

Leica Viva TPS Datasheet



Best-in-class Electronic Distance Measurement (EDM)

With PinPoint EDM, Viva TPS delivers the optimal balance of range, accuracy, reliability, beam visibility, laser dot size and measurement time.

- 1 mm + 1.5 ppm to prism
- 2 mm + 2 ppm to any surface
- 1000 m range without a prism



Best-in-class One-Person-Surveying

Viva TPS uses years of experience to optimally combine the world's best total station sensors: angles, distances, drives and the patented PowerSearch target recognition camera.

- **Search** – the unique PowerSearch finds your prism within seconds
- **Lock** – Viva TPS stays locked onto your prism in the most demanding environments
- **Measure** – PinPoint EDM seamlessly harmonizes with precise angle sensors to complete the measurement process



Leica Viva GNSS Add-on

Add full GNSS functionality to your Viva TPS whenever you want and combine TPS and GNSS in the most efficient way.

- Use SmartStation for TPS setup without the need of control points, traverses and resections
- Use SmartPole to save time with setup 'On-the-fly' and measure parallel with TPS and GNSS for double productivity

- when it has to be **right**

Leica
Geosystems

Technical Specifications TPS1200+



Leica Viva TPS	TC	TCR	TCRM	TCA	TCP	TCRA	TCRP
Angle measurement	●	●	●	●	●	●	●
Distance measurement (Prism)	●	●	●	●	●	●	●
Distance measurement (Non-Prism)		●	●			●	●
Motorized			●	●	●	●	●
Automatic Target Recognition (ATR)				●	●	●	●
PowerSearch (PS)					●		●
Guide Light (EGL)	○	○	○	●	●	●	●
Remote Control Unit / RadioHandle	○	○	○	○	○	○	○
GUS74 Laser Guide				○		○	
SmartStation (GS15, GS09)	○	○	○	○	○	○	○
● = Standard ○ = Optional							
<div>Angular Measurement</div> <div></div>	Accuracy Hz, V ¹			1'' (0.3 mgon), 2'' (0.6 mgon), 3'' (1 mgon), 5'' (1.5 mgon)			
	Display resolution			0.1'' (0.1 mgon)			
	Method			absolute, continuous, diametrical			
	Compensation			Quadruple axis compensation			
	Compensator setting accuracy			0.5'' (0.2 mgon), 0.5'' (0.2 mgon), 1.0'' (0.3 mgon), 1.5'' (0.5 mgon)			
<div>Distance Measurement</div> <div></div>	Distance Measurement (Prism)						
	Range ²						
	Round prism (GPR1)			3500 m (12000 ft)			
	3 Round prisms (GPR1)			5400 m (17700 ft)			
	360° prism (GRZ4, GRZ122)			2000 m (7000 ft)			
	360° mini prism (GRZ101)			1000 m (3300 ft)			
	Mini prism (GMP101)			2000 m (7000 ft)			
	Reflective tape (60 mm x 60 mm)			250 m (800 ft)			
	Accuracy ^{3,4} / Measurement Time						
	Standard			1 mm + 1.5 ppm			
	Fast			3 mm + 1.5 ppm			
	Tracking			3 mm + 1.5 ppm			
	Averaging			1 mm + 1.5 ppm			
	Typical Measurement Time ⁵			0.8 s			
	Distance Measurement (Non-Prism)						
	Range ⁶						
	PinPoint R400			400 m (1310 ft)			
	PinPoint R1000			1000 m (3280 ft)			
	Accuracy ^{3,7} / Measurement Time						
	PinPoint R400 / R1000			2 mm + 2 ppm / typ. 3 s			
	Distance Measurement (Long-range)						
	Long-range ^{2,4}			>10000 m (>32800 ft)			
	Accuracy ^{3,6} / Measurement Time						
	Long-range			5 mm + 2 ppm / typ. 2.5 s			
	General						
	Display resolution			0.1 mm			
	Shortest measurable distance			1.5 m			
	Method			System analyzer based on phase shift measurement (coaxial, visible red laser)			
	Laser dot size (Non-Prism)			At 30 m: 7 mm x 10 mm, at 50 m: 8 mm x 20 mm			
<div>General</div> <div></div>	Telescope						
	Magnification			30 x			
	Free objective aperture			40 mm			
	Field of view			1° 30' (1.66 gon) / 2.7 m at 100 m			
	Focusing range			1.7 m to infinity			
	Keyboard and Display						
	Display			1/4 VGA (320*240 pixels), graphic LCD, color, illumination, touch screen			
	Keyboard			34 keys (12 function keys, 12 alphanumeric keys), illumination			
	Position			face I standard / face II optional			
	Data storage						
	Internal memory / Memory card			256 MB (optional) / CompactFlash cards (256 MB)			
	Number of data records			1750 / MB			
	Interface			RS232, Bluetooth® Wireless-Technology (optional)			
	Operation						
	Sensitivity of Circular level			6' / 2 mm			
	Centering accuracy of Laser plummet			1.5 mm at 1.5 m			
	Number of drives			1 horizontal / 1 vertical			
	Power Management						
	Internal Battery			Lithium Ion			
	Operating Time			5 – 8 h (GEB221)			
	Voltage / Capacity			7.4 V / 4.4 Ah			
	Weight and Dimensions						
	Weight of Total Station / Battery GEB221 / Tribrach GEB121			4.8 – 5.5 kg / 0.2 kg / 0.8 kg			
	Height / Width / Length			345 mm / 226 mm / 203 mm			
	Environmental specifications						
	Working / Storage temperature range			-20° C to +50° C / -40° C to +70° C			
	Dust / water (IEC 60529) / Humidity			IP54 / 95%, non-condensing			
	Working Range			5 – 150 m			
	Positioning accuracy			5 cm at 100 m			

