

# SERIES EC23

**Dynapar™ brand**

## Miniature Encoder

### Key Features

- High 5000PPR Capability
- Optional Screw Terminal Connections
- Standard Size 23 (2.3" diameter)



## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental

**Resolution:** 3000 to 5000 PPR (pulses/revolution)

**Accuracy:** (Worst case any edge to any other edge)  $\pm 10.8^\circ$ /PPR

**Format:** Two channel quadrature (AB) with optional Index (Z) and complementary outputs

**Phase Sense:** A leads B for CW or CCW shaft rotation as viewed from the shaft end of the encoder; see Ordering Information

**Quadrature Phasing:**  $90^\circ \pm 25^\circ$  electrical

**Symmetry:**  $180^\circ \pm 25^\circ$  electrical

**Index:**  $90^\circ \pm 25^\circ$  electrical, gated with B

**Waveforms:** Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

### ELECTRICAL

#### Input Power:

4.5 min. to 26 VDC max. at 80 mA max., not including output loads

#### Outputs:

7273 Open Collector: 30 VDC max., 40 mA sink max.

7272 Push-Pull and Differential Line Driver: 40 mA sink or source

**Frequency Response:** 250 kHz min.

**Electrical Protection:** Overvoltage, reverse voltage and output short circuit protected

**Noise Immunity:** Tested to EN50082-2 (Heavy Industrial) for Electro Static Discharge, Radio Frequency Interference, Electrical Fast Transients, Conducted and Magnetic Interference

**Cable:** PVC jacket, 105 °C rated, overall foil shield; 3 twisted pairs 26 AWG (output signals), plus 2 twisted pairs 24 AWG (input power)

### MECHANICAL

**Bearing Life:**  $1 \times 10^9$  revolutions at max. load

**Shaft Loading:** 5 lbs. max radial and axial

**Shaft Runout:** 0.001" max. TIR

**Shaft Speed:** 10,000 RPM max. mechanical

**Shaft Tolerance:** Nominal  $-0.0004/-0.0007$ "

#### Starting Torque:

Shielded bearings: 0.1 oz-in max.;

Sealed bearings: 0.2 oz-in max.

**Moment of Inertia:**  $2.83 \times 10^{-4}$  oz-in-sec<sup>2</sup>

**Weight:** 13 oz. max.

### ENVIRONMENTAL

#### Operating Temperature:

Standard: 0 to +70 °C

**Storage Temperature:** -40 to +90 °C

**Shock:** 50 G's for 11 milliseconds duration

**Vibration:** 5 to 2000 Hz at 20 G's

**Humidity:** to 98% without condensation

**Enclosure Rating:** NEMA12/IP54 (dirt tight, splashproof)

### ELECTRICAL CONNECTIONS

Note: Wire color codes are referenced here for models that are specified with pre-wired cable.

| Single Ended |                    |                 |
|--------------|--------------------|-----------------|
| Term.        | Function (If Used) | Wire Color Code |
| A            | Signal A           | BRN             |
| B            | Signal B           | ORN             |
| C            | Signal Z           | YEL             |
| D            | Power Source       | RED             |
| E            | No Connection      | —               |
| F            | Common             | BLK             |
| G            | Case               | GRN             |

| Differential |                    |                 |
|--------------|--------------------|-----------------|
| Term.        | Function (If Used) | Wire Color Code |
| A            | Signal A           | BRN             |
| B            | Signal B           | ORN             |
| C            | Signal Z           | YEL             |
| D            | Power Source       | RED             |
| E            | No Connection      | —               |
| F            | Common             | BLK             |
| G            | Case               | GRN             |
| H            | Signal $\bar{A}$   | BRN/WH          |
| I            | Signal $\bar{B}$   | ORN/WH          |
| J            | Signal $\bar{Z}$   | YEL/WH          |

