MICRO-EPSILON

More Precision

optoCONTROL 2520 // Compact laser micrometer

Compact laser micrometer with high precision

The optoCONTROL 2520 is a compact laser micrometer with high accuracy and measuring rate. A high resolution, different measuring ranges and variable mounting distances allow a wide range of applications in quality monitoring and production control.

These micrometers operate according to the transmitted light principle (ThruBeam). Here, the transmitter produces a parallel light curtain that is transmitted via a lens arrangement into the receiver unit. The beam is interrupted if an object is in the light path. Unlike conventional devices, the laser micrometers do not require an external controller. The signal processing takes place entirely inside the device, which facilitates integration and cabling. In addition, the measurement object can be placed at any position within the light curtain and the distance from transmitter to receiver can be freely selected.

The optical micrometers are used for dimensional measurements in production and quality monitoring in production lines and measure both continuous material and single parts. Thereby, parameters such as diameter, gap, height, position and segments are detected at high accuracies.

Wear-free and long service life

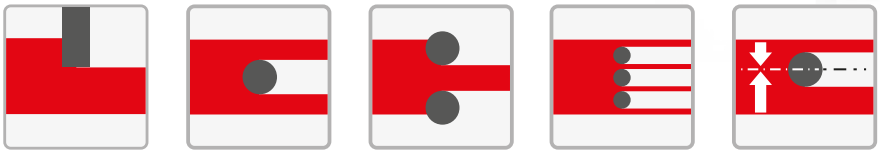
All optoCONTROL models work without rotating mirrors and are therefore completely wear-free. The parallel light curtain is created by special optics in the light source. High quality components in the receiving optics, e.g. filters and lenses, enable the high accuracy of the micrometers. This is why optoCONTROL micrometers are particularly suitable for areas where high precision and reliability are required.

- Distance-independent measurement
- Simultaneous output of several values
- Trigger and synchronization
- Value-time chart displays limit values
- Statistics and multiple types of averaging and filters
- Simple configuration of video signal
- Display of light/dark edges
- Measures up to 8 segments simultaneously
- Measures up to 16 edges simultaneously
- Smallest detectable object of 100 µm

Unique operating concept for quick and easy commissioning

The optoCONTROL micrometers are operated using an intuitive web interface, which can be accessed via a standard web browser. This enables readings and limit values to be displayed as well as the selection and application of filters. Furthermore, a video signal is available to precisely configure the measurement.

Parameter setting of the respective measuring programs is quick and intuitive. For each segment, gap or diameter, the center axis and the position of the individual edges can be output.



