MICRO-EPSILON

More Precision

confocalDT // Confocal chromatic measuring system

	Measuring rate up to 6.5kHz
	Interfaces: Ethernet / EtherCAT / RS422 / Analog
	Fast surface compensation
	Configuration via web interface
	Submicrometer resolution
	Multi-layer thickness measurement
	Synchronous two-sided thickness measurement
	Robust design with passive cooling

The confocalDT 2421/22 controllers set the industrial standard in precise, confocal measurement technology.

Available as either a single- or a dual-channel version, these measuring systems enable a low cost solution especially for serial applications. The active exposure regulation feature in the CCD line enables accurate, fast surface compensation on changing surfaces.

The controller can be operated with any IFS sensor and is available as a standard version for distance measurements or as a multi-peak version for multi-layer thickness measurements. Using a special calculation function, the confocalDT 2422 dual-channel version evaluates both channels. Measurement acquisition is synchronous and can be carried out while exploiting the full measuring rate for both channels.

Due to a user-friendly web interface, no additional software is necessary to configure the controller and the sensors. Data output is via Ethernet, EtherCAT, RS422 or analog output.
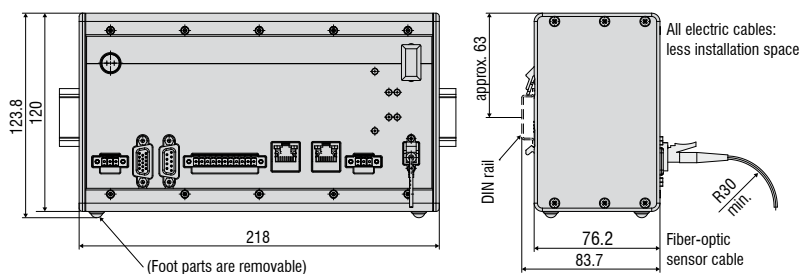

All settings are performed in the web interface. For thickness measurements, materials are stored in an expandable materials database.
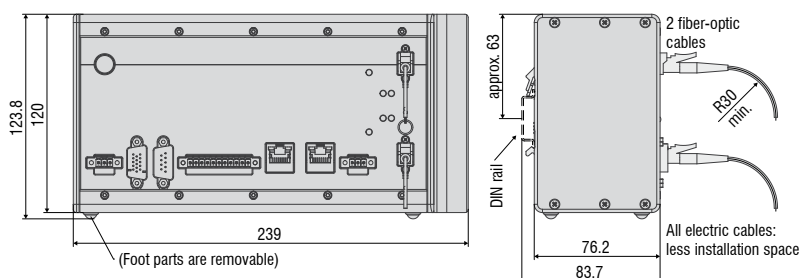

Two sensors can be directly connected to a confocal IFC2422 controller.

Controller		IFC2421	IFC2421MP	IFC2422	IFC2422MP
Multi peak measurement		1 layer	up to 5 layers	1 layer	up to 5 layers
Measurement channels		1	1	2	2
Light source		internal white LED			
Measuring rate		continuously adjustable from 100 Hz to 6.5 kHz			
Resolution	Ethernet	1 nm			
	RS422	18 bits			
	analog	16 bits (teachable)			
Storage		up to 20 calibration tables for different sensors per channel, menu selection			
Controller inputs/outputs		Sync-In/Trig-In, Sync-Out Error1-Out, Error2-Out Encoder (2x A, $\overline{A}$, B, $\overline{B}$, index) EtherCAT/Ethernet RS422 analog: current, voltage (16-bit D/A converter)			
EtherCAT		EtherCAT®			
Operating elements, controller display		multifunction button (dark alignment and reset to factory setting after 10 sec) 5x LEDs for intensity, range, status, supply voltage			
Supply voltage, power consumption		24 VDC ± 15 %, approx. 10 W			
Material		Aluminum case for DIN rail mounting			
Protection class		IP40			
Temperature range	Operation	+5 ... +50 °C			
	Storage	-20 ... +70 °C			
Permissible ambient light		30,000 lx			
Shock		15 g, 6 ms			
Vibration		2g / 10 Hz ... 500 Hz			
Connection	Cable (optical fiber)	2 ... 50 m			
	Connector	E2000			
Max. cable lengths (all cables are shielded)	EtherCAT, Ethernet	CAT5E; cable length <100 m			
	Supply, RS422, Sync./Error	<30 m			
	analog	<30 m			
	Encoder	<3 m			

