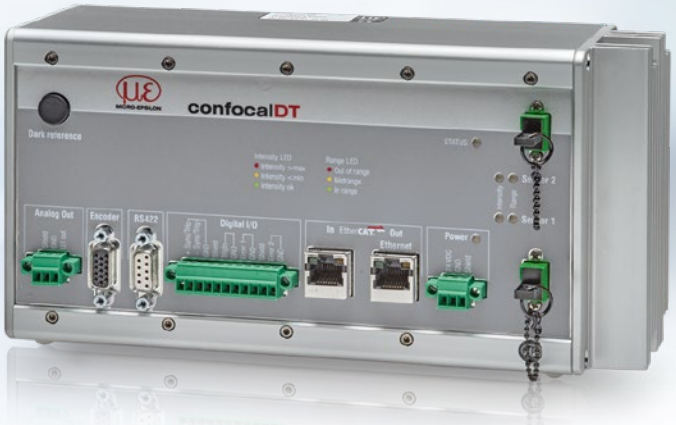
MICRO-EPSILON

More Precision

confocalDT // Confocal chromatic sensor system

Confocal universal controllers for industrial applications
confocalDT IFC242x

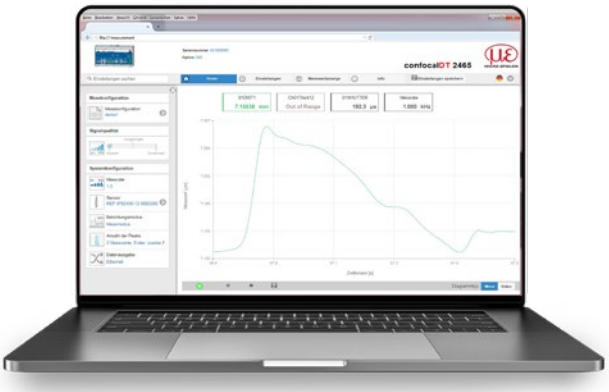
- Measuring rate of up to 10 kHz
- Ethernet / EtherCAT / RS422 / PROFINET / EtherNet/IP / Analog
- Fast surface compensation
- Configuration via web interface
- Submicron resolution
- Thickness measurement of multi-layer materials
- Synchronous two-sided thickness measurement
- Robust design with passive 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 are a low cost solution, especially for series applications. The active exposure regulation of the CCD line enables fast and accurate compensation of varying surfaces.

The controller can be operated with any IFS sensor and is available as a standard version for distance and thickness measurements or as a multi-peak version for multi-layer 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.



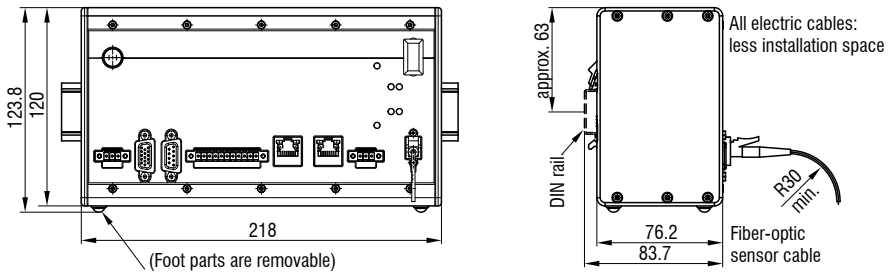
Settings are made via the web interface. For thickness measurements, materials are stored in an expandable materials database.

