



Assembly Instructions
capaNCDT 6114/6124

CSHA2FL-CRa5
CSHA2FL-CRa15

Warnings

CAUTION

Connect the power supply and the display/output device according to the safety regulations for electrical equipment.

- > Risk of injury
- > Damage to or destruction of the sensors and/or the controller

Disconnect the power supply before touching the sensor surface.

- > Risk of injury
- > Static discharge

NOTICE

The supply voltage must not exceed the specified limits.

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

Avoid shocks and impacts to the sensor and the controller.

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

Protect the sensor cable against damage.

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

Intended Use

- The capaNCDT 61x4 is designed for use in an industrial environment. It is used for
 - displacement, distance and movement measurement, thickness measurement,
 - measuring the position of parts or machine components
 - The measuring system must only be operated within the limits specified in the technical data, see Operating Instructions Chap. 2.3. The system 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 system.
- Take additional precautions for safety and damage prevention in case of safety-related applications.

Proper Environment

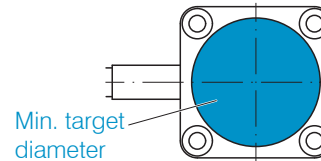
- Protection class: IP40
- Temperature range (operation)
 - Sensor, sensor cable: -40 ... +80 °C (-40 ... +176 °F)
 - Controller: +10 ... +60 °C (+50 ... +140 °F)
- Temperature range (storage)
 - Sensor, sensor cable: -40 ... +80 °C (-40 ... +176 °F)
 - Controller: -10 ... +75 °C (+14 ... +167 °F)
- Humidity: 5 - 95 % (non-condensing)
- Ambient pressure: Atmospheric pressure

Sensors

Sensors with an integrated preamplifier can be used in the measuring system.

➔ For accurate measurement results, keep the front of the sensor clean and avoid damaging it.

The capacitive measuring method is area-based. A minimum area is required depending on the sensor model and measuring range.



| Sensor model | Measuring range, nominal | Min. target diameter |
|--------------|--------------------------|----------------------|
| CSHA2FL | 2 mm | 17 mm |

Sensors for electrically conductive targets (metals)

The preamplifier integrated in the sensor generates and amplifies the distance-dependent measurement signal.

Controller

The DT61x4 controller contains a voltage processor, oscillator, demodulator and an output stage.

The voltage processor generates all required internal voltages from the supply voltage. The oscillator supplies the sensor with an alternating voltage that has a constant frequency and amplitude. The frequency is 31 kHz. The demodulator and output stage transform the measurement signal into a standardized voltage signal. The DT6124 controller also includes an analog-digital converter. This converts the measurement signal and outputs it on the RS485 interface.

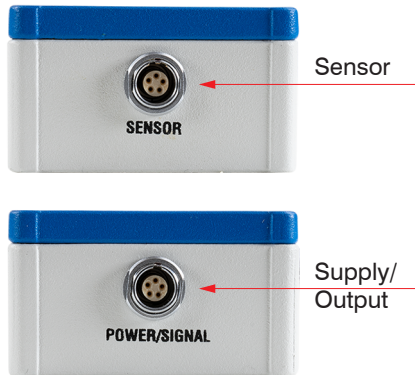
NOTICE

The output voltage can reach a maximum value of 13 VDC if the sensor is unplugged or if the measuring range is exceeded.

> Damage to downstream devices



DT6114 controller



Installation and Assembly

Precautions

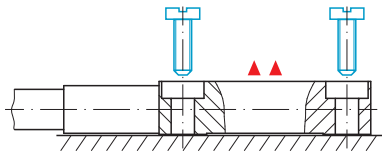
No sharp or heavy objects should be allowed to affect the cable sheath.

- ▶ Protect the cable from compressive stress in regions exposed to higher pressure
- ▶ Avoid folding the cables.
- ▶ Check the plug connections for a tight fit.

Sensor

During installation, take care that the polished sensor front face is not scratched.

