

Warnings

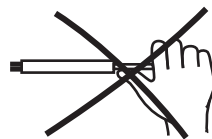
Avoid shocks and impacts to the sensor.

- > Damage to or destruction of the controller and/or the plunger

Excitation voltage and excitation frequency must comply with the requirements for the sensor.

- > Damage to or destruction of the sensor

- Please use a suitable MSC7401, MSC7802, MSC7602 controller with corresponding excitation voltage and excitation frequency to operate the sensor.



Protect the sensor cable against damage.

- > Destruction of the sensor
- > Failure of the measuring device

Do not carry the sensor on the plunger.

- > Damage to the plunger

Notes on Product Marking

CE Marking

The following applies to the product:

- 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.

UKCA Marking

The following applies to the product:

- 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.

The sensors were EMC tested together with the MSC7401, MSC7802, MSC7602 controllers as a complete system.

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.

Here you can inform yourself about the respective national collection and return points.

- Old devices can also be returned for disposal to Micro-Epsilon at the address given in the imprint at <https://www.micro-epsilon.com/legal-details/>.
- 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-Reg.-Nr. DE28605721, we are registered at the foundation Elektro-Altgeräte Register, Nordostpark 72, 90411 Nuremberg, as a manufacturer of electrical and/or electronic equipment.

Functional Principle, Technical Data

Inductive displacement sensors of the LVDT series are passive elements without integrated electronics. Suitable signal conditioning electronics are therefore required for operation (e.g. controller MSC7401, MSC7802, MSC7602). The technical data is only achieved if the specified values for the power supply (excitation frequency and excitation voltage) are observed.

Inductive displacement sensors work according to the LVDT principle (linear variable differential transformer; full bridge) and are made up of a primary and two secondary coils with a common, movable, soft magnetic core.

Technical Data

Model	DTA-1DX	DTA-3DX	DTA-5DX	DTA-10DX	DTA-15DX	DTA-25DX
Measuring range	±1 mm	±3 mm	±5 mm	±10 mm	±15 mm	±25 mm
Linearity ¹	≤ ±0.4% FSO	-	-	-	≤ ±80 μm	≤ ±120 μm
	≤ ±0.3% FSO	≤ ±6 μm	≤ ±18 μm	≤ ±30 μm	-	-
	≤ ±0.2% FSO	-	-	-	≤ ±40 μm	≤ ±60 μm
	≤ ±0.15% FSO	≤ ±3 μm	≤ ±9 μm	≤ ±15 μm	-	-
	≤ ±0.05 % FSO ²	≤ ±1 μm	≤ ±3 μm	≤ ±5 μm	≤ ±10 μm	≤ ±15 μm
Temperature stability ³	Zero	≤ 70 ppm FSO/K				
	Max. temp. error	≤ 150 ppm FSO/K				
Sensitivity	127 mV / mm/V	81 mV / mm/V	55 mV / mm/V	45 mV / mm/V	45 mV / mm/V	29 mV / mm/V
Excitation frequency	5 kHz	5 kHz	5 kHz	2 kHz	1 kHz	1 kHz
Excitation voltage	550 mV					
Connection	integrated cable 3 m with open ends; axial cable outlet; drag chain suitable; cable diameter 3.1 mm; min. bending radii: fixed installation 25 mm, moved 38 mm, drag chain 47 mm					
Temperature range	Storage	-20 ... +70 °C				
	Operation ^{4,5}	(-40) ... -20 ... +90 ... (105) °C				
Pressure resistance	5 bar (front)					
Shock (DIN EN 60068-2-27)	40 g / 6 ms in 3 axes, 1000 shocks each 100 g / 6 ms in 3 axes, 3 shocks each					
Vibration (DIN EN 60068-2-6)	± 1.5 mm / 10 ... 58 Hz in 2 axes, 10 cycles each ± 20 g / 58 ... 500 Hz in 2 axes, 10 cycles each					
Protection class (DIN EN 60529)	IP67					
Material	Stainless steel (housing), PVC-P/TPE-E (cable)					
Weight	Sensor CA	approx. 80 g	approx. 85 g	approx. 90 g	approx. 95 g	approx. 135 g
	Plunger	approx. 1 g	approx. 2 g	approx. 2 g	approx. 3 g	approx. 12 g
Compatibility	MSC7401, MSC7802, MSC7602					

