

Setup Guide  
**profileGAUGE C.ODC**

C.ODC-10/2  
C.ODC-10/2.PG  
C.ODC-10/2.PGA  
C.ODC-40/2  
C.ODC-40/2.PG  
C.ODC-40/2.PGA

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## 1. Safety

System operation assumes knowledge of the setup guide.

### 1.1 Symbols used

The following symbols are used in this document:



Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.



Indicates a situation that may result in property damage if not avoided.



Indicates a user action.



Indicates a tip for users.

Measurement

Indicates hardware or a software button/menu.

### 1.2 Warnings



Do not drop the sensor.

> Risk of injury



Avoid shocks and impacts to the sensor.

> Damage to or destruction of the sensor

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

> Damage to or destruction of the sensor

Protect the cables against damage. Do not bend the cables more tightly than the bending radii

> Failure of the measuring device

Avoid damage (scratches) to the protective windows of the light source and receiver through unsuitable cleaning methods or cleaning agents.

> Inaccurate or incorrect measurements

Do not touch the protective windows of the light source and receiver. Immediately wipe off any fingerprints.

> Inaccurate or incorrect measurements

Avoid constant exposure of the light source and receiver to splashes of water.

> Damage to or destruction of the sensor

The sensor housing may only be opened by authorized persons.

> Damage to or destruction of the sensor

### 1.3 Notes on product marking

#### 1.3.1 CE marking

The following apply to the product:

- EU Directive 2014/30/EU ("EMC")
- EU Directive 2011/65/EU ("RoHS")

Products which carry the CE marking satisfy the requirements of the EU Directives cited and the relevant applicable harmonized European standards (EN). The product is designed for use in industrial and laboratory environments. The EU Declaration of Conformity and the technical documentation are available to the responsible authorities according to the EU Directives.

### 1.3.2 UKCA marking

The following apply to the product:

- SI 2016 No. 1091 ("EMC")
- SI 2012 No. 3032 ("RoHS")

Products which carry the UKCA marking satisfy the requirements of the directives cited and the relevant applicable harmonized standards. The product is designed for use in industrial and laboratory environments.

The UKCA Declaration of Conformity and the technical documentation are available to the responsible authorities according to the UKCA Directives.

### 1.4 Intended use

- The sensor is designed for use in an industrial environment. It is used for
  - Non-contact distance, position, geometry and thickness measurements
  - Monitoring quality and checking dimensions
- The sensor must only be operated within the values specified in the technical data.
- The sensor must be used in such a way that no persons are endangered or machines and other material goods are damaged in the event of malfunction or total failure of the sensor.
- Take additional precautions for safety and damage prevention in case of safety-related applications.

### 1.5 Proper environment

- Protection class IP67 (with protective glasses and connected cables)

The protection class does not apply to optical paths during operation, as contamination of these paths will impair or prevent their function.

The IP67 protection class specifies protection against dust and water only. Exposure to oil, vapor, and emulsions is not covered by this protection class and must be evaluated separately.

- Temperature range
  - Operation: 0 °C ... +50 °C
  - Storage: -20 ... +70 °C
- Humidity: 5 ... 95 % RH (non-condensing)
- Ambient pressure: Atmospheric pressure

### 1.6 Light source

The light source for optoCONTROL 2700 uses an LED with a wavelength of 508 nm.

The LED light source is not covered by the laser standard.

## 2. Installation and assembly

### 2.1 Mechanical fastening of the sensor

The profileGAUGE sensor is an optical system that measures in the  $\mu\text{m}$  range. Ensure careful handling of the sensor during installation and operation of the sensor.



Sensor weight. Injury to the limbs possible. Do not drop the sensor.

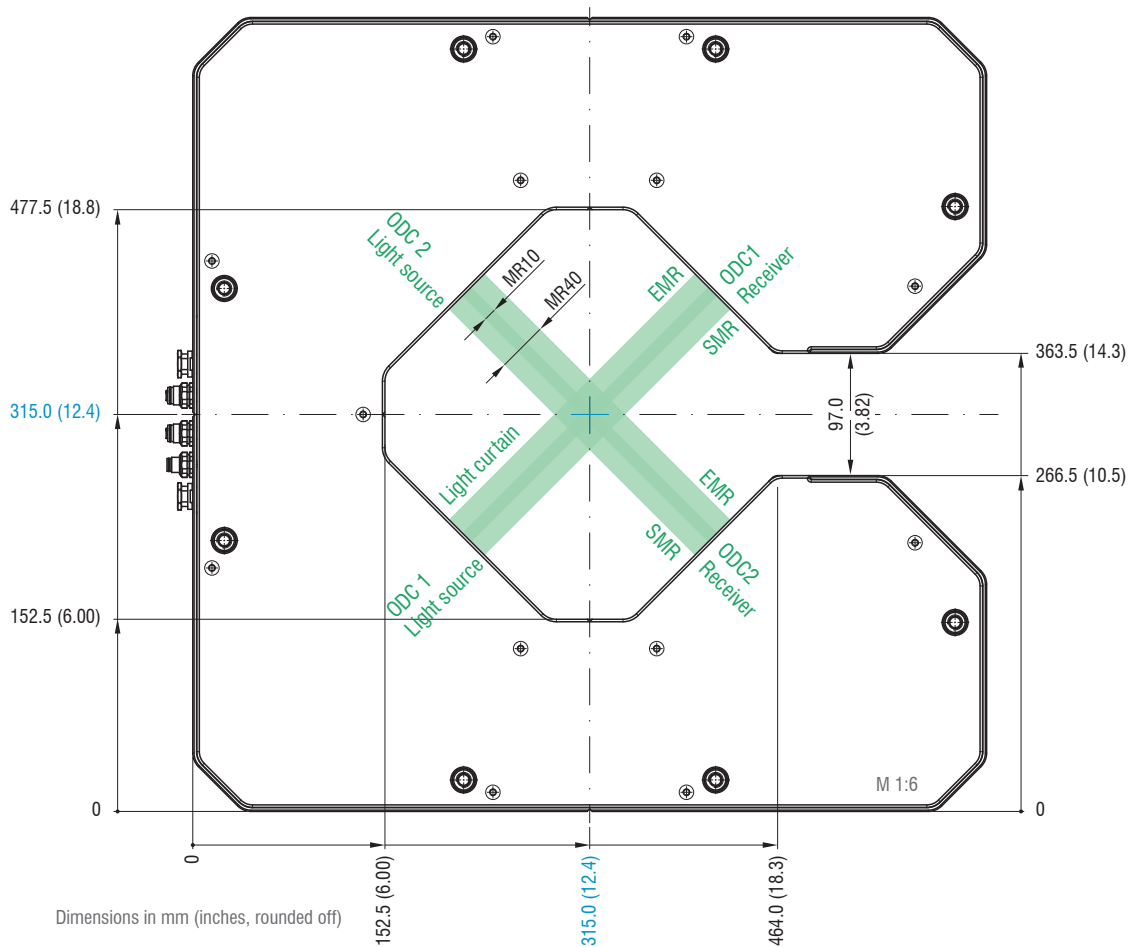


Fig. 1 Center of measuring range, arrangement of micrometers (ODCs)

Mount the sensor only to the existing threads on a flat surface. Any type of clamping is not permitted.