Edge light/dark
Edge dark/light

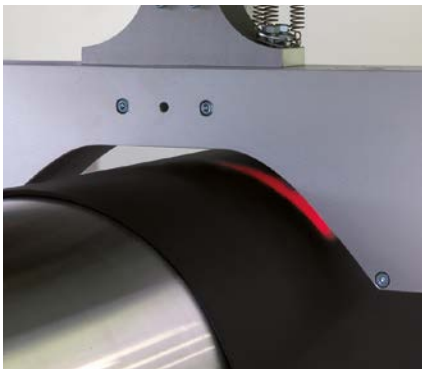
Diameter

Gap

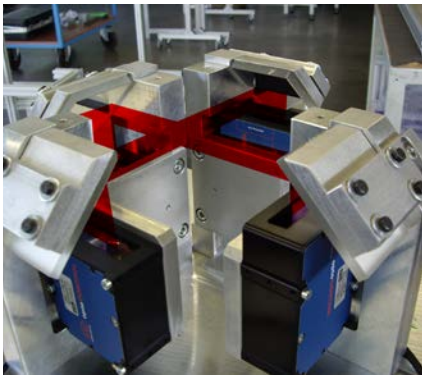
Segment

Center axis

Optical measurement of pulleys



Micrometer for thickness measurement of films and rubber



Measuring system for detection of X/Y position in the sewing machine needle

Bearing shell detection in automotive manufacturing

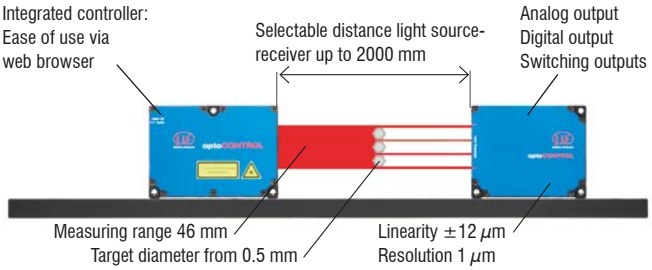
Versatile in application

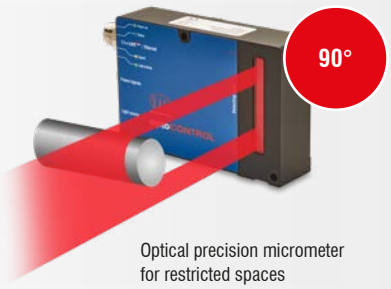
Micrometers are primarily used as part of the manufacturing process and quality control of production lines, measuring continuous material, as well as single parts. The technologies used (laser intensity measurement and imaging on a line detector) are suitable for a wide range of applications.

The compact models of the optoCONTROL family are suitable for applications in production lines, as well as for integration in machines and automated production systems. The high measuring rates ensure a high and continuous cycle rate in the production process.

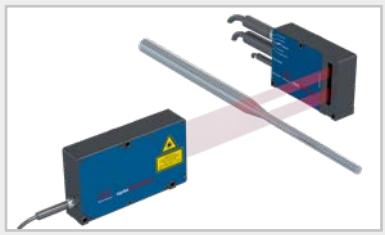
Compact laser micrometer with high precision

optoCONTROL 2520-46 is a compact laser micrometer which is characterized by high accuracy with a large measuring range of 46 mm. The optoCONTROL 2520 is flexible; the measurement object can be placed at any position within the light curtain and the distance from the light source to the receiver can be freely selected. The smallest detectable target diameter is 0.5 mm, which allows for example PINs and small gaps to be detected. The optoCONTROL 2520 is also used for counting tasks and roundness measurements.

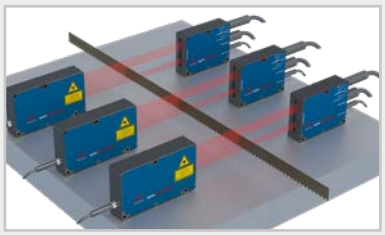




Optical precision micrometer
for restricted spaces

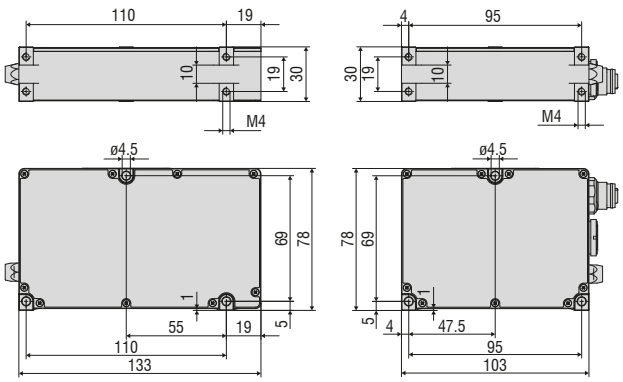


Diameter measurement at
conical constrictions



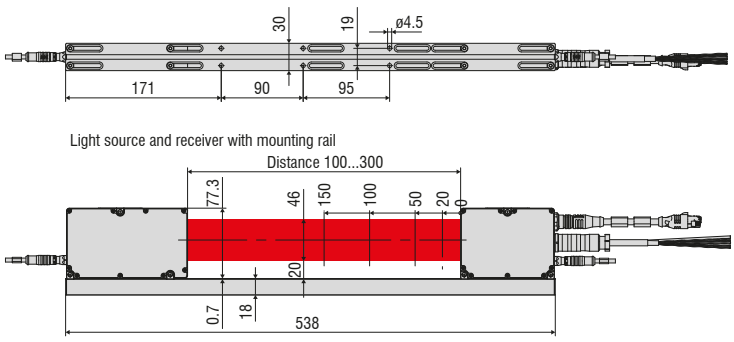
Measuring the deflection and cambering
of saw blades and steel strips

optoCONTROL 2520-46



Light source

Receiver



Light source and receiver with mounting rail

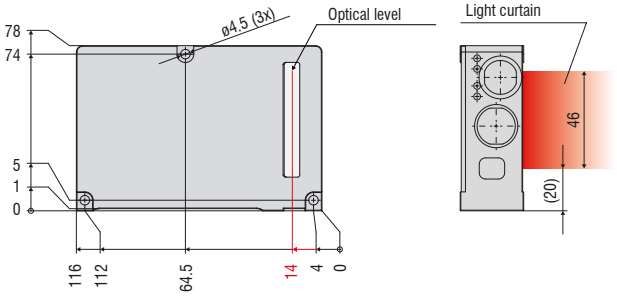
Dimensions in mm, not to scale.

