



Assembly Instructions
JMA-Thickness
Adjustable Mounting Adapter

1. Functions

- Supports optimal sensor alignment for best possible measurement results
- Manual adjustment mechanism for easy and fast adjustment
 - Shift in X/Y: ± 2 mm
 - Tilt angle: $\pm 4^\circ$
- The JMA-Thickness is designed such that it can be integrated into machines.
- Compatible with numerous confocalDT and interferoMETER sensor models

2. Reference

Optical sensors of confocal or interferometric measuring systems measure distances and thicknesses in a highly precise manner.

i Ensure careful handling during installation and operation!

Avoid shocks and impacts to the mounting adapter or the sensor.

> Damage to or destruction of the system

3. Proper Environment

- Shock (DIN-EN 60068-2-27) 15 g / 6 ms in XYZ-axis, 1000 shocks each
- Vibration (DIN-EN 60068-2-6) 2 g / 20 ... 500 Hz in XYZ-axis, 10 cycles each

4. Sensor Mounting, Compatibility

Radial clamping for sensors with

\varnothing 8 mm	\varnothing 10 mm	\varnothing 12 mm	\varnothing 20 mm	\varnothing 27 mm
Reducing sleeve				
D27-D8 adapter	D27-D10 adapter	D27-D12 adapter	D27-D20 adapter	
confocalDT: IFS2403 series	interferoMETER: IMP-DS19 IMP-TH45	confocalDT: IFS2404-2 IFS2407-0,1 IFS2407-0,8	confocalDT: IFS2406-2,5/VAC interferoMETER: IMP-TH70	confocalDT: IFS2405-0.3 IFS2405-1 IFS2406-3 IFS2406-10

5. Unpacking, Included in Delivery

1 JMA-Thickness-xx

1 JMP mounting plate

1 Hexagon screwdriver 1.5 mm

1 Allen wrench 2.5 mm

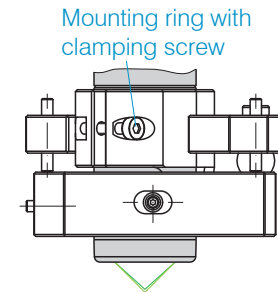
1 Allen wrench 3.0 mm

1 Assembly instructions

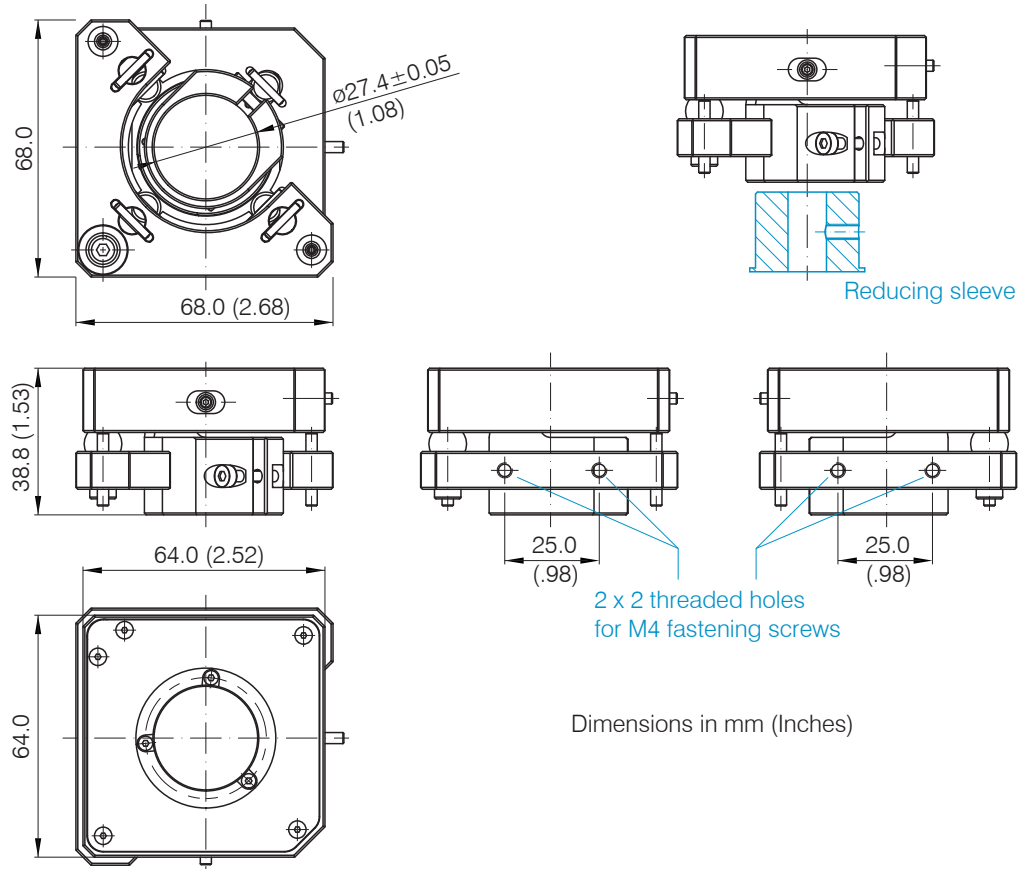
Optional reducing sleeve (depending on the package and the corresponding sensor)