IFC2421 controller

123.8
120
218
(Foot parts are removable)

approx. 63
DIN rail
76.2
83.7

All electric cables:
less installation space
R30 min.
Fiber-optic
sensor cable

IFC2422 controller

123.8
120
239
(Foot parts are removable)

approx. 63
DIN rail
76.2
83.7

2 fiber-optic
cables
R30 min.
All electric cables:
less installation space
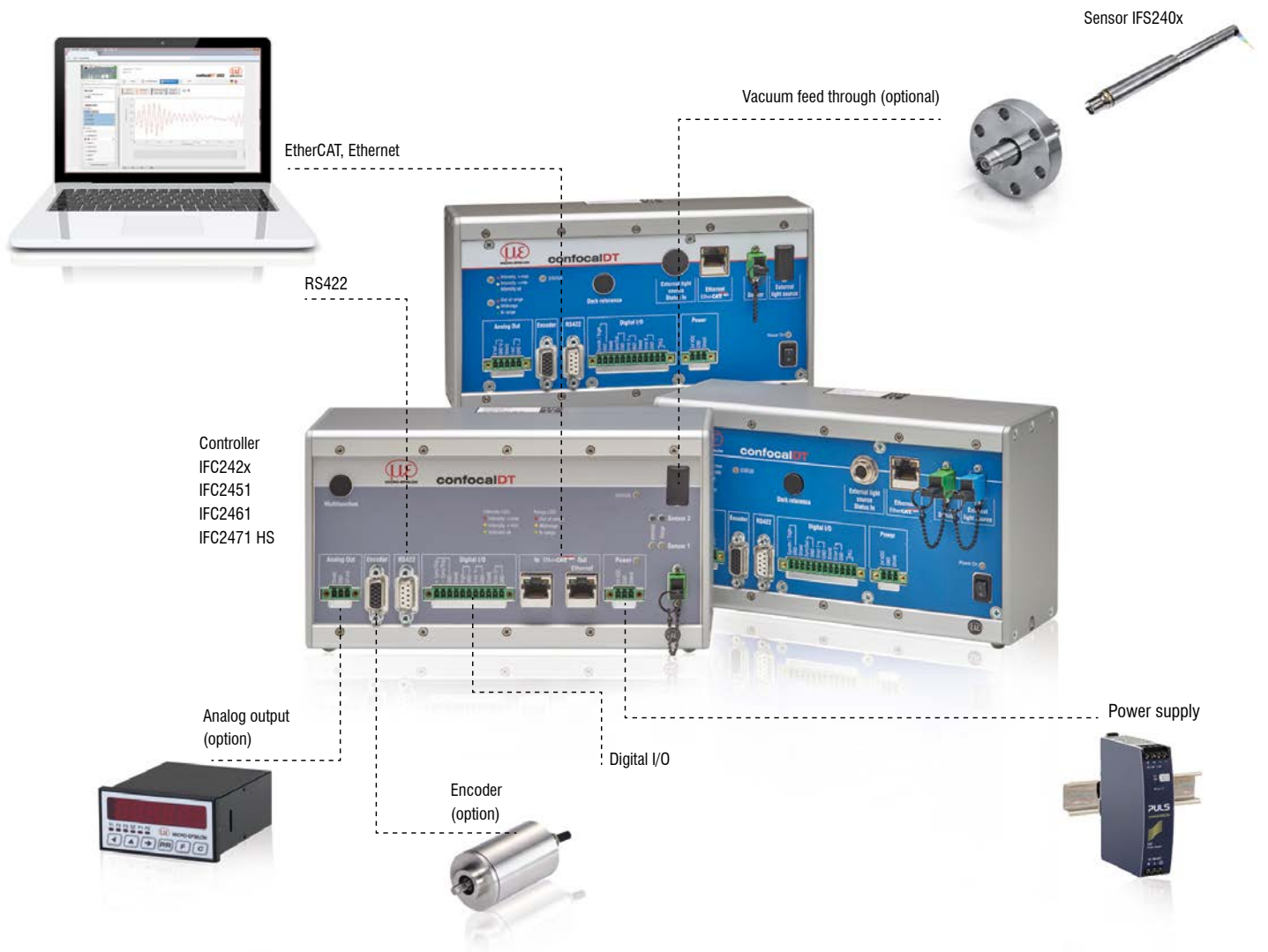
System design

