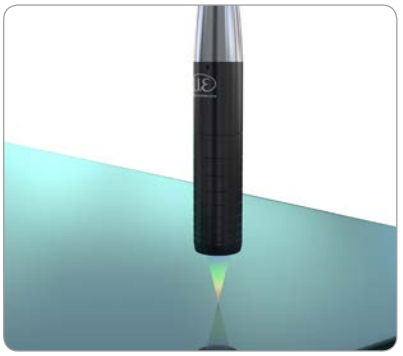
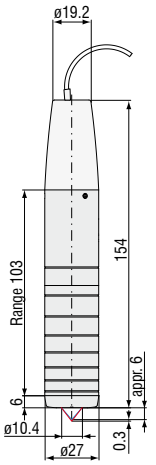
MICRO-EPSILON

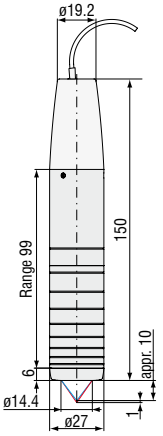
More Precision

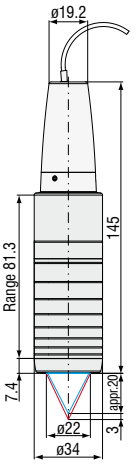
confocalDT // Confocal chromatic measuring system

- **Robust sensors for various applications**
- **One-sided thickness measurement**
- **Distance measurement**
- **Extremely small spot size**
- **Submicrometer resolution**
- **Passive design without electronic components**









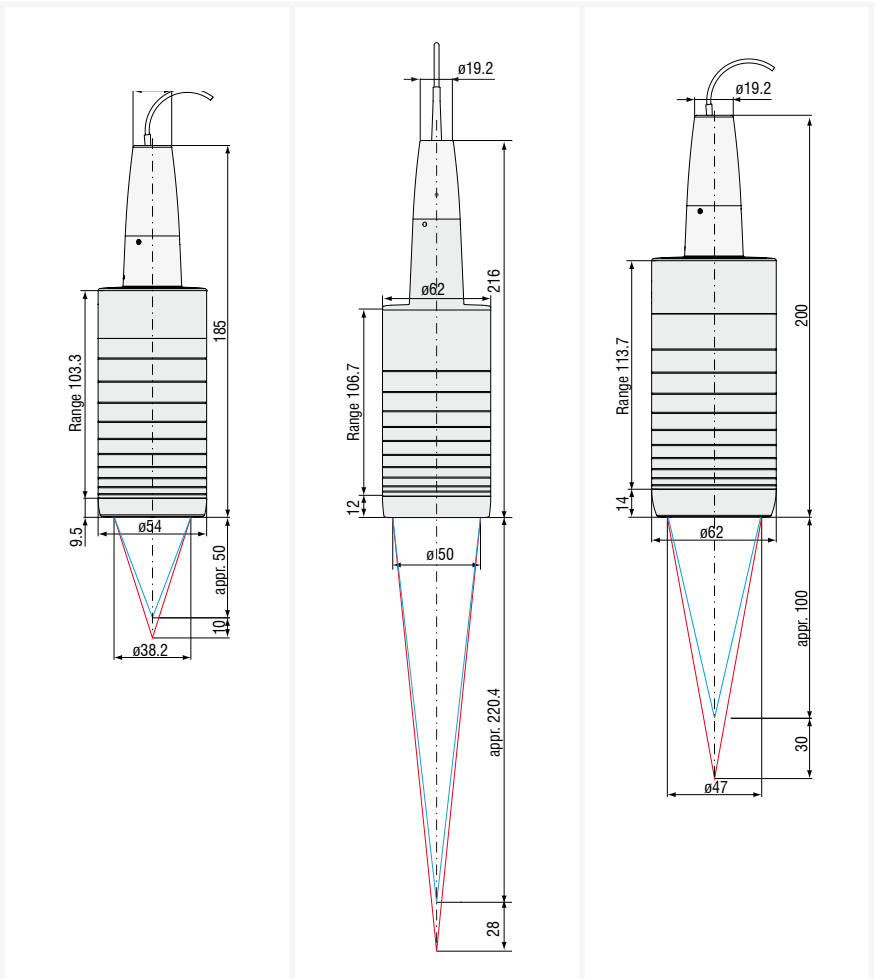
Sensor model		IFS2405-0.3	IFS 2405-1	IFS 2405-3
Measuring range		0.3 mm	1 mm	3 mm
Start of measuring range	approx.	6 mm	10 mm	20 mm
Numerical aperture		0.60	0.55	0.45
Light spot diameter		6 µm	8 µm	9 µm
Linearity (displacement and distance measurement)		≤ 0.15 µm	≤ 0.25 µm	≤ 0.75 µm
Linearity (thickness measurement)		≤ 0.3 µm	≤ 0.5 µm	≤ 1.5 µm
Resolution [1]		10 nm	28 nm	36 nm
Weight		140 g	125 g	225 g
Max. tilt [2]		± 34°	± 30°	± 24°
Protection class		IP65, front operated		
Temperature range	Operation	+5 ... +70 °C		
	Storage	-20 … +70 °C		
Connection		pluggable sensor cable via FC socket, standard length 3 m; extension up to 50 m; 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 ±2 °C) against optical flat; specifications can change when measuring different materials.