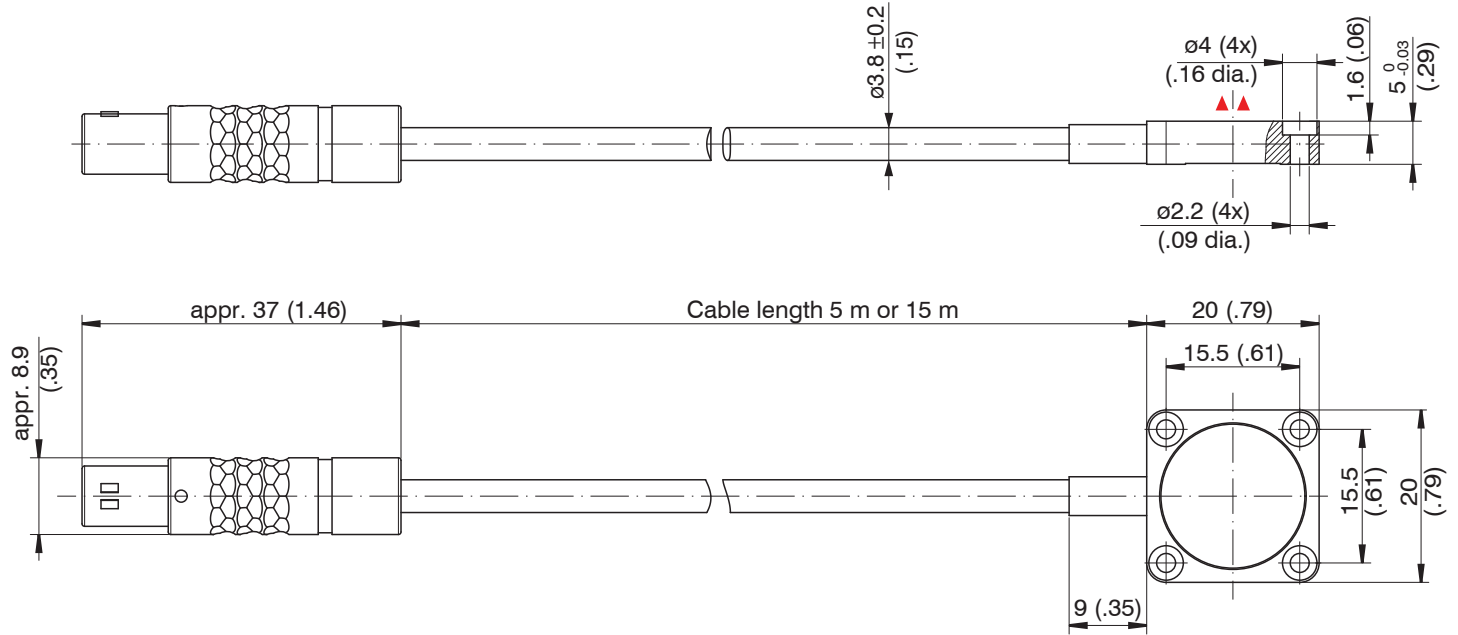
Screwed connection from top



The flat sensors are mounted using a threaded bore for M2 (for 0.2 and 0.5 mm sensors) or using a through-hole for M2 screws. The sensors can be screwed on from above or below.

Installing the flat sensors

▲▲ Sensor active measuring area



Dimensional drawing of CSHA2FL-CRAxx flat sensor with integrated cable, measuring range = 2 mm nominal, dimensions in mm (inches)