6. Assembly

- ➡ Mount the sensor in the mounting ring, see figure.
- ➡ Use reducing sleeves for sensors with an outer diameter of less than 27 mm.
- ➡ Mount the mounting adapter with M4 screws, see dimensional drawing.

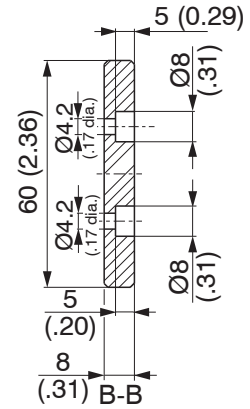
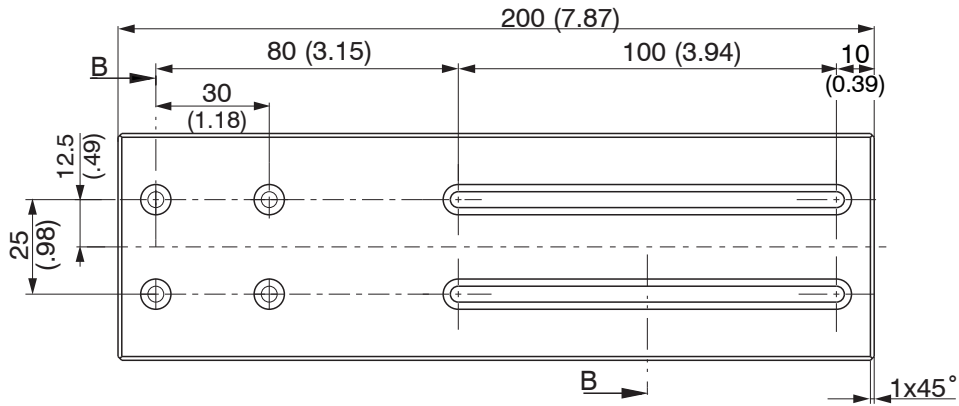


6.1 Dimensional Drawing of Mounting Adapter



Dimensions in mm (Inches)

6.2 Dimensional Drawing of JMP Mounting Plate



7. Orthogonal Alignment of Sensor

➡ With the light source switched on, align the sensor with the measuring object.

Horizontal shift ± 2 mm



Shift to the left:

➡ Turn the hexagon socket screw clockwise

Shift to the right:

➡ Turn the hexagon socket screw counterclockwise

Vertical shift ± 2 mm



Shift downwards:

➡ Turn the hexagon socket screw clockwise

Shift upwards:

➡ Turn the hexagon socket screw counterclockwise

Horizontal tilt angle $\pm 4^\circ$



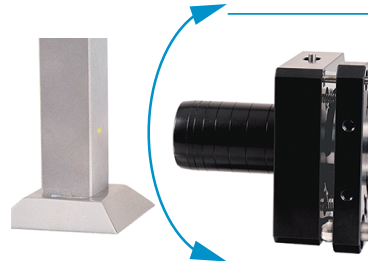
Tilt to the left:

➡ Turn the hexagon socket screw clockwise

Tilt to the right:

➡ Turn the hexagon socket screw counterclockwise

Vertical tilt angle $\pm 4^\circ$



Tilt downwards:

➡ Turn the hexagon socket screw clockwise

Tilt upwards:

➡ Turn the hexagon socket screw counterclockwise

8. Alignment of Two Confocal Sensors for Two-Sided Thickness Measurement

When delivered, the mounting adapters are already mounted on the mounting plate and aligned with one another. The following sets out the steps to be taken if you wish to mount and adjust the device yourself.

