MICRO-EPSILON

SCIENCE GATE
Your Automation Partner

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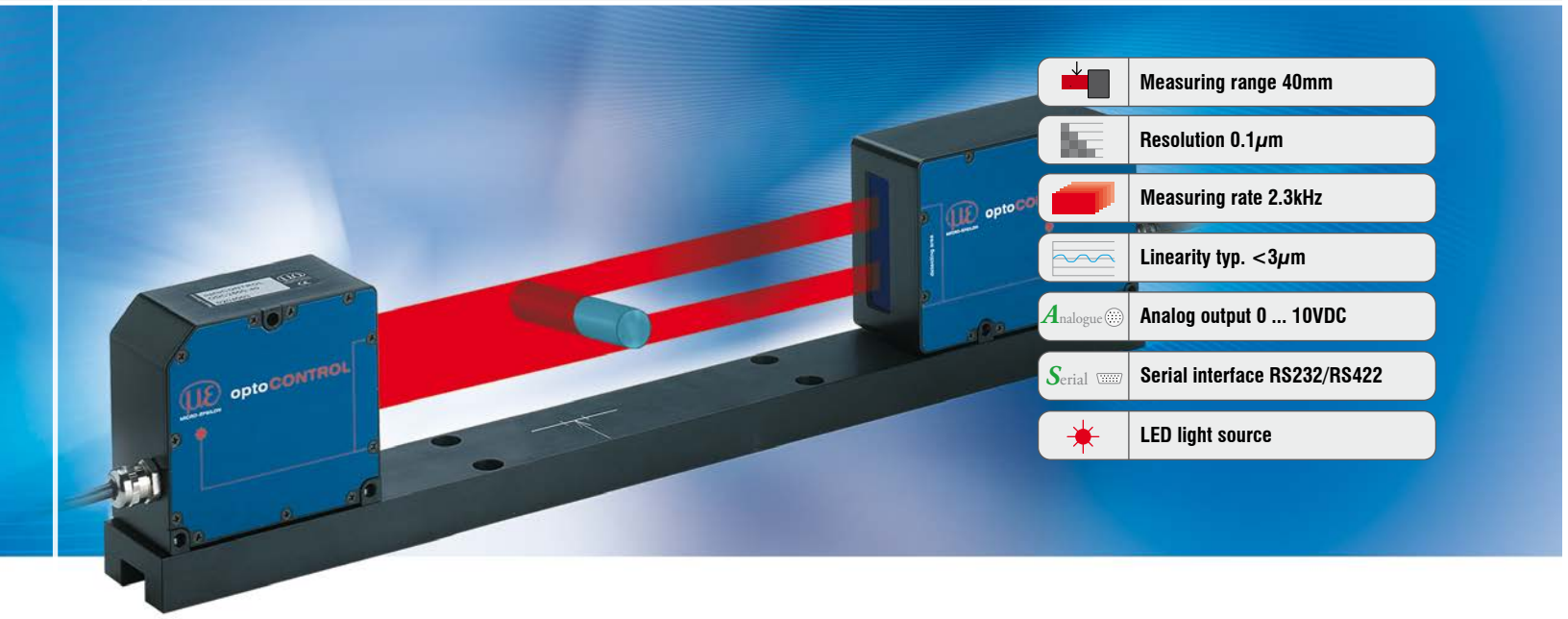
More Precision

optoCONTROL // Optical precision micrometers



- Maximum resolution and accuracy
- Outstanding repeatability
- Measuring rate 2.3kHz for fast processes
- Insensitive to external light
- Measurement against glass and transparent plastics
- Six different measuring programs
- Measures up to 4 segments simultaneously
- Free parameterisation and data acquisition tool

Measuring principle

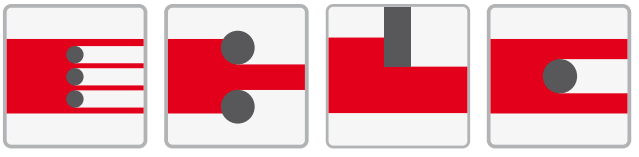
optoCONTROL 2600 is an optical measuring system with integrated high resolution CCD camera. Using a special lens arrangement, an LED light source produces a parallel light curtain (visible red light), which is imaged on the CCD camera via a telecentric lens. If an object to be measured is placed in the light curtain, the shadow it creates is detected by the CCD array. The measured data is output via analog and digital interfaces. The system is insensitive to high external light conditions.