The confocalDT system consists of:
- Sensor IFS240x
- Controller IFC24xx
- Fiber optic cable C24xx

Sensor IFS240x

Vacuum feed through (optional)

EtherCAT, Ethernet

RS422

Controller
IFC242x
IFC2451
IFC2461
IFC2471 HS

Analog output
(option)

Encoder
(option)

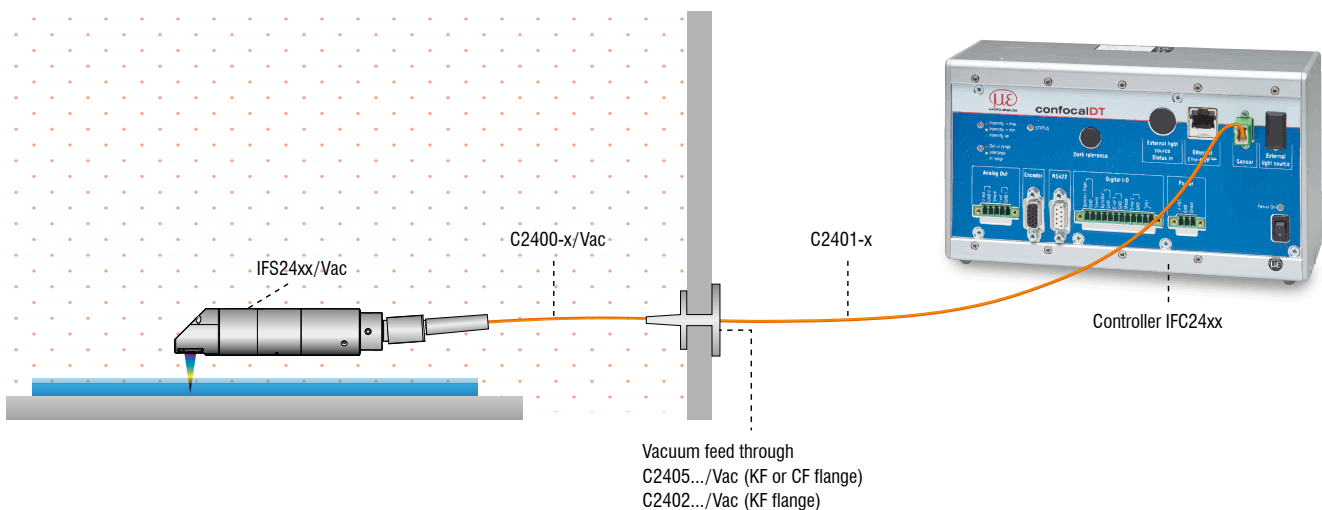Digital I/O

Power supply

Customer-specific modifications

Application examples are often found where the standard versions of the sensors and the controllers 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.
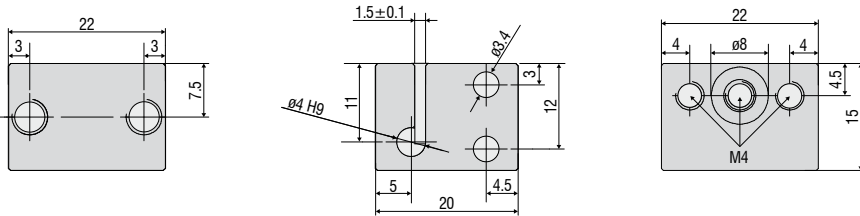
Possible modifications
- Sensors with connector
- Cable length
- Vacuum suitability up to UHV
- Specific lengths
