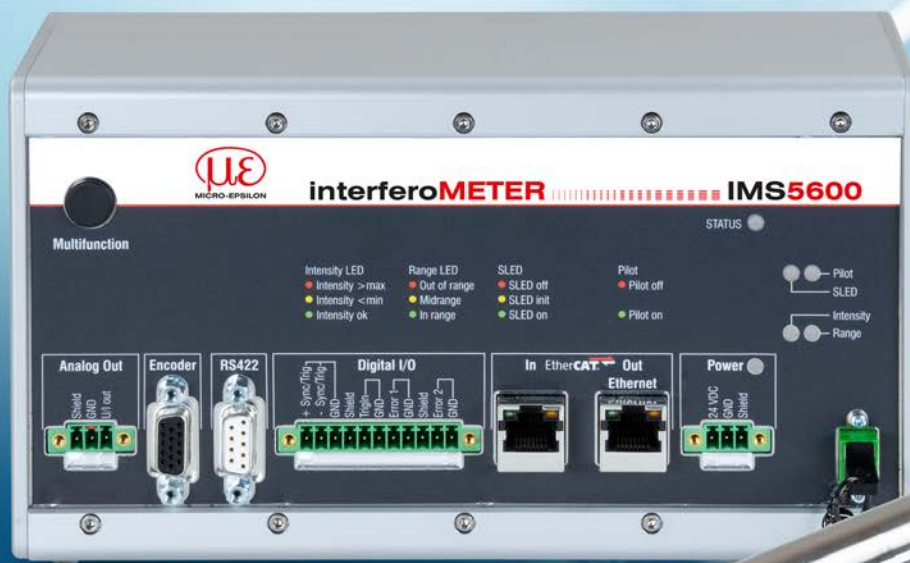




More Precision

interfero**METER** IMS5600-DS // White light interferometer for nanometer distance measurements



White light interferometer for absolute distance measurement with subnanometer accuracy

interfero**METER** 5600-DS



- Distance measurement with subnanometer precision
- Best-in-Class: Resolution < 30 picometers
- Absolute measurement, suitable for step profiles
- Compact and robust sensors with large offset distance
- Measuring rate up to 6 kHz for high speed measurements
- Ethernet, EtherCAT, RS422

Designed for high-resolution distance measurements in clean rooms & vacuum

The white light interferometer IMS5600-DS is used for distance measurements with highest precision. The controller offers a special calibration with intelligent evaluation and enables absolute measurements with subnanometer resolution. The interferometer is used for measurement tasks with the highest accuracy requirements, e.g., in electronics and semiconductor production. For vacuum applications, Micro-Epsilon offers special sensors, cables and feed-through accessories. These sensors and cables are particle-free to a high degree and can even be used in UHV.

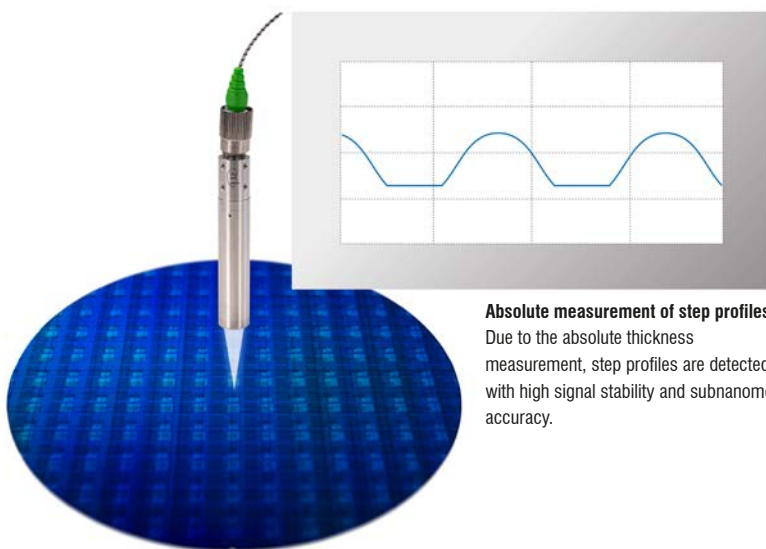
Absolute distance measurement with large measuring range and offset distance

The IMS5600-DS is used for high-precision displacement and distance measurements. The system provides absolute measurement values and can therefore also be used for distance measurement of step profiles. Thanks to the absolute measurement, sampling is performed without signal loss. When measuring on moving objects, the differences in height of heels, steps and depressions can thus be reliably detected. The measuring system offers sub-nanometer resolution with a large offset distance in relation to the measuring range.



