

Series EC23

- Compact Size 23 encoder
- Up to 10000 PPR with optional marker pulse
- Economical high performance



COMMERCIAL

APPLICATION/INDUSTRY

The Series EC23 is a high resolution, optical incremental encoder designed for light industrial and commercial applications. A standard Size 23 (2.3" dia.), the EC23 is ideal for machine and equipment designs with limited space and high performance requirements.

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.

DESCRIPTION

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 EC23 is mechanically interchangeable with the all popular Size 23 encoders.

FEATURES AND BENEFITS

Mechanical and Environmental Features

- 1/4" stainless steel shaft
- Low inertia, low starting torque
- Up to 10,000 RPM
- 0 to 70°C operating range
- Outline dimensions: 2.3" Dia. x 1.65" L.

Electrical Features

- Shielded cable or terminal screw options
- 3,000 to 5,000 pulses per revolution
- Bidirectional outputs and gated marker available
- 250 kHz frequency response
- 5-26 VDC supply voltage
- Single LED light source

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)

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

MECHANICAL

Bearing Life: 1×10^9 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: 2.83×10^{-4} oz-in-sec²
Weight: 13 oz. max.

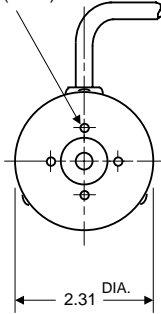
ENVIRONMENTAL

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)

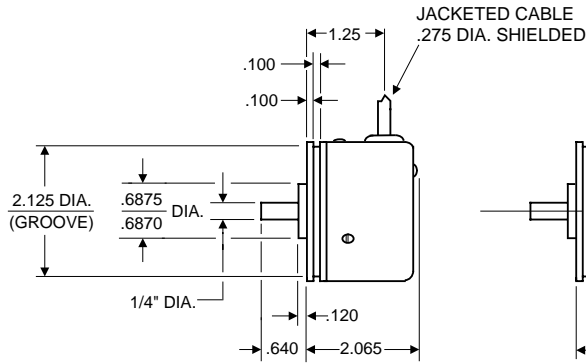
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Code 6: Termination

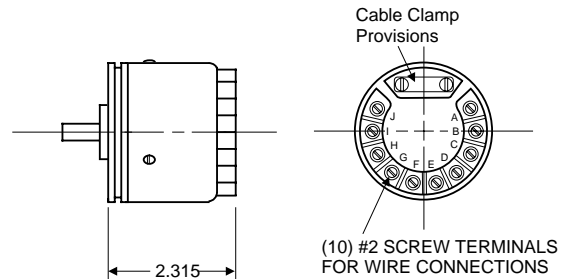
(4) #4-40 UNC-2B THD.
3/16" DP. MIN. EQUALLY
SPACED ON A 1.000 DIA.
B.C. (REF.)



0 - 4: Cable



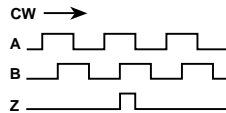
8: Terminals



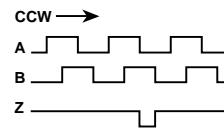
COMMERCIAL

Code 4: Output

4,5,8,9: Format C



6,7: Format D



Code 1: Model	Code 2: Pulses/Rev	Code 3: Mechanical	Code 4: Output	Code 5: Electrical	Code 6: Termination
EC23	<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					
EC23 Size 23 Enclosed	3000 3,000 3600 3,600 4096 4,096 5000 5,000	0 1/4" Shaft, Shielded Bearings, 2.31" Dia. Servo Mount w/ 4-Hole Face Mount 1 1/4" Shaft, Sealed Bearings, 2.31" Dia. Servo Mount w/ 4-Hole Face Mount	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 Pullups out 1 5-26V in, 5-26V Open Collector out 2 5-26V in; 5V out, Push-Pull out 3 5-26V in; 5V Line Driver out 4 5-26V in, 5-26V Line Driver out	0 18" Cable, Side Exit 1 3' Cable, Side Exit 2 6' Cable, Side Exit 3 10' Cable, Side Exit 4 15' Cable, Side Exit 8 Screw Terminals