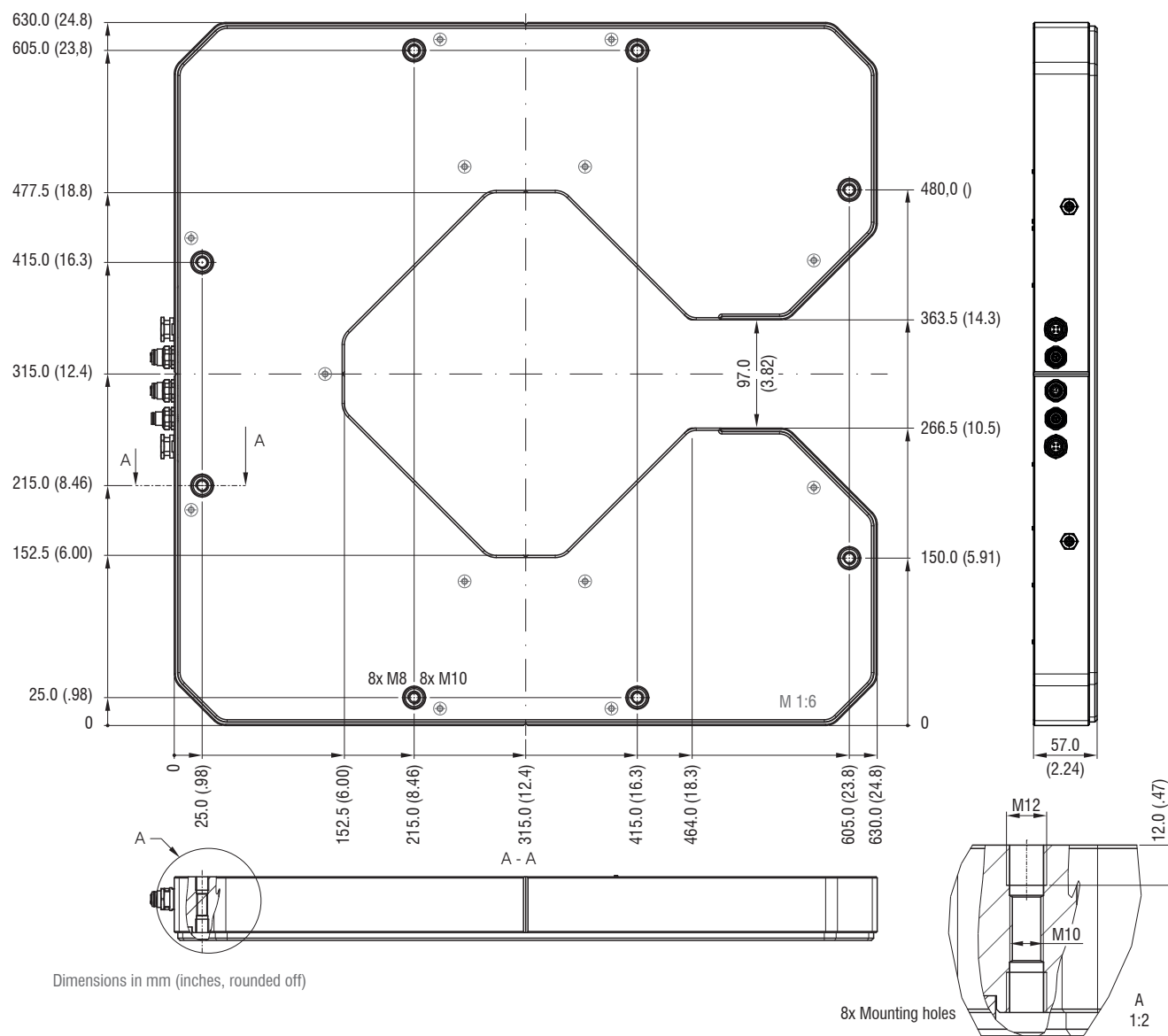


Fig. 2 Dimensional drawing of sensor

➤ Mount the sensor via direct fastening with eight M10 or M12 screws.

## 2.2 Electrical connections, pin assignments

### 2.2.1 Overview of connectors, connection possibilities

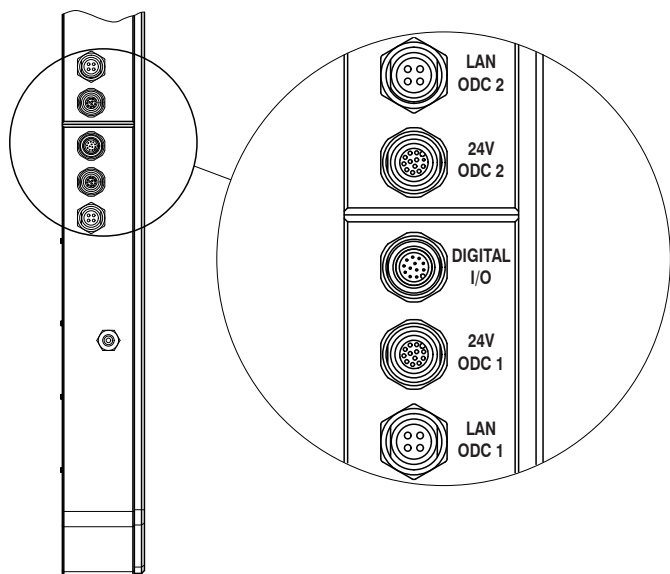


Fig. 3 Connections for power supply, switching inputs, and interfaces on the sensor profileGAUGE C.ODC