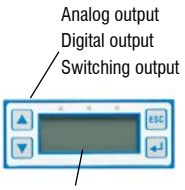
System design

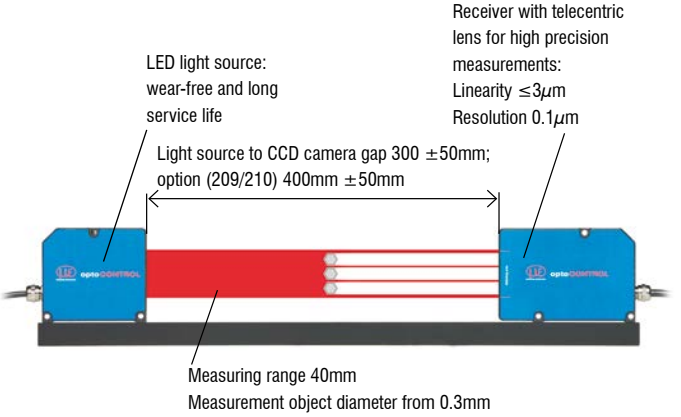
optoCONTROL 2600 consists of a sensor unit and a controller, which are attached to a mounting rail. The sensor unit comprises a light source with high power LED and a receiver with telecentric lens and CCD array. The sensor unit is controlled and evaluated by an intelligent controller with graphical display for operation and display of the measured value. The adjustable light source enables precise measurement of most transparent objects. Significantly higher accuracies and repeatability of measured data is made possible due to the combination of LED with telecentric lens arrangement. The system is insensitive to dirt and moisture.

Predefined measurement modes

(six individual programs can be generated)





