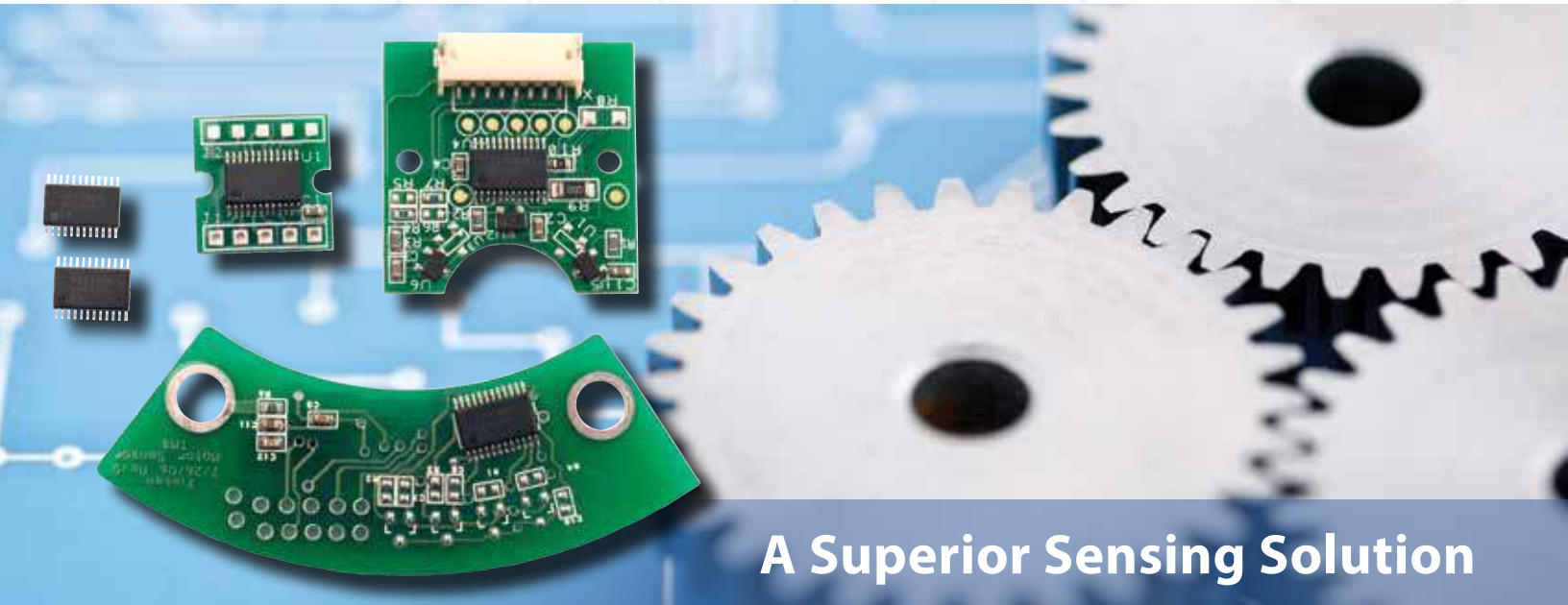


TIMKEN

MPS160 MULTIPLYING ENCODER ASIC

Timken® magnetic encoder technology offers clear operational and cost benefits over other commonly used technologies. Our superior sensing products provide reliable speed and position data even in harsh operating environments.



A Superior Sensing Solution

Patented Timken® high-resolution magnetic encoder technology offers a higher reliability at a comparable cost to optical encoders.

Timken encoders rely on the interaction between a sensor and magnetic target. This approach doesn't require a clear line of target-to-sensor sight like optical encoders. As a result, Timken encoders operate reliably even in environments filled with dirt, dust, oil, water or other contaminants.

Durability

MPS160 sensor and target assemblies are able to sustain shock loads and vibration that would damage more fragile optical-style encoders.

The durability of Timken encoder technology is evident from its proven performance record. In more than five million installations, Timken encoder performance has exceeded customer-specified reliability requirements.

MPS160

The Timken® MPS160 combines a direction-sensing Hall Effect encoder with integrated index pulses and a high-accuracy resolution multiplying circuit. The encoder produces and processes the Hall Effect signals to create high-resolution quadrature output signals that provide zero-speed and direction sensing. It can provide quadrature signals at speeds up to 200 kHz/channel (800kHz data rate).

As a multiplying encoder, the programmable output signal is up to 160 times the resolution of the pole-pair count on the sensor's multi-pole magnetic target. This creates the high-decimal or binary resolution normally associated with optical encoders.

Customized Solutions

Customers have wide flexibility when incorporating Timken encoders in their original equipment. In addition to the standard encoder options, customers can work with Timken application engineers to customize the sensor package to their application.

More details regarding specifications,
installation and instructions available at www.timkenencoders.com

The Attraction of Magnetic Encoders

- Fully integrated on-chip Hall Effect sensor generates digital, high-resolution, programmable synchronized index pulse signals (C&D)
- Customized solutions available to provide up to 14 bit resolution with a 68 mm (2.7 in.) diameter target; higher resolution available on larger targets
- Operating temperature range up to 125° C (255° F) means costly sealing or ruggedizing is not needed
- Not affected by liquid or solid particulate in gap between sensor and target
- Wide, 4 mm target-to-sensor (air) gap prevents damage from shock or vibration
- Absolute position capability when used with external or commutation Hall Effect devices
- SPI/SSI interface
- Low-power mode operation
- Self-diagnostics for air gap and internal errors
- Complete system on a chip
- Uses polymer-bonded multi-pole magnets as rotary or linear targets
- Off-axis positions
- AEC Q100 certified

Used In Many Applications

- Brushless DC motors
- Rotary and linear positioning
- General-purpose motion control
- Automotive electric-power-assisted steering
- AC and DC motor internal speed control
- Motion control/sensing in industrial equipment
- Electric motor feedback in automotive accessories

Specifications and Features

Electrical

- DC supply voltage: 4.5V to 5.5V, 40 mA max.
- Low-power mode (3 mA max.)
- Signal rise & fall time: <1 μ S (with 820 ohm pull up resistor)
- Multiple output drivers on chip:
 - Open drain - Current sinking, 10 mA max.
 - Line Driver outputs A, B, C
- Quadrature accuracy: +/-12.25° (Electrical)
- Position accuracy: < 0.09° @ 12 Bit (Mechanical)

Environmental

- Shock load protected up to 100 Gs
- Vibration-resistant
- Unaffected by liquid or solid particulate in sensor-to-target gap

- Standard operating temperature: -40° to 125° C (-40 – 255°F) (higher temperature versions available)
- Electrostatic discharge protected to 2 kV
- Excellent EMI performance
- Rejects common mode magnetic fields
- RoHS compliant
- TSSOP-24 package, 8 mm X 6 mm X 1 mm (.31 X .23 X .04 in.)

Resolution

- Programmable range of binary or decimal resolutions
- Minimum linear resolution: 10 Microns

Magnetic

- Pole size: 0.8 to 4.0 mm (.03 to .18 in.)
- Minimum field strength: 50 Gauss
- Standard and custom target polymer-banded magnets available

TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets high-performance steel as well as mechanical components, including bearings, belts, gears, chain and related mechanical power transmission products and

Stronger. Commitment. Stronger. Value. Stronger. Worldwide. Stronger. Together. | Stronger. By Design.

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