More Precision

confocalDT // Confocal chromatic measurement system
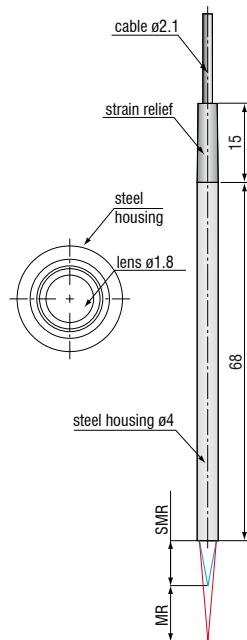
Miniature sensors ø4mm with axial or radial (90°) measuring direction

Submicrometer resolution

Distance measurement

Extremely small spot size

Passive design without electronic components

The miniaturized IFS2402 sensors are housed in a steel casing. The sensor contains a specially developed lens rod which enables the small design with an outer diameter of just 4mm. Therefore, these sensors can also be used in confined spaces to measure cavities and bores. In addition to sensors with axial measuring direction, sensors with radial beam path (90°) are available to detect the wall structure of cavities with highest accuracy.
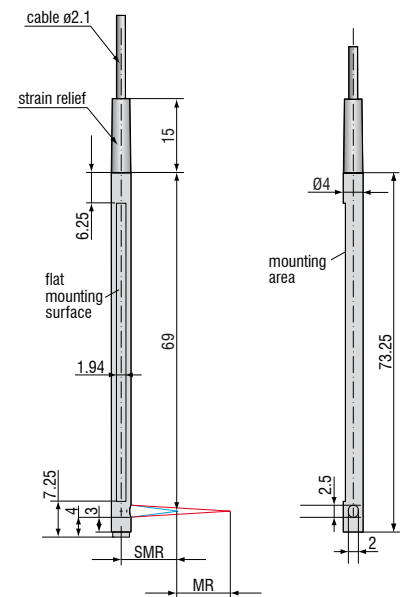
Inner diameter of small bores

IFS2402-0.4/1.5/4

cable ø2.1

strain relief

15

steel housing

lens ø1.8

68

steel housing ø4

SMR

MR

IFS2402/90-1.5/4

cable ø2.1

strain relief

15

6.25

flat mounting surface

1.94

69

7.25

4

3

SMR

MR

Ø4

mounting area

73.25

2.5

2

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

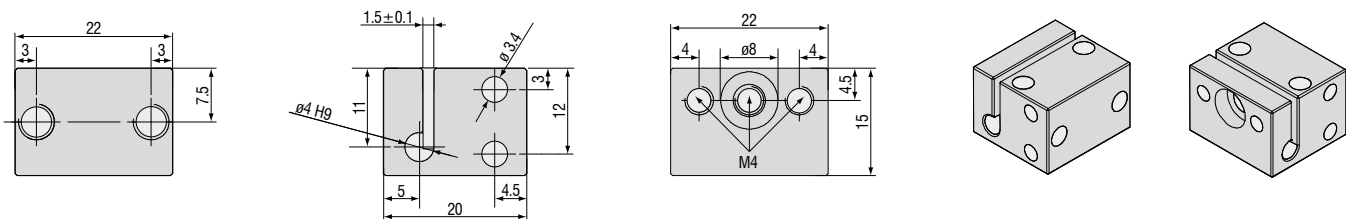| Sensor model (miniature)	IFS2402-0,4	IFS2402-1,5	IFS2402/90-1,5	IFS2402-4	IFS2402/90-4
Measuring range	400µm	1.5mm	1.5mm	3.5mm	2.5mm
Start of measuring range approx.	1.5mm	0.9mm	2.5mm [1]	1.9mm	2.5mm [1]
Spot diameter	10µm	20µm	20µm	20µm	20µm
Linearity	~0.3µm	1.2µm	1.2µm	~3µm	2µm
	≤ ±0.08 % FSO				
Resolution [2]	16nm	60nm	60nm	0.1µm	0.1µm
Weight	15g				
Max. tilt (direct reflection)	± 8°	± 5°	± 5°	± 3°	± 3°
Protection class	IP40				
Operating temperature	+5 ... +70 °C				
Storage temperature	-30 ... +70 °C				
Sensor cable (optical fiber)	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±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

