

- vibration measurement and analysis
- industrial shock and acceleration measurement
- vibration of building
- seismic measurement
- machine condition monitoring
- vibration machines control



Application:

The piezoelectric vibration sensors are determined for general use in systems for vibration measurements and machine condition monitoring. It features low sensibility to temperature and magnetic field fluctuations, low transverse sensitivity, high resonance frequency and high stability. The internal system is designed as a shear type with Disc Shear® construction (patent pending). It measures the acceleration in the sensor's axis direction.

Purpose:

The external casing of the sensors is made of austenitic stainless steel. A coaxial connector with the 10-32 UNF thread is used for the outlet. The active element of the sensor is a piezoelectric disc of annulose shape which is shear stressed. Compensation of primary pyroelectric charge which is generated in the piezoelectric element during temperature changes, is guaranteed through a special system of electrodes and their suitable interconnection. Seismic mass and dimensions of the piezoelectric element are selected in order to achieve good sensibility at high resonance frequency and sufficient shock resistivity. The sensor is attached to the measured object with a metric screw (UN threads on request). Typical assembly is shown on figure 2.

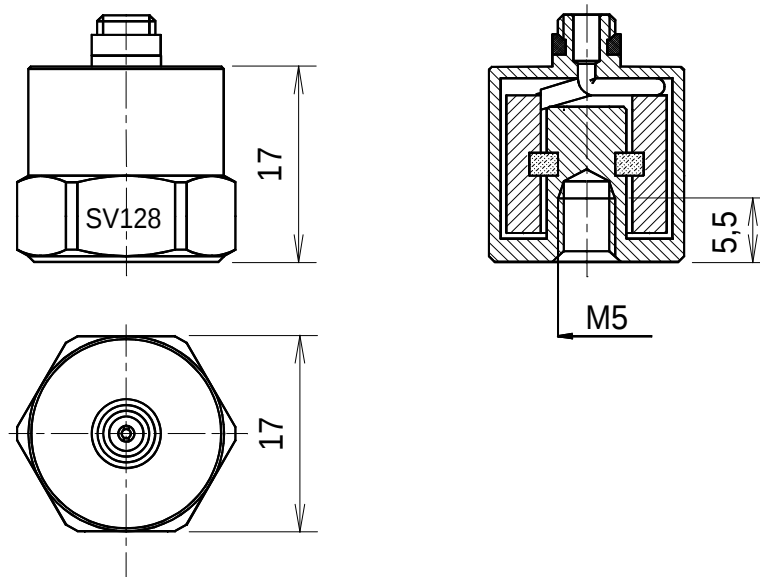


Fig. 2 Typical design of the accelerometer SV series

Assembly and application instructions

The SV type sensors are determined for permanent or temporary assembly on measured objects. Use a spanner to attach the sensor with an metric screw. Select the place of vibration measurement to avoid influence of a strong magnetic field or rapid temperature variations. The dynamic deformation of the base should be as low as possible. Apply silicone grease on contact area before the sensor is attached onto the measured surface. The grease will guarantee undisturbed transmission of vibrations into the sensor even at high amplitudes and high frequencies. Only viscous forces are able to transmit action of the sensor's inertial mass force. We recommend to use a measuring tip or a magnetic clamp for short-time and informative measurements only.

