Leica Nova TM60

Data sheet



Leica Geosystems' new monitoring solution comes with a strong promise: real-time information and reports you can always rely on, helping you make informed decisions in time and on time. Be it settling, flexing, shifting, sliding or any other change of state – you will have it under control 24 hours a day, seven days a week. The robust, precise and enduring TM60 comes with the world's longest ATRplus range, half-second automatic aiming accuracy, advanced imaging and the longest continuous operation. Combined with the Leica GeoMoS monitoring solution, you will be able to react to complex demands of any project – be it continuous or periodic. The decision is easy: maximum safety, minimum risk, half-second at a time.

LEICA NOVA TM60 MONITORING STATION: MONITOR IT.

- Permanent monitoring (24/7): remote operation, continuous monitoring, real-time measurement data, robust against various environmental conditions.
- Campaign monitoring (periodical): flexible instrument setup, automated measurements, Leica Captivate field software, dedicated monitoring app, connectivity to cloud services.
- **Buildings and structures:** monitoring of buildings, skyscrapers, industrial and sports facilities, offshore and underground structures.
- **Transportation infrastructure:** monitoring of tunnels, railway, bridges, roads & highways, airports, ports & canals.
- Environmental monitoring: monitoring of landslides, rock falls, subsidence.
- **Energy infrastructure:** monitoring of dams, oil & gas, nuclear facilities, pipelines power plants.
- Mining: monitoring of slope stability, high walls and quarries.





Leica Nova TM60 Monitoring Station

ANGLE MEASUREMENT		
Accuracy¹ Hz and V	Absolute, continuous, quadruple	0.5" (0.15 mgon) or 1" (0.3 mgon)
DISTANCE MEASUREMENT		
Range ²	 Prism (GPR1, GPH1P)³ Non-Prism / Any surface⁴ 	0.9 m to 3,500 m 0.9 m to >1,000 m
Accuracy / Measurement time	 Single (prism) ^{2,5} Single (any surface) ^{2,4,5,6} 	0.6 mm + 1 ppm / typ. 2.4 s 2 mm + 2 ppm / typ. 2 s $^{\circ}$
Laser dot size	At 50 m	8 mm x 20 mm
Measurement technology	System analyser	Coaxial, visible red laser
IMAGING ⁷		
Overview and telescope camera	SensorField of view (overview / telescope)Frame rate	5 megapixel 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 2.9 s
AUTOMATIC AIMING - LONG RANGE ATRPI	us	
Target aiming range ²	Circular prism (GPR1, GPH1P)360° prism (GRZ4, GRZ122)	■ 3,000 m ■ 1,500 m
Accuracy ^{1,2} / Measurement time	ATRplus angle accuracy Hz, V	0.5" (0.15 mgon) or 1" (0.3 mgon) / typically 3-4
GENERAL		
Operating System / Field Software	Windows EC7 / Leica Captivate with apps	
Processor	TI OMAP4430 1GHz Dual-core ARM® Cortex™- A9	MPCore™
Autofocus ⁸ telescope	Magnification / Focus Range	30 x / 1.7m to infinity
Display and keyboard	5" (inch), WVGA, colour, touch, Face 1 standard, Face 2 optional	37 keys, illumination
Operation	3x endless drives, 1x Servofocus drive, 2x Autofoc	us keys ⁸ , user-definable SmartKey
Power management	Exchangeable Lithium-lon battery with internal charging capability	Operating Time up to 9 h
Data storage	■ Internal memory	2 GB
	Memory card	SD card 1 GB or 8 GB
Interfaces	RS232, USB, Bluetooth®, WLAN	
Weight	Total station including battery	7.2 kg
Environmental specifications	 ■ Working temperature range ■ Dust & Water (IEC 60529) / Blowing rain ■ Humidity 	-20°C to +50°C IP65 / MIL-STD-810G, Method 506.5-I 95%, non-condensing

- ¹ Standard deviation ISO 17123-3

- Overcast, no haze, visibility about 40 km, no heat shimmer
 O.9 m to 2,000 m for 360° prisms (GRZ4, GRZ122)
 Object in shade, sky overcast, Kodak Gray Card (90% reflective)
- ⁵ Standard deviation ISO 17123-4



Laser radiation, avoid direct eye exposure.
Class 3R laser product in accordance with IEC 60825-1:2014.

