

High-temperature Piezoelectric Accelerometer

ASC P401A15



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



ASC P401A15



Features

- ▶ $\pm 50g$, $\pm 100g$ and $\pm 500g$ Dynamic Ranges
- ▶ High Temperature ($+150^{\circ}\text{C}$)
- ▶ High Frequency ($\pm 1\text{dB}$, 15kHz)
- ▶ Hermetically Sealed
- ▶ Isolated Mounting Surface
- ▶ Shear Design
- ▶ Centre bolt for 360° cable orientation
- ▶ Miniature size (11 grams)
- ▶ TEDS

Options

- ▶ Customised Cable Length
- ▶ DAkkS Calibration

Applications

- ▶ High Temperature Testing
- ▶ Automotive Testing
- ▶ Laboratory Testing
- ▶ Gearbox Vibration Monitoring
- ▶ General Purpose Vibration & Shock Monitoring
- ▶ Test & Measurement Applications
- ▶ High Frequency Applications
- ▶ HUMS (Health Usage & Monitoring Systems)

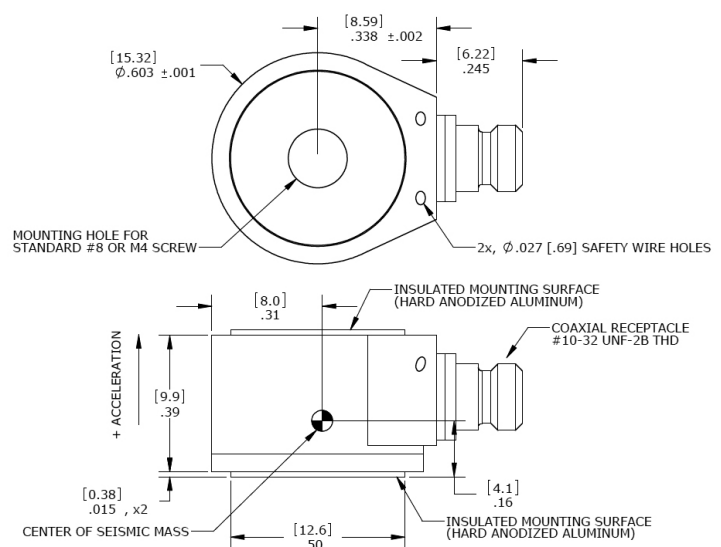
Piezoelectric IEPE Technology

ASC's high-temperature centre bolt accelerometers are made of piezoelectric ceramics and are usable over a wide frequency range from 0.5Hz to 15kHz. 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 high-temperature IEPE sensors operate on a 2-20mA constant-current supply and use a two-wire coaxial cable for power input and signal output.

Description

ASC's high-temperature IEPE uniaxial accelerometer, P401A15, is an analog voltage output sensor. Type P401A15 is designed for use in demanding high-temperature (150°C) vibration monitoring applications. The sensor is based on a piezoelectric annular shear design, which provides excellent immunity against base strain and temperature transients.

ASC Type P401A15 features a stainless steel housing that is rugged, corrosion proof and chemical resistant. The sensor incorporates a welded hermetic construction with the industry standard 10-32 UNF connector and can withstand shocks up to $5000g^{\circ}\text{s}$. Type P401A15 has a through hole for centre bolt mounting, which permits 360° cable orientation. ASC Type P401A15 operates over a wide temperature range from -55°C to $+150^{\circ}\text{C}$.



Typical Specifications

Model Number: ASC P401A15

Type: Piezoelectric IEPE High-temperature Accelerometer

DYNAMIC		Range (±g)		
Measurement Range	g	±50	±100	±500
Sensitivity (±10%)	mV/g	100	50	10
Full Scale Output	V		±5	
Amplitude Response: ±5%			1 to 5k	1 to 6k
±1dB	Hz		0.5 to 10k	0.5 to 15k
Non-Linearity	%FSO		±1	
Resonance Frequency	kHz		33	43
Transverse Sensitivity	%		<5	
Shock Limit	±g		5000	
Output Polarity		Acceleration in the direction of the arrow (see outline drawing) generates a positive output		

ELECTRICAL

Supply Voltage	V DC		18 to 30	
Supply current	mA		2 to 20	
Bias Voltage	V DC		10±2 (room temperature) ; 10±4 (in full temperature range)	
Output Impedance	Ω		<100	
Startup Time (to 90% of bias)	sec		2	
Discharge Time Constant	sec		0.8 to 1.2	
Isolation			Case Isolated	
Broadband Noise (1Hz to 10kHz)	mg (RMS)	1	1.5	2.5

ENVIRONMENTAL

Temperature Error of Sensitivity	%	-10°C to +100°C: <2%		
Operating & Storage Temperature Range	°C	-55 to +150		
Protection Class / Sealing		IP 68 / Hermetic		

PHYSICAL

Sensing Element / Design		Shear		
Case Material		Stainless Steel		
Connector		10-32 UNF		
Mounting		Adhesive / Centre Bolt		
Mounting Hole		M4 screw		
Weight (without cable)	gram	11		
Cable		10-32 to BNC Low-Noise PTFE		

Note: $1g_n = 9.80665m/s^2$

ASC P401A15

FACTORY CALIBRATION (SUPPLIED WITH THE SENSOR)

Measurement Range	50g	100g	500g
Sensitivity	200m/s ² @80Hz		
Frequency Response	10Hz to 5kHz	10Hz to 5kHz	10Hz to 6kHz

ORDERING INFORMATION

ASC P401A15	T	XX
Sensor Type	TEDS	Range
ASC Uniaxial IEPE High-temperature accelerometer		51: ±50g 12: ±100g 52: ±500g

Example: ASC P401A15-T51

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

- ▶ ASC GmbH is ISO 9001:2015 certified.
- ▶ The Deutsche Akkreditierungsstelle GmbH (DAkkS) has awarded to our calibration laboratory the DIN EN ISO/IEC 17025:2018 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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