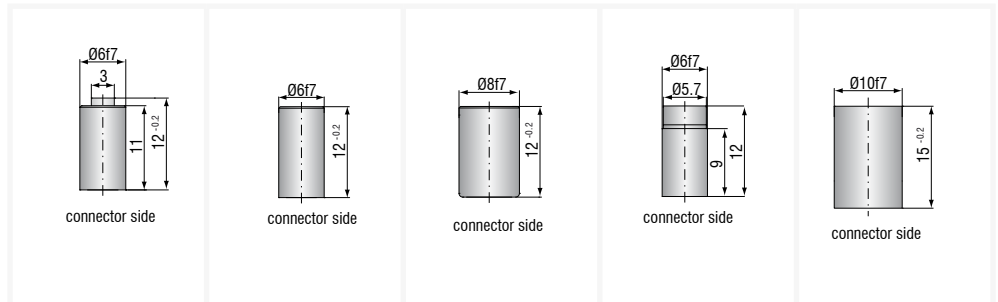




More Precision

capa**N**CDT // Capacitive displacement sensors and systems





Sensor Type	CS005	CS02	CS05	CSE05	CS08	
Article number	6610083	6610051	6610053	6610102	6610080	
Measuring range	reduced	0.025mm	0.1mm	0.25mm	0.25mm	0.4mm
	standard	0.05mm	0.2mm	0.5mm	0.5mm	0.8mm
	extended	0.1mm	0.4mm	1mm	1mm	1.6mm
Linearity ¹⁾		0.15µm	0.4µm	0.15µm	0.15µm	0.4µm
		0.3% FSO	0.2% FSO	0.03% FSO	0.03% FSO	0.2% FSO
Resolution ¹⁾ (static, 2Hz)	0.0375nm	0.15nm	0.375nm	0.375nm	0.6nm	
Resolution ¹⁾ (dynamic, 8.5kHz)	1nm	4nm	10nm	10nm	16nm	
Temperature stability zero ⁴⁾	-60nm/°C	-60nm/°C	-60nm/°C	-60nm/°C	-60nm/°C	
Temperature stability sensitivity	-0.5nm/°C	-2nm/°C	-5nm/°C	-5nm/°C	-8nm/°C	
Temperature range (operation)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	
Temperature range (storage)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	
Air humidity ²⁾	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.	
Sensor dimensions	Ø6 × 12 mm	Ø6 × 12 mm	Ø8 × 12mm	Ø6 × 12mm	Ø10 × 15mm	
Active measuring area	Ø1.3 mm	Ø2.3 mm	Ø3.9mm	Ø3.9 mm	Ø4.9mm	
Guard ring width	0.8mm	1mm	1.4mm	0.8mm	1.6mm	
Minimum target diameter	Ø3mm	Ø5mm	Ø7mm	Ø6mm	Ø9mm	
Weight	2g	2g	4g	2g	7g	
Material (housing)	NiFe ³⁾ (magn.)	NiFe (magn.)	NiFe (magn.)	NiFe (magn.)	NiFe (magn.)	
Connector type	type C	type C	type C	type C	type C	
Mounting	radial clamp	radial clamp	radial clamp	radial clamp	radial clamp	

FSO = Full Scale Output

¹⁾ With reference controller, relates to standard measuring range

²⁾ Non condensing

³⁾ Titanium version available

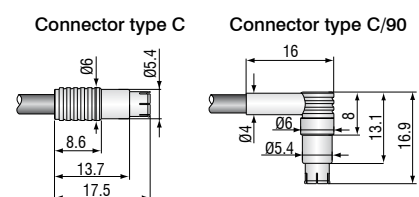
⁴⁾ Sensor mounted in the mid of clamping area

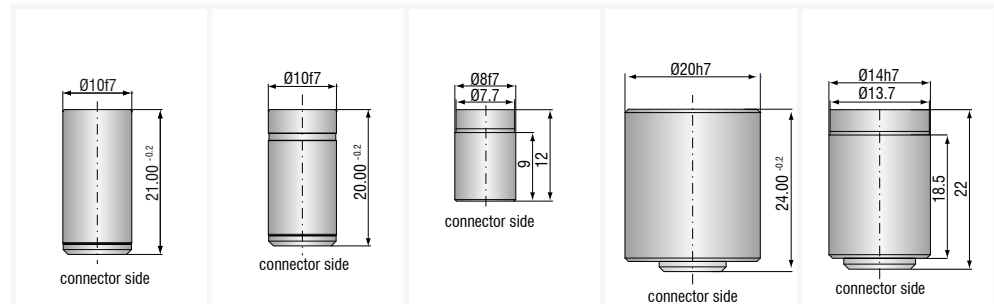
Sensors

The sensors are designed as guard ring capacitors. They are connected to the signal conditioning electronics with a triaxial cable. The sensor cable is connected to the sensor using a high quality connector. All standard sensors can be used within a maximum deviation of 0.3% without recalibration. Individually matched special sensors are produced on request.