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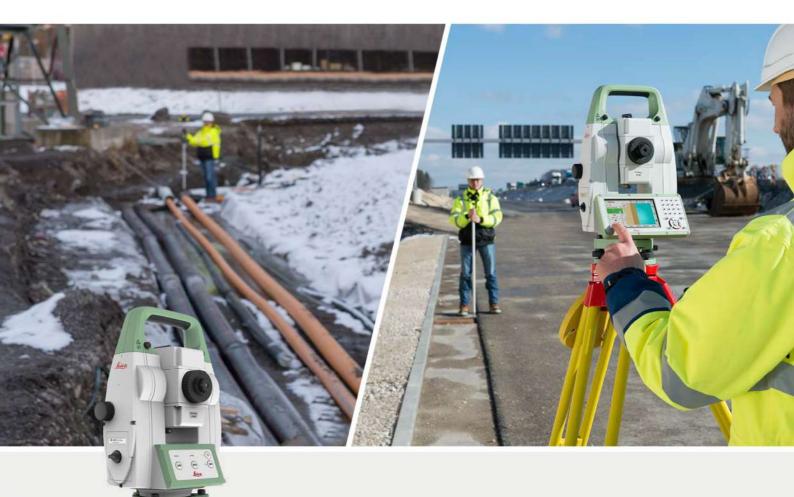
- $^{\rm o}$ Distance > 500 m: Accuracy 4 mm + 2 ppm, Measurement Time typ. 6 s $^{\rm 7}$ Available on TM60 I models
- ⁸ Autofocus for TM60 I models, Servofocus only for TM60 models
- 9 Up to 50 m, max. measurement time 15 s for full range





Leica TS13

Data sheet

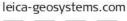


Sometimes you need your instrument to grow with your projects. The Leica TS13 empowers you to start with two-person mode and upgrade the instrument gradually to a robotic total station. You decide when to upgrade it - you can choose a different keyboard, add lock to follow a moving target or include robotic capabilities with SpeedSearch and controller connectivity via a radio handle. The TS13 comes with AutoHeight, helping you to setup your instrument error-free.

LEICA TS13 TOTAL STATION: COLLECT IT.

- Efficient data collection for mapping projects: measurements, adjustments, and computations - all supported by powerful coding and linework routines.
- Easy-to-use and data-centric field software: efficient data collection, management, visualisation, import and export.
- Upgradeable total station for measurement and layout tasks: starting with two-person, scalable to one-person operation.
- Accurate and effective stakeout and construction measurements: automated routines for both two-person and one-person design data layout, as-built checks, and BIM tasks.















Leica TS13 Total Station

Basic variant



ANGLE MEASUREMENT		
Accuracy ¹ Hz and V	■ Absolute, continuous, diametrical	1" (0.3 mgon), 2" (0.6 mgon), 3" (1 mgon), 5" (1.5 mgon)
DISTANCE MEASUREMENT		
Range ²	■ Prism (GPR1, GPH1P) ³ ■ Non-Prism / Any surface ⁴	0.9 m to 3,500 m R500: 0.9 m to >500 m R1000: 0.9 m to >1,000 m
Accuracy / Measurement time	 Single (prism) ^{2,5} Single (prism fast) ^{2,5} Single (any surface) ^{2,4,5,6} 	1 mm + 1.5 ppm / typically 2.4 s 2 mm + 1.5 ppm / typically 1.5 s 10 2 mm + 2 ppm / typically 2 s 9
Laser dot size	At 50m	8 mm x 20 mm
Measurement technology	System analyser	Coaxial, visible red laser
AUTOMATIC AIMING - ATR		
Target aiming range ²	Circular prism (GPR1, GPH1P)360° prism (GRZ4, GRZ122)	■ 1,000 m ■ 800 m
Accuracy 1,2 / Measurement time	ATR angle accuracy Hz, V	1" (0.3 mgon), 2" (0.6 mgon), 3" (1 mgon), 5" (1.5 mgon) / typically 3-4 s
GUIDE LIGHT (EGL)		
Working range / Accuracy		5 - 150 m / typically 5 cm @ 100 m
GENERAL		
Processor	TI OMAP4430 1 GHz Dual-core ARM® Cor	tex™- A9 MPCore™
AutoHeight module for automatic instrument height measurement	Distance accuracyDistance range	1.0 mm (1 Sigma) 0.7 m to 2.7 m
Power management	Exchangeable Lithium-lon battery	Operating time up to 8 h
Field software	Leica Captivate with apps	Running on field controller
Data storage	Internal memory 2 GBSD card 1 GB or 8 GB	On field controller
Interfaces	RS232, USB, Bluetooth®, WLAN	
Weight	Total station including battery	5.0 kg
Environmental specifications	Working temperature rangeDust / Water (IEC 60529) / Humidity	−20°C to +50°CIP55 / 95%, non-condensing

Upgrades7



KEYBOARD DISPLAY UNIT (Optional)

Keyboard with display	Face I and face II optional	5" (inch), WVGA, colour, touch 25 keys, illumination
Field software	Leica Captivate including apps	Running on TS13 instrument
Data storage	Internal memory 2 GB SD card 1 GB or 8 GB	On TS13 instrument
Weight	Total station including battery	5.3 kg
TARGET LOCK (Optional)		
Target locking range ²	Circular prism (GPR1, GPH1P)	■ 800 m
	360° prism (GRZ4, GRZ122)	■ 600 m

ROBOTIC SURVEYING including PRISM FAST SEARCH (Optional) 11

SpeedSearch range / Search time	360° prism (GRZ4, GRZ122)	300 m / Typically 7 s	
Robotic range with long-range	To CS20 internal long-range Bluetooth®	500 m	
Bluetooth® 8	To CTR20 expansion pack	1,000 m	

- 1 Standard deviation ISO 17123-3
- Overcast, no haze, visibility about 40 km, no heat shimmer 0.9 m to 2,000 m for 360° prisms (GRZ4, GRZ122)
- Object in shade, sky overcast, Kodak Gray Card (90% reflective) Standard deviation ISO 17123-4
- ⁶ Distance > 500 m: Accuracy 4 mm + 2 ppm, Measurement time typically 6 s



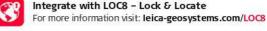
Laser radiation, avoid direct eye exposure.

