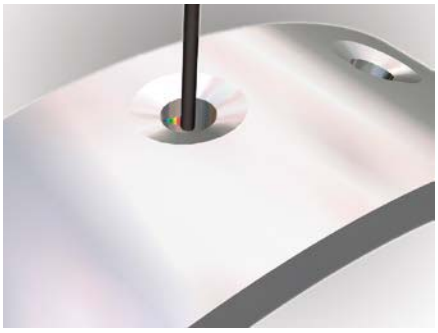
- Hybrid sensors ø8mm with axial or radial (90°) measuring direction
- Submicrometer resolution
- One-sided thickness measurement of transparent material
- Displacement and position measurement
- Tiny spot size
- ATEX / EX approved for hazardous areas

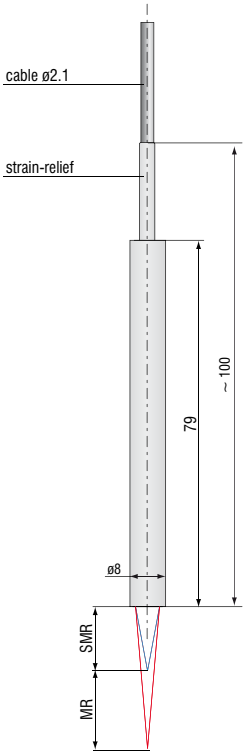
The combination of a gradient index lens (GRIN lens) with a relay lens represents a favorable compromise between the IFS2401 standard sensors and the IFS2402 miniature sensors. The sensors of the IFS2403 series with an external diameter of 8mm can still be used for precise measurement in relatively tight installation situations. Due to the larger numerical aperture in comparison with the IFS2402, significantly larger stand off distances and steeper tilt angles can be realized than for the miniature sensors.

Sensors with axial measuring direction and sensors with 90° beam exit are available, which can measure radially in small cavities and bores.

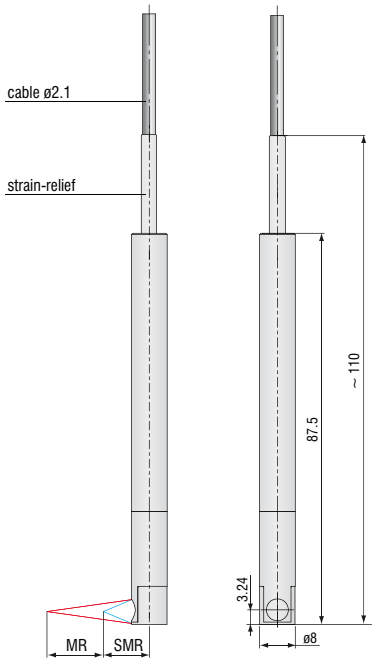


Measurement in bores with IFS2403/90 sensors

IFS 2403-0.4/1.5/4/10



IFS 2403/90-1.5/4/10



Tolerance ±0.1 mm
MR= Measuring Range SMR = Start of Measuring Range
Dimensions in mm.

Sensor model (GRIN lens with relay optics)	IFS 2403-0,4	IFS 2403-1,5	IFS 2403/90-1,5	IFS 2403-4	IFS 2403/90-4	IFS 2403-10	IFS 2403/90-10
Measuring range	400µm	1.5mm	1.5mm	4mm	4mm	10mm	10mm
Start of measuring range	2.5mm	8.0mm	4.9mm [1]	14.7mm	12mm [1]	11mm	8.6mm [1]
Spot diameter	9µm	15µm	15µm	28µm	28µm	56µm	56µm
Linearity (displacement measurement)	0.3µm	1.2µm	1.2µm	3µm	3µm	20µm	20µm
	≤ ± 0.08% FSO					≤ ± 0.2% FSO	
Linearity (thickness measurement)	0.6µm	2.4µm	2.4µm	6µm	6µm	40µm	40µm
	≤ ± 0.16% FSO					≤ ± 0.4% FSO	
Resolution [2]	16nm	60nm	60nm	0.2µm	0.1µm	0.2µm	0.2µm
Weight	25g						
Max. tilt (direct reflexion)	± 13°	± 16°	± 16°	± 6°	± 6°	± 6°	± 6°
Light source	LED						
Protection class	IP 40						
Operation temperature	+10 ... +50°C						
Storage temperature	-30 ... +70°C						
Sensor cable (fiber optic cable)	length: integral cable 2m; option up to 50m bending radius: static 30mm; dynamic 40mm						
Shock	15g, 6ms						
Vibration	2g / 10Hz ... 500Hz						

FSO = Full Scale Output
All data at constant ambient temperature (25±5°C) against optical flat; specifications can change when measuring different materials.
[1] Distance from sensor axis
[2] Averaging factor 512

Accessories: mounting adapter
MA2403 for sensors 2403