

Bulk Indium Arsenide BH-200 Series **Hall** Sensors

Instrumentation Quality

Description

The BH-200 series of Hall effect magnetic field sensors consists of ten models designed to meet the requirements of most magnetic field measurement applications. Models in the BH-200 Series are built in various configurations to measure axial, transverse, and tangential magnetic field components. Sensitivities range from 6 to 75 mV/KG with input and output resistance of several ohms.



Mechanical Specifications

- Polarity: With the magnetic field vector (+B) entering the top of the Hall plate and I_C entering the red lead, the positive Hall voltage will appear at the blue lead.
- Material: AWG 34 or AWG 36 copper with heavy polyurethane insulation.
- Color Code: Control Current (I_C): AWG 34-red (+ I_C), black (- I_C), AWG 36-neutral (+ I_C), green (- I_C)
- Hall Voltage: (V_H): AWG 34-blue (+ V_H), yellow (- V_H), AWG 36-red (+ V_H), neutral (- V_H)

Models

BH-200 General Purpose Transverse
 BH-201 Ultra-thin, Transverse
 BH-202 Small Axial
 BH-203 General Purpose, Axial
 BH-204 Mini Axial
 BH-205 Mini Transverse
 BH-206 High Sensitivity, Low-cost Transverse
 BH-207 High Resolution, Tangential
 BH-209 Ultra-mini, Transverse

Electrical Specifications

*Approximate

NOTE: In a time varying field the voltage induced into the Hall output leads, V_{ind} , is proportional to the effective area, A, of the Hall output loop and the amplitude and the rate of change of the field, V_{ind} (measured with $I_C=0$) = $A \frac{dB}{dt} \times 10^{-8}$
 V_{ind} =volts, A=cm², B=gauss, t=sec.

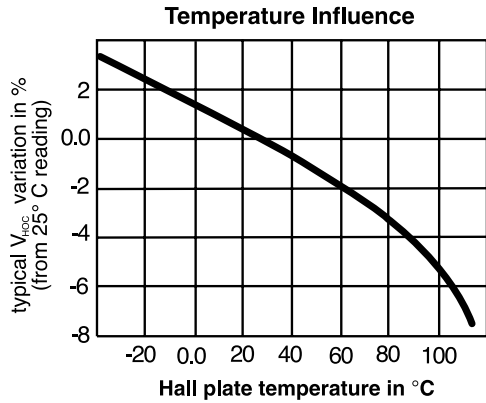
SPECIFICATIONS	UNITS	BH-200	BH-201	BH-202	BH-203	BH-204	BH-205	BH-206	BH-207	BH-209
Input resistance, R_{in}	ohms	2.5 max.	3 max.	3 max.	3 max.	3 max.	3 max.	7 max.	2.7 max.	2.5 max.
Output resistance, R_{out}	ohms	2 max.	3 max.	3 max.	3 max.	3 max.	3 max.	5 max.	2.7 max.	3 max.
Open circuit magnetic sensitivity, V_{HOC} (1)	mV/kg	15±25%	12±25%	10±25%	10±25%	11±25%	10±25%	60±25%	15±25%	6.75±25%
Inductive null constant, A	cm ²	.003	.01	.002	.003	.002	.002	.006	.002	.003
Max. resistive residual voltage, V_M @ B=0 (2)	±µV	100 max.	250 max.	100 max.	100 max.	200 max.	100 max.	500 max.	200 max.	100 max.
Max. control current @ 25°C, static air	mA	250	150	150	250	150	200	250	250	150
Nominal control current, I_{cn}	mA	150	100	100	100	100	125	200	150	75
Max. linearity error, (0 to 10 kG) with R_{in}	±% of RDG	1	1.5	1	1	1.5	1	2	1.5	1.5
Reversibility error of V_H (0 to 10 kG)	±% of RDG	1	2.5	1	1	1	1	1.5	1	1
Mean temperature coefficient of V_H (-20°C to +80°C) (2)*	%/°C	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.25	-0.08	-0.08
Mean temperature coefficient of resistance (-20°C to +80°C) (2)*	%/°C	.15	.15	.15	.15	.15	.15	.2	.15	.15
Temperature dependence of resistive residual voltage (-20°C to +80°C) (2)*	±µV/°C	1	1	1	1	1	1	6	1	.5
Operating temperature range	°C	-40°C to +100°C	0°C to +100°C	-40°C to +100°C	-40°C to +100°C	-40°C to +100°C	-40°C to +100°C	-40°C to +100°C	-40°C to +100°C	-40°C to +100°C
Storage temperature range	°C	-40°C to +105°C	0°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C	-40°C to +105°C

