MICRO-EPSILON

More Precision

optoCONTROL 2520

	Measuring range 46mm
	Target-sensor gap up to 2m
	Linearity ±12μm
INTER FACE	**Ethernet / EtherCAT / RS422 / Analogue interface**
	Laser class 1M
	Configurable via web interface

- ▶ Position target anywhere in measurement field
- ▶ Output multiple measurement values simultaneously
- ▶ Triggering and synchronisation of multiple channels
- ▶ Many filtering modes and statistical calculations
- ▶ View video signal via web browser
- ▶ Display of light and dark edges
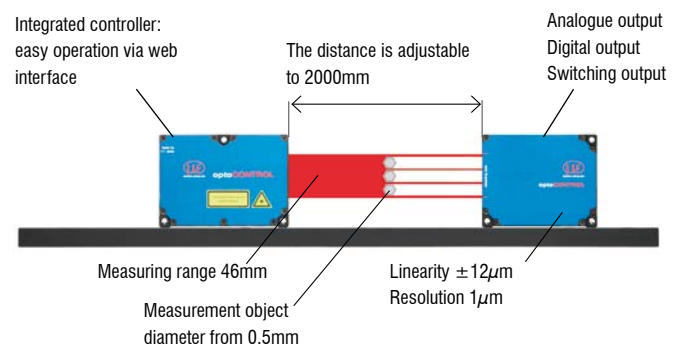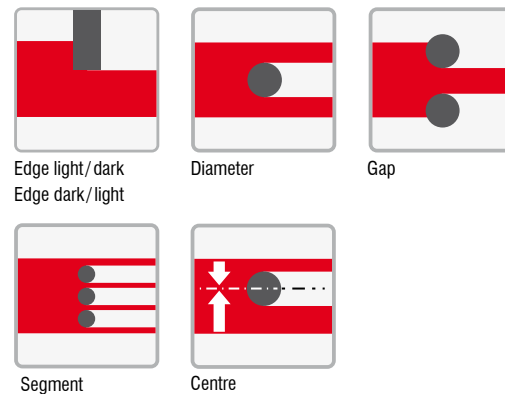- ▶ Measures up to 8 segments simultaneously

Compact multifunction micrometer with large working range

The optoCONTROL 2520 is a high performance, self contained laser micrometer with integrated controller and many programmable functions. It has a maximum measurement width of 46mm and the transmitter to receiver gap can be up to 2m (further can be achieved with reduction in measurement performance). Unlike current high accuracy micrometers, the optoCONTROL 2520 can have the target positioned at any point in the gap rather than just a small ‚working position'. This gives the user much more flexibility in use. Small objects with 0.5mm diameter can be reliably detected.

RS422, Ethernet / EtherCAT interfaces are available directly from the sensor. For analogue outputs, a small DIN rail module is supplied. An intuitive web browser interface is used for viewing and recording measurement values, configuration of sensor parameters and visualisation of the sensor video signal.

Measuring modes

The centre line as well as the position of the single edges can be output for every segment, gap or diameter.

