

General Purpose Piezoelectric Accelerometer



ASC P101A15 / ASC P101A25

- ▶ Uniaxial
- ▶ IEPE (Integrated Electronic Piezoelectric)
- ▶ Stainless Steel Housing
- ▶ Voltage Output



ASC P101A15



ASC P101A25



Features

- ▶ $\pm 50g$, $\pm 100g$, $\pm 500g$ and $\pm 1000g$ Dynamic Ranges
- ▶ Stud Mount
- ▶ Side Connector or Top Connector
- ▶ Hermetically Sealed
- ▶ High Resonance Frequency ($>50kHz$)
- ▶ Wide Bandwidth ($\pm 1dB$, $10kHz$)
- ▶ Light Weight (<10 grams)
- ▶ -55° to $+125^\circ C$ Operating Range
- ▶ Annular Shear Design
- ▶ TEDS

Options

- ▶ Customised Cable Length
- ▶ DAkkS Calibration

Applications

- ▶ General Purpose Vibration & Shock Monitoring
- ▶ Test & Measurement Applications
- ▶ Modal Applications
- ▶ High-Frequency Applications

Piezoelectric IEPE Technology

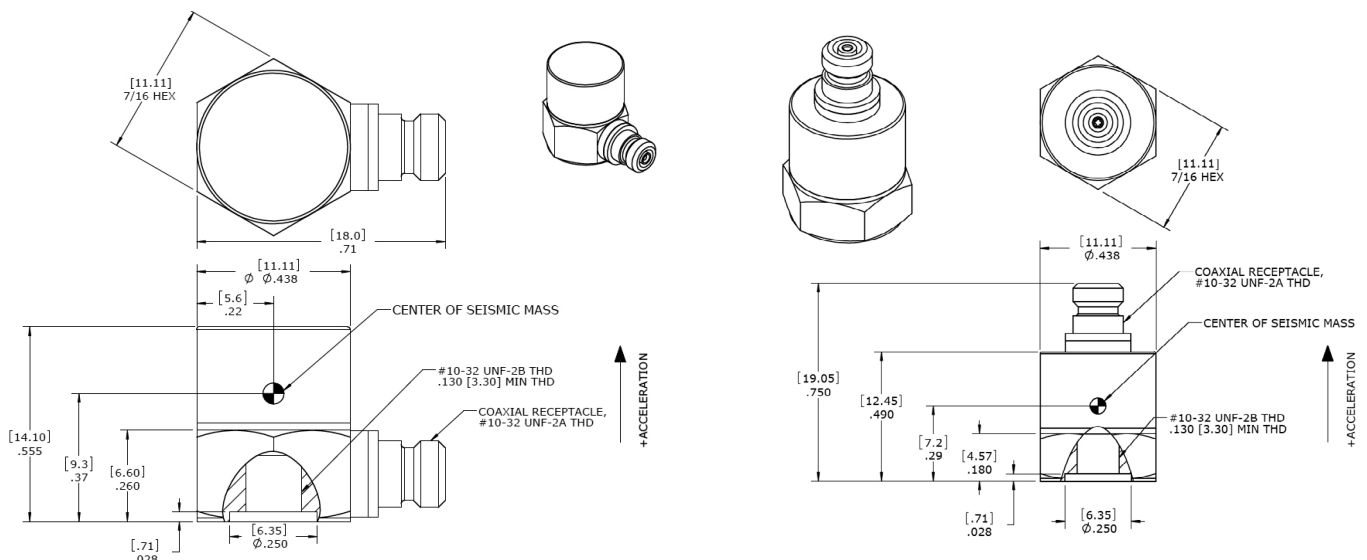
ASC's General Purpose IEPE accelerometers are made of piezoelectric ceramics and are usable over a wide frequency range from 0.3Hz to 10kHz. The accelerometers are IEPE (Integrated Electronics PiezoElectric) sensors that produce an output voltage proportional to the input acceleration. The sensors feature a built-in preamplifier and a charge to voltage converter that transforms the high-impedance charge output from the piezoelectric ceramic (Lead Zirconate Titanate, PZT) into a low-impedance voltage output that is suitable to drive long cables. ASC's IEPE sensors operate on a 2-10mA constant-current supply and use a two-wire coaxial cable for power input and signal output.

Description

ASC's General Purpose IEPE accelerometers, P101A15 and P101A25, are analog voltage output sensors. These piezoelectric vibration sensors are used typically in general purpose vibration and shock monitoring applications. The sensors are based on a piezoelectric annular shear design, which provides excellent immunity against base strain and temperature transients.