- Customer-specific mounting options
- Optical filter for ambient light compensation
- Housing material
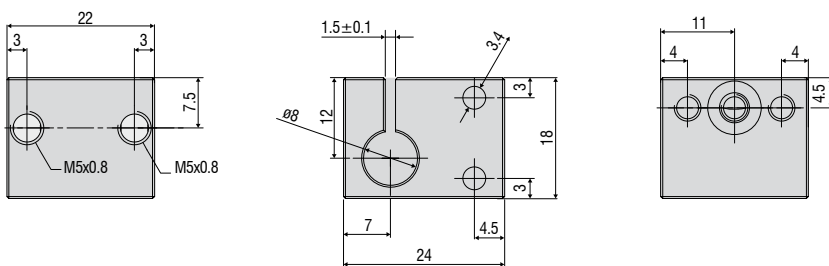- Measuring range / Offset distance

Vacuum setup

IFS24xx/Vac

C2400-x/Vac

C2401-x

Controller IFC24xx

Vacuum feed through
C2405.../Vac (KF or CF flange)
C2402.../Vac (KF flange)

Accessories: mounting adapter
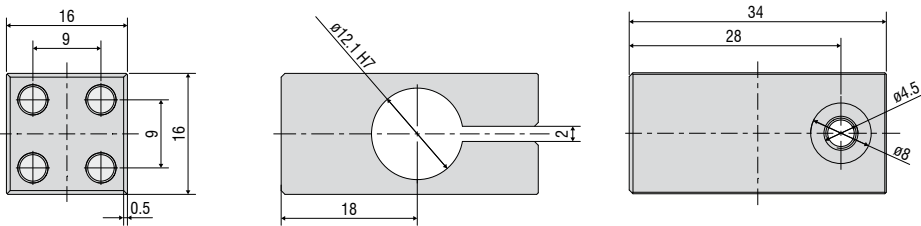MA2402 for sensors 2402

Accessories: mounting adapter
MA2403 for sensors 2403
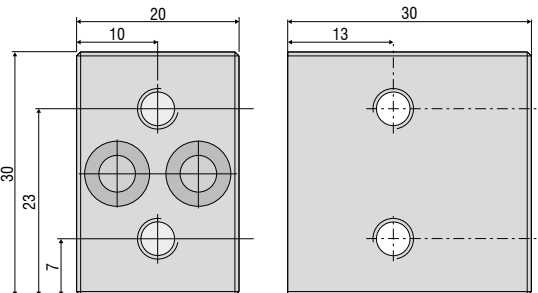
Accessories: mounting adapter
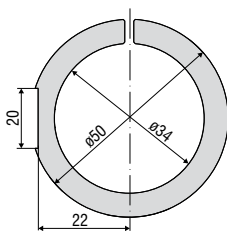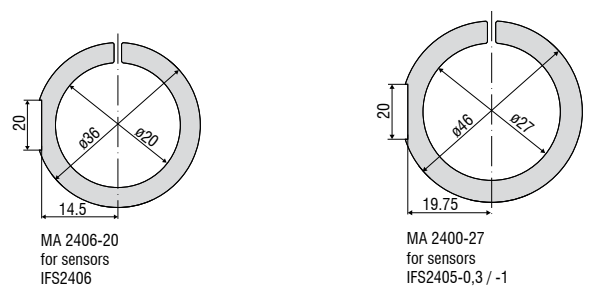MA2404-12 for sensors IFS2404-2

