

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 a 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 -10°C to +70°C without degradation of signals.

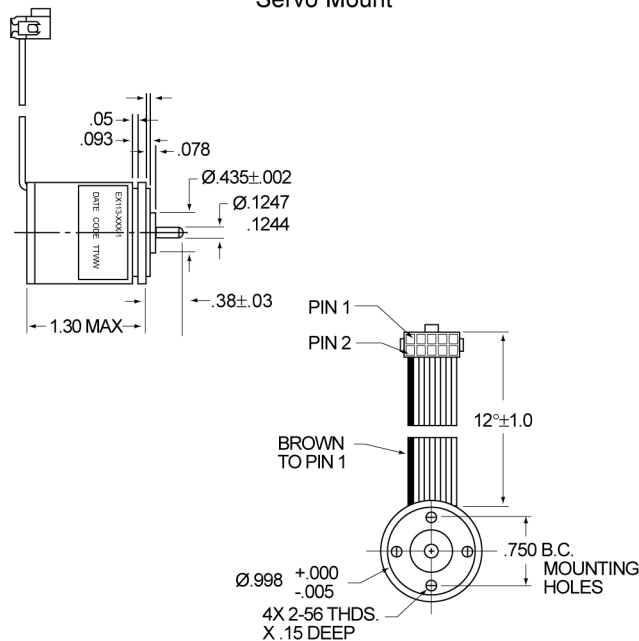
Proven design and Duncan Electronics' experience makes the EX11 perfectly suited for high volume OEM applications, including: robotics, process control and instrumentation.

## Standard Features

- Line counts up to 1024 PPR
- RS422 compatible 26LS31 line driver
- 1.1 inch diameter package in servo or flange mount configurations
- 2-year warranty

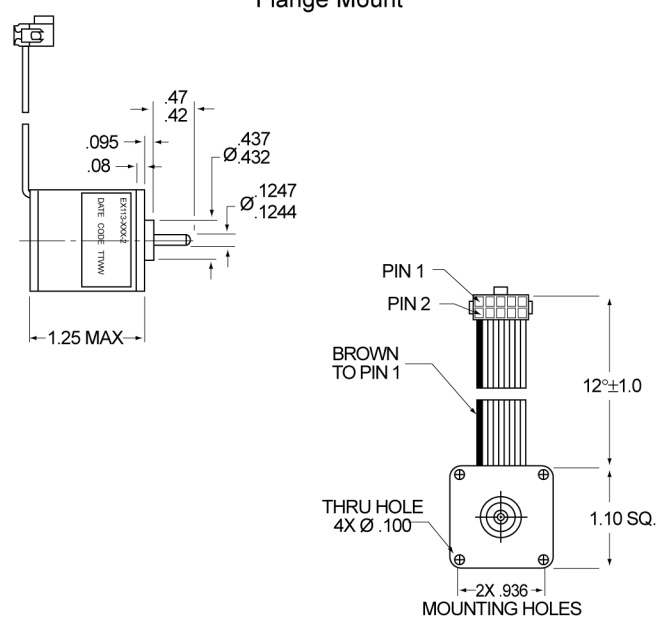


**Figure 1**  
Servo Mount



All dimensions in inches

**Figure 2**  
Flange Mount



.xx = ±.02  
.xxx = ±.005



# EX11 Series Miniature Incremental Rotary Optical Encoder

## Performance Specifications

### Mechanical

Dimensions	see Figure 1
Weight	2.0 oz. (Approx.)
Shaft Diameter	0.1247 +.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	$3.0 \times 10^{-5}$ 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. thru holes
Shaft Coupling	must be flexible (do not hard mount)

### Electrical

Code	incremental
Pulses per Revolution	see "Ordering Information"
Supply Voltage	+5 volts $\pm 5\%$ @ 80mA max.
Output Format	dual channel quadrature and index with complements (no index on EX112)
Output Type	TTL differential line driver (26LS31 or equiv.) should be terminated into a line receiver (26LS32, or equivalent circuit)
Rise Time	1.0 $\mu$ sec. max.
Frequency Response	see graph: Fig. 3

### Environmental

Temperature	operating: -10°C to +70°C storage: -40°C to +125°C
-------------	---

### Termination

Type	28 AWG flat ribbon cable with 10 position connector Berg P/N 65863-165 or equiv. Mates with Berg P/N65863-165 or equiv. (mating connector not provided)
------	---

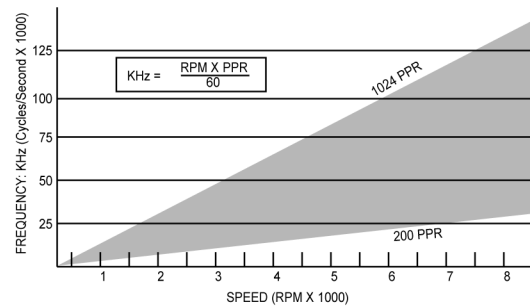
## Ordering Information

Basic Model No.	EX11 X - XXXX - X
Output Format	2 = Quadrature 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

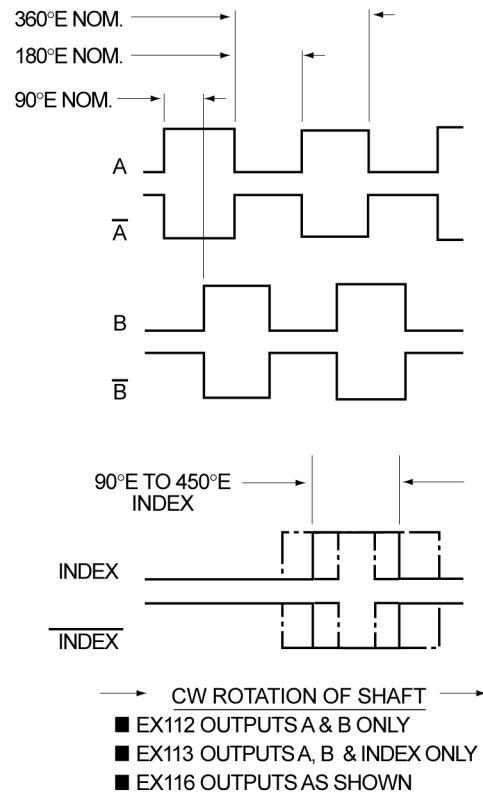
**EXAMPLE: EX113-500-2**

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

Figure 3



## Output Wave Form



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## BEI Sensors:

[EX116-512-1](#) [EX113-512-1](#) [EX113-512-2](#) [EX113-500-2](#) [EX113-500-1](#) [EX116-500-1](#) [EX116-1000-1](#) [EX116-1024-1](#)  
[EX113-1024-2](#) [EX113-1024-1](#) [EX113-1000-1](#) [EX113-1000-2](#) [EX113-256-2](#) [EX113-256-1](#) [EX116-256-1](#)