EX11 Series— Miniature Incremental Rotary Optical Encoder

BEI Sensors

The EX11 Series was developed to provide a high precision, low cost enclosed shaft encoder for light duty applications. The EX11 offers benefits of the Opto-ASIC design with 1024 line counts in a 1.1 inch diameter size.

Packaged in a glass filled polycarbonate housing with 1/8" stainless steel shaft and precision bearings, the EX11 provides superior performance at a lower cost.

The EX11 Series is capable of operating over a temperature range of 0°C to +70°C without degradation of signals.

Proven design and Duncan Electronics' experience makes the EX11 perfectly suited for high volume OEM applications, including: robotics, process control and instrumentation.

Mechanical Specifications

Dimensions: See Figure 1
Weight: 2.0 oz. (Approx.)
Shaft Diameter: 0.1247 +0.0000/-0.0003
Shaft Load: axial 2 lbs., Radial 1 lb.
Torque, starting: less than 0.4 oz. in.
running: less than 0.2 oz. in.
Inertia: 3.0 x 10^{-5} oz. in./sec

Motor Interface

Servo Mounting Holes: 4 places #2-56 @ 90° on 0.75"B.C.
Servo Mount: designed to accommodate motor mount cleat "PIC type" L2-2
Flange Mounting Holes: 4 places .100 dia. through holes
Shaft Coupling: must be flexible (do not hard mount)

Electrical Specifications

Code: incremental
Pulses per Revolution: see "Ordering Options"
Supply Voltage: +5 volts ± 5% @ 80mA max.
Output Format: dual channel Quadrature and index with complements (no index on EX112)
Output Type:
-EX116- Line driver 26LS31 or equivalent should be terminated into a line receiver
-EX112/EX113- Buffer driver 74F365 and 74F368 or equivalent. (not open collector)
Rise Time: 1.0µsec. max.
Frequency Response: see graph: Fig 3

Environmental Specifications

Temperature:
Operating: 0°C to +°70C
Storage: -25°C to +90°C
Termination Type: 28 AWG flat ribbon cable with 10 position connector FXI-Berg P/N 6690-310 or equivalent
Mates with FCI-Berg P/N 65863-165 or equivalent (mating connector not provided)

EX11 Incremental Ordering Options for assistance, call 800.350.2727

Use this diagram, working from left to right to construct your model number (example: EX113-500-2)

EX11 [ ] — [ ] — [ ]

OUTPUT FORMAT:
2 = Quadrature w/ complements
3 = Quadrature w/ index
6 = Quadrature w/ Index & complements

PULSES PER REVOLUTION (PPR)
200, 256, 500, 512, 1000, 1024

MOUNTING:
1 = Servo mount
2 = Flange mount

BEI SENSORS

Tel:805-968-0782 / 800-350-2727 | **Fax:** 805-968-3154 / 800-960-2726
7230 Hollister Ave., Goleta, CA 93117 | www.beisensors.com
Specification No. 02118-001 Rev. 06/11

