

RADIATION HARDENED B-DOT SENSOR

MODEL RB-40

DESCRIPTION

The RB-130 is a small, free-field, mid range frequency radiation hardened sensor, which was designed to measure B-dot fields in a nuclear radiation environment. It has a high transparency (approximately 80%), continuous aluminum cylindrical loop utilizing a dual moebius pickoff configuration and is totally encapsulated. The loop is attached to a copper pickoff tube, which is normally 12 inches long, and provides a capability for mounting. The output cables are 50 ohm semi-rigid type and exit from the tube. The length of the output cables beyond the tube end is 18 inches, but the tube and cable lengths can be varied to meet special needs.

The output signal of the sensor is proportional to the time rate-of-change of the magnetic field. The pertinent equation for this device is:

$$V_o = A_{eq}^{\rightarrow} \cdot \frac{db}{dt} = \text{sensor output (in volts)}$$

where

- A_{eq} = sensor equivalent area (m^2)
- B = magnetic flux density vector (teslas)

ELECTRICAL SPECIFICATIONS

Equivalent Area (A_{eq})	$1 \times 10^{-3} m^2$
Frequency Response (3 db Point)	> 300 MHz
Risetime (t_r 10-90)	< 1.1ns
Maximum output (peak)	1.5 KV
Output connectors	SMA (male)

PHYSICAL SPECIFICATIONS

