

# ENC-M111 Miniature Commutating Modular Magnetic Encoder w/Index



## FEATURES

- Accepts +/- 0.010" Axial Shaft Play
- 50 to 5,000 Counts per Revolution (CPR)
- Tracks 0 to 300,000 Counts per Second
- 200 to 20,000 Pulses per Revolution (PPR)
- 2-Channel Quadrature Differential Squarewave Outputs
- Third Index Channel
- Operating Temperature of -40° to +100° C
- Powered from a Single +5VDC Power Supply
- RoHS Compliant and REACH Certified

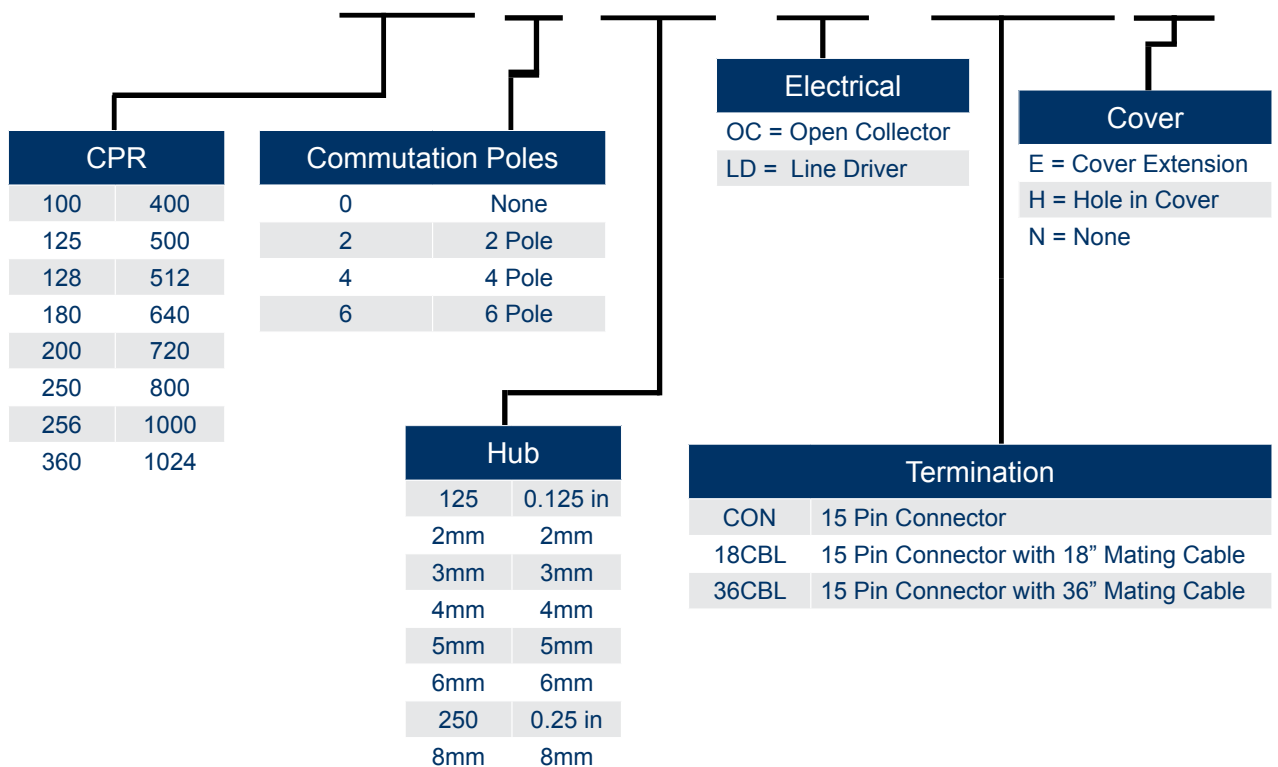


## DESCRIPTION

The ENC-M111 is a differential encoder designed for quick and simple assembly to any minimum shaft length 0.445" and shaft size ranging from 0.079" to 0.394" in diameter. The ENC-M111 module is designed to detect the rotary position with a code wheel. When attached to the end of a shaft, the encoder provides digital feedback information. This differential encoder consists of a LED source lens and a monolithic detector IC enclosed in a small polymer package. These modules implement phased array detector technology providing superior performance and tolerances over traditional aperture mask type encoders. The ENC-M111 series provides digital quadrature differential outputs on all resolutions and are capable of sinking or sourcing 8 mA each. These encoders are powered from a single +5VDC power supply and are RoHS compliant and REACH certified.

