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# High Frequency

## High Frequency Accelerometers

High frequency accelerometers are used on machinery with gear mesh or small bearings such as high-speed machine tool spindles and compressors. High frequency sensors are available with 100 mV/g or 10 mV/g output sensitivity. The 10 mV/g version is most commonly used due to its high amplitude range which can prevent sensor overload.

As previously discussed there is little vibration in terms of displacement and velocity at high frequency; however tremendous amounts of acceleration amplitudes may be present. It is not uncommon for vibration amplitudes on a very high speed gearbox to exceed 80 g peak prior to failure. High frequency accelerometers with low voltage sensitivity will prevent sensor overload from these high amplitudes. Whereas a 100 mV/g accelerometer may overload at 50g peak, a 10 mV/g sensor will measure to 500g peak.

Because high frequency sensors are generally smaller and lighter weight than their general purpose or low frequency counterparts, they have the advantage of less mass loading (mounting of the sensor will have less tendency to change the vibration of the structure under test). However, the signal to noise ratio will be reduced with high frequency units because of the lower sensor sensitivity. If measurement of low-level signals is necessary, check the narrowband noise levels of the sensor.

### Wilcoxon High Frequency Accelerometers:

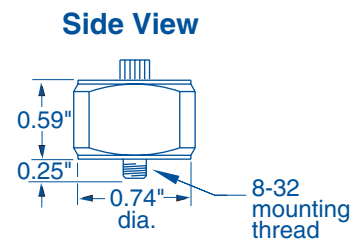
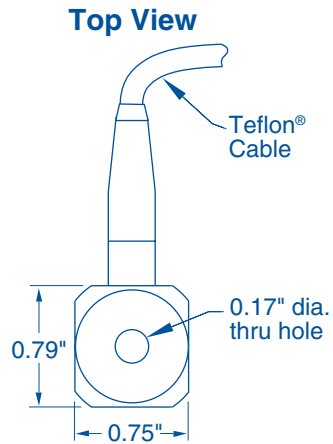
Model	Style	Sensitivity	Low Freq	High Freq	Accel Range
712F	shear	100 mV/g	3.0 Hz	25,000 Hz	60 g peak
732A/732AT	compression	10 mV/g	0.5 Hz	25,000 Hz	500 g peak
736/736T	compression	100 mV/g	2.0 Hz	25,000 Hz	50 g peak

Note: Frequency @  $\pm 3dB$ .



**FEATURES:**

- Corrosion resistant
- Hermetically sealed
- Ground isolated
- ESD protection
- Reverse wiring protection
- EMI/RFI protection



## Model 712F

### High Frequency, Integral Cable Accelerometer

**DYNAMIC**

Sensitivity, $\pm 10\%$ @25°C .....	100 mV/g
Acceleration Range .....	60 g peak
Amplitude Nonlinearity .....	1%
Frequency Response:	
$\pm 5\%$ .....	9.0 - 15,000 Hz
$\pm 10\%$ .....	6.0 - 20,000 Hz
$\pm 3$ dB .....	3.0 - 25,000 Hz
Resonance Frequency, mounted .....	>45 kHz
Transverse Sensitivity, max .....	3% of axial
Temperature Response .....	-50°C -10%
	+120°C +10%

**ELECTRICAL**

Power Requirement:	voltage source .....	18 - 30 VDC
	current regulating diode .....	2 - 10 mA
Electrical Noise, equiv. g., nominal:		
Broadband	2.5 Hz to 25 kHz .....	1,000 $\mu$ g
Spectral	10 Hz .....	25 $\mu$ g/ $\sqrt$ Hz
	100 Hz .....	10 $\mu$ g/ $\sqrt$ Hz
	1000 Hz .....	8 $\mu$ g/ $\sqrt$ Hz
Output Impedance, max. ....		100 $\Omega$
Bias Output Voltage, nominal .....		12 VDC
Grounding .....		case isolated, internally shielded

**ENVIRONMENTAL**

Temperature Range .....	-50 to 120°C
Vibration Limit .....	$\pm 1,000$ g
Shock Limit, max. ....	5,000 g peak
Sealing .....	Hermetic
Base Strain Sensitivity, max .....	0.03 g/ $\mu$ strain

**PHYSICAL**

Sensing Element Design .....	PZT ceramic / shear
Weight .....	35 grams
Case Material .....	316L stainless steel
Mounting .....	8-32 captive screw with 0.047" diameter safety wire hole
Mating Connector .....	N/A
Integral Cabling .....	J9T2K, 16 ft. blunt cut

FUNCTION	712F
power / signal	White
common	Black
case	Shield

**ACCESSORIES SUPPLIED:** 8-32 captive screw; Calibration data (level 2).

**ACCESSORIES AVAILABLE:** M4 captive screw.

## Model 732A / 732AT High Frequency Accelerometer



### FEATURES:

- Wide dynamic range
- Compact construction to fit in tight spaces
- Wide frequency range

### DYNAMIC

Sensitivity, $\pm 5\%$ , 25°C .....	10 mV/g
Acceleration Range .....	500 g peak
Amplitude Nonlinearity .....	1%
Frequency Response	
$\pm 5\%$ .....	2.0 - 15,000 Hz
$\pm 3$ dB .....	0.5 - 25,000 Hz
Resonance Frequency .....	60 kHz
Transverse Sensitivity, max. ....	7% of axial
Temperature Response .....	-50°C     -10%
	+120°C    +5%

