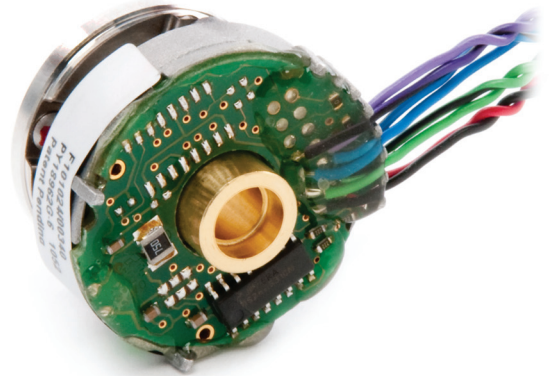# SERIES F10

Dynapar™ brand

For Stepper & Small Servo Motors

Key Features

- **Digital Encoder Replaces size 10 Pancake Resolver**

- **Up to 2048 PPR with Commutation Tracks**

- **Up to 120°C Temperature Range Doesn't Limit Motor Performance**

RoHS

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: +/- 1 °mech. index pulse center to U channel edge.

Index Pulse Width: 90° gated A and B high

ELECTRICAL

Input Power Requirements: 5±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 kΩ 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: ±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: 2.22X10^{-5} in-oz-sec.^{2} (1.6 gm-cm^2)

Housing & Cover Material: Housing: cast aluminum; Servo Ring: glass reinforced engineering resin; Hub: brass; Disc: 0.030" (0.76mm) thick glass
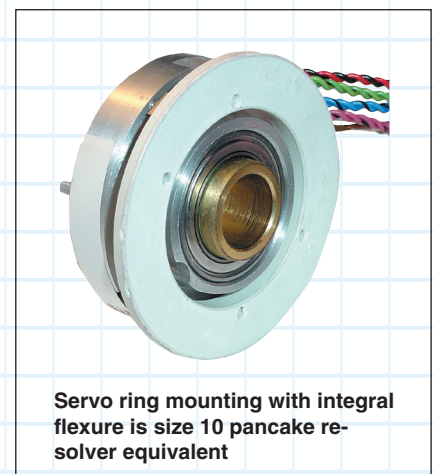
Weight: 1.6 oz. (45 gm) typ.

ENVIRONMENTAL

Operating Temperature: 0° to +120°C

Storage Temperature: 0° to +120°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

Worldwide Brands: **NorthStar™** • **Dynapar™** • **Hengstler™** • **Harowe™**

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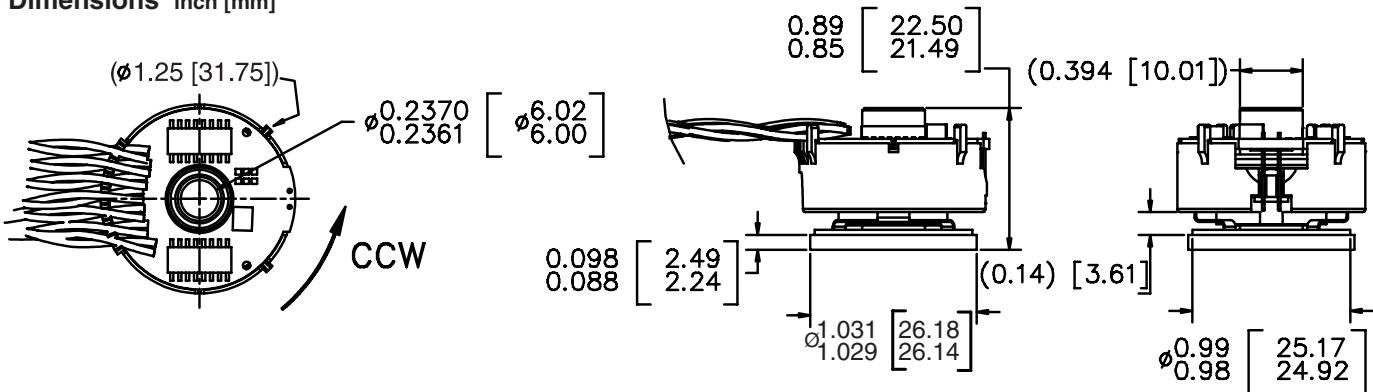dynapar.techsupport@dynapar.com

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Dynapar™ *brand*
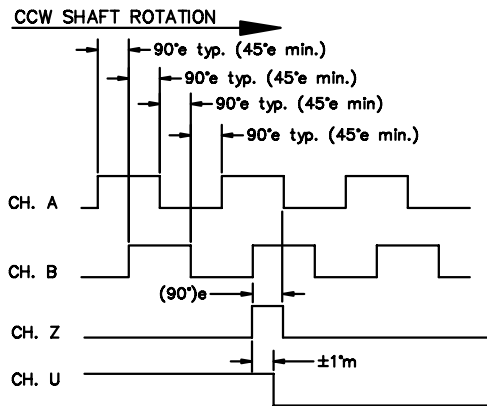
# SERIES F10

Dimensions inch [mm]

(∅1.25 [31.75])

∅0.2370 / 0.2361 [∅6.02 / 6.00]

CCW

0.89 / 0.85 [22.50 / 21.49]

(0.394 [10.01])

0.098 / 0.088 [2.49 / 2.24]

(0.14) [3.61]

∅1.031 / 1.029 [26.18 / 26.14]

∅0.99 / 0.98 [25.17 / 24.92]

Connections

Function*	Cable Wire Color
VCC	RED
GND	BLACK
Ā	BLUE/BLACK
A	BLUE
B̄	GREEN/BLACK
B	GREEN
Z̄	VIOLET/BLACK
Z	VIOLET
Ū	BROWN/BLACK
U	BROWN
V̄	GRAY/BLACK
V	GRAY
W̄	WHITE/BLACK
W	WHITE

* Function availability dependant on Model

Waveforms

CCW SHAFT ROTATION

90°e typ. (45°e min.)
90°e typ. (45°e min.)
90°e typ. (45°e min)
90°e typ. (45°e min.)

CH. A

CH. B

(90°)e

CH. Z

CH. U

±1°m

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

CH. Z

CH. U   180°e

CH. V   120°e

CH. W   120°e
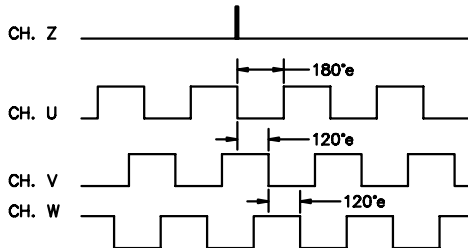
Ordering Information

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	☐☐☐☐/☐	**0**	☐	**4**	**0**
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		