Modular Incremental Rotary Optical Encoder

MX21 Series

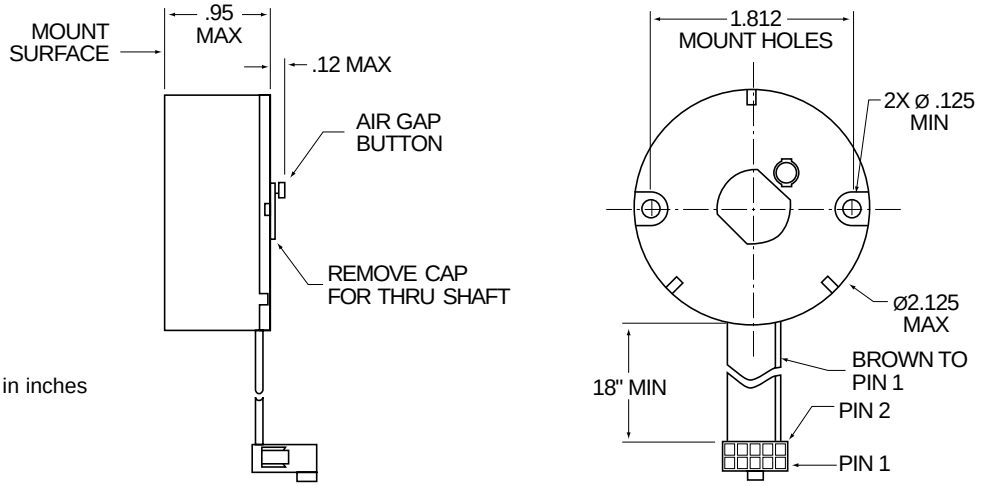
By the time you have read this first sentence, you could have installed BEI's model MX21 INSTA-MOUNT™ modular optical encoder. In addition to its quick and easy installation, the MX21 is designed to operate with jitter-free output signals without tight controls on shaft endplay, runout, or perpendicularity. The new INSTA-MOUNT™ encoder is capable of operating within a temperature range of -10° to +70°C, requiring less than 30 milliamps of L.E.D. current, without degradation of output signals and is short circuit protected. The MX21 is perfectly suited for motor manufacturers and other high volume OEMs.

BEI's INSTA-MOUNT™ Series encoder offers 5V TTL compatible quadrature outputs with index and complements as options. Axial shaft movements during operation, of ±0.010", will not adversely affect the output signals. Shaft runouts of 0.005" TIR can also be absorbed by this device without affecting output signal performance.

Standard Features

- Resolutions to 1024 PPR
- Quick and easy installation
- Tolerant of axial and radial shaft movements often associated with less expensive motor designs
- Jitter-free outputs
- Increased MTBF
- Index and complementary output options
- 26LS31 line driver output from MX216
- High frequency response
- 2-year warranty

Figure 1



All dimensions in inches

.xx = ±.02
.xxx = ±.005

MX21 INSTA-MOUNT™ Series
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Performance Specifications

Mechanical	
Dimensions	see Figure 1
Weight	2.1 oz. (Approx.)
Moment of Inertia	2.6 x 10^{-5}oz in sec
Bore Size	see “Ordering Information”
Motor Interface	
Mount Holes	#4-40 or M3 x 0.5 @ 180° on 1.812" dia B.C.
Mount Hardware	2 sockethead cap screws
Perpendicularity Shaft to Mount	0.002" TIR
Shaft Runout	0.005” max (each 0.0001 degrades accuracy by 0.5 arc minutes)
Shaft Endplay Dynamic or Static	±0.010"
Shaft Finish	16 microinches or better. End must be chamfered or rounded
Shaft Tolerance	nominal -.0002"/-.0007"
Shaft Length	0.56" minimum (remove cap for motor through shaft)
Electrical	
Code	incremental
Pulses per Revolution	see “Ordering Information”
Index Pulse Options (no index on MX212)	ungated index (U) gated index (G)
Supply Voltage	5 volts ±5% @ 80mA max.
Output Format (MX212 & MX213)	dual channel quadrature and index (no index on MX212)
Output Format (MX216)	dual channel quadrature and index with complements
Output Type (MX212 & MX213)	square wave TTL. 16mA sink 500µA source. Short circuit protected
Output Type (MX216)	TTL differential line driver (26LS31 or equiv.) should be terminated into a line receiver (26LS32, or equivalent circuit)
Frequency Response	see graph: Fig. 3
Rise Time	1.0µsec. max.
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

MX21 X - XX - XXXX - X

Basic Model No.

Output Format
- 2 = Quadrature
- 3 = Quadrature w/index
- 6 = Quadrature w/index & complements

Bore Size
- 25 = .25", 38 = .375", 50 = .500"
- 6M = 6mm, 8M = 8mm, 10M = 10mm

Pulses Per Revolution (PPR)
- 200, 400, 500, 512, 1000, 1024

Index Option
- G = gated to data A & B
- U = ungated

EXAMPLE: MX213-38-1000-U

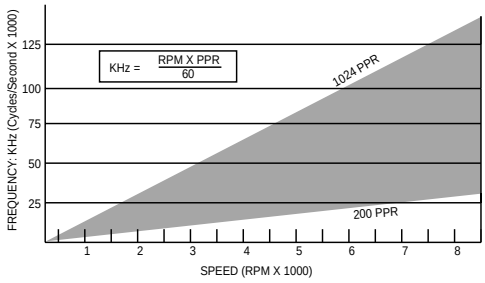
Pinout MX212/213

Pin #	Signal	Pin #	Signal
1	channel A	6	NC
2	+5 volts	7	NC
3	ground	8	channel B
4	NC	9	NC
5	NC	10	index (213)

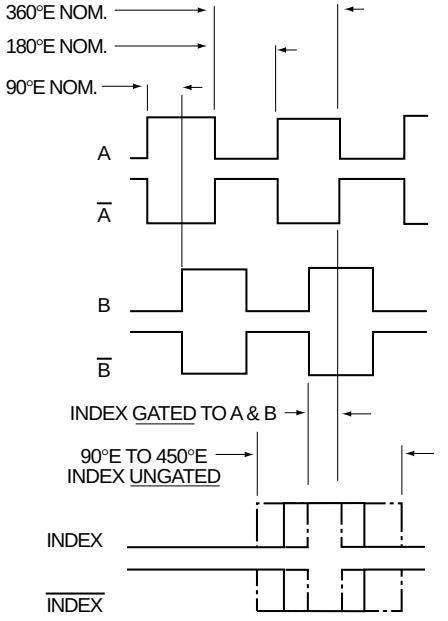
Pinout MX216

Pin #	Signal	Pin #	Signal
1	NC	6	channel A
2	+5 volts	7	channel $\overline{B}$
3	ground	8	channel B
4	NC	9	$\overline{index}$
5	channel $\overline{A}$	10	index

Figure 3



Output Wave Form



- MX212 OUTPUTS A & B ONLY
- MX213 OUTPUTS A, B & INDEX ONLY
- MX216 OUTPUTS AS SHOWN

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