

# Leica TM30

Monitoring Sensor  
Every half second counts

Leica Monitoring  
Solutions



- when it has to be **right**

**Leica**  
Geosystems

# Leica TM30

## Monitoring Sensor

### Every half second counts

We live in a dynamic world. Buildings and dams settle, bridges flex and vibrate, rock masses shift, mud slides, glaciers flow and volcanoes erupt. Whether by human activity such as mining and construction or by natural processes such as climate change and erosion, the world in which we live is continually changing.

Engineering companies and contractors face increased challenges monitoring this change. They are being charged with – and being held liable for – the condition of the structures they create and maintain. In order to surmount these challenges, engineers need to be able to measure structural movements to millimeter-level accuracy.

For equipment to manage and monitor these structures, engineers rely on Leica Geosystems and the TM30 Monitoring sensor: because every half second counts!

The Leica TM30 combines accurate 0.5" measurements, together with fast data acquisition. This powerful combination of speed and accuracy allows engineers to effectively and cost efficiently measure and control the health of vital infrastructure. The Leica TM30, designed specifically for use in monitoring applications, incorporates excellent accuracy, outstanding reliability and robust design from a company with extensive experience in high precision sensor technology. The combination of SmartEye vision technology and unique direct drive technology provides faster, more precise and longer range measurements than ever before.





# Leica TM30

## Accurate, Fast and Silent

The Leica TM30 is designed to meet the highest accuracy standards. High precision measurements, combined with automatic, fast and silent operation ensures that the TM30 detects the smallest movement in all monitoring applications.



### High accuracy angular measurement

The TM30 offers 0.5" or 1" angular accuracy, ensuring that the highest accuracy standards are met every time.



### SmartEye vision

The TM30 includes SmartEye vision technology to automatically measure targets up to 3000 m with millimeter accuracy. This advanced technology enables large areas to be monitored with a single instrument, significantly saving on equipment costs.



### Unique high precision PinPoint EDM

Measure targets with higher accuracy than ever before with next generation PinPoint EDM technology. The TM30 PinPoint EDM features a unique precision of 0.6 mm+1ppm to prisms and 2 mm+2 ppm to natural surfaces.



### Move, Lock, Measure, Transmit

The TM30 quickly moves with unmatched speed to monitor points. SmartEye vision then effortlessly locks onto the prism. The long-range PinPoint EDM is seamlessly harmonized with precise angle sensors to complete the measurement process. Measurement data is then immediately available for on-board storage, or to be transmitted to any location via cable, radio, mobile phone or the internet. The optimized high accuracy measurement process of the TM30 ensures maximum productivity and efficiency.



### Zero noise pollution

The TM30 is equipped with direct drives based on piezo technology which are not only extremely fast but very quiet. The TM30 can be installed in urban areas with confidence due to zero noise pollution.



# Leica TM30

## Robust and Reliable

Critical man-made structures and natural phenomenon need to be measured continuously. The Leica TM30 will operate 24 hours a day, 365 days a year, and continue to deliver top quality measurements. The TM30 is built to be tough and to be left unattended in remote, hostile environments. The Leica TM30 distinguishes itself with robustness, reliability, minimal maintenance and lowest power consumption.

24/7

### Continuous operation

The TM30 meets the challenge of 24 hours, 7 days a week monitoring applications. It is designed to withstand the roughest use in the most severe environments. The TM30 will operate throughout a wide temperature range and is protected against wind driven rain, sand and dust. The sensor is fully operational in bright sunlight and complete darkness.



### Long service intervals

The TM30 can operate for extremely long intervals without suffering from wear and tear. The long service interval, low maintenance costs and continuous operation ensure maximum productivity.



### Theft protection and keyboard lock

A PIN-code feature and keyboard lock prevent unauthorized persons from using the instrument. Without a correct code, the equipment can't be operated or data erased. This increases your data security and makes it unattractive to steal.



### Lowest Power Consumption

The Leica TM30 unique piezo direct drive technology ensures maximum accuracy whilst minimizing power consumption with intelligent on-demand power management.





# Leica TM30

## SmartEye Vision

Leica SmartEye vision is the combination of long range Automatic Target Recognition (ATR), TargetView and TargetCapture technology. The TM30 is the only sensor combining long range with exceptionally high accuracy to meet the demands of any monitoring application.



### Long range ATR

The long range ATR detects and measures to prisms within a range of up to 3000 m with millimeter accuracy. Long range ATR maximizes the flexibility of instrument placement. Instrument damage can be avoided and security ensured, reducing overall costs in a large monitoring project.