8.1 Fastening and Aligning the Mounting Adapters on the Mounting Plate

- ▶ Fasten the left-hand mounting adapter by inserting two M4 screws into the through-holes on the mounting plate.
- ▶ Fasten the right-hand mounting adapter by inserting two M4 screws into the slots on the mounting plate.

8.2 Aligning the Mounting Adapter with a Try-Square

It is easier to align the sensors if the mounting adapters are at as much of a right angle as possible to the mounting plate. Both mounting adapters should therefore be aligned with the aid of a try-square.

- ▶ Place a try-square against the surface of the mounting adapter and adjust the set screws for horizontal and vertical tilting such that the surfaces of the mounting adapter and mounting plate form an angle of 90° .

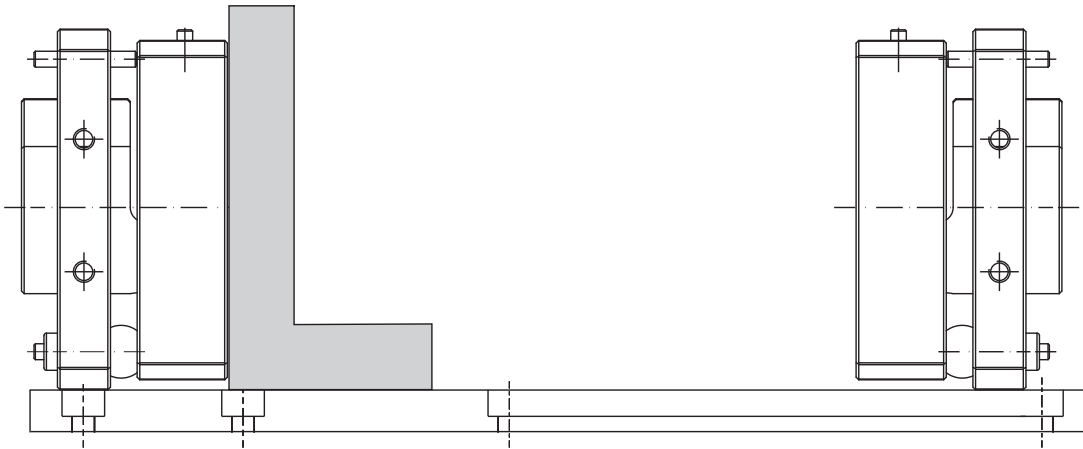


Fig. 1 Side view of mounting plate and mounting adapter with try-square applied

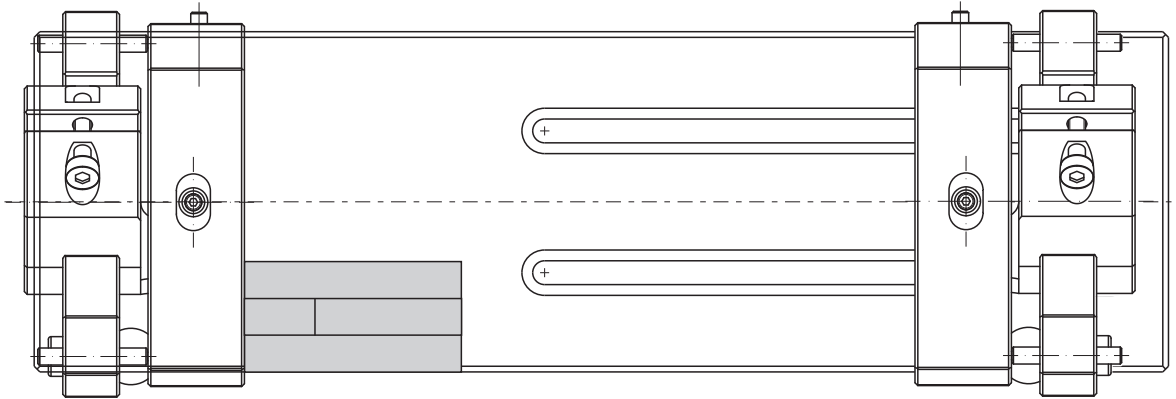


Fig. 2 Plan view of mounting plate and mounting adapter with try-square applied

The inner ring of the mounting adapter must be as centered as possible within the outer ring of the mounting adapter, [see Fig. 3](#). The set screws for shifting the JMA in the X and Y direction must be in a central position, [see Fig. 4](#).