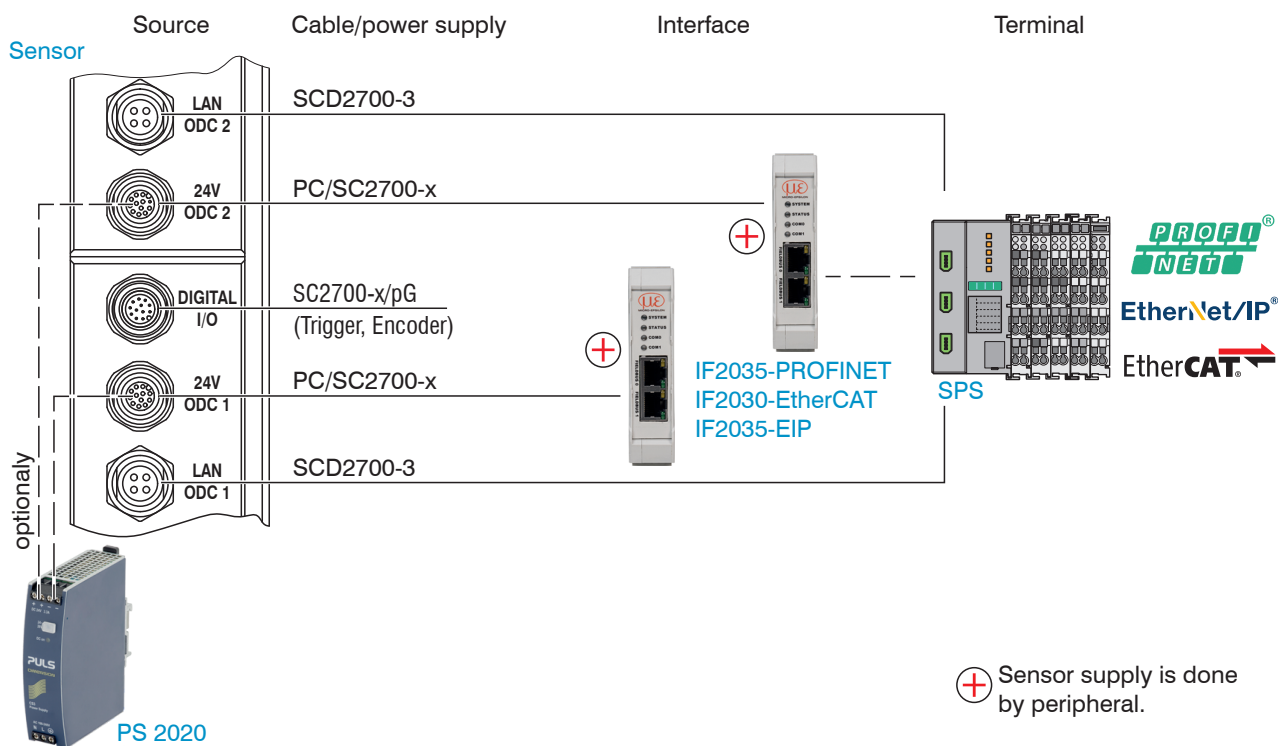


Fig. 4 Connection examples for fieldbus

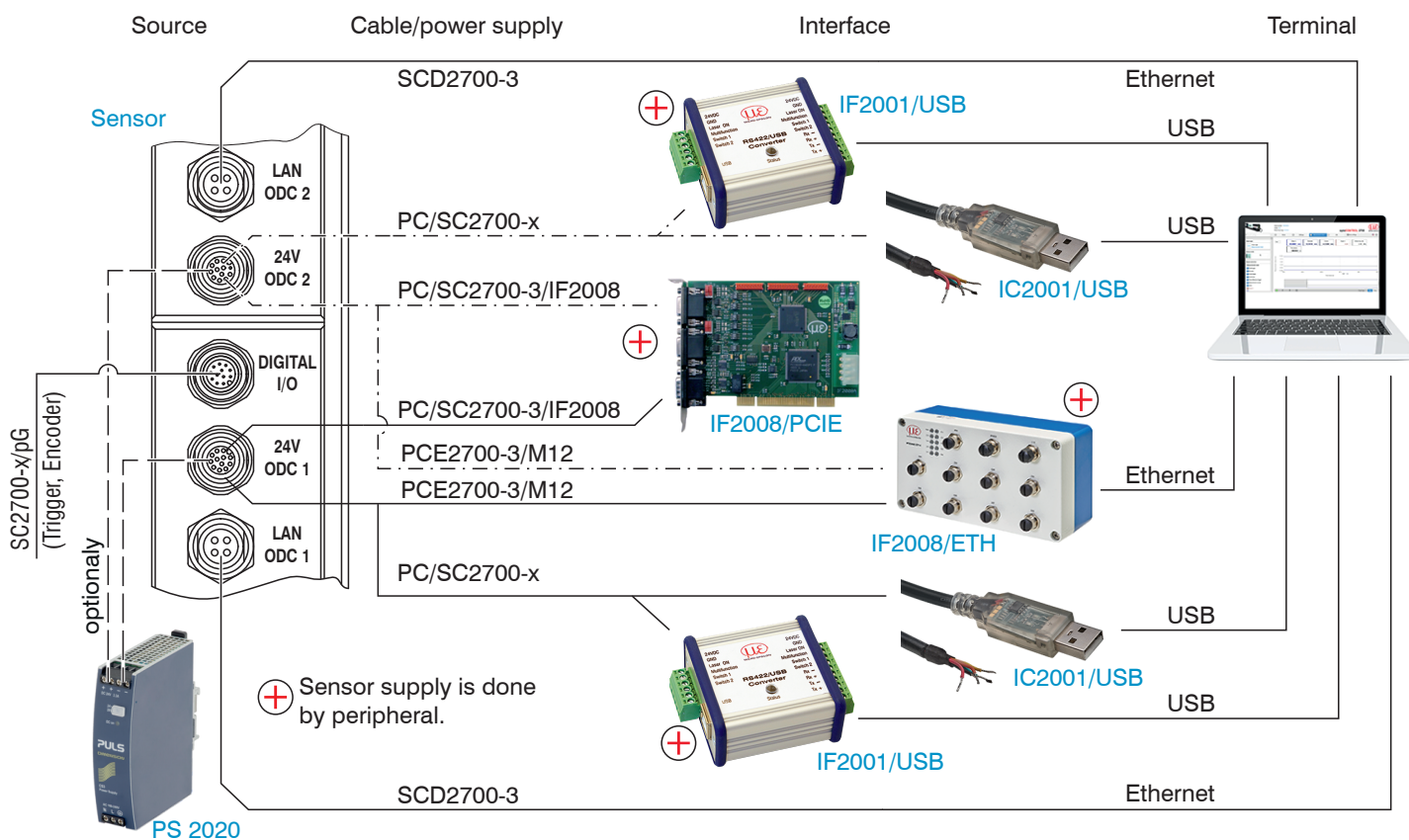


Fig. 5 Connection examples for RS422/USB/Ethernet

Interface	Number	Provision of power to the sensor	Interface
IC2001/USB	2	no	RS422 > USB
IF2001/USB	2	yes	RS422 > USB
IF2035	2	yes	Industrial Ethernet
IF2008/PCIE	1/2	yes	PCI Express
IF2008/ETH	1/4	yes	RS422 > Ethernet

Fig. 6 Number of interfaces required to operate a profileGAUGE C.ODC

### 2.2.2 Ethernet

Signal	Pin	Notes SCD2700-3
Tx +	1	Ethernet
Rx +	2	
Tx -	3	
Rx -	4	

Fig. 7 Pin assignment for the 4-pin M12 socket, LAN ODC 1 / LAN ODC 2

### 2.2.3 Supply, synchronization, RS422

Signal	Pin	Wire color PC/SC2700-x, Explanation		Notes
V <sub>+</sub>	9	Red	Supply voltage	11 ... 30 VDC, typ. 24 VDC, I <sub>max</sub> 230 mA at 24 VDC
GND	2	Blue	Reference ground	Reference ground for Power, Sync, RS422
Sync +	1	Brown	Synchronization	Differential, RS422 level, terminating resistor (120 ohm), direction can be switched using software, not electrically separated
Sync -	3	White		
Tx +	5	Pink	RS422, 32 bit	RS422 interface, differential, Rx internally terminated with 100 ohm, max. 4 MBaud, full duplex, not electrically separated
Tx -	8	Gray		
Rx +	4	Green		
Rx -	6	Yellow		

Fig. 8 Pin assignment for the 12-pin M12 socket, 24V ODC 1 / 24V ODC 2

The PC/SC2700-x has a 12-pin M12 connector and open ends on the other side.

