

Piezoresistive Accelerometer

ASC 74C1



- ▶ Triaxial
- ▶ Wheatstone Bridge
- ▶ mV Output
- ▶ Aluminium Housing
- ▶ Made in Germany



Piezoresistive MEMS Technology

Features

- ▶ Range: 500g, 1000g and 2000g
- ▶ 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

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.

Description

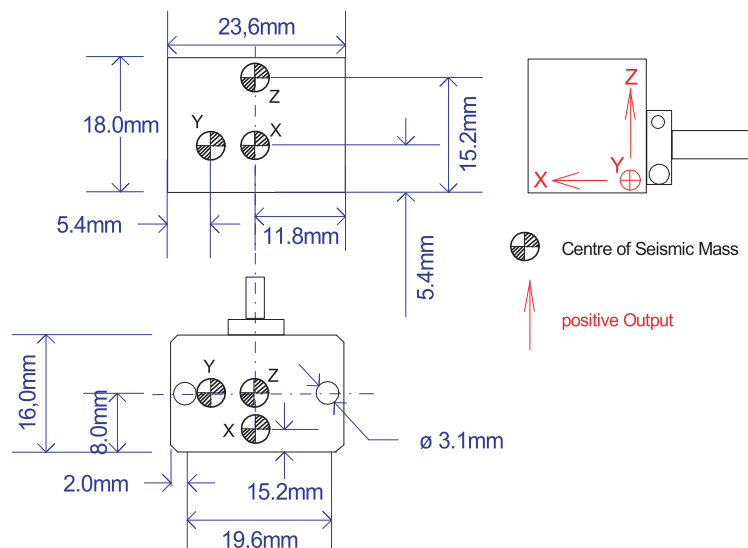
The model ASC 74C1 is a triaxial accelerometer based on piezoresistive technology. Each axis is working independently as a 4-wire system.

The ASC 74C1 is a small and compact accelerometer.

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 74C1 is equipped as standard with 6 meter of rugged Polyurethane cable.



Typical Specifications

MODEL NUMBER ASC 74C1

Type: MEMS Piezoresistive Accelerometer

DYNAMIC

		Range (\pm g)		
		500	1000	2000
Model		74C1	74C1	74C1
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		Anodized Aluminium		
Mounting		3 mm screws / Adhesive		
Weight (without cable)	gram	ASC 74C1: 16 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 / PIN CONFIGURATION

	X-Axis	Y-Axis	Z-Axis
12-wiring-System	Red/Purple: Supply +	Red/Grey: Supply +	Red: Supply +
	Black/Purple: Supply -	Black/Grey: Supply -	Black: Supply -
	Green/Purple: Signal +	Green/Grey: Signal +	Green: Signal +
	White/Purple: Signal -	White/Grey: Signal -	White: Signal -

ORDERING INFORMATION

ASC	74C1	500	6	A
	Model number	Range (Ex. 500 is 500g)	Cable length (meters)	Connector & Pinout
				A: no connector

Example: ASC 74C1-500-6A

QUALITY

- 1) ASC is ISO 9001:2015 certified
- 2) The Deutsche Akkreditierungsstelle GmbH (DAkkS) has awarded to our calibration laboratory the DIN EN ISO/IEC 17025:2005 accreditation for calibrations and has confirmed our competence to perform calibrations in the field of mechanical acceleration measurements.

* accredited by the German accreditation body (Deutsche Akkreditierungsstelle, DAkkS) to DIN EN ISO / IEC 17025; the pictured DAkkS-ILAC logo refers exclusively to the accredited service

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