MICRO-EPSILON

More Precision.

opto**CONTROL**

Optical precision micrometers for online
gap-, edge- and diameter measurement
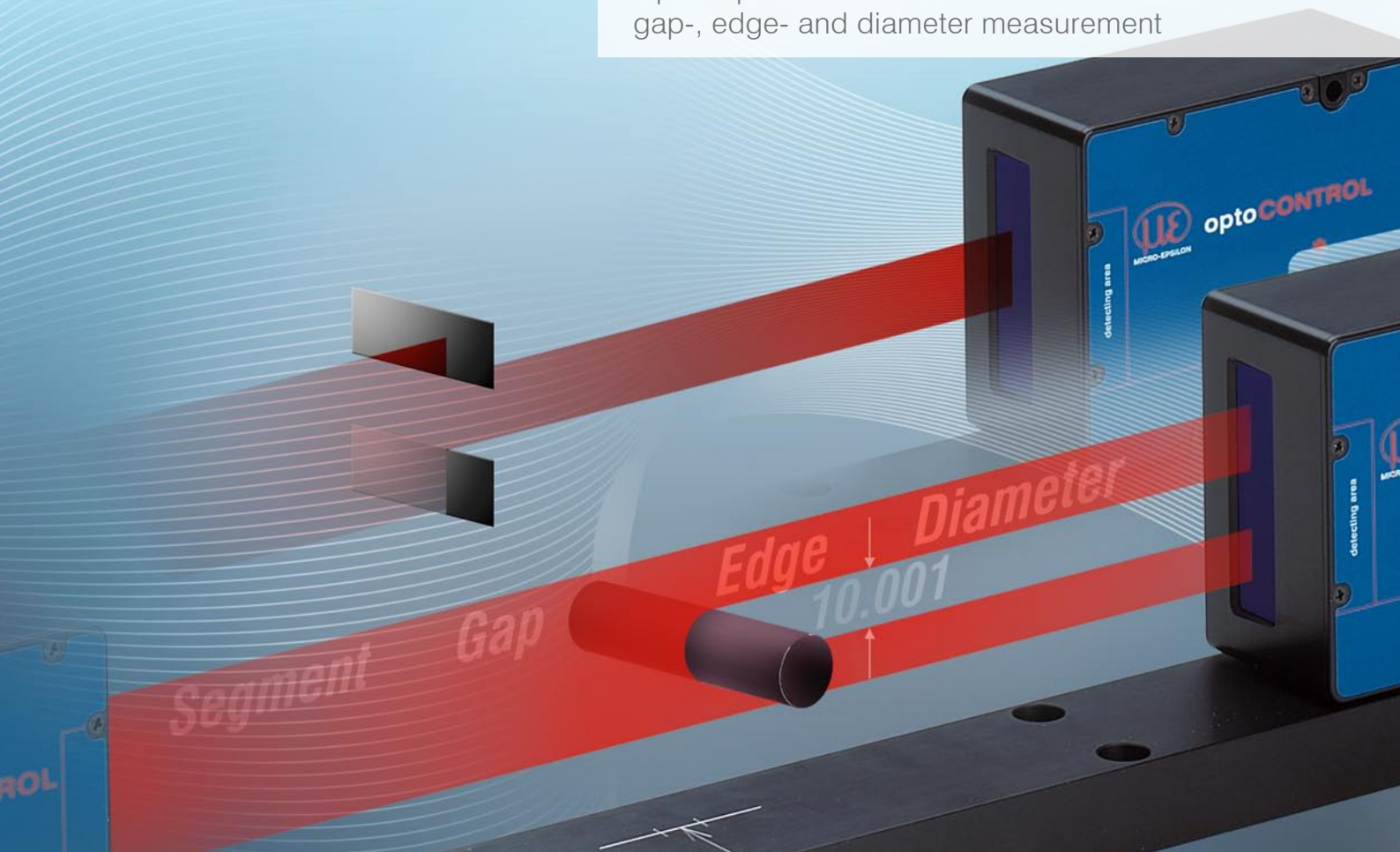
optoCONTROL 1200 / 1201

|	
	Measuring range 2 - 30 mm
	Resolution ≥10μm
	Measuring rate up to 100kHz (-3dB)
*A*nalogue	**Analogue output 0 ...10VDC**
⚠	**Laser class 1**