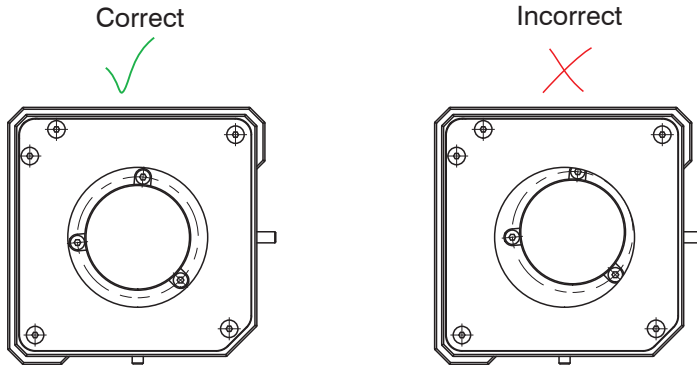


Fig. 3 Inner ring centered (left) and off-center (right)

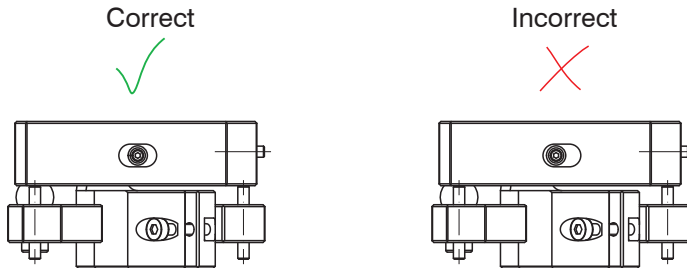
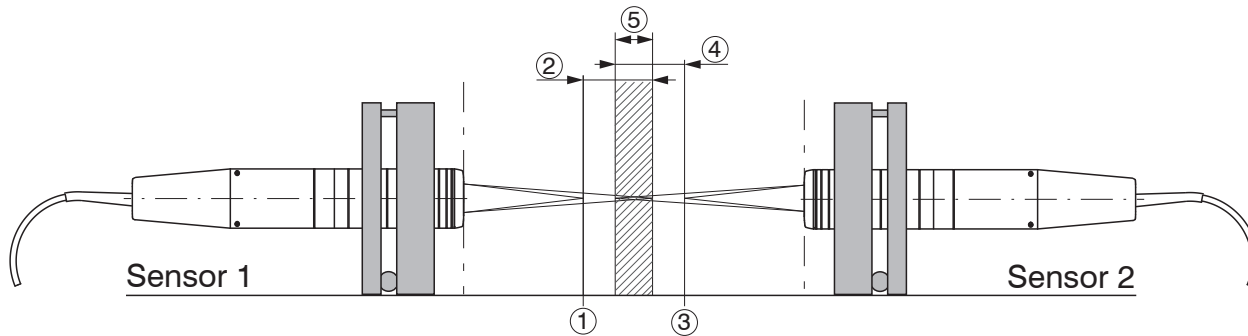


Fig. 4 Set screw in correct position (left) and incorrect position (right)

8.3 Adjusting the Distance between the Sensors

➡ Now secure the two sensors in the mounting adapters.

For an accurate thickness measurement, it is crucial that the sensors are at the right distance from one another. This requires the correct value for the start of the measuring range (SMR) and for the measuring range (MR), which can be found in the data sheet for the relevant sensor.



1	Start of measuring range, sensor 1
2	Measuring range, sensor 1
3	Start of measuring range, sensor 2
4	Measuring range, sensor 2
5	50% overlap range of both measuring ranges.

9. Coincidence of Both Measuring Spots

The optical axes of both sensors must be aligned as precisely as possible with one another.

Using a piece of paper, you can make the measuring spots visible and thus check whether they meet so as to form a single spot.

i To adjust, use only the screws for horizontal and vertical shifting, [see Fig. 5](#).