### TargetView

The TargetView functionality narrows the field of view of the ATR to the area of interest. If there are multiple prisms close together the measurement process is enhanced by detecting the correct prisms without interference from surrounding prisms.



### TargetCapture

TargetCapture makes the telescopic camera image available for visual documentation of the point measured. Obstructions in the line of sight can be inspected remotely, avoiding safety concerns in high-risk environments.



# Leica TM30

## Decades of experience in precision monitoring



Leica Geosystems has unrivalled experience in precise monitoring with instruments operating around the world for decades. Building on this experience, the Leica TM30 is the latest generation of total stations designed specifically for precise monitoring. Offering full backward compatibility, the Leica TM30 can be installed in any new or existing monitoring project.

### Leica TM30 Performance Specifications

Angle Measurement		
Accuracy <sup>1)</sup>	0.5" (0.15 mgon), 1" (0.3 mgon)	
Method	Absolute, continuous, quadruple	
Distance Measurement (Prism)		
Range	Round Prism (GPR1)	3500 m
Accuracy <sup>2)</sup> /Measurement time	Precise <sup>3,4)</sup>	0.6 mm + 1 ppm / typ. 7s
	Standard	1 mm + 1 ppm / typ. 2.4 s
Method	System analyzer based on phase shift measurement (coaxial, visible red laser)	
Distance Measurement (Non-Prism)		
Range <sup>5)</sup>	1000 m	
Accuracy <sup>2,6)</sup> /Measurement time	2 mm + 2 ppm / typ. 3 s	
	Method	
System analyzer based on phase shift measurement (coaxial, visible red laser)		
Motorization		
Maximum acceleration	400 gon (360°)/s <sup>2</sup>	
Rotation Speed	200 gon (180°)/s	
Time for change face	2.9 s	
Positioning Time for 200 gon (180°)	2.3 s	
Method	Direct drives based on Piezo technology	
Automatic Target Recognition (ATR)		
Range <sup>3)</sup>	Round prism (GPR1)	3000 m
Accuracy <sup>1)</sup> /Measurement time (GPR1)	ATR angle accuracy Hz, V	
	Base positioning accuracy	±1 mm
	Pointing precision at 3000 m	±7 mm
Minimum spacing between prism at 200 m	0.3 m	
Method	Digital Image processing	
General		
Telescope Magnification/Focusing Range	30 x / 1.7 m to infinity	
Keyboard and Display	¼ VGA, colour, touch, 34 keys, illuminated	
Data storage	256 MB Internal memory, Compact Flash cards 256 MB or 1 GB	
Interfaces	RS232, Bluetooth® Wireless	
Operation	Three endless drives for one or two hand manual operation	
	Userdefinable Smart key for manual fast high precision measurements	
	Laser plummet	
Standby Power Consumption	typ. 5.9W	
Security	Password protection and keyboard lock	
Operating temperature	-20° C to +50° C (-4° F to +122° F)	
Dust/water (IEC 60529)	IP54	
Humidity	95%, non-condensing	

<sup>1)</sup> Standard Deviation ISO-17123-3

<sup>2)</sup> Standard Deviation ISO-17123-4

<sup>3)</sup> Overcast, no haze, visibility about 40 km, no heat shimmer

<sup>4)</sup> range up to 1000 m, GPH1P reflector

<sup>5)</sup> Object in shade, sky overcast, Kodak Gray Card (90% reflective)

