker and Built in radio)	7.4 kg (16.5 lbs)	

## Overview of upgrades and options

1. Standard side cover
2. Battery side cover
3. Radio side cover. Weight: 0.5 kg (1.0 lbs). Range: approx. 1 600 m (1 mile), depending on site conditions. Output: max 100 mW
4. Internal battery
5. Tracklight® A blinking guide-light which emits a red, white and green sector. The white represents the measuring beam.
6. Tracker (not available for 600M)
7. Internal memory 1 000 points
8. Internal memory 5 000 points
9. Internal memory 10 000 points
10. Numeric control unit, 22-keys, 4-row LCD, 20 characters/row, with illumination.
11. Internal software See separate description
12. Alphanumeric control unit, 33-keys, 4-row LCD, 20 characters/row, with illumination.
13. Range 2 500 m (1.6 miles), 1 prism (3 500 m, 2.2 miles, Long Range option)
14. Range 2 000 m (1.2 miles), 1 prism (2 800 m, 1.7 miles, Long Range option)
15. Range 1 500 m (0.9 miles), 1 prism (1 800 m, 1.1 miles, Long Range option)
16. Range 1 200 m (0.7 miles), 1 prism (1 800 m, 1.1 miles, Long Range option)
17. Accuracy 0.3 mgon 1"
18. Accuracy 0.5 mgon 2"
19. Accuracy 1.0 mgon 3"
20. Accuracy 1.5 mgon 5"
21. Panel attachment
22. Card memory
23. Memory card PCMCIA
24. Geodimeter® Geodat®Win
25. RMT Super (not available for 600M)
26. RMT/TS (not available for 600M)
27. RMT Mini
28. Large tiltable reflector
29. RMT, RMT Long Range (not available for 600M)

