

Accelerometer

Type M122A...

Uniaxial, Resistive

Type M122A... was developed for the universal use at crash test applications, either for in-dummy testing or for operations at light structures inside the car.

- Measuring ranges 750 ... 2 000 g
- Low transverse sensitivity
- Small linearity
- Frequency response 0 ... 3 000 Hz ($\pm 5\%$)
- High shock resistance
- Easy to repair



Description

Type M122A... is based on a silicon sensor element with gas damping and integrated overload stops. Type M122AM... is realized as a passive full bridge circuit, Type M122AC... is additionally equipped with an external electronic feature. This feature covers an active temperature compensation and a stabilization of the bridge voltage, which tolerates oscillations of the supply voltage in the range of 9 ... 12 V without affecting the sensitivity of the sensor.

In addition, the source resistance is amplified by a precision amplifier. All versions are available with ID modules, either a UPS module (Universal Parametric Memory) or a Dallas module can be chosen. These modules are integrated in an external housing in the wiring or in the connector. Customized cable lengths and connectors with specific pin assignments are optionally deliverable.

Technical Data

M122A...		M1C6	M1C7	C1C5
Measuring range	g	$\pm 1\ 000$	$\pm 2\ 000$	± 750
Sensitivity at 80 Hz ¹⁾				
typ.	mV/g	0,18	0,18	2,8
min./max.	mV/g	0,16/0,22	0,16/0,22	2,4/3,2
Supply voltage	VDC	2 ... 15	2 ... 15	9 ... 12
Zero measurement output (ZMO) ²⁾				
(typ./max.)	mV	$\pm 10/\pm 20$	$\pm 10/\pm 20$	$\pm 40/\pm 60$
Temperature drift, ZMO (max.)	mV	± 3	± 3	± 30
Temperature drift, sensitivity ³⁾ (max.)	%/°C	-0,18	-0,18	-0,03
Source resistance (SIG+ to SIG-)	kΩ	1,7	1,7	1

Frequency response, $\pm 5\%$ DC up to (min.)	Hz	3 000
Current consumption	mA	6
Amplitude non-linearity 0 ... 200 g ⁴⁾ (typ./max.)	%	$\pm 0,1/\pm 0,3$
Transverse sensitivity (typ./max.)	%	1/1,5
Bridge resistance	kΩ	1,7
Insulation resistance ⁵⁾ (min.)	MΩ	90
Shock (>2 ms pulse)	g	8 000
Warm up period (max.)	s	120
Operating temperature range	°C	-20 ... 60
Storage temperature range	°C	-30 ... 90
Damping ratio, typ.		0,35
min./max.		0,3 ... 0,5
Housing material		Alu alloy
Mounting		screwed
Mounting screws, 2 units (metric)		M2x10
Mounting torque	N·m	0,25
Weight (only sensor)	grams	3
Dimensions	mm	13x17,5x7
Dimensions external electronics	mm	39x15x9

All specifications are typical at 25 °C and rated at 10 V sensor supply voltage, unless otherwise specified.

¹⁾ Sensitivity at 80 Hz, at 50 m/s² of sine amplitude

²⁾ ZMO values are only valid when accelerometer is mounted

³⁾ Range of 0 ... 40 °C or 0 ... 80 °C Type M122AC1C5...

⁴⁾ Values calculated with pendulum calibration up to 200 g

⁵⁾ All wires to screen (GND), measured with 10 V (DC)

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Application

The accelerometer is fixed by two screws at the measuring location. The damped sensor element disables parasitic frequencies as well as the natural frequency of the system itself. The accelerometer covers a large frequency response up to 3 kHz and a small phase shift below 2° at 1 kHz. The large measurement range and the good non-linearity characteristics as well as the high shock resistance enable its use for many measuring technique applications. Another feature of this type series is the repairable cable at the accelerometer.

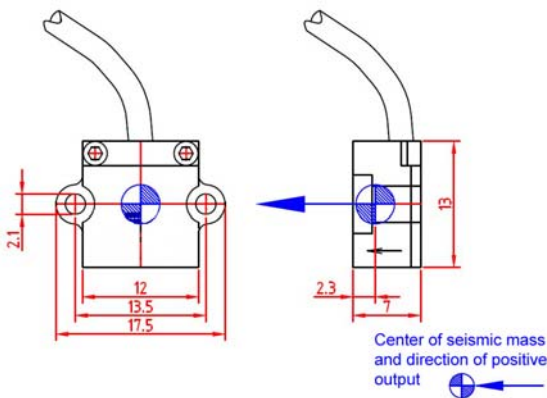
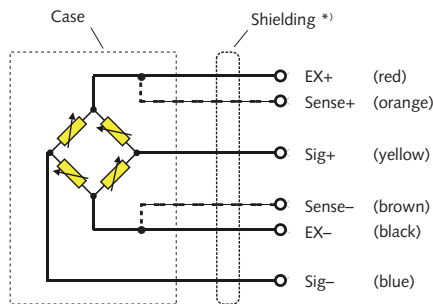
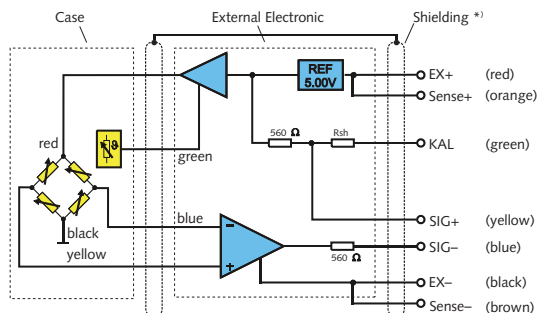


Fig. 1: Dimensions and directions of action



*) Shielding is connected to plug housing

Fig. 2: Schematic diagram "M" version



*) Shielding is connected to plug housing

Fig. 3: Schematic diagram "C" version

Included Accessories

- Mounting screws, 2 units

Type No.
on request

Optional Accessories

- Pendulum calibration adapter
- Sine calibration adapter
- Add. label with serial number, plug side
- ID module
- Add. label with ID number at sensor
- Add. shunt

Type No.
on request
on request

M015KABID
on request
M015KABID
on request

Ordering Key

Type M122A

Design	
Without amplifier, mr 1 000 g	M1C6
Without amplifier, mr 2 000 g	M1C7
With amplifier, mr 750 g	C1C5

Cable Length before Electronics	
0 cm	00
<10 cm (digit x 1 cm)	C#
10 cm ... 9,9 m (digit x 10 cm)	##
10 m ... 90 m (digit x 10 m)	D#

Additional Electronics	
Sensor detail, as per type declaration acceleration TP-650-1	#

Cable Length after Electronics	
0 cm	00
<10 cm (digit x 1 cm)	C#
10 cm ... 9,9 m (digit x 10 cm)	##
10 m ... 90 m (digit x 10 m)	D#

Connector	
Conn. type, as per TP-600	#-
Conn. assignment, as per TP-600	-#

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This information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes. Liability for consequential damage resulting from the use of Kistler products is excluded.

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