### 2.2.4 Switching outputs and inputs

Signal	Pin	ODC1	ODC2	Wire color SC2700-x/pG Explanation	Notes
Switching output 1	2	x		Blue	Switching behavior: NPN, PNP, push-pull or push-pull negated Function either limit value or number of edges
	9		x	Red	
Switching output 2	3	x		White	
	10		x	Violet	
Switching output 3	4	x		Green	
	11		x	Gray/pink	
Multifunction input 1	5	x	x	Pink	24 V logic (HTL): Low level ≤ 3 V; High level ≥ 8 V (max 30 V)
Multifunction input 2	6	x	x	Yellow	5V logic (TTL): Low ≤ 0.8 V; High ≥ 2 V Internal pull-up resistor, an open input is detected as High.
Multifunction input 3	7	x	x	Black	Connect the input to GND to trigger the function. Function either triggering or encoder
GND	1	x		Brown	Reference ground for the switching inputs and outputs
GND	12		x	Red/blue	
Socket housing	Cable shield				

Fig. 9 Pin assignment 12-pin M12 connector, DIGITAL I/O

The SC2700-x/pG has a 12-pin M12 socket and open ends on the other side, with A-code.

The multifunction inputs support the triggering and encoder functions. The function (encoder track A, track B, reference track, or trigger) depends on how the inputs are programmed.

### 2.3 Pneumatic supply, purge air

This option is available on the following models:

- C.ODC-10/2.PGA
- C.ODC-40/2.PGA

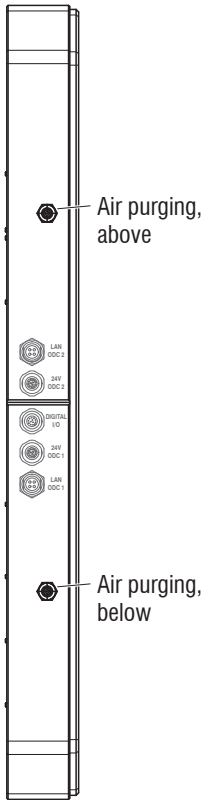


Fig. 10 Pneumatic supply connection (compressed air), narrow side of the sensor

The purity of the purge air must comply with DIN ISO 8573-1:2010 [1:4:2].

**NOTICE**

Damage to the optical openings. Avoid oil deposits from the compressor air on the glass panes. Use a submicron filter (0.01  $\mu\text{m}$ ).

Pneumatic quick-connect fitting for KST hose:

- Outer diameter 8 mm; e.g., Festo PUN-H-8X1.25-BL

### 3. Quick start, operation

#### 3.1 Commissioning

➡ Connect the sensor to a 24 V DC power supply, see [Chap. 2.2.3](#).

➡ Switch on the power supply.

Initializing starts after the sensor has been switched on. The sensor is ready for use after approx. 10 seconds.

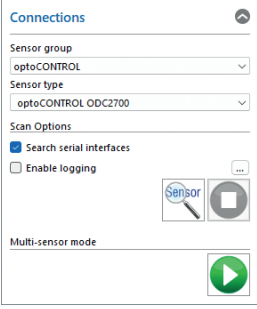
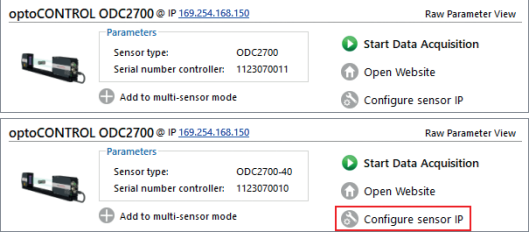
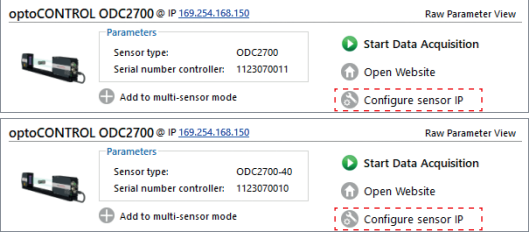
You can configure the software using the web pages or the ASCII commands integrated in the sensor. Parallel operation with web browser and ASCII commands is possible; the last setting applies.

Micro-Epsilon Eltrotec GmbH recommends setting the sensor via the integrated website.

**!** To ensure precise measurements, let the sensor warm up for approx. 30 minutes.

Both laser micrometers are shipped with an identical, static IP address. To avoid an IP address conflict, the IP address must be changed on at least one laser micrometer, see [Chap. 3.2](#).

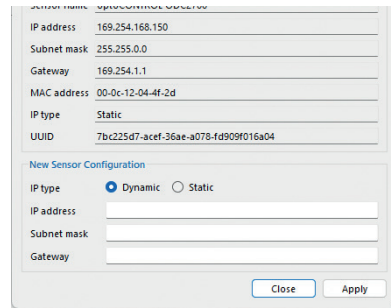
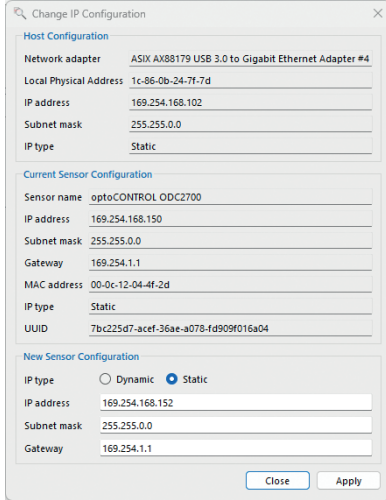
#### 3.2 Connection to PC

Static IP	Dynamic IP, DHCP
<p>➡ Connect both laser micrometers to a PC using a direct Ethernet connection (LAN). Use the SCD2700-x cables for this.</p>	<p>➡ Enter the sensors in the DHCP settings or notify your IT department.</p> <p>The IP address is assigned by your DHCP server. You can query this IP address with the program sensorTOOL.</p>
<p>➡ Launch the <code>sensorTOOL</code> program and click on the <code>Sensor</code> button.</p>	
<p>➡ Now select the desired laser micrometer from the list. To do this, click the <code>Configure sensor IP</code> button.</p> 	<p>➡ Change the address type to <code>Dynamic</code> for both laser micrometers. To do this, click the <code>Configure sensor IP</code> button.</p> 

Static IP

Dynamic IP, DHCP

➔ Change the IP address of one of the laser micrometers  
 1. Confirm your entry by clicking the **Apply** button.



➔ Confirm your entry by clicking the **Apply** button.

➔ Click on the **Sensor** button.

The updated view shows both laser micrometers with different IP addresses.



OR: When using DHCP with the DHCP server coupled to the DNS server, access to the sensor is possible using a host name with the structure "ODC2xxx\_SN<Serial number>"

➔ Start a web browser on your PC. To reach a sensor with serial number "01234567", type "ODC2xxx\_SN01234567" into the address bar of the browser.