Dimensions

Figure 1

Servo Mount

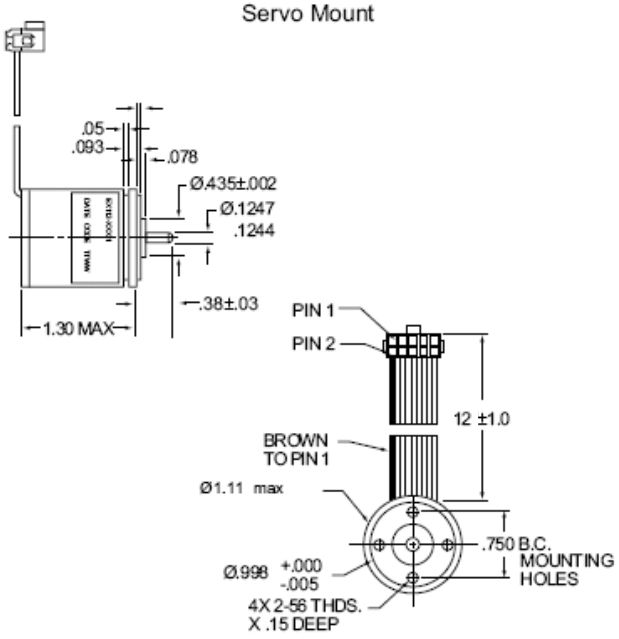
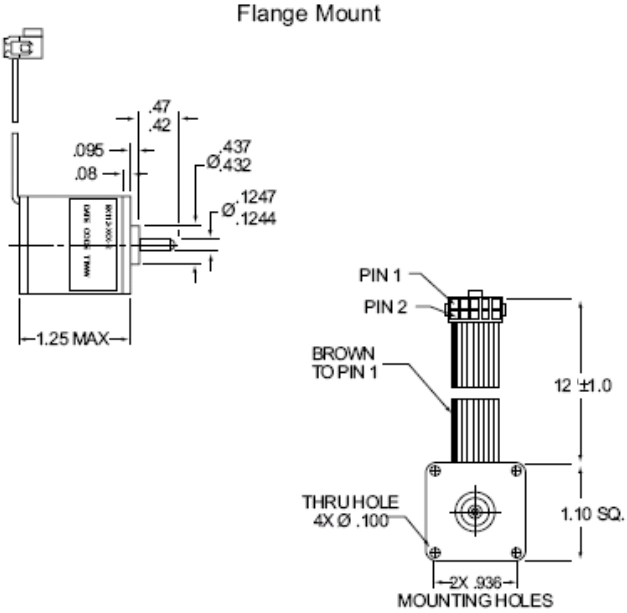


Figure 2

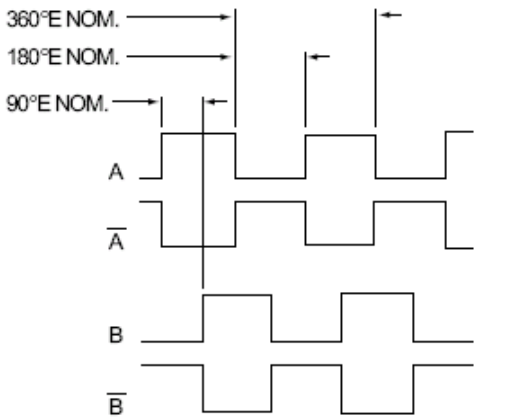
Flange Mount

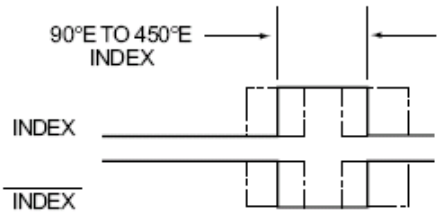


All dimensions in inches

.xx = ±.02
.xxx = ±.005

Output Wave Form



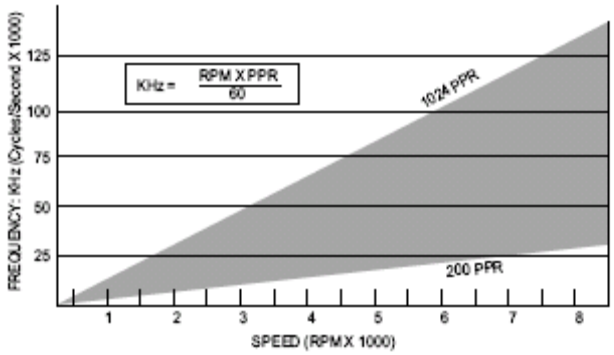


→ CW ROTATION OF SHAFT →

- EX112 buffer driver outputs w/o INDEX or $\overline{INDEX}$
- EX113 buffer driver outputs as shown
- EX116 differential line driver outputs as shown

Frequency Response

Figure 3



Pin Out

Pin No.	Color	Signal
1	Brown	N/C
2	Red	+5V
3	Orange	$\overline{B}$
4	Yellow	B
5	Green	$\overline{index}$
6	Blue	index
7	Violet	$\overline{A}$
8	Gray	A
9	White	N/C
10	Black	Ground

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