

# Smart Digital Magnetometer HMR2300

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The Honeywell HMR2300 is a three-axis smart digital magnetometer to detect the strength and direction of an incident magnetic field. The three of Honeywell's magneto-resistive sensors are oriented in orthogonal directions to measure the X, Y and Z vector components of a magnetic field. These sensor outputs are converted to 16-bit digital values using an internal delta-sigma A/D converter. An onboard EEPROM stores the magnetometer's configuration for consistent operation. The data output is serial full-duplex RS-232 or half-duplex RS-485 with 9600 or 19,200 data rates.

Applications include: Attitude Reference, Compassing & Navigation, Traffic and Vehicle Detection, Anomaly Detection, Laboratory Instrumentation and Security Systems.

A RS-232 development kit version is available that includes a windows compatible demo program, interface cable, AC adapter, and carrying case.

Honeywell continues to maintain product excellence and performance by introducing innovative solid-state magnetic sensor solutions. These are highly reliable, top performance products that are delivered when promised. Honeywell's magnetic sensor solutions provide real solutions you can count on.



## FEATURES & BENEFITS

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- ▶ High Accuracy Over  $\pm 1$  gauss,  $< 0.5\%$  Full Scale
- ▶ Range of  $\pm 2$  gauss,  $< 70 \mu\text{gauss}$  Resolution
- ▶ Three Axis (X, Y, Z) Digital Outputs
- ▶ 10 to 154 Samples Per Second, Selectable
- ▶ RS-232 or RS-485 Serial Data Interfaces
- ▶ PCB or Aluminum Enclosure Options
- ▶ 6-15 volt DC Unregulated Power Supply Interface

# HMR2300

## SPECIFICATIONS

Characteristics	Conditions	Min	Typ	Max	Units
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### Power Supply

Supply Voltage	Pin 9 referenced to Pin 5 (Ground)	6.5		15	Volts
Supply Current	Vsupply = 15V, with S/R = On		27	35	mA

### Temperature

Operating	Ambient	-40		+85	°C
Storage	Ambient, Unbiased	-55		125	°C

### Magnetic Field

Range	Full Scale (FS), Total Field Applied	-2		+2	gauss
Resolution	Applied Field to Change Output	67			micro-gauss
Accuracy	RSS of All Errors @+25°C ± 1 gauss ± 2 gauss		0.01 1	0.52 2	%FS
Linearity Error	Best Fit Straight Line @+25°C ± 1 gauss ± 2 gauss		0.1 1	0.5 2	%FS
Hysteresis Error	3 Sweeps Across ± 2 gauss @+25°C		0.01	0.02	%FS
Repeatability Error	3 Sweeps Across ± 2 gauss @+25°C		0.05	0.10	%FS
Gain Error	Applied Field for Zero Reading		0.05	0.10	%FS
Offset Error	Applied Field for Zero Reading		0.01	0.03	%FS
Temperature Effect	Coefficient of Gain		-600 ±114		ppm/°C
Power Supply Effect	From +6 to +15V with 1 gauss Applied Field		150		ppm/V

### Mechanical

Weight	PCB Only PCB and Non-Flanged Enclosure PCB and Flanged Enclosure		28 94 98		grams
Vibration	Operating, 5 to 10Hz for 2 Hours 10Hz to 2kHz for 30 Minutes		10 2.0		mm g

### Digital I/O Timing (See Timing Diagrams)

T <sub>RESP</sub>	*dd Commands (dd = Device ID) *ddP *ddR, *ddS, *ddT *ddC *ddQ *99 Commands *99Q	1.9	2 3 6 40 2+(ddx80) 2+(ddx40) 2+(ddx120)	2.2 3.2 6.2 60 2+Typ 2+Typ 2+Typ	msec
T <sub>DELAY</sub>	*dd Commands (dd = Device ID) *99 Commands	39	40 ddx40	41 2+Typ	msec
T <sub>BYTE</sub>	9600 19,200		1.04 0.52		msec
T <sub>STARTUP</sub>	Power Applied to End of Start-Up Message		50	80	msec