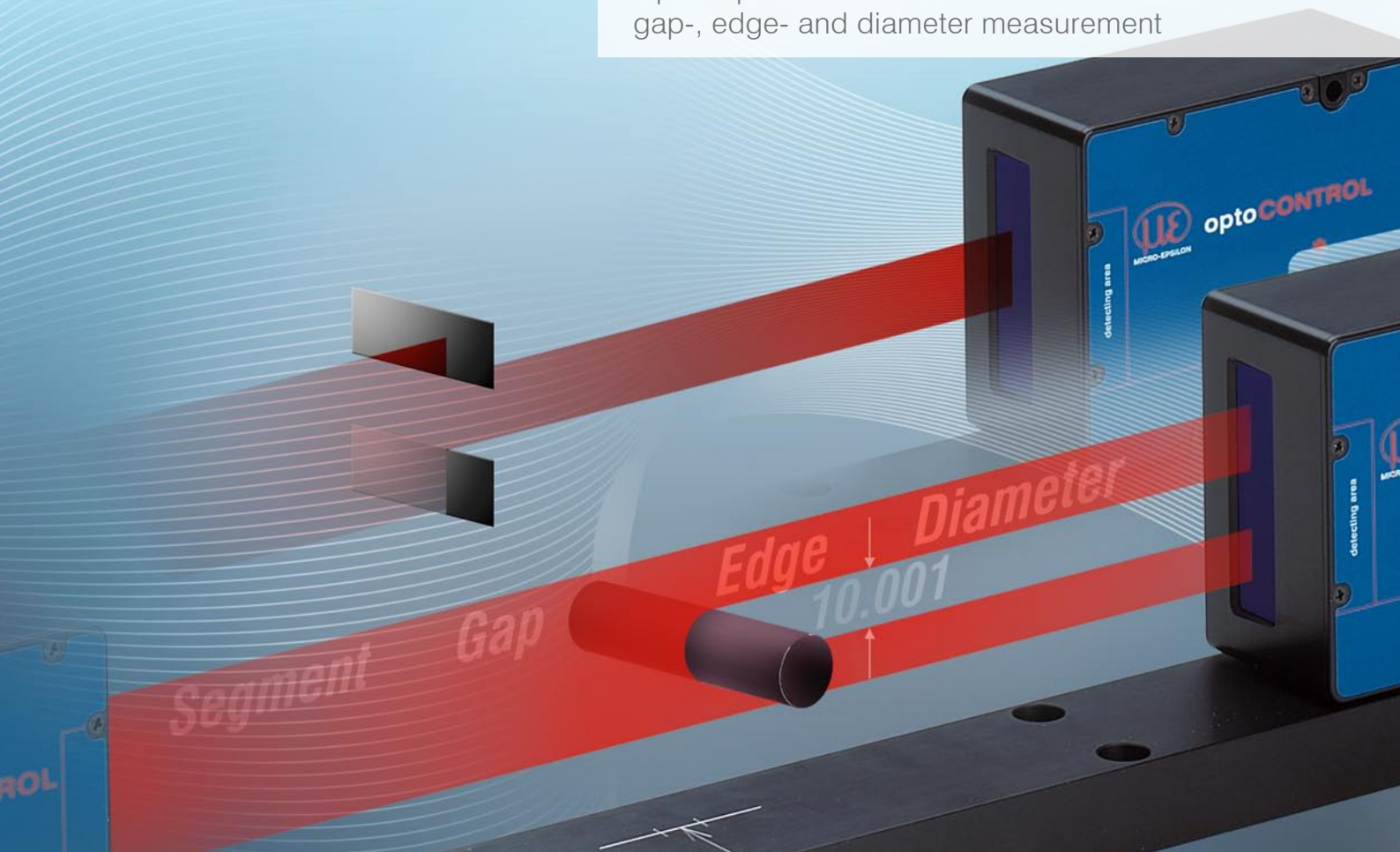




# More Precision.

## optoCONTROL

Optical precision micrometers for online gap-, edge- and diameter measurement



# optoCONTROL 2500

	<b>Resolution 1<math>\mu</math>m</b>
	<b>Measuring rate 2.3kHz</b>
	<b>Linearity <math>\pm 10\mu</math>m</b>
	<b>Analogue output 0 ... 10VDC</b>
	<b>Serial interface RS232/RS422</b>
	<b>Laser class 1</b>



## High precision laser micrometer

- ▶ High resolution and precision
- ▶ Measuring rate 2.3kHz for fast processes
- ▶ Laser-ThruBeam technology
- ▶ Six different measuring programs

### Measuring principle

optoCONTROL 2500 is a laser-based measuring system with integrated high resolution CCD camera. The Thru-Beam micrometer measures the dimension of an object or the position of an edge by using the shadow-casting principle. The data obtained with various, selectable measuring programs is output via analogue and digital interfaces. Thanks to the high measuring rate, the outstanding accuracy and excellent resolution, the laser micrometer is ideally suited to precision measurement and inspection tasks on moving products in production lines.

