



# R3α Sensor

## General Purpose, 30 kHz Resonant Frequency Acoustic Emission Sensor

### Description and Features

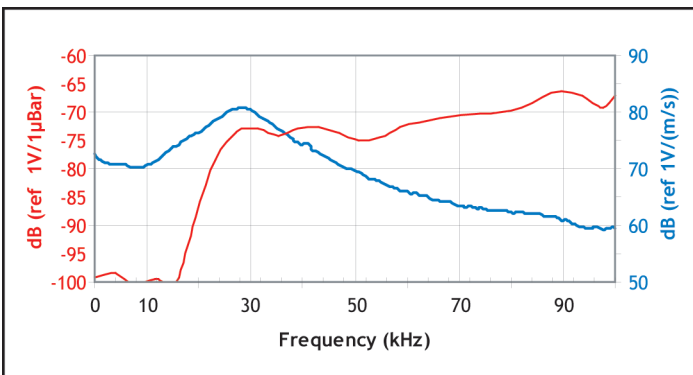
The R3α sensor cavity is machined from a solid stainless steel rod, making the sensor extremely rugged and reliable. The ceramic face electrically isolates the sensor from the structure to assure a low noise operation.

Most low frequency AE sensors are relatively large. However, the R3α sensor has the same compact size as our other Alpha series sensors and boasts a low frequency, 30 kHz resonant response. This feature makes it extremely useful in tight areas that require a low frequency sensor for testing.

The Alpha series family of sensors features SMA connectors versus the Microdot connectors found on PAC's RXX series of passive sensors. The Alpha series includes R3α, R6α, R15α, R30α, R50α, R80α and WSα sensors.

### Application

This sensor is normally selected for structural health monitoring of small to medium concrete and geologic structures and for concrete and metal pipeline leak detection applications where there needs to be high acoustic background noise rejection and distances between sensors can be relatively close (tens of feet).



Frequency response of the R3α. Calibration based on ASTM E1106; Calibration based on ASTM E976.

### Operating Specifications

#### Dynamic

Peak Sensitivity V/(m/s); [V/μbar] ..... 80 [-63] dB  
 Operating Frequency Range ..... 25 - 70 kHz  
 Resonant Freq. V/(m/s); [V/μbar] ..... 29 [140] kHz  
 Directionality..... ±1.5 dB

#### Environmental

Temperature Range ..... -65 to 175°C  
 Shock Limit ..... 500 g  
 Completely enclosed crystal for RFI/EMI immunity

#### Physical

Dimensions..... 0.75" dia. x 0.88" h (19 x 22.4 mm)  
 Weight..... 41 grams  
 Case Material..... Stainless Steel  
 Face Material..... Ceramic  
 Connector..... SMA  
 Connector Locations ..... Side  
 Seal ..... Epoxy  
 Sensor to Preamp Cable (1 or 2 meters)..... 1232-X-SMA

### Ordering Information and Accessories

R3α ..... R3α or R3a  
 Magnetic Hold-Down ..... MHR15A  
 Preamplifier ..... 0/2/4, 2/4/6  
 Preamp to System Cable (specify length in meters) ..... 1234 - X

#### Sensors include

NIST Calibration Certificate & Warranty