Model		ODC 2520-46	ODC 2520-46(090) angled at 90°
Measuring range		46 mm	
Min. target size		typ. ≥ 0.5 mm	
Distance light source - receiver (free space)		with mounting rail 100 ... 300 mm; without mounting rail open to approx. 2000 m	
Measuring distance (target - receiver)		20 mm ... 2000 mm; optimum distances: 20, 50, 100, 150 mm	
Measuring rate		2.5 kHz	
Resolution [1]		1 µm	
Linearity [2]		< ±12 µm	
Repeatability [3]		≤5 µm	
Light source		Semiconductor laser 670 nm (red)	
Laser safety class		Laser class 1M (P_{max} 2 mW) according to DIN EN 60825-1 : 2015-07	
Permissible ambient light		approx. 20,000 lx	
Analog output		0 ... 10 V not electrically separated, 14-bit D/A	
Digital interface		RS422 (max. 4 MBaud), full duplex, not electrically separated / Ethernet, electrically separated / EtherCAT / EtherNet/IP [4] / PROFINET [4]	
Switching output		2 outputs, optionally for errors or limits, not electrically separated 24 V logic (HTL), High level depends on operating voltage.	
Signal input		Zero setting/mastering, resetting to factory defaults; not electrically separated, 24 V logic (HTL) High level depends on operating voltage; TrigIn / SyncIn via RS422 level	
Digital output		SyncOut symmetric, RS422 level, terminating resistance (120 ohm) direction can be switched via software, not electrically separated	
Connection	Receiver	3-pin socket M8 for supply of light source; 14-pin M16 socket for power supply & signals; 4-pin M12x1 socket for Ethernet / EtherCAT	
	Light source	3-pin socket M8 for supply	
Mounting		Mounting rail (see accessories), mounting holes	
Temperature range	Storage	-20 … +70 °C	
	Operation	0 … +50 °C	
Supply voltage		+24 VDC (11 … 30 VDC)	
Max. current consumption		< 1A	
Shock (DIN-EN 60068-2-27)		15 g / 6 ms	
Vibration (DIN-EN 60068-2-6)		2 g / 20 … 500 Hz	
Protection class (DIN-EN 60529)	Receiver / light source	IP64	
Material	Receiver / light source	Aluminum housing	
Weight		1.25 kg (without cable)	
Measuring programs		Edge light-dark; edge dark-light (outside) diameter / width incl. edges & center axis gap / (inside diameter) incl. edges & center axis any segments, incl. segment edges & center axes	
Control and display elements		Web interface for setting parameters and display; color LEDs for Power on, Status, Speed, Link/activity	
Features		Integrated web server for transmission of several measurements to the PC; optional other periphery devices, see operating instructions	

The specified data apply for a consistent room temperature of 20 °C, continuously in operation, signal outputs open and sensor mounted on included mounting rail
Measured at light source - receiver distance of 300 mm, measured object - receiver distance of 20 mm, operating mode: edge light-dark
[1] At the digital interface
[2] Measured with 3 sigma
[3] Measured with a moving average over 32 values
[4] Connection via interface module (see accessories)

optoCONTROL 2520-46(090), 90° angle

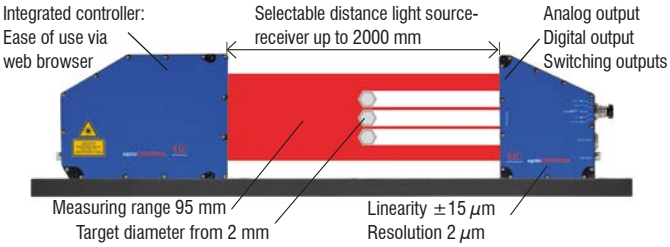
Dimensions in mm, not to scale.