Fig. 5 Screws for vertical and horizontal shifting

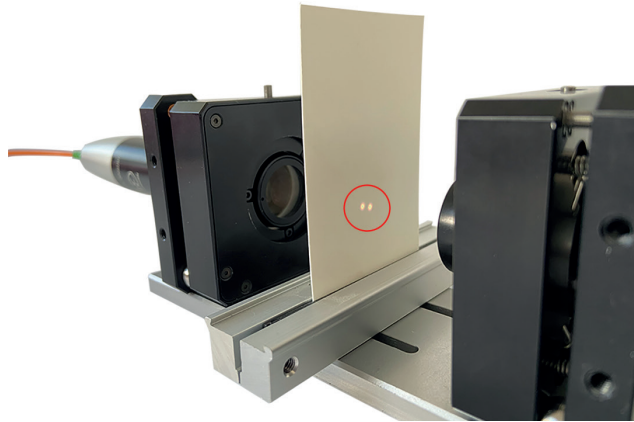


Fig. 6 Measuring spots do not coincide

If you can see two individual spots on the paper, [see Fig. 6](#), you will need to adjust the sensors a little more.

- ➡ Adjust the alignment of the sensors using the set screws for horizontal and vertical shifting so that the measuring spots coincide with one another as exactly as possible, [see Fig. 7](#).

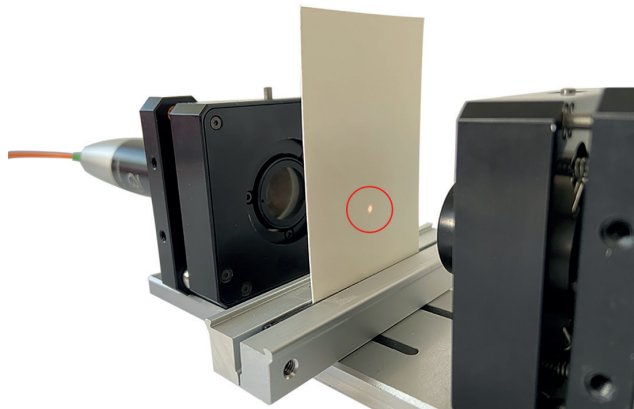


Fig. 7 Measuring spots coincide

10. Fine Adjustment in the Web Interface

- ▶ Connect the controller to the PC and launch the web interface.
- ▶ Set the chart type to Video.

For the further fine adjustment procedure, the video signal must be viewed in the web interface.

A small peak should be visible in the chart, see Fig. 8.

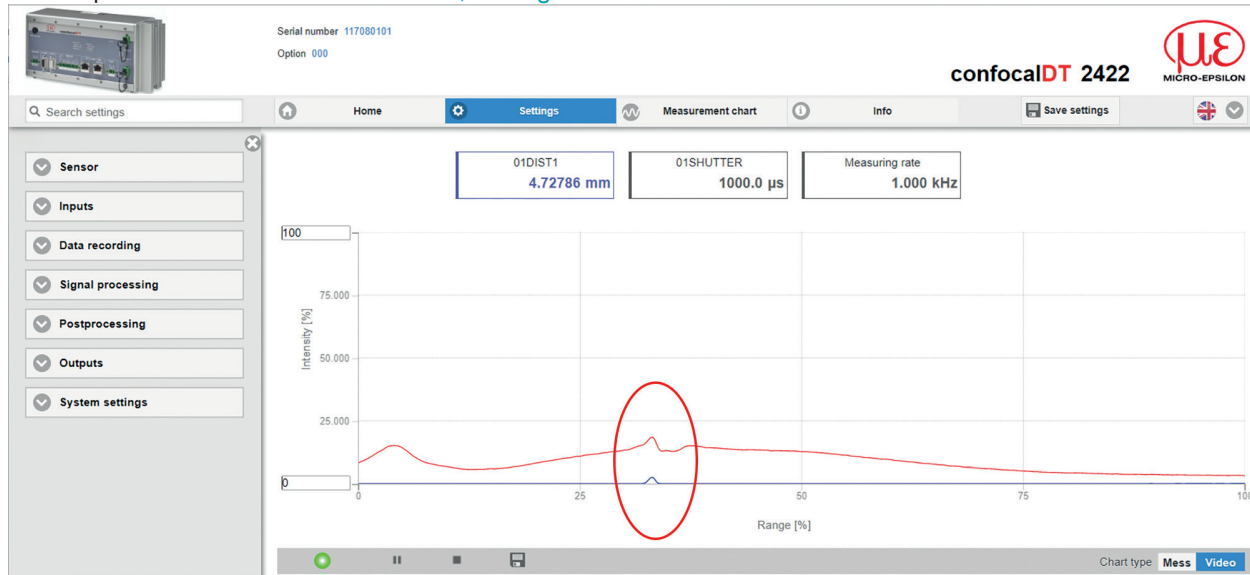


Fig. 8 Video signal in sensorTOOL

Further fine adjustments using the screws for horizontal and vertical shifting should initially be made on only one of the two mounting adapters. The aim is to maximize the peak visible in the video signal.

