

# TIMKEN

## M9 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® M9 – the smallest off-axis magnetic encoder on the market – provides a high-resolution, reliable solution offering exceptional operation in tough conditions, long life, easy installation and consistent performance.

### Durable

The M9 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 M9 encoder handles a wider range of shaft-end play and run-out than modular optical encoders.

### Design

The Timken M9 produces on-chip Hall Effect signals to create high resolution quadrature output that determines speed and direction.

The M9 is capable of up to 1000PPR and is available with index pulse and line driver. It's ideal for microstepping small stepper motors or for small, high speed servomotors. 800KHz data rate allows up to 12,000 RPM at 1000PPR. Off-axis technology provides accuracy not available in on axis magnetic encoders.

The magnetic target is marked for shaft-positioning alignment. Air gap tolerance makes installation quick and easy.

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### 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, 2 mm, 3 mm, 4 mm, 5 mm
- Maximum Speed: 12,000 RPM
- Weight: 10 g (0.5oz)

**Electrical\***

- Open collector or line driver (26C31)
- Resolutions (PPR): 100, 125, 128, 180, 200, 250, 256, 360, 400, 500, 512, 640, 720, 800, 1000
- Gated Index
- Supply Voltage: 5VDC +/- 10%
- Current Requirements: 39mA
- Data Rate: 200kHz (800kHz combined)

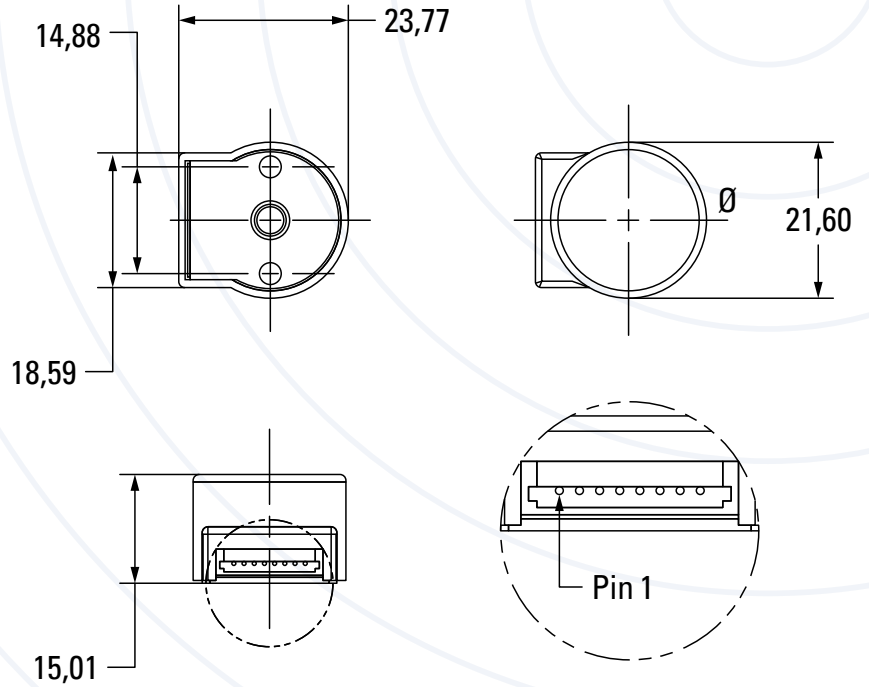
**Environmental**

- 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



All dimensions in mm

Mating Connector: JST ZHR-8

Pin #	1	2	3	4	5	6	7	8
Function	Power (+5VDC)	Ground	A+	A-	B+	B-	C+	C-
Color	Red	Blk	Yel	Yel/Wht	Blu	Blu/Wht	Orn	Orn/Wht

**To Order:** The part numbering for the Timken M9 Modular Magnetic Encoder provides the information to select the best encoder for your needs. Use the chart below to determine the proper part number for your order.

M9 - \_\_\_\_\_

ENCODER	RESOLUTION	COMMUTATION	INDEX PULSE	SHAFT/BORE SIZE	OUTPUT	TERMINATION	COVER	
M9	100	400	0 = none	0 = none	1 = 1/8 in.	1 = open collector	1 = 8 pin connector	0 = none
	125	500		1 = yes	31 = 1.5 mm	2 = line driver	2 = 18" cable with 8 pin mating connector	1 = cover
	128	512			15 = 2 mm		3 = 36" cable with double end 8 pin mating connectors	2 = cover w/ center hole
	180	640			30 = 3 mm			
	200	720			11 = 4 mm			
	250	800			3 = 5 mm			
	256	1000						
	360							
							Cables sold separately	
							Cable Part Numbers	
						MISC-CABLE 18 INCH 8 COND		
						MISC-CABLE 36 INCH 8 COND		



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. By Design.**

[www.timken.com](http://www.timken.com)  
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