

Miniature Accelerometer

Uniaxial, Resistive

Type M106A...

The uniaxial accelerometer Type M106A... was developed for universal use in crash test applications, both for in-dummy testing and for operations at light structures inside the car.

- Measuring range 2 000 g
- Frequency response 0 ... 4 000 Hz ($\pm 5\%$)
- Transverse sensitivity typ. 1 %
- Low weight
- High shock resistance



Description

The uniaxial accelerometer Type M106A... is based on a specific sensor element, manufactured in silicon technology with an air damping and integrated overload stops. The sensor is a resistive full bridge and supplies 360 mV at 2 000 g measuring range. All sensors are available with ID module, either a UPS module (Universal Parameter Memory) or a Dallas module can be chosen for this functionality. 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.

Application

The sensor scopes a large measuring range with good linearity characteristics. Furthermore it has a large frequency response and absorbs high shock overloads. These characteristics make it easy to handle the sensor with various applications and enable its universal use. Different dampings for different applications are available:

Type M106A...	Damping	Frequency Response, $\pm 5\%$	Typical Application
M0C7	0,6 ... 0,8 (black)	3 000 Hz	Impactor applications (FMH, ...)
M1C7	0,3 ... 0,5 (blue)	4 000 Hz	Standard applications
M1L7		2 500 Hz	
M2C7	0,01 ... 0,08 (red)	2 500 Hz	Phase relevant applications
M2L7			

Technical Data

Type M106A...		MxL7	MxC7
Measuring range	g	$\pm 2\ 000$	$\pm 2\ 000$
Sensitivity at 80 Hz ¹⁾			
typ.	mV/g	0,18	0,18
min./max.	mV/g	0,15/0,19	0,14/0,22
Supply voltage	VDC	2 ... 12	2 ... 15
Zero measurand output ²⁾ (typ./max.)	mV	$\pm 20/\pm 50$	$\pm 10/\pm 20$
Temperature drift, ZMO (max.)	mV	± 10	± 3
Temperature drift, sens. ³⁾ (max.)	%/°C	-0,25	-0,18
Source resistance (SIG+ to SIG-)	k Ω	1,7	1,7
Current consumption	mA	6	6
Ampl. non-linearity 0 ... 200 g ⁴⁾ (typ./max.)	%	$\pm 0,5/\pm 1$	$\pm 0,1/\pm 0,3$
Transverse sensitivity ⁵⁾ (typ./max.)	%	2/3	1/1,5
Bridge resistance	k Ω	1,7	1,7
Insulation resistance ⁶⁾ (min.)	M Ω	90	90
Shock (>2 ms Puls)	g	5 000	8 000
Max. sine load (<2 kHz, peak to peak)	g	100	200
Sine/pendulum deviation ⁷⁾	%	-	1,5
Warm-up period (max.)	s	120	120
Operating temperature range	°C	-10 ... 70	-20 ... 80
Storage temperature range	°C	-30 ... 90	-30 ... 90

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Technical Data (Continuation)

Damping ratio (typ.)		
M0C7 (black)		0,7
M1C7 (blue)		0,35
M1L7 (blue)		
M2C7 (red)		0,05
M2L7 (red)		
Housing material		Al alloy
Mounting		Adhesion
Weight (only sensor)	grams	0,85
Dimensions	mm	14,7x5x4,75

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

- 1) Sensitivity at 80 Hz, at 50 m/s² sine amplitude
- 2) ZMO values are only valid when accelerometer is mounted
- 3) Range of 0 ... 50 °C
- 4) Values calculated with pendulum calibration up to 200 g
- 5) Accelerometers with selected transverse sensitivity ≤1 % are extra charged
- 6) All wires to screen (GND), measured with 10 V (DC)
- 7) Calibration: sine and pendulum, Type M106AMxL7... only sine. Sensitivity deviation between sine and pendulum calibration

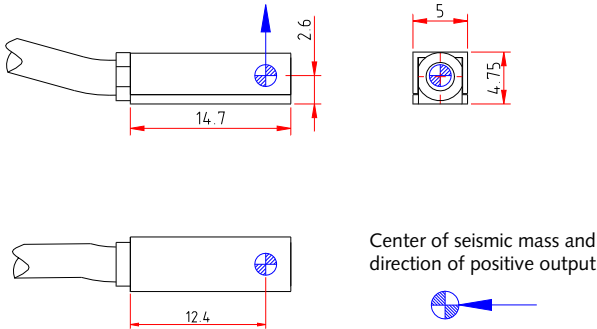
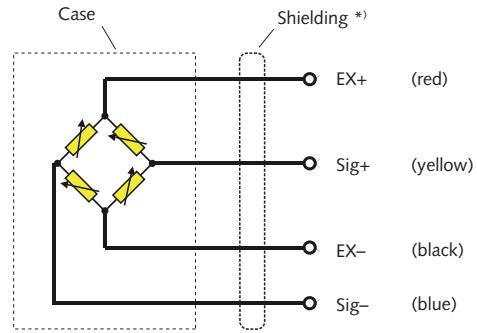


Fig. 1: Dimensions and direction of action



*) Shielding is connected to plug housing

Fig. 2: Schematic diagram

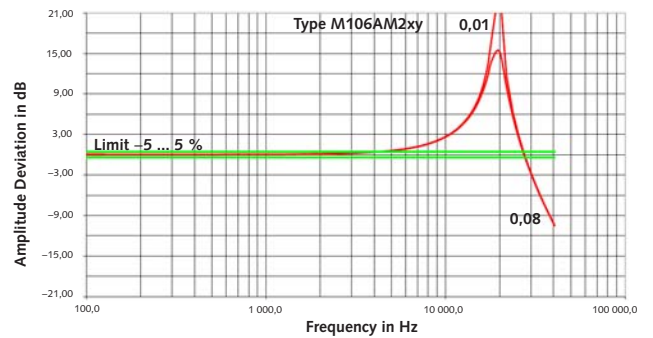


Fig. 3: Damping curve Type M106AM2xy

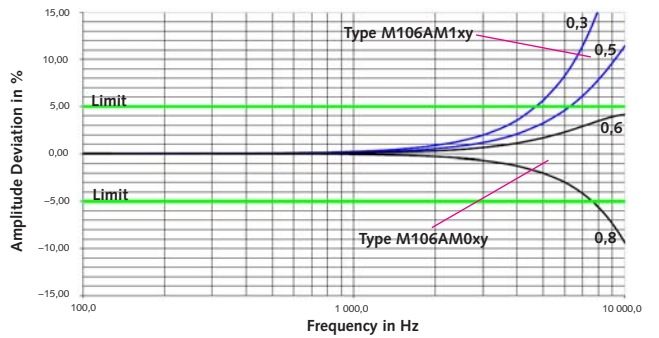


Fig. 4: Damping curve Type M106AM1xy

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Accessories Included

- None

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 M106A

Measuring Range – Damping Ratio

2 000 – 0,35 (SP, blue)	M1L7
2 000 – 0,05 (SP, red)	M2L7
2 000 – 0,7 (black)	M0C7
2 000 – 0,35 (blue)	M1C7
2 000 – 0,05 (red)	M2C7

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	#
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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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