- ▶ Adjust the position of a sensor using the screws for horizontal and vertical shifting. While doing so, keep an eye on the video signal in the web interface and maximize the peak.

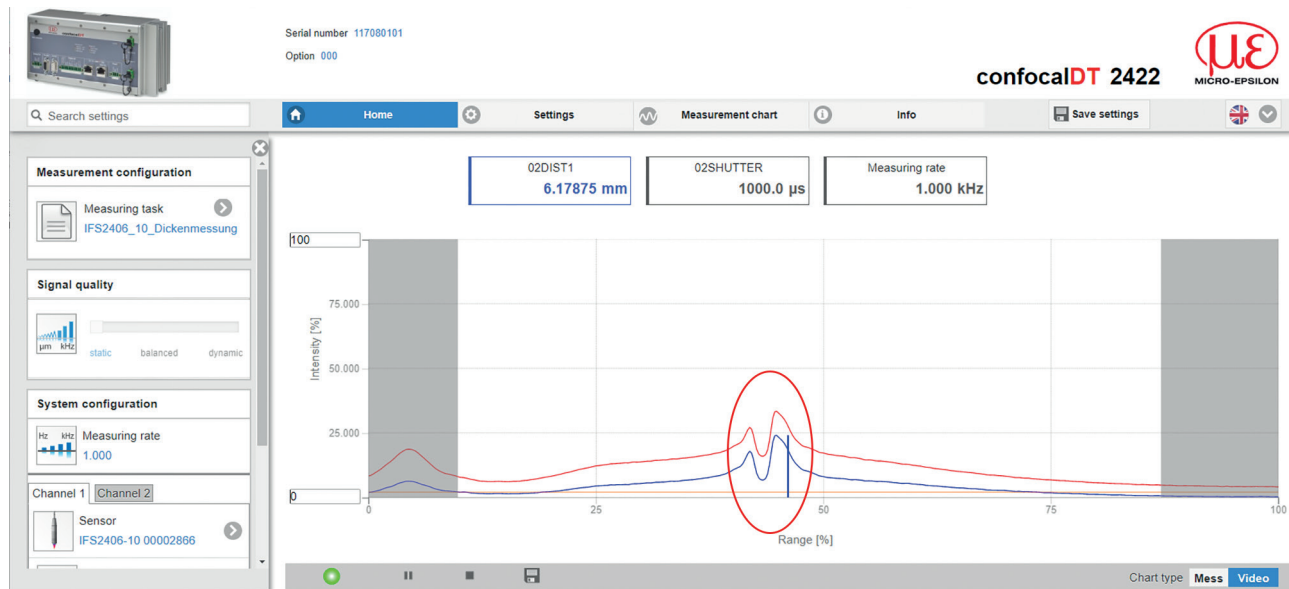


Fig. 9 Double peak in sensorTOOL

If the peak in the video signal becomes lower compared to Fig. 9, reverse the change and adjust in the opposite direction. Two peaks should become visible in the interim.

If the sensors are optimally aligned with one another, a single, sharp peak is displayed in the video signal, see Fig. 10.

