

Encoder Installation Manual

Dynapar™ brand

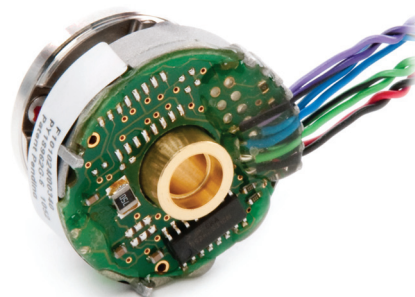
SERIES F10

For Stepper & Small Servo Motors

Document No.: 702453-0001

Revision Level: D

October 20, 2016



DESCRIPTION

The Dynapar brand Series F10 encoder provides high performance, cost effective feedback for stepper and servo motor applications. The F10 offers compact package dimensions and flying leads for a low-profile installation. A size 10 servo ring allows easy mounting and replacement of pancake resolvers with high tolerance to motor shaft movement and 360 degrees of adjustment to align the signal outputs to the shaft position.

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental with commutation option, Optical

Resolution: 1024 or 2048 PPR incremental with 6 pole commutation channels

Accuracy: Incremental: ± 2.5 arc-mins. max. edge to any edge; Commutation: ± 6 arc-mins. max.

Phasing for CCW rotation of motor shaft :
A leads B by 90° and U leads V leads W by 120° .

Minimum edge separation: A to B is 45°

Index to U channel: $\pm 1^\circ$ mech. index pulse center to U channel edge.

Index Pulse Width: 90° gated A and B high

ELECTRICAL

Input Power Requirements: $5 \pm 10\%$ VDC at 100 mA max (incremental and commutation), excluding output load

Output Signals:

Incremental: 26LC31 Differential Line Driver, sink / source 40 mA max.

Commutation: Open Collector w/2.0 k Ω pull-ups, 8 mA sink max.; or 26LC31 Differential Line Driver, sink / source 40 mA max.

Frequency Response: 300 kHz, max.

Termination: Flying leads, stranded 26 AWG, twisted pair, PVC insulation, 6.5" length ± 0.5 "

MECHANICAL

Bore Diameter: 6mm

Bore Dia. Tolerance: $+0.001"/-0.000"$ ($+0.025$ mm/ -0.000 mm)

Dimensions: Outside Diameter : 1.25" (31.7mm), max.; Height: 0.89" (24.1mm), max.

Mating Shaft Runout: 0.002" (0.05 mm) max. (Includes shaft perpendicularity to mounting surface)

Mating Shaft Axial movement: $\pm 0.010"$ (± 0.25 mm)

Mounting: 1.030" (26.16mm) servo ring with integral flexure (size 10 pancake resolver equivalent)

Acceleration: 100,000 rad/sec.² max.

Velocity: 5,000 RPM continuous; 12,000 RPM peak

Moment of Inertia: 2.22×10^{-5} in-oz-sec.² (1.6 gm-cm²)

Housing & Cover Material: Housing: cast aluminum; Servo Ring: glass reinforced engineering resin; Hub: brass; Disc: 0.030" (0.76mm) thick glass

Weight: 1.6 oz. (45 gm) typ.

ENVIRONMENTAL

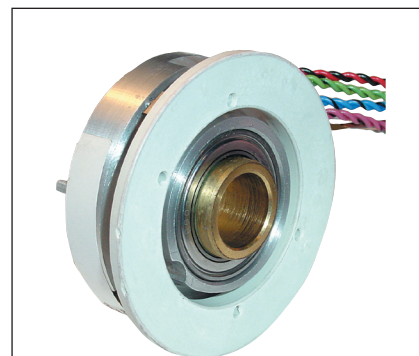
Operating Temperature: 0° to $+120^\circ\text{C}$

Storage Temperature: 0° to $+120^\circ\text{C}$

Shock: 50 Gs for 6 msec duration

Vibration: 2.5 Gs at 5 to 2000 Hz

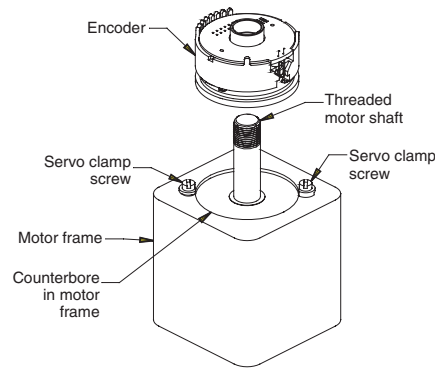
Humidity: 90% (non-condensing)



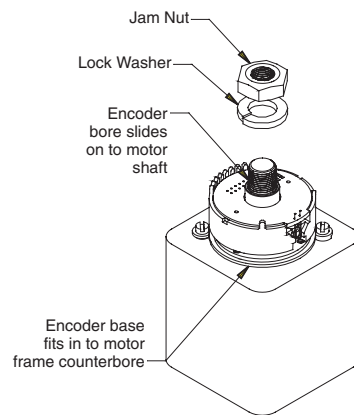
Servo ring mounting with integral flexure is size 10 pancake resolver equivalent

INSTALLATION INSTRUCTIONS (See figures Below)

1) Slide encoder onto motor shaft and allow base ring to seat onto motor housing.

