**R80α Sensor**

*General Purpose, 800 kHz Resonant Frequency Acoustic Emission Sensor*

### Description and Features

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. The major improvements in Alpha series over the RXX series include:

- **Use of the more popular SMA type of connector.**
- **Cavity is machined from a solid stainless steel rod making for a simpler and more robust design.**
- **Dramatically increased thickness of the ceramic shoe for better mechanical stability.**
- **Distance from the bottom of the ceramic shoe to the bottom edge of sensor cavity increased for better insulation resistance and ground avoidance.**
- **Introduced a 30-degree angle at the bottom edge of the sensor cavity.**

All these improvements make the Alpha series sensors more robust, reliable and greatly reduce the possible grounding of the cavity to the structure caused by wet environments.

### Application

High frequency AE sensors such as the R80α are often used in high noise environments on applications such as brittle crack detection and processing of AE signals with high frequency components.

### Operating Specifications

**Dynamic**
- Peak Sensitivity $V/(m/s); [V/\mu bar]$ ..... 58 [-62] dB
- Operating Frequency Range ........... 200 - 1000 kHz
- Resonant Freq. $V/(m/s); [V/\mu bar]$ ... 200 [800] 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 0.84” h (19 x 21.4 mm)
- Weight ........................................... 32 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

- R80α ................................................. R80α or R80a
- 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

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Frequency response of the R80α.  *Calibration based on ASTM E1106; Calibration based on ASTM E976.*