

MEMS Capacitive Accelerometer



ASC 5411LN / ASC 5415LN

- ▶ Triaxial
- ▶ Ultra Low Noise (LN)
- ▶ High g-Range
- ▶ 8 or 12 Wire System
- ▶ Amplified Output
- ▶ Aluminium Housing / Stainless Steel Housing
- ▶ Made in Germany

Features

- ▶ Range: $\pm 2g$ to $\pm 400g$
- ▶ DC Response
- ▶ High Shock Resistance
- ▶ Gas Damped
- ▶ Excellent Bias and Scale Factor Stability
- ▶ Differential 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

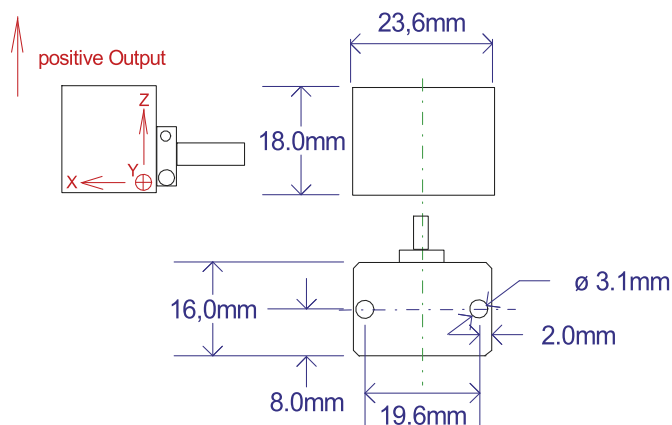
The accelerometers are based on a capacitive MEMS technology and can be used in a low frequency response up from 0Hz. Inside the sensor element, the seismic mass is connected with two conductive capacitor plates. If the seismic mass oscillates between the two capacitor plates the capacitance will change.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

Description

The models ASC 5411LN and ASC 5415LN 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 noise level and a low bias and an excellent scale factor temperature coefficient.

The ASC 5411LN and ASC 5415LN are fully compensated over a wide temperature range and are factory calibrated. 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.

The package is hard anodized aluminium that is rugged for automotive, industrial and military applications. A very high flexible and rugged cable provides a simple mounting. ASC 5411LN and ASC 5415LN are equipped with 6 meter cable as standard.



Typical Specifications

DYNAMIC

		Range (\pm g)							
		2	5	10	25	50	100	200	400
Sensitivity	mV/g	2000	800	400	160	80	40	20	10
Frequency response: \pm 5%	Hz	100	100	300	500	650	650	1000	1000
Amplitude non-linearity	% FSO	<1							
Transverse sensitivity	%	3							
Shock limit	\pm g	2000	2000	4000	4000	4000	4000	4000	4000
Recovery time	ms	<1							

ELECTRICAL

Excitation voltage	V DC	8-30							
Supply current	mA	10							
Zero acceleration output	\pm mV	150	150	80	80	80	80	80	80
Output Impedance	Ω	100							
Isolation		Case Isolated							
Spectral noise	μ g/ \sqrt Hz	5	7	10	25	50	100	200	400
Residual / Broadband noise (\pm 5% frequency range)	μ V	100	60	70	90	100	100	125	125

ENVIRONMENTAL

Thermal sensitivity shift	%/ $^{\circ}$ C	0.015							
Thermal zero shift	mg/ $^{\circ}$ C	0.15	0.4	0.75	2	4	7.5	15	30
Operating temperature range	$^{\circ}$ C	-40 $^{\circ}$ C to +100 $^{\circ}$ C							
Storage temperature range	$^{\circ}$ C	-55 $^{\circ}$ C to +125 $^{\circ}$ C							
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 5411LN: 20 gram ASC 5415LN: 40 gram							
Cable	30 gram/meter; AWG 30, Polyurethane (PUR); Diameter: 4.4mm								

FACTORY CALIBRATION (SUPPLIED WITH THE SENSOR)

Range	2g and 5g	10g	25g	50g and 100g	200g and 400g
Sensitivity	at 16Hz and 0.5g	at 80Hz and 5g	at 80Hz and 15g	at 80Hz and 20g	at 80Hz and 20g
Frequency Response	10 to 100Hz	10 to 300Hz	10 to 500Hz	10 to 650Hz	10 to 1000Hz

CALIBRATION DIN ISO 17025 (ORDER SEPARATELY)

Range	2g and 5g	10g	25g	50g and 100g	200g and 400g
Sensitivity	at 16Hz and 0.5g	at 80Hz and 5g	at 80Hz and 5g	at 80Hz and 20g	at 80Hz and 20g
Frequency Response	0.5 to 150Hz	10 to 500Hz	10 to 800Hz	10 to 1600Hz	10 to 2000Hz

Cable Code / Pin Configuration**8-wiring-System**

Red Supply +
Black Supply -

X-Axis:

Green/Violet Signal +
White/Violet Signal -

Y-Axis:

Green/Grey Signal +
White/Grey Signal -

Z-Axis:

Green Signal +
White Signal -

12-wiring-System**X-Axis:**

Red/Violet Supply +
Black/Violet Supply -
Green/Violet Signal +
White/Violet 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	5411LN (Low Noise)	002	6	A
	Model number	Range (Ex. 050 is 50g)	Cable length (meters)	Connector & Pinout
				A: no connector

ASC GmbH - Advanced Sensors Calibration

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