Measuring range expansion / reduction

The capaNCDT controller can optionally be configured so that the standard measuring ranges of the sensors are reduced by half or expanded by the factor of 2. The reduction increases the accuracy while the measuring range expansion reduces the accuracy.





Sensor Type	CS1	CS1HP	CSE1	CS2	CSE2	
Article number	6610054	6610074	6610103	6610052	6610104	
Measuring range	reduced	0.5mm	0.5mm	0.5mm	1mm	1mm
	standard	1mm	1mm	1mm	2mm	2mm
	extended	2mm	2mm	2mm	4mm	4mm
Linearity ¹⁾	1.5µm	1.5µm	2µm	1µm	2.6µm	
	0.15% FSO	0.15% FSO	0.2% FSO	0.05% FSO	0.13% FSO	
Resolution ¹⁾ (static, 2Hz)	0.75nm	0.75nm	0.75nm	1.5nm	1.5nm	
Resolution ¹⁾ (dynamic, 8.5kHz)	20nm	20nm	20nm	40nm	40nm	
Temperature stability zero ⁴⁾	-170nm/°C	-60nm/°C	-60nm/°C	-170nm/°C	-170nm/°C	
Temperature stability sensitivity	-32nm/°C	-10nm/°C	-10nm/°C	-64nm/°C	-64nm/°C	
Temperature range (operation)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	
Temperature range (storage)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	
Air humidity ²⁾	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.	
Sensor dimensions	Ø10 × 21mm	Ø10 × 20mm	Ø8 × 12mm	Ø20 × 24mm	Ø14 × 22mm	
Active measuring area	Ø5.7mm	Ø5.7mm	Ø5.7mm	Ø7.9mm	Ø8.0mm	
Guard ring width	1.5mm	1.5mm	0.9mm	4.4mm	2.7mm	
Minimum target diameter	Ø9mm	Ø9mm	Ø8mm	Ø17mm	Ø14mm	
Weight	8g	8g	3.5g	50g	20g	
Material (housing)	1.4404 ³⁾ (non-magn.)	NiFe (magn.)	NiFe (magn.)	1.4404 ³⁾ (non-magn.)	1.4404 (non-magn.)	
Connector type	type B	type B	type C	type B	type B	
Mounting	radial clamp	radial clamp	radial clamp	radial clamp	radial clamp	

FSO = Full Scale Output

¹⁾ With reference controller, relates to standard measuring range

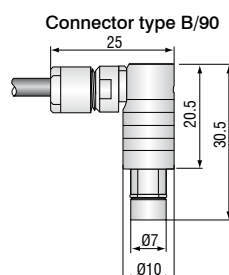
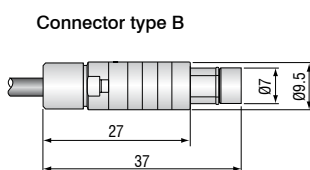
²⁾ Non condensing

³⁾ Titanium version available

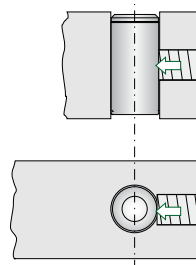
⁴⁾ Sensor mounted in the mid of clamping area

Mounting cylindrical sensors

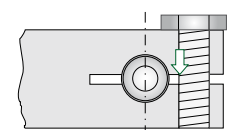
All sensors can be installed as either freestanding or flush mounted. Fastening is carried out using a clamp or collet.

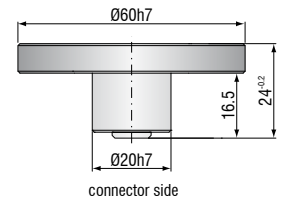
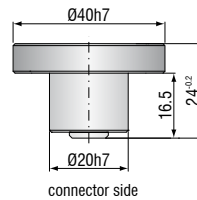
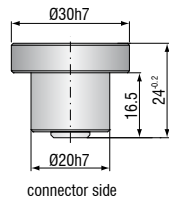


Mounting with grub screw (plastic)



