

# HMR4001

**Honeywell****SENSOR PRODUCTS**  
*Advance Information*

## LINEAR POSITION SENSOR MODULE

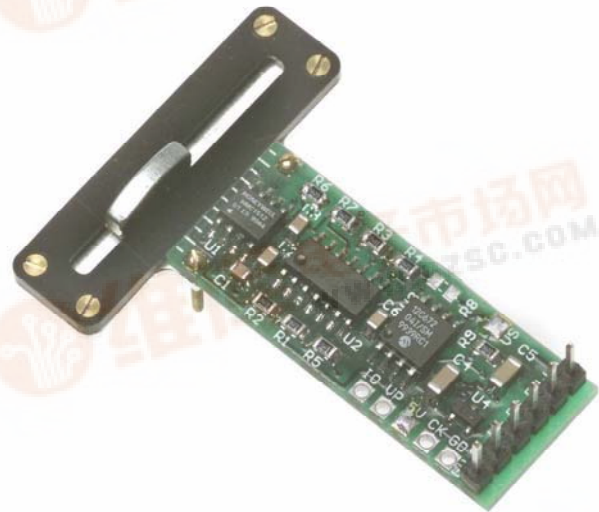
### Features

- 0-10 mm Magnetic Travel (Magnet Dependent)
- Continuous PWM and Analog Voltage Outputs
- 0.2mm Accuracy (Magnet Dependent)
- 0.05mm Repeatability
- -40° to +85°C Operating Temperature Range
- 1%/100°C Temperature Effect
- Small PCB Package
- 6 to 20 volt DC Single Supply Required

### General Description

The Honeywell HMR4001 is a high-resolution single sensor module capable of measuring linear or angular position. Advantages include high sensitivity so lower cost magnets such as alnico or ceramic can be used, insensitivity to shock and vibration, and ability to withstand large variations in the gap between the sensor and the magnet.

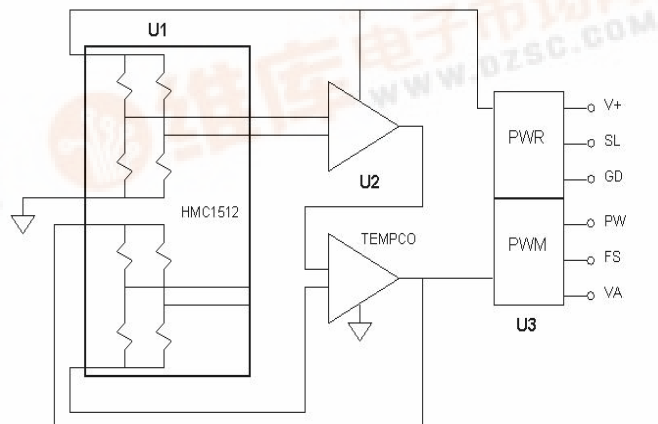
The HMR4001 is manufactured with Honeywell's HMC1512 Magnetic Displacement Sensor IC, which provides better performance than Hall Effect devices and only needs a magnetic field source greater than 80 gauss. Dual frequency PWM and analog outputs plus a sleep mode function are included on board



## APPLICATIONS

- **Linear Displacement**
- **Shaft Position**
- **Angular Displacement**
- **Proximity Detection**

Block Diagram



# HMR4001

**Honeywell****SENSOR PRODUCTS**  
**Advance Information****SPECIFICATIONS**

| Characteristics | Conditions | Min | HMR4001<br>Typ | Max | Units |
|-----------------|------------|-----|----------------|-----|-------|
|-----------------|------------|-----|----------------|-----|-------|

**Linear Position**

|               |                      |  |      |  |    |
|---------------|----------------------|--|------|--|----|
| Range         | > 80 gauss at sensor |  | 10   |  | mm |
| Accuracy      | > 80 gauss at sensor |  | 0.2  |  | mm |
| Repeatability | > 80 gauss at sensor |  | 0.05 |  | mm |

**Angular Position**

|               |                      |  |      |  |     |
|---------------|----------------------|--|------|--|-----|
| Range         | > 80 gauss at sensor |  | 90   |  | deg |
| Accuracy      | > 80 gauss at sensor |  | 0.1  |  | deg |
| Repeatability | > 80 gauss at sensor |  | 0.07 |  | deg |

