

MEMS Capacitive Accelerometer



ASC 4321 / ASC 4325

- ▶ Uniaxial
- ▶ 4 Wire System
- ▶ Amplified Output
- ▶ Aluminium Housing / Stainless Steel Housing
- ▶ Made in Germany



Features

- ▶ Range: $\pm 1g$ to $\pm 200g$
- ▶ DC Response
- ▶ Gas Damped
- ▶ Excellent Bias and Scale Factor Stability
- ▶ Low Power Consumption
- ▶ Single Ended Mode

Options

- ▶ Customised Cable Length
- ▶ Customised Connector
- ▶ TEDS Module

Applications

- ▶ Structural Monitoring and Testing
- ▶ Endurance Testing
- ▶ Brake Test
- ▶ Vibration Monitoring
- ▶ Civil Engineering
- ▶ Modal Analysis
- ▶ Vehicle Testing
- ▶ Automotive Ride Quality & Comfort
- ▶ Railway Engineering
- ▶ Flutter Test

Capacitive MEMS Technology

The accelerometers are based on a capacitive MEMS technology and can be used in a low frequency response up from 0Hz. Inside the sensor element, the seismic mass is connected with two conductive capacitor plates. If the seismic mass oscillates between the two capacitor plates the capacitance will change. This capacitance change is converted via an ASIC (Application Specific Integrated Circuit) into an analog signal.

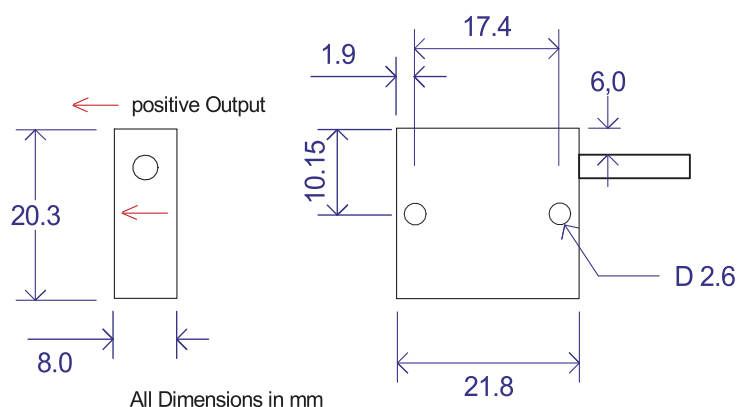
Description

The models ASC 4321 and ASC 4325 have been developed for the demanding requirements of different applications. The highly robust housing and the connecting cables are suitable for the rough application areas in automotive, train, military and so on. These ASC accelerometers benefit from the high stability of the chip technology with a low bias and an excellent scale factor temperature coefficient.

The ASC 4321 and ASC 4325 are fully compensated over a wide temperature range and are factory calibrated. Both models are shock resistant up to at least 5000g. As capacitive technology is used, extremely small measuring ranges are possible. The amplified output is easy to use with a data acquisition unit.

The signal is independent from the power between +8VDC to +30VDC. A very high flexible and rugged cable provides a simple mounting.

The stainless steel package of the ASC 4325 provides a high resistance to strong environmental influences. The ASC 4321 and ASC 4325 are equipped with 6 meter cable as standard.



Typical Specifications

DYNAMIC

		Range (\pm g)							
		1	2	5	10	30	50	100	200
Sensitivity	mV/g	2000	1000	400	200	66.6	40	20	10
Frequency response: \pm 5%	Hz	70	100	100	800	1000	1000	1000	1000
Amplitude non-linearity	% FSO	<1							
Transverse sensitivity	%	3							
Shock limit	\pm g	5000 (0.15ms, half-sine)							
Recovery time	ms	<1							

ELECTRICAL

Excitation voltage	V DC	8-30							
Supply current	mA	2							
Zero acceleration output	\pm mV	100	30	30	30	30	30	30	30
Output Impedance	Ω	200							
Isolation		Case Isolated							
Spectral noise	μ g/ \sqrt Hz	9	18	45	125	375	625	1250	2500
Residual / Broadband noise (\pm 5% frequency range)	μ V	180	180	180	700	800	800	800	800

ENVIRONMENTAL

Thermal sensitivity shift	%/ $^{\circ}$ C	0.01							
Thermal zero shift	mg/ $^{\circ}$ C	0.05	0.1	0.25	0.5	1.5	2.5	5	10
Operating temperature range	$^{\circ}$ C	-40 to +100							
Storage temperature range	$^{\circ}$ C	-55 to +125							
Humidity/Sealing		Epoxy sealed							

PHYSICAL

Sensing element		MEMS Capacitive							
Case material		Aluminium/Stainless Steel							
Connector (at cable end)		Optional							
Mounting		Adhesive/screw holes							
Weight (without cable)	gram	ASC 4321: 7 ASC 4325: 19							
Cable		12 gram/meter; AWG 30, Polyurethane (PUR); Diameter: 3mm							

FACTORY CALIBRATION (SUPPLIED WITH THE SENSOR)

Range	1g	2g and 5g	10g	30g	50g to 200g
Sensitivity	at 8Hz and 0.5g	at 16Hz and 0.5g	at 80Hz and 5g	at 80Hz and 15g	at 80Hz and 20g
Frequency Response min. 5%	1 to 70Hz	1 to 100Hz	10 to 800Hz	10 to 1000Hz	10 to 1000Hz

CALIBRATION DIN ISO 17025 (ORDER SEPARATELY)

Range	1g	2g and 5g	10g	30g	50g to 200g
Sensitivity	at 8Hz and 0.5g	at 16Hz and 0.5g	at 80Hz and 5g	at 80Hz and 15g	at 80Hz and 200g
Frequency Response	0.5 to 100Hz	0.5 to 150Hz	10 to 1100Hz	10 to 1500Hz	10 to 2000Hz

Cable Code/Pin Configuration*Red* *Supply +**Black* *Supply -**Green* *Signal +**White* *Signal -***ORDERING INFORMATION**

ASC	4321	002	6	A
	Model number	Range (Ex. 050 is 50g)	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

