

## MODEL ZMD – MINIATURE LENGTH SENSOR (Replaces MODEL LSM)

- COMPACT SIZE
- QUADRATURE OUTPUT
- BUILT-IN SPRING TENSIONING
- VERTICAL, HORIZONTAL, OR UPSIDE-DOWN MOUNTING
- REDUCES INSTALLATION TIME
- VARIOUS MEASURING WHEELS AVAILABLE



### DESCRIPTION

Designed for light to medium duty sensing applications, the Miniature Length Sensor, Model ZMD, is compact in size and easy-to-use.


It features a built-in spring-loaded torsion arm that provides a simple-to-adjust torsion load, allowing the unit to be mounted in almost any orientation, including upside down. Using a 6" or 200 mm wheel, the ZMD can be used on almost any surface, while operating at speeds up to 3000 feet per minute. The housing is a durable, conductive composite material that will eliminate static build up. Whether you need to measure speed, position, or distances, the Model ZMD is the ideal solution. For other pulse rates and/or wiring configurations, contact the factory for further details.

### Open Collector Output Wiring


The ZMD sensors have open collector outputs. An open collector output brings the uncommitted collector of the encoder switching device to the external world. Because the collector element is not associated with the sensor supply voltage, the sensor output collector may be "pulled up" to external voltages different than the encoder supply voltage (30 VDC maximum). NPN open collector outputs are current sinking devices. An output signal will not be generated unless a pull-up resistor is connected from the open-collector to the positive side of an external supply. The same supply can be used for powering the unit and for the pull-up resistor.

### SAFETY SUMMARY

All safety related regulations, local codes and instructions that appear in the literature or on equipment must be observed to ensure personal safety and to prevent damage to either the instrument or equipment connected to it. If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.



**CAUTION: Read complete instructions prior to installation and operation of the unit.**



**CAUTION: Risk of electric shock.**

### SPECIFICATIONS

#### ELECTRICAL SPECIFICATIONS

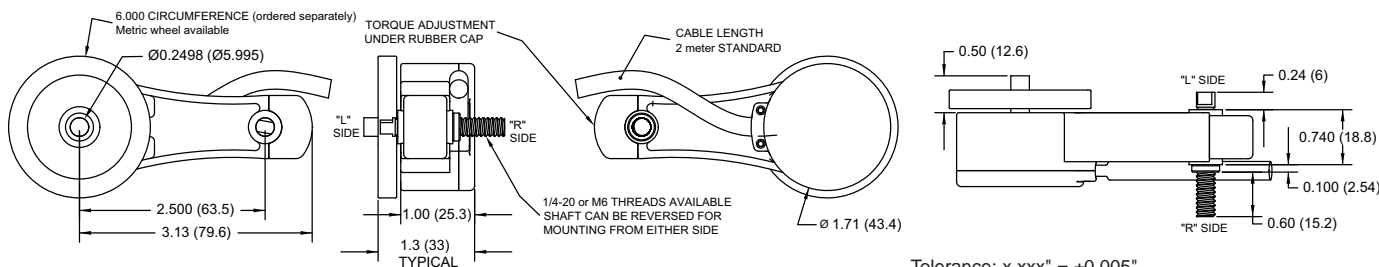
- INPUT VOLTAGE:** 4.75 to 28 VDC max for temperatures up to 85°C; 4.75 to 24 VDC for temperatures between 85°C to 100°C, reverse polarity protected.
- INPUT CURRENT:** 100 mA max (65 mA typical) with no output load
- OUTPUTS:** NPN Open Collector Transistor,  $V_{OH} = 30$  VDC max.; 20 mA max. current. Incremental - Two square waves in quadrature with A leading B for clockwise rotation, as viewed from the wheel side.
- MAX FREQUENCY:** 200 KHz standard
- NOISE IMMUNITY:** Tested to BS EN61000-6-2; BS EN50081-2; BS EN61000-4-2; BS EN61000-4-3; BS EN61000-4-6, BS EN500811 (Tested with 2 meter cable)
- SYMMETRY:** 180° ( $\pm 18^\circ$ ) electrical
- QUAD. PHASING:** 90° ( $\pm 22.5^\circ$ ) electrical
- MIN. EDGE SEP:** 67.5° electrical
- ACCURACY:** Within 0.017° mechanical or 1 arc-minute from true position. (for PPR>189)