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

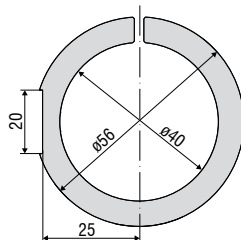Mounting block

Mounting ring

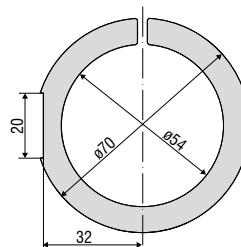MA 2406-20
for sensors
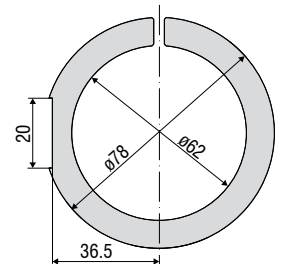IFS2406

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

MA 2405-34
for sensors
IFS2405-3

MA 2405-40
for sensors
IFS 2405-6

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)

Cable extension for 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	Extension for optical fiber with protection tube for mechanical stress (3 m, 10 m, customer-specific length up to 50 m)

Cable for IFS2404 sensors

C2404-x (01)	Optical fiber core diameter 20 μm (2 m)

Cables for IFS2405/IFS2406/2407-0,1 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 IFS2407/90-0,3 sensors

C2407-x	Optical fiber with DIN connector and E2000/APC (2 m, 5 m)

Vacuum feed through

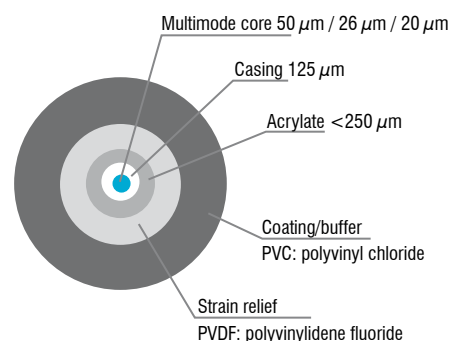|	
C2402/Vac/KF16	Vacuum feed through with optical fiber, 1 channel, vacuum side FC/APC non-vacuum side E2000/APC, clamping flange KF 16
C2405/Vac/1/KF16	Vacuum feed through on both sides FC/APC socket, 1 channel, clamping flange type KF 16
C2405/Vac/1/CF16	Vacuum feed through on both sides FC/APC socket,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

Other accessories

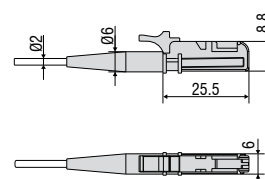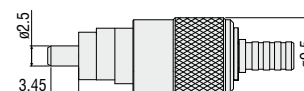|	
SC2471-x/USB/IND	Connector cable IFC2451/61/71, 3 m, 10 m, 20 m
SC2471-x/IF2008	Connector cable IFC2451/61/71-IF2008, 3 m, 10 m, 20 m
PS2020	Power supply 24V / 2.5A
EC2471-3/OE	Encoder cable, 3m

Optical fiber

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

Multimode core 50 μm / 26 μm / 20 μm
Casing 125 μm
Acrylate < 250 μm
Coating/buffer
PVC: polyvinyl chloride
Strain relief
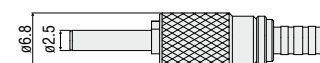PVDF: polyvinylidene fluoride

E2000/APC standard connector

FC/APC standard connector

DIN connector

Sensors and Systems from Micro-Epsilon

Sensors and systems for displacement, distance and position

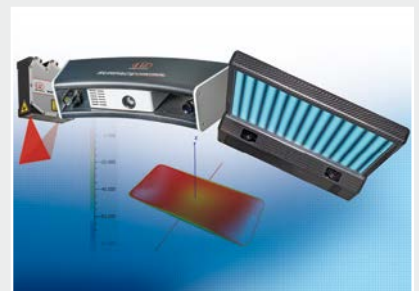Sensors and measurement devices for non-contact temperature measurement

Measuring and inspection systems for metal strips, plastics and rubber

Optical micrometers and fiber optics, measuring and test amplifiers

Color recognition sensors, LED analyzers and inline color spectrometers

3D measurement technology for dimensional testing and surface inspection