



More Precision

capa**NCDT** // Capacitive sensors for displacement, distance & gap



Cylindrical sensors in very compact design (socket)

capaNCDT CSE



Model		CSE01-CAm1,4	CSE025-CAm1,4	CSE05	CSE1	CSE1.25	CSE2	CSE3
Measuring range	Reduced	0.05 mm	0.125 mm	0.25 mm	0.5 mm	0.625 mm	1 mm	1.5 mm
	Nominal	0.1 mm	0.25 mm	0.5 mm	1 mm	1.25 mm	2 mm	3 mm
	Extended	0.15 mm	0.5 mm	1 mm	2 mm	2.05 mm	4 mm	6 mm
Resolution ^[1]	Static	0.03 nm	0.075 nm	0.15 nm	0.3 nm	0.375 nm	0.6 nm	0.9 nm
	Dynamic	2 nm	5 nm	10 nm	20 nm	25 nm	40 nm	60 nm
Linearity ^[2]		< ±0.3 μm	< ±0.375 μm	< ±0.25 μm	< ±2 μm	< ±1.25 μm	< ±2 μm	< ±3 μm
Replaceability ^[3]		< ±0.5 % FSO	< ±0.5 % FSO	< ±0.2 % FSO	< ±0.2 % FSO	< ±0.2 % FSO	< ±0.2 % FSO	< ±0.2 % FSO
Temperature stability		-0.025 μm/K	-0.025 μm/K	-0.02 μm/K	-0.02 μm/K	-0.12 μm/K	-0.16 μm/K	-0.18 μm/K
Recommended target size (flat) ^[4]		Ø 3 mm	Ø 4 mm	Ø 6 mm	Ø 8 mm	Ø 10 mm	Ø 14 mm	Ø 20 mm
Active measuring area		Ø 1.8 mm	Ø 2.9 mm	Ø 3.9 mm	Ø 5.7 mm	Ø 6.5 mm	Ø 8 mm	Ø 9 mm
Connection ^[5]		integrated cable with connector (type B); standard length 1.4 m		Plug connection via triaxial socket (type C)		Plug connection via triaxial socket (type B)		
Mounting		Circumferential clamping						
Temperature range	Storage	-50 ... 200 °C						
	Operation	-50 ... 200 °C						
Shock (DIN EN 60068-2-27)		20 g / 5 ms in XY axis, 1000 shocks each			30g / 5 ms in XY axis, 1000 shocks each			
Vibration (DIN EN 60068-2-6)		10 g / 58 ... 2000 Hz in XY axis, 10 cycles each			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. 26 g (incl. cable)	approx. 27 g (incl. cable)	approx. 2 g	approx. 3.5 g	approx. 8.2 g	approx. 20 g	approx. 50 g
Recommended mounting position ^[6]		2.5 mm	1.2 mm	3 mm	3 mm	3.5 mm	3.5 mm	4.5 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

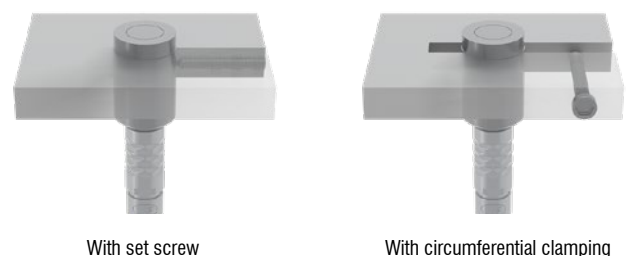
^[5] For suitable sensor cables, please refer to Connections

^[6] From the sensor front face (measuring surface), opposite to the measuring direction

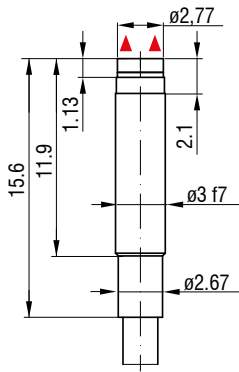
Mounting of the cylindrical CSE sensors

CSE-type cylindrical sensors can be installed either protruding (with the sensor extending beyond the mounting bracket) or flush with the mounting bracket. However, when installing flush with the surface, a clearance must be taken into account. 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.

