



More Precision

confocalDT // Confocal chromatic measuring system





Miniature sensors $\varnothing 4$ mm with axial or radial (90°) measuring direction



Submicrometer resolution



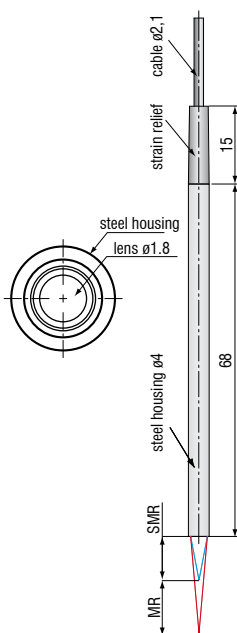
Distance measurement



Extremely small spot size



Passive design without electronic components



Mechanical tolerances ± 0.1 mm
 MR = measuring range
 SMR = start of measuring range
 Dimensions in mm.

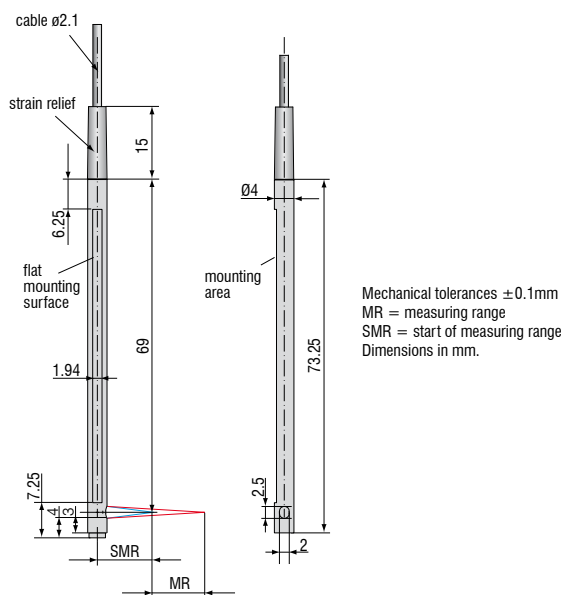
Sensor model (miniature)		IFS2402-0,4	IFS2402-1,5	IFS2402-4
Measuring range		400 μm	1.5 mm	2.5 mm
Start of measuring range	approx.	1.5 mm	0.9 mm	1.9 mm
Numerical aperture		0.25	0.20	0.10
Light spot diameter		10 μm	20 μm	20 μm
Linearity		≤ 0.3 μm	≤ 1.2 μm	≤2 μm
Resolution ¹⁾		16 nm	60 nm	100 nm
Weight		15 g		
Max. tilt ²⁾		± 8°	± 5°	± 3°
Protection class		IP64, front operated		
Temperature range	Operation	+5 ... +70 °C		
	Storage	-30 ... +70 °C		
Connection		integral cable 2m; option up to 50m; bending radius: static 30 mm; dynamic 40 mm		
Shock		15 g, 6 ms		
Vibration		2 g / 10 Hz ... 500 Hz		

FSO = Full Scale Output

All data at constant ambient temperature (25 \pm 2 °C) against optical flat; specifications can change when measuring different materials.

¹⁾ Average from 512 values

²⁾ Maximum sensor tilt angle that produces a usable signal on a reflecting surface, near to the midrange



Sensor model (miniature)	IFS2402/90-1,5	IFS2402/90-4
Measuring range	1.5 mm	2.5 mm
Start of measuring range approx.	2.5 mm ¹⁾	2.5 mm ¹⁾
Numerical aperture	0.20	0.10
Light spot diameter	20 μm	20 μm
Linearity	$\leq 1.2 \mu\text{m}$	$\leq 2 \mu\text{m}$
Resolution ²⁾	60 nm	100 nm
Weight	15 g	
Max. tilt ³⁾	$\pm 5^\circ$	$\pm 3^\circ$
Protection class	IP40	
Temperature range	Operation	+5 ... +70 °C
	Storage	-30 ... +70 °C
Connection	integral cable 2 m; option up to 50 m; bending radius: static 30 mm; dynamic 40 mm	
Shock	15 g, 6 ms	
Vibration	2g / 10 Hz ... 500 Hz	

FSO = Full Scale Output

All data at constant ambient temperature (25 \pm 2 °C) against optical flat; specifications can change when measuring different materials.

