

# Accelerometer

## Triaxial, Gas-damped

Type M0053A...

Type M0053A... is a small, compact triaxial device designed for vehicle impact and road testing.

- Measuring ranges  $\pm 500 \dots 2\,000$  g
- Excitation 2 ... 10 VDC
- Low transverse sensitivity
- Gas-damped MEMS element
- Mechanical overload stops
- Designed for adhesive mounting

### Description

The sensor incorporates gas-damped MEMS sensing elements with mechanical stops for high overload protection. Featuring ranges from  $\pm 500 \dots 2\,000$  g and a shock limit up to 5 000 g. This sensor is easily mounted in hard to reach places on vehicles under test.

### Application

The sensor is designed for automotive crash testing, impact testing, off road testing and vehicle testing.

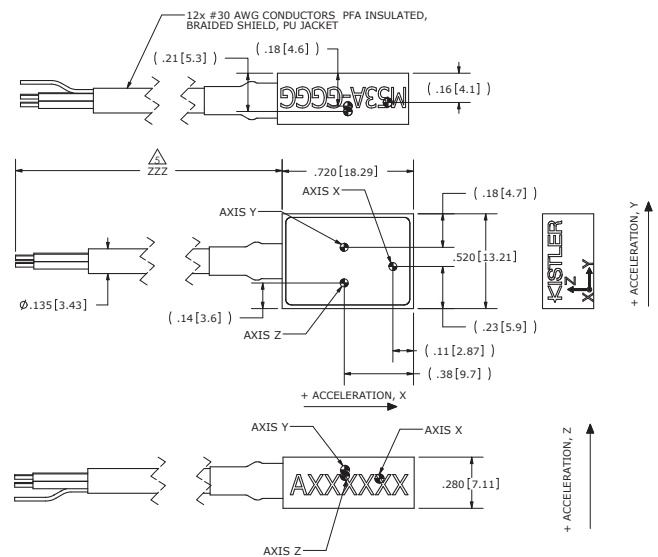


Fig. 1: Dimensions and center of seismic mass

### Technical Data

#### Dynamic

Measuring range	g	$\pm 500$	$\pm 2\,000$
Sensitivity <sup>1)</sup>	mV/g	0,4	0,15
Frequency response			
X axis, $\pm 1$ dB	Hz	0 ... 1 500	0 ... 2 500
Y axis, $\pm 1$ dB	Hz	0 ... 1 500	0 ... 2 500
Z axis, $\pm 1$ dB	Hz	0 ... 3 000	0 ... 4 500
Resonant frequency	Hz	15 000	26 000
Damping ratio, typ.		0,3	0,05
Amplitude non-linearity, of reading	%FSO	$\pm 1$	$\pm 1$
Transverse sensitivity	%	<3	<3
Shock limit	g	5 000	5 000

M0053A00\_003-098e-03\_15

**Technical Data (Continuation)**

**Electrical**

Zero acceleration output	mV	<±50
Excitation	VDC	2 ... 10
Input resistance	Ω	2 400 ... 6 000
Output resistance	Ω	2 400 ... 6 000
Insulation resistance, @ 100 VDC	MΩ	>100
Residual noise	μV RMS	<10
Ground isolation		isolated from mounting surface

**Environmental**

Thermal zero shift, from 0 ... 50 °C	%FSO/°C	±0,05
Thermal sensitivity shift, from 0 ... 50 °C	%/°C	-0,20 (±0,05)
Operating temperature range	°C	-20 ... 85
Storage temperature range	°C	-40 ... 90
Humidity, epoxy sealed		IP65

**Physical**

Case material	anodized aluminium	
Cable	#30 AWG conductors PFA insulated braided shield PU jacket	
Mounting	adhesive	
Weight (without cable)	grams	3,5

All values are typical at +24 °C, 100 Hz and 10 VDC excitation unless otherwise stated.

<sup>1)</sup> Output is ratiometric to excitation voltage

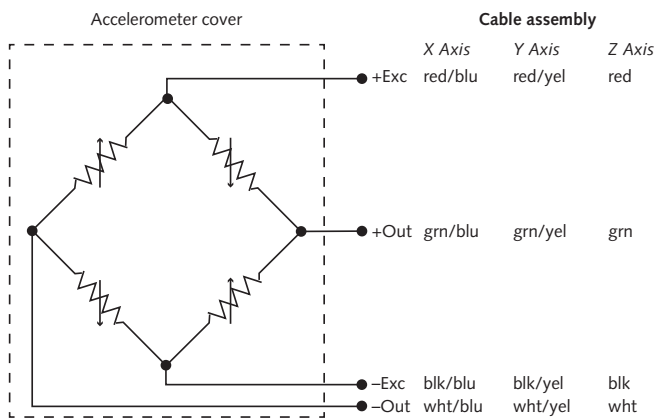


Fig. 2: Schematic diagram

**Ordering Key**

Type M0053A00-□-□-□-□-□

**Measuring Range**

±500 g	0500
±2 000 g	2000

**Cable Length**

8 ... 360 inches <sup>1)</sup>	###
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**Sensor Detail**

Nothing	A
UPS	B
Dallas	C
DiMod	D
Shunt	N
Shunt & Dallas	P

**Connector**

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

**Calibration Power Supply**

10 VDC	0
5 VDC	1
2,5 VDC	2
2 VDC	3

<sup>1)</sup> 1 inch = 25,4 mm

M0053A00\_003-098e-03\_15