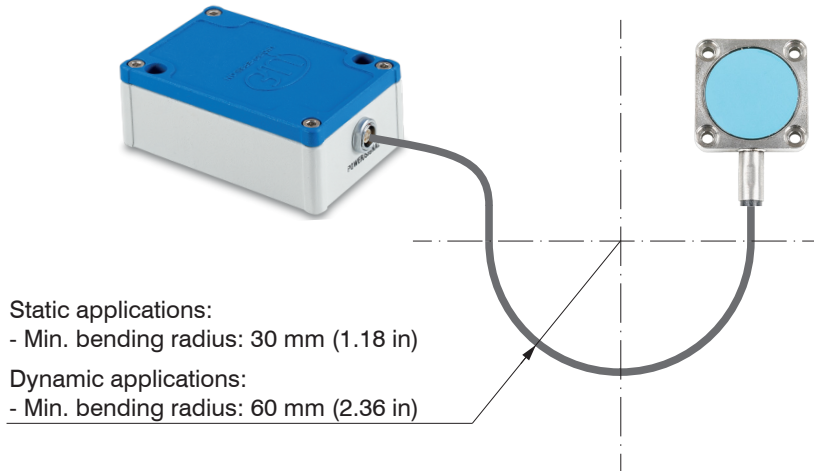
▲▲ Sensor active measuring area

Sensor Cable

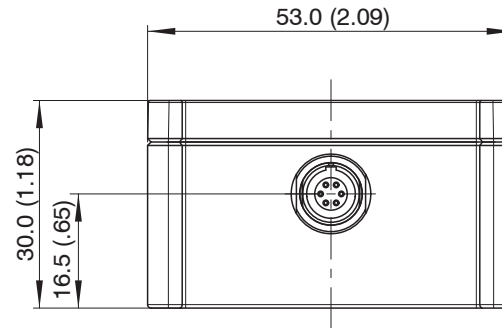
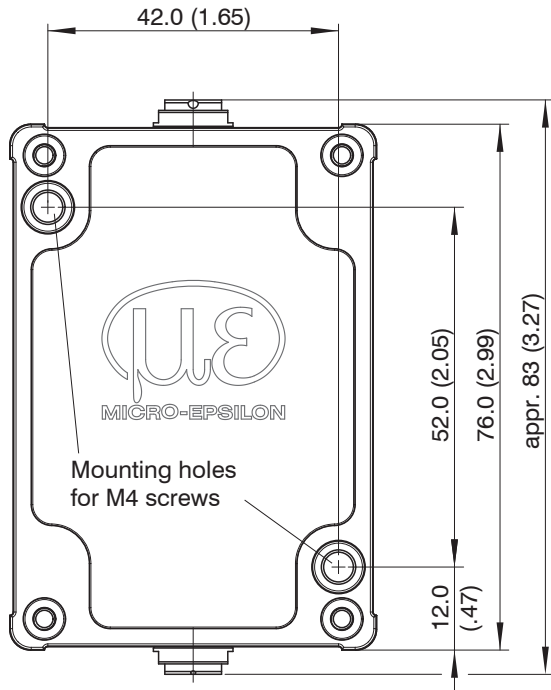
The 5-pin sensor cable is firmly connected to the sensor. It is suitable for use in drag chains and robots, for example. The sensor is connected to the controller via the sensor cable provided. This is done simply by plugging it in. The plug connection will lock automatically. You can check that the fit is tight by pulling on the connector housing (cable socket). You can unlock and release the plug connection by pulling on the knurled housing sleeve of the cable socket.

NOTICE

Switch off the controller when disconnecting or altering the cable connection.
Do not crush the sensor cable. Do not make any changes to the sensor cable.
Loss of functionality!



Controller






Dimensional drawing of controller, dimensions in mm (inches)

Ground Connection, Grounding

▶ Ensure sufficient grounding of the target, for example by connecting it to the sensor or the power supply ground.

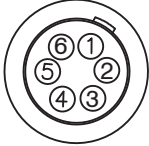


Power Supply, DT6114 Display/Output Device

The power supply and signal output are provided via the 5-pin connector on the front of the controller.

| Pin | Wire color SCAC3/5 | Signal | Description |  View: Solder side, 5-pin socket |  <i>Supply voltage connection</i> |  <i>SCAC3/5 power supply and output cable</i> The SCAC3/5 is an assembled supply and output cable that is 3 m long. |
|--------|-----------------------|-----------|------------------------------------|---|--|--|
| 1 | White | V_+ | +24 V supply | | | |
| 2 | Gray | GND | Supply ground | | | |
| 3 | Yellow | - | Not used | | | |
| 4 | Green | AGND | Analog ground (for signal output) | | | |
| 5 | Brown | V_{OUT} | Signal output (load, min. 10 kOhm) | | | |
| Shield | | | Cable shield, housing | | | |