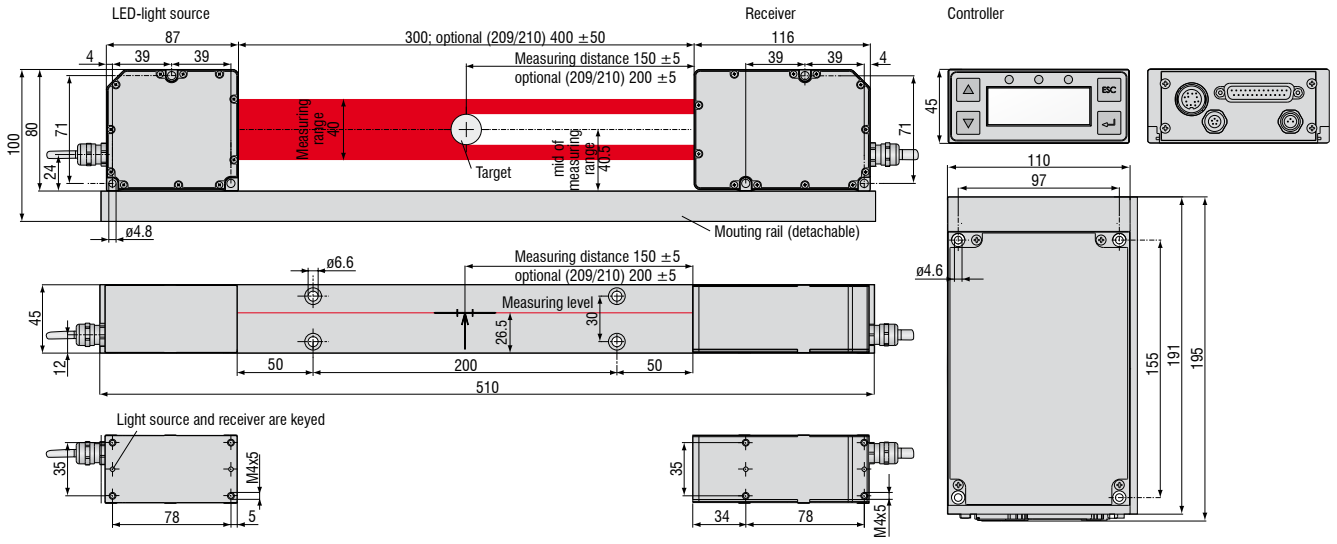


Model	ODC2600-40	ODC2600-40(209)	ODC2600-40(210)
Measuring range	40mm		
Smallest diameter or gap (detectable target)	0.3mm		
Distance light source - CCD camera (free space)	300 (±50)mm	400 (±50)mm	400 (±50)mm
Distance (target to receiver)	150 (±5)mm	200 (±5)mm	200 (±5)mm
Linearity (3 s) [1]	≤3µm		
Resolution [2]	0.1µm		
Repeatibility [1] [3]	≤1µm	≤1.5µm	≤1.5µm
Measuring rate	2.3kHz		
Light source	red LED		
Analog output (voltage)	0 ... 10VDC, range ±10VDC, selectable		
Digital output	RS232 (115.2kBaud) or RS422 (691.2kBaud)		
Switching output	error, 4x limit, synchronisation		
Input	zero; reset; trigger; synchronisation; light on/off (programmable)		
Shock	acc. IEC 60068-2-29		
Vibration	acc. IEC 60068-2-6		
Operation temperature	0 to 50°C		
Storage temperature	-20 to 70°C		
Power supply	24VDC (±15%), <1A		
Cable length (controller-light source / controller-CCD camera)	standard: 2m		standard: 2m, cable outlet light source and receiver 90°
Protection class — receiver / light source	IP 64		
Protection class — controller	IP 40		
Measurement programs	edge light-dark; edge dark-light; diameter; gap; segment; multi-segments; 4 user-programs		
Display	LC-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)		

All specifications are measured at a constant temperature of 20°C after a warm-up time of 30 minutes.
[1] (edge measurement, no averaging at the target, operating distance 150 ±5mm) <±3µm
[2] Display resolution (resolution digital output 0.6µm)
[3] Measured at static noise for 3 min.

Optional versions

- Carry case version for service tasks
- Customized cable lengths, modified cable outlet
- Customer-specific software (measuring programs, statistics)
- System for measurement of grooved surfaces
- System with reduced distance between transmitter and receiver
- System with reduced and increased distance between transmitter and receiver



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 analog 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 analog signals and 8 I/O signals
- Overall with IF2008: 6 digital signals,2 encoders and 2 analog signals and 8 I/O signals
- FIFO data memory
- Synchronous data acquisition

Diverse ODC tools

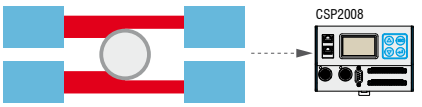
Depending on the sensor, diverse tools for continuous measurement value recording and parameter set up are available free of charge.

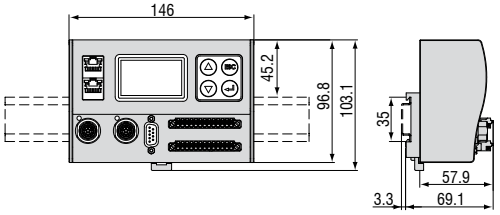
CSP2008 - Universal controller for up to six sensor signals

The controller CSP2008 has been designed to process 2 to 6 both optical and other sensors from Micro-Epsilon (6 digital or 4 analog 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 multicolor backlighting which changes its color 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)

IF1032/ETH

The IF1032/ETH interface module now enables to run sensors equipped with analog interfaces with the proven operating concept based on a web interface. The Ethernet interface permits to easily display the measured data on a PC. Moreover, sensors can be connected to an EtherCAT bus. The RS485 interface allows to connect new sensors that use the Micro-Epsilon specific RS485 protocol.