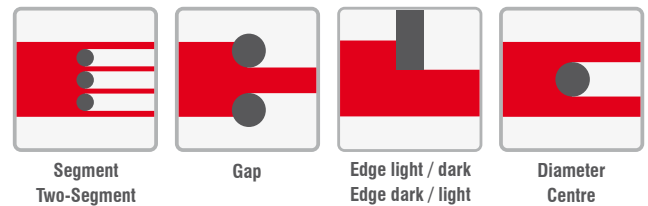
Crossing two optoCONTROL 2500, the X/Y position of needles in an sewing machine can be measured.

### System design

optoCONTROL 2500 consists of a sensor unit and a controller. The sensor unit comprises a laser light source (transmitter) and a CCD camera (receiver). A parallel light curtain is produced with the laser light source. The CCD array in the receiver measures the contour formed by shadow casting of the measurement object with high accuracy. The sensor unit is controlled and evaluated by an intelligent controller with graphical display for operation and display of the measured values.

### Predefined measurement modes

(six individual programs can be selected)



Segment  
Two-Segment

Gap

Edge light / dark  
Edge dark / light

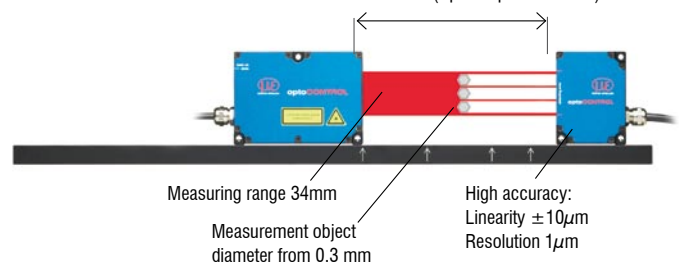
Diameter  
Centre

Analogue output  
Digital output  
Switching output

External controller:  
easy operation and  
measured value display



Light source to receiver distance can be selected  
from 150 to 700mm (Option up to 1850mm)



Model	ODC 2500-35
Measuring range	34mm
Smallest diameter or gap (detectable target)	typ. $\geq 0.3\text{mm}$
Distance light source - CCD-camera	300mm (150mm - 700mm) (Option up to 1850mm) <sup>1)</sup>
Distance (target to receiver)	20 ... 150mm
Linearity <sup>2)</sup>	$\pm 10\mu\text{m}$
Resolution <sup>3)</sup>	$1\mu\text{m}$
Repeatability	$\leq 3\mu\text{m}$
Sampling rate	2.3kHz
Light source	Semiconductor laser 670nm, class 1
Analogue output	0 ... 10V, range -10 ... +10V
Digital output	RS 232 or RS 422
Switching output	1 x error, 2 x limit, 2 x warning; LC-display, 3 x LED; Sync-Out
Input	Sync-In; zero; Laser On/Off
Shock	acc. IEC 68-2-29
Vibration	acc. IEC 68-2-6
Operation temperature	0°C to 50°C
Storage temperature	-20°C to 70°C
Power supply	24VDC ( $\pm 15\%$ )
Cable length	2m (option: extension 3m / 8m)
Protection class	receiver / light source IP 64
programs	controller IP 40
Display	LCD-display (value, maximum, minimum, peak-to-peak) display in mm or inch, selectable; menu languages in german / english, selectable 3x LED (power on, light on, error)
Measuring programs	diameter, gap, position / edge, segment, two-segment

All specifications are measured at a constant temperature of 20 °C after a warm-up time of 30 minutes.