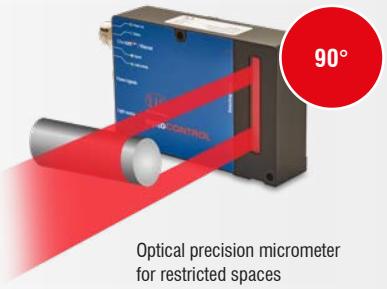


- Measuring range 95 mm
- Measurement distances up to 2 m
- Linearity ±15 µm
- INTERFACE: Ethernet / EtherCAT / RS422 / Analog / EtherNet/IP / PROFINET
- Laser class 1M
- Configurable via web interface

Compact laser micrometer with large measuring range

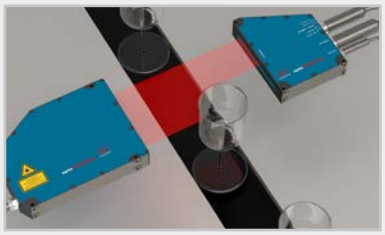
optoCONTROL 2520-95 is a compact laser micrometer which is characterized by high accuracy with a large measuring range of 95 mm. The optoCONTROL 2520 is flexible; the measurement object can be placed at any position within the light curtain and the distance from the light source to the receiver can be freely selected.





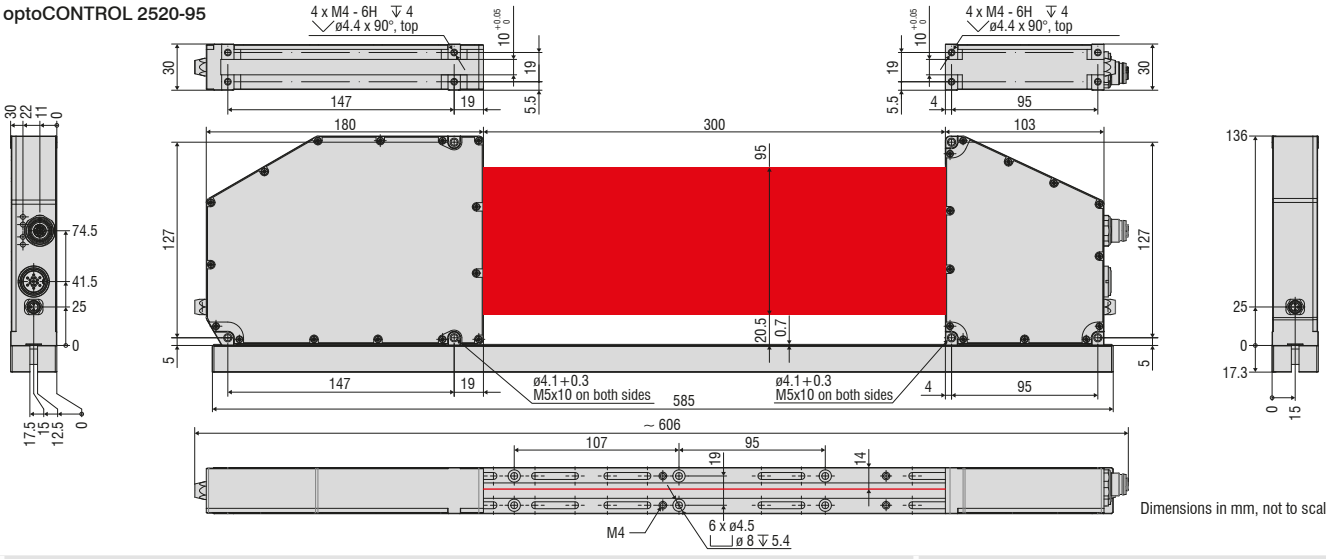
Optical precision micrometer for restricted spaces