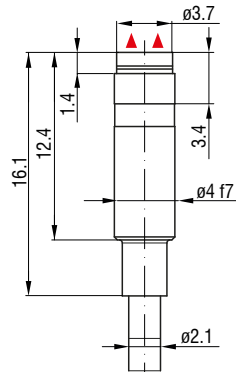
Recommended mounting of CSE sensors



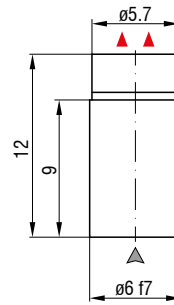
CSE01-CAm1,4



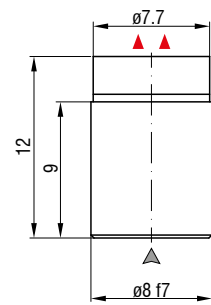
CSE025-CAm1,4



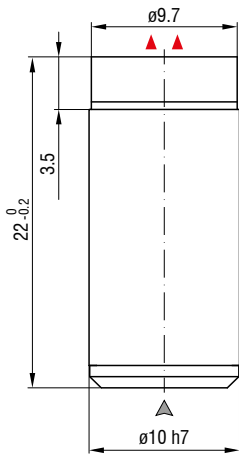
CSE05



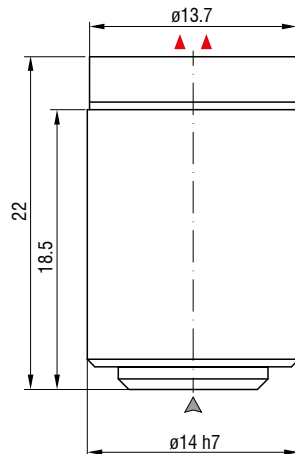
CSE1



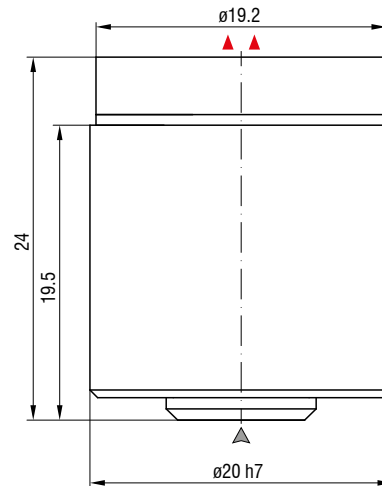
CSE1,25



CSE2



CSE3



▲ ▲ 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
Replaceability ^[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.