[1] Average from 512 values at 1 kHz, near to the midrange

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



Sensor model		IFS 2405-10	IFS 2405-28	IFS 2405-30
Measuring range		10 mm	28 mm	30 mm
Start of measuring range	approx.	50 mm	220 mm	100 mm
Numerical aperture		0.30	0.10	0.20
Light spot diameter		16 µm	60 µm	50 µm
Linearity (displacement and distance measurement)		≤ 2.5 µm	≤ 7 µm	≤ 7.5 µm
Linearity (thickness measurement)		≤ 5 µm	≤ 14 µm	≤ 15 µm
Resolution [1]		60 nm	250 nm	180 nm
Weight		500 g	750 g	730 g
Max. tilt [2]		± 17°	± 5°	± 9°
Protection class		IP65, front operated		
Temperature range	Operation	+5 ... +70 °C		
	Storage	-20 … +70 °C		
Connection		pluggable sensor cable via FC socket, standard length 3 m; extension up to 50 m; 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 ±2 °C) against optical flat; specifications can change when measuring different materials.

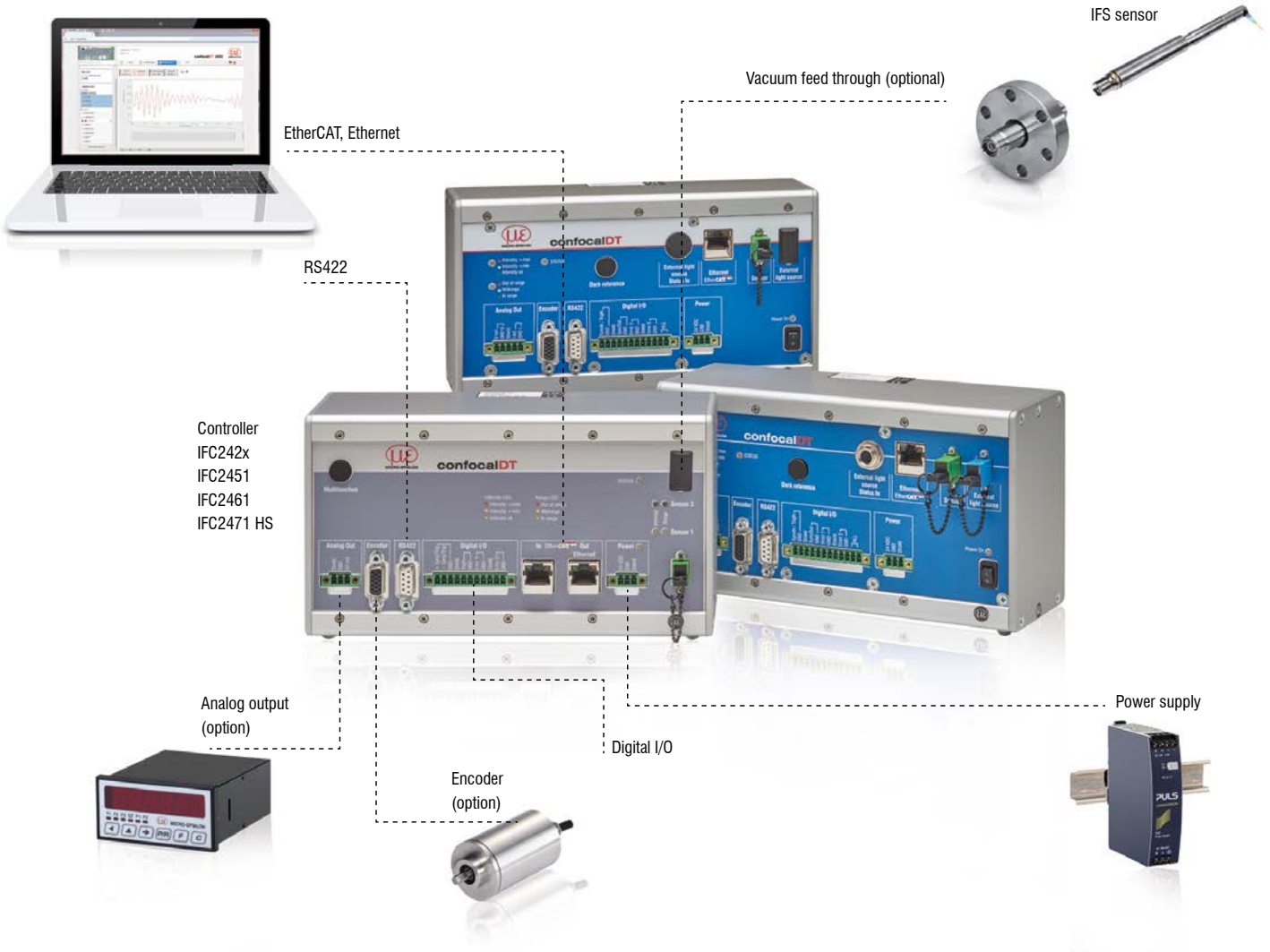
[1] Average from 512 values at 1 kHz, near to the midrange