Step measurement on pipes with large diameter, cascading



Measurement of the glass impact of wine glasses

optoCONTROL 2520-95



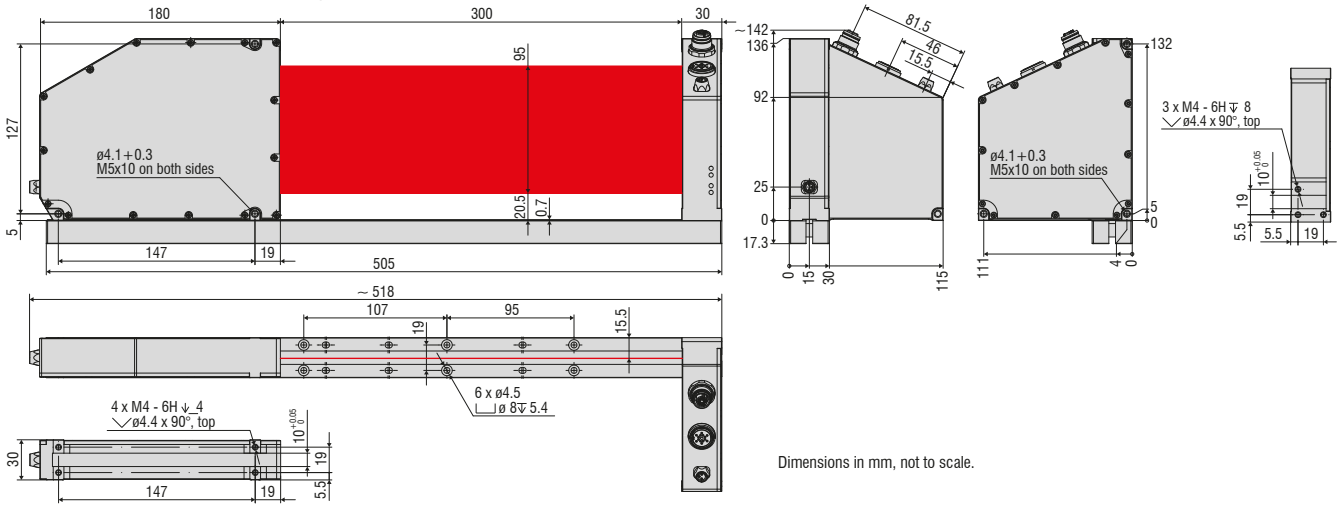
Dimensions in mm, not to scale.

Model		ODC 2520-95	ODC 2520-95(270) angled at 90°
Measuring range		95 mm	
Min. target size		typ. ≥ 2.0 mm / 100 µm [4]	
Distance light source - receiver (free space)		with mounting rail 100 ... 300 mm; without mounting rail open to approx. 2000 m	
Measuring distance (target - receiver)		20 mm ... 2000 mm; optimum distances: 20, 50, 100, 150 mm	
Measuring rate		2.0 kHz	
Resolution [1]		2 µm	
Linearity [2]		< ±15 µm	
Repeatability [3]		≤6 µm	
Light source		Semiconductor laser 670 nm (red)	
Laser safety class		Laser class 1M (P_{max} 2 mW) according to DIN EN 60825-1 : 2015-07	
Permissible ambient light		approx. 15,000 lx	
Analog output		0 ... 10 V not electrically separated, 14-bit D/A	
Digital interface		RS422 (max. 4 MBaud), full duplex, not electrically separated / Ethernet, electrically separated / EtherCAT / EtherNet/IP [5] / PROFINET [5]	
Switching output		2 outputs, optionally for errors or limits, not electrically separated 24 V logic (HTL), High level depends on operating voltage.	
Signal input		Zero setting/mastering, resetting to factory defaults; not electrically separated, 24 V logic (HTL) High level depends on operating voltage; TrigIn / SyncIn via RS422 level	
Digital output		SyncOut symmetrical, RS422 level, terminating resistor (120 ohm) direction can be switched using software, not electrically separated	
Connection	Receiver	3-pin socket M8 for supply of light source, 14-pin M16 socket for power supply & signals, 4-pin M12x1 socket for Ethernet / EtherCAT	
	Light source	3-pin socket M8 for supply	
Mounting		Mounting rail (see accessories), mounting holes	
Temperature range	Storage	-20 … +70 °C	
	Operation	0 … +50 °C	
Supply voltage		+24 VDC (11 … 30 VDC)	
Max. current consumption		< 1A	
Shock (DIN-EN 60068-2-27)		6 g / 6 ms in 3 axes, 1000 shocks each	
Vibration (DIN-EN 60068-2-6)		2 g / 10 … 500 Hz in 3 axes, 10 cycles each	
Protection class (DIN-EN 60529)	Receiver / light source	IP64	
Material	Receiver / light source	Aluminum housing	
Weight		2.0 kg (without cable)	
Measuring programs		Edge light-dark; edge dark-light; (outside) diameter / width incl. edges & center axis gap / (inside diameter) incl. edges & center axis; any segments, incl. segment edges & center axes	
Control and display elements		Web interface for setting parameters and display; color LEDs for Power on, Status, Speed, Link/activity	
Features		Integrated web server for transmission of several measurements to the PC; optional other periphery devices, see operating instructions	