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

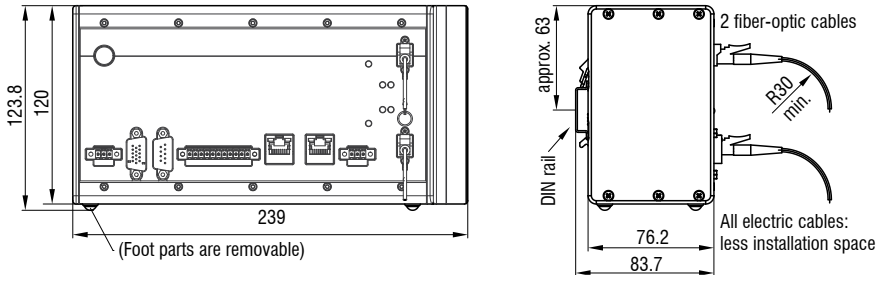
Model		IFC2421	IFC2421MP	IFC2422	IFC2422MP
Resolution	Ethernet/EtherCAT	1 nm			
	RS422	18 bit			
	Analog	16 bits (teachable)			
Measuring rate		Continuously adjustable from 100 Hz to 10 kHz [1]			
Linearity		typ. < ±0.020 % FSO (depends on sensor)			
Multi-peak measurement		1 layer	5 layers	1 layer	5 layers
Light source		Internal white LED			
No. of characteristic curves		up to 20 characteristic curves for different sensors per channel, selection via table in the menu			
Permissible ambient light [2]		30.000 lx			
Synchronization		yes			
Supply voltage		24 VDC ±15 %			
Power consumption		approx. 10 W			
Signal input		Sync-in / trig-in; 2x encoders (A+, A-, B+, B-, index) or 3x encoders (A+, A-, B+, B-)			
Digital interface		Ethernet / EtherCAT / RS422 / PROFINET [3] EtherNet/IP [3]			
Analog output		Current: 4 ... 20 mA; voltage: 0 ... 10 V (16 bit D/A converter)			
Switching output		Error1-Out, Error2-Out			
Digital output		Sync-out			
Connection	Optical	pluggable optical fiber via E2000 socket, length 2 m ... 50 m, min. bending radius 30 mm			
	Electrical	3-pin supply terminal strip; encoder connection (15-pin, HD-sub socket, max. cable length 3 m, 30 m with external encoder supply); RS422 connection socket (9-pin, Sub-D, max. cable length 30 m); 3-pin output terminal strip (max. cable length 30 m); 11-pin I/O terminal strip (max. cable length 30 m); RJ45 socket for Ethernet (out) / EtherCAT (in/out) (max. cable length 100 m)			
Mounting		free-standing, DIN rail mounting			
Temperature range	Storage	-20 … +70 °C			
	Operation	+5 … +50 °C			
Shock (DIN EN 60068-2-27)		15 g/6 ms on XYZ axis, 1000 shocks each			
Vibration (DIN EN 60068-2-6)		2 g / 20 ... 500 Hz in XYZ axis, 10 cycles each			
Protection class (DIN EN 60529)		IP40			
Material		Aluminum			
Weight		approx. 1.8 kg		approx. 2.25 kg	
Compatibility		compatible with all confocalDT sensors			
No. of measurement channels [4]		1		2	
Control and indicator elements		Multifunction button (adjustable functions and reset to factory setting after 10 s); 5x LEDs for intensity, range, status and supply voltage			

[1] Full measuring range up to 8 kHz. Sensor-dependent up to 80% FSO between 9 and 10 kHz
[2] Illuminant: light bulb
[3] Connection via interface module (see accessories)
[4] No loss of intensity and linearity due to two synchronous measurement channels

