

Leica Total Station Comparison



Nova **MS60**



Viva **TS16**








Nova **TS60**



Nova **TM50**



Viva **TS12**

	MULTISTATION				ROBOTIC TOTAL STATION					
ANGLE MEASUREMENT										
Accuracy ¹ Hz and V	Absolute, continuous, quadruple	1" (0.3 mgon)	Absolute, continuous, diametrical	1" (0.3 mgon), 2" (0.6 mgon), 3" (1 mgon), 5" (1.5 mgon)	Absolute, continuous, quadruple	0.5" (0.15 mgon)	Absolute, continuous, quadruple	0.5" (0.15 mgon) or 1" (0.3 mgon)	Accuracy Hz, V 1	2" (0.6 mgon), 3" (1 mgon), 7" (2 mgon)
DISTANCE MEASUREMENT										
Range ²	Prism (GPR1, GPH1P) 3 Non-Prism / Any surface 4	1.5m to >10,000m 1.5m to 2000m	Prism (GPR1, GPH1P) 3 Non-Prism / Any surface 4	1.5m to 3500m R500: 1.5m to >500m, R1000: 1.5m to >1000m	Prism (GPR1, GPH1P) 3 Non-Prism / Any surface 4	1.5m to 3500m 1.5m to >1000m	Prism (GPR1, GPH1P) 3 Non-Prism / Any surface 4	1.5 m to 3500 m 1.5 m to >1000 m	Round prism (GPR1) 360° prism (GRZ4, GRZ122)	3500 m (12000 ft) 2000 m (7000 ft)
Accuracy / Measurement time	Single (prism) 2,5 Single (any surface) 2,4,5,6	1mm + 1.5ppm / typically 1.5s 2mm + 2ppm / typically 1.5s	Single (prism) 2,5 Single (any surface) 2,4,5,6	1mm + 1.5ppm / typically 2.4s 2mm + 2ppm / typically 3s	Single (prism) 2,5 Single (any surface) 2,4,5,6	0.6mm + 1ppm / typically 2.4s 2mm + 2ppm / typically 3s	Single (prism) 2-5 Single (Any surface) >A,5,6	0.6 mm+ 1 ppm/ typ. 2.4 s 2 mm + 2 ppm / typ. 3 s	Standard Tracking	1 mm + 1.5 ppm / 2.4 s 3 mm + 1.5 ppm / < 0.15 s
Laser dot size	At 50m	8mm x 20mm	At 50m	8mm x 20mm	At 50m	8mm x 20mm	at 50 m	8 mm x 20 mm	at 50 m	8 mm x 20 mm
Measurement technology	Wave Form Digitising	Coaxial, visible red laser	System analyser	Coaxial, visible red laser	System analyser	Coaxial, visible red laser	System Analyser	coaxial, visible red laser		
IMAGING										
Overview and telescope camera	Sensor Field of view Frame rate	5 megapixel CMOS sensor 19.4° / 1.5° Up to 20 frames per second	Sensor Field of view Frame rate	5 megapixel CMOS sensor 19.4° Up to 20 frames per second	Sensor Field of view Frame rate	5 megapixel CMOS sensor 19.4° / 1.5° Up to 20 frames per second	Sensor Field of view Frame rate	5 Mpixel CMOS sensor 19.4° / 1.5° Up to 20 frames per second		
MOTORISATION										
Direct drives based on Piezo technology	Rotation speed / Time to change face	Maximum 200 gon (180°) per s / typically 2.9s			Rotation speed Time to change face	Maximum 200 gon (180°) / s Typically 2.9s	Rotation speed Time to Change Face	max. 200 gon (180°) / s typ. 2.9 s	Rotation speed	45° (50 gon) / s
AUTOMATIC AIMING - ATRplus										
Target aiming range ² / Target locking range ²	Circular prism (GPR1, GPH1P) 360° prism (GRZ4, GRZ122)	1500m / 1000m 1000m / 1000m	Circular prism (GPR1, GPH1P) 360° prism (GRZ4, GRZ122)	1500m / 1000m 1000m / 1000m	Circular prism (GPR1, GPH1P) 360° prism (GRZ4, GRZ122)	1500m / 1000m 1000m / 1000m	Circular prism (GPR1, GPH1P) 360° prism (GRZ4, GRZ122)	3000m 1500 m	Round prism (GPR1) 360° prism (GRZ4, GRZ122)	1000m 800 m
Accuracy ^{1,2} / Measurement time	ATRplus angle accuracy Hz, V	1" (0.3 mgon) / typically 2.5s	ATRplus angle accuracy Hz, V	1" (0.3 mgon), 2" (0.6 mgon), 3" (1 mgon), 5" (1.5 mgon) / typically 3-4s	ATR angle accuracy Hz, V	0.5" (0.15 mgon) / typically 3-4s	ATR angle accuracy Hz, V	0.5" (0.15 mgon) or 1" (0.3 mgon) / typ. 3-4 s	ATR angle accuracy Hz, V	1" (0.3 mgon)
POWERSEARCH										
Range / Search time	360° prism (GRZ4, GRZ122)	300m / typically 5s	360° prism (GRZ4, GRZ122)	300m / typically 5s	360° prism (GRZ4, GRZ122)	300m / typically 5s				
GUIDE LIGHT (EGL)		✓		✓		✓		✓		✓
Working range / Accuracy										
GENERAL										
Field software	 Leica Captivate with apps		 Leica Captivate with apps		 Leica Captivate with apps		 Leica Captivate with apps		 Leica Viva	
Autofocus telescope	Magnification / Focus Range	30 x / 1.7m to infinity			Magnification / Focus range	30 x / 1.7m to infinity	Magnification / Focus Range	30 x / 1.7 m to infinity		
Power management	Lithium-Ion	Operating time 7-9 h	Lithium-Ion	Operating time 5-8 h	Lithium-Ion	Operating time 7-9 h	Lithium-Ion	Operating Time 7-9 h	Lithium-Ion	Operating Time 5-8 h
Data storage	Internal memory Memory card	2 GB SD card 1 GB or 8 GB	Internal memory Memory card	2 GB SD card 1 GB or 8 GB	Internal memory Memory card	2 GB SD card 1 GB or 8 GB	Internal memory Memory card	1 GB SO card 1 GB or 8 GB	Internal memory Memory card	2 GB SD card 1 GB or 8 GB
Interfaces	RS232, USB, Bluetooth®, WLAN		RS232, USB, Bluetooth®, WLAN		RS232, USB, Bluetooth®, WLAN		RS232, USB, Bluetooth®, WLAN		RS232, USB, Bluetooth®, WLAN	
Weight	Instrument including battery	7.7kg	Total station including battery	5.3 - 6kg	Instrument including battery	7.7kg	Instrument including battery	7.6 kg	Instrument including battery	5 - 5.7 kg
Environmental specifications	Working temperature range Dust & Water Humidity	-20°C to +50°C IP65 95%, non-condensing	Working temperature range Dust / Water Humidity	-20°C to +50°C IP65 95%, non-condensing	Working temperature range Dust & Water Humidity	-20°C to +50°C IP65 95%, non-condensing	Working temperature range Dust & Water (IEC60529) / Blowing rain Humidity	-20°C to +50°C IP 65 95%, non-condensing	Working temperature range Dust / water Humidity	-20° C to +50° C IP54 95%, non-condensing

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