The specified data apply for a consistent room temperature of 20 °C, continuously in operation, signal outputs open and sensor mounted on included mounting rail.
Measured at light source - receiver distance of 300 mm, measured object - receiver distance of 20 mm, operating mode: edge light-dark

[1] At the digital interface
[2] Measured with 3 sigma
[3] Measured with a moving average over 32 values
[4] Smallest detectable object, not measurable
[5] Connection via interface module (see accessories)

optoCONTROL 2520-95(270), 90° angle



Dimensions in mm, not to scale.

Accessories		
2901925	SCD2520-3	Digital output cable, 3 m long, RJ45/ Ethernet/EtherCAT
29011002	SCD2520/90-5	Digital output cable, 5 m long, RJ45/ Ethernet/EtherCAT, 90° angle
29011042	SCD2520/90-8	Digital output cable, 8 m long, RJ45/ Ethernet/EtherCAT, 90° angle
29011003	PC/SC2520/90-5	Supply, interface and signal cable, 5 m long, 90° angle
2901918	PC/SC2520-3	Supply, interface and signal cable, 3 m long
29011037	PC/SC2520-10	Supply, interface and signal cable, 10 m long
29011038	PC/SC2520-20	Supply, interface and signal cable, 20 m long
29011039	PC/SC2520-30	Supply, interface and signal cable, 30 m long
29011040	SCD2520-5 M12	Digital output cable EtherCAT, 5 m long
2901919	CE2520-1	Connection cable light source-receiver, 1 m long
2901920	CE2520-2	Connection cable light source-receiver, 2 m long
2901921	CE2520-5	Connection cable light source-receiver, 5 m long
2901922	CE2520/90-1	Connection cable light source-receiver, 1 m long, 90° angle
2901923	CE2520/90-2	Connection cable light source-receiver, 2 m long, 90° angle
2901924	CE2520/90-5	Connection cable light source-receiver, 5 m long, 90° angle
2901967	PC/SC2520-3/CSP	Interface and supply cable for CSP2008, only MR 46 mm
29011014	PC/SC2520-3/IF2008	Interface and supply cable for IF2008
9335426	Demo prism ODC2520	Demo prism ODC2520 incl. testing pins
2213024	IF2004/USB	IF2004/USB 4-channel RS422/USB converter
2213025	IF2001/USB converter	IF2001/USB converter RS422 to USB
2213017	IF2008	Interface card RS422 / PCI card
2213018	IF2008E	Expansion board RS422/analog/PCI
2901528	IF2008-Y adapter cable	Adapter cable, Y type, 100 mm long
2420057	CSP 2008	Universal controller for displacement signals, only MR 46 mm
6414071	CSP for extension terminal	RS422 extension terminal for CSP2008, only MR 46 mm
6414113	EK1122/CSP2008	2-port EtherCAT junction RJ45
6414114	EK1100/CSP2008	Bus terminal bus coupler
6414107	EL3162/CSP2008	Bus terminal
6414016	KL9010	Bus terminal / End terminal
6414119	EL9011	Bus end cap
2420087	IF2030/PNET	Interface module for PROFINET
2420088	IF2030/ENETIP	Interface module for EtherNet/IP
2966033	Mounting rail	Mounting rail for ODC2520, length 700 mm
2966034	Mounting rail	Mounting rail for ODC2520, length 1000 mm
2966035	Mounting rail	Mounting rail for ODC2520, length 1500 mm
2966040	Manual workstation	Manual workstation set for single value triggering with ODC2520
2420096	PS2031	Power supply unit universal 100-240 V / 24 V / 1 A
2420062	PS2020	Power supply unit 24 VDC / 2.5 A for mounting on DIN rail

optoCONTROL EDU190

Digital display for optical micrometers

- Article no.: 2966045 | EDU190-4 Pro Digital display for optical micrometers
- Article no.: 2966032 | EDU190-7 Pro Digital display for optical micrometers

XFrame2520

Accessory for the integration of optical micrometers ODC2520-46 micrometers for diameter measurements

- 2-axis frame, X-arrangement of 2 sensors
- Optics can be cleaned with compressed air (8 mm)
- Article no.: 2966036

MICRO-EPSILON

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