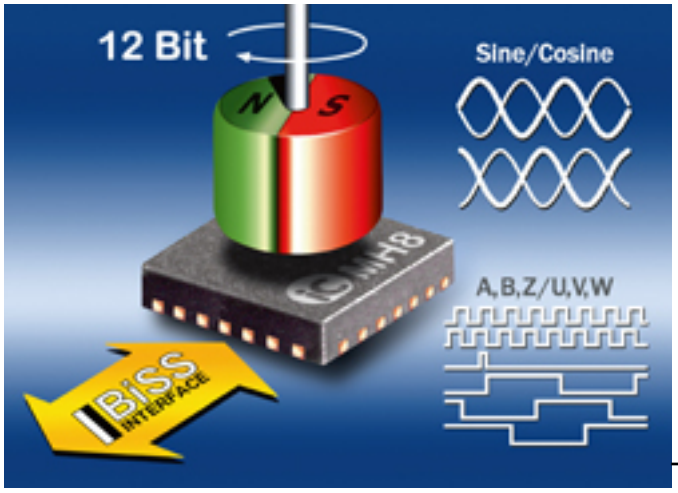
12-bit Encoder IC Includes Absolute, Incremental and BLDC Motor Commutation Signals



The iC-MH8 system on chip magnetic encoder device provides fast step response for motor control applications. Combined with a diametrically magnetized permanent magnet, this compact device (QFN28 5x5 package) can be used to create a vigorous, universal encoder with motor commutation and positioning interfaces. The SoC includes a Hall sensor array with signal amplification control, incremental (ABZ) outputs, absolute position via serial SSI/BiSS interface, BLDC motor commutation (UVW) outputs, differential sine/cosine outputs (1 Vpp to 100 Ohm), and integrated RS-422 line driver outputs. The encoders is typically used in industrial, automotive, and general motor control applications.

The angle resolution can be programmed up to 4,096 steps (12-bit) per revolution, and with an ABZ incremental signal output edge rate of 8 MHz, speeds of up to 120,000 RPM can be realized. BLDC motor commutation is also available for 2-pole, 4-pole, or 8-pole DC motors. For safety applications, the differential sine/cosine outputs provide redundant capture and transmission of the angle position at 1 Vpp to 100 ?. The sine/cosine, ABZ, and UVW outputs have also been implemented as configurable RS422 line drivers enabling the device to suit various line lengths and transmission rates.

A bidirectional or synchronous serial SSI/BiSS-C interface is also integrated for absolute position data output. The resolution, hysteresis, edge distance, zero position of the ABZ and UVW signals, and direction of rotation for the iC-MH8 can be configured through the BiSS-C serial interface. These settings can then be permanently stored inside the iC-MH8 internal ROM. An automatic gain regulator compensates for variations in the Hall sensor signals due to fluctuations in the ambient temperature or changes in distance from chip to magnet over the life of the application.

The iC-MH8 operates on a supply voltage of +5 V (±10 percent) within an operating temperature range of -40 to +125°C.

Ic-Haus
630-245-1000, www.ichaus.com [1]

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