MICRO-EPSILON

More Precision.

confocalDT 2415 // Best in class - Next-generation confocal sensor system

Confocal chromatic sensor system with integrated controller
confocalDT 2415

- All-in-One: sensor and controller in one compact housing
- Easy integration, no optical fiber required
- Direct PLC connection due to Industrial Ethernet
- High precision distance and thickness measurements (5 layers)
- Short exposure time due to high light intensity

EtherCAT®

Integrated fieldbus for direct connection to PLC

All-in-One: compact confocal sensor with high performance

The confocalDT IFD2415 is a powerful confocal sensor with integrated controller. The space-saving IP65-housing enables fast integration into plant equipment and machines as no optical fiber is required. Furthermore, the IFD2415 ideally suited to high precision distance and thickness measurements in industrial series applications. In addition, the sensor can be used with transparent materials for multi-layer thickness measurements of up to 5 layers The active exposure time regulation of the CCD line enables fast and stable measurements of varying surfaces even in dynamic measurement processes up to 25 kHz. The measuring system is also characterized by high luminous intensity which enables fast and reliable measurements even on darker surfaces.

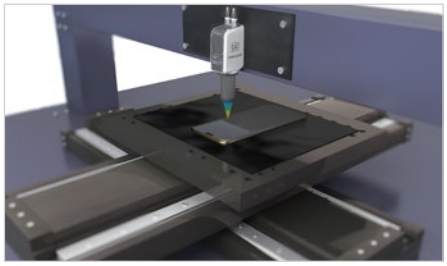
Intelligent technology meets high performance and user-friendliness

In Ethernet mode, the confocalDT IFD2415 can be set via the intuitive web interface. Industrial Ethernet ensures that the settings are automatically applied to the PLC environment. This eliminates time-consuming setting efforts in the programming environment.

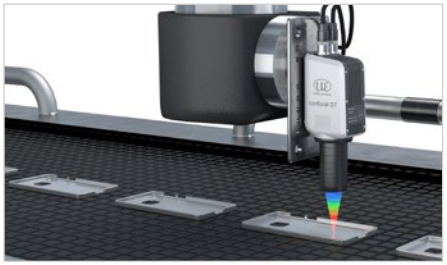
Fast, precise and compact

The unique combination of sensor and controller combined with excellent performance and high measuring rate make the confocalDT IFD2415 the best in its class. This compact sensor can be used in series applications such as, e.g., in inline inspection machines, robots, 3D printers and coordinate measuring machines.

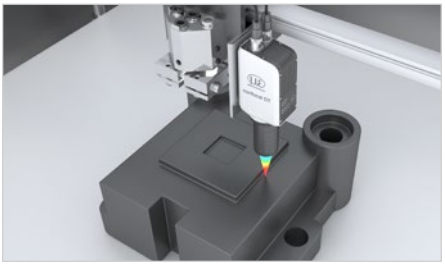
Simple parameter set up via integrated web interface



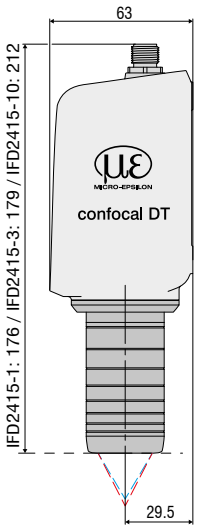
Measurement of smartphones in coordinate measuring machines

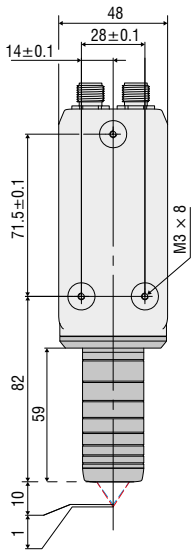


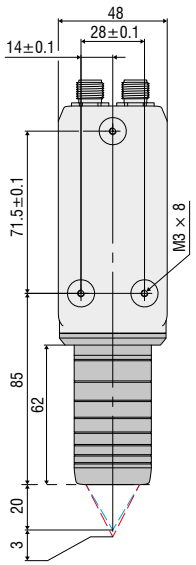
Measurement of smartphone housings on the robot arm

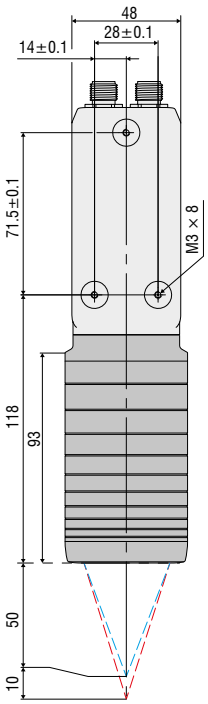


Displacement and distance measurement in 3D printing









Dimensions in mm,
not to scale.

