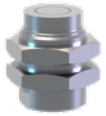
MICRO-EPSILON

More Precision

capaNCDT // Capacitive sensors for displacement, distance & gap

Cylindrical sensors with thread (socket)
capaNCDT CSE/Mx






Model		CSE05/M8	CSE1.25/M12	CSE2/M16	CSE3/M24
Measuring range	Reduced	0.25 mm	0.625 mm	1 mm	1.5 mm
	Nominal	0.5 mm	1.25 mm	2 mm	3 mm
	Extended	1 mm	2.5 mm	4 mm	6 mm
Resolution [1]	Static	0.15 nm	0.375 nm	0.6 nm	0.9 nm
	Dynamic	10 nm	25 nm	40 nm	60 nm
Linearity [2]		< ±0.25 µm	< ±1.25 µm	< ±2 µm	< ±3 µm
Replacement accuracy [3]		< ±0.2 % FSO	< ±0.2 % FSO	< ±0.2 % FSO	< ±0.2 % FSO
Temperature stability		-0.02 µm / K	-0.12 µm / K	-0.16 µm / K	-0.18 µm / K
Recommended target size (flat) [4]		Ø 6 mm	Ø 10 mm	Ø 14 mm	Ø 20 mm
Active measuring area		Ø 3.9 mm	Ø 6.3 mm	Ø 8 mm	Ø 9.8 mm
Connection [5]		Plug connection via triaxial socket (type C)	Plug connection via triaxial socket (type B)		
Mounting		Direct fastening via thread on the sensor			
Temperature range	Storage	-50 ... 200 °C			
	Operation	-50 ... 200 °C			
Shock (DIN EN 60068-2-27)		30g / 5 ms in XY axis, 1000 shocks each			
Vibration (DIN EN 60068-2-6)		20 g / 58 … 2000 Hz in XY axis, 10 cycles each			
Protection class (DIN EN 60529)		IP40			
Material		NiFe (magn.)	1.4404 (non-magn.)		
Weight		approx. 3.5 g	approx. 11.5 g	approx. 35 g	approx. 80 g
Recommended mounting position [6]		3.6 mm	4.4 mm	4.4 mm	5.4 mm
Compatibility		Compatible with all capacitive controllers from Micro-Epsilon Sensors can be replaced as required without recalibration (see replacement accuracy)			

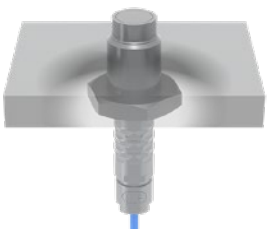
[1] RMS noise referred to the end of the measuring range and to the nominal measuring range using the standard cable CCm (1.4 m); valid for operation with the DT6530: static 2 Hz, dynamic 8.5 kHz
[2] Typical linearity to be added to the controller linearity; valid for standard cable adjustment CCm (1.4 m)
[3] FSO = Full Scale Output | The value corresponds to the slope error that occurs when a sensor is replaced without recalibration
[4] In relation to the nominal measuring range
[5] For suitable sensor cables, please refer to Connections
[6] From the sensor front face (measuring surface), opposite to the measuring direction

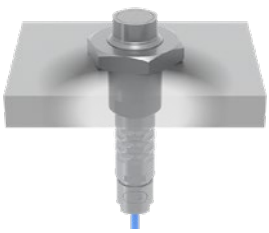
Mounting of CSE/Mx thread sensors

The threaded sensors can be secured in an internal thread using a mounting nut (at the front or rear). For thin brackets and through-holes, the sensors are secured on both sides using two mounting nuts. Follow the tightening torques specified in the operating instructions.

The technical specifications always refer to circumferential clamping at the recommended mounting position.

