

**9** ASC P401A15  
High-temperature Piezoelectric Accelerometer



ASC P401A15



**SPECIFICATIONS**

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

**FEATURES**

- $\pm 50g$ ,  $\pm 100g$  and  $\pm 500g$  Dynamic Ranges
- High Temperature (+150°C)
- High Frequency ( $\pm 1dB$ , 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)

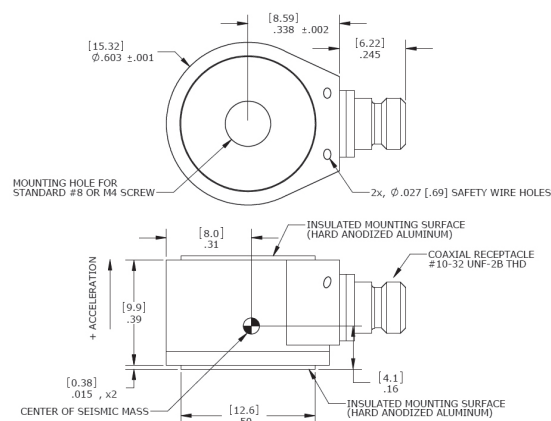
**PIEZOELECTRIC IEPE TECHNOLOGY**

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'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°C.





**TYPICAL SPECIFICATIONS**

DYNAMIC		Range ( $\pm g$ )		
Measurement Range	g	$\pm 50$	$\pm 100$	$\pm 500$
Sensitivity ( $\pm 10\%$ )	mV/g	100	50	10
Full Scale Output	V	$\pm 5$		
Amplitude Response: $\pm 5\%$		1 to 5k	1 to 6k	
$\pm 1dB$	Hz	0.5 to 10k	0.5 to 15k	
Non-Linearity	%FSO	$\pm 1$		
Resonance Frequency	kHz	33	43	
Transverse Sensitivity	%	$< 5$		
Shock Limit	$\pm g$	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 $\pm$ 2 (room temperature) ; 10 $\pm$ 4 (in full temperature range)		
Output Impedance	$\Omega$	$< 100$		
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:  $1g_n = 9.80665m/s^2$



**TYPICAL SPECIFICATIONS**

**FACTORY CALIBRATION (SUPPLIED WITH THE SENSOR)**

Measurement Range	50g	100g	500g
Sensitivity	200m/s <sup>2</sup> @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