¹⁾ Start of measuring range measured from sensor axis.

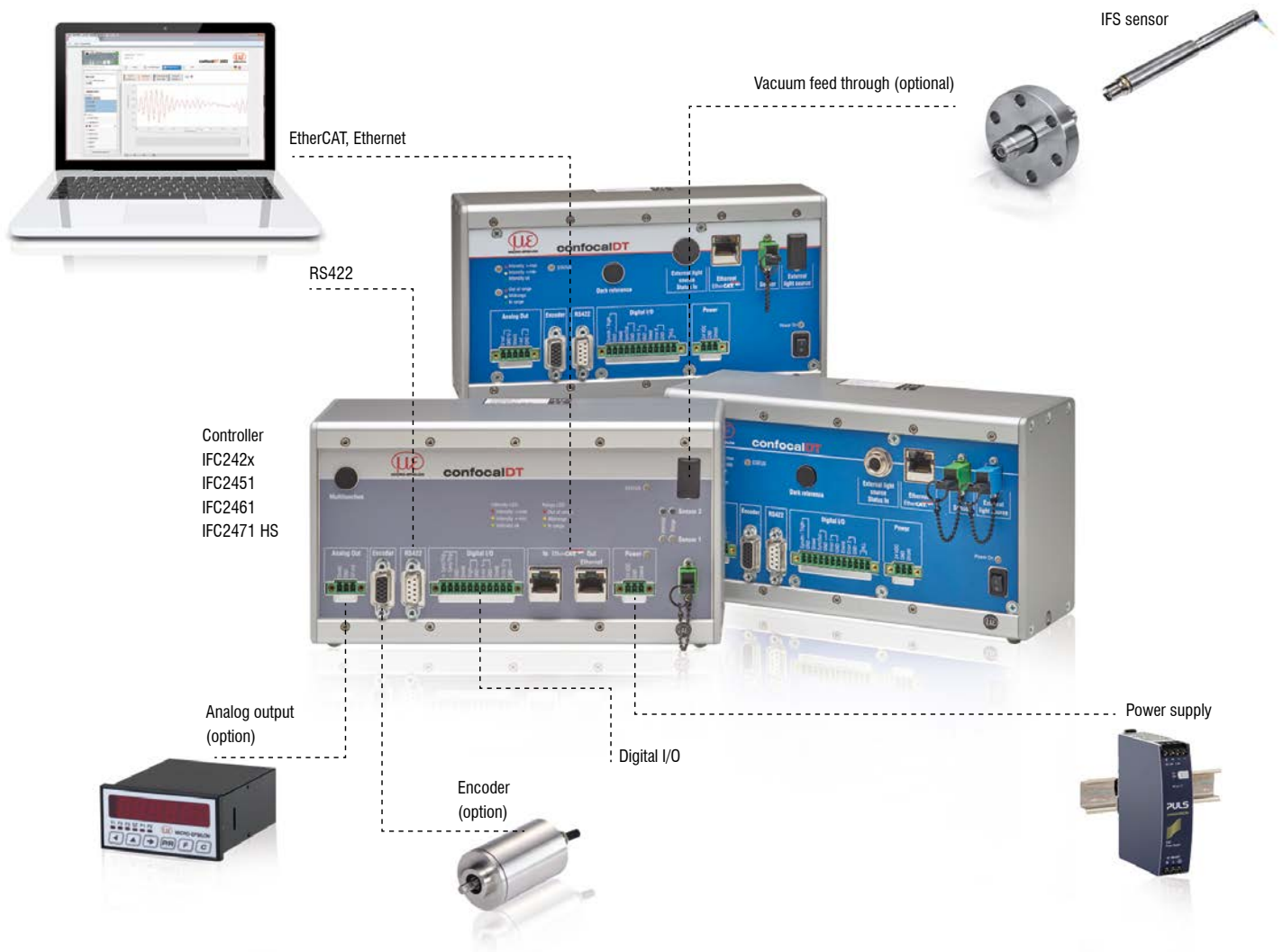
²⁾ Average from 512 values

³⁾ Maximum sensor tilt angle that produces a usable signal on a reflecting surface, near to the midrange

