

# MEMS Capacitive Accelerometer



## ASC OS 115LN / ASC OS 125MF

- ▶ Uniaxial
- ▶ Ultra Low Noise (LN) & Medium Frequency (MF)
- ▶ High g-Range
- ▶ 4 Wire System
- ▶ Amplified Output
- ▶ Stainless Steel Housing
- ▶ Hermetic
- ▶ Made in Germany

### Features

- ▶ Range:  $\pm 2g$  to  $\pm 400g$
- ▶ DC Response
- ▶ Protection Class IP68
- ▶ Salt Water Resistance
- ▶ High Shock Resistance
- ▶ Gas Damped
- ▶ Excellent Bias and Scale Factor Stability
- ▶ Differential Mode

### Options

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

### Applications

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



### Capacitive MEMS Technology

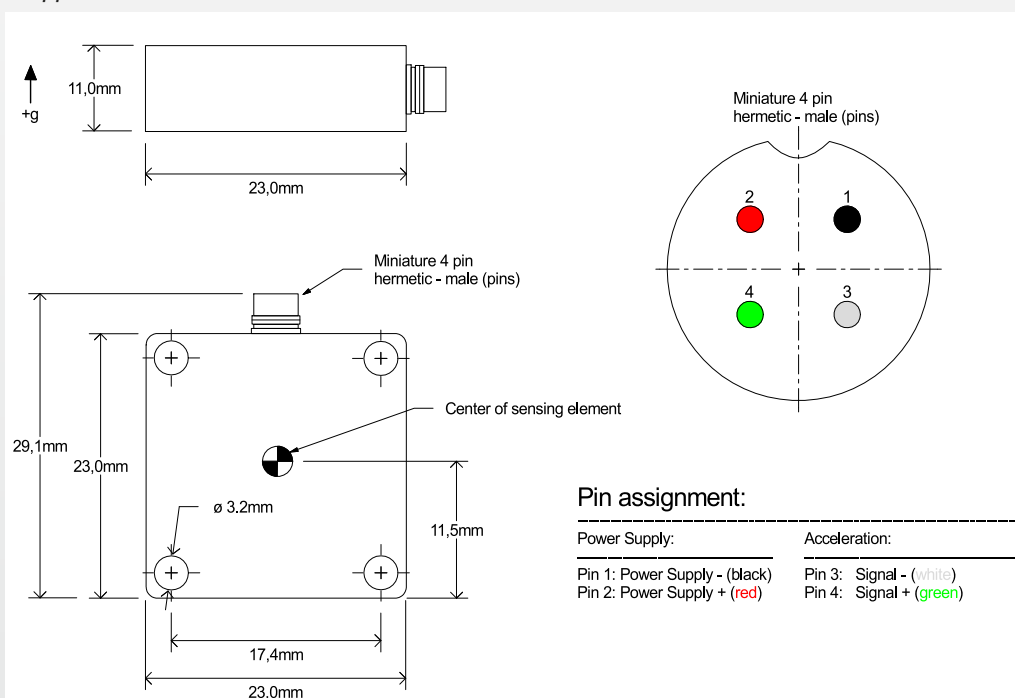
ASC's Offshore (OS) series capacitive accelerometers are based on capacitive sensing technology and produce an analog voltage output proportional to the input acceleration. The accelerometers can measure both static (gravity) and dynamic accelerations. ASC's OS series can be used for very low to medium frequency vibration measurements. The OS series features a MEMS sensor element where the seismic mass is connected between two conductive capacitor plates. When subjected to an input acceleration, the seismic mass oscillates between the two capacitor plates and there is a change in the capacitance. This change in capacitance is converted via an ASIC (Application Specific Integrated Circuit) into a low impedance analog voltage output signal.

### Description

ASC's OS series capacitive accelerometers, OS 115LN and OS 125MF, are analog voltage output sensors. The sensors can be powered by a DC power supply (+5V\* to +40V) where the output voltage is independent of the supply. The sensors operate in a differential configuration, which results in an improved S/N ratio due to common-mode external noise rejection.

ASC Type OS 115LN and OS 125MF operate in a wide temperature range from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ \*. The sensors exhibit exceptional temperature stability, very low non-linearity and can withstand repetitive shocks as high as  $6000g$ 's\*. The hermetically sealed OS sensors, ASC OS 115LN and OS 125MF, feature a robust and corrosion proof stainless steel housing with a welded 4-pin connector. The sensors are supplied with 1m detachable cable as a standard.