Mounting with collet





Sensor Type	CS3	CS5	CS10
Article number	6610055	6610056	6610057
Measuring range	reduced	1.5mm	2.5mm
	standard	3mm	5mm
	extended	6mm	10mm
Linearity ¹⁾	0.9µm	2.5µm	15µm
	0.03% FSO	0.05% FSO	0.15% FSO
Resolution ¹⁾ (static, 2Hz)	2.25nm	3.75nm	7.5nm
Resolution ¹⁾ (dynamic, 8.5kHz)	60nm	100nm	200nm
Temperature stability zero ⁴⁾	-170nm/°C	-170nm/°C	-170nm/°C
Temperature stability sensitivity	-96nm/°C	-160nm/°C	-320nm/°C
Temperature range (operation)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C
Temperature range (storage)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C
Air humidity ²⁾	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.
Sensor dimensions	Ø30 × 24mm	Ø40 × 24mm	Ø60 × 24mm
Active measuring area	Ø9.8mm	Ø12.6mm	Ø17.8mm
Guard ring width	8mm	11.6mm	19mm
Minimum target diameter	Ø27mm	Ø37mm	Ø57mm
Weight	70g	95g	180g
Material (housing)	1.4404 (non-magn.)	1.4404 ³⁾ (non-magn.)	1.4404 ³⁾ (non-magn.)
Connector type	type B	type B	type B
Mounting	radial clamp	radial clamp	radial clamp

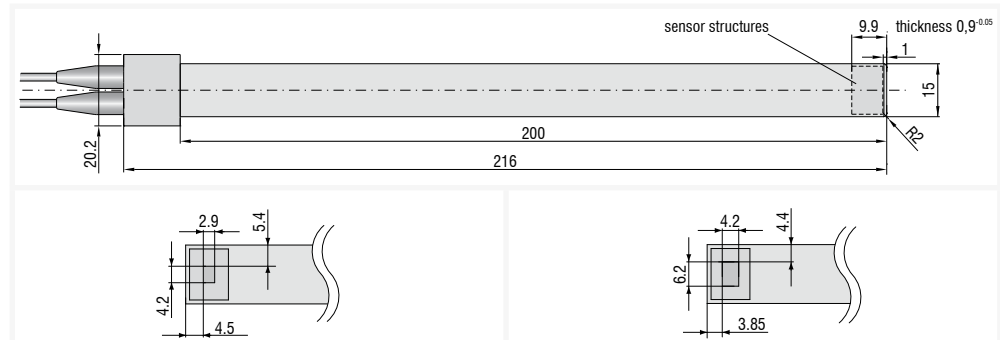
FSO = Full Scale Output

¹⁾ With reference controller, relates to standard measuring range

²⁾ Non condensing

³⁾ Titanium version available

⁴⁾ Sensor mounted in the mid of clamping area



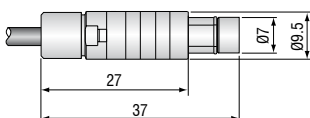
Sensor Type	CSG0,50-CAm2,0	CSG1,00-CAm2,0
Article number	6610112	6610111
Measuring range	standard 0.5mm	1mm
Gap width ¹⁾	0.9 - 1.9mm	0.9 - 2.9mm
Linearity ²⁾	0.5µm	1µm
Resolution ²⁾ (static, 2Hz)	4nm	8nm
Resolution ²⁾ (dynamic, 8,5kHz)	90nm	180nm
Temperature stability zero	-50nm/°C	-50nm/°C
Temperature stability sensitivity	-20nm/°C	-40nm/°C
Temperature range (operation)	-50...+100°C	-50...+100°C
Temperature range (storage)	-50...+100°C	-50...+100°C
Air humidity ³⁾	0...95%	0...95%
Sensor dimensions	200 x 15 x 0.9mm	200 x 15 x 0.9mm
Active measuring area	3 x 4.3mm	4.2 x 5.1mm
Guard ring width	2.7mm	2.2mm
Minimum target diameter	approx. 7 x 8mm	approx. 8 x 9mm
Weight	77g	77g
Material (housing)	1.4301	1.4301
Material (sensor)	FR4	FR4
Integrated cable	2m	2m

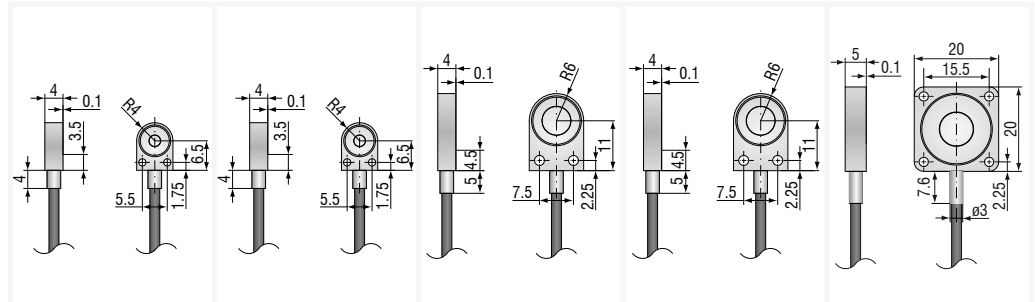
¹⁾ Sensor width + measuring range on both sides