### ELECTRICAL

Power Requirement:	voltage source .....	18 - 30 VDC
	current regulating diode .....	2 - 10 mA
Electrical Noise, equiv. g:		
Broadband	2.5 Hz to 25 kHz .....	200 $\mu$ g
Spectral	10 Hz .....	20 $\mu$ g/ $\sqrt{\text{Hz}}$
	100 Hz .....	3 $\mu$ g/ $\sqrt{\text{Hz}}$
	1,000 Hz .....	2 $\mu$ g/ $\sqrt{\text{Hz}}$
	10,000 Hz .....	2 $\mu$ g/ $\sqrt{\text{Hz}}$
Output Impedance, max. ....		100 $\Omega$
Bias Output Voltage .....		10 VDC
Grounding .....		case grounded

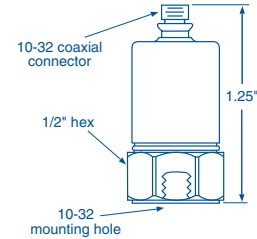
### ENVIRONMENTAL

Temperature Range .....	-50 to 120°C
Vibration Limit .....	500 g peak
Shock Limit .....	5,000 g peak
Electromagnetic Sensitivity, equiv. g .....	100 $\mu$ g/gauss
Base Strain Sensitivity .....	0.005 g/ $\mu$ strain

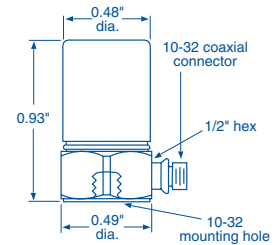
### PHYSICAL

Sensing Element Design .....	PZT ceramic / compression
Weight .....	13 grams
Material .....	316L stainless steel
Mounting .....	10-32 tapped hole
Output Connector .....	10-32 coaxial
Mating Connector .....	R1
Recommended Cabling .....	J93

CONNECTOR PIN	FUNCTION
SHELL	common
PIN	power / signal



Model 732AT



Model 732A

### ACCESSORIES SUPPLIED:

SF1 mounting stud (International customers specify mounting requirements); Calibration data (level 3).



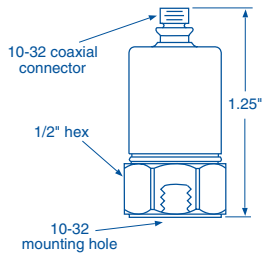


## Model 736 / 736T

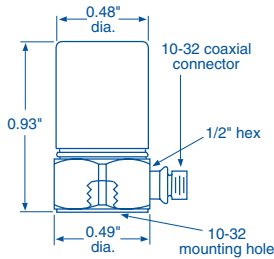
### High Sensitivity, High Frequency Accelerometer

#### FEATURES:

- Wide dynamic range
- Compact construction to fit in tight spaces
- Wide frequency range



**Model 736T**



**Model 736**

#### DYNAMIC

Sensitivity, $\pm 5\%$ , 25°C .....	100 mV/g
Acceleration Range .....	50 g peak
Amplitude Nonlinearity .....	1%
Frequency Response:	
$\pm 5\%$ .....	5.0 - 15,000 Hz
$\pm 3$ dB .....	2.0 - 25,000 Hz
Resonance Frequency .....	60 kHz
Transverse Sensitivity, max. ....	7% of axial
Temperature Response .....	-50°C      -10%
	+120°C     +5%

#### ELECTRICAL

Power Requirement:	voltage source .....	18 - 30 VDC
	current regulating diode .....	2 - 10 mA
Electrical Noise, equiv. g:		
Broadband 2.5 Hz to 25 kHz .....	150 $\mu$ g	
Spectral		
10 Hz .....	10 $\mu$ g/ $\sqrt$ Hz	
100 Hz .....	2 $\mu$ g/ $\sqrt$ Hz	
1,000 Hz .....	1 $\mu$ g/ $\sqrt$ Hz	
10,000 Hz .....	0.8 $\mu$ g/ $\sqrt$ Hz	
Output Impedance, max. ....	150 $\Omega$	
Bias Output Voltage .....	10 VDC	
Grounding .....	case grounded	

#### ENVIRONMENTAL

Temperature Range .....	-50 to 120°C
Vibration Limit .....	500 g peak
Shock Limit .....	5,000 g peak
Electromagnetic Sensitivity, equiv. g .....	100 $\mu$ g/gauss
Base Strain Sensitivity .....	0.005 g/ $\mu$ strain

#### PHYSICAL

Sensing Element Design .....	PZT ceramic / compression
Weight .....	13 grams
Material .....	316L stainless steel
Mounting .....	10-32 tapped hole
Output Connector .....	10-32 coaxial
Mating Connector .....	R1
Recommended Cabling .....	J93

CONNECTOR PIN	FUNCTION
SHELL	common
PIN	power / signal

**ACCESSORIES SUPPLIED:** SF1 mounting stud (International customers specify mounting requirements); Calibration data (level 3).



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