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Miniature Accelerometer

Type M301A...

Triaxial, Resistive

This miniature accelerometer Type M301A... fulfills the general operation requirements of crash measuring technique.

- Measuring range 1 000 g
- Low transverse sensitivity
- Small linearity error
- Frequency response 0 ... 2 500 Hz (±5 %)
- Weight 8 grams (with part of cable)
- Typical damping 0,35

Description

The accelerometer Type M301A... is based on elements which are made by silicon technique. The natural oscillation of the sensor is disabled by gas damping of the chip. The attenuation and the integrated overload stop units cause the robustness of the sensor. Because of the sensor's electrical construction it is possible to sense the supply lines to the sensor element.

Application

The sensor is universally applicable because of its small dimensions and its light mass. The mounting of the housing is realized by sticking it together with the measurement location. The sensor is mainly used at measurement locations which are exposed to possible destruction. Because of its robust body, it is also possible to do the mounting with X-60 or aluminium band and single-faced adhesive tape. ID module is optionally available. 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.

Technical Data

Measuring range	g	±1 000
Sensitivity at 80 Hz[1] typ.	mV/g	0,18
min./max.	mV/g	0,15 ... 0,22
Supply voltage	VDC	5 ... 12
Zero measurand output typ./max.	mV	±15/±30
Temperature drift, ZMO (max.), in temp. range 0 ... 50 °C	mV	±4,8
Temperature drift, sensitivity (max.), in temp. range 0 ... 50 °C	%/°C	–0,25
Source resistance (SIG+ to SIG–)	kΩ	1,7
Frequency response, ±5 % DC up to (min.)	Hz	2 500
Current consumption	mA/channel	6
Damping ratio[2] typ.		0,35
min./max.		0,3/0,5
Amplitude non-linearity 0 ... 200 g[3] (typ./max.)	%	±0,5/±1
Transverse sensitivity (typ./max.)	%	2/3
Bridge resistance (typ.)	kΩ	1,7
Insulation resistance[4] (min.)	MΩ	90
Shock (>2 ms pulse)	g	5 000
Max. sine load (<2 kHz)	g	100
Warm-up period (max.)	s	120
Operation temperature range	°C	–20 ... 70
Storage temperature range	°C	–30 ... 90
Mounting		adhesion
ID module (in cable rsp. plug housing)	unit	1
Housing material		Alu alloy
Weight	grams	8
Dimensions	mm	15x15x19,80
Calibration method[3]		impact

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) Damping changes in temperature range of –10 ... 80 °C by <10 % relating to 25 °C
3) Values calculated with pendulum calibration at 30 g, 115 g, 200 g
4) All wires to screen (GND), measured with 10 V (DC)

M301A_000-750e-12.11

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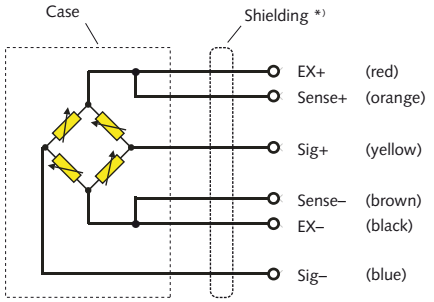

Note:
Do not invert polarity of excitation

*) Shielding is connected to plug housing

Fig. 1: Schematic diagram of one axis (the sensor has three axes)

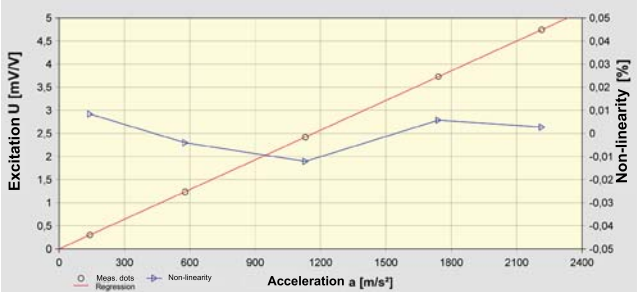

Fig. 2: Typical pendulum calibration (z-axis)

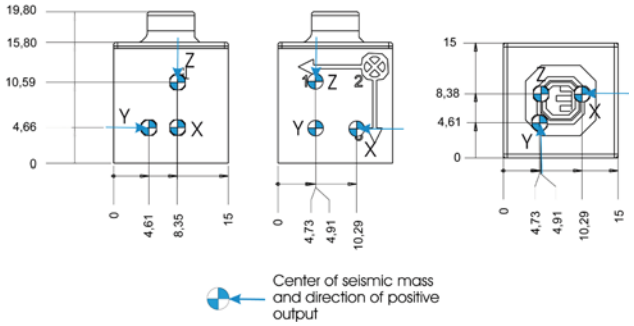

Fig. 3: Dimensions and directions of action

Ordering Key

Type M301A ☐☐☐☐☐

Design

Standard	**M1L6**

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	**-#**

Included Accessories

- None

Optional Accessories	**Art. No.**
• Quick adhesion	on request
• Mounting plates	on request
• Add. label with serial number, plug side	M015KABID
• ID module	on reqeust
• Add. label with ID number at sensor	M015KABID
• Add. shunt	on request