

# MOD 700- Low Profile Incremental Encoder Opto-ASIC Miniature Frameless Caliper

BEI Industrial Encoders



Ideally suited for integration into motors or other tight packaging constraints, the BEI MOD 700 Series introduces a highly miniaturized rotary incremental encoder that accommodates a broad range of standard code disk resolutions and diameters.

The MOD 700 incorporates BEI's proven Opto-ASIC technology- a phased array photo diode IC noted for its high tolerance for axial movement, low power consumption and high operating temperature range—into a highly miniaturized lead-frame caliper design, offering resolutions up to 2540 PPR (Pulse Per Revolution). Weighing only 25 grams, the unit includes integral surface mount pads for SMT installation onto PCBs or flexible circuitry. Two integrally molded orientation posts assure correct alignment onto PCB circuitry.

Offering maximum versatility and compact size, the MOD 700 can be provided with a wide range of optical disks to accommodate a variety of shaft diameters. Disks can be provided in standard optical radii from 0.375" (9.38mm) to 0.860" (21.5mm). Photolithography film disks are also available as a lower cost alternative and are suited for lower temperature extremes.

## Mechanical Specifications

**Dimensions:** See Figure 1  
**Mechanical Travel:** Continuous  
**Weight:** 25 grams

## Environmental Specifications

**Vibration:** 5G peak, 60-2,000 Hz  
**Shock:** 50G, half sine pulse, 5ms duration  
**Operating temperature range:** 0°C to +70°C  
**Storage temperature range:** -25°C to +90°C  
**Enclosure:** Unsealed housing

## NOTES:

1. Pull-up resistors added externally by customer
2. Gating circuitry added externally by customer

## Electrical Specifications

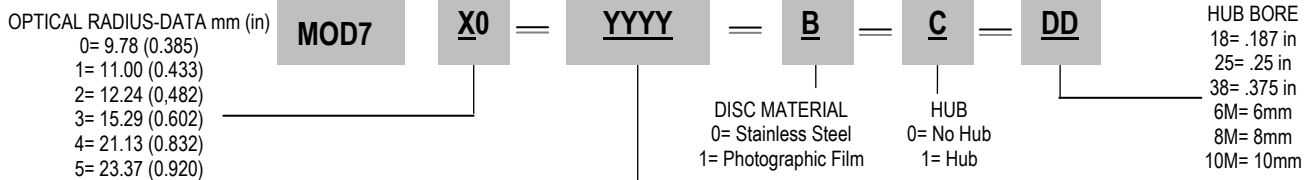
**Code:** Incremental  
**Pulses per revolution (PPR):** Refer to Table 1  
**Output Format:** Digital, Dual channel ("A", "B") w/Quadrature and gateable index  
**Input Voltage:** 5.0 V ± 0.25 VDC  
**Frequency Response:** 100kHz, Data and Index (up to 350kHz optional)  
**Output Type:** TTL output (4.0V min. @500µA source, 0.8V max. @16mA sink)  
**Symmetry/Duty Cycle:** 180° ± 36°  
**Input Current:** 60mA maximum, 40mA typical  
**Rise Time w/2kΩ pull-up resistor (1):** 800nSec  
**Fall Time w/2kΩ pull-up resistor (1):** 200nSec  
**Index Width (one PPR, see Fig 2):** 90° to 450° w/no relation to  
If ungated: data "A" and "B"  
If gated (2): w/data "A" and "B": 45° to 135°  
**Edge Separation:** 90° ± 45°

## Caliper Termination/ Mounting/ Alignment

**Type:** Surface mount  
**Pinout:** See Figure 2  
**Mounting:** Caliper pins locate caliper in holes on customer's circuit board  
**Alignment:** Holes in caliper spacer will accommodate alignment tooling  
**Mating Codewheel**  
**Type:** Stainless Steel, 0.051mm thick (Mylar®-type disk available, maximum temperature 100°C)  
Available in optical radiuses from 0.335 – 0.920 inches

## MOD700 Series Encoder Caliper Kit Ordering Options: for assistance, call 800.350.2727

Use this diagram, working from left to right to construct your model number (example: MOD7 10-512-0-1-18)



**TABLE 1: CURRENTLY TOOLED COMBINATIONS**

X	Optical Radius mm (in)	Pulses Per Revolution (PPR)- YYYY														Hub Bore					Dimensions											
		100	128	200	250	256	360	400	500	512	800	960	1000	1024	1500	1600	2000	2048	2500	2540	1.87"	.25"	.375"	6mm	8mm	10mm	A	B	C			
0	9.78 (.385)			●		●			○	○											●	●	●	●				.270	.374	.85		
1	11.00 (.433)	●		●	●	●	●	●	●												●	●	●	●				.270	.374	.95		
2	12.24 (.482)								●	●		○	○								●	●	●	●	●				.488	.680	1.04	
3	15.29 (.602)	●	●																		●	●	●	●	●	●				.488	.680	1.29
4	21.13 (.832)																○	○	○	○	●	●	●	●	●	●				.340	.751	1.74
5	23.37 (.920)								●	●		●	●								●	●	●	●	●	●				.340	.751	1.93

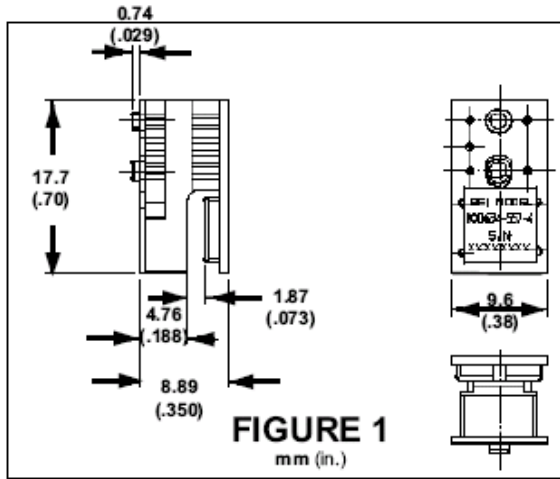
Legend: (○) = Photographic Film Disc ONLY | (●) = Photographic Film OR Metal Disc