### 3.3 Selection of measuring mode, diameter preset

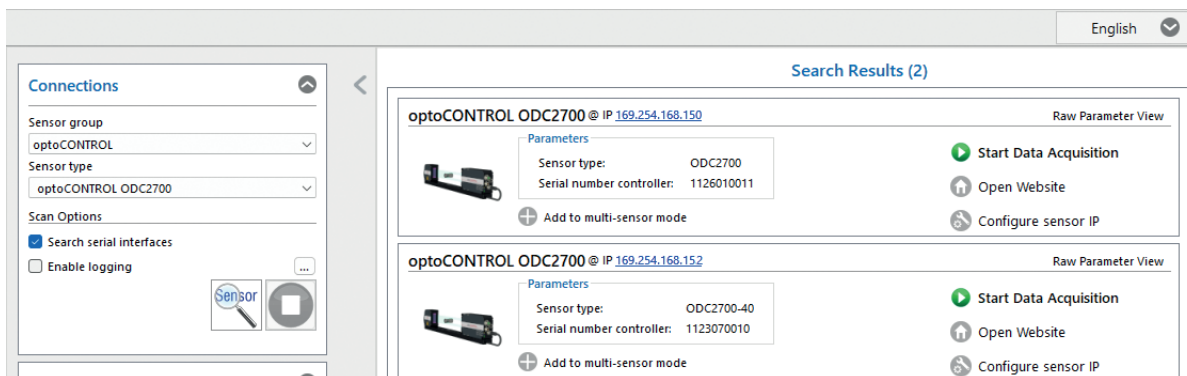
When delivered from the factory, the laser micrometers are equipped with presets such as Web edge, Wire measurement and Diameter, among others.

#### Definition

- Preset: Manufacturer-specific program with settings for frequent measurement tasks; cannot be overwritten.
- Setup: User-specific program with relevant settings for a measurement task.
- Initial setup at boot (sensor start): a favorite can be selected from the setups, which is automatically activated at sensor start. If no favorite is selected from the setups, the sensor starts with the most recently saved settings/setup, or the sensor activates the preset Web edge.

Micro-Epsilon recommends using the preset **Diameter** on both laser micrometers.

➔ Launch the **sensorTOOL** program and click on the **Sensor** button.



➔ Repeat the following steps for both laser micrometers.

➔ Click the **Open Website** button.

1) This assumes that the LAN connection on the PC uses the following IP address, for example: 169.254.168.1.

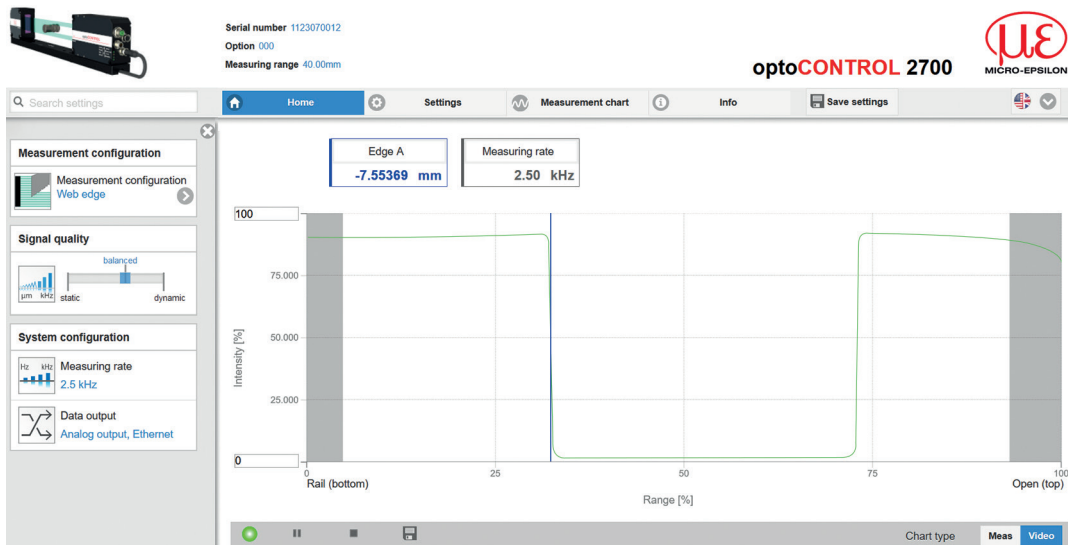
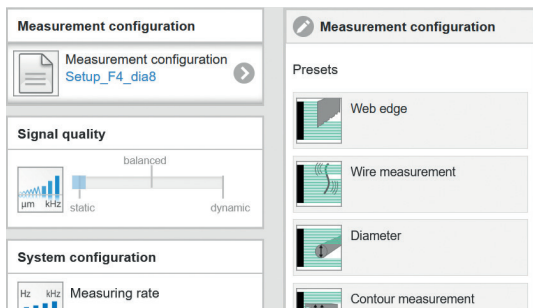


Fig. 11 Home screen of sensor software



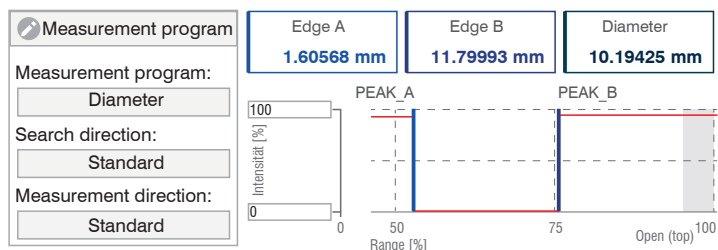
You can select a preset on the tab

- Home > Measurement configuration

You can select a setup on the tab

- Home > Measurement configuration
- Settings in the menu System settings > Load & Save > Saved measurement settings

➡ Select the preset Diameter.



The Diameter preset is designed for measuring the diameter of cylindrical objects, such as bar stock, pipes, and hydraulic lines. If the object is tilted in relation to the measuring plane, the active inclination correction feature compensates for this in real time.

The search direction determines the numbering or sequence of the edges.

Measurement program	Search direction Standard	Search direction Inverse
Diameter	<p>The laser micrometer searches for the first light-dark and the last dark-light transition, start is SMR</p>	<p>Sensor searches for the first light-dark and the last dark-light transition, start is EMR</p>

➡ Go to the menu Settings > Data acquisition > measurement program.

➡ Select Standard or Inverse for the search direction.

The measurement direction determines the reference point for the measured value

- **Standard:** Measures the position starting from the mid of the measuring range (MMR) toward the mounting rail
- **Inverse:** Measures the position starting from the mid of the measuring range (MMR) toward the end of the measuring range (EMR)