IFC2421 Controller



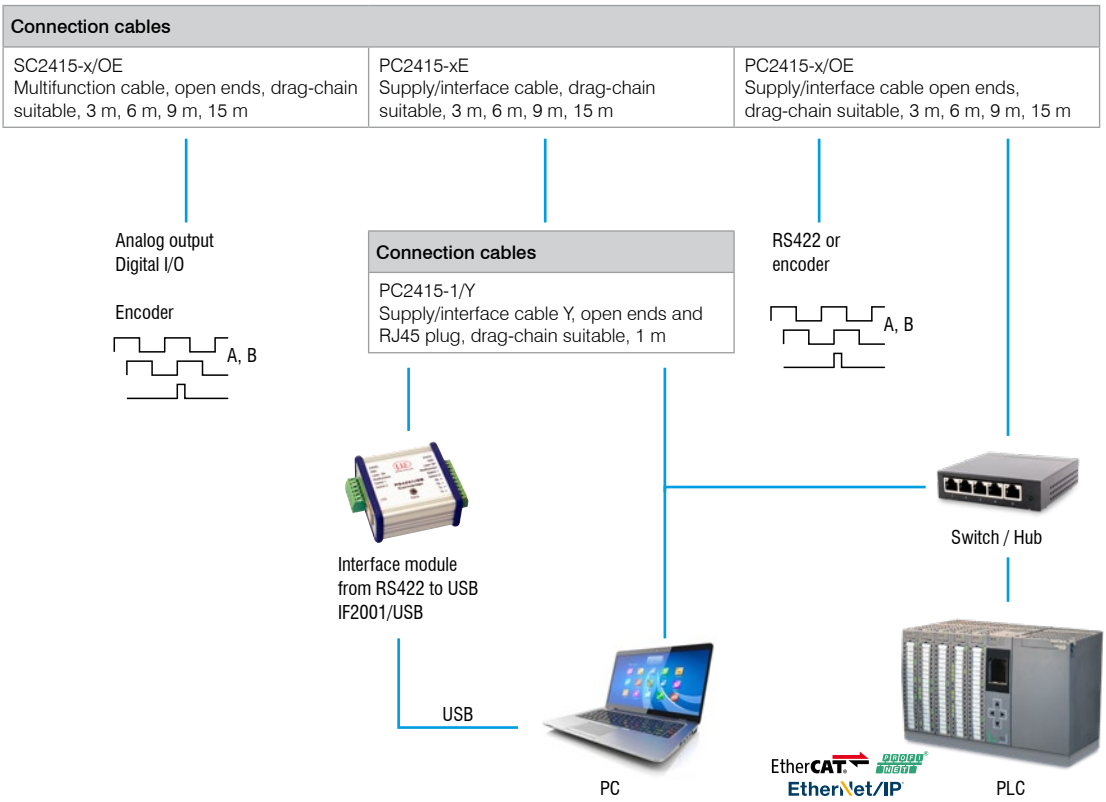
IFC2422 Controller



Connection possibilities
confocalDT

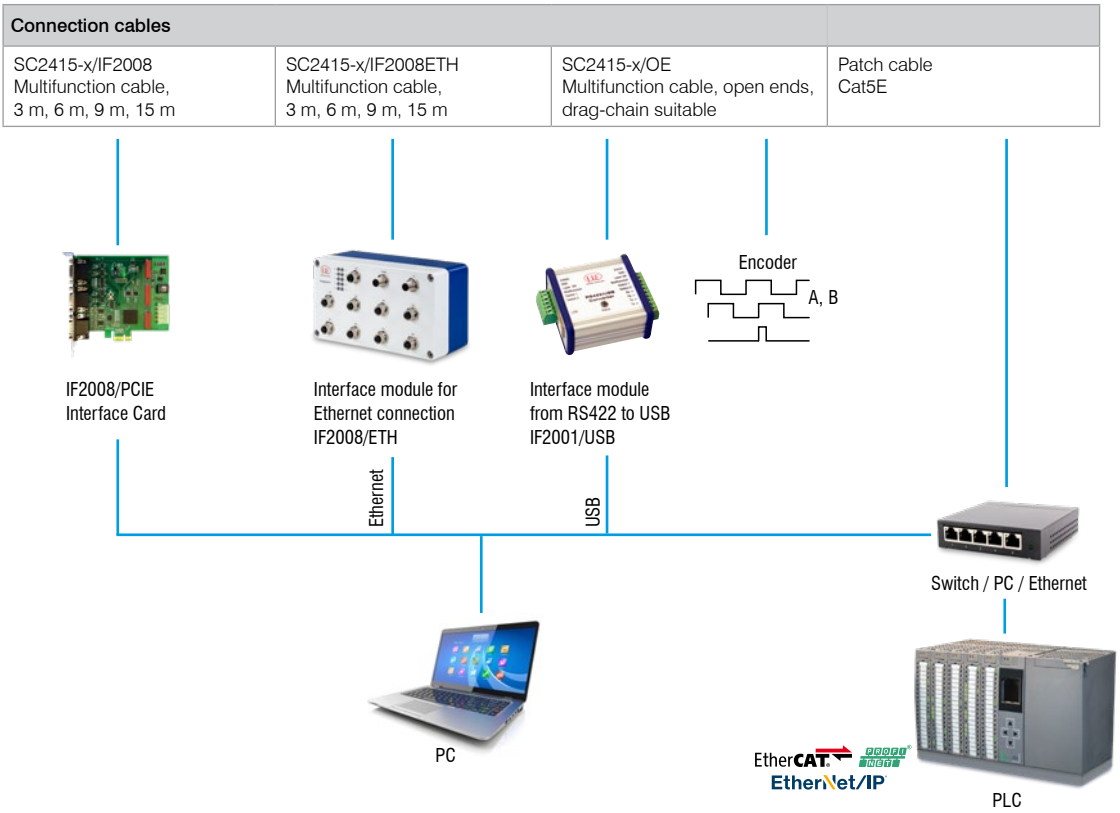
IFD2410 / IFD2415

* Can be connected via the PS2020 power supply unit (24 V / 2.5 A)



IFC2411 / IFC2416
IFC2412 / IFC2417

* Can be connected via the PS2020 power supply unit (24 V / 2.5 A)



IFC242x/IFC246x

* Can be connected via the PS2020 power supply unit (24 V / 2.5 A)

Connection cables			
SC2471-x/IF2008 Connection cable, 3 m, 10 m, 20 m	SC2471-3/IF2008ETH Connection cable, 3 m	SC2471-x/RS422/OE Connection cable Interface module, 3 m, 10 m	Patch cable Cat5E

4-channel USB converter IF2004/USB

IF2008/PCIE Interface Card

Interface module for Ethernet connection IF2008/ETH

Interface module from RS422 to USB IF2001/USB

Interface module for Industrial Ethernet connection IF2030/PNET IF2035/ENETIP

Ethernet

USB

Switch / PC / Ethernet

PC

PLC

EtherCAT. POWERLINK Ethernet/IP

Customer-specific modifications

Application examples are often found where the standard versions of the sensors and the controllers are reaching 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

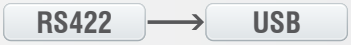
- Sensors with connector
- Cable length
- Vacuum suitability up to UHV
- Specific lengths
- Customer-specific mounting options
- Optical filter for ambient light compensation
- Housing material
- Measuring range / Offset distance

Accessories
Interface modules

Module	IFD2410/IFD2415	IFC2411/12	IFC2416/17	IFC242x	IFC246x
IF2001/USB Single-channel RS422/USB converter cable	✔	✔	✔	✔	✔
