



R3I-AST Sensor

Integral Preamplifier

Acoustic Emission Sensor

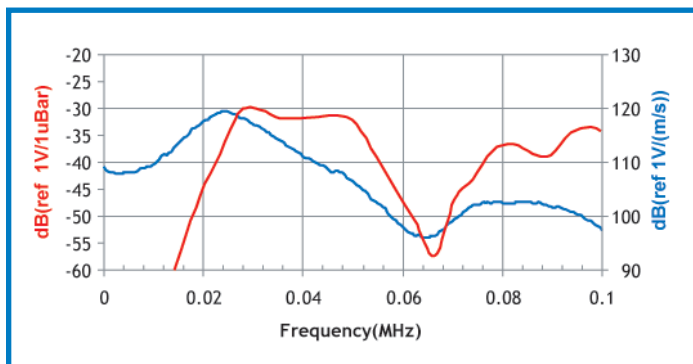
Description and Features

PAC's integral preamp sensors were specifically engineered to attain high sensitivity and have the capability to drive long cables without the need for a separate preamplifier. Incorporating a low-noise input, 40 dB preamplifier and a filter all inside the sensor housing, these transducers are completely enclosed in metal stainless steel (or aluminum) housings that are treated to minimize RFI/EMI interference. Care has also been taken to thermally isolate the critical input stage of the preamplifier in order to provide excellent temperature stability over the range of -35° to 75° C.

Their integrated Auto Sensor Test (AST*) capability allows these sensors to pulse as well as receive. This feature lets you verify the sensor coupling and performance at any time throughout the test.

Applications

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



Frequency response of the R3I-AST. Calibration based on ASTM E1106; Calibration based on ASTM E976.

Operating Specifications

Dynamic

Peak Sensitivity, Ref V/(m/s)	120 dB
Peak Sensitivity, Ref V/μbar	-28 dB
Operating Frequency Range	10 - 40 kHz
Resonant Frequency, Ref V/(m/s).....	25 kHz
Resonant Frequency, Ref V/μbar	31 kHz
Directionality.....	+/-1.5 dB

Environmental

Temperature Range	-35 to 75°C
Shock Limit	500 g
Completely shielded crystal for maximum RFI/EMI immunity	

Physical

Dimensions.....	1.13" diameter x 1.54" h
	(29 x 39 mm)
Weight.....	147g with 1m cable
Case Material.....	Stainless Steel (304)
Face Material.....	Ceramic
Connector.....	BNC
Connector Locations	Side

Ordering Information and Accessories

R3I.....	R3I-AST
Cable (specify cable length)	1234 - X
Magnetic Hold-Down	MHR3I
Amplifier	AE2A

Sensors include

NIST Calibration Certificate & Warranty

* AST – Auto Sensor Testing feature allows AE systems to control the sensor as a pulser and a receiver at the same time. It can therefore characterize its own condition as well as send out a simulated acoustic emission wave that other sensors can detect, so the condition of the nearby sensors also can be tested.