

**SINGLE DIAPHRAGM SECOND ORDER
DIFFERENTIAL MICROPHONE ASSEMBLY**

This Sheet Has Been Replaced

**Abstract**

A second-order differential (SOD) microphone includes a first-order
5 differential (FOD) microphone element installed in a housing. A pair of front sound
conduits extend from respective ports to a chamber on the front side of the
microphone diaphragm, and a pair of rear sound conduits extend from respective
ports to a chamber on the rear side of the microphone diaphragm. The two front
ports and the two rear ports are all substantially collinear along a minor axis, with
10 the rear ports intermediate the front ports or the front ports intermediate the rear
ports. The respective acoustic transfer functions from each port to the microphone
diaphragm are equivalent. The microphone response is approximately proportional
to the second spatial derivative, along the minor axis, of a sampled acoustic pressure
field.