<sup>6)</sup> Distance > 500 m 4 mm + 2 ppm



# Leica TM30

## Complete Monitoring Integration

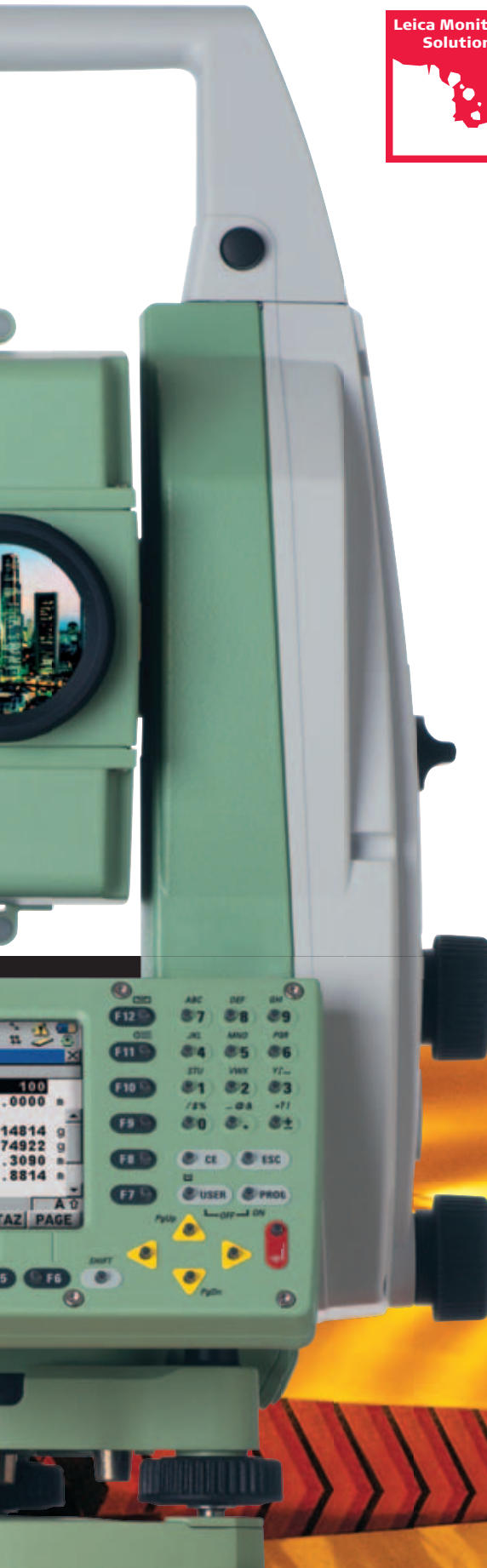
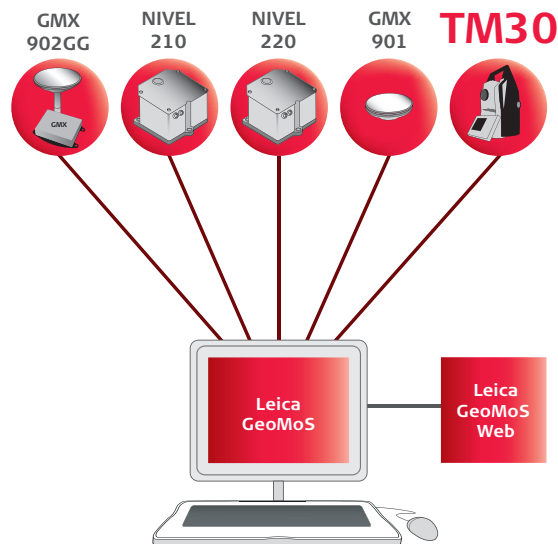
Leica Monitoring  
Solutions



The Leica TM30 forms one component of a unique Monitoring solution which seamlessly integrates total stations, GNSS receivers and antennas, geotechnical sensors, software and IT communication infrastructures.

Leica GeoMoS software provides a highly flexible automatic deformation monitoring system that is able to combine geodetic, geotechnical and meteorological sensors to match the needs of your monitoring project, whether it is large or small, temporary or permanent.

Leica GeoMoS Web is a web based service for the visualization and analysis of monitoring data collected by a GeoMoS monitoring system. Access your monitoring project anywhere, anytime using your web browser, pocket pc or mobile phone.





Whether you monitor the movement of a volcanic slope, the structure of a long bridge or track the settlement of a dam; whether you measure, analyse and manage the structures of natural or man-made objects: the monitoring systems by Leica Geosystems provide you with the right solution for every application.

Our solutions provide reliable, precise data acquisition, advanced processing, sophisticated analysis and secure data transmission. Using standard interfaces, open architectures and scalable platforms, the solutions are customizable to meet individual requirements – for permanent and temporary installations, for single sites and monitoring networks.

**When it has to be right.**

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**Total Quality Management – our commitment to total customer satisfaction.**

Ask your local Leica Geosystems dealer for more information about our TQM program.

**Distance meter (Prism), ATR:**  
 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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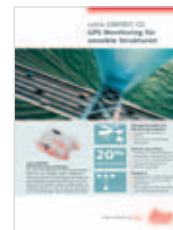
**Leica TS30**



**Leica Monitoring Solutions**



**Software**  
 Leica GeoMoS  
 Leica GNSS Spider  
 Leica GNSS QC  
 Leica GeoMoS Web



**GPS/GNSS**  
 Leica GMX902 GG  
 Leica GRX1200 Series  
 Leica GPS1200 Series  
 Leica GMX901



**Other**  
 Leica Nivel210/220  
 Leica GPR112  
 Monitoring Prism