Compact laser micrometers with high measuring rate

- ▸ High quality glass lense optics
- ▸ Robust and compact design with integrated controller
- ▸ Limit switch with up to 25kHz switching frequency
- ▸ Axial and radial design

Measuring principle

The optoCONTROL 1200 is based on the principle of light quantity measurement. The light of a red laser diode is spread out by a lens to a parallel light curtain which is aimed at the receiving unit. In the receiving unit, the light is guided via various filters and lenses through a precision shutter to a light-sensitive detector. The amount of occurring light is provided by analogue electronics and output as an analogue signal.
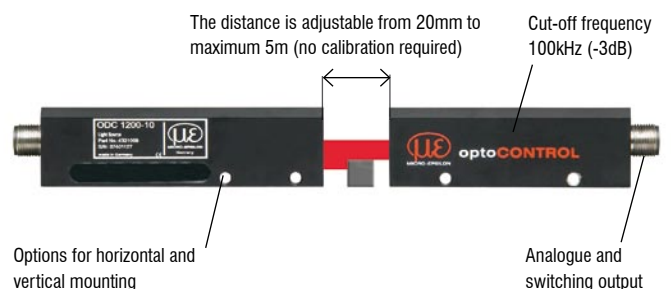
System design

optoCONTROL 1200 consists of a light source and a receiving unit. The complete controller electronics are integrated in the receiver housing. The light source and receiver can be installed at any distance up to 5 meters from each other. All models can be installed without additional brackets in both vertical and horizontal positions. The compact design of the housing and the 90° version also enable easy mounting of the miniature micrometers in tight installation spaces.

As well as the analogue output, an adjustable limit switch is also available. This can be operated both as NPN (bright switching) as well as in PNP logic (dark switching).

Measurement mode

Edge	Diameter	Gap
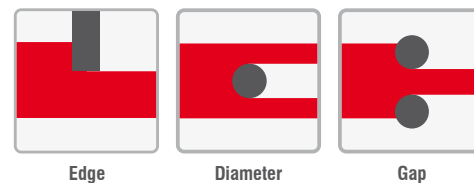
The target must be positioned inside the measuring window for the diameter measurement. Smallest diameter typ. >0.3mm. For gap measurement from 50 - 400μm there is an option using light quantity measurement.

The distance is adjustable from 20mm to maximum 5m (no calibration required)

Cut-off frequency 100kHz (-3dB)

Options for horizontal and vertical mounting

Analogue and switching output

optoCONTROL 1200/90:
Version with 90° beam path for mounting in tight spaces
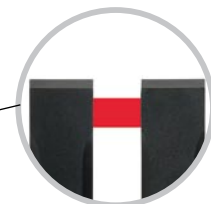
Model		ODC1200 (axial model)				ODC 1200/90 (90° model)				ODC1201	
Measuring range		2mm	5mm	10mm	16mm	2mm [2)]	5mm	10mm	16mm	20mm	30mm
Distance transmitter - receiver (free space) [1)]		min. 20mm to max. 5m									
Linearity [3)]		±2% FSO		±3,5% FSO		±2% FSO		±3,5% FSO			
Resolution (dynamic) typ.		10µm	25µm	50µm	80µm	10µm	25µm	50µm	80µm	100µm	150µm
Frequency response		100kHz (-3db)									
Light source		semiconductor laser <0.39mW, 670nm (red, laser class 1)									
Permissble ambient light		≤ 5000lx [4)]									
Analogue output		0 ... 10VDC (adjustable gain)									
Switching output		PNP dark switching and NPN bright switching (max. switching frequency 25kHz)									
Shock		15g / 6ms									
Vibration		15g / 10Hz…1kHz									
Operation temperature		0 bis 50℃									
Storage temperature		-20 bis 70℃									
Operation voltage		12-32VDC, reverse polarity protection									
Mounting holes	straight up	M4 x 5mm								ø4.1mm	
	horizontal	M5 x 8mm								M4 x 6mm	
Weight (without cable)	transmitter	appr. 150g				appr. 170g				appr. 260g	
	receiver	appr. 120g				appr. 160g				appr. 220g	
Protection class		IP 67									