System design

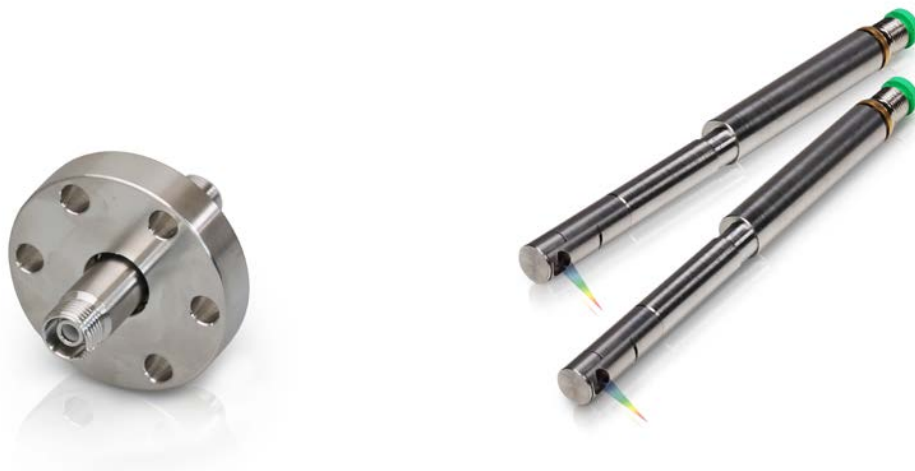
The confocalDT system consists of:

- Sensor IFS240x
- Controller IFC24xx
- Fiber-optic cable



Customer-specific modifications

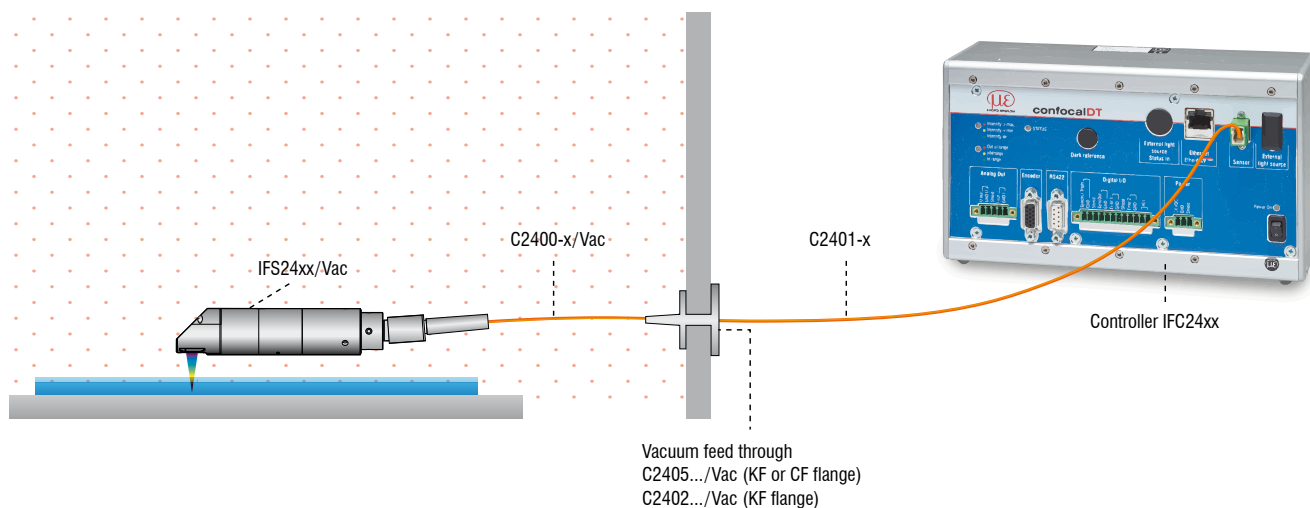
Application examples are often found where the standard versions of the sensors and the controller are performing at their limits. To facilitate such special tasks it is possible to customize the sensor design and to adjust the controller accordingly. Common requests for modifications include changes in design, mounting options, customized cable lengths and modified measuring ranges.



