# MICRO-EPSILON

# More Precision

**confocalDT** // Confocal chromatic measurement system
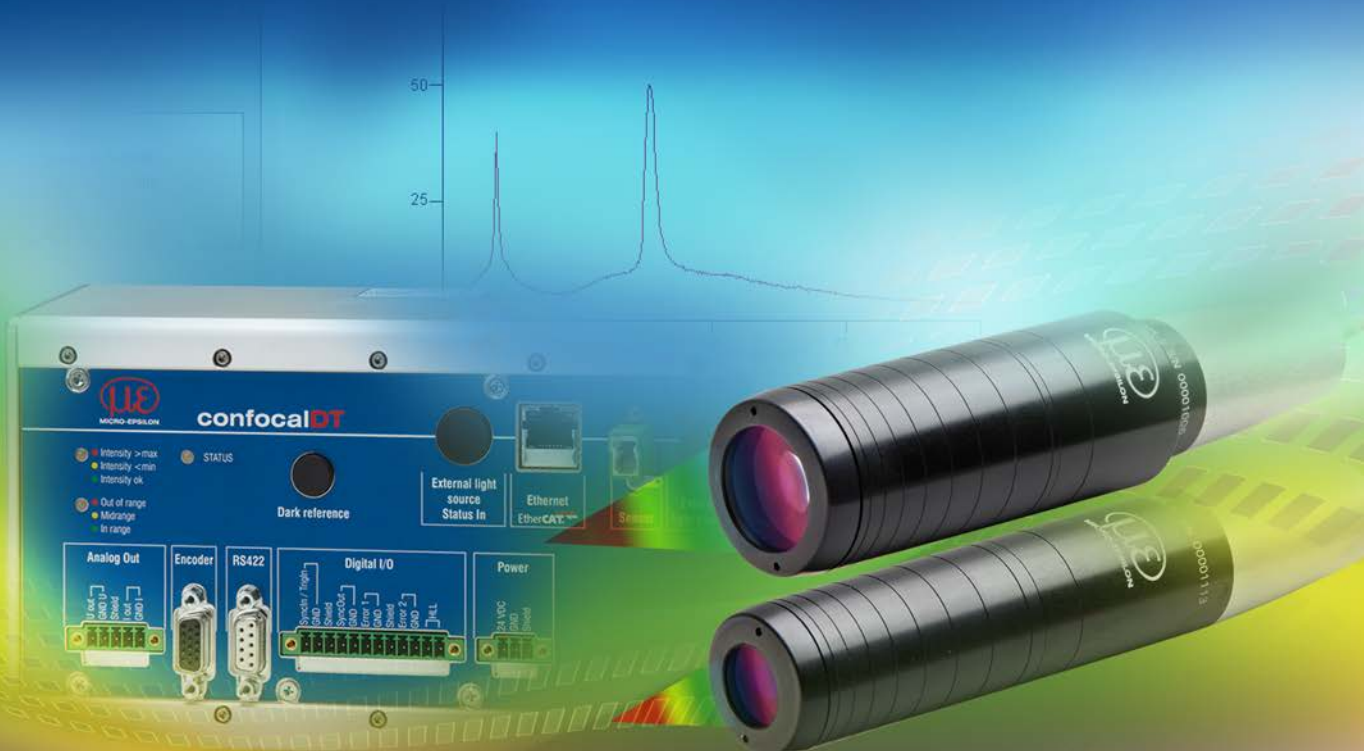
**Robust sensors for various applications**

**One-sided thickness measurement of transparent material**

**Displacement and position measurement**

**Tiny spot size**

**Submicrometer resolution**

**Suited for hazardous areas**

The confocal sensors in the IFS2405 series are designed for measurement tasks that require maximum precision. These new sensors excel through their high sensitivity. The high tilt angle and the relatively large base distance enable a great variety of potential applications. As well as distance measurements for reflective and transparent surfaces, the sensor can also be used for one-sided thickness measurement of clear film, boards or layers.
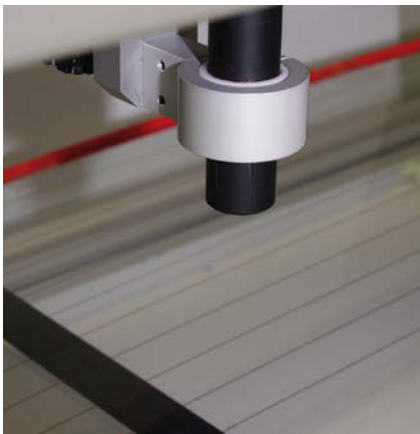