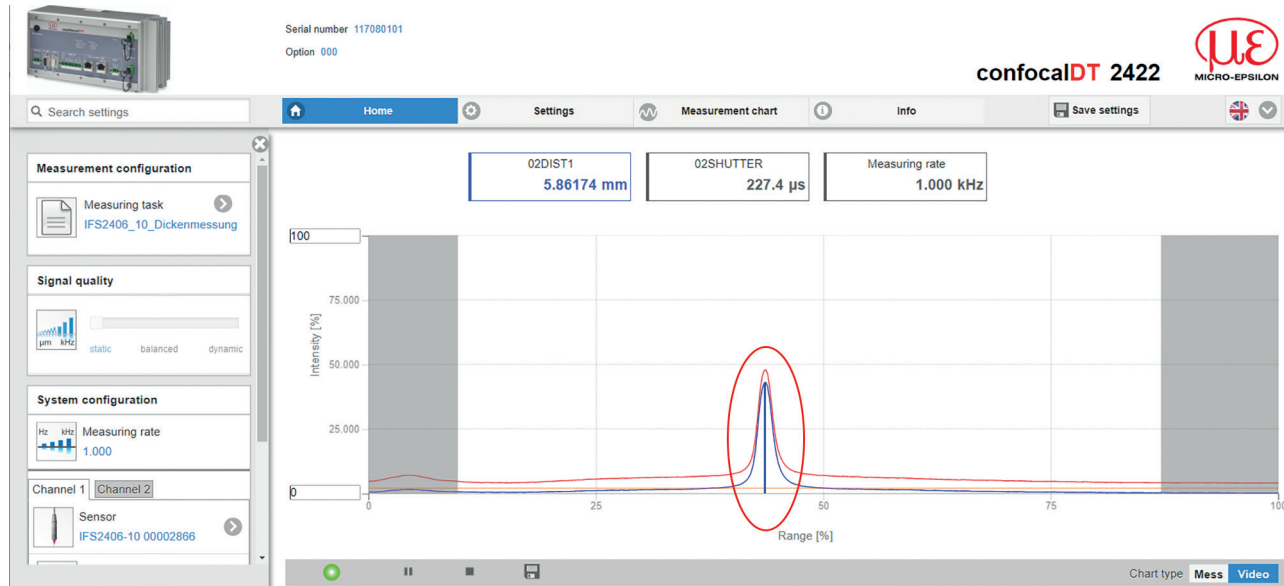


Fig. 10 Single measurement peak in sensorTOOL

11. Thickness Calculation in the Web Interface

- Go to the `Settings/Postprocessing` menu.
- Click on the `Add calc` module button.
- In the drop-down menu, select `Calculation` under the calculation function.
- Set `Factor 1` and `Factor 2` to `-1.000`.
- Select `O1DIST1` for `Distance A` and `O2DIST1` for `Distance B`.
- Give the calculation module a name (`Thick` in this example)

11.1 Alternative 1: Manual determination of the offset

Enter the distance between the two measuring range starts in the `Offset` field. The distance can be precisely determined by adding up the `O1DIST1` and `O2DIST1` values. This requires the sensors to be aligned with one another, see 10, with no objects in the measuring range.

- Activate channel 1 and read off the value for `O1DIST1`, see Fig. 11.

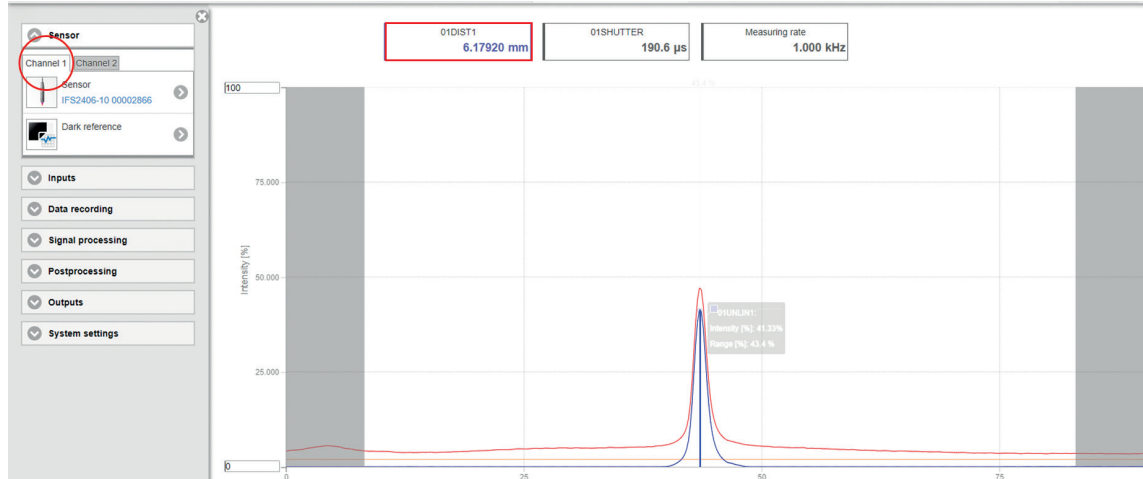


Fig. 11 O1DIST1 value in web interface

- ▶ Activate channel 2 and read off the value for 02DIST1
- ▶ Add up the values for 01DIST1 and 02DIST1 and enter the result in the *Offset* field, see Fig. 12.

