



Leica Absolute Tracker
ASME B89.4.19-2006 Specifications

Leica
Geosystems



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DOF

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IFM



 **HEXAGON**
METROLOGY

According to the ASME B89.4.19-2006 Standard, the Leica Absolute Tracker is the most accurate laser tracker ever made!

Maximum Permissible Error or "MPE" is defined in the ISO-VIM (International Vocabulary of basic and general terms in Metrology) as "the extreme values of an error permitted by specification, regulations [...] for a given measuring instrument". It can be looked at as the value that all measurements are guaranteed to be below. According to the B89.4.19-2006 American National Standard, published by the AMSE in November of 2006, the Leica Absolute Tracker has the lowest guaranteed, or "MPE" values of any laser tracker on the market.



Some laser tracker producers do not publish their MPE values as specifications. Instead they use their typical accuracy which is stated as half of their MPE values. To be able to compare specifications side

by side the Leica Absolute Tracker specifications have been converted to reflect both MPE and typical (or half MPE) values.


In-Line Distance Measurement

Range (m)	ADM (mm)	IFM (mm)	ADM (mm)	IFM (mm)
	MPE values		Typical values	
2 to 5	0.0141	0.0011	0.0071	0.0006
2 to 10	0.0141	0.0025	0.0071	0.0013
2 to 20	0.0141	0.0054	0.0071	0.0027
2 to 30	0.0141	0.0084	0.0071	0.0042
2 to 35	0.0141	0.0099	0.0071	0.0050
2 to 40	0.0141	0.0114	0.0071	0.0057



Horizontal Scale Bar Measurement

Range (m)	ADM (mm)	IFM (mm)	ADM (mm)	IFM (mm)
	MPE values		Typical values	
2	0.036	0.036	0.018	0.018
5	0.063	0.063	0.032	0.032
10	0.106	0.106	0.053	0.053
20	0.191	0.191	0.096	0.096
30	0.276	0.276	0.138	0.138
35	0.318	0.318	0.159	0.159
40	0.361	0.361	0.180	0.180



Performance

	MPE values	Typical values
Angle Performance		
Angular accuracy	$\pm 15 \mu\text{m} + 6 \mu\text{m}/\text{m}$	$\pm 7.5 \mu\text{m} + 3 \mu\text{m}/\text{m}$
Distance Performance		
<u>ADM</u> Accuracy	$\pm 10 \mu\text{m}$	$\pm 5 \mu\text{m}$
<u>Interferometer</u> Accuracy RO Parameter	$\pm 0.4 \mu\text{m} + 0.3 \mu\text{m}/\text{m}$ 5 μm	$\pm 0.2 \mu\text{m} + 0.15 \mu\text{m}/\text{m}$ 2.5 μm

All specifications are calculated per the ASME B89.4.19 standard. Information is from the most recent Leica Absolute Tracker specifications released in December of 2008. To allow for comparison, variation in air temperature is not included.



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