#### MECHANICAL SPECIFICATIONS

- MAXIMUM MECHANICAL SPEED:** 6000 RPM. Higher speeds may be achievable, contact the factory.
- SHAFT MATERIAL:** Stainless Steel
- SHAFT TOLERANCE:** +0.0000/-0.0004" (+0.000/-0.010 mm)
- RADIAL SHAFT LOAD:** 5 lb. max. Rated load of 2 to 3 lb for bearing life of  $1.2 \times 10^{10}$  revolutions
- AXIAL SHAFT LOAD:** 5 lb. max. Rated load of 2 to 3 lb for bearing life of  $1.2 \times 10^{10}$  revolutions
- STARTING TORQUE:** 0.05 oz-in
- ELECTRICAL CONNECTION:** 2 meter Cable, (foil and braid shield, 24 AWG conductors). Drain wire internally connected to case.

FUNCTION	CABLE WIRE COLOR
+VDC	Red
Com	Black
A	White
B	Green
Shield	Bare

### DIMENSIONS In inches (mm)



Tolerance: x.xxx" =  $\pm 0.005$ "  
 x.xx" =  $\pm 0.01$ "

8. **MOUNTING:** Pivot Shaft can be mounted from either side of the housing and is field reversible.  
 9. **HOUSING:** Stainless steel fibers in a high temperature nylon composite  
 10. **WEIGHT:** 5 oz typical

**ENVIRONMENTAL SPECIFICATIONS**

1. **OPERATING TEMPERATURE:** -20°C to 85°C  
 2. **STORAGE TEMPERATURE:** -25°C to +85°C  
 3. **HUMIDITY:** 98% RH non-condensing  
 4. **VIBRATION:** 10 g @ 58 to 500 Hz  
 5. **SHOCK:** 80 g @ 11 msec duration  
 6. **SEALING:** IP50

**ORDERING INFORMATION**

MODEL NO.	DESCRIPTION	PPR	PART NUMBER
ZMD	Miniature Length Sensor with Quadrature Output	250	ZMD0250B
		500	ZMD0500B
		1000	ZMD1000B
		2000	ZMD2000B
		2500	ZMD2500B



Do not dispose of unit in trash - Recycle

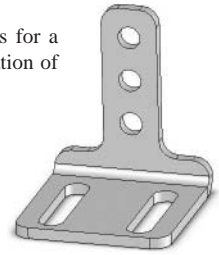
**ACCESSORIES**

DESCRIPTION	PART NUMBER
Mounting Bracket	RPGMB002
Urethane (6" Circumference) Wheel	WI0006OF
Knurled (6" Circumference) Wheel	WI0006OK
Urethane (200 mm Circumference) Wheel	WM0200OF
Knurled (200 mm Circumference) Wheel	WM0200OK

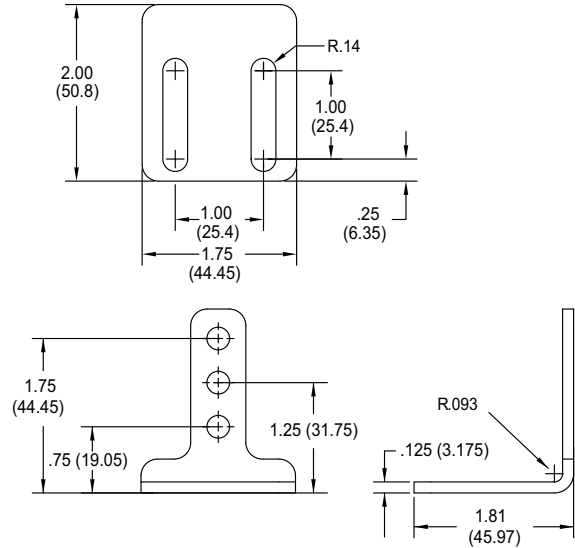
Only factory stocked part numbers are listed. Consult the factory for part number and availability of other PPR and output configurations.

**MOUNTING BRACKET**

This accessory angle mounting bracket allows for a variety of mounting positions and makes installation of the ZMD even easier.



**DIMENSIONS In inches (mm)**



**LIMITED WARRANTY**

The Company warrants the products it manufactures against defects in materials and workmanship for a period limited to two years from the date of shipment, provided the products have been stored, handled, installed, and used under proper conditions. The Company's liability under this limited warranty shall extend only to the repair or replacement of a defective product, at The Company's option. The Company disclaims all liability for any affirmation, promise or representation with respect to the products.

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