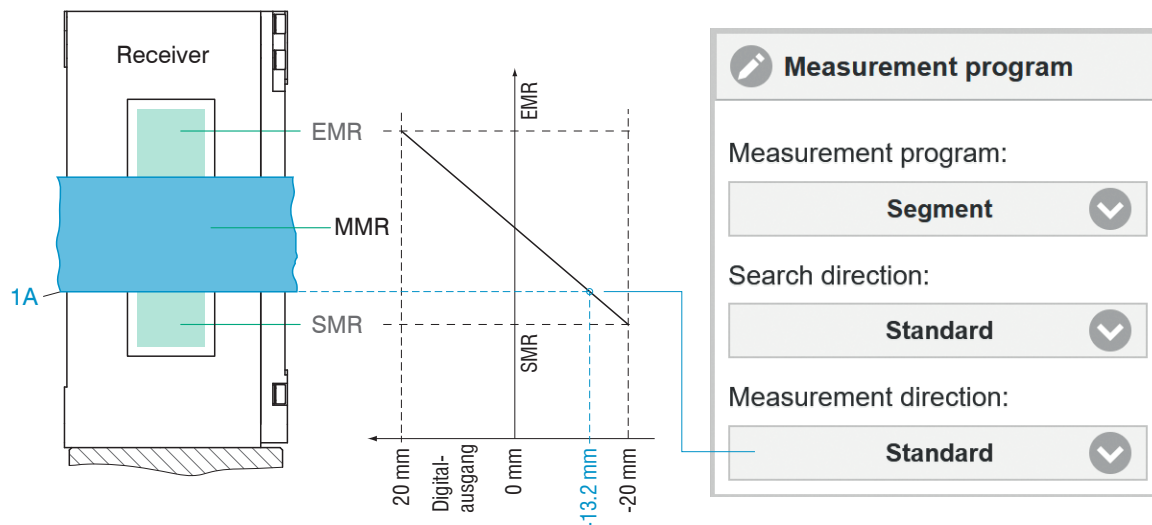


Fig. 12 Digital output with Standard measurement direction

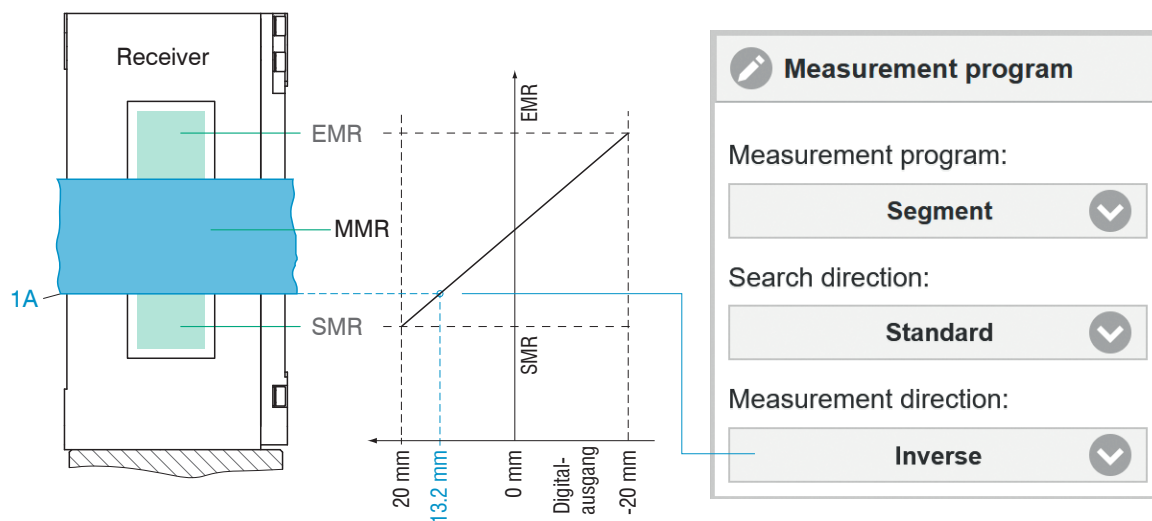


Fig. 13 Digital output with Inverse measurement direction

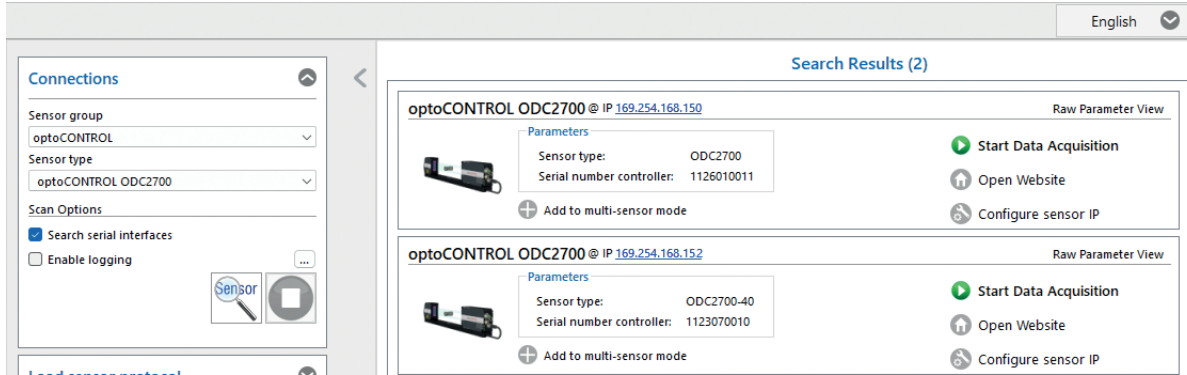
- ➡ Go to the menu `Settings > Data acquisition > Measurement direction`.
- ➡ Select `Standard` or `Inverse` for the measurement direction.

### 3.4 Selection of output values, Ethernet

The Ethernet interface is enabled in the laser micrometer by default.

The output data is selected from all internally determined values (e.g., diameter or center point) and the values calculated by the calculation modules prior to a measurement. The data is output in a fixed order. The web interface shows this order.

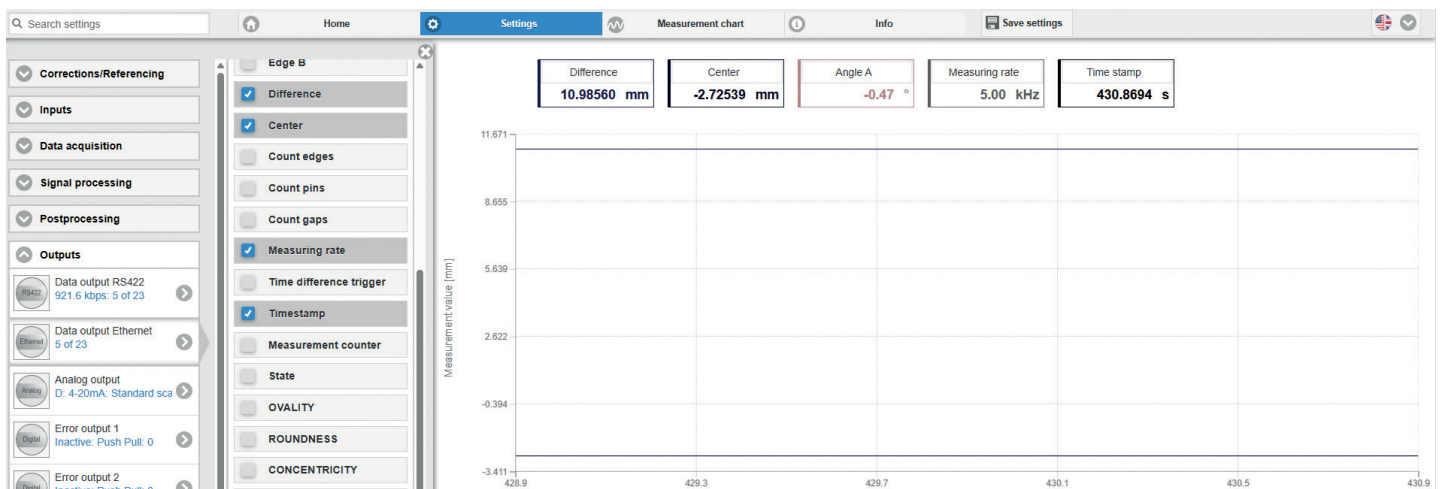
➡ Launch the `sensorTOOL` program and click on the `sensor` button.



