

## MODEL ZR - C-FACE ENCODER WITH LINE DRIVER OUTPUT FOR MOTOR FEEDBACK



- THRU-SHAFT DESIGN FOR EASY MOUNTING
- EXCELLENT CHOICE FOR VECTOR MOTOR DRIVE CONTROL
- DESIGNED FOR INDUSTRIAL ENVIRONMENTS
- GASKET KIT INCLUDED
- QUADRATURE LINE DRIVER OUTPUT
- POSITIVE INDEX PULSE

### DESCRIPTION

The Model ZR C-face encoder for motor feedback is a rugged, high resolution, high temperature (100°C) encoder designed to mount directly on NEMA C-face motors. The ZR contains a precision bearing and internal coupling that virtually eliminates inaccuracies induced by motor shaft runout. This encoder is ideal for applications using high performance AC vector motors.

The thru-shaft design allows fast and simple mounting of the encoder directly to the accessory shaft or to the drive shaft of the motor, using the standard motor face (NEMA sizes 56C, 143TC, 145TC, 182C, 184C). The tough anodized aluminum housing with thru-shaft design resists the vibration and hazards of an industrial environment.

### SPECIFICATIONS

#### ELECTRICAL SPECIFICATIONS

- SUPPLY:** 4.75 to 28 VDC, 40 mA current draw typical, 100 mA maximum.
- OUTPUT:** Quadrature Line driver, 20 mA max per channel (meets RS-422 at 5 VDC supply). Incremental - two square waves in quadrature with A leading B for clockwise shaft rotation. Positive pulse index.  
*Note: Line driver outputs are intended for motion controllers that have line driver receivers.*
- CYCLES PER REVOLUTION:** 1024 or 2048

- MAX. FREQUENCY:** 200 KHz
- NOISE IMMUNITY:** Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DDENV 50141; DDENV 50204; BS EN55022; BS EN61000-6-2; BS EN50081-2
- SYMMETRY:** 180° (±18°) electrical
- QUAD PHASING:** 90° (±22.5) electrical
- MIN EDGE SEP:** 67.5° electrical
- RISE TIME:** Less than 1 microsecond

#### MECHANICAL SPECIFICATIONS

- MAX MECHANICAL SPEED:** 6000 RPM
- BORE DIAMETER:** 0.625" or 1.0"
- BORE TOLERANCE:** +0.0015"/-0.000"
- MOMENT OF INERTIA:**  $3.3 \times 10^{-3}$  oz-in-sec<sup>2</sup> typical
- USER SHAFT TOLERANCES:**  
Radial Runout: 0.005"  
Axial Endplay: ±0.015"
- ELECTRICAL CONNECTION:** 10-pin MS type connector or 36" (914.4 mm) cable. 24 AWG foil and braid shield.

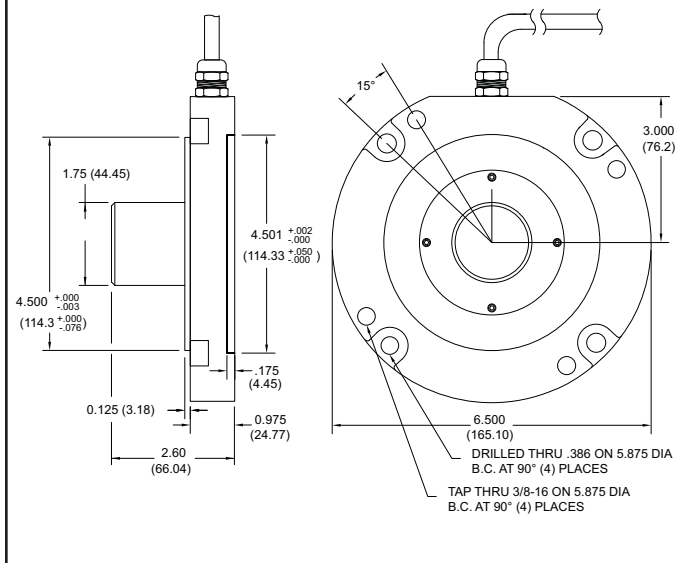
FUNCTION	PIN	CABLE WIRE COLOR
+VDC	D	RED
COM	F	BLACK
DATA A	A	WHITE
DATA A'	H	BROWN
DATA B	B	BLUE
DATA B'	I	VIOLET
DATA Z	C	ORANGE
DATA Z'	J	YELLOW
SHIELD	—	BARE

- HOUSING:** All metal construction
- MOUNTING:** NEMA 56C to 184C when proper bore size is selected
- WEIGHT:** 2.60 lb. (1.18 Kg) typical

#### ENVIRONMENTAL CONDITIONS

- OPERATING TEMPERATURE:** 0 to +100°C @ 4.75 to 24 VDC  
0 to +70°C @ 4.75 to 28 VDC
- STORAGE TEMPERATURE:** -25 to +100°C
- HUMIDITY:** 98% RH non-condensing
- VIBRATION:** 10 g @ 58 to 500 Hz
- SHOCK:** 50 g @ 11 msec duration
- SEALING:** IP65 with included shaft cover and gaskets installed.