IF2004/USB RS422/USB converter to convert up to 4 digital signals to USB	⊘	✔	✔	✔	✔
IF2008/ETH Interface module for Ethernet connection for up to 8 sensors	⊘	✔	✔	✔	✔
IF2008PCIE Interface card for multiple sensor signals; analog and digital interfaces	⊘	✔	✔	✔	✔
IF2035/PNET Interface module for Industrial Ethernet connection (PROFINET)	⊘	⊘	⊘	✔	✔
IF2035/ENETIP Interface module for Industrial Ethernet connection (EtherNet/IP)	⊘	⊘	⊘	✔	✔

IF2001/USB converter RS422 to USB

The RS422/USB converter converts the digital signals of a confocal controller into a USB data packet. The sensor and the converter are connected via the RS422 interface of the converter. Data output is via the USB interface. The converter also passes through additional signals and functions such as laser on/off, switch signals and function output. The connected controllers and the converter can be programmed through software.

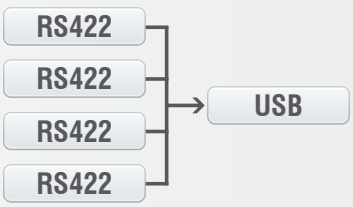


Characteristics

- Robust aluminum housing
- Easy sensor connection via screw terminals (plug and play)
- Conversion from RS422 to USB
- Supports baud rates from 9.6 kBaud to 12 MBaud

IF2004/USB: 4-channel converter from RS422 to USB

The RS422/USB converter is used for transforming digital signals of up to four confocal controllers into USB data signals. The converter has four trigger inputs and a trigger output for connecting additional converters. Data is output via a USB interface. The connected controllers and the converter can be programmed through software. The COM interfaces can be used individually and can be switched.



