

# TIMKEN



## TIMKEN<sup>®</sup> MAGNETIC ENCODERS

### **Sensing An Opportunity To Improve Your Products?**

Timken<sup>®</sup> magnetic encoder technology offers clear operational and cost benefits over other commonly used technologies. Our superior sensing products hold up to harsh conditions and are customizable to help control your costs.

# Superior Sensing Solution from Timken

Durable, reliable Timken® magnetic encoders outperform optical encoders in many manufacturing, material processing and power generation automation systems, where accurate speed and position in motors and other electromechanical equipment is vital. In almost every application, Timken technology provides the required resolution for precision position control with significantly higher reliability, at a comparable cost to optical encoders.

## Standard and Customized Encoders Enhance Your Products

Timken expertise in sensing technology begins with our knowledge of electronics in demanding industrial mechanical applications, specifically the effects of heat, moisture, vibration and mechanical shock. We focus on integrating Timken-patented sensor electronics with your equipment to help ensure top performance and long product life.

Customers rely on Timken for value-added solutions. The standard M15 Modular Magnetic Encoder offers a range of resolutions in a ready-to-mount kit that includes the circuit board and target. THS25 packaged encoders provide reliable speed and position sensing for a variety of applications including motor and vector control. Timken application engineers also work with customers to develop customized



*THS 25 Industrial Package Encoder*



*MPS 160 Linear Encoder ASIC*

kits to meet specific physical, electrical and environmental requirements.

## Helping You Develop New Solutions

Timken provides original equipment manufacturers (OEMs) with a wide range of options for encoder components. Some rely on Timken to provide complete circuit boards and targets, or simple circuit board design, with Timken supplying the multiplying encoder ASIC chip (MPS160) and target. Others purchase a target-and-chip combination to integrate with their circuit board design.

Timken supports customer product development, by offering fast, flexible lead times for prototypes. Relying on Timken engineering assistance to design-in a customized encoder ensures a more compact configuration delivering reliable performance.



*M15 Modular Magnetic Encoder*

## Cost-Saving Sensing Solutions

For new product design, Timken application engineers can help you create an optimized sensor solution. A compact, customized design provides OEMs with cost-saving opportunities to downsize motors or other equipment creating space and material savings. The smaller dimensions may also provide a design advantage over competitors' offerings.

## Flexible Design Capacity

Timken encoders feature a highly flexible design capability. As a result, a relatively short list of Timken encoders can be used in a wide variety of applications, reducing the number of encoders in your supply chain and on your shelves.

Magnetic technology's resistance to debris and damage means less maintenance and downtime for end users, and builds greater satisfaction with the OEM's products.

Reliable, versatile Timken encoders selected and designed-in with the guidance of Timken application engineers provide a superior sensing solution for a broad range of applications.

## Handles Most Jobs

Timken encoder technology can be successfully used in a variety of applications, including:

- *Servomotors*
- *Variable-speed Drives*
- *Stepper Motors*
- *Paper-handling Equipment*
- *Lab Analyzers*
- *Industrial Automation Systems*
- *Pan, Tilt, Zoom and Elevation & Azimuth*
- *Critical Vehicle Systems*
- *Material-handling Cranes, Lifts, Conveyors*

## Attractive Magnetic Encoders

Timken advancements in magnetic encoding technology have resulted in patented, compact, cost-effective encoders, providing a better alternative. The encoder produces reliable and accurate data even in hot and dirty environments, or where moisture and condensation can be a challenge. Additional features include:

- *A wide target-to-sensor gap of up to 4 mm, which allows accurate signals even in high-vibration and shock installations and where axial tolerances can cause optical encoders to fail.*
- *An operating temperature range of up to 135° C (275° F) in a standard Timken encoder — higher than most optical sensors can tolerate.*
- *Higher temperature ranges in a standard encoder that make costly ruggedizing unnecessary.*
- *Reliability that stands up to the challenges of tough applications like brushless motors used for speed and position control in automotive assisted-power-steering. Timken consistently exceeds customer-specified reliability requirements. In fact, in more than five million installations, Timken has exceeded customer-specified reliability requirements.*
- *A standard offering of up to 2,560 counts-per-revolution that meets most data applications. Customized solutions can be provided up to 25,000 counts.*

	On-Axis Magnetic Encoder	Resolver	Optical Encoder	Timken Off-Axis Magnetic Encoder
Absolute or Incremental	Absolute and Incremental	Absolute	Absolute and Incremental	Absolute and Incremental
Absolute Resolution	8-12 bits	16 bits	15 bits typ	13 or 16 bits
Incremental Resolution	1024 lines	N/A	10,000 lines typ 250k lines possible	25,000 lines
Typical Accuracy (arc minutes)	30 to 50	3 to 50	.15 to 6	4 to 20
Gap/Alignment Requirements	Sensitive	Sensitive	Highly Sensitive	Least Sensitive
Handles Contamination Well	Y	Y	N	Y
Handles Shock/Vibration Well	Y	Y	N	Y
Typical Maximum Temperature	125°C (257°F)	150°C (302°F) (125°C for R/D Converter)	85°C or 100°C (185°F or 212°F)	135°C (275°F)
Simple Architecture	Y	N	Y	Y
Redundant System	Y	N	Y	Y
Required Space	Very Small	Large	Medium	Very Small
Cost	Less	Higher	Less	Less

Comparing the operating parameters of various encoder types can help engineers select the appropriate encoder technology for specific applications.



*Visit [timkenencoders.com](http://timkenencoders.com) to order magnetic encoders.*

# 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, gears, chain and related mechanical power transmission products and services.

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

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