













Laser Triangulation Displacement Sensors

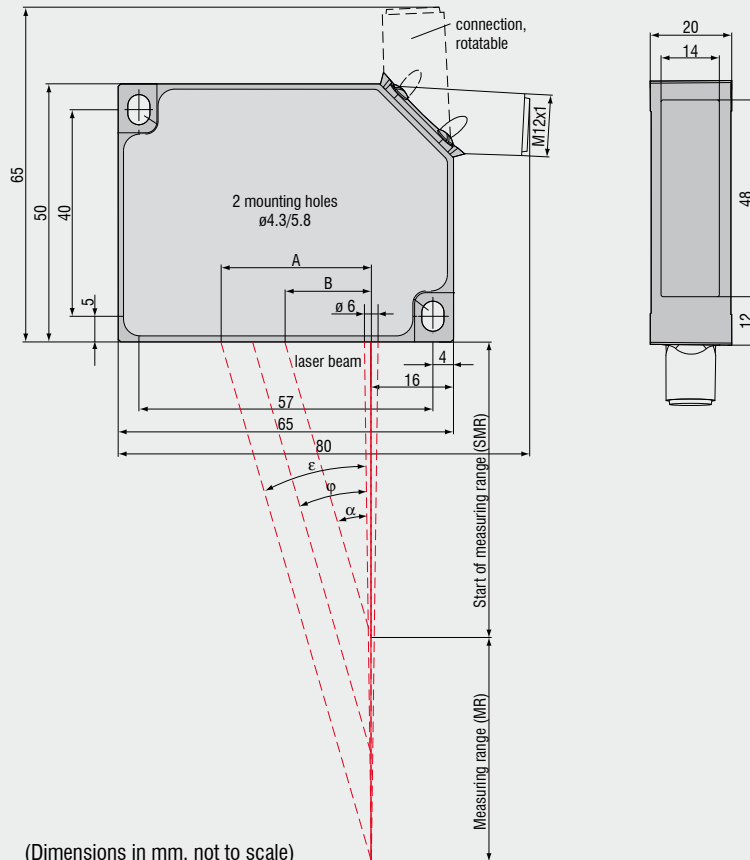




-  **Eight models with measuring ranges from 5mm to 600mm**
-  **Ideal for OEM applications**
-  **Compact design with integrated controller**
-  **Adjustable measuring rate up to 1.5kHz**
-  **Analogue (U/I) and digital output**
-  **Trigger input and teach-in**
-  **Adjustable filter functions Peak selection (firmware)**
-  **High flex cables for dragchain or robot use**
-  **Calibration certificate included**
-  **Configuration via software www.micro-epsilon.com/download**

The miniature optoNCDT 1402 series is the leading sensor in this price/performance category. The compact construction enables integration inside small areas. The optoNCDT 1402 series is ideally suited for integration into machines and automation applications.

optoNCDT 1402



(Dimensions in mm, not to scale)

MR	SMR	α	ϕ	ϵ	A	B
5	20.0	33.5	35.5	37.1	18.9	13.2
10	20.0	33.5	32.9	32.4	19.1	13.2
20	30.0	31.2	27.9	25.8	24.2	18.2
50	45.0	25.1	19.6	16.9	28.9	21.1
100	50.0	23.1	14.4	11.3	30.1	21.3
200	60.0	20.1	9.4	6.8	30.8	22.0
250VT	100.0	14.7	7.6	5.5	33.9	26.2
600	200.0	9.7	4.3	3	41.6	33.7