Characteristics

- 4x digital signals via RS422
- 4x trigger inputs, 1x trigger output
- Synchronous data acquisition
- Data output via USB

IF2008/ETH

Interface module for Ethernet connection with up to 8 sensors

The IF2008/ETH integrates up to eight sensors and/or encoders with an RS422 interface into an Ethernet network. Four programmable switching in-/outputs (TTL and HTL logic) are available.

Ten indicator LEDs directly on the module show both the channel and the device status. In addition, acquisition and output of data via Ethernet is performed at high speeds up to 200 kHz. Parameter setting of the interface module can be easily done via the web interface.

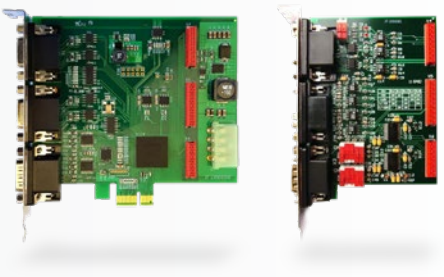
IF2008PCIe / IF2008E

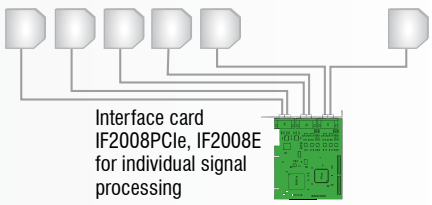
Interface card for synchronous data acquisition

Absolute synchronous data acquisition is a decisive factor for the deflection or straightness measurement using several controllers. The IF2008PCIe interface card is designed for installation in PCs and enables the synchronous acquisition of four idigital sensor signals and two encoders. The data is stored in a FIFO memory in order to enable resource-saving processing in blocks in the PC. The IF2008E expansion board also enables the acquisition of two digital controller signals, two analog controller signals and eight I/O signals.

Characteristics

- IF2008PCIe - Basic printed circuit board: 4 digital signals and 2 encoders
- IF2008E - Expansion board: 2x digital signals, 2x analog signals and 8x I/O signals





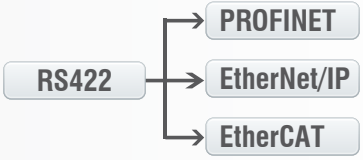
IF2035

Interface module for Industrial Ethernet connection

The IF2035 interface modules are designed for easy connection of Micro-Epsilon sensors to Ethernet-based fieldbuses. The IF2035 is compatible with sensors that output data via an RS422 or RS485 interface and supports the common Industrial Ethernet protocols EtherCAT, PROFINET and EtherNet/IP.

On the sensor side, these modules operate with up to 4 MBd and feature two network connections for different network topologies. In addition, the IF2035-EtherCAT offers a 4-fold oversampling function that enables faster measurements than the bus cycle would otherwise allow, if required. Installation in control cabinets is via a DIN rail.

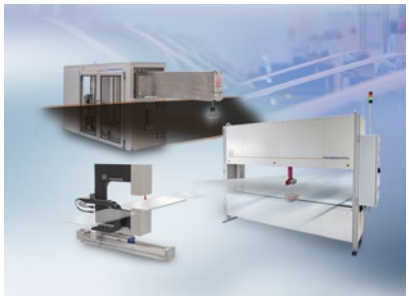
EtherNet/IP
PROFINET
EtherCAT



Sensors and Systems from Micro-Epsilon

Sensors and systems for displacement, distance and position

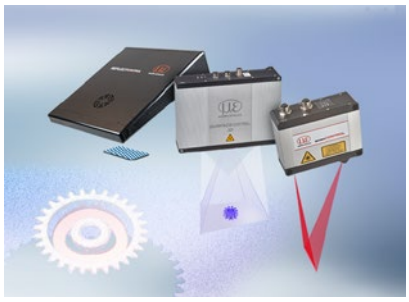
Sensors and measurement devices for non-contact temperature measurement



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

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