²⁾ With controller DT6530

³⁾ Non condensing

Connector type B





Sensor Type	CSH02FL-CRm1,4	CSH05FL-CRm1,4	CSH1FL-CRm1,4	CSH1,2FL-CRm1,4	CSH2FL-CRm1,4	
Article number	6610075	6610085	6610072	6610077	6610094	
Measuring range	reduced	0.1mm	0.25mm	0.5mm	0.6mm	1mm
	standard	0.2mm	0.5mm	1mm	1.2mm	2mm
	extended	0.4mm	1mm	2mm	2.4mm	4mm
Linearity ¹⁾	0.05µm	0.09µm	0.2µm	0.84µm	0.32µm	
	0.025% FSO	0.018% FSO	0.02% FSO	0.07% FSO	0.016% FSO	
Resolution ¹⁾ (static, 2Hz)	0.15nm	0.38nm	0.75nm	0.9nm	1.5nm	
Resolution ¹⁾ (dynamic, 8.5kHz)	4nm	10nm	20nm	24nm	40nm	
Temperature stability zero ⁴⁾	-37.6 or 2.4nm/°C	-37.6 or 2.4nm/°C	-37.6 or 2.4nm/°C	-37.6 or 2.4nm/°C	-47 or 4nm/°C	
Temperature stability sensitivity	-2.4nm/°C	-6nm/°C	-12nm/°C	-14.4nm/°C	-24nm/°C	
Temperature range (operation)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	
Temperature range (storage)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	
Air humidity ²⁾	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.	0 ... 95% r.H.	
Sensor dimensions ³⁾	10.5 × 8 × 4mm	10.5 × 8 × 4mm	17 × 12 × 4mm	17 × 12 × 4mm	20 × 20 × 5mm	
Active measuring area	Ø2.6mm	Ø4.1mm	Ø5.7mm	Ø6.3mm	Ø8.1mm	
Guard ring width	Ø1.9mm	Ø1.2mm	Ø2.4mm	Ø2.1mm	Ø4.4mm	
Minimum target diameter	Ø7mm	Ø7mm	Ø11mm	Ø11mm	Ø17mm	
Weight (incl. cable and connector)	28g	28g	30g	30g	36g	
Material (housing)	1.4104 (magn.)	1.4104 (magn.)	1.4104 (magn.)	1.4104 (magn.)	1.4104 (magn.)	
Integrated cable	Ø2.1mm×1.4m radial	Ø2.1mm×1.4m radial	Ø2.1mm×1.4m radial	Ø2.1mm×1.4m radial	Ø2.1mm×1.4m radial	
Mounting	2x thread M2	2x thread M2	2x screw M2 DIN 84A	2x screw M2 DIN 84A	4x screw M2 DIN 84A	

FSO = Full Scale Output CSH Sensors are matched to controller with standard cable length

¹⁾ With reference controller, relates to standard measuring range

²⁾ Non condensing

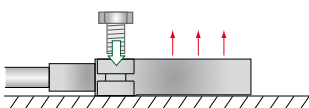
³⁾ Without cable, bend protection and crimp

⁴⁾ In the case of a sensor mounting on the top or underside

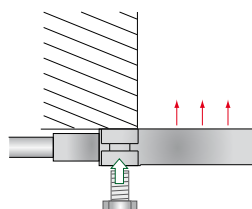
Mounting flat sensors

The flat sensors are attached using a threaded bore for M2 (for the sensors CSH02FL and CSH05FL) or using a through-hole for M2 bolts. The sensors can be bolted from above or below.