Interfaces

- 1x RS485 (ME-internal protocol)
- 2x analog-in (14 bit, max. 4 ksps), voltage
- 1x analog-in, (14 bit, max. 4 ksps), current
- Inputs for supply voltage
- Trigger input
- EtherCAT synchronisation output
- Output for sensor power supply

Accessories optoCONTROL 1200/1201		
Article number	Model	Description
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 analog sensor 0-10V, 2 limit switches
2420066	IF1032/ETH	ME Ethernet/EtherCAT interface module max.14Bit/4k samples/sec
2966006 *	ODC1202-L100	Mounting rail for ODC1202, 400mm; distance light source/receiver max.100mm
2966007 *	ODC1202-L200	Mounting rail for ODC1202, 500mm; distance light source/receiver max. 200mm
2966008 *	ODC1202-L500	Mounting rail for ODC1202, 800mm; distance light source/receiver max. 500mm
2966018	JU1200-VR	ODC1200 adjustment plate for vertical mounting of the receiver
2966019	JU1200-HR	ODC1200 adjustment plate for horizontal mounting of the receiver
2966020	JU1200-VT	ODC1200 adjustment plate for vertical mounting of the transmitter
2966021	JU1200-HT	ODC1200 adjustment plate for horizontal mounting of the transmitter
2966024	BR1200L220	Bracket for mounting as C-frame, length 220mm, 2 pcs. required
2966025	BR1200L320	Bracket four mounting as C-frame, height 320mm, 2 pcs. required

*only for C-frame mounting combined with adjustment plate JU1200 and bracket BR1200

Accessories optoCONTROL 1202		
2901497	CE1202-2	Connecting cable light source-receiver, 2m
2901482	CE1202-5	Connecting cable light source-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 analog output cable, 2m
2901510	SCA1202-5	Power supply and analog output cable, 5m
2966006	ODC1202-L100	Mounting rail for ODC1202, 400mm; distance light source/receiver max.100mm
2966007	ODC1202-L200	Mounting rail for ODC1202, 500mm; distance light source/receiver max. 200mm
2966008	ODC1202-L500	Mounting rail for ODC1202, 800mm; distance light source/receiver max. 500mm
6414114	EK1100/CSP2008	Bus terminal
6414107	EL3162/CSP2008	Bus terminal; 2-channel analog input terminal
2420057	CSP2008	Universal controller for displacement sensors
2420066	IF1032/ETH	ME Ethernet/EtherCAT interface module max.14Bit/4k samples/sec

Accessories optoCONTROL 1220		
2901871	CE1220-1	Connecting cable light source-receiver, 1m
2901851	CE1220-2	Connecting cable light source-receiver, 2m
2901852	CE1220-5	Connecting cable light source-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 analog output cable, 2m
2901510	SCA1202-5	Power supply and analog output cable, 5m
2966009	ODC1220-L220	Mounting rail for ODC1220, 400mm; distance light source/receiver max. 220mm
2966011	ODC1220-L420	Mounting rail for ODC1220; 600mm; distance light source/receiver max. 420mm
2966012	ODC1220-L620	Mounting rail for ODC1220; 800mm; distance light source/receiver max. 620mm
6414114	EK1100/CSP2008	Bus terminal
6414107	EL3162/CSP2008	Bus terminal; 2-channel analog input terminal
2420057	CSP2008	Universal controller for displacement sensors
2420066	IF1032/ETH	ME Ethernet/EtherCAT interface module max.14Bit/4k samples/sec

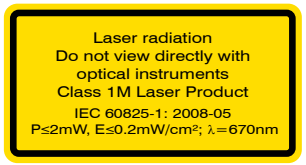
Accessories optoCONTROL 2500/2600		
2901123	PC2500-3	Power supply cable 3m, open
2901124	PC2500-10	Power supply cable 10m, open
2901120	SCA2500-3	Signal output cable, analog, 3m
2901215	SCA2500-10	Signal output cable, analog, 10m
2901121	SCD2500-3/3/RS232	Signal output cable, 3m, analog / RS232
2213017	IF2008	PCI interface card RS422
2213018	IF2008E	Expansion board analog / RS422 / PCI
2901122	SCD2500-3/10/RS422	Signal output cable, 3m, analog / 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