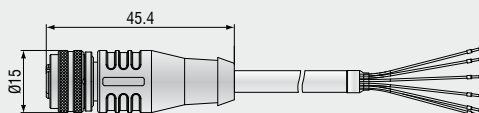
Model		ILD 1402-5	ILD 1402-10	ILD 1402-20	ILD 1402-50	ILD 1402-100	ILD 1402-200	ILD 1402-250VT	ILD 1402-600
Measuring range		5mm	10mm	20mm	50mm	100mm	200mm	250mm	600mm
Start of measuring range	SMR	20mm	20mm	30mm	45mm	50mm	60mm	100mm	200mm
Midrange	MMR	22.5mm	25mm	40mm	70mm	100mm	160mm	225mm	500mm
End of measuring range	EMR	25mm	30mm	50mm	95mm	150mm	260mm	350mm	800mm
Linearity		5...9 μ m	5...18 μ m	7...36 μ m	12...90 μ m	20...180 μ m	40...360 μ m	50...1200 μ m	120...3000 μ m
		$\leq 0.18\%$ FSO						$\leq 0.5\%$ FSO	
Resolution ¹⁾	averaged with averaging factor 64	0.6 μ m	1 μ m	2 μ m	5 μ m	10 μ m	13 μ m	32 μ m	80 μ m
	dynamic 1.5 kHz	1...3 μ m	2...5 μ m	5...10 μ m	6...25 μ m	12...50 μ m	13...100 μ m	32...300 μ m	80...600 μ m
Measuring rate, programmable		1.5kHz; 1kHz; 750Hz; 375Hz; 50Hz							
Exposure rate, programmable ²⁾		0.6ms; 1ms; 1.3ms; 2.6ms; 20ms							
Light source		semiconductor laser <1mW, 670nm (red)							
Laser safety class		class 2 IEC 60825-1 : 2001-11							
Spot diameter	SMR	110 μ m	110 μ m	210 μ m	1100 μ m	1400 μ m	2300 μ m	5000 μ m	2.6 x 5mm
	MMR	380 μ m	650 μ m	530 μ m	110 μ m	130 μ m	2200 μ m	5000 μ m	2.6 x 5mm
	EMR	650 μ m	1200 μ m	830 μ m	1100 μ m	1400 μ m	2100 μ m	5000 μ m	2.6 x 5mm
Protection class		IP 67							
Vibration		15g / 10Hz ... 1kHz						20g / 10Hz...1kHz	
Shock		15g / 6ms (IEC 68-2-29)							
Weight (without cable)		appr. 83g						appr. 130g	
Temperature stability		0.03 % FSO/°C				0.08 % FSO/°C			
Operation temperature		0 ... +50°C							
Storage temperature		-20 ... +70°C							
Output	analogue	4 ... 20mA (1 ... 5V with cable PC 1402-3/U); free scalable within the nominal range							
	digital	RS422 / 14bit							
Control I/O		1x open collector output (switching output, switch, error); 1x input (teach in, trigger); 1x laser on/off							
Supply		11 ... 30VDC, 24VDC / 50mA							
Controller		integrated signal processor							
Software		free setup and aquisition tool + SDK (software development kit)							
Electromagnetic compatibility (EMC)		EN 61326-1:2006 / EN 55011 Class B (Interface emission)							
		EN 61326-1:2006 / EN 61000-4-2:1995 + A1:1998 + A2:2001 (Interference resistance)							

FSO = Full scale output. All specifications apply for a diffusely reflecting matt white ceramic target

¹⁾ resolution digital output 14bit ²⁾ tide to measurement rate

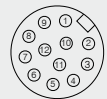
SMR = Start of measuring range MMR = Midrange EMR = End of measuring range

Connector axial



12-pin-connector

(view on solder termination side of male inserts)



Pin	Description	colour PC1402-x/I	
3	RS422 Rx+	serial input	green
4	RS422 Rx-	serial input	yellow
5	RS422 Tx+	serial output	grey
6	RS422 Tx-	serial output	pink
7	+U _b	11-30DV 24V MP	red
8	Laser off	switch input	black
9	Teach in	switch input	violet
10	Error	switch output	brown
11	I _{OUT}	4 ... 20mA	white
12	GND	supply and signal ground	blue
1/2	n.c.		

The cable screen is connected with the sensor housing. The interface and power supply cable are robot rated and UL certified. At one end there is a 12pin M12 connector, the other end is open.

High performance sensors made by Micro-Epsilon



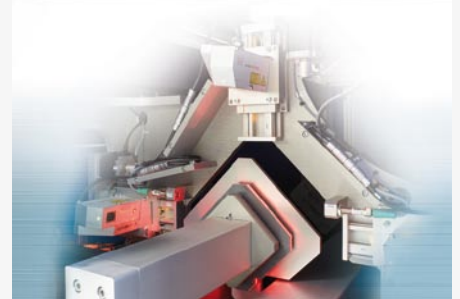
Sensors and systems for displacement, position and dimension

Eddy current sensors
Optical and laser sensors
Capacitive sensors
Inductive sensors
Draw-wire sensors
Optical micrometers
2D/3D profile sensors
Image processing



Sensors and measurement devices for non-contact temperature sensors

Online instruments
Handheld devices



Measuring systems for quality control

for plastic and film
for tire and rubber
for web material
for automotive components
for glass