### DIMENSIONS In inches (mm)



## MOUNTING INSTRUCTIONS

### Mounting Kit Items Included:

- 4 ea. - 3/8" 16 x 1.0" Length Socket Head Cap Screws, Black Alloy.
- 4 ea. - 3/8" High Collar Spring Lock washer, Steel Zinc.
- 1 ea. 3/32" Hex Allen Wrench, Long arm.

*Note: The ZR encoder can mount to many types of C face devices. In these mounting instructions, we will refer to the device as a motor.*

### Step 1

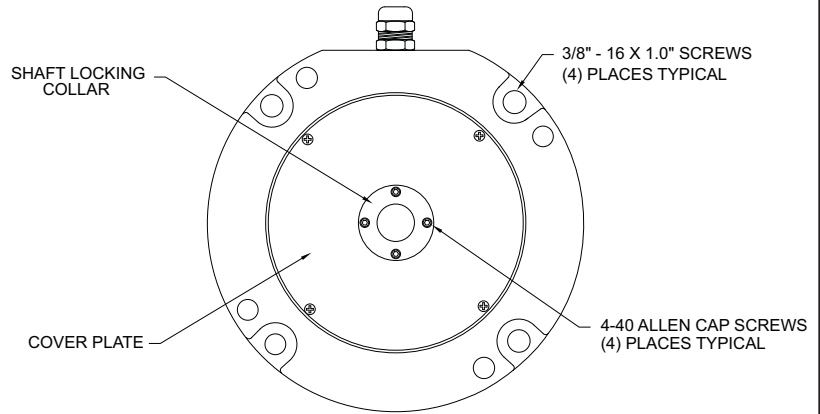
After carefully unpacking the unit, inspect to insure the motor shaft is the correct size and free of all burrs or aberrations. Slide the ZR Encoder over the motor shaft. **DO NOT USE EXCESSIVE FORCE:** There is a rubber O-ring in the Encoder locking collar that will provide a small amount of resistance as it engages the shaft. If the encoder does not slide easily See Note 1 below.

### Step 2

Install the four 3/8" 16 x 1.0" socket head cap screws with lock washers through the holes in the Encoder C face and tighten securely to the motor.

### Step 3

Insure the shaft locking collar is flush with the Encoder cover plate. Prevent the motor shaft from turning (See Note 2 for additional information) and tighten the four 4-40 Allen head cap screws in the locking collar evenly in a crossing pattern. See Figure 1. Make sure the screws are securely tightened and the front of the locking collar remains flush with the encoder cover plate. If the collar does not turn true when the motor shaft is rotated, loosen the four screws and repeat the procedure.



### In Case of Difficulty:

**Note 1:** Make sure the four 4-40 Allen head cap screws in the front of the Encoder locking collar are loose and the collar is not cocked or jammed. Clean the shaft of any burrs using fine crocus cloth. The O- ring in the Encoder locking collar may need a small amount of additional lubrication.

**Note 2:** When tightening the screws in the locking collar avoid holding the motor shaft with anything that may scar or burr the shaft.

## ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PPR	BORE SIZE	CONNECTION	PART NUMBER
ZRJ	NEMA C Face Encoder 56C to 184C (Must select proper bore size)	1024	0.625	MS 10-Pin	ZRJ1024Z
		2048	0.625	MS 10-Pin	ZRJ2048Z
		1024	0.625	36" Pigtail	ZRJ1024R
		2048	0.625	36" Pigtail	ZRJ2048R
ZRL		1024	1.0	MS 10-Pin	ZRL1024Z
		2048	1.0	MS 10-Pin	ZRL2048Z
		1024	1.0	36" Pigtail	ZRL1024R
		2048	1.0	36" Pigtail	ZRL2048R

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

## ACCESSORIES

MODEL NO.	DESCRIPTION	PART NUMBER
CCBRPG	10-Pin MS Connector	CCBRPG04
	10-Pin MS Connector with 10 ft 24 AWG 5 Conductor Cable w/drain	CCBRPG05
	10-Pin MS Connector with 20 ft 24 AWG 5 Conductor Cable w/drain	CCBRPG06

### 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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