

**Assembly Instructions**  
optoCONTROL 2520

Laser micrometer

MICRO-EPSILON Eltrotec GmbH  
Manfred-Wörner-Straße 101  
73037 Göppingen / Germany

Tel. +49/7161/98872-300  
Fax +49/7161/98872-303  
e-mail [eltrotec@micro-epsilon.de](mailto:eltrotec@micro-epsilon.de)  
[www.micro-epsilon.com](http://www.micro-epsilon.com)



Zertifiziert nach DIN EN ISO 9001: 2008  
Certified acc. to DIN EN ISO 9001: 2008

# Assembly Instructions

## optoCONTROL 2520

### Functions

- Edge measurement with the shadow principle (Edge low-high; edge high-low)
- Measurement of diameter-, width-, gap incl. center axis
- Counting of edges or segments, any segment situations or widths; calculation of the center axes between edges
- Trigger, synchronization and further functions
- RS422, Ethernet or EtherCAT interface, transfer of several measuring values to the PC
- Measuring rate 2.5 kHz

### Warnings

Connect the power supply according to the safety regulations for electrical operating equipment. Supply voltage must not exceed specified limits.

> Danger of injury, damage to or destruction of the sensor

Protect cables against damage.

> Failure of the measuring device

Avoid shock and vibration to the light source and the receiver.

> Danger of injury, damage to or destruction of the sensor

### Notes on CE Identification

The following applies to the optoCONTROL 2520: EMC regulation 2004/108/EC



The sensor satisfies the requirements according to the standards

EN 61000-6-3 / EN 61326-1 (class B) emitted interference

EN 61000-6-2 / EN 61326-1 interference immunity

### Proper Environment

Protection class: IP 64 applies only with connected cable (with protective cap on Ethernet connector)

Operating temperature: +5 ... +50 °C

Storage temperature: -20 ... +70 °C

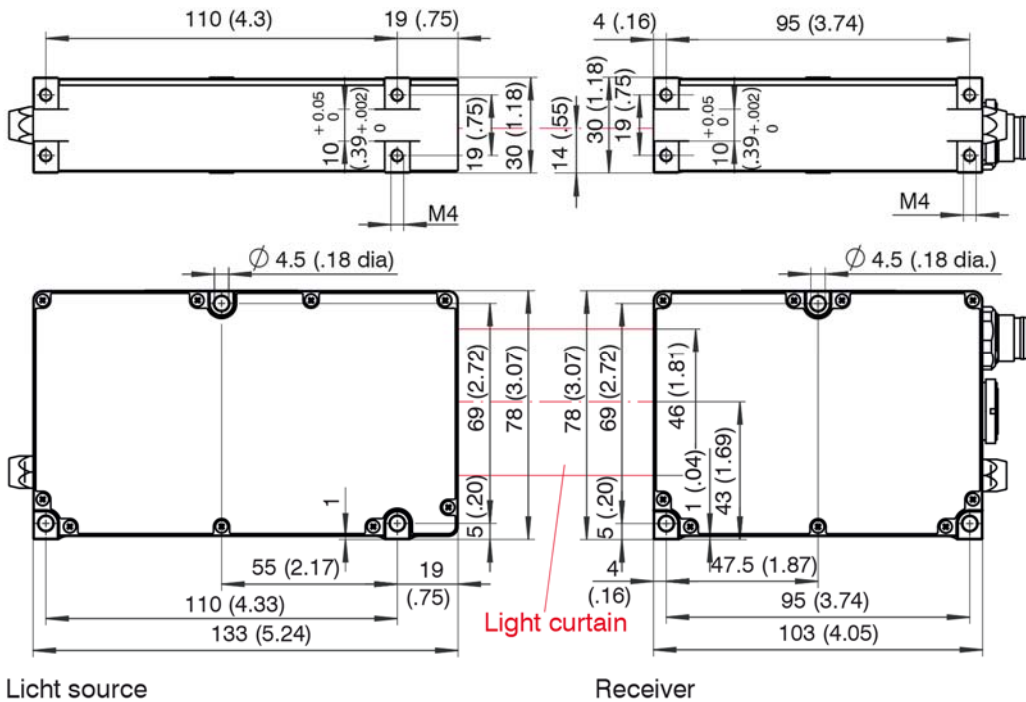
## Mounting the Components

- Light source
- Receiver
- On the delivered mounting rail (or free mounting on own stable appliance)
- Power supply
- Laptop / PC