The screenshot displays the configuration for a calculation module. On the left, a sidebar menu includes 'Sensor', 'Eingänge', 'Messwertaufnahme', 'Signalverarbeitung', and 'Nachbearbeitung'. Under 'Nachbearbeitung', three calculation modules are listed: 'Rechnung 1' (selected), 'Rechnung 2', and 'Rechnung 3'. The main configuration area for 'Rechnung 1' includes the following fields:

- Berechnungsfunktion:** Berechnung
- Faktor 1:** -1,000
- Abstand A:** 01DIST1
- Faktor 2:** -1,000
- Abstand B:** 02DIST1
- Offset:** (highlighted with a red box, containing a vertical bar |)
- Name:** Thick

A 'Rechnung speichern' button is located at the bottom of the configuration area.

Fig. 12 Calculation module for thickness measurement

11.2 Alternative 2: Mastering based on a master object

Another option for thickness calculation is available in the `Settings` menu in the `Zeroing/Mastering` submenu. Use zeroing and setting masters to define a target value within the measuring range. When measuring the thickness of a measuring object using the controller IFC2421/2422/2465/2466, you need to specify the actual thickness of a master object as `Master value`.

Master value in mm	Value	Specify the thickness (or other parameter) of a master object. Value range: - 2147.0 ... +2147.0 mm
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Mastering (setting masters) is used to compensate for mechanical tolerances in the sensor measurement setup or to correct chronological (thermal) changes to the measuring system. The master value, also called calibration value, is defined as the target value.

The `master value` is the reading that is issued as result of measuring a master object. Zeroing is when you set a master with 0 (zero) as the master value.

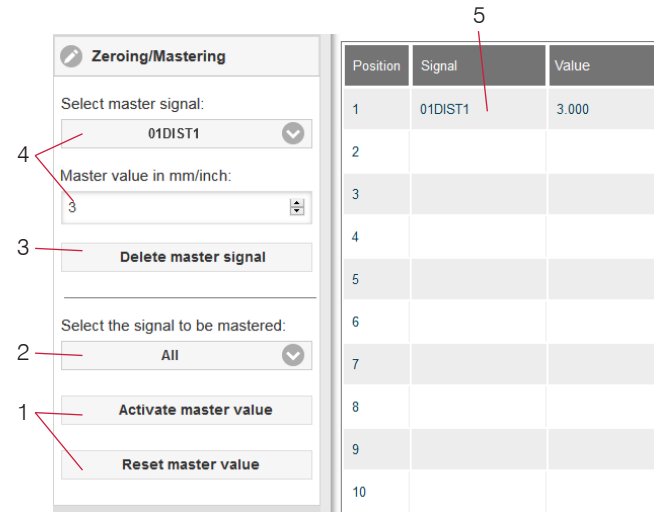
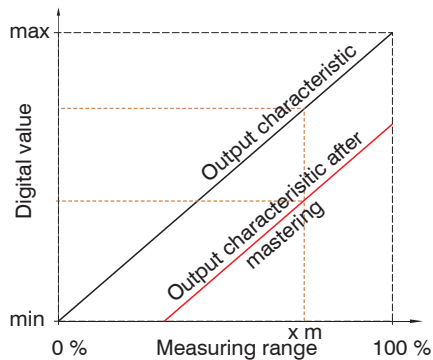


Fig. 13 Mastering dialog, overview of individual master values

The zeroing/mastering function is not channel-specific. The controller manages up to 10 master signals. These 10 signals can be applied to any internally determined value. This also applies for calculated values.

i Mastering or zeroing requires a target object to be present in the measuring range and affects both analog and digital outputs.

- 1 Starts/stops the function
- 2 Applies a certain selected signal or function to all defined signals (5)
- 3 Deletes a signal
- 4 Selects a signal for the function, assigns master value
- 5 Overview of all existing signals for the function



When setting a master, the output characteristic is moved in parallel. Moving the characteristic reduces the relevant measuring range of a sensor (the further master value and master position are located, the greater the reduction).

Setting masters/Zeroing – Step-by-Step:

- ▶ Place target and sensor into their required positions.
- ▶ Define the `Master value` (web interface/ASCII).

After setting the master, the controller will issue new readings that relate to the master value. If you click the `Reset master value` button to undo the mastering process, the system reverts to the state that existed before the master was set.

Fig. 14 Moving the characteristic when mastering

11.3 Display of Thickness in the Web Interface

- ▶ Go to the `Measurement chart` menu and set the chart type to `Mess`.
- ▶ In the measurement chart area, apply a check mark to the calculation module you just created in order to display the thickness value, see Fig. 14.



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