[2] 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



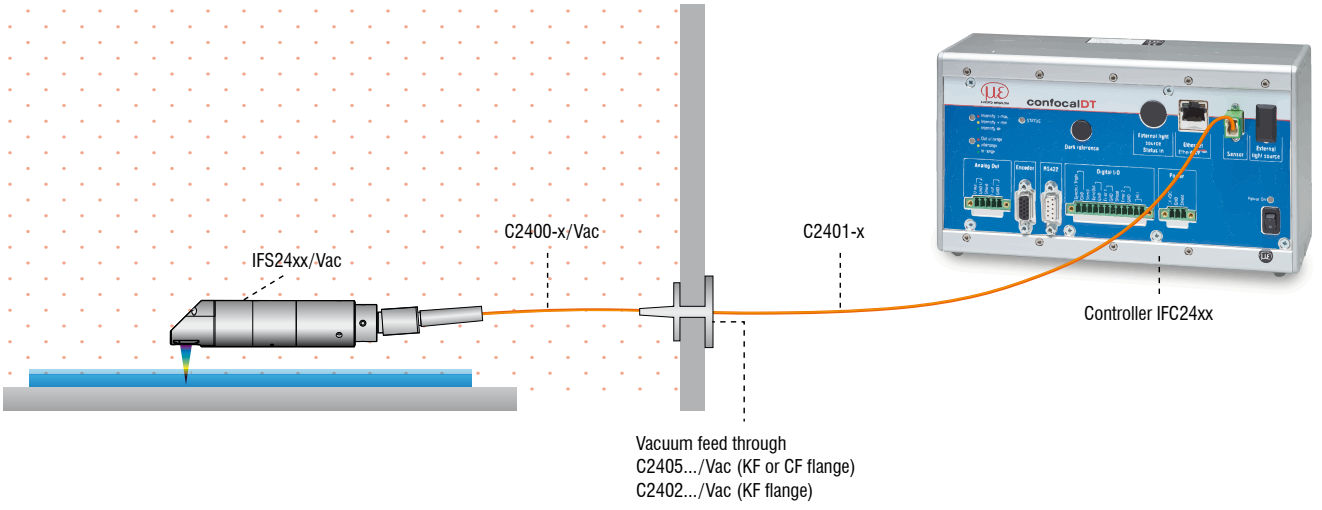
Customer-specific modifications

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.

