

More Precision

optoCONTROL // Optical precision micrometers



optoCONTROL 1200/1201



- OptoCONTRC
 - 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

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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. >0.3mm. For gap measurement from 50 - 400µm there is an option using light quantity measurement.



optoCONTROL 1200/90:

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



ODC1202-L mounting rail, available in different lengths

| 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 | | ≤3,59 | | % 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 | \leq 5000lx ³⁾ | | | | | | | | | | | |
| Analog output | 0 10VDC (adjustable gain) | | | | | | | | | | | |
| Temperature drift of the analog | ≤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 / 10Hz1kHz | | | | | | | | | | |
| 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 | | | | | | ø4.1 | mm | | | |
| | horizontal | M5 x 8mm | | | | | | M4 x 6mm | | | | |
| Weight (without cable) | light source | appr. 150g | | 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: thrubeam operation with distances up to 700mm

³⁾ Shadowing from ambient daylight increases the signal stability

optoCONTROL 1200

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16 Accessories

optoCONTROL

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 opto-CONTROL. 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 Ether-CAT 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

- Ix 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



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Accessories

| Accessories op | otoCONTROL 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 | | | | | | |
| 2001261 | PC1200/90-5 | Power supply and signal cable for and and connector, for light source and receiver unit | | | | | | |
| 2901201 | | Divisit supply and signal cables on, angled connector, for agrin source and received unit | | | | | | |
| 0200031.11 | | Digital display unit, h5252, connection non ratialog seriori 0 - 10, 2 initia switches | | | | | | |
| 2420066 | | Me Ethemet/EthelCAT Internace module max.14bit/4k samples/sec | | | | | | |
| 2966006 ^ | ODC1202-L100 | Mounting rai 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 n | nounting combined with adjustme | ent 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 | | | | | | |
| 2001371 | SCD1202-2-RS232 | Digital output cable 2m for connection to a RS232 port | | | | | | |
| 2001500 | SCD1202-2-110202 | Digital output cable, 5m, for connection to a R\$232 port | | | | | | |
| 2901009 | SOD 1202-0-RS232 | Digital output cable, SITI, 101 CONTRECTION to a mazaz point | | | | | | |
| 2901848 | SOD 12XX-2-USB | Digital output cable for Job conflection incl. anver, 2m | | | | | | |
| 2901373 | SUA1202-2 | 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 or | NTACONTROL 1220 | | | | | | | |
| 0001071 | OF1000 1 | Connecting achieves receiver the | | | | | | |
| 2901871 | CE1220-1 | Connecting cable light source-receiver, Im | | | | | | |
| 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 | | | | | | | | |
| Accessories op | DC0500 2 | Power outpoly colle 2m open | | | | | | |
| 2901123 | F 02000-3 | Power supply cable 311, Open | | | | | | |
| 2901124 | PC2500-10 | Power suppry caple rom, open | | | | | | |
| 2901120 | SCA2500-3 | Signal output caple, analog, 3m | | | | | | |
| 2901215 | SCA2500-10 | Signal output cable, analog, 10m | | | | | | |
| 2901121 | SCD2500-3/3/RS232 | Signal output cable, 3m, analog / HS232 | | | | | | |
| 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 | | | | | | |
| | 1022000 10,001 | | | | | | | |



Accessories optoCONTROL 2500/2600 Assembly block for controller ODC2500/2600 2964022 MBC300 2213024 IF2004/USB converter 4 channel RS422/USB converter IF2001/USB converter RS422 to USB 2213025 IF2001/USB converter 2213022 RS-422/USB converter Industrial converter for ODC2xxx sensors, RS-422/USE 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 CF2520-1 Connecting cable light source-receiver, 1m 2901920 CE2520-2 Connecting cable light source-receiver, 2m 2901921 CE2520-5 Connecting cable light source-receiver, 5m CE2520/90-1 Connecting cable light source-receiver, 1m 2901922 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 DD241PC(10)-U Digital process display, 0...10V 0260031.10 0260031.11 DD241PC(11)-U Digital process display, 2 limit switches, 0...10V 2213017 IF2008 PCI interface card RS422 2213018 IE2008E 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 <=2mW. This laser class does not require any additional protection equipment. Be careful with the dazzling effect related to optical instruments.



THIS PRODUCT COMPLIES WITH FDA REGULATIONS 21CFR 1040.10 AND 1040.11 optoCONTROL 12xx and 2500 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



Optical micrometers, fiber optic sensors and fiber optics



Sensors and measurement devices for non-contact temperature measurement



Color recognition sensors, LED analyzers and color online spectrometer



2D/3D profile sensors (laser scanner)



Measurement and inspection systems



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