## ORDERING INFORMATION

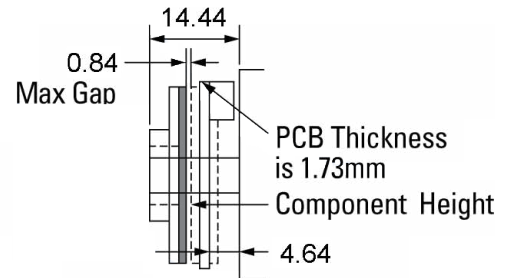
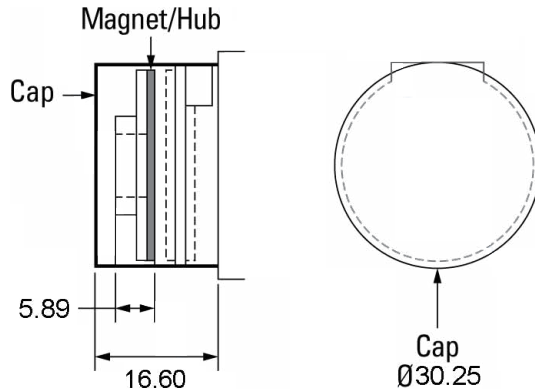
# ENC-M111-100-0-125-OC-CON-H



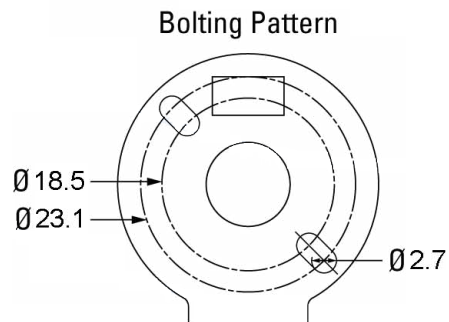
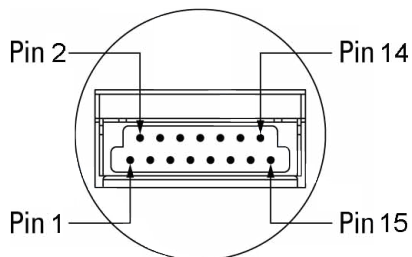
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Item	Counts Per Rev (CPR)	Commutation	Bore Size	Index Channel	Cover	Electrical
ENC-M111-100-0-125-OC-CON-N	100	0 Pole	0.125 in	Yes	None	Open Collector
ENC-M111-125-2-2mm-OC-CON-H	125	2 Pole	2mm	Yes	Cover With Center Hole	Open Collector
ENC-M111-128-4-3mm-LD-CON-H	128	4 Pole	3mm	Yes	Cover With Center Hole	Line Driver
ENC-M111-180-6-4mm-LD-CON-N	180	6 Pole	4mm	Yes	None	Line Driver
ENC-M111-200-0-5mm-OC-18CBL-E	200	0 Pole	5mm	Yes	Cover Extension	Open Collector
ENC-M111-256-2-6mm-LD-36CBL-H	256	2 Pole	6mm	Yes	Cover With Center Hole	Line Driver
ENC-M111-360-4-250-OC-CON-N	360	4 Pole	0.250 in	Yes	None	Open Collector
ENC-M111-500-6-8mm-OC-18CBL-H	500	6 Pole	8mm	Yes	Cover With Center Hole	Open Collector
ENC-M111-640-0-125-LD-CON-N	640	0 Pole	0.125 in	Yes	None	Line Driver
ENC-M111-1024-2-3mm-OC-36CBL-H	1024	2 Pole	3mm	Yes	Cover With Center Hole	Open Collector