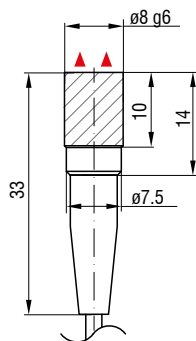
Recommended mounting of CSH sensors



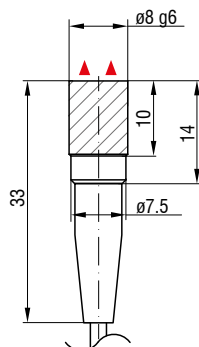
With set screw

With circumferential clamping

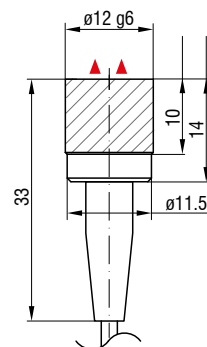
CSH02-CAm1,4



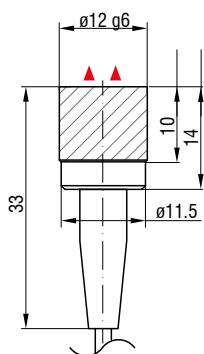
CSH05-CAm1,4



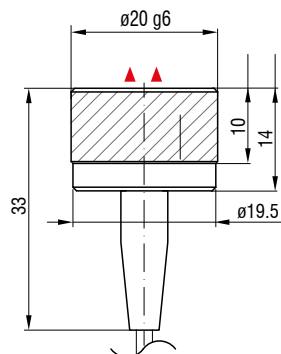
CSH1-CAm1,4



CSH1,2-CAm1,4



CSH2-CAm1,4



▲ ▲ Measurement direction

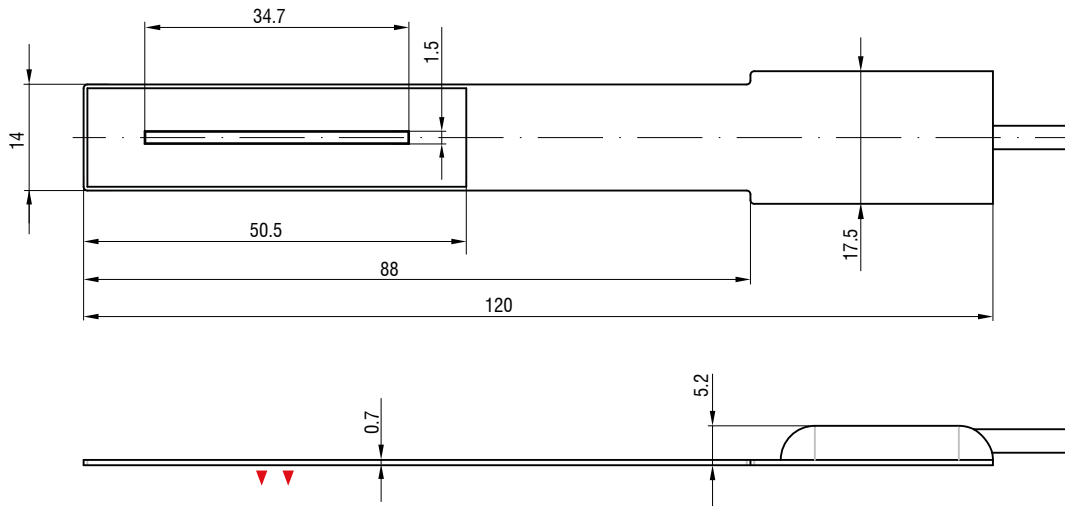
(dimensions in mm, not to scale)

Dimensions

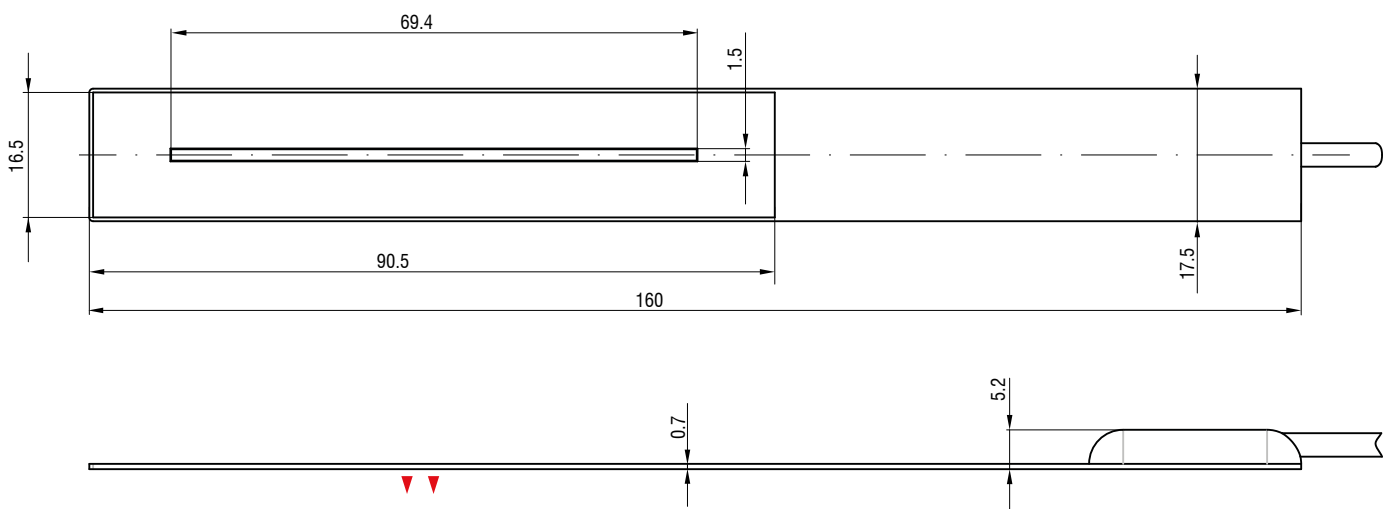
capa^{NC}DT CSF

Flat sensors with integrated sensor cable

CSF2-CRg4.0



CSF4-CRg4.0



CSF6-CRg4.0

