

# SERIES E23

**Dynapar™ brand**

## Miniature Encoder

### Key Features

- Up to 2540 PPR with Optional Index
- Optional Screw Terminal Connections
- Standard Size 23 (2.3" diameter)



## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

**Code:** Incremental, Optical  
**Resolution:** 1 to 2540 PPR (pulses/revolution)  
**Accuracy:** (Worst case any edge to any other edge)  $\pm 2.5$  arc-min.  
**Format:** Two channel quadrature (AB) with optional Index (Z) 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:**  $90^\circ \pm 18^\circ$  electrical  
**Symmetry:**  $180^\circ \pm 9^\circ$  electrical  
**Index:**  $180^\circ \pm 9^\circ$  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:**  
 Open Collector or Totem Pole outputs: 5 to 26 VDC, at 200 mA max.;  
 Line Driver: 5 to 26 VDC at 80 mA max.  
**Outputs:**  
 7272 Push-Pull: 40mA, sink or source  
 7272 Differential Line Driver: 40 mA, sink or source  
 7273 Open Collector: 40mA, sink max  
 4469 Differential Line Driver: 100 mA, sink or source  
**Frequency Response:** 100 kHz min.  
**Noise Immunity:** Tested to EN61326-1  
**Electrical Immunity:** Reverse polarity and short circuit protected  
**Termination:** Cable, Screw Terminals  
**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

**Shaft Size:** 1/4"  
**Shaft Loading:** 5 lbs. max. radial and axial  
**Shaft Speed:** 5,000 RPM max.  
**Starting Torque:** 0.2 oz-in max. at 25 °C  
**Moment of Inertia:**  $3.7 \times 10^{-4}$  oz-in-sec<sup>2</sup>  
**Housing and Cover:** Aluminum  
**Shaft Material:** Stainless Steel  
**Disc Material:** Glass  
**Weight:** 13 oz. max.

### ENVIRONMENTAL

**Operating Temperature:** 0 to +70 °C  
**Storage Temperature:** -40 to +80 °C  
**Shock:** 50 G's for 11 msec duration  
**Vibration:** 5 to 2000 Hz at 2 G's  
**Humidity:** Up to 98% (non-condensing)  
**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          |

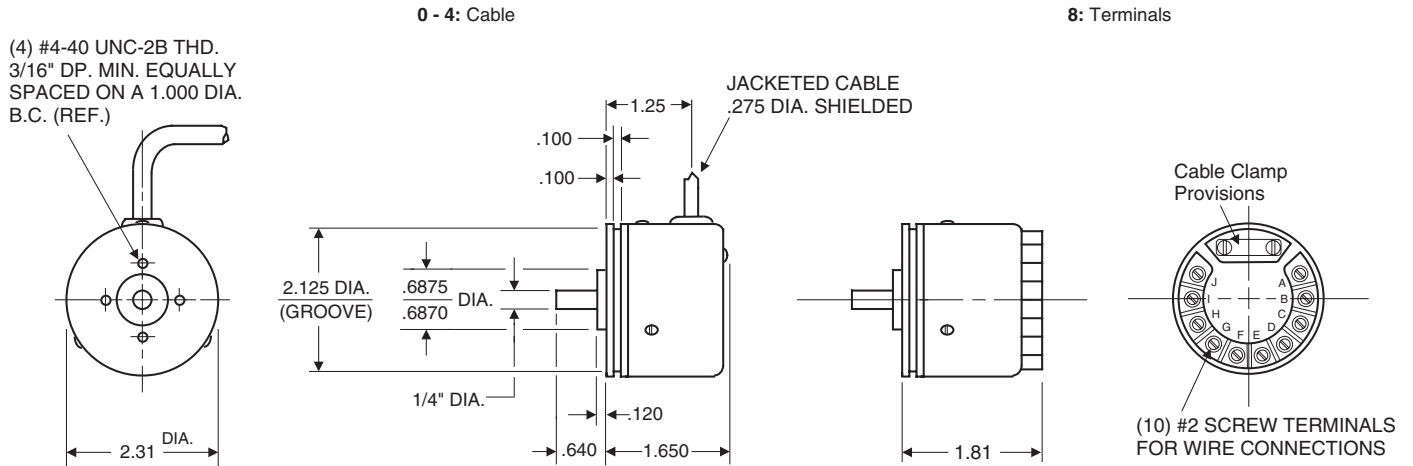
**Ordering Information**

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>E23</b>                  | <input type="checkbox"/>  | <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>E23</b> Size 23 Enclosed | <b>0001</b> <b>0256</b> <b>1024</b><br><b>0005</b> <b>0300</b> <b>1200</b><br><b>0010</b> <b>0344</b> <b>1250</b><br><b>0012</b> <b>0360</b> <b>1270</b><br><b>0050</b> <b>0400</b> <b>1500</b><br><b>0060</b> <b>0500</b> <b>1600</b><br><b>0100</b> <b>0512</b> <b>1800</b><br><b>0120</b> <b>0600</b> <b>1968</b><br><b>0150</b> <b>0625</b> <b>2000</b><br><b>0180</b> <b>0635</b> <b>2048</b><br><b>0200</b> <b>0720</b> <b>2400</b><br><b>0240</b> <b>0800</b> <b>2500</b><br><b>0250</b> <b>0900</b> <b>2540</b><br><b>1000</b><br>For Resolutions above 2540, see Series EC23 | <b>0</b> 1/4" Shaft, Shielded Bearings<br><b>1</b> 1/4" Shaft, Sealed Bearings | <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 Pull up<br><b>1</b> 5-26V in; 5-26V Open Collector out<br><b>2</b> 5-26V in; 5V TTL Totem Pole out<br><b>3</b> 5-26V in; 5V Line Driver out (7272)<br><b>4</b> 5-26V in; 5-26V Line Driver out (7272)<br><b>5</b> 5-26V in, 5V Differential Line Driver out (4469)<br><b>6</b> 5-15V in, 5-15V Differential Line Driver out (4469) | <b>0</b> 18" Cable<br><b>1</b> 3' Cable<br><b>2</b> 6' Cable<br><b>3</b> 10' Cable<br><b>4</b> 15' Cable<br><b>8</b> Screw Terminals |                          |                          |

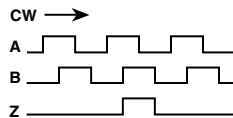
**Dimensions (inches)**

**Code 6: Termination**



**Code 4: Output**

**4,5,8,9: Format C**



**6,7: Format D**