¹ Independent linearity

² Only valid with linearized controller (factory service can be added to the overall system), observe installation environment

³ Determined using the box method (-20 ... +90 °C)

⁴ -40 °C with cable at rest

⁵ up to 105 °C over max. 500h

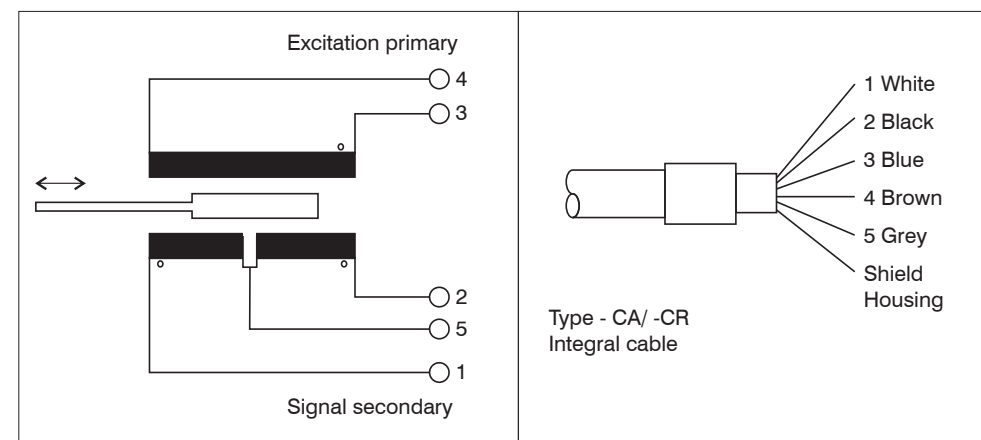
Proper Environment

- Temperature range:
 - Storage: -20 ... +70 °C (-4 ... +158 °F)
 - Operation: (-40) ¹ ... -20 ... +90 ... (+105) ² °C ((-40) ¹ ... -4 ... +194 ... (+221) ² °F)
 - Humidity: 5 ... 95 % RH (non-condensing)
- Ambient pressure: Atmospheric pressure
- Protection class: IP67

1) -40 °C (-40 °F) with cable at rest

2) Up to 105 °C over max. 500h

Pin Assignment



Pin assignment for electrical connections

The integrated cable presents a strand cross-section of 5x 0.16 mm (AWG26).

- ➡ Use suitable ferrules to connect the sensor to the controller.

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.

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/>.

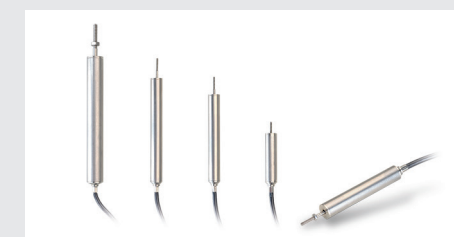
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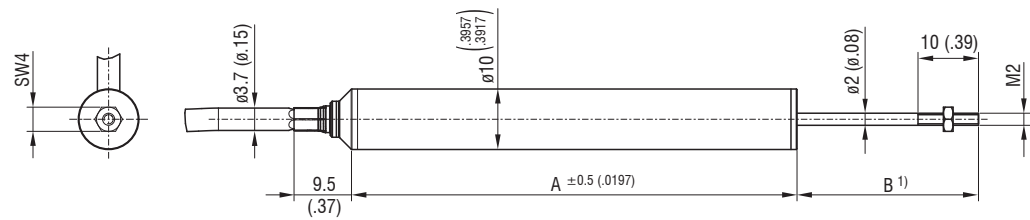
X9771478-A012064HDR