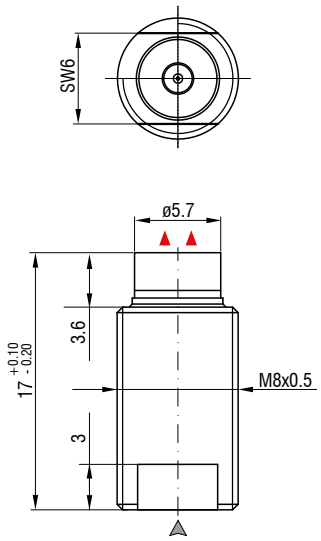
Recommended mounting of CSE/Mx sensors


Back-secured with nut

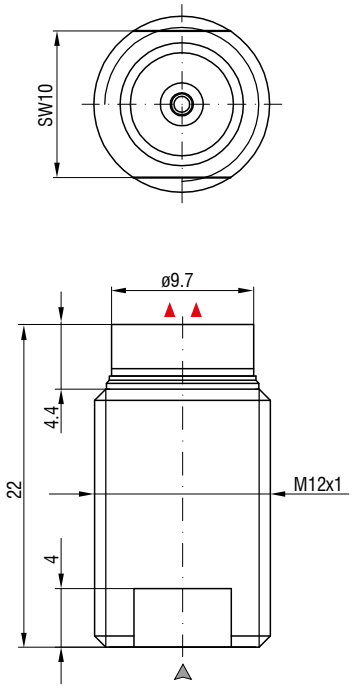

Front-secured with nut

Dimensions
capaNCDT CSE/Mx

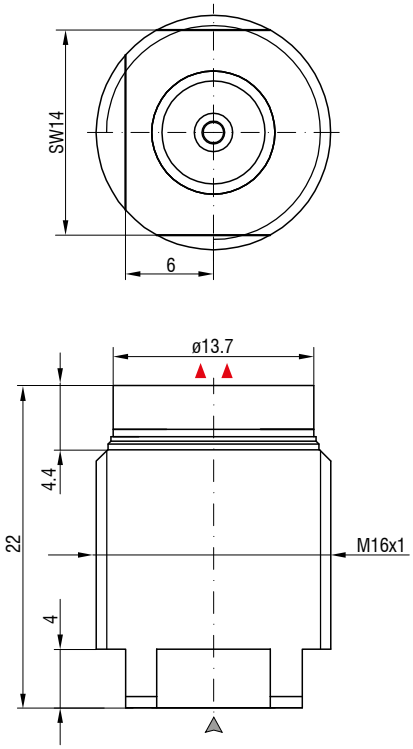
CSE05/M8



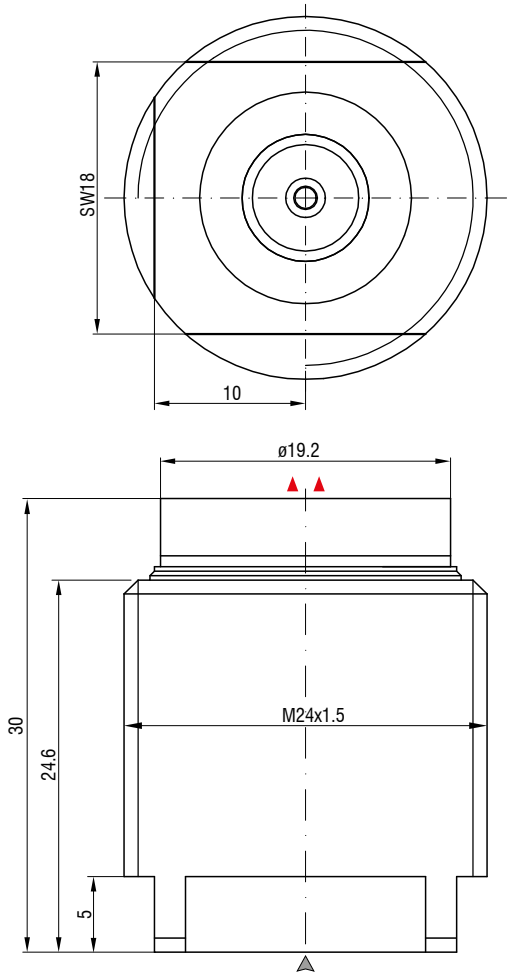
CSE1.25/M12



CSE2/M16



CSE3/M24



▲ ▲ Measurement direction

△ Connector side

(dimensions in mm, not to scale)