**Magnetic Field**

|          |                         |    |   |   |       |
|----------|-------------------------|----|---|---|-------|
| Strength | Repeatability <0.03% FS | 80 | - | - | gauss |
|----------|-------------------------|----|---|---|-------|

**Electrical**

|         |                                        |   |     |    |          |
|---------|----------------------------------------|---|-----|----|----------|
| Voltage | Unregulated                            | 6 | -   | 20 | volts DC |
| Current | Active Mode - SLEEP pin = 5V (or open) |   | 7   |    | mA       |
| Supply  | Sleep Mode - SLEEP pin = 0V            |   | < 2 |    | mA       |

**PWM Output**

|                       |                              |      |            |     |                |
|-----------------------|------------------------------|------|------------|-----|----------------|
| Frequency             | FS = 5V (or open)<br>FS = 0V |      | 350<br>250 |     | Hz<br>Hz       |
| Frequency<br>Accuracy | Ambient Temperature (+23°C)  | +/-8 | -          | -   | %              |
| PWM Range             | "1" Level Duty Cycle         | 1    | -          | 99  | %              |
| PWM<br>Amplitude      | "1" Level at any Position    | 4.5  | -          | 5.5 | Volts<br>pk-pk |

**Analog Output**

|       |                             |   |     |   |       |
|-------|-----------------------------|---|-----|---|-------|
| Range | Ambient Temperature (+23°C) | - | 4.0 | - | volts |
|-------|-----------------------------|---|-----|---|-------|

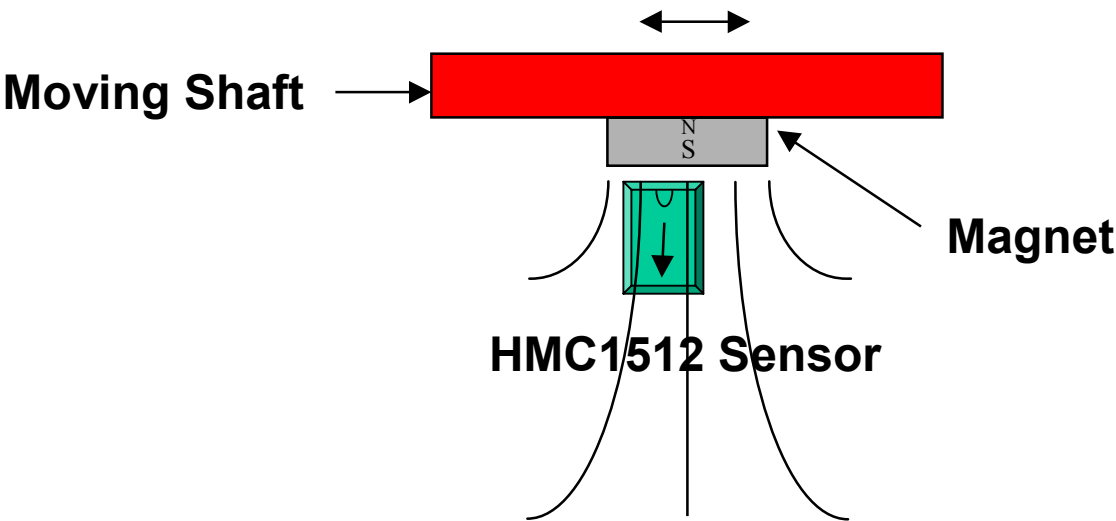
**Physical**

|            |                    |  |            |  |       |
|------------|--------------------|--|------------|--|-------|
| Dimensions | circuit board only |  | 15x48.5x12 |  | mm    |
| Weight     | circuit board only |  | 5          |  | grams |

**Environment**

|             |           |     |   |      |    |
|-------------|-----------|-----|---|------|----|
| Temperature | Operating | -40 | - | +85  | °C |
|             | Storage   | -55 | - | +125 | °C |





Demonstration PCB Module

The HMR4001 Demo Module includes an attached magnet and slide assembly for evaluating the performance of the module.

Ordering Information

| Ordering Number   | Product                                  |
|-------------------|------------------------------------------|
| HMR4001-D00 -DEMO | PCB Module with Attached Magnet Assembly |
| HMR4001-D00       | PCB Module Only                          |

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