

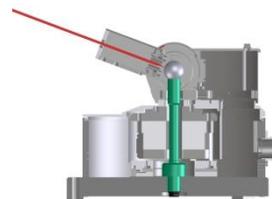
monthly rent *
€ 19.900,-

AfM
Accuracy for Machines

MultiTRACE -

The realtime multilateration system for the calculation of 3D coordinates with highest precision, based on the LaserTRACER technology

Don't be satisfied with less!



Customers

Our customers for MultiTRACE are custom machine builders, as well as research and development institutes, interested in spatial (3D) realtime position measuring with highest accuracy.

Innovation

By using 4 LaserTRACER systems, a self calibrating measuring system accrues, which allows to measure 3D positions in realtime with an accuracy of sub-microns.

Like the calculation for the volumetric compensation, the MultiTRACE system is also based on multilateration (similar to the GPS System).

From software version TRAC-CAL 2.5, 4 LaserTRACERs can be combined to a online multilateration system, thus a realtime calculation of the spatial coordinates of the cateye reflector is possible.

This cateye reflector can be attached to various axes systems, in order to calculate the spatial position (3D coordinates).

Function

Different to conventional devices, the LaserTRACER reaches a unprecedented level of accuracy by its patented reference in the rotational centre.

Inside the LaserTRACER is a fixed high precision sphere, used as a reference reflector with a form deviation of less than 50 nm. Additionally, the sphere is mechanically and thermally decoupled from the moving parts. Therefore the sphere remains stable in sub-micron range, also during tracking movements of the vertical and horizontal axis of the LaserTRACER.

The interferometer with a resolution of 1 nm has a maximum range of 15m. Environmental conditions, as temperature, air pressure and humidity, are measured by sensors and are compensated directly in the electronics. The laser source is mounted in the electronics rack, outside from the interferometer. The light is guided by a glas fibre to the LaserTRACER itself. This design prevents the system from thermal influences and results in a compact shape. The LaserTRACER can be handled easily by a single operator.

Spatial realtime measurements with sub-micron accuracy

Fields of Application

- Research and development, monitoring and calibration of high precision CMM and machine tools
- Realtime multilateration system for high precision measuring tasks
- High precision detection of spatial points
- Contactless 3 dimensional measuring system
- Workspace up to a volume of 10m x 10m x 10m
- Direct traceability to the standards by the laser interferometer
- Volumetric compensation of machine tools and coordinate measuring machines
- Calibration of parallel kinematics
- High precision calibration of robot systems
- Wireless circular test with a radius up to 15m; for the fast check of machine tools, as well as the CNC controller setup / optimization

Rental offer: Complete measuring system MultiTRACE / €19.900,- per month* / ex works Aalen

- 4 LaserTracer systems in flight cases
- Software TRAC-CAL 2.5 for realtime multilateration (4 Tracer), as well as for the volumetric calibration (1 Tracer)
- 1 notebook with installed TRAC-CAL software
- Transport and training against separate charge

Rental cost	1 off LaserTRACER	4 off LaserTRACERS
per week	3.000,00 €	10.000,00 €
per month	10.000,00 €	32.000,00 €
per quarter	25.000,00 €	77.500,00 €
per year	80.000,00 €	238.800,00 €

Specification LaserTRACER

Dimensions and weights	
LaserTRACER weight	approx. 12 kg
Controller weight	approx. 10kg
LaserTRACER height	200mm
Height of reference sphere above machine table	165mm
Operating range	
Angular range elevation axis	-18° bis +85°
Angular range azimuth axis	± 200°
Measuring range	0,2 - 15m
Angular range reflector (cateye)	120° (15m length) / 160° (2,5m length)
Dynamics	
Maximally allowed acceleration of the reflector	3 m/s ²
Maximally allowed velocity of the reflector	5 m/min
Accuracy	
Frequency stability of the laser 24h	2 x 10 ⁻⁸
Stability of the reference sphere bei ΔT = ±1K	± 0,1μm
Resolution of the interferometer	0,001μm
Spatial length measurements	U _(k=2) = 0,2μm + 0,3μm/m

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