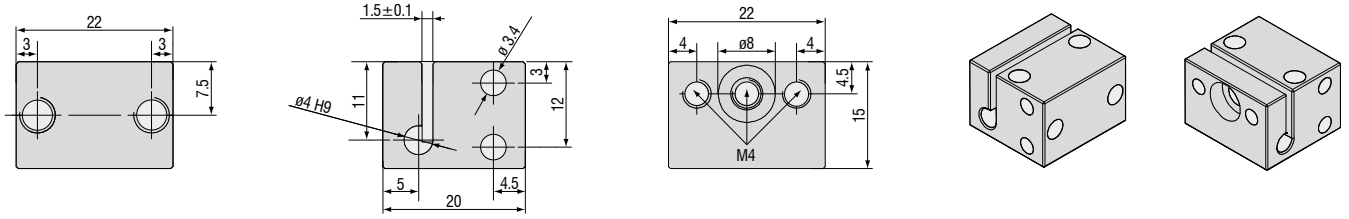
Possible modifications

- 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

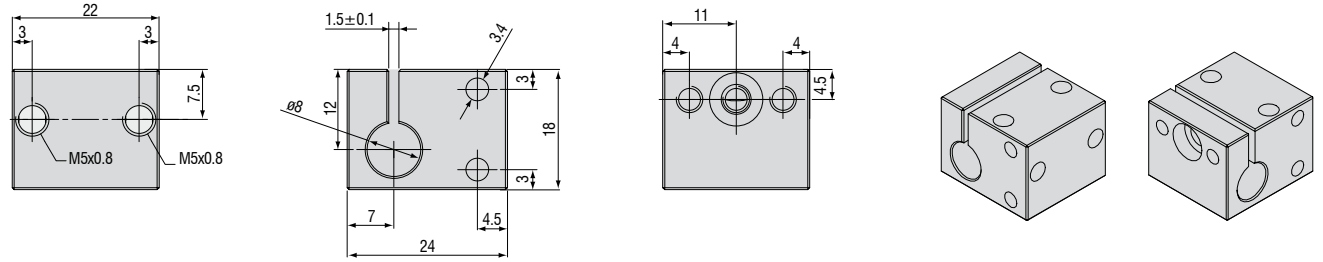
Vacuum setup



Accessories: mounting adapter
MA2402 for sensors 2402

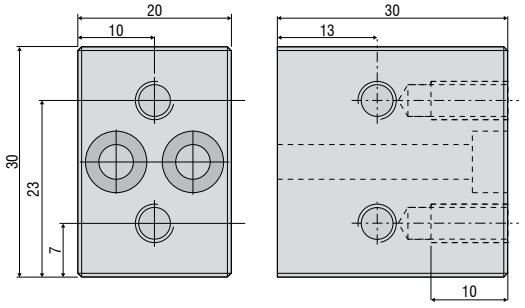


Accessories: mounting adapter
MA2403 for sensors 2403

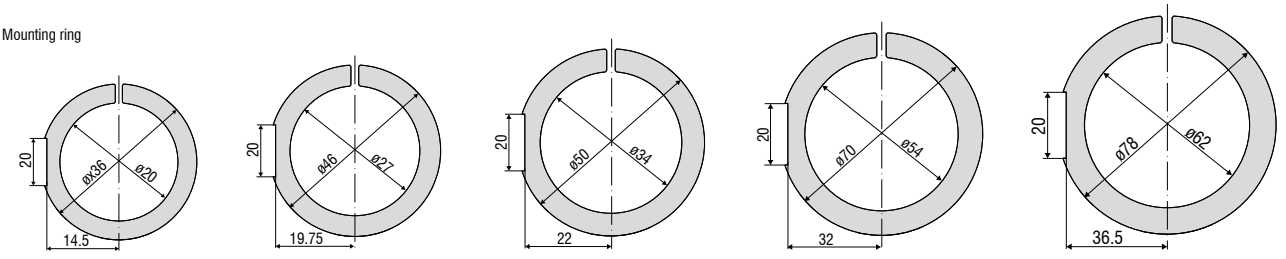


Accessories: mounting adapter
MA2400 for sensors IFS2405/IFS2406 (consisting of a mounting block and a mounting ring)

Mounting block



Mounting ring



MA 2406-20
for sensors
IFS2406

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

MA 2405-34
for sensors
IFS2405-3

MA 2405-54
for sensors
IFS2405-10

MA 2405-62
for sensors
IFS2405-28 / IFS2405-30

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

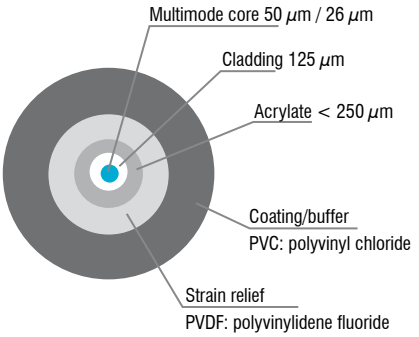
C2402/Vac/KF16	Vacuum feed through with optical fiber, 1 channel, vacuum side FC/APC non-vacuum side E2000/APC, clamping flange KF 16