Notes:

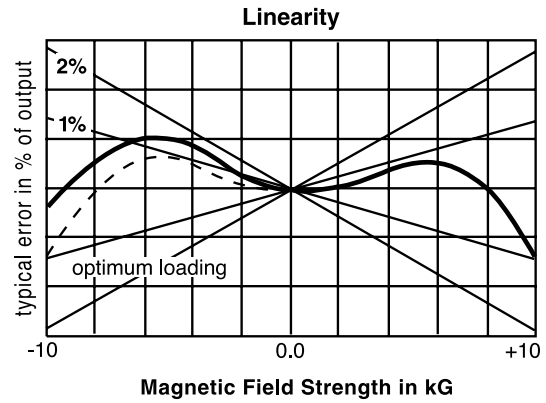
- Nominal Control Current, I_{cn}
- $I_C=100$ mA
- Due to continuous process improvement, all specifications are subject to change without notice.

Mechanical Dimensions

All dimensions are in inches (millimeters)

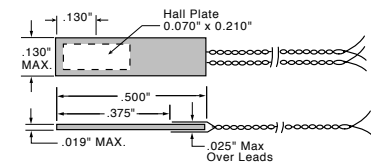


NOTE: For an unmounted Hall device supported by its leads, typical Hall plate temperature rise is 20° C for nominal control current.



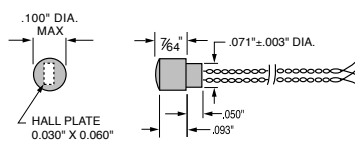
NOTE: The dotted line is a mirror image of the curve in the right hand plane and illustrates the reversibility error.

Model BH-200: General-Purpose Transverse



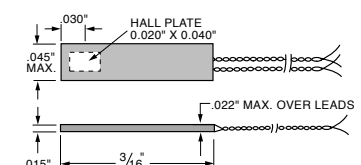
LEADS: AWG 34, 10" long

Model BH-204 Mini Axial



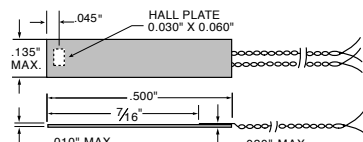
LEADS: AWG 36, 10" long

Model BH-209 Ultra-Mini Transverse



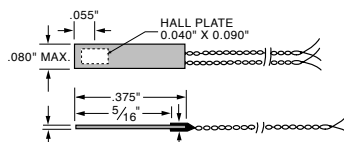
LEADS: AWG 36, 10" long

Model BH-201 Ultra-Thin Transverse



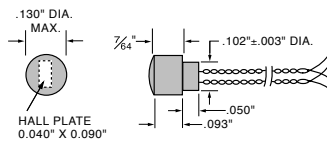
LEADS: AWG 36, 10" long

Model BH-205 Mini Transverse



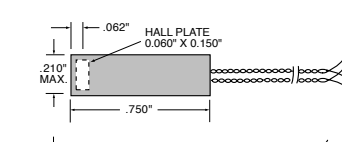
LEADS: AWG 36, 10" long

Model BH-202 Small Axial



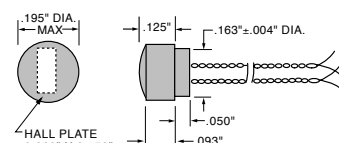
LEADS: AWG 36, 10" long

Model BH-206 High Sensitivity Low Cost Transverse



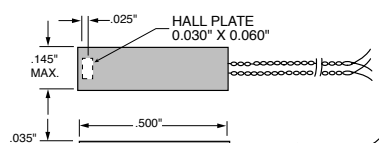
LEADS: AWG 34, 10" long

Model BH-203 General-Purpose Axial



LEADS: AWG 34, 10" long

Model BH-207 High Resolution Tangential



LEADS: AWG 36, 10" long