Possible modifications

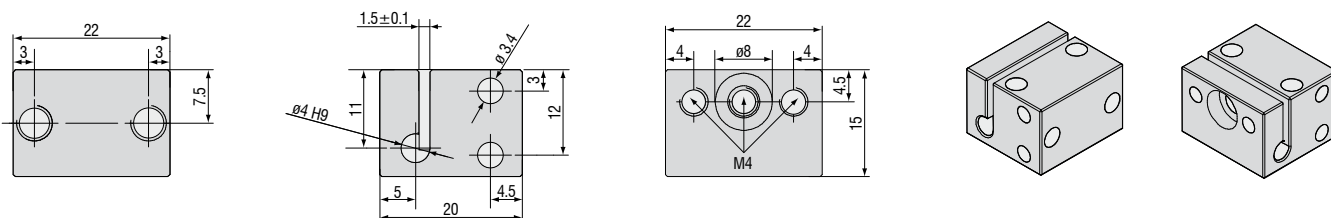
- Sensors with connector
- Cable length
- Vacuum suitability until UHV
- Specific lengths
- Customer-specific mounting options
- Optical filter for ambient light compensation
- Housing material
- Measuring range / offset distance

Vacuum setup

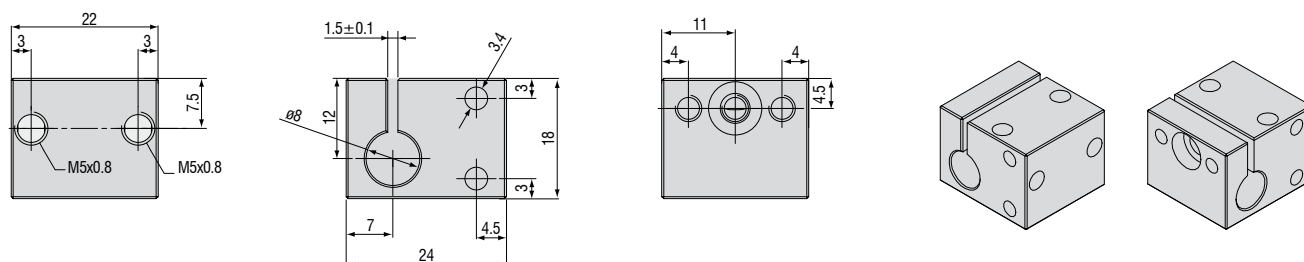


Accessories: mounting adapter

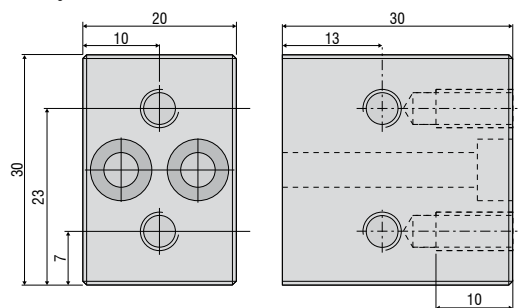
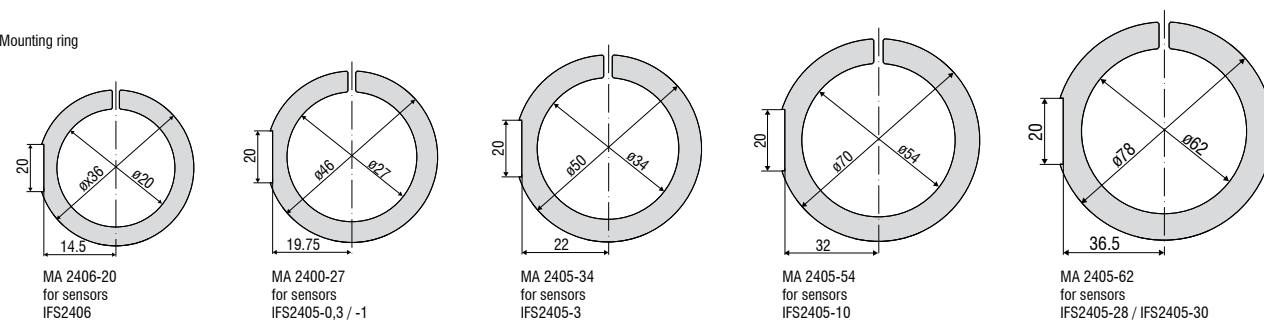
MA2402 for sensors 2402