**i** Position the light source and the receiver without covering the connectors and the display elements.

**➡** Connect the components.

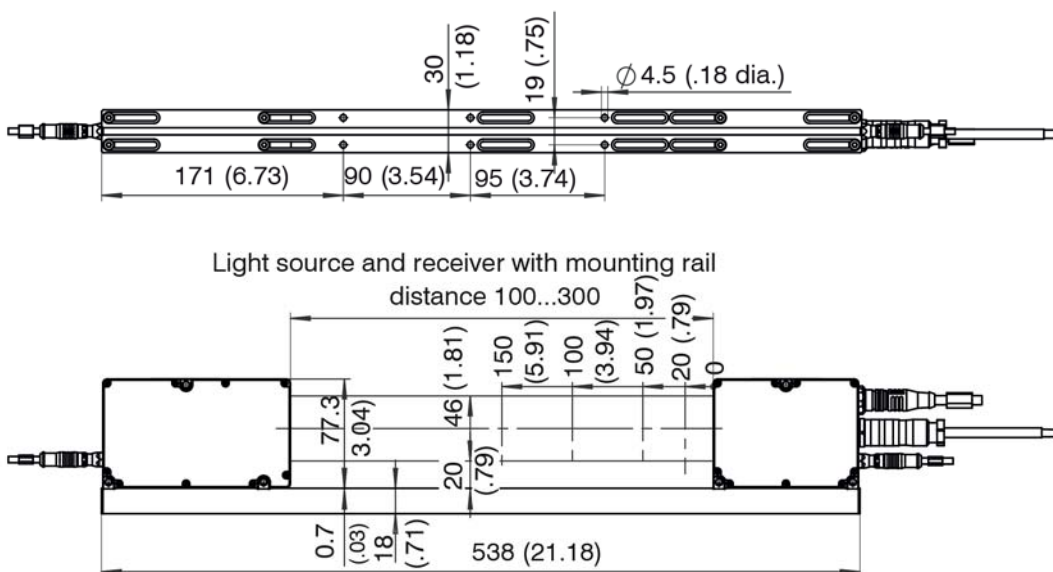
## Dimensional Drawings Light source and receiver



Light source

Receiver

## Dimensional Drawings Light Source and Receiver with Mounting Rail



## Light Source Female Connector (3-pin)

There are cables of various lengths (1 m, 2 m or 5 m, each one optionally with straight plug or angled connector) for the connection between the light source and the receiver.

### Power Signals Female Connector (14-pin)

A cable with open ends (PC/SC2520-3) is included.

Signal	Description	Comments	Cable color
24 VDC	Operating voltage	11 ... 30 VDC, I max < 1 A	Red
GND	Operating voltage ground		Black
Out 1	Switching output 1	Error or limits, not electrically isolated, 24 V logic (HTL), High level depends on operating voltage	Blue
Out 2	Switching output 2		Pink
In	Input Zeroing/mastering Or reset to factory settings	Not electrically isolated, 24 V logic (HTL), Low level ≤ 3 V, High level ≥ 10 V	Gray/pink
Sync - In/out	Input synchronization or triggering, synchronous output	symmetrical, RS422 level, load resistance 120 Ohm and direction via software switchable, not electrically isolated	White/green
/Sync - In/out			Red/blue
RX - 422	RS422	Serial input, symmetrical, internally terminated with 100 Ohm	Brown
/RX - 422			Green
/TX - 422		Serial output RS422, symmetrical	Yellow
TX - 422			Grey
GND - RS 422	Ground	Ground reference for RS422-Pegel	Violet
Ana - Out	Voltage output	0 ... 10 V, not electrically isolated, only one measuring value, 14 bit D/A	Shielded inner cable: White inner conductor
Ana - GND	Ground analog output	Reference ground for analog signal	Shielded inner cable: Shielding braid
PE	Total outer shield	Connect with PE of the system	Black shrinking hose with wire end


➤ Connect at least the power supply and switch it on.

➤ Adjust the position of the light source in direction to the receiver when mounting without rail.

**i** The laser light has to hit exactly the center of the entry window of the receiver.  
Please consider: The larger the distance between light source and receiver, the more exactly has to be adjusted.

### Ethernet/EtherCAT Female Connection (4-pin)

Electrically isolated M12x1-female connection in combination with an Ethernet-network (PC) or with the bus system EtherCAT. There is an Ethernet cable with straight plug on RJ45-plug, 3 m long (accessory). The receiver is connected with a PC or generally with a network via the Ethernet interface. The internal web pages can be retrieved with a web browser and thereby the measuring system can be configured.