➡ Repeat the following steps for both laser micrometers.

➡ Click the `Open Website` button.

➡ Switch to the menu `Settings > Outputs > Data output Ethernet`.



➡ Select the required output values.

### 3.5 Synchronization

If both laser micrometers should measure the same object in sync, the receivers can be synchronized with each other. The synchronization output of the first laser micrometer (= master) is connected to the synchronization inputs of the second laser micrometer (= slave).

Micro-Epsilon recommends synchronizing both laser micrometers.

For details on synchronization, refer to the operating instructions for the optoCONTROL 2700 sensors in the following chapters:

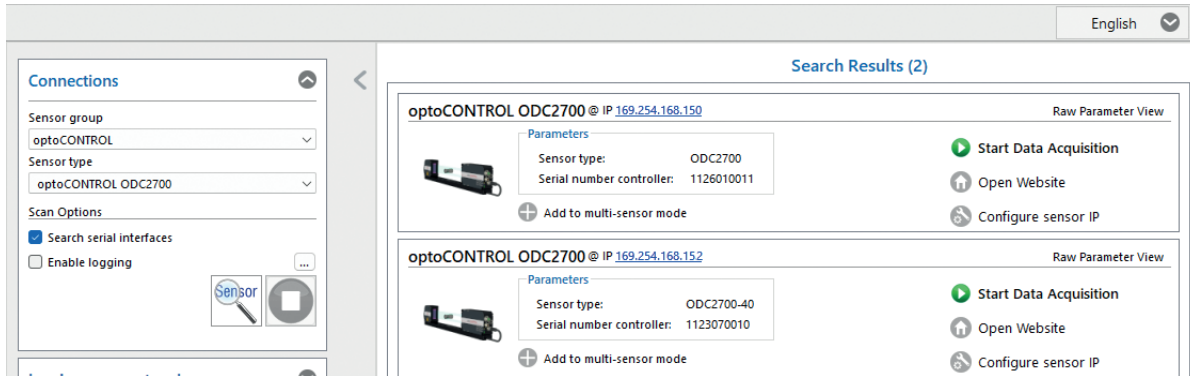
- Installation and assembly > Electrical connections
- Advanced settings > Inputs

### 3.6 Saving the settings

All settings of the laser micrometers can be permanently saved in user programs, known as setups.

- After parameterization, store all settings permanently in a parameter set so that they are available again the next time the sensor is switched on.

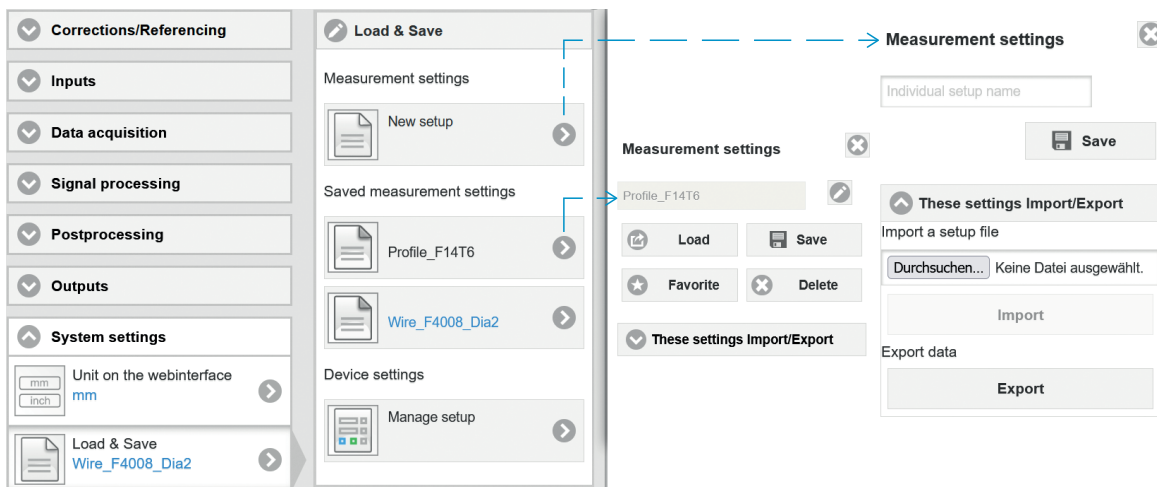
➡ Launch the `sensorTOOL` program and click on the `Sensor` button.



➡ Repeat the following steps for both laser micrometers.

➡ Click the `Open Website` button.

➡ Go to the menu `Settings > System settings > Load & Save`.



Initial save: ➡ Click the `New setup` button.

Assign a custom name to the measurement settings.

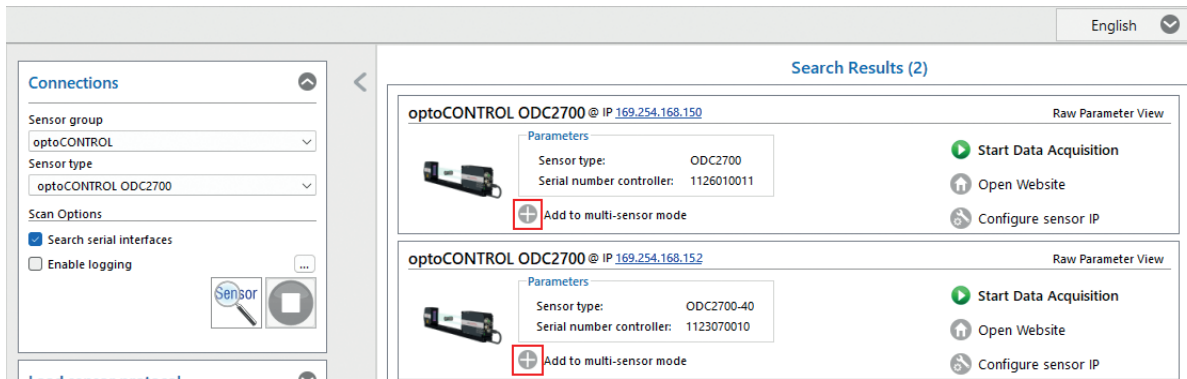
➡ Click `Save`.

Subsequent save:

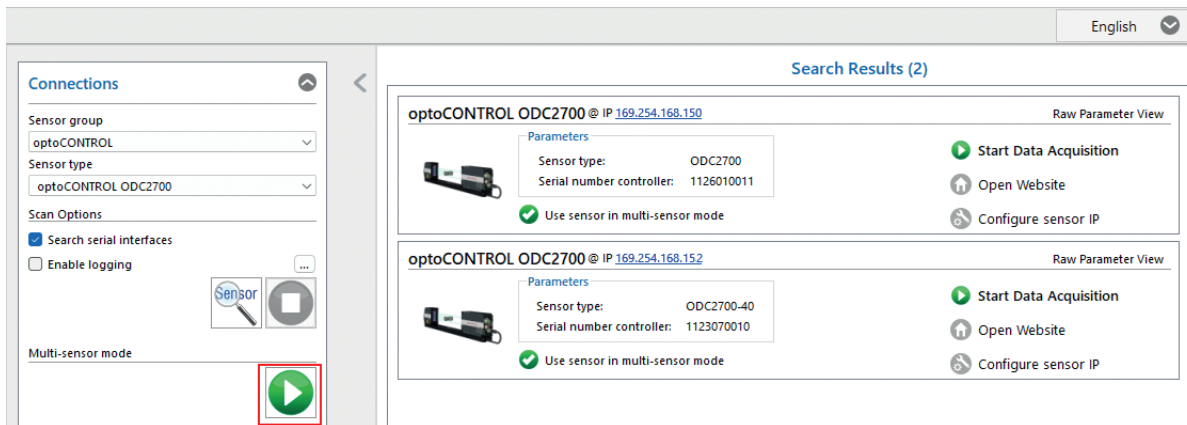
➡ In the `Saved measurement settings` section, select the desired setup, and then click the `Save` button.