Thickness measurement of rear windows

**IFS2405-0.3**     **IFS2405-1**     **IFS2405-3**     **IFS2405-10**     **IFS2405-30**
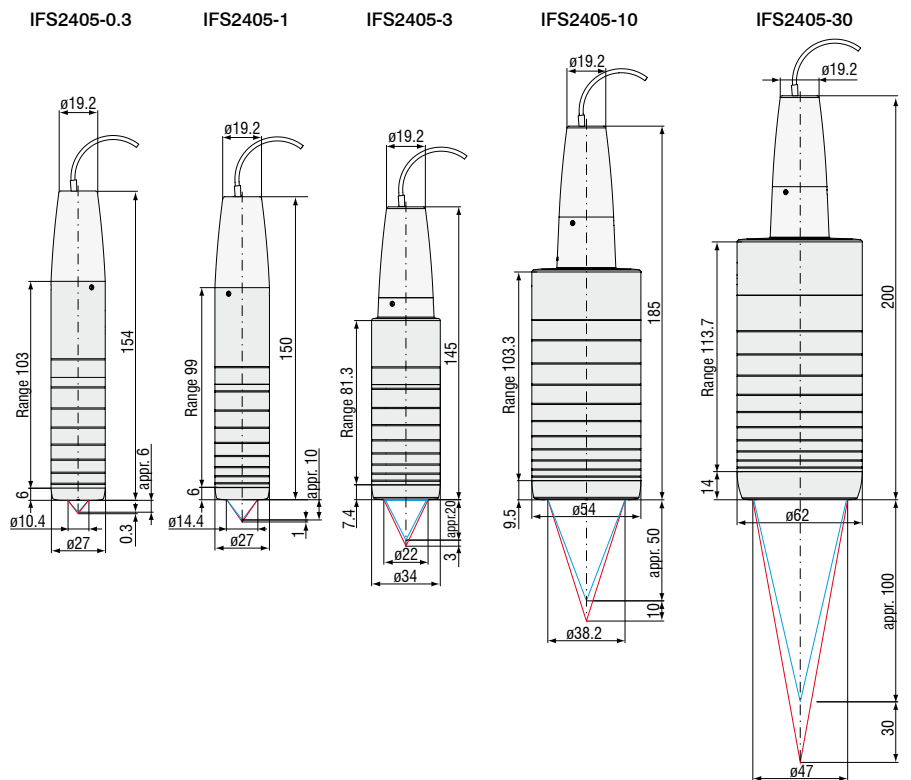
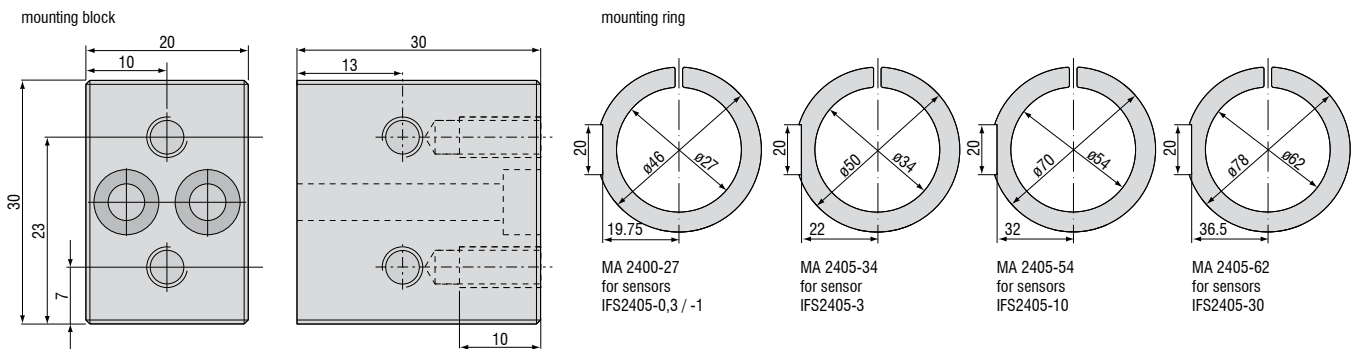| Sensor model | IFS 2405-0,3 | IFS 2405-1 | IFS 2405-3 | IFS 2405-10 | IFS 2405-30 |
|---|---|---|---|---|---|
| Measuring range | 0.3mm | 1mm | 3mm | 10mm | 30mm |
| Start of measuring range                     appr. | 6mm | 10mm | 20mm | 50mm | 100mm |
| Spot diameter | 6$\mu$m | 8$\mu$m | 9$\mu$m | 16$\mu$m | 50$\mu$m |
| Linearity (displacement measurement) | 0.15$\mu$m | 0.25$\mu$m | 0.75$\mu$m | 2.5$\mu$m | 7.5$\mu$m |
| | ±0.05 % FSO | ±0.025 % FSO | | | |
| Linearity (thickness measurement) | 0.3$\mu$m | 0.5$\mu$m | 1.5$\mu$m | 5$\mu$m | 15$\mu$m |
| | ±0.1 % FSO | ±0.05 % FSO | | | |
| Resolution [1] | 10nm | 28nm | 36nm | 60nm | 180nm |
| Weight | 140g | 125g | 225g | 500g | 730g |
| Max. tilt [2] | ±34° | ±30° | ±24° | ±17° | ±9° |
| Protection class | IP 65, front | | | | |
| Operation temperature | +5 ... +70 °C | | | | |
| Storage temperature | -20°C … +70°C | | | | |
| Sensor cable (fibre optic cable) | length: standard 3m; 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±2°C) against optical flat; specifications can change when measuring different materials.
1) Average from 512 values at 1kHz, near to the centre of the measuring range
2) Maximum sensor tilt angle that produces a usable signal, near to the centre of the measuring range