Accessories: mounting adapter
MA2402 for sensors 2402

System design

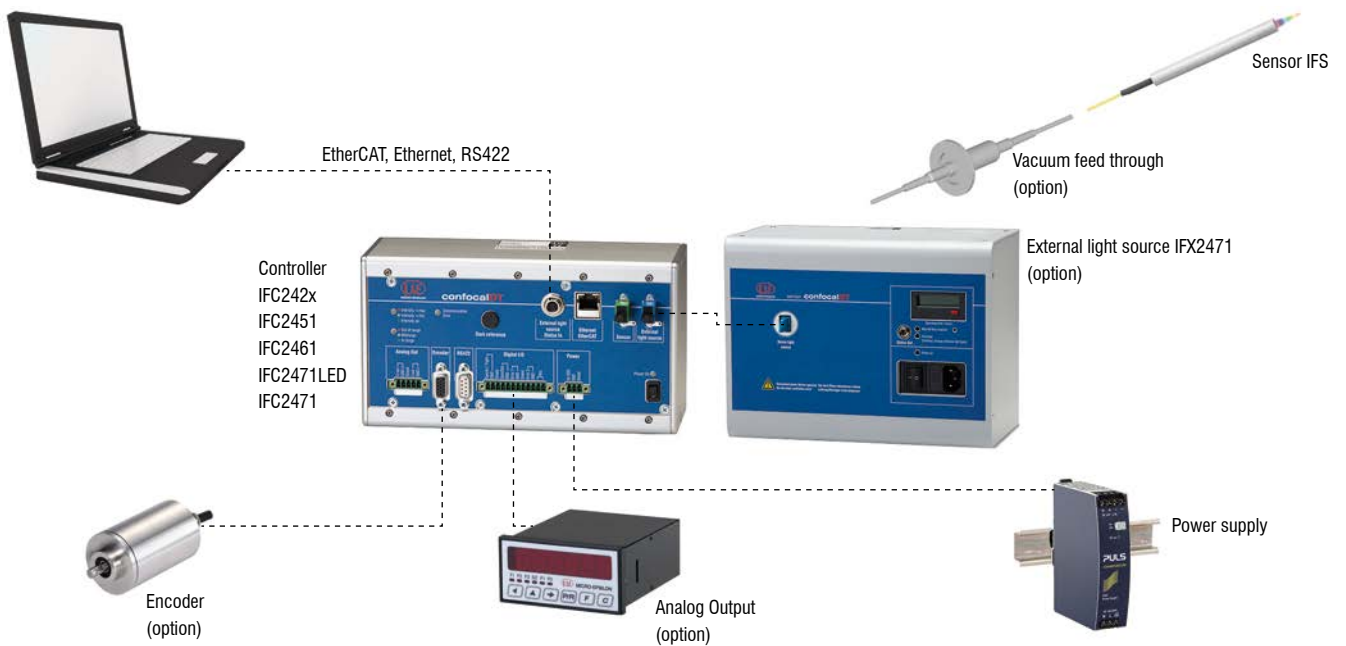**The confocalDT 247x system consists of:**
- Sensor IFS240x
- Controller IFC242x

The confocalDT 2451 / 2461 / 2471 HS system consists of:
- Sensor IFS240x
- Controller IFC2451 / IFC2461 / IFC2471LED

The confocalDT 2471 system consists of:
- Sensor IFS240x
- Controller IFC2471 (for external light source)
- Xenon light source IFX2471

Sensor IFS

EtherCAT, Ethernet, RS422

Vacuum feed through (option)

Controller
IFC242x
IFC2451
IFC2461
IFC2471LED
IFC2471

External light source IFX2471 (option)

Power supply

Encoder (option)

Analog Output (option)

Customer-specific modifications

On occasions, application requirements exceed the performance limits of standard sensors and controllers. 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
- 90° cable outlet
- Vacuum suitability, no outgassing, also UHV
- Reduced sensor length
- Customer-specific mounting options
- Extended sensor lance
- Optical filter for ambient light compensation
- Housing material

Accessories

Software

IFD24n1-Tool	Free demo software tool included

Light source accessories

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

Accessories IFS2406

C2401-X (01)	Optical fiber ø26μm (3m, 10m)

Accessories IFS2405

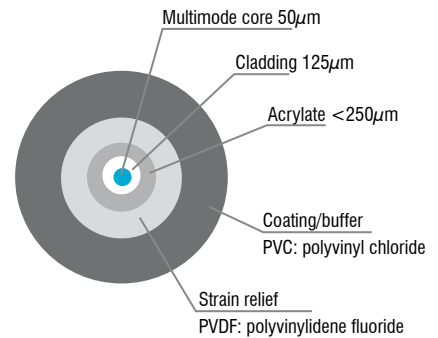|	
C2401-X	Optical fiber (3m, 10m, customer-specific length up to 50m)
C2401/PT-X	Protection tube for mechanical stress (3m, 10m, customer-specific length up to 50m)
C2401-3(10)	Sensor cable for drag chain use, 3m
C2401-5(10)	Sensor cable for drag chain use, 5m

Accessories IFS2402/2403

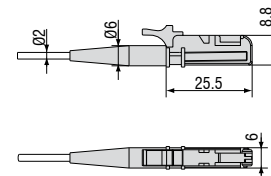|	
CE2402-X	Sensor cable extension (3/10/13/30/50m)
CE2402-X/PT	Sensor with protection tube (for mechanical stress) (3m/10m, customer-specific length up to 50m)
C2402/Vac/KF16	Vacuum feed through for optical fiber, 1 channel
C2405/Vac/6/CF63	Vacuum feed through for optical fiber, 6 channels
C2405/Vac/9/CF63	Vacuum feed through for optical fiber, 9 channels

Other 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 24V / 2.5A
EC2471-3/OE	Encoder cable, 3m

Optical fiber

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

- Multimode core 50μm
- Cladding 125μm
- Acrylate <250μm
- Coating/buffer PVC: polyvinyl chloride
- Strain relief PVDF: polyvinylidene fluoride

E2000/APC standard 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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