

MEMS Capacitive Accelerometer

ASC OS-225MF-PG



- ▶ Biaxial
- ▶ Medium Frequency Range
- ▶ 6 Wire System
- ▶ Amplified Output
- ▶ Stainless Steel Housing
- ▶ Hermetically Sealed
- ▶ Made in Germany



integrated cable

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.

Features

- ▶ Range: $\pm 2g$ to $\pm 200g$
- ▶ Medium Frequency (MF) 0Hz to 1.8kHz
- ▶ Protection Class IP68
- ▶ Salt Water Resistance
- ▶ High Shock Resistance
- ▶ Gas Damped
- ▶ Excellent Bias and Scale Factor Stability
- ▶ Differential Mode
- ▶ Integrated Cable

Options

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

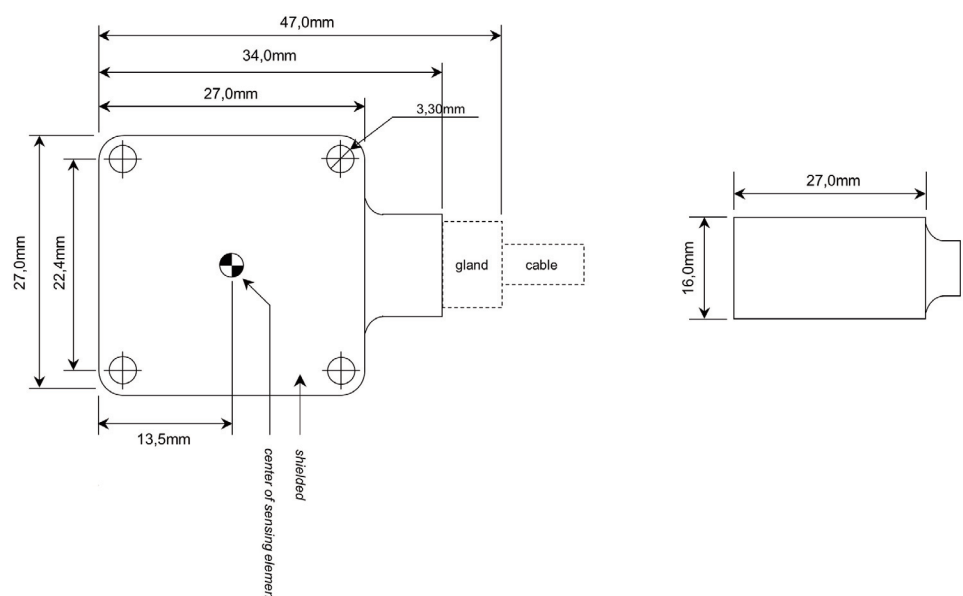
Applications

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

Description

ASC's biaxial capacitive accelerometers ASC OS-225MF-PG are analog voltage output sensors and have been developed for the demanding requirements of offshore applications. The robust housing and the connection cables are suitable for immersion in salt water and are designed to work at 1m water depth.

The sensors can be powered by a DC power supply (+5V to +40V) where the output voltage is independent of the supply. They operate in a differential configuration, which results in an improved S/N ratio due to common-mode external noise rejection. ASC OS-225MF-PG operate in a wide temperature range either from -15°C to $+70^{\circ}\text{C}$ (standard) or even -20°C to $+100^{\circ}\text{C}$. The sensors exhibit exceptional temperature stability, very low non-linearity and can withstand shocks as high as $6000g_{pk}$. The hermetically sealed ASC OS-225MF-PG sensors feature a robust and corrosion proof stainless steel housing. A very high flexible and rugged cable provides a simple mounting. The sensors are supplied with 1 meter integrated cable as standard. Please see cable configuration.



