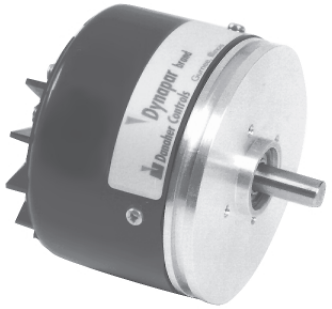
Dynapar brand Encoder

Series E23



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Manufactured by:
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Technical Bulletin

The Series E23 is a high resolution, optical incremental encoder designed for light industrial and commercial applications. A standard Size 23 (2.3" dia.), the E23 is ideal for machine and equipment designs with limited space and high performance requirements.

A pre-wired cable or terminal screw connections are included with either servo clip or face mounting options.

Its bidirectional and optional marker pulse, current sink or differential line driver outputs are compatible with most electronic counters, instruments, PLC's, robot controls, CNC's, and industrial computers. The E23 is mechanically interchangeable with other Size 23 encoders on the market.

Applications

- Motor mounted feedback for servo systems
- Assembly machines
- Robotics and material handling
- Printers, X/Y plotters, and phototypesetters
- Semiconductor I.C. bonders
- Medical diagnostic equipment (X-ray & CAT scanners)
- Position and/or velocity input for CNC's, PLC's, motion controllers, etc.

Mechanical and Environmental Features

- 1/4" stainless steel shaft
- Low inertia, low starting torque
- Up to 5000 RPM
- 0 to 70°C operating range
- Outline dimensions: 2.3" Dia. x 1.65" L.

Electrical Features

- Shielded cable or terminal screw options
- Up to 2540 pulses per revolution
- Bidirectional outputs and gated marker available
- 100 kHz frequency response
- 5-26 VDC supply voltage
- Single LED light source

SPECIFICATIONS

Electrical

Code: Incremental

Resolution: 1 to 2540 PPR (pulses/revolution)

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° ± 18° electrical

Symmetry: 180° ± 9° electrical

Index: 180° ± 9° electrical, gated with B

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

Input Power:
Open Collector or Totem Pole outputs: 4.5 VDC min. to 26 VDC max. at 200 mA max.;
Line Driver: 4.5 VDC min. to 26 VDC max. at 80 mA max.

Outputs:
Open Collector ET7273:
V_{OH}: 30 V max.; V_{OL}: 0.4 V max. at 20 mA sink
Totem Pole, Line Driver ET7272:
40 mA min. sink or source

Frequency Response: 100 kHz min.

Mechanical

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 x 10^{-4} oz–in–sec^2

Weight: 13 oz. max.

Environmental

Operating Temperature: 0 to +70 °C

Storage Temperature: –40 to +80 °C

Humidity: to 98% without condensation

Shock: 50 G's for 11 msec duration

Vibration: 5 to 2000 Hz at 2 G's

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

IMPORTANT ENCODER INSTALLATION INFORMATION

Mounting the Encoder: The encoder should be mounted such that its shaft is in close as possible alignment with the axis of the driving machine or motor shaft. The two shafts should then be joined using a suitable, instrument grade, flexible shaft coupling.

CAUTION: Rigidly coupling the encoder shaft to the driving shaft will cause failure of the encoder's or driving shaft's bearings.

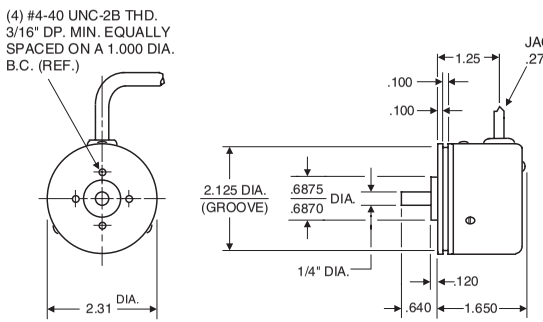
Important Wiring Instructions: Use of shielded cable is recommended for all encoder installations. The shield should be connected to signal-ground at the receiving device only. ***Connecting the shield at both ends can cause grounding problems that degrade system performance.*** If possible, run the encoder cable through a dedicated conduit (not shared with other wiring). Use of conduit will protect the cable from physical damage and provide a degree of electrical isolation. Do not run the cable in close proximity to other conductors that carry current to heavy loads such as motors, motor starters, contactors, solenoids, etc. This practice can induce electrical transients in the encoder cable, potentially interfering with reliable data transmission.

Refer to Electrical Connections table for wiring information. To avoid possible damage, do not connect or disconnect the encoder connector or wiring while power is applied to the system.

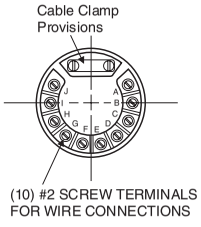
CAUTION: Unused encoder signal wires must be individually insulated and under no circumstances be in contact with ground, voltage sources, or other signal lines.

Code 6: Termination

0 - 4: Cable

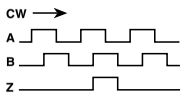


8: Terminals

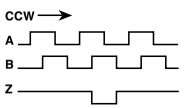


Code 4: Output

4,5,8,9: Format C



6,7: Format D



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
E23	□□□□	□	□	□	□
E23 Size 23 Enclosed	**0001** **0300** **1024** **0005** **0344** **1200** **0010** **0360** **1250** **0012** **0400** **1270** **0050** **0500** **1500** **0060** **0512** **1600** **0100** **0600** **1800** **0120** **0625** **1968** **0150** **0635** **2000** **0180** **0720** **2048** **0200** **0800** **2400** **0240** **0900** **2500** **0250** **1000** **2540** **0256** For Resolutions above 2540, see Series EC23	**0** 1/4" Shaft, Shielded Bearings **1** 1/4" Shaft, Sealed Bearings	**4** Single Ended, with Index, Format C **5** Differential, with Index, Format C **6** Single Ended, with Index, Format D **7** Differential, with Index, Format D **8** Single Ended, no Index, Format C **9** Differential, no Index, Format C	**0** 5-26V in; 5-26V Open Collector w/2.2kΩ Pullup out **1** 5-26V in; 5-26V Open Collector out **2** 5-26V in; 5V TTL Totem Pole out **3** 5-26V in; 5V Line Driver out **4** 5-26V in; 5-26V Line Driver out	**0** 18" Cable **1** 3' Cable **2** 6' Cable **3** 10' Cable **4** 15' Cable **8** Screw Terminals