\*Applicable to ASC OS 125MF



## Typical Specifications

### ASC OS 115LN

#### 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	6 to 40							
Supply current	mA	10							
Zero acceleration output	$\pm$ mV	150	150	80	80	80	80	80	80
Output Impedance	$\Omega$	100							
Isolation		Case Isolated							
Spectral noise	$\mu$ g/ $\sqrt$ Hz	10	14	20	50	100	200	400	800
Residual / Broadband noise ( $\pm$ 5% frequency range)	$\mu$ V	200	120	140	180	200	200	250	250

#### 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							
Sealing		Hermetic (IP68)							

#### PHYSICAL

Sensing element		MEMS Capacitive							
Case material		Stainless Steel (Optional: Titanium)							
Connector		4-pin Comtronic							
Mounting		Adhesive / screw holes							
Weight (without cable)	gram	31							
Cable		12 gram/meter; AWG 30, Polyurethane (PUR); Diameter: 3mm							

## Typical Specifications

### ASC OS 125MF

#### DYNAMIC

		Range ( $\pm g$ )						
		2	5	10	30	50	100	200
Sensitivity	mV/g	1350	540	270	90	54	27	13.5
Frequency response: $\pm 5\%$	Hz	700	700	1400	1600	1800	1800	1800
Amplitude non-linearity	% FSO	<0.5						
Transverse sensitivity	%	<3						
Shock limit	$g_{pk}$	6000 (0.1ms, half-sine)						
Recovery time	ms	1						

#### ELECTRICAL

Excitation voltage	V DC	5 to 40						
Supply current	mA	5						
Zero acceleration output	$\pm mV$	50						
Output Impedance	$\Omega$	300						
Isolation		Case Isolated						
Spectral noise	$\mu g/\sqrt{Hz}$	10	20	35	100	170	340	680
Residual / Broadband noise ( $\pm 5\%$ frequency range)	$\mu V$	360	290	360	360	390	390	390

#### ENVIRONMENTAL

Thermal sensitivity shift	$\%/^{\circ}C$	0.01						
Thermal zero shift	$mg/^{\circ}C$	0.2	0.5	1	3	5	10	20
Operating temperature range	$^{\circ}C$	-40 to +125						
Storage temperature range	$^{\circ}C$	-55 to +125						
Sealing		Hermetic (IP68)						

#### PHYSICAL

Sensing element		MEMS Capacitive						
Case material		Stainless Steel (Optional: Titanium)						
Connector (at cable end)		4-pin Comtronic						
Mounting		Adhesive/screw holes						
Weight (without cable)	gram	31						
Cable		12 gram/meter PUR; AWG 30; Diameter: 3mm						

**ASC OS 125MF****FACTORY CALIBRATION (SUPPLIED WITH THE SENSOR)**

Range	2g and 5g	10g	30g	50g to 200g
Sensitivity	at 16Hz and 0.5g	at 80Hz and 5g	at 80Hz and 15g	at 80Hz and 20g
Frequency Response	1 to 100Hz	10 to 1400Hz	10 to 1600Hz	10 to 1800Hz

**CALIBRATION DIN ISO 17025<sup>1</sup> (ORDER SEPARATELY)**

Range	2g and 5g	10g	30g	50g to 200g
Sensitivity	at 16Hz and 0.5g	at 80Hz and 5g	at 80Hz and 15g	at 80Hz and 20g
Frequency Response	0.5 to 150Hz	10 to 2000Hz	10 to 2300Hz	10 to 2500Hz

**ORDERING INFORMATION**

ASC	OS 125MF	002	6	A
	Model number	Range (Ex. 050 is 50g)	Cable length (meters)	Connector & Pinout
				A: no connector

**ASC OS 115LN****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	1 to 100Hz	10 to 300Hz	10 to 500Hz	10 to 650Hz	10 to 1000Hz

**CALIBRATION DIN ISO 17025<sup>1</sup> (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

**ORDERING INFORMATION**

ASC	OS 115LN	002	6	A
	Model number	Range (Ex. 050 is 50g)	Cable length (meters)	Connector & Pinout
				A: no connector

\* 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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