Integration in industrial environments

Robust sensors and a controller in a metal housing make the IMS5600-DS ideally suitable for integration into production lines. These compact sensors are extremely space-saving and can also be integrated in confined spaces. The controller is installed in the control cabinet via DIN rail mounting and provides very stable measurement results due to active temperature compensation and passive cooling. Highly flexible fiber optic cables are available in lengths up to 20 m and allow a spatial separation of sensor and controller. Unlike other conventional interferometers, initial operations and parameter set up are easy and user-friendly via a web interface. No software installation is required.



Absolute measurement of step profiles
Due to the absolute thickness measurement, step profiles are detected with high signal stability and subnanometer accuracy.

Model		IMS5600-DS
Measuring range		2.1 mm
Start of measuring range		approx. 19 mm
Resolution ¹⁾		< 30 µm
Measuring rate		continuously adjustable from 100 Hz to 6 kHz
Linearity ²⁾		< ±10 nm
Temperature stability		Linearity: typ. 0.1 nm / K (without offset displacement) temperature compensated, stability < 10 ppm between +15 ... +35 °C
Light source		NIR-SLED, wavelength 840 nm
Laser safety class		Class 1 in accordance with DIN EN 60825-1 : 2015-07
Light spot diameter ³⁾		10 µm
Max. tilt angle ⁴⁾		±2°
Target material		Glass, reflecting or diffuse surfaces ⁵⁾
Supply voltage		24 VDC ± 15 %
Power consumption		approx. 10 W (24 V)
Signal input		sync in, trigger in, 2 x encoders (A+, A-, B+, B-, index)
Digital interface		Ethernet / EtherCAT / RS422
Analog output		4 ... 20 mA / 0 ... 10 V (16 bit D/A converter)
Switching output		Error1-Out, Error2-Out
Digital output		sync out
Connection	optical	pluggable optical fiber via E2000 socket (controller) and FC socket (sensor); standard length 3 m, 5 m and 10 m; other cable lengths on request; bending radius: static 30 mm, dynamic 40 mm
	electrical	3-pin supply terminal strip; encoder connection (15-pin, HD-sub socket, max. cable length 3 m, 30 m with external encoder supply); RS422 connection socket (9-pin, Sub-D, max. cable length 30 m); 3-pin output terminal strip (max. cable length 30 m); 11-pin I/O terminal strip (max. cable length 30 m); RJ45 socket for Ethernet (out) / EtherCAT (in/out) (max. cable length 100 m)
Installation	Sensor	Clamping, mounting adapter (see accessories)
	Controller	free-standing, DIN rail mounting
	Storage	-20 ... +70 °C
Temperature range	Operation	sensor: +5 ... +70 °C; controller: +15 ... +35 °C
Shock (DIN-EN 60068-2-27)		15 g / 6 ms in XY axis, 1000 shocks each
Vibration (DIN-EN 60068-2-6)		2 g / 20 ... 500 Hz in XY axis, 10 cycles each
Protection class (DIN-EN 60529)		IP40 (controller and sensor)
Vacuum		optional UHV (cable and sensor)
Material	Sensor	Stainless steel
	Controller	Aluminum housing, passive cooling
Control and display elements		multifunction button: two adjustable functions and reset to factory setting after 10 s; web interface for setup: selectable presets, freely selectable averaging possibilities, data reduction, setup management; 6 x color LEDs for intensity, range, SLED, pilot laser, status and power; pilot laser: switchable for sensor alignment (laser LED 635 nm, laser class 1, performance < 0.2 mW)

All data at constant ambient temperature (24 ± 2 °C)

¹⁾ Measuring rate 0.5 kHz, moving average over 64 values, measured differentially between the front and back of a thin glass plate in the mid of the measuring range (2 sigma)

²⁾ Maximum deviation from reference system over entire measuring range, measured on front surface of ND filter

