

Leica Viva TS15

Datasheet



Best-in-class Imaging

Optimize your productivity with exact photo documentation of site conditions. With live streaming of the total station view, you always know what the total station sees. Measure all points without returning to the total station.

- **Image Notes** – Capture an image, screenshot or template, sketch on it and link it to any object in the database.
- **Image Assisted Surveying** – Simply tap on the display and the total station will turn and measure the desired target.



Best-in-class One-Person-Surveying

Viva TS15 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 TS15 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 TS15 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

Technical Specifications TS15



Leica Viva TS15		TS15 M	TS15 A	TS15 G	TS15 P	TS15 I	
Angle measurement		●	●	●	●	●	
Distance measurement to prism		●	●	●	●	●	
Distance measurement to any surface (reflectorless)		●	●	●	●	●	
Motorized		●	●	●	●	●	
Automatic Target Aiming		–	●	●	●	●	
PowerSearch (PS)		–	–	–	●	●	
Overview Camera		–	–	–	–	●	
RS232, USB and SD card interface		●	●	●	●	●	
Bluetooth		●	●	●	●	●	
Internal Flash Memory (1GB)		●	●	●	●	●	
Hotshoe interface for radiohandle		●	●	●	●	●	
Guide Light (EGL)		●	●	–	●	●	
Laser Guide		–	–	●	–	–	
SmartStation/SmartPole GS15 GNSS receiver		○	○	○	○	○	
SmartStation/SmartPole GS14 GNSS receiver		○	○	○	○	○	
SmartStation/SmartPole GS12 GNSS receiver		○	○	○	○	○	
Radio field controller CS10/CS15		○	○	○	○	○	
		● = Standard	○ = Optional	– = Not available			
<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)					
	Distance Measurement (Prism)						
<div>Distance Measurement</div> <div></div>	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 / typ. 2.4 s					
	Fast	2 mm + 1.5 ppm / typ. 0.8 s					
	Continuous	3 mm + 1.5 ppm / typ. <0.15 s					
	Distance Measurement (Any Surface)						
	Range ⁶						
	PinPoint R30 / R400 / R1000	30 m (98 ft) / 400 m (1310 ft) / 1000 m (3280 ft)					
	Accuracy ^{3,7} / Measurement Time						
	PinPoint R30 / 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>	Operating system & Processor					
Operating System		Windows CE 6.0					
Processor		Freescale i.MX31 533 MHz ARM Core					
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		640 x 480 pixel (VGA) color TFT with LED backlight and touch screen					
Keyboard		36 keys (12 function keys, 12 alphanumeric keys), illumination					
Position		face I standard / face II optional					
Memory, Ports & Communication							
Internal memory / Memory devices		1 GB (nonvolatile NAND Flash) / SD card, USB stick					
Interfaces		RS232, Bluetooth® Wireless-Technology, USB mini AB OTG					
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 GDF121		4.9 – 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		IP55 / 95%, non-condensing					
<div>Guide Light (EGL)</div> <div></div>		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 Aiming (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* (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 Imaging



Wide-angle Camera



Sensor	5 Mpixel CMOS sensor
Focal Length	21 mm
Field of view	15.5° x 11.7° (19.4° diagonal)
Frame rate	20 frames per second
Focus	2 m (6.5 feet) to infinity
Image storage	JPEG up to 5 Mpixel (2560 x 1920)
Zoom	3-step (1x, 2x, 4x)
Whitebalance	User configurable
Brightness	User configurable

Leica Viva SmartStation



Add-on GS15/GS14/GS12



Position accuracy ^{9,10}	Horizontal: 10 mm + 1 ppm, Vertical: 20 mm + 1 ppm		
RTK Initialization			
Reliability	>99.99%		
Time of initialization ¹¹	GS15/GS14/GS12 4 s, GS08plus 6 s		
Range	Up to 50 km, assuming reliable data-link is available		
RTK Data formats for data reception	Leica proprietary formats (Leica, Leica 4G), GPS and GNSS real-time data formats, CMR, CMR+, RTCM v2.1 / 2.2 / 2.3 / 3.x		
GNSS Antenna			
Number of channels	GS15/GS14/GS12/GS08plus: 120		
Dimensions (diameter x height)	GS15: 196 mm x 198 mm GS12: 186 mm x 89 mm	GS14: 190 mm x 90 mm GS08plus: 186 mm x 71 mm	
Weight	GS15: 1.34 kg GS12: 1.05 kg	GS14: 0.93 kg GS08plus: 0.75 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, accuracy and reliability are dependent upon various factors including number of satellites, geometry, obstructions, 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.

¹¹ Might vary due to atmospheric conditions, signal multipath, obstructions, signal geometry and number of tracked signals.