

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

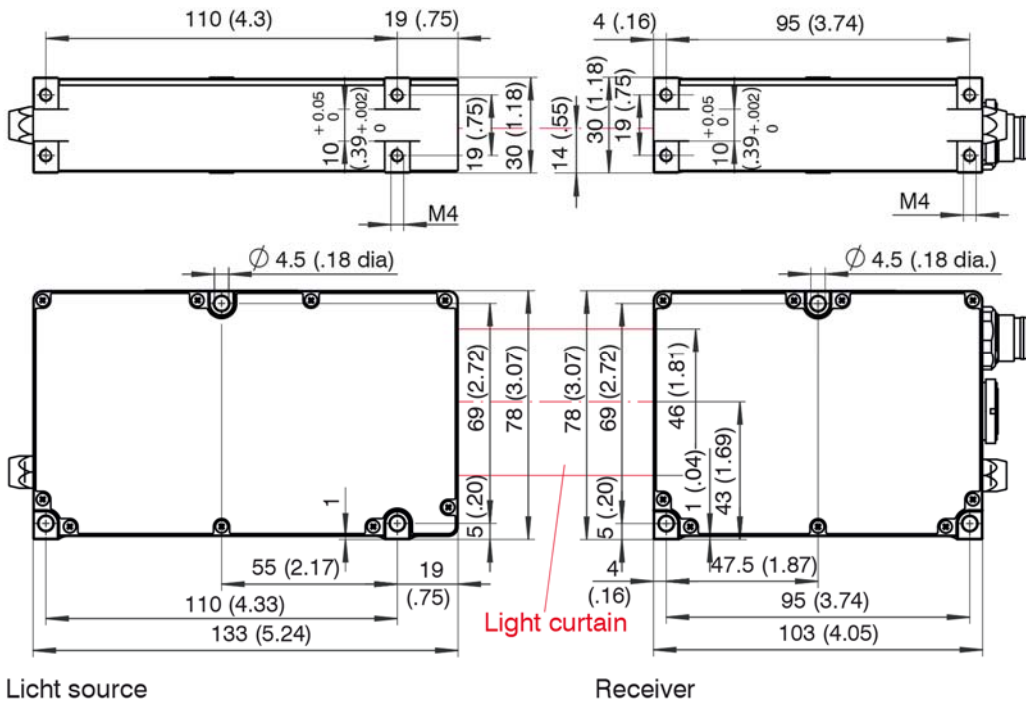
Mounting the Components

- 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.

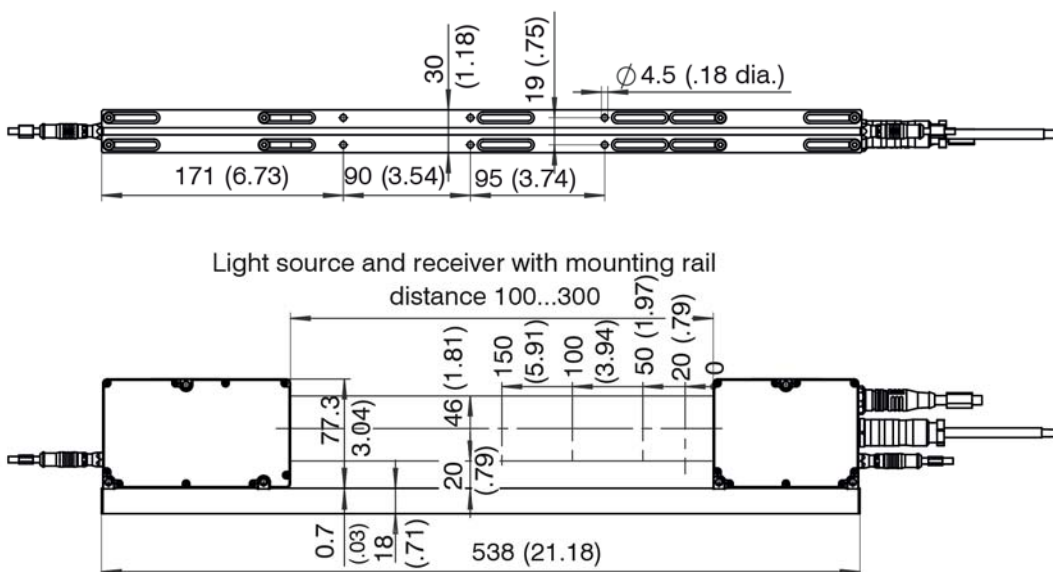
Dimensional Drawings Light source and receiver



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		

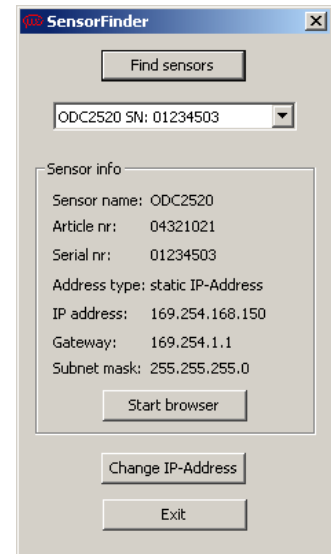
Meaning of the Light Emitting Diodes on the Receiver

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

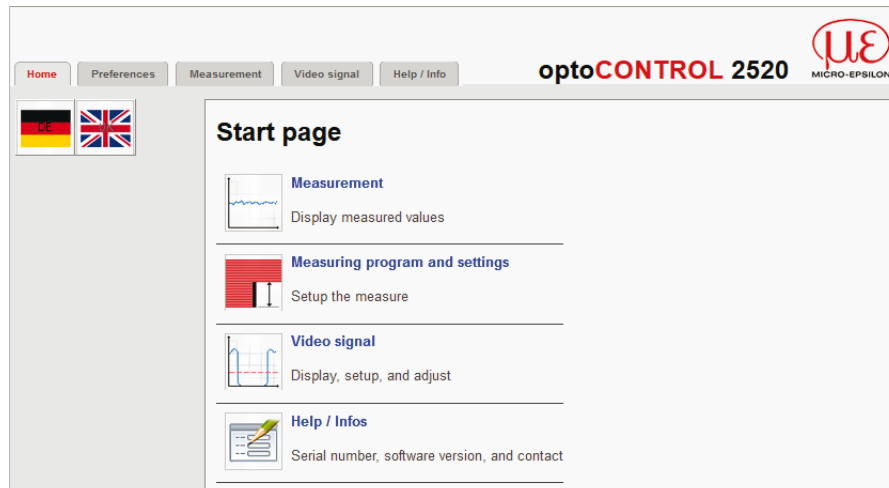
Quick Start Guide

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 or on the supplied CD.



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