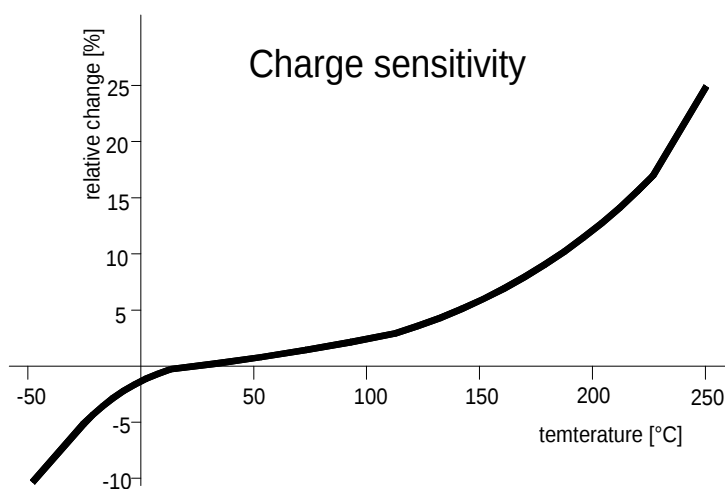


Fig. 3 Temperature dependance of the charge sensitivity of sensors

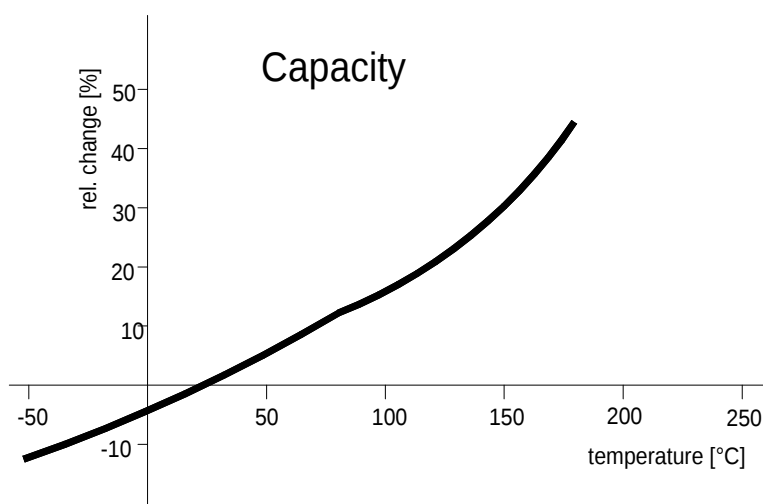
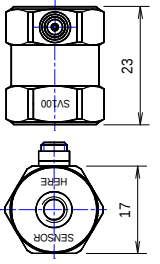
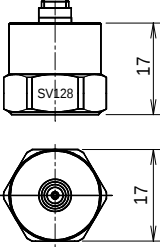
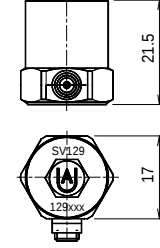
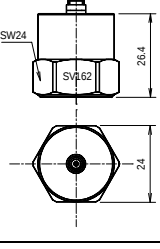


Fig. 4 Temperature dependance of the charge capacity of sensors

Parameter ¹	unit	SV 100	SV 128	SV 129	SV 162
accelerometer type		piezoelectric	piezoelectric	piezoelectric	piezoelectric
output		charge/voltage	charge/voltage	charge/voltage	charge/voltage
design		Disc Shear ®	Disc Shear ®	Disc Shear ®	Disc Shear ®
charge sensitivity	pC/ms ⁻²	3,1	3,1	3,1	10
capability	pF	400	400	400	400
mass	g	35	24	32	83
transverse sensitivity	%	2	2	2	2
resonance frequency (mounted 180g)	kHz	22	22	22	16
frequency range		-	-	-	-
max. shock acceleration	kms ⁻²	10	10	10	10
min. leak resistance (at room temp.)	GQ	10	10	10	10
magnetic sensitivity	ms ⁻² /T	2	2	2	2
temperature transient sensitivity ²	ms ⁻² /K	0,2	0,2	0,2	0,2
temperature range	°C	-40 ÷ 260	-40 ÷ 260	-40 ÷ 260	-40 ÷ 260
material	-	stainless steel	stainless steel	stainless steel	stainless steel
sensing element	-	piezoelectric	piezoelectric	piezoelectric	piezoelectric
seismic mass	g	10	10	10	30
centre of seismic mass gravity ³	mm	14	8,5	14	13,5
electrical connector	-	coaxial 10-32 UNF	coaxial 10-32 UNF	coaxial 10-32 UNF	coaxial 10-32 UNF
outlet	-	radial	axial	radial	axial
mounting thread / length	-	(2x) M5 hl. 5,5	M5 hl. 5,5	M5 hl. 5,5	M5 hl. 5,5
mounting stud	-	(2x) M5 x 10 mm, ocel	M5 x 10 mm, ocel	M5 x 10 mm, ocel	M5 x 10 mm, ocel
Dimensions:					

1. in accordance with ANSI S2.11-1969
2. LFF = 3 Hz
3. from mounting surface at central axis

KAT01SV/13en