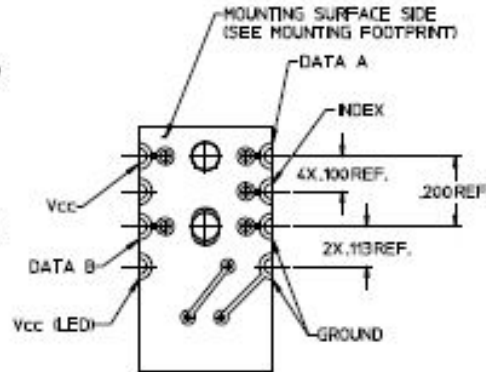
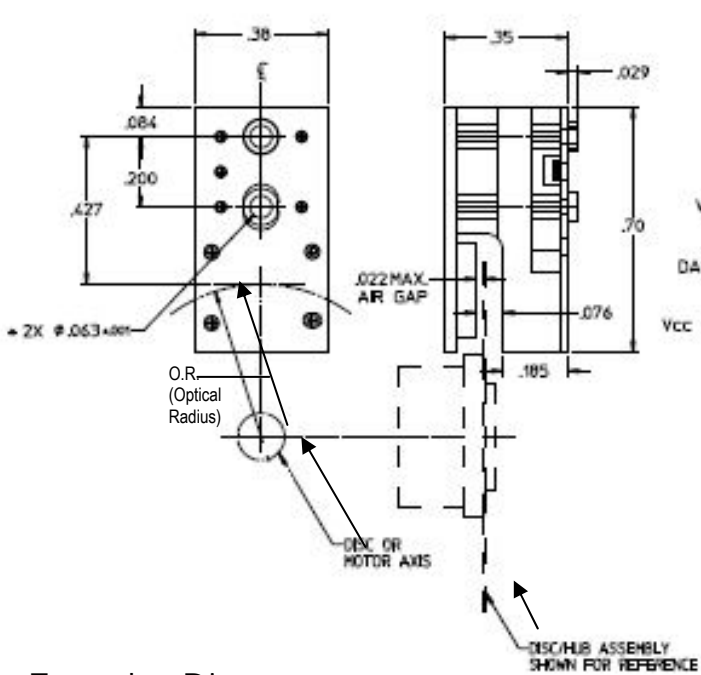
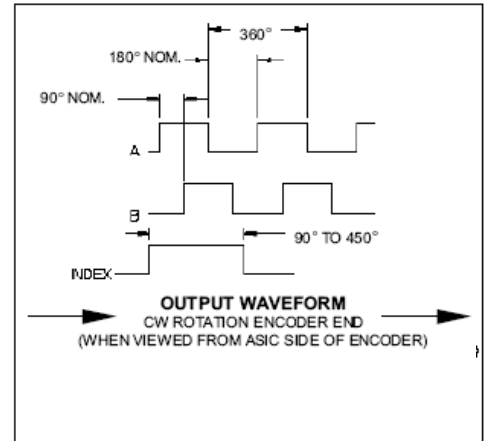
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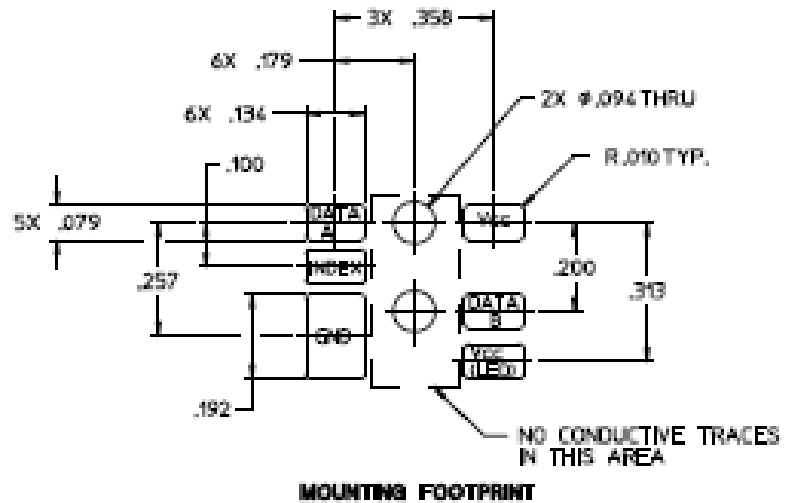
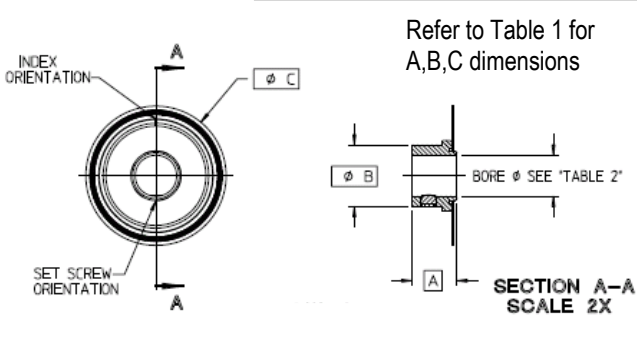
## Dimensions



## Output Waveform



## Encoder Disc



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