C2405/Vac/1/KF16	Vacuum feed through on both sides FC/APC socket, 1 channel, clamping flange type KF 16
C2405/Vac/1/CF16	Vacuum feed through on both sides FC/APC socket,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

Other accessories

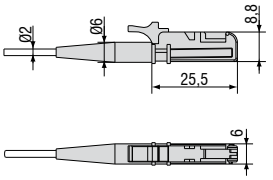
SC2471-x/USB/IND	Connector cable IFC2451/61/71, 3 m, 10 m, 20 m
SC2471-x/IF2008	Connector cable IFC2451/61/71-IF2008, 3 m, 10 m, 20 m
PS2020	Power supply 24 V / 2.5 A
EC2471-3/OE	Encoder cable, 3 m

Optical fiber

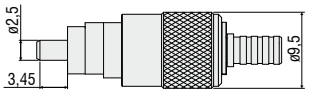
Temperature range : -50 °C to 90 °C
Bending radius: 30/40 mm



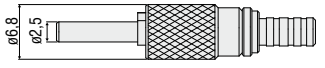
E2000/APC standard connector



FC/APC standard connector



DIN connector



High performance sensors made by Micro-Epsilon

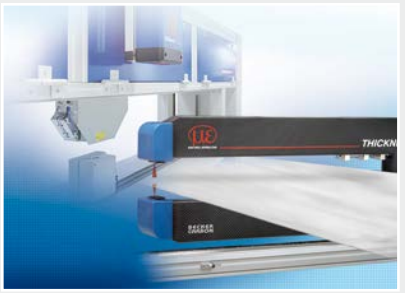
Sensors and systems for displacement and position

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

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