Assembly Instructions
induSENSOR
DTA-xDX



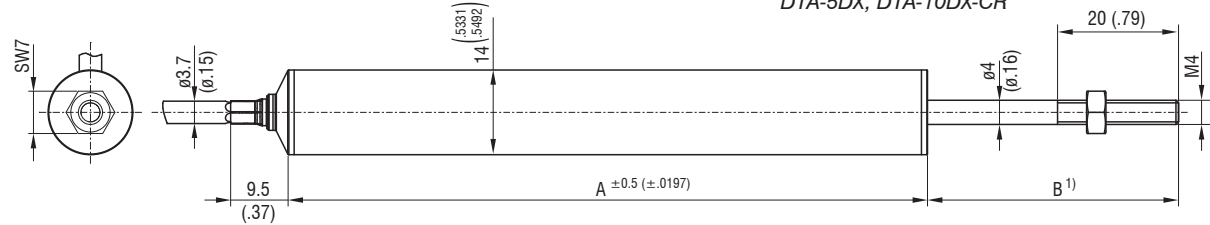
Installation and Assembly



Dimensional drawing induSENSOR DTA-1DX, DTA-3DX, DTA-5DX, DTA-10DX

Model	A	B ¹
DTA-1DX	41.6 mm (1.64)	17.3 mm (.68)
DTA-3DX	58.2 mm (2.29)	27.2 mm (1.07)
DTA-5DX	73.7 mm (2.90)	30 mm (1.18)
DTA-10DX	87.7 mm (3.45)	35.1 mm (1.38)

1) Plunger in zero position ($\pm 1\text{mm} \pm 10\%$ FSO)



Dimensional drawing of sensor with radial cable outlet DTA-1DX, DTA-3DX, DTA-5DX, DTA-10DX-CR

Dimensional drawing induSENSOR DTA-15DX, DTA-25DX

Model	A	B ²
DTA-15DX	105.7 mm (4.16)	46.5 mm (1.83)
DTA-25DX	140.7 mm (5.54)	61.5 mm (2.42)

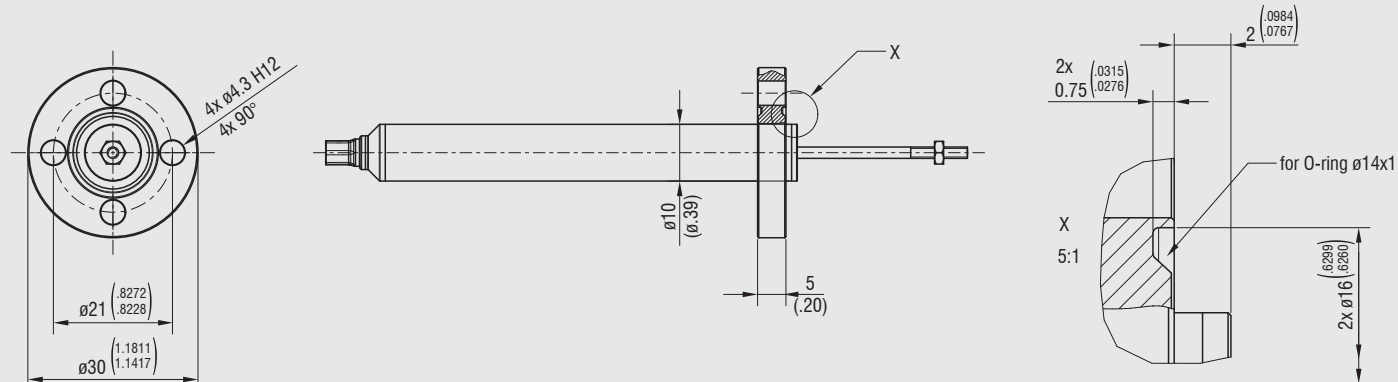
2) Plunger in zero position ($\pm 1\text{mm} \pm 10\%$ FSO)