High-precision cylindrical sensors (integrated cable)
capaNCDT CSH

Model		CSH02-CAm1,4	CSH05-CAm1,4	CSH1-CAm1,4	CSH1,2-CAm1,4	CSH2-CAm1,4
Measuring range	Reduced	0.1 mm	0.25 mm	0.5 mm	0.6 mm	1 mm
	Nominal	0.2 mm	0.5 mm	1 mm	1.2 mm	2 mm
	Extended	0.4 mm	1 mm	2 mm	2.4 mm	4 mm
Resolution [1]	Static	0.06 nm	0.15 nm	0.3 nm	0.36 nm	0.6 nm
	Dynamic	4 nm	10 nm	20 nm	24 nm	40 nm
Linearity [2]		< ±0.08 µm	< ±0.35 µm	< ±0.6 µm	< ±1.2 µm	< ±0.6 µm
Replacement accuracy [3]		< ±0.5 % FSO	< ±0.2 % FSO	< ±0.2 % FSO	< ±0.2 % FSO	< ±0.2 % FSO
Temperature stability [4]		-0.01 µm / K	+0.01 µm / K	+0.056 µm / K	+0.052 µm / K	+0.152 µm / K
Recommended target size (flat) [5]		Ø 7 mm	Ø 7 mm	Ø 11 mm	Ø 11 mm	Ø 17 mm
Active measuring area		Ø 2.6 mm	Ø 4.1 mm	Ø 5.7 mm	Ø 6.3 mm	Ø 8.1 mm
Connection		integrated cable with connector (type B); standard length 1.4 m				
Mounting		Circumferential clamping				
Temperature range	Storage	-50 ... 200 °C				
	Operation	-50 ... 200 °C				
Shock (DIN EN 60068-2-27)		30g / 5 ms in XY axis, 1000 shocks each				
Vibration (DIN EN 60068-2-6)		20 g / 58 … 2000 Hz in XY axis, 10 cycles each				
Protection class (DIN EN 60529)		IP40				
Material		1.4104 (magn.)				
Weight		approx. 30 g (incl. cable)	approx. 30 g (incl. cable)	approx. 33 g (incl. cable)	approx. 33 g (incl. cable)	approx. 38 g (incl. cable)
Recommended mounting position [6]		3 mm				
Compatibility		Compatible with all capacitive controllers from Micro-Epsilon Sensors can be replaced as required without recalibration (see replacement accuracy)				

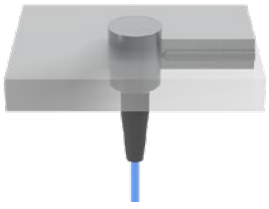
[1] RMS noise referred to the end of the measuring range and to the nominal measuring range using the standard cable CCm (1.4 m); valid for operation with the DT6530: static 2 Hz, dynamic 8.5 kHz
[2] Typical linearity to be added to the controller linearity; valid for standard cable adjustment CCm (1.4 m)
[3] FSO = Full Scale Output | The value corresponds to the slope error that occurs when a sensor is replaced without recalibration
[4] In recommended mounting position; from a temperature of +120 °C: non-linear signal drift
[5] In relation to the nominal measuring range
[6] From the sensor front face (measuring surface), opposite to the measuring direction

Mounting of cylindrical CSH sensors

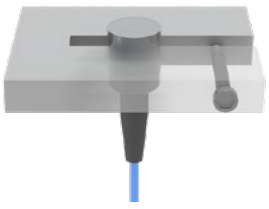
CSH-type cylindrical sensors can be installed either protruding (with the sensor extending beyond the mounting bracket) or flush with the mounting bracket. The sensor is mounted either by point clamping using a plastic set screw or by circumferential clamping using a collet. When using circumferential clamps, please note that the surrounding material may cause heat buildup.

The technical specifications always refer to circumferential clamping at the recommended mounting position.