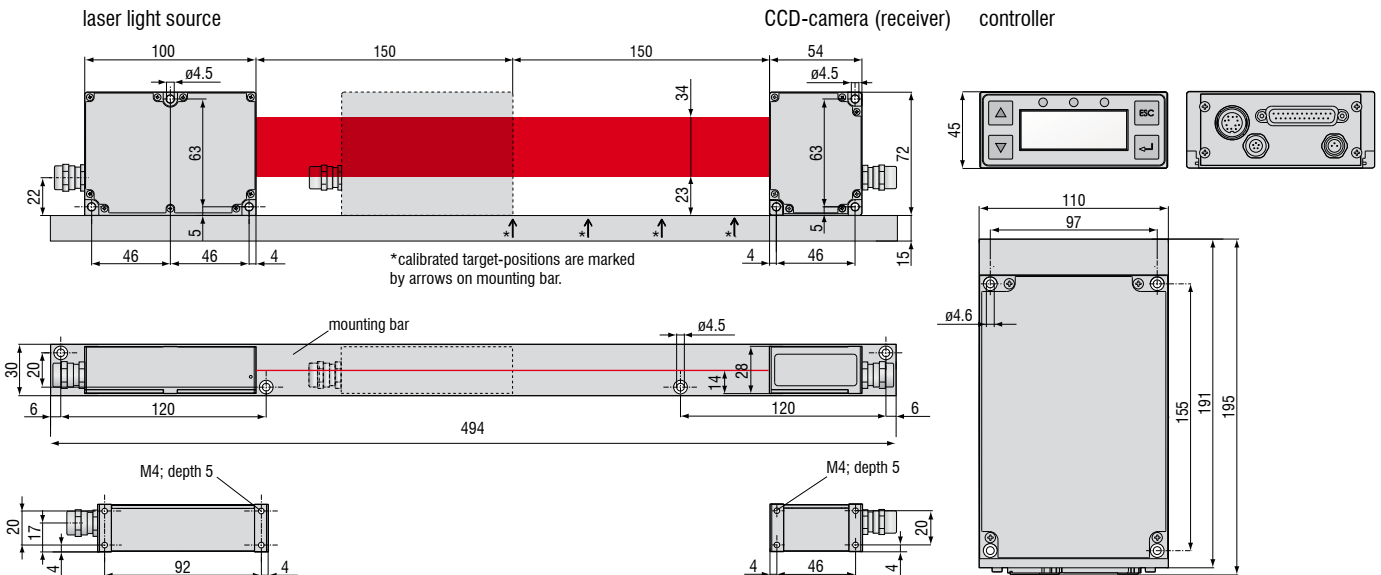
<sup>1)</sup> If distances increase, linearity and resolution may decline

<sup>2)</sup> Valid for distance of the target to receiver  $20 \pm 5\text{mm}$ ; distance light source - CCD-camera 150mm

<sup>3)</sup> Display resolution

### Customer specific versions

- Carry case version for service tasks
- Customised cable lengths, modified cable outlet
- Version with reduced light source to receiver gap
- Version with deflection mirror for installation in restricted, tight spaces
- OEM measuring programs adaption



# 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

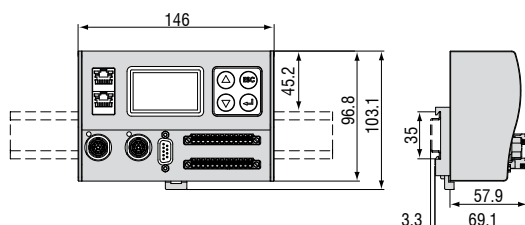


## CSP2008 - Universal controller for up to six sensor signals

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)

### 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

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

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

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

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  $\leq 0.39$  mW. This laser class does not require any additional protection equipment.

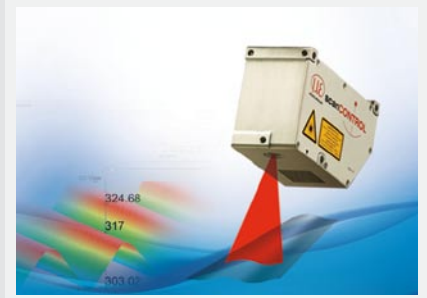
## High performance sensors made by Micro-Epsilon



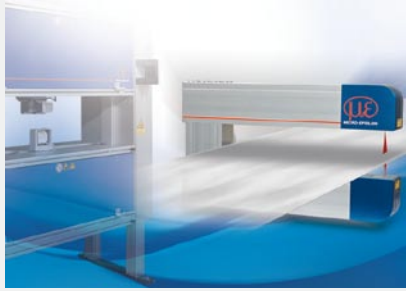
Sensors and systems for displacement and position



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