

# TIMKEN

## M11 MODULAR MAGNETIC ENCODER

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

The Timken® M11 miniature off-axis magnetic commutating encoder provides a high-resolution, reliable solution offering exceptional operation in tough conditions, long life, easy installation and consistent performance.

### Durable

The M11 performs remarkably well in extremes of temperature, with a limit of 125°C which is 40°C higher than most optical encoders this size. Its differential magnetic sensor circuit design protects from magnetic field interference while its larger sensor gap allows it to sustain intense shock loads and vibration. The M11 encoder handles a wider range of shaft-end play and run-out than modular optical encoders.

### Design

The Timken M11 produces on-chip Hall Effect signals to create high resolution quadrature output that determines speed and direction. The M11 is available with index pulse and optional commutation for brushless motors up to 6 poles.

One of the smallest commutating encoders available, it is the most accurate magnetic encoder in its class – ideal for small brushless DC motors, servo motors, and microstepping small stepper motors.

The M11 fits Nema 11 motors and is capable of up to 1024PPR.

Off axis technology provides accuracy not available with on-axis magnetic encoders. The magnetic target is marked for shaft-positioning alignment. Air gap tolerance makes installation quick and easy.

### Customized Solutions

Timken application engineers create products designed to meet your unique needs. By tailoring the encoder's electronic and physical configurations, the Timken team enhances function and performance to supply a reliable and durable solution.

### Why Magnetic Encoders?

- Highly resistant to liquid or solid particulate in gap between sensor and target
- Polymer-bonded multi-pole magnets
- High accuracy - less than 10 arc minutes
- Compact, low-cost and rugged
- Can be customized as a replacement part or to fit new designs
- No moving parts

More details regarding specifications, installation and instructions available at [www.timkenencoders.com](http://www.timkenencoders.com)

**Specifications and Features**

**Mechanical**

- Bore Sizes: 0.125 in., 1.5 mm, 2mm, 3mm, 4mm, 5mm, , 6mm, 0.25 in., 8 mm
- Maximum Speed: 12,000 RPM
- Weight: 12.5 g (0.5oz)

**Electrical\***

- Open collector or line driver (26C31)
- Commutation: 2/4/6 poles standard
- Resolutions (PPR): 100, 125, 128, 160, 200, 250, 256, 320, 400, 500, 512, 640, 720, 800, 1000, 1024
- Gated Index
- Current Requirements: 39mA
- Supply Voltage: 5VDC +/- 10%
- Data Rate: 200kHz (800kHz combined)

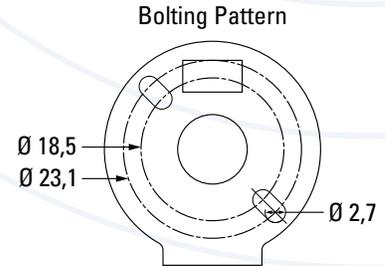
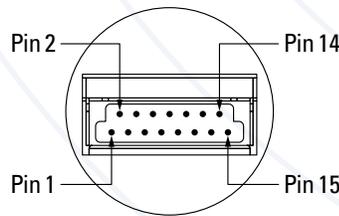
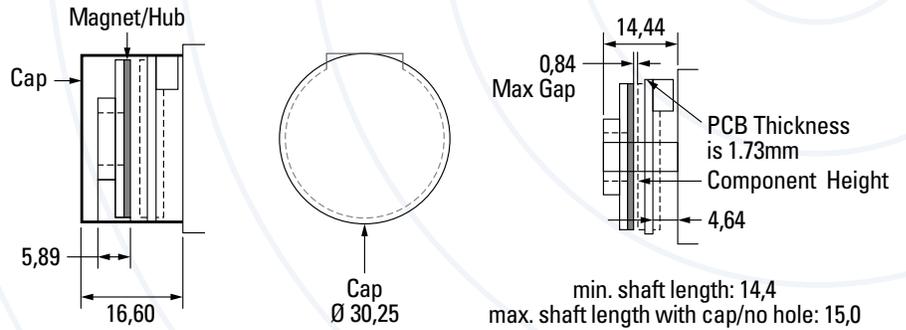
**Environmental**

- Temperature: -40°C to 125°C open collector, -40°C to 85°C line driver, -40°C to 125°C high temperature line driver
- Enclosure Rating with Cover: IP40
- RoHS Compliant

\*Consult Timken for other electrical options.



Typical miniature stepper motor installation



Mating Connector: FI-W15S JAE

All dimensions in mm

Pin #	1	2†	3	4†	5	6†	7*	8*†	9*	10*†	11*	12*†	13	14	15
Function	A+	A-	B+	B-	RP+	RP-	U+	U-	V+	V-	W+	W-	VCC1	GRND	N/A
Color	Yel	Yel/ Wht	Blu	Blu/ Wht	Orn	Orn/ Wht	Grn	Grn/ Wht	Brn	Brn/ Wht	Wht	Wht/ Gry	Red	Blk	Gry

†Output on pins 2, 4, 6, 8, 10, 12 available with line driver option only.  
\*Output on pins 7-12 available with commutated units only.



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 mechanical components, including bearings, gears, belts, chain and related mechanical power transmission products and services.

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

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