**Accessories: mounting adapter**
MA2400 for sensors 2405 (consisting of a mounting block and a mounting ring)



mounting block

mounting ring

MA 2400-27
for sensors
IFS2405-0,3 / -1

MA 2405-34
for sensor
IFS2405-3

MA 2405-54
for sensors
IFS2405-10

MA 2405-62
for sensors
IFS2405-30

## Accessories

### Software

| | |
|---|---|
| IFD24n1-Tool | Free demo software tool included in delivery |

### Accessories light source

| | |
|---|---|
| IFX2471/Xe/75 | external Xenon light source for controller IFC2471 (70 kHz) |
| IFX2471/Xe/75-light-bulb for IFX2471 | |
| IFL2451/LED-light-bulb for IFC2451 | |
| IFL2451/LED(003)-light-bulb for IFC2451(003) with cooling element | |
| CL2471-1/Xe | Light source cable, 1m |

### Accessories IFS2405

| | |
|---|---|
| C2401-X | Fibre optical cable (3m, 10m,customer specific length up to 50m) |
| C2401/PT-X | Armored cable (3m, 10m, customer specific length up to 50m) |
| C2401-3(10) | Sensor cable for drag chain use, 3m |
| C2401-5(10) | Sensor cable for drag chain use, 5m |

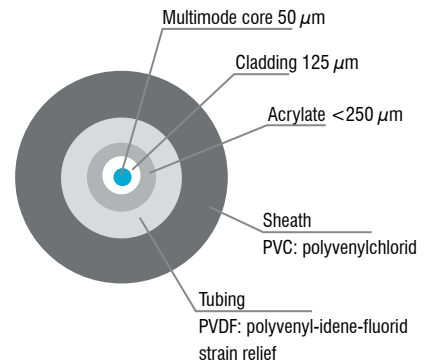### Accessories IFS2402/2403

| | |
|---|---|
| CE2402-X | Extension for fibre optical cable (3/10/13/30/50m) |
| CE2402-X/PT | Sensor with armored cable (3/10m, customer specific length up to 50m) |
| C2402/Vac/KF16 | Vacuum feedthrough, 1 channel |
| C2405/Vac/6/CF63 | Vacuum feedthrough, 6 channel |
| C2405/Vac/9/CF63 | Vacuum feedthrough, 9 channel |

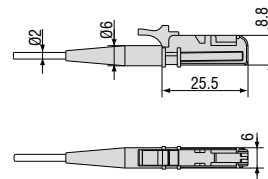### Accessories

| | |
|---|---|
| SC2471-3/USB/IND | Connector cable IFC2451/61/71, 3m |
| SC2471-3/IF2008 | Connector cable IFC2451/61/71-IF2008, 3m |
| SC2471-3/CSP | Connector cable IFC2451/61/71-CSP2008, 3m |
| SC2471-10/IF2008 | Connector cable IFC2451/61/71-IF2008, 10m |
| SC2471-10/CSP | Connector cable IFC2451/61/71-CSP2008, 10m |
| SC2471-10/USB/IND | Connector cable IFC2451/61/71, 10m |
| SC2471-20/USB/IND | Connector cable IFC2451/61/71, 20m |
| PS2020 | Power supply 24 V / 2,5 A |
| EC2471-3/OE | Encoder cable, 3 m |

### Fibre optic

Temperature range : -50°C - 90°C
Bending radius: 30/40mm

Multimode core 50 $\mu$m
Cladding 125 $\mu$m
Acrylate <250 $\mu$m
Sheath
PVC: polyvenylchlorid
Tubing
PVDF: polyvenyl-idene-fluorid
strain relief

### E2000/APC standard connector

Ø2
Ø6
8.8
25.5
6

# High performance sensors made by Micro-Epsilon

Sensors and systems for displacement and position

Sensors and measurement devices for non-contact temperature measurement

2D/3D profile sensors (laser scanner)

Optical micrometers, fibre optic sensors and fibre optics

Colour recognition sensors, LED analyzers and colour online spectrometer

Measurement and inspection systems

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