



Angle Measurement

Horizontal Accuracy (Standard deviation based on DIN 18723)

3" (1.0 mgon)

Vertical Accuracy (Standard deviation based on DIN 18723)

2" (0.6 mgon)

Angle Reading (least count)

Standard

1" (0.3 mgon)

Tracking

2" (0.6 mgon)

Automatic Level Compensator

Dual-axis compensator +/- 5.4' (+/- 100 mgon)

Distance Measurement Accuracy (Standard Deviation), Prism Mode

Standard

$\pm(2 \text{ mm} + 2 \text{ ppm}) \pm(0.0065 \text{ ft} + 2 \text{ ppm})$

Tested standard deviation according to ISO17123-4

$\pm(1.5 \text{ mm} + 2 \text{ ppm}) \pm(0.0049 \text{ ft} + 2 \text{ ppm})$

Tracking

$\pm(10 \text{ mm} + 2 \text{ ppm}) \pm(0.032 \text{ ft} + 2 \text{ ppm})$

Dynamic Measurement Capability (Standard Deviation)

Synchronized Angle and Distance Measurements
Maximized Position Update Rate

No
2.5Hz

DR Mode

Standard Measurement

$\pm(3 \text{ mm} + 2 \text{ ppm}) \pm(0.01 \text{ ft} + 2 \text{ ppm})$

Tracking

$\pm(10 \text{ mm} + 2 \text{ ppm}) \pm(0.032 \text{ ft} + 2 \text{ ppm})$

Measuring Time, Prism Mode

Standard

2.0 seconds

Tracking

0.4 seconds

Measuring Time, DR Mode

Standard

3 to 15 seconds

Tracking

0.4 seconds

Range (under clear conditions), Prism Mode

1 prism

2,500 m (8,202 ft)

1 prism Long Range mode

N/A

3 prism

5,000 m (16,404 ft) max range

Shortest possible range

0.2 m (0.65 ft)

Range (under clear conditions), DR Mode

Kodak Gray Card (18% reflective)

>300 m (984 ft)

Kodak Gray Card (90% reflective)

>800 m (2625 ft)

Range (under difficult conditions), DR Mode

Kodak Gray Card (18% reflective)

>150 m (492 ft)

Kodak Gray Card (90% reflective)

>200 m (656 ft)

Typical ranges, DR Mode

Concrete

Wood construction

Metal construction

Light rock

Dark rock

Reflective foil 20 mm x 20 mm (0.7 in x .07 in)

>200 m (656 ft)

Reflective foil 60 mm x 60 mm (2.3 in x 2.3 in)

>500 m (1640 ft)

Shortest possible range

1.5m (4.9 ft)

DR Extended Range Mode

Kodak Gray Card (18% reflective)

N/A

Kodak Gray Card (90% reflective)

N/A

Accuracy

N/A

DR surface scan and surface profile speed

Specifications

SPS720 DR Total Station

Light Source	Laser diode 660 nm, Laser class 1 in Prism mode laser class 3R in DR mode Laser class 3R
Laser pointer coaxial (standard)	
Beam Divergence in Prism Mode	
Horizontal	4 cm/100 m (0.13 ft/328 ft)
Vertical	4 cm/100 m (0.13 ft/328 ft)
Beam Divergence in 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 continuous
Leveling	
Circular level in Tribrach	8/2 mm (8/0.007 ft)
Electronic 2-axis level in the LCD	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)
Positioning speed 360/180 degrees (400/200 gon)	3.2 sec
Positioning speed - Change Face I to Face II	3.2 sec
Clamps and slow motions	Servo-driven, endless fine adjustment
Centering	
Centering system	Trimble 3-pin
Optical plummet	Alidade optical plummet
Magnification/shortest focusing distance	2.3x/0.5 m – infinity (1.6 ft – infinity)
Telescope	
Magnification	30x
Aperture	40 mm (1.57 inches)
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)
Built-in tracklight	Standard
Operating temperature	-20 °C to +50 °C (-4 °F to +122 °F)
Dust and water proofing	IP55
Focus type	Servo assisted on side cover
Power Supply	
Internal battery	Rechargeable Li-Ion battery 11.1 V, 4.4 Ah
Operating Time	
One internal battery	Approximately 6 hours
Three internal batteries in multi-battery adaptor	Approximately 18 hours
Robotic holder with one internal battery	Approximately 12 hours
Weight	
Instrument (Servo/Autolock)	5.15 kg (11.35 lb)
Instrument (Robotic)	5.25 kg (11.57 lb)
Trimble CU Controller	N/A
Tribrach	0.7 kg (1.54 lb)
Internal battery	0.35 kg (0.77 lb)
	196 mm (7.71 in)
Trunnion axis Height	
Handle	Detachable and eccentric for unrestricted sighting
Range	
Robotic	300 - 500 m (984 - 1,640 ft)
Autolock	300 - 500 m (984 - 1,640 ft)
Autolock to Trimble MT1000 Target	500 m (1,640 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	
Standard	1" (0.3 mgon)
Tracking	2" (0.6 mgon)
Averaged observations	0.1" (0.03 mgon)
Type of radio	2.4 GHz frequency-hopping, spread-spectrum radios
Search time	2 – 10 s
Search area	360 degrees (400 gon) or defined horizontal and vertical search window
Communication	USB, Serial

Specifications

SPS720 DR Total Station

Machine Control Specifications

Machine Control Capable	No
Range to target (MT900)	N/A
Search time	N/A
Search area	N/A
Maximum acceleration of target at short distance 2 m (6.5 ft) radial acceleration	N/A

Maximum velocity of target

Radial speed	N/A
Axial speed	N/A

Data Output

Rate	N/A
Data Timing	N/A
Data Latency	N/A
Synchronized measurement data	N/A

Accuracy to a target moving at 1 m/s (Standard deviation)

Horizontal	N/A
Vertical	N/A
Slope Distance	N/A

Models Available

Robotic only

Upgradable

No

Specifications subject to change without notice.

© 2010, Trimble Navigation Limited. All rights reserved. Trimble, and the Globe & Triangle logo are trademarks of Trimble Navigation Limited, registered in the United States and in other countries. All other trademarks are the property of their respective owners. PN 022482-1535

Trimble Heavy and Highway Business Area

5475 Kellenburger Road
Dayton, Ohio 45424
USA

800-538-7800 (Toll Free)
+1-937-245-5154 Phone
+1-937-233-9441 Fax

www.trimble.com