

Description

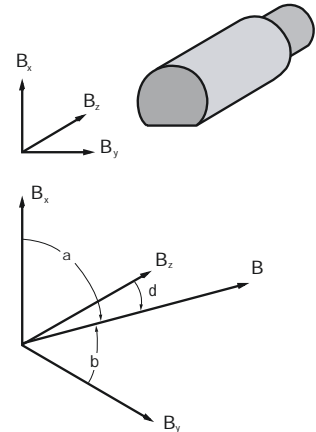
The BH-703 multi-axis Hall sensor consists of three individual Hall elements oriented in mutually perpendicular planes and encapsulated in a small epoxy package. This enables the BH-703 to produce voltages proportional to the three orthogonal components (B_x , B_y , B_z) of a magnetic flux in any direction. Thus the BH-703 may be permanently mounted or arbitrarily oriented to sense fields in any direction.

The magnitude of the flux vector, B , can be found using the following relation:

$$B = \sqrt{B_x^2 + B_y^2 + B_z^2}$$

The flux direction may be found using the following relations:

$a = \cos^{-1} B_x/B$, $b = \cos^{-1} B_y/B$, $d = \cos^{-1} B_z/B$ where a , b , d are the angles between B and B_x , B_y , B_z respectively.



Features

- Three Axis, simultaneous measurement
- Instrumentation Quality

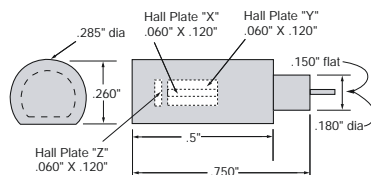
Mechanical Specifications

a. Notes: All tolerances unless specified are $\pm 0.010"$.

Unless otherwise noted: $B=1\text{kG}$, $I_c=I_{cN}$, $T=25^\circ\text{C}$, Static air.

b. Leads: #34 AWG copper with polyurethane insulation, approximately 20" long. The BH-703 has 12 leads.

c. Polarity: When the magnetic field vectors are oriented as shown, and I_c enters the read leads, the positive Hall voltage appears at the blue leads.



Electrical Specifications

SPECIFICATIONS	UNITS	BH-703	BH-706
Input resistance, R_{in}	ohms	3.5 max.	3 max.
Output resistance, R_{out}	ohms	3.5 max.	3 max.
Magnetic sensitivity, V_H (loaded)	mV/kG	5.5 to 10	6 to 9
Max. resistive residual voltage, V_M @ $B=0$	$\pm\mu\text{V}$	100	200
Max. control current @ 25°C , static air	mA	300	300
Nominal control current	mA	100	100
Angularity	degrees	Hall plates 3 within ± 2	Hall plates 2 within ± 2
Sensitivity matching	$\pm\%$ of RDG	1	1
Max. linearity error, (-10 kG to +10 kG) with R_{in}	$\pm\%$ of RDG	1	1
Mean temperature coefficient of V_H (-20°C to +80°C)	$\%/^\circ\text{C}$	-0.04 max.	-0.04 max.
Mean temperature coefficient of resistance (-20°C to +80°C)	$\%/^\circ\text{C}$	+0.15 max.	+0.15 max.
Temperature dependence of resistive residual voltage (-20°C to +80°C)	$\pm\mu\text{V}/^\circ\text{C}$	0.5 max.	0.5 max.
Operating temperature range	$^\circ\text{C}$	-40 to +100	-40 to +100
Storage temperature range	$^\circ\text{C}$	-40 to +120	-40 to +120