

Piezoresistive Accelerometer

ASC 76C1



- ▶ Triaxial
- ▶ Wheatstone Bridge
- ▶ mV Output
- ▶ Specification SAE J211
- ▶ Aluminium Housing
- ▶ Cube Form
- ▶ Made in Germany



Piezoresistive MEMS Technology

The accelerometer is based on an advanced piezoresistive MEMS technology and can be used in a low frequency response up from 0Hz. The piezoresistive sensor element is made of monolithic resistors. These resistors are attached to carrier-elements and are electrically connected in a Wheatstone bridge. The electrical signal changes proportional to the vibration.

Features

- ▶ Range: 500g, 1000g and 2000g
- ▶ Very Small Size
- ▶ Light Weight
- ▶ DC Response
- ▶ $\pm 5000g$ Shock Resistance
- ▶ Gas Damped

Options

- ▶ Customised Cable Length
- ▶ Customised Connector
- ▶ TEDS Module
- ▶ Shunt Resistor
- ▶ Equipment Exchange (EQX)

Applications

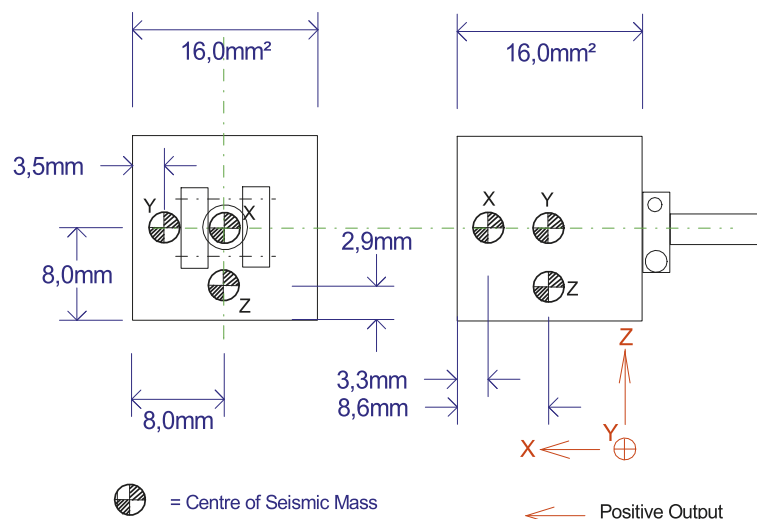
- ▶ Automotive Crash Testing
- ▶ Shock Testing

Description

The model ASC 76C1 is a triaxial accelerometer based on piezoresistive technology. Each axis is working independently as a 4-wire system.

The ASC 76C1 is a small and compact accelerometer which meets the specifications of SAE J211. The housing is a flat design in hard anodised aluminium. The compact cube form facilitates mounting on different sites. Due to their low mass these sensor models are ideal for testing on light-weight structures. The sensing element in the models has integrated overload stops and therefore the silicon chip is highly shock resistant. The sensors have an excellent non-linearity over a wide frequency response. Electrically they are configured as a full Wheatstone bridge.

The models can be obtained with all common sensor ID modules. A very high flexible cable provides a simple mounting. The ASC 76C1 is equipped as standard with 6 meter of rugged Polyurethane cable.



Typical Specifications

MODEL NUMBER: ASC 76C1

Type: MEMS Piezoresistive Accelerometer

DYNAMIC

		Range (\pm g)		
		500	1000	2000
Model		76C1	76C1	76C1
Sensitivity ¹	mV/g	0.4	0.15	0.13
Frequency response: \pm 5%	Hz		2500	
Resonance frequency	kHz	15	15	26
Amplitude non-linearity	% FSO		\pm 1	
Damping ratio			0.7	
Transverse sensitivity	%		<3	
Shock limit	\pm g		5000	
Recovery time	s		0.5	

ELECTRICAL

Excitation voltage	V DC	3 to 10	3 to 10	3 to 10
Zero acceleration output	mV		\pm 25	
Insulation resistance	M Ω		>100	
Isolation			Case isolated	

ENVIRONMENTAL

Temperature coefficient of bias (Thermal zero shift)	g/ $^{\circ}$ C	\pm 0.25	\pm 0.5	\pm 1
Temperature coefficient of sensitivity (Thermal sensitivity shift)	%/ $^{\circ}$ C		-0.2	
Operating temperature range	$^{\circ}$ C		-20 to +80	
Storage temperature range	$^{\circ}$ C		-25 to +100	
Humidity / Sealing			Epoxy sealed	

PHYSICAL

Sensing element		Piezoresistive MEMS		
Case material		Aluminium		
Mounting		3 mm screws / Adhesive		
Weight (without cable)	gram	ASC 76C1: 12 gram		
Cable		12 gram/meter; AWG 30, Polyurethane (PUR); Diameter: 3mm		

FACTORY CALIBRATION (SUPPLIED WITH THE SENSOR)

Shaker Calibration (Sinusoidal)			
Range	500g	1000g	2000g
Sensitivity	at 80Hz and 20g		
Frequency Response	40Hz to 2500Hz		
Pendulum (Shock) Calibration			
Range	500g	1000g	2000g
Sensitivity	5 shocks at 100g		

CALIBRATION DIN ISO 17025 (ORDER SEPARATELY)

Shaker Calibration (Sinusoidal)			
Range	500g	1000g	2000g
Sensitivity	at 80Hz and 20g		
Frequency Response	25Hz to 3150Hz		
Pendulum (Shock) Calibration			
Range	500g	1000g	2000g
Linearity	One shock each at 50g, 100g, 150g, 200g and 250g		

Cable Code 12 wire system:**x-axis***Red/Purple: Supply +**Black/Purple: Supply -**Green/Purple: Signal +**White/Purple: Signal -***y-axis***Red/Grey: Supply +**Black/Grey: Supply -**Green/Grey: Signal +**White/Grey: Signal -***z-axis***Red: Supply +**Black: Supply -**Green: Signal +**White: Signal -***ORDERING INFORMATION**

ASC	76C1	500	6	A
	Model number	Range (Ex. 500 is 500g)	Cable length (meters)	Connector & Pinout
				A: no connector

ASC GmbH · Advanced Sensors Calibration

Ledererstraße 10 · 85276 Pfaffenhofen · Germany · Tel. +49 (0) 8441 786 547 -0 · office@asc-sensors.de

All data, information, statements, photographs and graphic illustrations made in this data sheet are without any obligation and raise no liabilities to or form part of any sales contracts of ASC GmbH or any affiliates for components referred to herein. © ASC GmbH 2011. All rights reserved. No part of this copyrighted work may be reproduced, modified or distributed in any form or by any means, or stored in any database or retrieval system, without the prior written permission of ASC GmbH or its affiliates. Any such unauthorized use for any purpose is a violation of the relevant copyright laws. Revision Jun2017