Model		IFD2415-1	IFD2415-3	IFD2415-10
Measuring range	Distance	1.0 mm	3.0 mm	10.0 mm
	Min. thickness	0.05 mm	0.15 mm	0.5 mm
Start of measuring range	approx.	approx. 10 mm	approx. 20 mm	approx. 50 mm
Resolution	static [1]	< 8 nm	< 15 nm	< 45 nm
	dynamic [2]	< 28 nm	< 60 nm	< 180 nm
Measuring rate		continuously adjustable from 100 Hz to 25 kHz		
Linearity [3]	Displacement and distance	< ±0.25 µm	< ±0.75 µm	< ±2.5 µm
	Thickness	< ±0.5 µm	< ±1.5 µm	< ±5.0 µm
Light source		internal white LED		
Permissible ambient light		30,000 lx		
Light spot diameter [4]		8 µm	9 µm	16 µm
Measuring angle [5]		±30°	±24°	±17°
Numerical aperture (NA)		0.55	0.45	0.3
Target material		Glass, reflecting or diffuse surfaces		
Supply voltage		24 VDC ±10 %		
Power consumption		approx. 5 W (24 V)		
Signal input		2x encoders (A+, A-, B+, B-, index); 2x HTL/TTL multi-function inputs: trigger in, slave in, zero setting, mastering, teach-in; 1x RS422 synchronization input: trigger in, sync in, master/slave, master/slave alternating		
Digital interface		EtherCAT / RS422		
Analog output		4 … 20 mA / 0 … 5 V / 0 ... 10 V (16 bit D/A converter)		
Switching output		Error1-Out, Error2-Out		
Digital output		sync out		
Connector		12-pin. M12 plug for supply, encoder, Ethernet and sync 17-pin M12 plug for I/O analog and encoder optional extension to 3 m / 6 m / 9 m / 15 m (see accessories for suitable connection cables)		
Mounting		radial clamping, threaded hole, mounting adapter (see accessories)		
Temperature range	Storage	-20 … +70 °C		
	Operation	+5 … +50 °C		
Shock (DIN EN 60068-2-27)		15 g / 6 ms in XY axis, 1000 shocks each		
Vibration (DIN EN 60068-2-6)		2 g / 20 … 500 Hz in XY axis, 10 cycles each		
Protection class (DIN EN 60529)		IP65 (front)		
Material		Aluminum housing, passive cooling		
Weight		approx. 490 g	approx. 570 g	approx. 780 g
Control and indicator elements		Correct button: interfaces selection, two adjustable functions and reset to factory settings after 10 s; 4x color LEDs for Intensity, Range, RUN and ERR		

All data at constant ambient temperature (24 ± 2 °C)

[1] Average from 512 values at 1 kHz, in the mid of the measuring range onto optical flat

[2] RMS noise relates to mid of measuring range (1 kHz)