Dimensional drawing of sensor with radial cable outlet DTA-15DX, DTA-25DX-CR

Dimensions in mm (inches, rounded off)

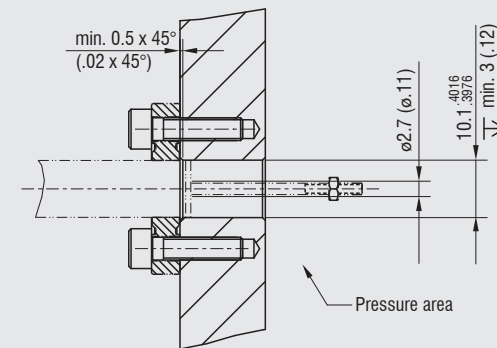
Mounting pressure flange DTA-1DX, 3DX, 5DX, 10DX



4x M4 screws must be used.

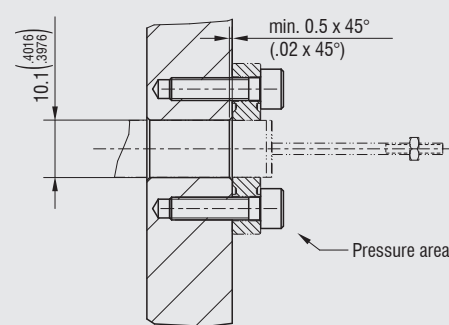
Select the strength class of the screws according to the application.

Installation situation: front wall mounting



Dimensions in mm (inches, rounded off)

Installation situation: rear wall mounting

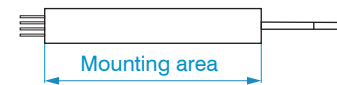


Precautions

Do not drop the freely moving plunger of the inductive displacement sensor. Protect the cable sheath of the sensor cable from sharp, pointed and heavy objects. Never bend the sensor cable more tightly than the bending radius. Avoid folding the cables.

Check the plug-in connections for firm seating.

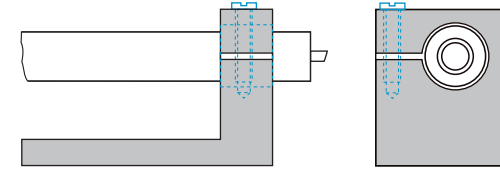
Sensor Mounting



Mounting displacement sensors

Circumferential Clamping

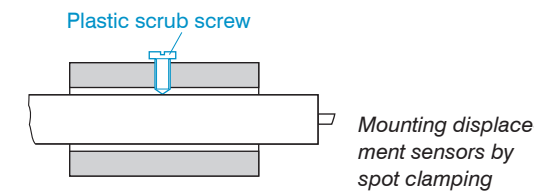
Use a peripheral clamping on the sensor housing to mount the sensor. It ensures the highest level of reliability because the sensor's cylindrical cover is clamped over a relatively large area.



Mounting displacement sensors by circumferential clamping

Spot Clamping

At installation locations where there are no forces and vibrations, mount the sensor using radial point clamping with set screws.



The grub screw must be made of plastic so that it cannot damage or deform the sensor housing.

Mounting the Plunger on the Measuring Object

Screw the plunger of the displacement sensor to the measuring object using the thread.

The screw joint must either be secured with a screw locking compound (e.g. Loctite) or counter-screwed with the lock-nut supplied.

When mounting, ensure that the plunger remains freely movable in the sensor and that tilting is avoided.