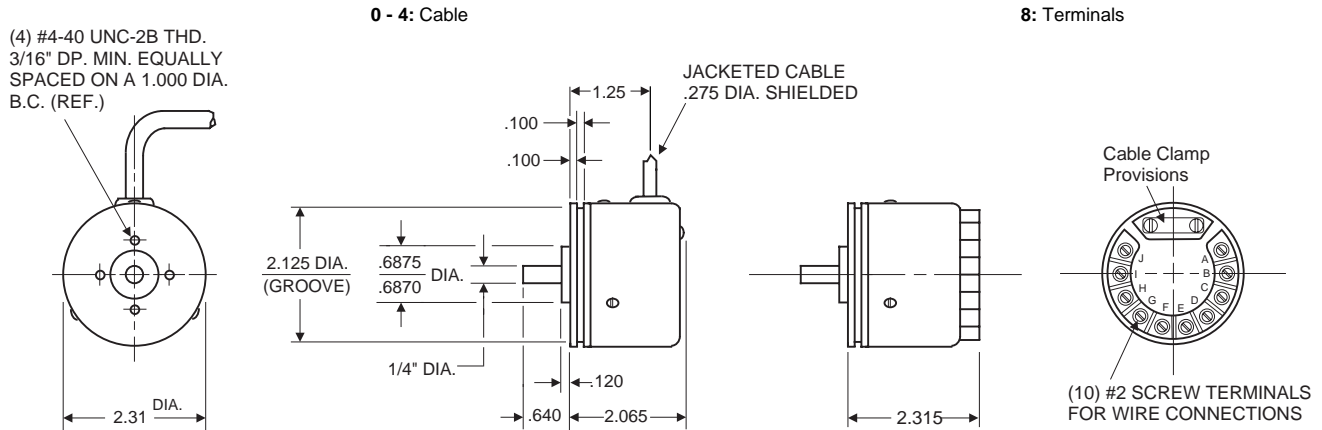
**Ordering Information**

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

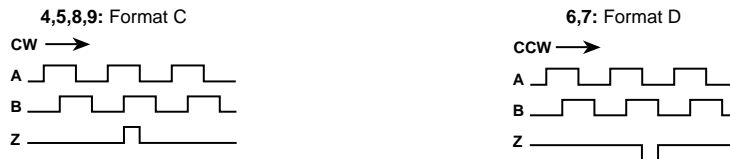
| Code 1: Model                | Code 2: Pulses/Rev  | Code 3: Mechanical   | Code 4: Output   | Code 5: Electrical  | Code 6: Termination   |
|------------------------------|---|--|--|---|---|
| <b>EC23</b>                  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/>  | <input type="checkbox"/>  |
| Ordering Information         |   |  |  |   |   |
| <b>EC23</b> Size 23 Enclosed | <b>3000</b> 3,000<br><b>3600</b> 3,600<br><b>4096</b> 4,096<br><b>5000</b> 5,000                    | <b>0</b> 1/4" Shaft, Shielded Bearings, 2.31" Dia. Servo Mount w/ 4-Hole Face Mount<br><br><b>1</b> 1/4" Shaft, Sealed Bearings, 2.31" Dia. Servo Mount w/ 4-Hole Face Mount | <b>4</b> Single Ended, with Index, Format C<br><b>5</b> Differential, with Index, Format C<br><b>6</b> Single Ended, with Index, Format D<br><b>7</b> Differential, with Index, Format D<br><b>8</b> Single Ended, No Index, Format C<br><b>9</b> Differential, No Index, Format C | <b>0</b> 5-26V in, 5-26V Open Collector w/2.2kΩ Pullups out<br><b>1</b> 5-26V in, 5-26V Open Collector out<br><b>2</b> 5-26V in; 5V out, Push-Pull out<br><b>3</b> 5-26V in; 5V Line Driver out<br><b>4</b> 5-26V in, 5-26V Line Driver out | <b>0</b> 18" Cable, Side Exit<br><b>1</b> 3' Cable, Side Exit<br><b>2</b> 6' Cable, Side Exit<br><b>3</b> 10' Cable, Side Exit<br><b>4</b> 15' Cable, Side Exit<br><b>8</b> Screw Terminals |

**Dimensions (inches/mm)**

**Code 6: Termination**



**Code 4: Output**



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