Edge light / dark
Edge dark / light

Diameter

Gap

Segment

Centre

Integrated controller:
easy operation via web interface

The distance is adjustable to 2000mm

Analogue output
Digital output
Switching output

Measuring range 46mm

Measurement object
diameter from 0.5mm

Linearity ±12μm
Resolution 1μm

Modell	ODC 2520
Measuring range	46mm
Smallest diameter or gap	typ. ≥0.5mm
Distance light source - receiver (free space)	with mounting rail 100 … 300mm; without mounting rail up to approx. 2m
Distance (target to receiver)	20mm, max. 1500 ... 2000mm
Linearity (3σ) [1]	$< \pm 12 \mu m$
Digital resolution	$1 \mu m$
Repeatibility [1] [2]	$\leq 5 \mu m$
Measuring rate	2.5kHz
Light source	semiconductor laser 670nm (red), laser class 1M (P_{max} 2mW)
Analogue output	0 … 10V not electrically isolated, 14Bit D/A
Digital output	RS 422; max. 4 MBaud, full-duplex, not electrically isolated
	Ethernet, electrically isolated
	EtherCAT
Switching outputs	2 outputs, selectable for error or limit values, not electrically isolated 24V logic (HTL), High level depends to operating voltage
In-/Outputs	Zeroing / mastering, reset to factory setting; not electrically isolated, 24 V logic (HTL), High level depends to operating voltage
	TrigIn / SyncIn / symmetrical SyncOut, RS422 level, load resistance (120 Ohm) and direction switchable via software, not electrically isolated
Shock	15g / 6ms
Vibration	2g / 20 ... 500Hz
Operation temperature	0 ... 50°C
Storage temperature	-20 ... 70°C
Power supply	+24VDC (11…30VDC), < 1A
Connector receiver	3-pin connector M8 for supply of the light source, 14-pin connector M16 for power supply and signals 4-pin connector M12x1 for Ethernet / EtherCAT
Display LEDs receiver	Power on, Status, Speed, Link / activity
Protection class receiver / light source	IP 64
Measuring programs	Edge light/dark; edge dark/light (outer-) diameter/ width incl. centre gap / (inner diameter) incl. centre Any segment edges incl. centre
Functions	averaging, filter; Threshold adjustment for transparent targets; edge detection and measurement direction reversible; current measuring value, Maximum, Minimum, Peak to Peak; edge / level / software triggering synchronization, counting function
Operation, measured value display	Web interface for parametrisation and display (incl. measurement server for transmitting multiple measuring values to the PC)

All specifications are measured at a constant temperature of 20 °C, sensor in continuous operation.
[1] Distance light source - receiver 300mm, distance target - receiver 20mm and 50mm, mode: edge light/dark
[2] Measured at static noise for 3 min.

Light source

Receiver

Light source and receiver with mounting rail
Distance 100...300
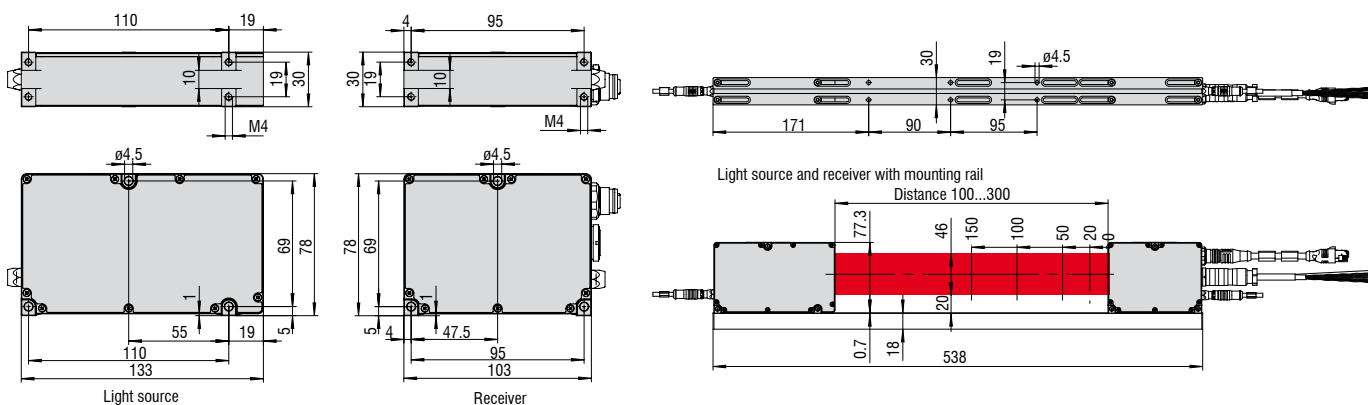
IF2008 - PCI interface card

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 and8 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 analogue 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 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
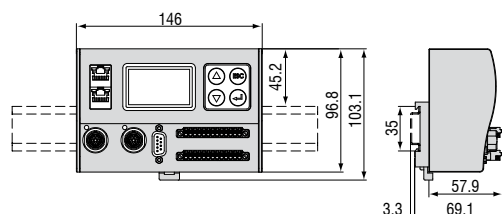
Universal controller with DIN rail TS 35
(dimensions not to scale)

IF1032/ETH

The IF1032/ETH interface module now enables to run sensors equipped with analogue 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 analogue-in (14 bit, max. 4 ksps), voltage
- 1x analogue-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 analogue 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 analogue output cable, 2m
2901510	SCA1202-5	Power supply and analogue 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 analogue 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 analogue output cable, 2m
2901510	SCA1202-5	Power supply and analogue 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 analogue 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, 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

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 analogue / 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.

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 ≤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, fibre optic sensors and fibre optics

Colour recognition sensors, LED analyzers and colour online spectrometer

Measurement and inspection systems