FSO = Full Scale Output
The quoted data apply for a constant room temperature of 20℃ after a warm-up period of 30 min,
in the range 10 ... 90% of the analogue output at a distance between transmitter and receiver of 0.5 m.
Analogue drift 0.12 V at constant temperature; If laser beam is covered (without ambient light): analogue offset <0.05 V
[1)] Increasing the distance, the measurement of hot targets is possible without damaging the controller electronics
[2)] For gap measurements 50 - 400 µm there is an controller option available: thrubeam operation with distances up to 700mm
[3)] If a round target moves within the measuring range, the accuracy declines.
[4)] Shadowing from ambient daylight increases the signal stability

optoCONTROL 1200

optoCONTROL 1200/90

optoCONTROL 1201

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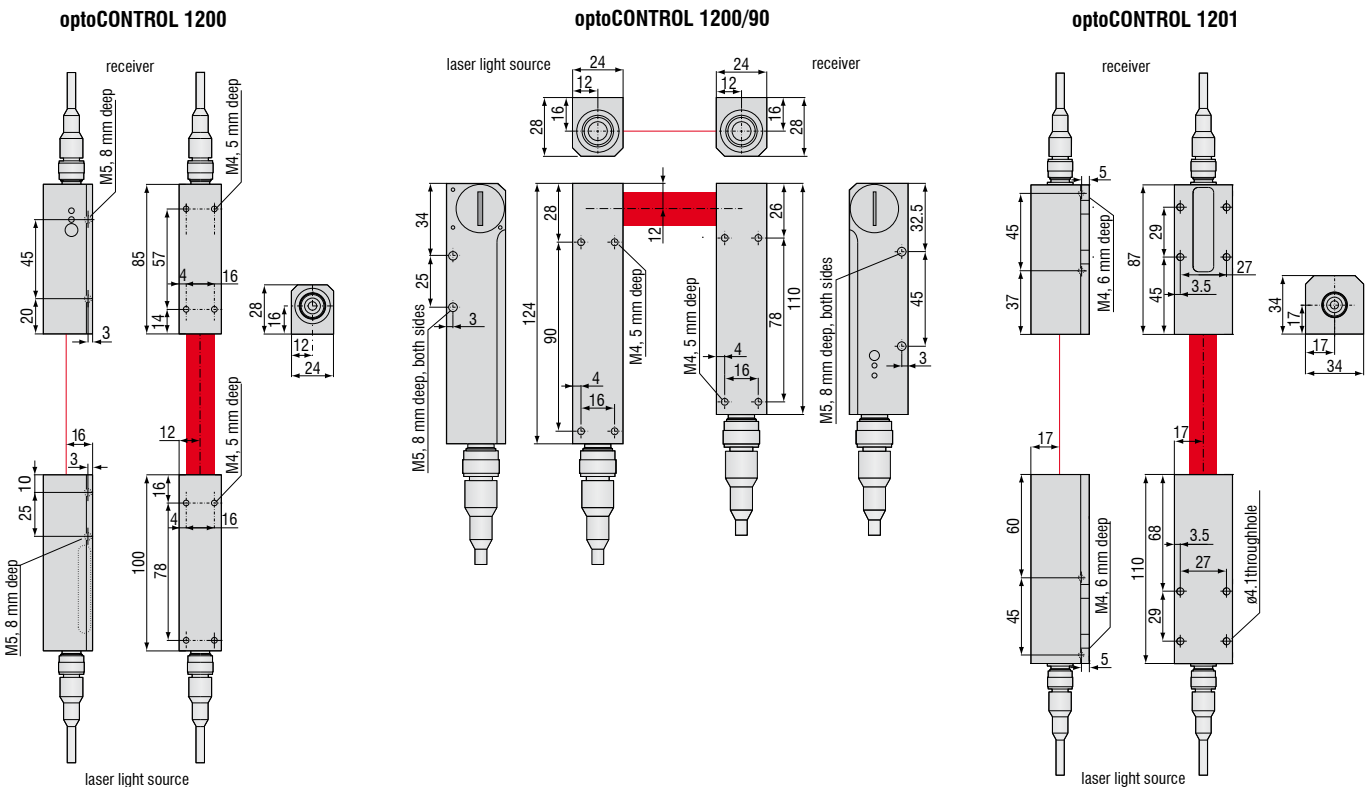
Accessories