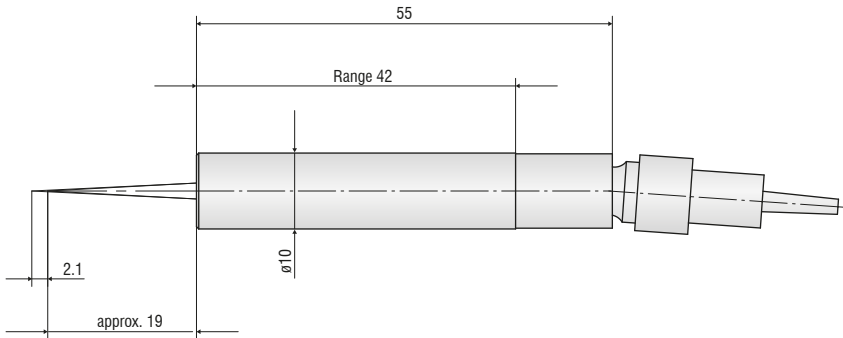
³⁾ In the mid of the measuring range

⁴⁾ Maximum sensor tilt angle that produces a usable signal on polished glass (n = 1.5) in the mid of the measuring range. The accuracy decreases when approaching the limit values.

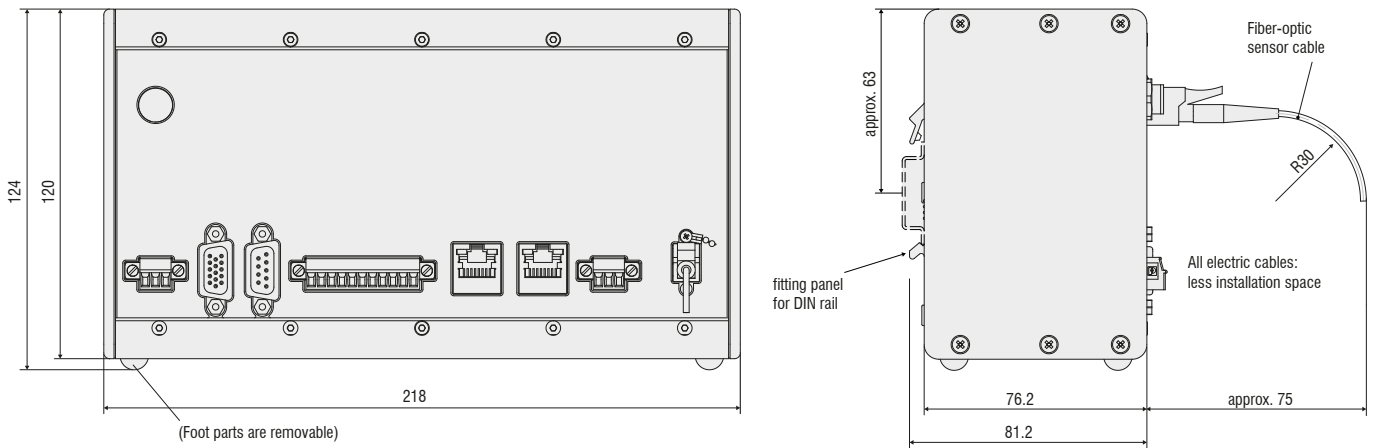
⁵⁾ Non-transparent materials require an optically dense surface with a wavelength of 840 nm

Dimensions

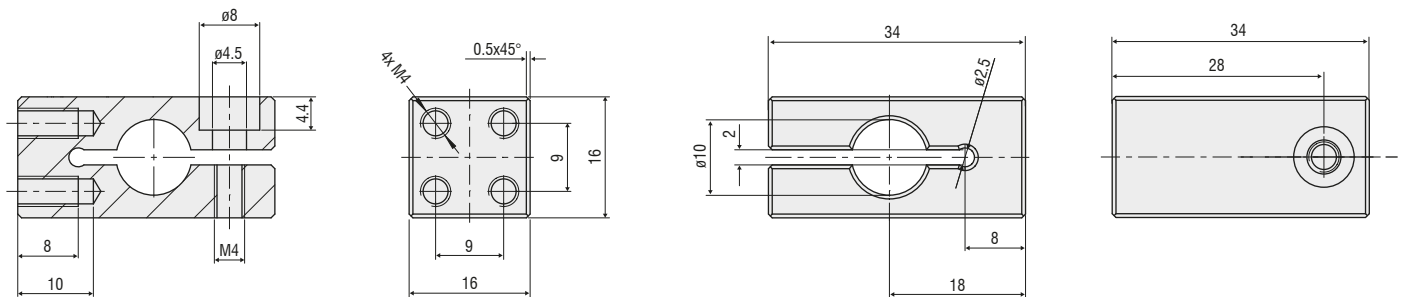
Sensor



Controller



Accessories: Sensor mounting adapter



(dimensions in mm, not to scale)