Signal	Pin female connector		Solder pin side on the cable
RX+	2		
RX-	4		
TX+	1		
TX-	3		

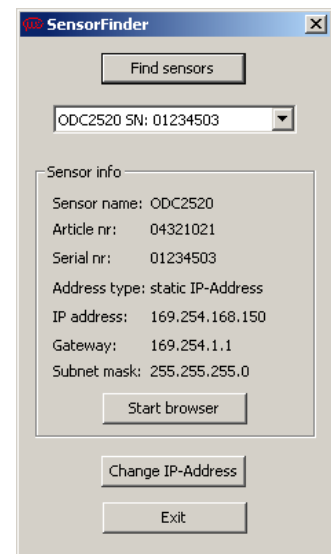
## Meaning of the Light Emitting Diodes on the Receiver

LED	Color	Remarks
Power on	green	---
Status	yellow	Ethernet transmission error; when EtherCAT-interface is active, the meaning depends on the EtherCAT guidelines
Speed	yellow	Baud rate 100 Mb
	off	Baud rate 10 Mb
Link/activity	green	Active link
	off	Inactive link
	Flashing	Network activity

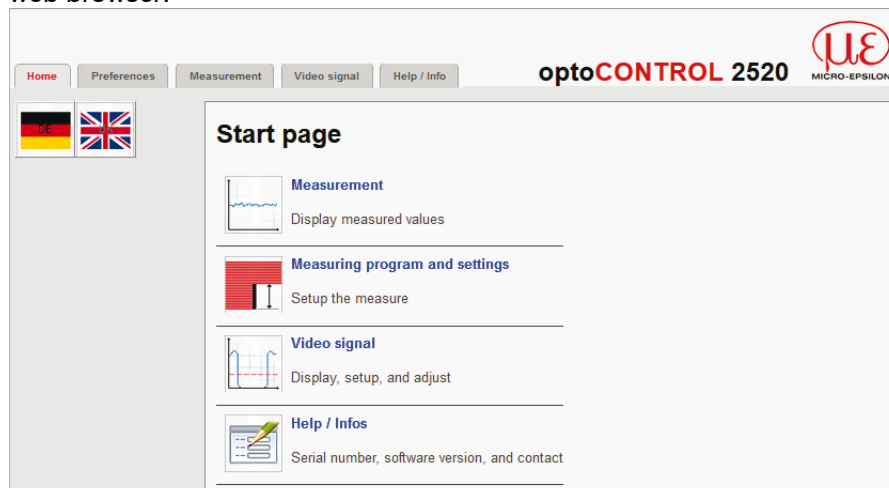
## Quick Start Guide

The sensor is delivered ex works with the IP address 169.254.168.150. The IP address of the sensors which are connected to a PC/network can be interrogated with the program SensorFinder.exe.

- Start the SensorFinder and press the **Find sensors** button.
- Select the correct sensor from the list.
- Press the **Start browser** button in order to connect the sensor with your standard browser.



The start screen of the sensor software should be displayed now in the web browser:



## Selecting the Measuring Distance

- Open the menu **Settings** > **Measuring distance**.
  - Select a calibrated measuring distance from the list and confirm with **Submit**.
- i** If the measuring distance changes during the measurement or if the target edge has a large thickness parallel to the laser beam, a considerable linearity error can occur.

## Selecting the Measuring Program

- Open the menu **Settings** > **Measurement program**.
- Select the desired measurement e.g. **Edge Low-high**.

### Executing the Light Source Reference

This adjustment is at least necessary once after mounting and a warm-up time of 30 min but can also be repeated very often in case of elevated accuracy requirements.

**i** There must not be any object between the light source and the receiver when executing the light correction.

- Press the light source reference via the menu `Video signal > Light source reference > Start light source reference`.
- Press respectively once the `Stop` and `Start` buttons if the diagram does not start again automatically.

### Aligning the Target

- Align the target in the measuring distance chosen to the receiver, as centrally as possible in the measuring range.

If the edge to be measured has a large thickness, the latter has to be aligned exactly parallel to the laser beam.

### Controlling the Video Signal

- Open the menu `Video signal` and check it.

The edges to be measured have to cross the detection threshold. Should a transparent measuring target should be measured, you can increase the detection threshold which can consequently influence the linearity.

### Controlling the Measurement

- Open the menu `Measurement` and check the timing diagram of measurement.

You can select further data for the display in the measurement programs `Diameter`, `Gap` and `Segment` e.g. single edges or center axes.

You can also quickly modify averaging settings and observe their effects on this site.

### Save Settings

- Save the current settings in the receiver with a setup.
- Otherwise the settings will be lost by switching-off.

Read the detailed instruction manual before using the sensor. The manual is available online on [www.micro-epsilon.de/download/manuals/man--optoCONTROL-2520--en.pdf](http://www.micro-epsilon.de/download/manuals/man--optoCONTROL-2520--en.pdf) or on the supplied CD.



MICRO-EPSILON Eltrotec GmbH  
Manfred-Wörner-Straße 101 · 73037 Göppingen / Germany  
Tel. +49 (0) 7161 / 98872-300 · Fax +49 (0) 7161 / 98872-303  
eltrotec@micro-epsilon.de · www.micro-epsilon.com

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