Recommended mounting of CSH sensors



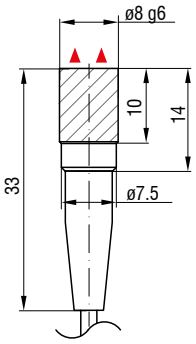
With set screw



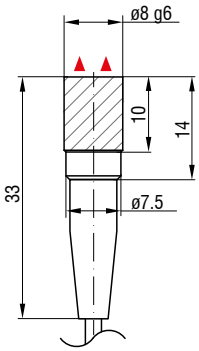
With circumferential clamping

Dimensions
capaNCDT CSH

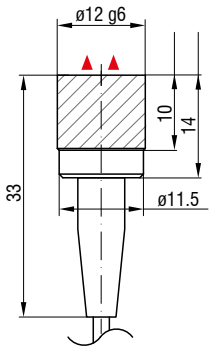
CSH02-CAm1,4



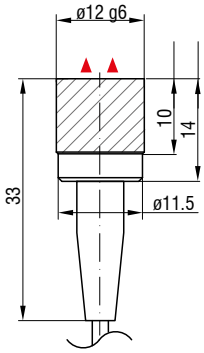
CSH05-CAm1,4



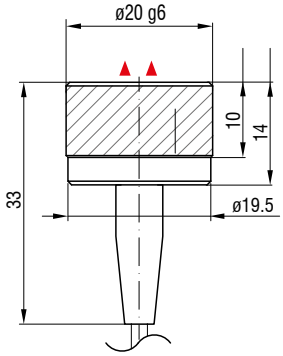
CSH1-CAm1,4



CSH1,2-CAm1,4



CSH2-CAm1,4



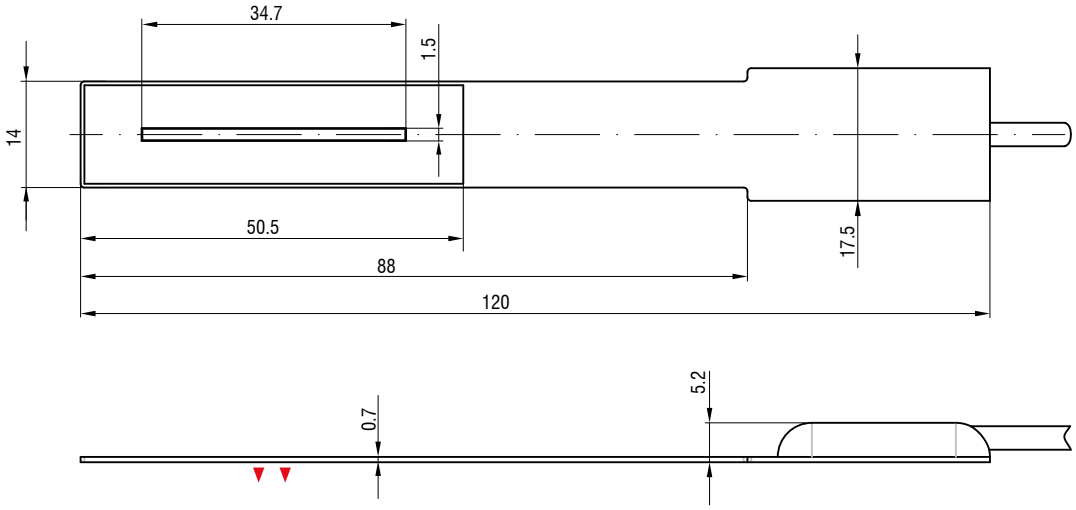
▲ ▲ Measurement direction

(dimensions in mm, not to scale)

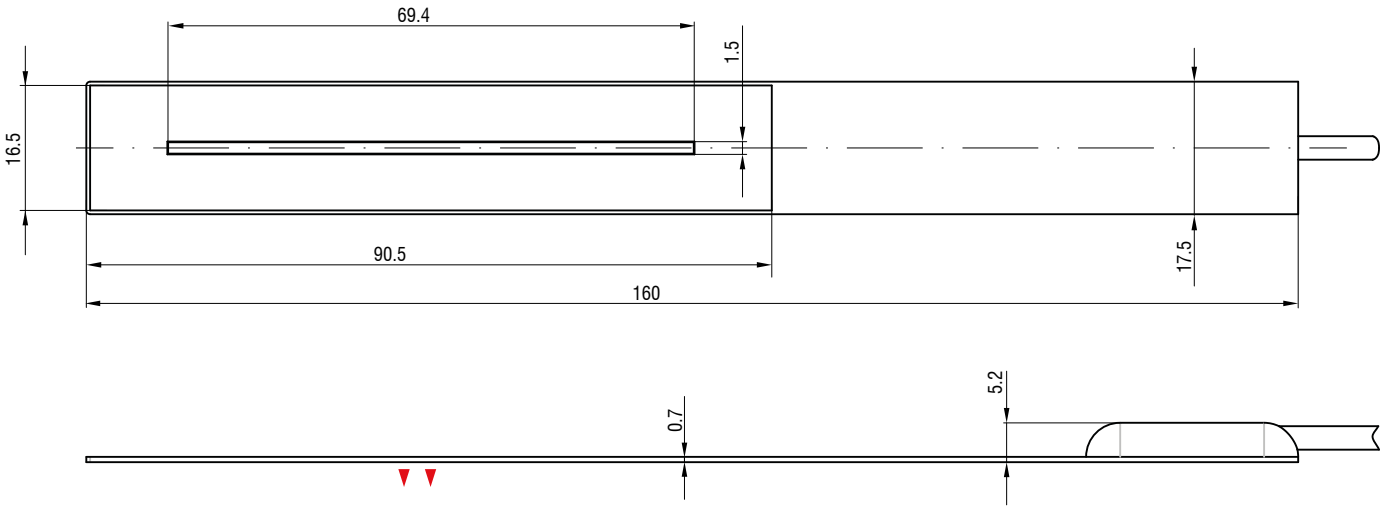
Dimensions
capaNCDT CSF

Flat sensors with integrated sensor cable

CSF2-CRg4.0



CSF4-CRg4.0



CSF6-CRg4.0