### 3.7 Measurement operation, display of measurement values

➡ Launch the sensorTOOL program and click on the Sensor button.



➡ For both search results, click the Add to multi-sensor mode button.



➡ Click the button Multi-sensor mode to start a measurement.

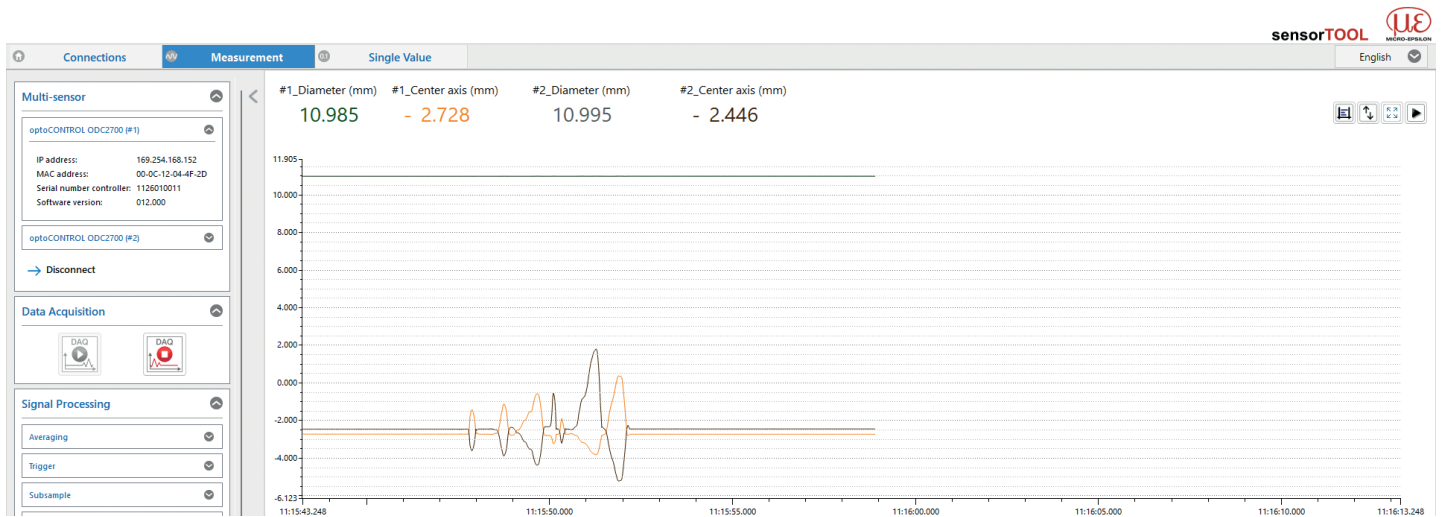


Fig. 14 Ongoing measurement and display of measurement values in the sensorTOOL program

### 3.8 Further literature, operating instructions

You can download a PDF of detailed operating instructions for the optoCONTROL 2700 sensors and their output values from our website at:

Ethernet operation

<https://www.micro-epsilon.com/download-file/man--optoCONTROL-2700--en.pdf>



#### 4. Disclaimer

All components of the device have been checked and tested for functionality in the factory. However, should any defects occur despite careful quality control, these shall be reported immediately to Micro-Epsilon or to your distributor / retailer.

Micro-Epsilon undertakes no liability whatsoever for damage, loss or costs caused by or related in any way to the product, in particular consequential damage, e.g., due to

- non-observance of these instructions/this manual,
- improper use or improper handling (in particular due to improper installation, commissioning, operation and maintenance) of the product,
- repairs or modifications by third parties,
- the use of force or other handling by unqualified persons.

This limitation of liability also applies to defects resulting from normal wear and tear (e.g., to wearing parts) and in the event of non-compliance with the specified maintenance intervals (if applicable).

Micro-Epsilon is exclusively responsible for repairs.

It is not permitted to make unauthorized structural and / or technical modifications or alterations to the product.

In the interest of further development, Micro-Epsilon reserves the right to modify the design or the firmware.

In addition, the General Terms of Business of Micro-Epsilon shall apply, which can be accessed under Legal details | Micro-Epsilon

<https://www.micro-epsilon.com/legal-details/>.

#### 5. Service, repair

If the sensor is defective:

- If possible, save the current sensor settings in a parameter set to reload them into the sensor after the repair.
- Please send us the affected parts for repair or exchange.

If the cause of a fault cannot be clearly identified, please send the entire measuring system to:

MICRO-EPSILON Eltrotec GmbH

Manfred-Wörner-Straße 101  
73037 Göppingen / Germany

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[eltrotec@micro-epsilon.de](mailto:eltrotec@micro-epsilon.de)

[www.micro-epsilon.com/contact/worldwide/](http://www.micro-epsilon.com/contact/worldwide/)

[www.micro-epsilon.com](http://www.micro-epsilon.com)

## 6. Decommissioning, disposal

In order to avoid the release of environmentally harmful substances and to ensure the reuse of valuable raw materials, we draw your attention to the following regulations and obligations:

- Remove all cables from the sensor and/or controller.
- Dispose of the sensor and/or the controller, its components and accessories, as well as the packaging materials in compliance with the applicable country-specific waste treatment and disposal regulations of the region of use.
- You are obliged to comply with all relevant national laws and regulations.

For Germany / the EU, the following (disposal) instructions apply in particular:

- Waste equipment marked with a crossed garbage can must not be disposed of with normal industrial waste (e.g. residual waste can or the yellow recycling bin) and must be disposed of separately. This avoids hazards to the environment due to incorrect disposal and ensures proper recycling of the old appliances.
- A list of national laws and contacts in the EU member states can be found at [https://ec.europa.eu/environment/topics/waste-and-recycling/waste-electrical-and-electronic-equipment-weee\\_en](https://ec.europa.eu/environment/topics/waste-and-recycling/waste-electrical-and-electronic-equipment-weee_en). Here you can inform yourself about the respective national collection and return points.
- Old devices can also be returned for disposal to Micro-Epsilon Eltrotec GmbH, Manfred-Wörner-Str. 101, 73037 Göppingen / Germany.
- We would like to point out that you are responsible for deleting the measurement-specific and personal data on the old devices to be disposed of.
- Under the registration number WEEE Registration No. DE28605721, we are registered at the foundation Elektro-Altgeräte Register, Nordostpark 72, 90411 Nuremberg, as a manufacturer of electrical and/or electronic equipment.







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