**Accessories: mounting adapter**

MA2403 for sensors 2403

**Accessories: mounting adapter**

MA2400 for sensors IFS2405/IFS2406 (consisting of a mounting block and a mounting ring)

Mounting block**Mounting ring**

Accessories

Software

IFD24n1-Tool Free demo software tool included

Accessories light source

IFL2422/LE Lamp module for IFC2422
 IFL24x1/LED Lamp module for IFC24x1
 IFL2451/LED(003) Lamp module for IFC2451(003)

Cables for IFS2402/IFS2403 sensors

CE2402 cable with 2x E2000/APC connectors
 CE2402-x Extension for optical fiber (3 m, 10 m, 13 m, 30 m, 50 m)
 CE2402-x/PT Optical fiber with protection tube for mechanical stress
 (3 m, 10 m, customer-specific length up to 50 m)

Cables for IFS2405/IFS2406 sensors

C2401 cable with FC/APC and E2000/APC connectors
 C2401-x Optical fiber (3 m, 5 m, 10 m, customer-specific length up to 50 m)
 C2401/PT-x Optical fiber with protection tube for mechanical stress
 (3 m, 5 m, 10 m, customer-specific length up to 50 m)
 C2401-x (01) Optical fiber core diameter 26 μm (3 m, 5 m, 15 m)
 C2401-x(10) Drag-chain suitable optical fiber (3 m, 5 m, 10 m)

C2400 cable with 2x FC/APC connectors

C2400-x Optical fiber (3 m, 5 m, 10 m, customer-specific length up to 50 m)
 C2400/PT-x Optical fiber with protection tube for mechanical stress
 (3 m, 5 m, 10 m, customer-specific length up to 50 m)
 C2400/PT-x-Vac Optical fiber with protection tube suitable for use in vacuum
 (3 m, 5 m, 10 m, customer-specific length up to 50 m)

Cable for IFS2407 sensors

C2404-x Optical fiber with DIN connector and E2000/APC (2 m, 5 m)

Vacuum feed through

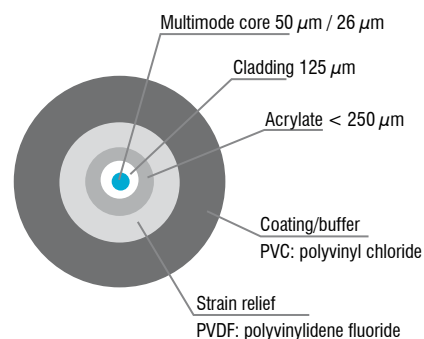
C2402/Vac/KF16 Vacuum feed through with optical fiber, 1 channel, vacuum side FC/APC
 non-vacuum side E2000/APC, clamping flange KF 16
 C2405/Vac/1/KF16 Vacuum feed through on both sides FC/APC socket, 1 channel,
 clamping flange type KF 16
 C2405/Vac/1/CF16 Vacuum feed through on both sides FC/APC socket, 1 channel,
 flange type CF 16
 C2405/Vac/6/CF63 Vacuum feed through FC/APC socket, 6 channels,
 flange type CF 63

Other accessories

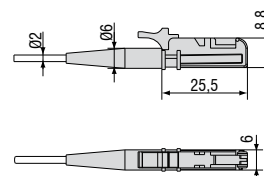
SC2471-x/USB/IND Connector cable IFC2451/61/71, 3 m, 10 m, 20 m
 SC2471-x/IF2008 Connector cable IFC2451/61/71-IF2008, 3 m, 10 m, 20 m
 PS2020 Power supply 24 V / 2.5 A
 EC2471-3/OE Encoder cable, 3 m

Optical fiber

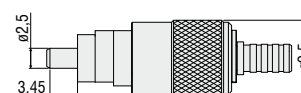
Temperature range : -50 °C to 90 °C
 Bending radius: 30/40 mm



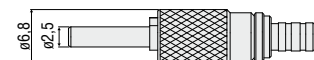
E2000/APC standard connector



FC/APC standard connector



DIN connector



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, fiber optic sensors and fiber optics



Color recognition sensors, LED analyzers and color inline spectrometer



Measurement and inspection systems