Leica Industrial Theodolites and Total Stations

TPS5000 Instruments – World-Class Precision in Every Environment

Leica Geosystems

Common Specifications for TDM/TDA5005 and TM5100A

Angular measurement	
Standard deviation per ISO17123-3, 1 σ [1]	0.5“ (0.15 mgon)
Units of measurement	360˚ sexagesimal, 400 gon 360˚ decimal, 6400 mil
Display (smallest selectable unit)	0.01 mgon; 0.1“, 0.00001˚, 0.00001 mil
Automatic reference to the horizon	*(2-axis liquid compensator)*
Working range, longitudinal/lateral	3' (0.055 gon)
Setting accuracy	≤ 0.3“ (0.1 mgon)
Displays	
LCD (liquid crystal display)	8 rows of 35 characters each 6 status fields
Data storage and interfaces	
	PCMCIA memory card RS232 programmable interface
Motor and fine drives	
Fine drives	Coarse/fine, motorised, infinite, slip coupling
Motor	
Speed of rotation	45 ˚/s (50 gon/s)
Positioning accuracy	0.8” (0.2 mgon)
Power supply	
Plug-in battery pack	12 V/1.8 Ah, rechargeable
External power source	Any 12 V battery (e.g. GEB70) or mains power supply
Temperature range	
Working	–20˚ C to +50˚ C (–4˚ F to +122˚ F)
Storage	–40˚ C to +70˚ C (–40˚ F to +158˚ F)

Specifications TDM/TDA5005

Point accuracy (total RMS ≈1 σ) [2] at 20 m (65 ft) measuring volume	≤ 0.3 mm (0.012”)
Distance measurement	*(integrated in the TDM5005 and TDA5005)*
Standard deviation (absolute) per ISO17123-4, 1 σ	1 mm + 2 ppm (0.04” + 2 ppm) over the entire measurement range
Typical distance accuracy at 120 m (365 ft) measuring volume [3]	
Reflective tape	± 0.5 mm (0.02”)
Corner cube reflector	± 0.2 mm (0.008”)
Units of measurement	m, mm, feet, inch
Display (smallest selectable unit)	0–5 decimal places, dependent on the selected unit
Reflectors (selectable)	Prisms, Corner Cube Reflectors CCR (1.5“ diameter), Leica reflective tapes, 360˚ prisms
Measurement range with CCR (dependent on atmospheric conditions)	2 to 600 m (6 to 1’900 ft)
Measurement range with reflective tapes (dependent on target size)	2 to 180 m (6 to 600 ft)
ATR – Automatic Target Recognition	*Integrated in the TDA5005*
Tracking speed lateral (linear)	3 m/s (10 ft/s) at a distance of 10 m (33 ft)
Tracking speed longitudinal	4 m/s (13 ft/s)
Measurement range (dependent on the type of reflector)	2.5 to 1’000 m (8 to 3’300 ft)
Safety Class	Laser Class I as defined by IEC 825-1 or EN 60825-1 FDA 21 CFR Ch. I §1040
Weight (w/o battery, tribrach)	7.5 kg (17,5 lbs)

Specifications TM5100A

Telescope type	Pan-focal alignment telescope
Autocollimation device	built-in
Unobstructed lens diameter	52 mm (2”)
Field of view diameter	2.08 m (6.8 ft) at 100 m 0.26 m (10”) at 10 m, non linear
Magnification with the FOK53 standard eyepiece [4]	18x at 0.6 m 44x at 10 m, non linear
Shortest target range	0.6 m (2 ft)
Range of inclination, telescope positions I and II	–55˚ to +47˚ (–60 gon +52 gon)
Weight (w/o battery, tribrach)	7.3 kg (17.0 lbs)

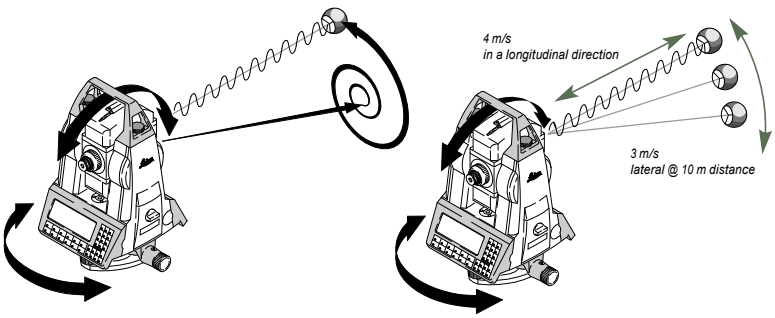
[1] Producer inspection certificate available as an option [2] In comparison with the Leica Laser Tracker
[3] Producer inspection certificate (in accordance with ISO 17123) included with the instrument
[4] Eyepieces with different magnification factors and diagonal eyepieces are also available

World-Class Precision in Large-Scale Measurement

New standards – more applications

The Leica Industrial Theodolites and Total Stations of the TPS5000 series set new standards in portable, large-scale coordinate measurement. Based on proven technology, unrivalled precision and optics, the Leica Theodolites have become standard in Aerospace alignment applications. By incorporating a precision distance meter and automation features, the so-called Total Station has spread into every industry as a truly large-scale PCMM solution for tooling, inspection and assembly. Their flexibility together with a large choice of both software and hardware solutions give you a wider perspective – in all dimensions.

TDA5005 – ATR Automatic Target Recognition



ATR mode with “Point-and-Shoot”

LOCK-IN mode with “Step-and-Go” tracking from one measuring location to the next

The Leica Industrial Theodolites and Total Stations set new standards, giving you more features and benefits than any other Theodolites and Total Stations in the market.

Featuring...	*Giving you...*
· Proven track record with far over 1’000 TPS5000 instruments in the market	· Highest reliability in the market
· Highest angle and distance accuracy	· The most precise instrument worldwide in it’s category
· Completely open and programmable software interface	· The seamless integration with your standard software or with automated processes via serial communication
· Motorization & Automation	· Completely guided and highly automated measurement of inspection and assembly processes
· Minimal set-up time within just a few minutes	· Minimal downtime of production and assembly process
· Wide range of accessories and targets	· The best adaptation to your part inspection, building and tooling application
· Extended specifications for environmental conditions	· Use of the instrument under almost each condition – indoor and outdoor
· Measurement range beyond 200 m with TDM5005 and TDA5005	· A truly large scale PCMM for large assembly and inspection processes
· Remote control option with TDA5005	· The truly single operator system, controlled from the point of interest
· Built-In Automatic Target Recognition ATR within the TDA5005	· A fatigue-free, fast and consistent pointing with no need to look through the telescope, for “Point-and-Shoot” as well as tracking in “Step-and-Go”
· Built-In Autocollimation Eyepiece within the TM5100A	· The recognized global standard tool for direction and coordinate based precision alignment tasks

Choose more functionalities…
Choose Leica

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