IF2008 - PCI interface card

Particular benefits
- 4x digital signals and two encoders with basic printed circuit board
- Additional expansion board for a total of 6x digital signals, 2x encoder and 2x analogue signals and 8x I/O Signals
- FIFO data memory
- Synchronous data acquisition

Example: measurement of diameters with two optoCONTROL. The diameter to be measured can be increased using two optoCONTROL. See CSP2008 universal controller.

IF2008E - Expansion board

Particular benefits
- Two digital signals, two analogue signals and 8 I/O signals
- Overall with IF2008: 6 digital signals, 2 encoders and 2 analogue signals and 8 I/O signals
- FIFO data memory
- Synchronous data acquisition

CSP2008 - Universal controller for up to six sensor signals

The controller CSP2008 has been designed to process 2 to 6 both optical and other sensors from Micro-Epsilon (6 digital or 4 analogue input signals max., 2x internal + 4x external via EtherCAT modules from the company Beckhoff. EtherCAT is intended as external bus for connecting further sensors and I/O modules. The controller is equipped with a display offering multicolour backlighting which changes its colour in the case of exceeding the limit value while a signal is displayed.

Features
- Real-time processing of input and output signals at up to 100kHz (user selectable)
- Unique user interface for the configuration of the controller via Ethernet on a PC or laptop. All user selectable functions of the controller and the measured values can be viewed, displayed and stored in real time via your own web browser without installing any 3rd part software
- Simple sensor connection with automatic sensor recognition, configuration of the sensor using buttons and display on controller or via web browser
- Modular system upgradable with additional I/O modules for customer-specific requirements. The internal communication between I/O components using EtherCAT connection (CSP 2008 acts as master)
- Extremely flexible and powerful functionality; function modules can be combined in many ways.
- Simple mounting using DIN rail TS 35
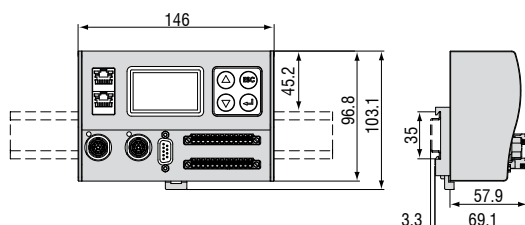
Universal controller with DIN rail TS 35 (dimensions not to scale)

146
45.2
96.8
103.1
35
57.9
3.3
69.1

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Accessories optoCONTROL 1200/1201

Art.-Nr.	Model	Bezeichnung
2901260	PC1200-5	Power supply and signal cable 5m, straight connector, for light source and receiver unit
2901483	PC1200-10	Power supply and signal cable 10m, straight connector, for light source and receiver unit
2901261	PC1200/90-5	Power supply and signal cable 5m, angled connector, for light source and receiver unit
0260031.11	DD241PC(11)-U	Digital display unit, RS232, connection for 1 analogue sensor 0-10V, 2 limit switches
0260033.10	DD245PC(10)-U	Digital display unit, RS232, connection for 2 analogue sensors 0-10V, 2 limit switches

Accessories optoCONTROL 1202

Art.-Nr.	Model	Bezeichnung
2901497	CE1202-2	Connecting cable transmitter-receiver, 2m
2901482	CE1202-5	Connecting cable transmitter-receiver, 5m
2901371	SCD1202-2-RS232	Digital output cable, 2m, for connection to a RS232 port
2901509	SCD1202-5-RS232	Digital output cable, 5m, for connection to a RS232 port
2901848	SCD12xx-2-USB	Digital output cable for USB connection incl. driver, 2m
2901373	SCA1202-2	Power supply and analogue output cable, 2m
2901510	SCA1202-5	Power supply and analogue output cable, 5m
2966006	ODC1202-L100	Mounting rail for ODC1202, 400mm; distance transmitter/receiver max.100mm
2966007	ODC1202-L200	Mounting rail for ODC1202, 500mm; distance transmitter/receiver max. 200mm
2966008	ODC1202-L500	Mounting rail for ODC1202, 800mm; distance transmitter/receiver max. 500mm