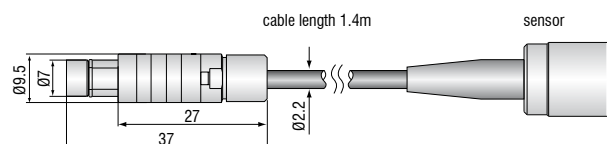
Screw connection from above on the underside

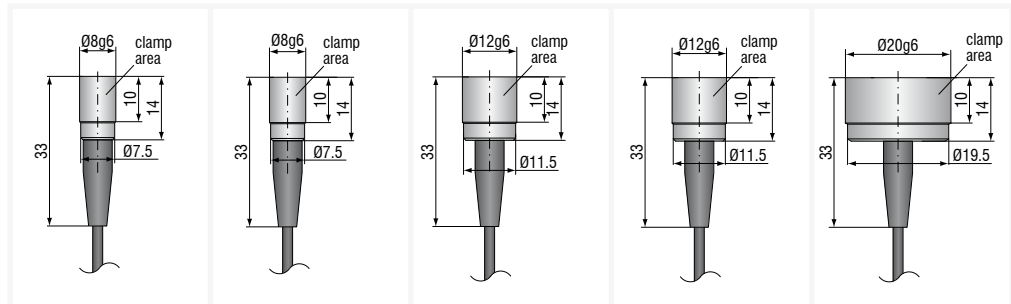


Screw connection from below on the sensor top side



Connector for integrated cables





Sensor Type	CSH02-CAM1,4	CSH05-CAM1,4	CSH1-CAM1,4	CSH1,2-CAM1,4	CSH2-CAM1,4
Article number	6610086	6610087	6610088	6610089	6610107
Measuring range	reduced	0.1mm	0.25mm	0.5mm	0.6mm
	standard	0.2mm	0.5mm	1mm	1.2mm
	extended	0.4mm	1mm	2mm	2.4mm
Linearity ¹⁾	0.054µm	0.13µm	0.13µm	0.84µm	0.5µm
	0.027% FSO	0.026% FSO	0.013% FSO	0.07% FSO	0.025% FSO
Resolution ¹⁾ (static, 2Hz)	0.15nm	0.38nm	0.75nm	0.9nm	1.5nm
Resolution ¹⁾ (dynamic, 8.5kHz)	4nm	10nm	20nm	24nm	40nm
Temperature stability zero ⁴⁾	-19nm/°C	-19nm/°C	-19nm/°C	-19nm/°C	-19 nm/°C
Temperature stability sensitivity	-2.4nm/°C	-6nm/°C	-12nm/°C	-14.4nm/°C	-24nm/°C
Temperature range (operation)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C
Temperature range (storage)	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C	-50 ... +200°C
Air humidity ²⁾	0 ... 95%r.H.	0 ... 95%r.H.	0 ... 95%r.H.	0 ... 95%r.H.	0 ... 95%r.H.
Sensor dimensions ³⁾	Ø8 × 14mm	Ø8 × 14mm	Ø12 × 14mm	Ø12 × 14mm	Ø20 × 14mm
Active measuring area	Ø2.6mm	Ø4.1mm	Ø5.7mm	Ø6.3mm	Ø8.1mm
Guard ring width	1.9mm	1.2mm	2.4mm	2.1mm	4.4mm
Minimum target diameter	Ø7mm	Ø7mm	Ø11mm	Ø11mm	Ø17mm
Weight (incl. cable and connector)	30g	30g	33g	33g	38g
Material (housing)	1.4104 (magn.)	1.4104 (magn.)	1.4104 (magn.)	1.4104 (magn.)	1.4104 (magn.)
Integrated cable	Ø2.1mm×1.4m axial	Ø2.1mm×1.4m axial	Ø2.1mm×1.4m axial	Ø2.1mm×1.4m axial	Ø2.1mm×1.4m axial
Mounting	radial clamp	radial clamp	radial clamp	radial clamp	radial clamp

FSO = Full Scale Output CSH Sensors are matched to controller with standard cable length

¹⁾ With reference controller, relates to standard measuring range

²⁾ Non condensing

³⁾ Without cable, bend protection and crimp

⁴⁾ In the case of a sensor mounting 2mm behind front surface

Mounting cylindrical sensors

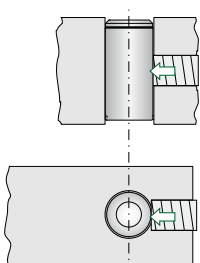
All sensors can be installed as both freestanding and flush units.

Fastening is carried out by using a clamp or collet.

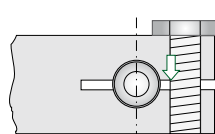
Important!

All Micro-Epsilon sensors are short circuit proof. Unlike other systems the pre-amplifier will not get damaged, if the front face of the sensor gets shorted by touching the conductive target.

Mounting with grub screw (plastic)



Mounting with collet



High performance sensors made by Micro-Epsilon



Sensors and systems for displacement and position



Sensors and measurement devices for non-contact temperature measurement



2D/3D profile sensors (laser scanner)



Optical micrometers, fibre optic sensors and fibre optics



Colour recognition sensors, LED analyzers and colour online spectrometer



Measurement and inspection systems

