



More Precision

optoCONTROL // Optical precision micrometers





| | |
|--|---|
| | Measuring range 2 - 30mm |
| | Resolution $\geq 10\mu\text{m}$ |
| | Frequency response up to 100kHz (-3dB) |
| | Analog output 0 ...10VDC |
| | Laser class 1 |

- ▶ High quality glass lense optics
- ▶ Robust and compact design with integrated controller
- ▶ Limit switch with up to 60kHz 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 analog electronics and output as an analog signal.

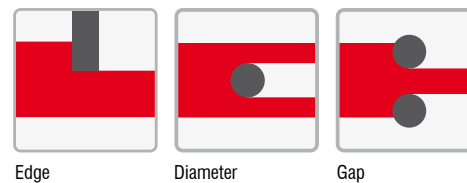
System design

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 analog 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).

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

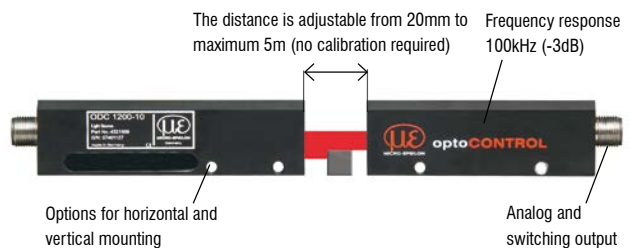
Measurement mode



Edge

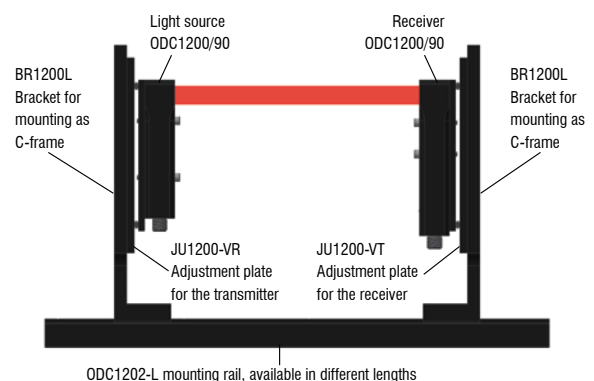
Diameter

Gap



optoCONTROL 1200/90:

Version with 90° beam path for mounting in tight spaces. Optional mounting with ODC1202-L mounting rail as C-frame.



| Model | ODC1200 (axial model) | | | | ODC 1200/90 (90° model) | | | | ODC1201 | | |
|---|--|------------|-----------|------|-------------------------|-------------------|-----------|------|---------|------------|------|
| | Measuring range | 2mm | 5mm | 10mm | 16mm | 2mm ²⁾ | 5mm | 10mm | 16mm | 20mm | 30mm |
| Distance light source - receiver (free space) ¹⁾ | min. 20mm to max. 5m | | | | | | | | | | |
| Linearity | ≤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) | | | | | | | | | | |
| Permissible ambient light | ≤ 5000lx ³⁾ | | | | | | | | | | |
| Analog output | 0 ... 10VDC (adjustable gain) | | | | | | | | | | |
| Temperature drift of the analog output | ≤130mV (at 10 - 50°C) | | | | | | | | | | |
| Switching output | PNP dark switching and NPN bright switching (max. switching frequency 60kHz) adjustable signal threshold | | | | | | | | | | |
| Shock | 15g / 6ms | | | | | | | | | | |
| Vibration | 15g / 10Hz...1kHz | | | | | | | | | | |
| Operation temperature | 0 ... 50°C | | | | | | | | | | |
| LED display | Switching state and dusty optics | | | | | | | | | | |
| Storage temperature | -20 ... 70°C | | | | | | | | | | |
| Operation voltage | 12-32VDC, reverse polarity protection | | | | | | | | | | |
| Mounting holes | straight up | | | | | | | | | M4 x 5mm | |
| | horizontal | | | | | | | | | M5 x 8mm | |
| Weight (without cable) | light source | 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°C after a warm-up period of 30min, in the range 10 ... 90% of the analog output at a distance between light source and receiver of 0.5m.