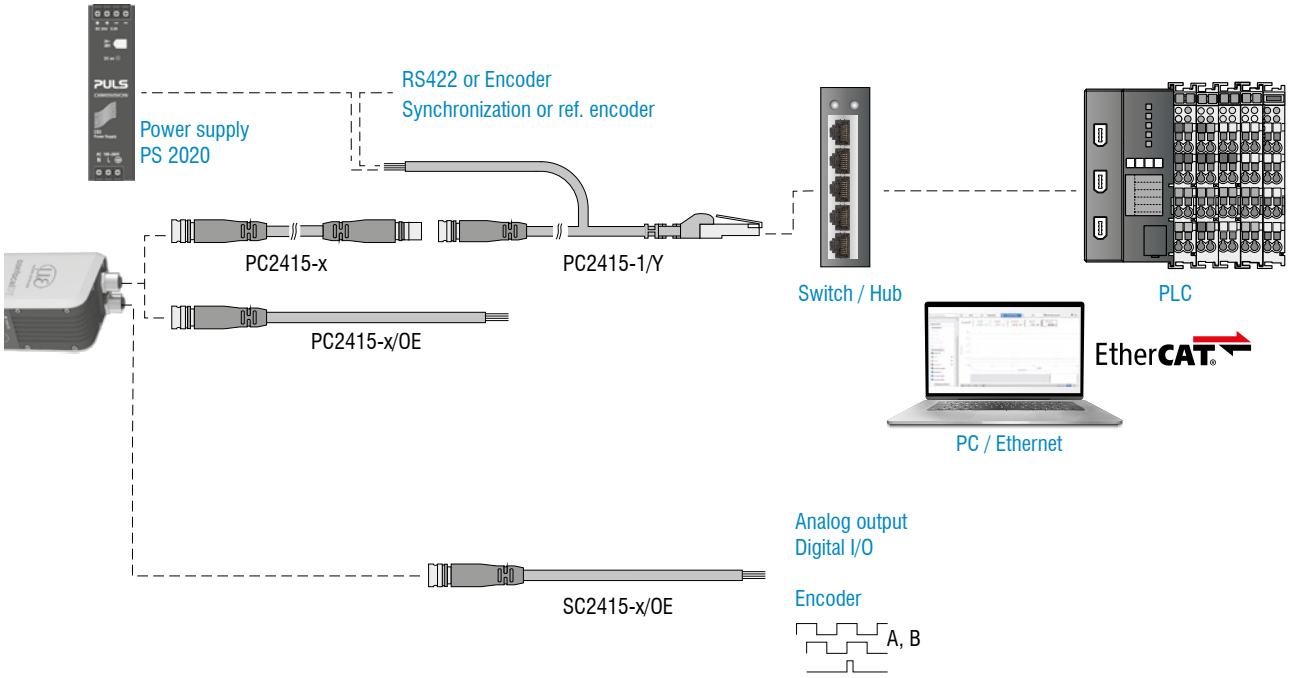
[3] Maximum deviation from reference system over the entire measuring range, measured on front surface of ND filter

[4] In the mid of the measuring range

[5] Maximum sensor tilt angle that produces a usable signal on polished glass (n = 1.5) in the mid of the measuring range. The accuracy decreases when approaching the limit values.

Cable concepts for every application

The connection options are diverse and can be adapted to your plant or machine concept.



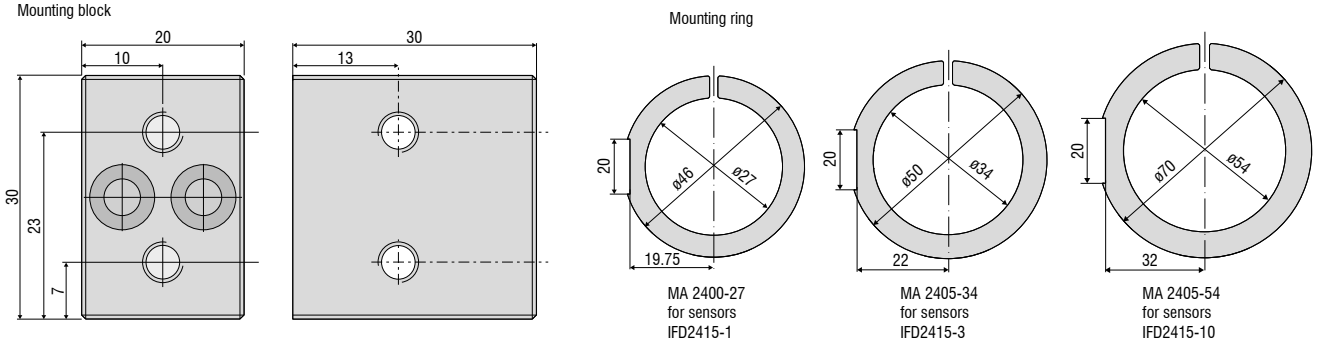
PC2415-x / PC2415-x/OE	
Minimum bending radius (mm)	static R55
	dynamic R55
	drag chain R88
Length	3 m/6 m/9 m/15 m

PC2415-1/Y	
Minimum bending radius (mm)	static R55
	dynamic R55
Length	1 m

SC2415-x/OE	
Minimum bending radius (mm)	static R35
	dynamic R70
	drag chain R83
Length	3 m/6 m/9 m/15 m

Accessories: Sensor mounting adapter

MA2400 for IFD2415 sensors (consisting of mounting block and mounting ring)



Dimensions in mm, not to scale

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