Typical Specifications

ASC OS-225MF-PG

DYNAMIC

Measurement Range	g	±2	±5	±10	±30	±50	±100	±200
Sensitivity	mV/g	1350	540	270	90	54	27	13.5
Frequency Response ±5%	Hz	0 to 700	0 to 700	0 to 1400	0 to 1600	0 to 1800	0 to 1800	0 to 1800
Amplitude Non-Linearity	% FSO	<0.3						
Transverse Sensitivity	%	<3						
Shock Limit	g _{pk}	6000 (0.1ms, half-sine)						

ELECTRICAL

Excitation voltage	V DC	5 to 40						
Supply Current	mA	10						
Zero Acceleration Output	±mV	<30						
Resistive Load	kΩ	>1000						
Isolation		Case Isolated						
Spectral Noise	µg/√Hz	10	20	35	100	170	340	680
Residual / Broadband Noise (±5% Frequency Range)	µV	250	250	360	360	390	390	390

ENVIRONMENTAL

Thermal Sensitivity Shift	%/°C	typ. 0.012						
Thermal Zero Shift	mg/°C	0.2	0.5	1	3	5	10	20
Operating Temperature Range	°C	Standard: -15 to +70			with Cable Art.No. 12301 (K3)			
		Optional: -20 to +100			with Cable Art. No 15344 (K4)			
Storage Temperature Range	°C	-55 to +125						
Protection Class		IP68						

PHYSICAL

Sensing Element	MEMS Capacitive							
Case Material	Stainless Steel (Optional: Titanium)							
Connector Housing	PG Gland, integrated							
Connector at Cable End	Open end / customised							
Mounting	Adhesive / screw holes							
Weight (without cable)	gram	68						
Cable K3: Art.No. 12301	22 gram/meter; AWG 30, Polyurethane (PUR), Diameter: 3.6 ± 0.15mm, waterproof							
Cable K4: Art.No. 15344	29 gram/meter; AWG 30, Fluorethylenpropylen (FEP), Diameter: 3.6 ± 0.15mm, waterproof							

Please note:

The housing is hermetically sealed and therefore not repairable.

ASC OS-225MF-PG

CABLE CODE / PIN CONFIGURATION

The biaxial sensor ASC OS-225MF-PG comes with the x- and y-axes as standard. Upon request all other combinations of axes are possible.

6-Wiring-System, Cable K3: Art.No. 12301

Red: Supply +	Brown: GND/Supply -	
X-axis:	White: Signal +	Grey: Signal -
Y-axis:	Yellow: Signal +	Pink: Signal -
Z-axis:	Green: Signal +	Blue: Signal -

6-Wiring-System, Cable K4: Art.No. 15344

Red: Supply +	Black: GND/Supply -	
X-axis:	Green/Purple: Signal +	White/Purple: Signal -
Y-axis:	Green/Grey: Signal +	White/Grey: Signal -
Z-axis:	Green: Signal +	White: Signal -

FACTORY CALIBRATION(SUPPLIED WITH THE SENSOR)

Measurement Range	2g and 5g	10g	30g	50g to 200g
Sensitivity	5m/s ² @16Hz	50m/s ² @80Hz	100m/s ² @80Hz	200m/s ² @80Hz
Frequency Response	1 to 100Hz	10 to 1400Hz	10 to 1600Hz	10 to 1800Hz

CALIBRATION DIN ISO 17025 (ORDER SEPARATELY)

Measurement Range	2g and 5g	10g	30g	50g to 200g
Sensitivity	5m/s ² @16Hz	50m/s ² @80Hz	100m/s ² @80Hz	200m/s ² @80Hz
Frequency Response	0.5 to 150Hz	10 to 2000Hz	10 to 2300Hz	10 to 2500Hz

Conversion factor: 1g corresponds to 9,80665 m/s²

ORDERING INFORMATION

ASC	OS-225MF-PG	002	K3	6A
	Model number	Range (Ex. 050 is 50g)	Cable Spec.	Cable Length, Connector & Pinout

A: no connector

Example: ASC OS-225MF-PG-002-K3-6A

QUALITY

- ▶ ASC GmbH is ISO 9001:2015 certified.
- ▶ 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. The pictured DAkkS-ILAC logo refers exclusively to the accredited service.
- ▶ All ASC products are CE-compliant.

ASC GmbH

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