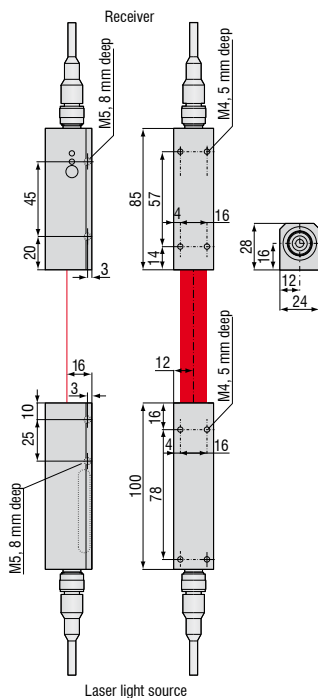
Analog offset <0.05V

¹⁾ Increasing the distance, the measurement of hot targets is possible without damaging the controller electronics

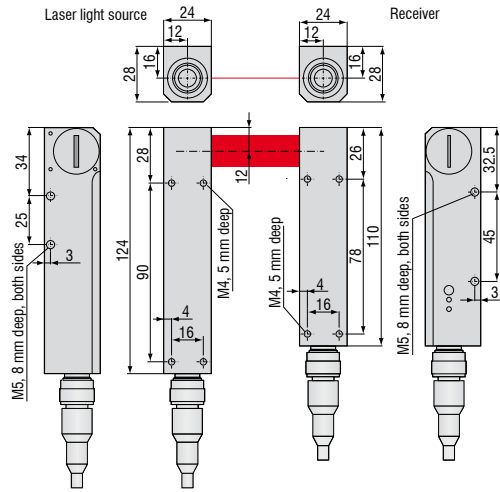
²⁾ For gap measurements 50 - 400μm there is an controller option available: thru-beam operation with distances up to 700mm

³⁾ Shadowing from ambient daylight increases the signal stability

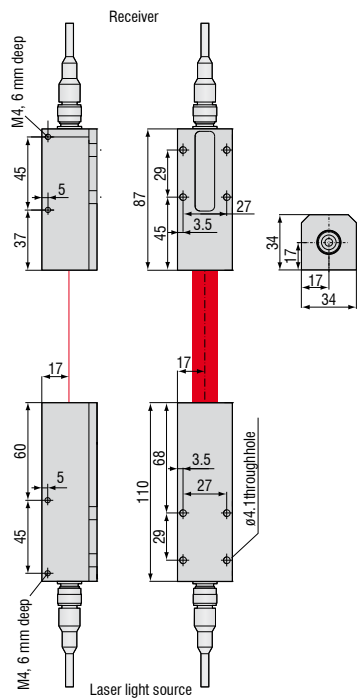
optoCONTROL 1200



optoCONTROL 1200/90



optoCONTROL 1201



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.

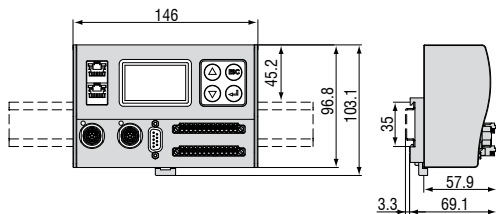


CSP2008 - Universal controller for up to six sensor signals

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.



Laser radiation
Do not view directly with
optical instruments
Class 1M Laser Product
IEC 60825-1: 2008-05
P≤2mW, E≤0.2mW/cm²; λ=670nm

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



Class 1 Laser Product
IEC 60825-1: 2008-05

optoCONTROL 12xx and 2500 use a semiconductor class 1 laser with a wavelength of 670nm. The maximum optical output power is $\leq 0.39\text{ mW}$. This laser class does not require any additional protection equipment.

**THIS PRODUCT COMPLIES
WITH FDA REGULATIONS
21CFR 1040.10 AND 1040.11**

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