Power Supply, DT6124 Display/Output Device

The power supply and signal output are provided via the 6-pin connector on the front of the controller.

| Pin | Wire color SCAC3/6 | Signal | Description |  View: Solder side, 6-pin socket |  <i>Supply voltage connection</i> |  <i>SCAC3/6 power supply and output cable</i> The SCAC3/6 is an assembled supply and output cable that is 3 m long. |
|--------|-----------------------|-----------|------------------------------------|---|--|--|
| 1 | White | V_+ | +24 V supply | | | |
| 2 | Gray | GND | Supply ground | | | |
| 3 | Pink | RS485 + | RS485 interface | | | |
| 4 | Green | AGND | Analog ground (for signal output) | | | |
| 5 | Brown | V_{OUT} | Signal output (load, min. 10 kOhm) | | | |
| 6 | Blue | RS485 - | RS485, negated | | | |
| Shield | | | Cable shield, housing | | | |

Operation

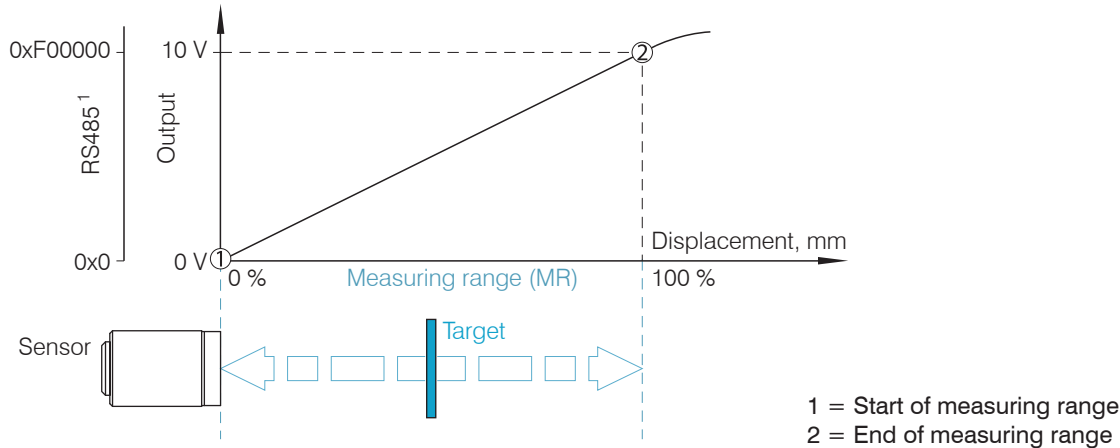
▶ Connect the display/output devices via the screw terminal connection before connecting the device to the power supply, then switch it on.

The measuring system is calibrated before being shipped. The user does not need to perform a calibration.

i Let the measuring system warm up for approx. 10 minutes after switching on the power supply.

NOTICE

The supply voltage must not exceed the specified limits or fall below them for extended periods of time.
> Damage to or destruction of the sensor and/or controller



Output voltage vs measuring range curve

CAUTION

Disconnect the power supply before touching the sensor surface.
> Static discharge, risk of injury

1) Digital interface can only be used with DT6124 controller

Decommissioning, Disposal

➤ Remove the power and output cable from the sensor.

Incorrect disposal may cause harm to the environment.

➤ Dispose of the device, 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 can find more information about the sensor in the operating instructions. They are available online at:
www.micro-epsilon.com/download/manuals/man--capaNCNT-61x4--en.pdf



MICRO-EPSILON

MICRO-EPSILON MESSTECHNIK GmbH & Co. KG
Koenigbacher Str. 15 · 94496 Ortenburg / Germany · www.micro-epsilon.com
Your local contact: www.micro-epsilon.com/contact/worldwide/

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