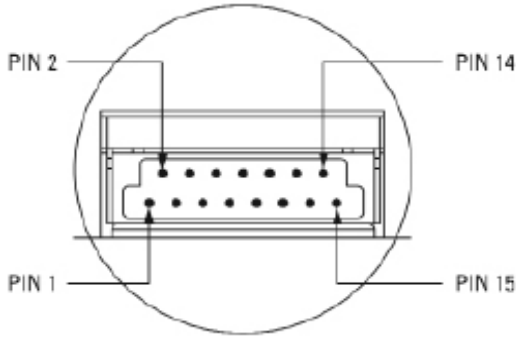
Note: Dimensions are in millimeters



min. shaft length: 14.4  
max. shaft length with cap/no hole: 15.0

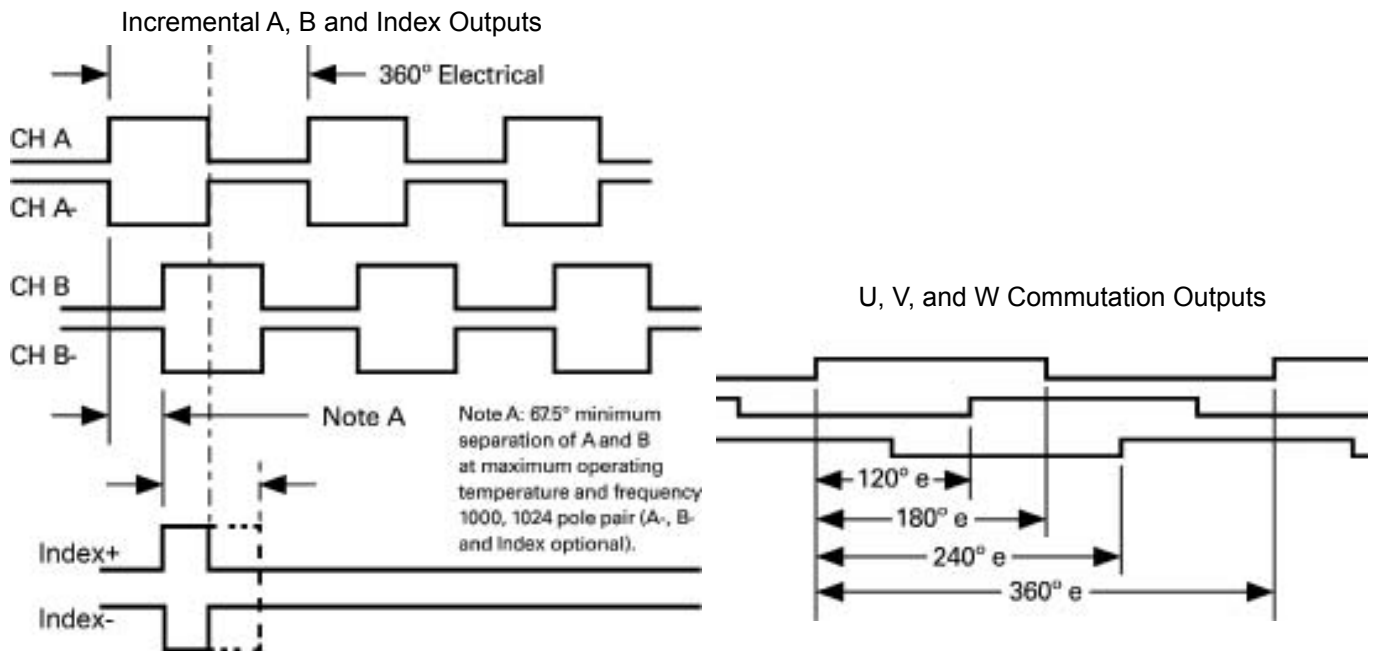


ENCODER PINOUT



Pin #	Function	Color
1	Yellow	A+
2	Yellow/White	A-
3	Blue	B+
4	Blue/White	B-
5	Orange	RP+
6	Orange/White	RP-
7	Green	U+
8	Green/White	U-
9	Brown	V+
10	Brown/White	V-
11	White	W+
12	White/Grey	W-
13	Red	VCC1
14	Black	GRND
15	Grey	n/a

TIMING DIAGRAM



Terminology	Description
CPR (N):	The Number of Cycles Per Revolution
One Shaft Rotation:	360 mechanical degrees, N cycles
One Electrical Degree (°e):	1/360th of one cycle
One Cycle (C):	360 electrical degrees (°e). Each cycle can be decoded into 1 or 4 codes, referred to as X1 or X4 resolution multiplication
Symmetry:	A measure of the relationship between (X) and (Y) in electrical degrees, nominally 180°e
Quadrature (Z):	The phase lag or lead between channels A and B in electrical degrees, nominally 90°e
Index (CH I):	The index output goes high once per revolution, coincident with the low states of channels A and B, nominally 1/4 of one cycle (90°e)

Parameter	Max	Units
Supply Current A, B, Index, OC	39	mA
Supply Current A, B, Index, LD	65	mA
Supply Current A, B, Index, CP, OC	63	mA
Supply Current A, B, Index, CP, LD	105	mA

Recommended Operating Conditions	Min	Max	Units
Open-Collector Temperature	-40	125	°C
Line Driver Temperature	-40	85	°C
Supply Voltage	4.5	5.5	Volts
Count Frequency	-	200	kHz

Parameter	Max	Units
Vibration (20 to 2kHz)	3	g
Shaft Axial Play	± 0.01	in.
Max Speed	12000	RPM