Leica Viva One-Person-Surveying



Motorization



Rotation speed 45° (50 gon) / s

Automatic Target Recognition (ATR)



Range	ATR Mode	Lock Mode
Round prism (GPR1)	1000 m (3300 ft)	800 m (2600 ft)
360° prism (GRZ4, GRZ122)	800 m (2600 ft)	600 m (2000 ft)
360° mini prism (GRZ101)	350 m (1150 ft)	300 m (1000 ft)
Mini prism (GMP101)	500 m (1600 ft)	400 m (1300 ft)
Reflective tape (60 mm x 60 mm)	55 m (175 ft)	-
Shortest distance to 360° prism	1.5 m	5 m
Accuracy¹ / Measurement Time		
ATR angle accuracy Hz, V	1" (0.3 mgon)	
Base positioning accuracy	±1 mm	
Measurement Time for GPR1	3 – 4 s	
Maximum speed (Lock Mode)		
Tangential (standard mode)	5 m / s at 20 m, 25 m / s at 100 m	
Radial (tracking mode)	4 m / s	
Searching		
Search time in field of view	Typ. 1.5 s	
Field of view	1° 30' (1.66 gon)	
Definable search windows	Yes	
Method		
Digital Image processing		
Range		
Round prism (GPR1)	300 m (1000 ft)	
360° reflector ⁸ (GRZ4, GRZ122)	300 m (1000 ft)	
Mini prism (GMP101)	100 m (330 ft)	
Shortest distance	1.5 m	
Searching		
Typical search time	5 – 10 s	
Default search area	Hz: 360° (400 gon), V: 36° (40 gon)	
Definable search windows	Yes	
Method		
Digital Image processing (rotating laser fan)		

Power Search (PS)



Leica Viva SmartStation



GNSS Add-on



Position accuracy^{9,10}	Horizontal: 10 mm + 1 ppm, Vertical: 20 mm + 1 ppm
RTK Initialization	
Reliability / Time of initialization	>99.99% / Typically 8 s, with 5 or more satellites on L1 and L2
Range	Up to 50 km, assuming reliable data-link is available
RTK Data formats for data reception	Leica proprietary formats (Leica, Leica Lite, Leica 4G), GPS and GNSS real-time data formats, CMR, CMR+, RTCM v2.1 / 2.3 / 3.0 / 3.1
GNSS Antenna	
Number of channels	GS15: 120 GS09: 120
Dimensions (diameter x height)	GS15: 196 mm x 198 mm GS09: 186 mm x 89 mm
Weight (w/o battery)	GS15: 1.34 kg GS09: 0.96 kg

¹ Standard deviation ISO 17123-3

² Overcast, no haze, visibility about 40 km; no heat shimmer

³ Standard deviation ISO 17123-4

⁴ To Round Prism GPR1

⁵ Fast Mode

⁶ Object in shade, sky overcast, Kodak Grey Card (90% reflective)

⁷ Distance >500 m 4 mm + 2 ppm

⁸ Target perfectly aligned to the instrument

⁹ Measurement precision and accuracy in position and accuracy in height are dependent upon various factors including number of satellites, geometry, observation time, ephemeris accuracy, ionospheric conditions, multipath etc. Figures quoted assume normal to favorable conditions. Times can also not be quoted exactly. Times required are dependent upon various factors including number of satellites, geometry, ionospheric conditions, multipath etc. The following accuracies, given as root mean square, are based on real-time measurements.

¹⁰ When used within reference station networks the position accuracy is in accordance with the accuracy specifications provided by the reference station network.

Whether you want to stake-out an object on a construction site or you need accurate measurements of a tunnel or a bridge; whether you want to determine the area of a parcel of land or need the position of a power pole or to capture objects for as-built maps – you need reliable and precise data.

Leica Viva combines a wide range of innovative products designed to meet the daily challenges for all positioning tasks. The simple yet powerful and versatile Leica Viva hardware and software innovations are redefining state-of-the-art technology to deliver maximum performance and productivity. Leica Viva gives you the inspiration to make your ambitious visions come true.

When it has to be right.



Total Quality Management –
our commitment to total
customer satisfaction.

**Distance meter (Prism),
ATR and PowerSearch:**
Laser class 1 in accordance
with IEC 60825-1 resp. EN
60825-1

Laser plummet:
Laser class 2 in accordance
with IEC 60825-1 resp. EN
60825-1

Distance meter (Non-Prism):
Laser class 3R in accordance
with IEC 60825-1 resp. EN
60825-1



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Overview brochure



Leica Viva GNSS
Product brochure



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Viva**
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Leica Viva LGO
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Leica Zeno
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