Connecting the Sensor to the Controller

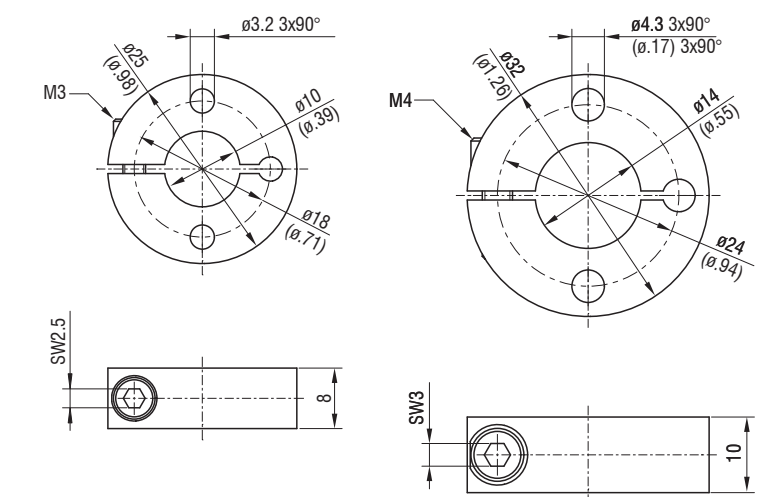
Connect the sensor (depending on the respective model) to the controller using plug connectors or wire terminals (see pin assignment).

Readjust the controller when replacing the sensor!

Use suitable ferrules, if necessary.

Ready-made connecting cables are available for sensors with plug connectors.

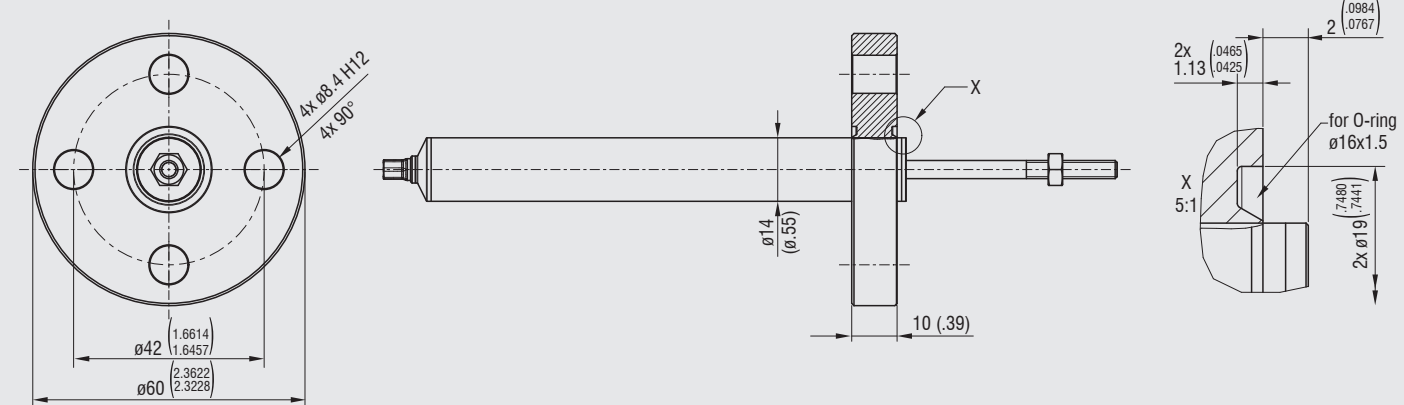
Mounting Accessories



Flange DTA-F10

Flange DTA-F14

Mounting pressure flange DTA-15DX, 25DX

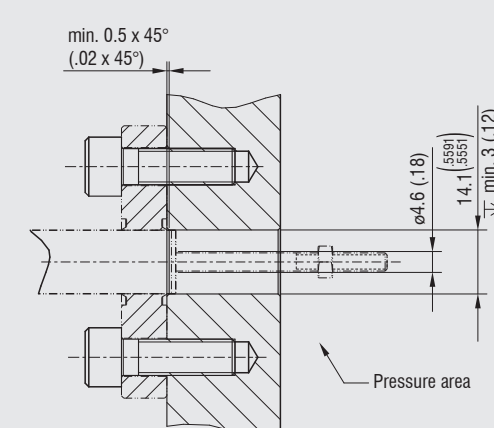


4x M8 screws must be used.

Select the strength class of the screws according to the application.

Note the change in pressure resistance with changing temperature.

Installation situation: front wall mounting



Dimensions in mm (inches, rounded off)

Installation situation: rear wall mounting

