

## MODELS ZOD AND ZOH - THRU-BORE ROTARY PULSE GENERATORS (ZOH REPLACES THE MODEL RPGO)

### GENERAL DESCRIPTION

The Model ZOD and ZOH are Thru-Bore Encoders. The ZOD has a bore of 0.25" (6.35 mm) and the ZOH is a 0.375" (9.5 mm) bore. These units are ideal for applications requiring a miniature, high precision, low cost encoder, designed with all metal construction for years of trouble-free operation.

The encoders have a flexible butterfly mount and blind hollow shaft. These encoders use two set screws that are 90° apart to clamp the encoder's hub to the motor shaft. The NPN Open Collector outputs are each current limited to 100 mA. The outputs are standard quadrature with index, and are available in resolutions up to 2500 pulses per shaft revolution. The quadrature separation is typically 90 electrical degrees. Output A leads output B for clockwise rotation of the encoder shaft.



### SPECIFICATIONS

#### ELECTRICAL SPECIFICATIONS

- SUPPLY VOLTAGE:** 4.75 to 28 VDC, 100 mA max. 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.
- MAX. FREQUENCY:** 200 KHz
- INDEX:** NPN Open Collector Transistor,  $V_{OH} = 30$  VDC max.; 20 mA max. current. Once per revolution centered over output Channel A. Index is a positive going pulse.
- 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
- 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:** 8000 RPM
- BORE SIZE:**  
 ZOD: 0.25" (6.35 mm)  
 ZOH: 0.375" (9.5 mm)
- BORE TOLERANCE:** -0.0000"/+0.0006"
- USER SHAFT TOLERANCES:**  
 Radial Runout: 0.008" max  
 Axial Endplay: +/- 0.030" max
- STARTING TORQUE:** 0.6 oz-in (4.24 N-mm)
- MOMENT OF INERTIA:**  
 $6.7 \times 10^{-5}$  oz-in-sec<sup>2</sup> (4.8 gm-cm<sup>2</sup>)
- ELECTRICAL CONNECTIONS:**  
 Cable is 36" (914.4 mm) in length with 24 AWG conductors w/shield.

FUNCTION	WIRE COLOR
+VDC	Red
Common	Black
Data A	White
Data B	Green
Index Z	Orange

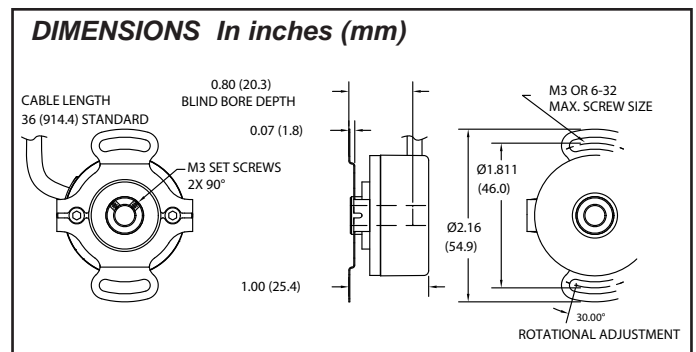
- MOUNTING:** 1.811 (46 mm) slotted flex mount
- WEIGHT:** 3 oz. (85.0 g)

#### ENVIRONMENTAL SPECIFICATIONS

- OPERATING TEMPERATURE:** -20°C to 85°C
- STORAGE TEMPERATURE:** -25°C to +85°C
- HUMIDITY:** 98% RH non-condensing
- VIBRATION:** 10 g @ 58 to 500 Hz
- SHOCK:** 80 g @ 11 msec duration
- SEALING:** IP64

#### Open Collector Output Wiring

The ZOD and ZOH encoders 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.



#### ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PPR	PART NUMBER	
			0.25" Thru-Bore	0.375" Thru-Bore
ZOD & ZOH	Thru-Bore Rotary Pulse Generators	60	ZOD0060A	ZOH0060A
		100	ZOD0100A	ZOH0100A
		500	ZOD0500A	ZOH0500A
		600	ZOD0600A	ZOH0600A
		1000	ZOD1000A	ZOH1000A
		1200	ZOD1200A	ZOH1200A
		2000	ZOD2000A	ZOH2000A
		2500	ZOD2500A	ZOH2500A

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