

# Specifications

# SPS720 DR Total Station



## 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  $\pm(5 \text{ mm} + 2 \text{ ppm}) \pm(0.016 \text{ ft} + 2 \text{ ppm})$

## Dynamic Measurement Capability (Standard Deviation)

Synchronized Angle and Distance Measurements No

Maximized Position Update Rate 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

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## DR surface scan and surface profile speed

### 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

# Specifications

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<b>Communication</b>	USB, Serial
<b>Machine Control Specifications</b>	
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
<b>Maximum velocity of target</b>	
Radial speed	N/A
Axial speed	N/A
<b>Data Output</b>	
Rate	N/A
Data Timing	N/A
Data Latency	N/A
Synchronized measurement data	N/A
<b>Accuracy to a target moving at 1 m/s (Standard deviation)</b>	
Horizontal	N/A
Vertical	N/A
Slope Distance	N/A
<b>Models Available</b>	Robotic only
<b>Upgradable</b>	No

Specifications subject to change without notice.

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