ASC Type P101A15 has a side exit connector and Type P101A25 has a top exit connector.

ASC's General Purpose accelerometers, P101A15 and P101A25, feature a rugged stainless steel housing that is corrosion proof and chemical resistant. ASC Type P101A15 and P101A25 operate over a wide temperature range from $-55^\circ C$ to $+125^\circ C$. Both sensors incorporate a welded hermetic construction and can withstand shocks up to $5000g$'s. The industry standard 10-32 coaxial connectors with side and top exit options provide flexibility in mounting. The sensors are available with built-in TEDS.



Typical Specifications

MODEL NUMBER: ASC P101A15 / ASC P101A25

Type: Piezoelectric IEPE General Purpose Accelerometer

DYNAMIC		Range (\pm g)			
		50	100	500	1000
Sensitivity ($\pm 10\%$)	mV/g	100	50	10	5
Full Scale Output	V	± 5			
Amplitude response: $\pm 5\%$		0.5 to 6k		0.5 to 8k	
	$\pm 1\text{dB}$ Hz	0.3 to 10k			
Phase response: $\pm 10^\circ$		0.5 to 10k			
Non-linearity	%FSO	± 1			
Resonance Frequency	kHz	50			
Transverse sensitivity (Max.)	%	<5			
Shock limit	\pm g	5000 (half-sine, 300 μ s)			
Output Polarity		Acceleration in the direction of the arrow (see outline drawing) generates a positive output			

ELECTRICAL

Excitation voltage	V DC	18 to 30			
Supply current	mA	2 to 10			
Bias Voltage	V DC	10 \pm 2 (room temperature) ; 10 \pm 4 (in full temperature range)			
Output Impedance	Ω	<100			
Discharge Time Constant	sec	0.8 to 1.2			
Startup / Settling time (to 90% of bias)	sec	2.5			
Isolation		Case Grounded			
Spectral Noise	$\mu\text{g}/\sqrt{\text{Hz}}$	1Hz: 200; 10Hz: 80; 100Hz: 25; 1kHz: 12			
Broadband noise (1Hz to 10kHz)	milli g	0.4	0.5	0.8	1.4

ENVIRONMENTAL

Temperature coefficient of sensitivity	%/ $^\circ\text{C}$	-55 $^\circ\text{C}$ to +80 $^\circ\text{C}$: +0.02 ; +80 $^\circ\text{C}$ to +125 $^\circ\text{C}$: -0.04			
Thermal transient sensitivity	mg/ $^\circ\text{C}$	0.5			
Operating & Storage temperature range	$^\circ\text{C}$	-55 to +125			
Sealing		Hermetic			

PHYSICAL

Sensing element / design		PZT / Shear			
Case material		Stainless Steel			
Connector		10-32 coaxial UNF-2A			
Mounting		Adhesive / Stud			
Mounting thread		10-32 UNF 2B (10-32 to 10-32 mounting stud included)			
Mounting torque	N-m	2			
Weight (without cable)	gram	ASC P101A15: 8.6; ASC P101A25: 7.3			
Cable		10-32 to BNC Low-noise coaxial PTFE			

Note: 1g = 9.80665m/s²

FACTORY CALIBRATION (SUPPLIED WITH THE SENSOR)

Range	50g	100g	500g	1000g
Sensitivity	at 160Hz and 10g	at 160Hz and 15g	at 160Hz and 25g	
Frequency Response	10Hz to 6kHz		10Hz to 8kHz	

CALIBRATION DIN ISO 17025 (ORDER SEPARATELY)*

Range	50g	100g	500g	1000g
Frequency Response	I: 0.5Hz to 100Hz (Long-stroke shaker calibration) II: 10Hz to 10kHz (High-frequency shaker calibration)			

ORDERING INFORMATION

ASC P101A15		
or	T	XX
ASC P101A25		
Sensor Type	TEDS	Range
Side connector: P101A15		51 ±50g
or		12 ±100g
Top connector: P101A25		52 ±500g
		13 ±1000g

Example: ASC P101A15-T52

ACCESSORIES

Cable Assembly for ASC Uniaxial IEPE Accelerometers	
KPU	XXX
	Cable length in meters
Cable for Uniaxial IEPE Accelerometer	
10-32 UNF to BNC	003: 3m
-55°C to +200°C	006: 6m
	009: 9m

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