Accessories optoCONTROL 2500/2600		
2964022	MBC300	Assembly block for controller ODC2500/2600
2213024	IF2004/USB converter	4 channel RS422/USB converter
2213025	IF2001/USB converter	IF2001/USB converter RS422 to USB
2213022	RS-422/USB converter	Industrial converter for ODC2xxx sensors, RS-422/USB
29011111	SCD2500-3/RS422	Output cable RS422, 3m, open ends
2901528	IF2008-Y adaptation cable	Adaptation cable, Y-type, 100mm
2901561	SCD2500-3/IF2008	Interface cable
2901563	SCD2500-8/IF2008	Interface cable
6414071	Extension clamp	Extension clamp RS422 to CSP2008

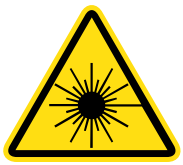
Accessories optoCONTROL 2520		
2901925	SCD2520-3	Digital output cable, 3m, RJ45/ Ethernet/EtherCAT
29011002	SCD2520/90-5	Digital output cable, 5m, RJ45/ Ethernet/EtherCAT
29011042	SCD2520/90-8	Digital output cable, 8m, RJ45/ Ethernet/EtherCAT
29011003	PC/SC2520/90-5	Supply-, interface- and signal cable, 5m
2901918	PC/SC2520-3	Supply-, interface- and signal cable, 3m
29011037	PC/SC2520-10	Supply-, interface- and signal cable, 10m
29011038	PC/SC2520-20	Supply-, interface- and signal cable, 20m
29011039	PC/SC2520-30	Supply-, interface- and signal cable, 30m
29011040	SCD2520-5 M12	Digital output cable Ethernet/EtherCAT, 5m
2901919	CE2520-1	Connecting cable light source-receiver, 1m
2901920	CE2520-2	Connecting cable light source-receiver, 2m
2901921	CE2520-5	Connecting cable light source-receiver, 5m
2901922	CE2520/90-1	Connecting cable light source-receiver, 1m
2901923	CE2520/90-2	Connecting cable light source-receiver, 2m
2901924	CE2520/90-5	Connecting cable light source-receiver, 5m
2901967	PC/SC2520-3/CSP	Interface and supply cable for CSP2008
29011014	PC/SC2520-3/IF2008	Interface and supply cable for IF2008
2213024	IF2004/USB converter	4 channel RS422/USB converter
2213022	RS-422/USB converter	Industrial converter for ODC2xxx sensors, RS-422/USB
2213025	IF2001/USB converter	Single channel RS422/USB converter
0260031.10	DD241PC(10)-U	Digital process display, 0...10V
0260031.11	DD241PC(11)-U	Digital process display, 2 limit switches, 0...10V
2213017	IF2008	PCI interface card RS422
2213018	IF2008E	Expansion board analog / RS422 / PCI
2901528	IF2008-Y adaptation cable	Adaptation cable, Y-type, 100mm
2420057	CSP2008	Universal controller for displacement sensors
6414071	Extension clamp	Extension clamp RS422 to CSP2008
6414113	EK1122/CSP2008	2 port RJ45 EtherCAT junction
6414114	EK1100/CSP2008	Bus terminal

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

Further cable lengths on request.



optoCONTROL 2520 use a semiconductor class 1M laser with a wavelength of 670nm. The maximum optical output power is <=2mW . This laser class does not require any additional protection equipment. Be careful with the dazzling effect related to optical instruments.



optoCONTROL 12xx and 2500 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.

High performance sensors made by Micro-Epsilon

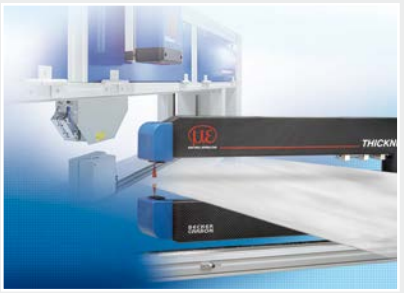
Sensors and systems for displacement and position

Sensors and measurement devices for non-contact temperature measurement

2D/3D profile sensors (laser scanner)

Optical micrometers, fiber optic sensors and fiber optics

Color recognition sensors, LED analyzers and color online spectrometer



Measurement and inspection systems

MICRO-EPSILON

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