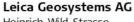
Class 3R laser product in accordance with IEC 60825-1:2014.

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- 7 Initial or after sales, independent from each other
- Under good radio conditions
 Up to 50 m, max. measurement time 15 s for full range
- ¹⁰ Initial measurement time typically 2 s
 ¹¹ Available also without prism fast search







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Leica Viva TS16

Data sheet





Engaging software

The Leica Viva TS16 total station comes with the revolutionary Captivate software, turning complex data into the most realistic and workable 3D models. With easy-to-use apps and familiar touch technology, all forms of measured and design data can be viewed in all dimensions. Leica Captivate spans industries and applications with little more than a simple swipe, regardless of whether you work with GNSS, total stations or both.



Infinitely bridging the field to the office

While Leica Captivate captures and models data in the field, Leica Infinity processes the information back in the office. A smooth data transfer ensures the project stays on track. Leica Captivate and Leica Infinity work in conjunction to join previous survey data and edit projects faster and more efficiently.



Customer care is only a click away

Through Active Customer Care (ACC), a global network of experienced professionals is only a click away to expertly guide you through any problem. Eliminate delays with superior technical service, finish jobs faster with excellent consultancy support, and avoid costly site revisits with online service to send and receive data directly from the field. Control your costs with a tailored Customer Care Package, giving you peace of mind you're covered anywhere, anytime.





Leica Viva TS16 Total Station

ANGULAR MEASUREMENT

Accuracy ¹ Hz and V	Absolute, continuous, diametrical	1" (0.3 mgon), 2" (0.6 mgon), 3" (1 mgon), 5" (1.5 mgon)
DISTANCE MEASUREMENT		
Range ²	Prism (GPR1, GPH1P) ³ Non-Prism / Any surface ⁴	1.5m to 3500m R500: 1.5m to >500m, R1000: 1.5m to >1000m
Accuracy / Measurement time	Single (prism) ^{2,5} Single (any surface) ^{2,4,5,6}	1mm + 1.5ppm / typically 2.4s 2mm + 2ppm / typically 3s
Laser dot size	At 50m	8mm x 20mm
Measurement technology	System analyser	Coaxial, visible red laser
IMAGING		
Overview camera	Sensor Field of view Frame rate	5 megapixel CMOS sensor 19.4° Up to 20 frames per second
AUTOMATIC AIMING - ATRplus		
Target aiming range ² / Target locking range ²	Circular prism (GPR1, GPH1P) 360° prism (GRZ4, GRZ122)	1500m / 1000m 1000m / 1000m
Accuracy 1.2 / Measurement time	ATRplus angle accuracy Hz, V 1" (0.3 mgon), 2" (0.6 mgon), 5" (1.5 mgon) / typically 3-4s	
POWERSEARCH		
Range / Search time	360° prism (GRZ4, GRZ122)	300m / typically 5s
GUIDE LIGHT (EGL)		
Working range / Accuracy		5–150m / typically 5cm @ 100m
GENERAL		
Field software	Leica Captivate with apps	
Display and keyboard	5" (inch), WVGA, colour, touch, face I standard face II optional	d / 37 keys, illumination
Processor	TI OMAP4430 1GHz Dual-core ARM® Cortex™ A9 MPCore™	Operating system – Windows EC7
Power management	Exchangeable Lithium-Ion battery	Operating time 5–8 h
Data storage	Internal memory Memory card	2 GB SD card 1 GB or 8 GB
Interfaces	RS232, USB, Bluetooth®, WLAN	
Weight	Total station including battery 5.3 - 6kg	
Environmental specifications	Working temperature range Dust / Water (IEC 60529) / Humidity	-20°C to +50°C IP55 / 95%, non-condensing
LEICA VIVA	TS16 M TS16 A	TS16 P TS16 I

LEICA VIVA	TS16 M	TS16 A	TS16 P	TS16 I
Angular measurement	V	V	V	V
Distance measurement to prism	~	V	~	~
Distance measurement to any surface	V	V	~	V
Automatic target aiming - ATRplus	X	V	~	V
PowerSearch (PS)	X	×	~	V
Overview camera	X	×	×	V
Guide Light (EGL)	V	V	~	V

¹ Standard deviation ISO 17123-3

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✓ = Standard
X = Not available

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

3 1.5m to 2000m for 360° prisms (GRZ4, GRZ122)

4 Object in shade, sky overcast, Kodak Gray Card (90% reflective)

5 Standard deviation ISO 17123-4

⁶ Distance > 500m: Accuracy 4mm + 2ppm, Measurement time typically 6s