Accessories optoCONTROL 1220

Art.-Nr.	Model	Bezeichnung
2901871	CE1220-1	Connecting cable transmitter-receiver, 1m
2901851	CE1220-2	Connecting cable transmitter-receiver, 2m
2901852	CE1220-5	Connecting cable transmitter-receiver, 5m
2901371	SCD1202-2-RS232	Digital output cable, 2m, for connection to a RS232 port
2901509	SCD1202-5-RS232	Digital output cable, 5m, for connection to a RS232 port
2901848	SCD12xx-2-USB	Digital output cable for USB connection incl. driver, 2m
2901373	SCA1202-2	Power supply and analogue output cable, 2m
2901510	SCA1202-5	Power supply and analogue output cable, 5m
2966009	ODC1220-L220	Mounting rail for ODC1220, 400mm; distance transmitter/receiver max. 220mm

Accessories optoCONTROL 2500/2600

Art.-Nr.	Model	Bezeichnung
2901123	PC2500-3	Power supply cable 3m, open
2901124	PC2500-10	Power supply cable 10m, open
2901120	SCA2500-3	Signal output cable, analogue, 3m
2901215	SCA2500-10	Signal output cable, analogue, 10m
2901121	SCD2500-3/3/RS232	Signal output cable, 3m, analogue / RS232
2213017	IF2008	PCI interface card RS422
2213018	IF2008E	Expansion board analogue / RS422 / PCI
2901122	SCD2500-3/10/RS422	Signal output cable, 3m, analogue / RS422, 10m
2901057	CE1800-3	Sensor cable extension for camera, 3m
2901118	CE2500-3	Sensor cable extension for light source, 3m
2901058	CE1800-8	Sensor cable extension for camera, 8m
2901119	CE2500-8	Sensor cable extension for light source, 8m
2420057	CSP2008	Universal controller for up to six sensor signals
2901504	SCD2500-3/CSP	Output cable, 3m, for connection to CSP2008
2901505	SCD2500-10/CSP	Output cable, 10m, for connection to CSP2008
2964022	MBC300	Assembly block for controller ODC2500/2600

Accessories power supplies

Art.-Nr.	Model	Bezeichnung
2420065	PS2030	Wall power supply 24V/24W/ 1A; 2m-PVC; clamp
2420062	PS2020	Power supply for DIN rail mounting 24VDC / 2.5A
2420042	PS2011	Power supply for laboratory use 230VAC/ 24VDC / 5.2A

Class 1 Laser Product
DIN EN 60825-1 : 2008-05
Additional protection
equipment not required.

Laser class 1: DIN EN 60825-1 : 2008-05
optoCONTROL use a semiconductor class 1 laser with a wavelength of 670nm. The maximum optical output power is ≤0.39 mW. This laser class does not require any additional protection equipment.
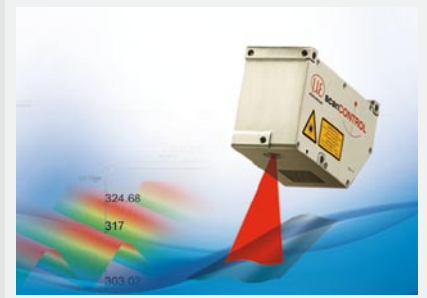
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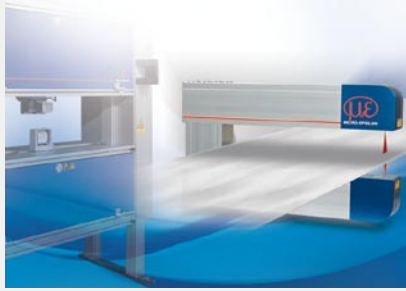# High performance sensors made by Micro-Epsilon

Sensors and systems for displacement and position

Sensors and measurement devices for non-contact temperature measurement

2D/3D profile sensors (laser scanner)

Measurement and inspection systems for quality assurance

Optical micrometers, fibre optic sensors and fibre optics

Colour recognition sensors, LED analyzers and colour online spectrometer

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