

# UNIDIRECTIONAL HALL-EFFECT SENSOR IC

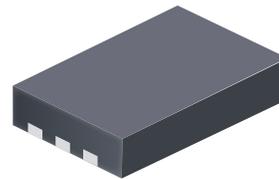
Space-Saving, Unipolar Design  
 Ideal for Consumer Electronics

Battery-powered devices in consumer and industrial applications require low power consumption and high reliability. Now designers can achieve both objectives with the [A31010](#), a contactless unipolar Hall sensor with fast start-up and both ratio and non-ratiometric output in a small DFN-6 package. The A31010 is ideal for game controllers, PC peripherals, home and building automation, and industrial monitoring, including electronic smartlocks and open/close detection for windows and doors.

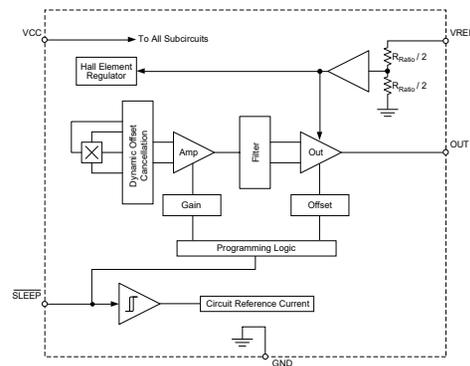
The compact 2 mm × 3 mm × 0.75 mm size, combined with a lack of mandatory external components, ensures the sensor can fit into a larger variety of space-constrained applications compared to competing solutions.

Using a 2.5–3.5 V supply, the A31010 consumes only 25 μA when in sleep mode, and 3.2 mA when in active operation. Controllable via external pin, the sensor enters and exits sleep mode rapidly in only 1 μs and 40 μs, respectively, making it ideal for power-constrained applications. The output is ratiometrically scaled to the provided output reference pin.

Two option codes dictate the sensitivity range: 3.78 and 10 mV/G. These option codes ensure support for a variety of magnet types and mechanical configurations. The output is configured for unidirectional operation, which ensures maximum use of the output span and resolution for head-on push-pull motion.



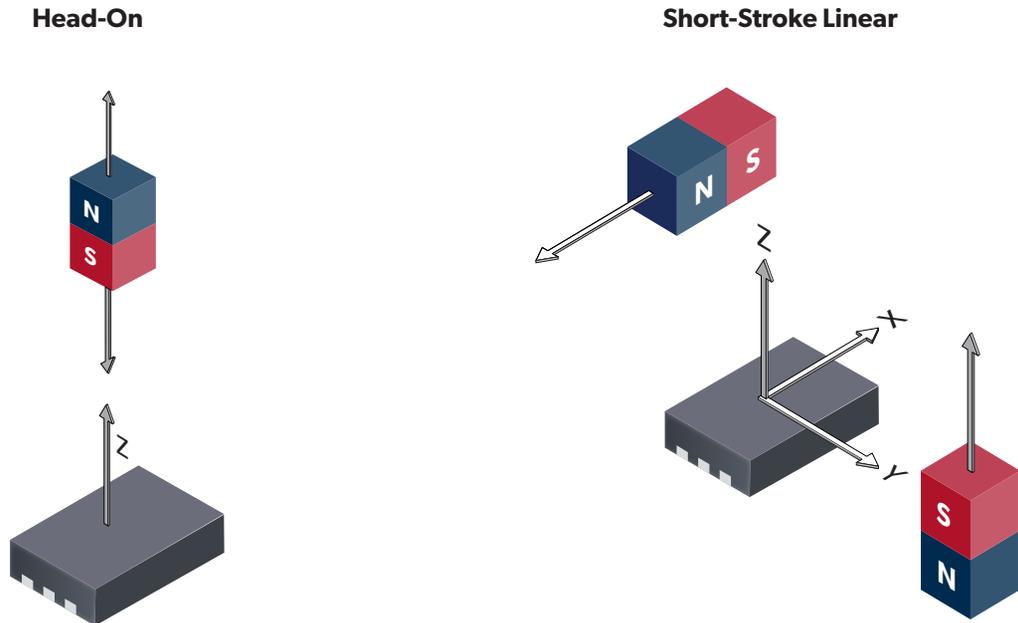
**6-Pin MLP/DFN (suffix EH) Package**



**Functional Block Diagram**

## Features and Benefits

- Fewer external parts, less space required, and lower power usage compared to competitive solutions
- User-controlled sleep mode minimizes power usage
- Output reference pin allows for ratiometric and non-ratiometric operation modes
- Contactless technology minimizes wear on components and extends product life
- Improved stroke measurement resolution achieved for head-on push-pull motion vs bipolar Hall-effect sensors
- Immune to contamination by debris and liquids via magnetic sensing



Sensors with Vertical Hall Technology can be made sensitive to field direction as well as magnitude.

### Ideal for battery-powered applications:

- Video game controllers
- PC peripherals
- Home automation (security, lighting, HVAC vent control)
- Open/close detection
- Valve/solenoid position detection
- Industrial automation

### Sensitivity Options with Order Codes

Part Number	Polarity	Sensitivity (mV/G)	QVO (% $V_{REF}$ )	Supply Voltage (V)	Full Scale Field (G)	Package Type
A31010SHALT-4	Unipolar (south pole)	3.78	6.47	2.5 to 3.5	650	DFN-6 2 × 3 mm
A31010SHALT-10	Unipolar (south pole)	10	7	2.5 to 3.5	250	DFN-6 2 × 3 mm

We also offer a wide range of vertical and planar Hall sensor ICs for nearly any application. Learn more at [www.allegromicro.com](http://www.allegromicro.com).