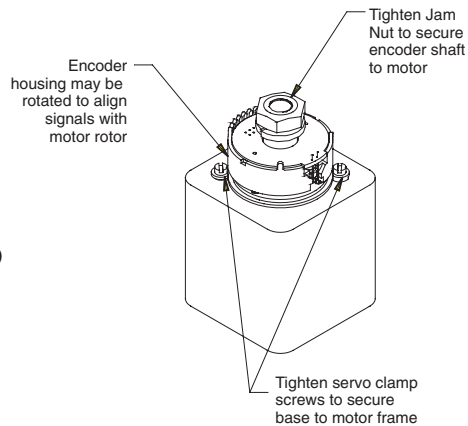


2) Install washer and jam nut and tighten (50 in-lbs [5 N-m] max.).



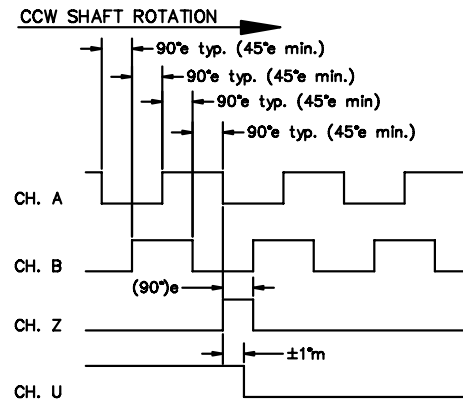
3) Attach wire leads to drive termination (See Electrical Connections, left).

4) Adjust commutation signals by rotating encoder housing.

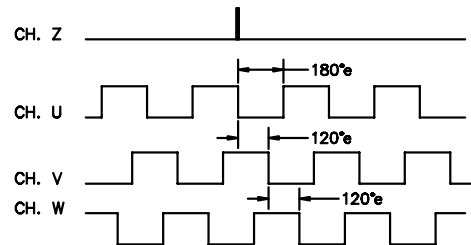


5) Tighten servo clamp screws onto base ring (torque depends on clamp screw used).

Waveforms



Waveforms below show relationship between CH. Z, U, V & W (scale differs from above)

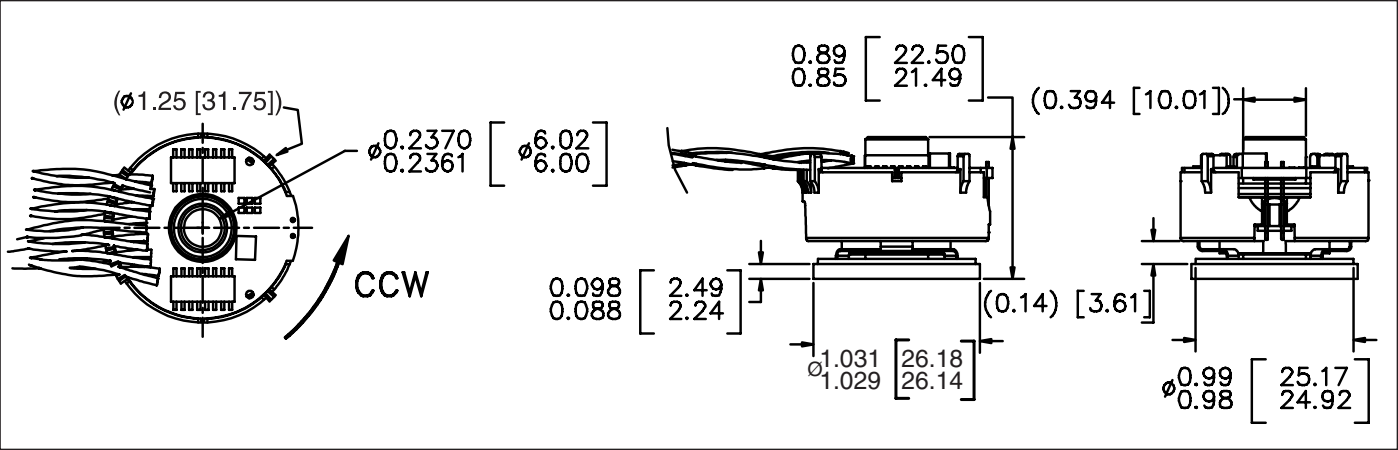


Electrical Connections

Function*	Cable Wire Color
VCC	RED
GND	BLACK
A ⁻	BLUE/BLACK
A	BLUE
B ⁻	GREEN/BLACK
B	GREEN
Z ⁻	VIOLET/BLACK
Z	VIOLET
U ⁻	BROWN/BLACK
U	BROWN
V ⁻	GRAY/BLACK
V	GRAY
W ⁻	WHITE/BLACK
W	WHITE

* Function availability dependant on Model

DIMENSIONS - Inches [mm]



ORDERING

Ordering Information

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR, Poles	Code 3: Mount	Code 4: Electrical	Code 5: Bore	Code 6: Termination
F10					
Ordering Information					
F10 Size 10 Commutating Encoder	Incremental channels only 1024/0 2048/0	0 Servo mount 1.030 Diameter x .095 thick	Available when Code 2 is XXXX/0 3 5V in, line driver out incremental only	4 6mm thru bore	0 6.5" ±0.5" Twisted Pair Flying Leads
	Incremental plus Commutation channels 2048/6		Available when Code 2 is XXXX/6 6 5V in, line driver out for incremental; 5V in, open collector out for commutation 9 5V in, line driver out for incremental; 5V in, line driver out for commutation		