

# ENC-A4PS Miniature Encoder without Index Channel



## FEATURES

- Miniature Size
- 100 to 360 Cycles per Revolution (CPR)
- Tracks 0 to 30,000 Cycles per Second
- 400 to 1,440 Pulses per Revolution (PPR)
- Off-Axis Mounting Tolerance of 0.010"
- 2-Channel Quadrature TTL Squarewave Outputs
- Operating Temperature of -10° to +85° C
- Powered from a Single +5VDC Power Supply



## DESCRIPTION

With an acceptable minimum shaft length of 0.375" and shaft sizes ranging from 0.059" to 0.250" in diameter, the ENC-A4P is a single-ended miniature encoder designed for high volume applications with space limitations. The ENC-A4PS 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 single-ended miniature encoder consists of 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-A4P series provides digital quadrature 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.

## CUSTOM ORDER LAYOUT

# ENC - A4PS - 0100 - 250 - H - M

CPR	
0100	0200
0108	0250
0120	0256
0125	0300
0128	0360

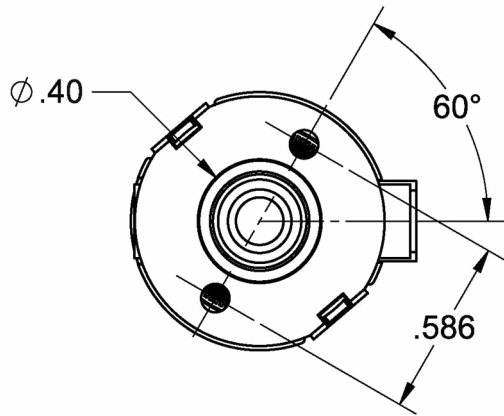
Bore Size	
059 = 1.5mm	188 = 3/16"
079 = 2mm	197 = 5mm
125 = 1/8"	236 = 6mm
156 = 5/32"	250 = 1/4"
157 = 4mm	

Cover Options
H = Hole in Cover
Blank = Default

Base Options
M = Metric Mounting Screws
T = Transfer Adhesive
Blank = Default

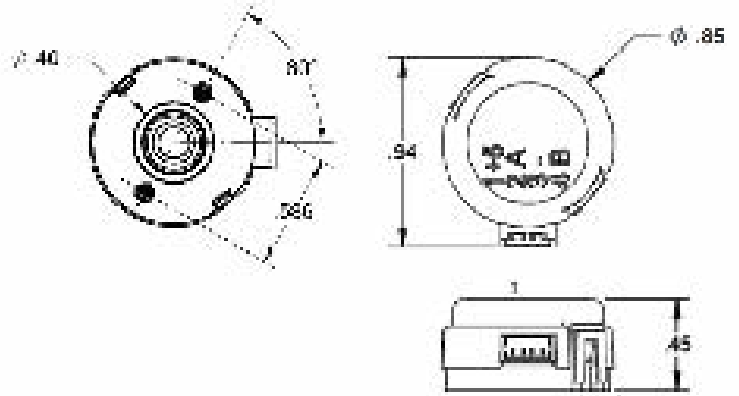
L010725

**DEFAULT OPTION:**

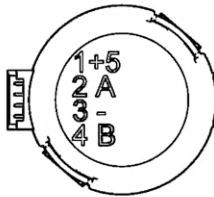


3-48 X 1/4" MOUNTING SCREWS SUPPLIED WITH THIS OPTION.

**DEFAULT OPTION:**



**M-OPTION:**

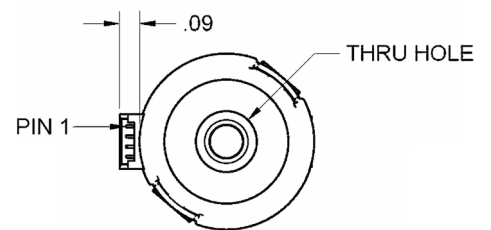


M2.5 X 6mm MOUNTING SCREWS SUPPLIED WITH THIS OPTION.

**T-OPTION:**



**H-OPTION:**

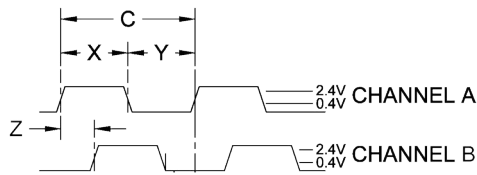


Note: All units are in inches

Base Options:	Description
M - Option	Alternate metric M2.5x0.45mm, length 6mm screws
T - Option	A pre-applied transfer adhesive (with peel-off backing) is available for "stick-on" mounting.

Cover Options:	Description
H - Option	For shaft diameters of 1.5mm to 1/8" - a 0.170" hole is used. For shaft diameters of 5/32" to 1/4" - a 0.295" hole is used.

**SINGLE-END ENCODER TIMING DIAGRAMS**



ROTATION:  
CW - B LEADS A, CCW - A LEADS B

**SINGLE-ENDED ENCODER PINOUT  
TOP OF ENCODER FACING PLUG**

Pin #	Function	ENC-CBL-CA3285-1 ENC-CBL-CA3286-1
1	+5VDC	Orange or Red
2	Channel A	Blue or Green
3	Ground	Brown or Black
4	Channel B	Yellow
5	Channel B	

Model #	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

Parameter	Typ	Max	Units
Symmetry Error (Ch. A, Ch. B)	15, 25	55, 75	°e
Symmetry Error (Ch. A, Ch. B) - 8,300-P, 8300-Q	16	75	°e
Quadrature Error - 8300-K	12	60	°e
Quadrature Error - 8300-P, 8300-Q	10	60	°e

Parameter	Min	Typ	Max	Units
Detector Supply Current	-	2.2	5.0	mA
High Level Output Voltage*	2.4	-	-	Volts
Low Level Output Voltage	-	-	0.4	Volts
Rise Time	-	500	-	ns
Fall Time	-	100	-	ns

Recommended Operating Conditions	Min	Max	Units
Temperature	-40	100	°C
Supply Voltage	4.5	5.5	Volts
Load Capacitance	-	100	pF
Count Frequency	-	100	kHz

Parameter	Max	Units
Vibration (5 to 2kHz)	20	g
Shaft Axial Play	+/- 0.02	in.
Off-Axis Mounting Tolerance	0.010	in.
Acceleration	250,000	rad/sec <sup>2</sup>

### Cables:

The following cables are compatible with Anaheim Automation's A4PS series encoder. Select a cable length from the table below:

Cable Part Number	Length
ENC-CBL-CA3285-1	1 ft.
ENC-CBL-CA3286-6	6 ft.

*NOTE: For pricing and other information on cables and centering tools, please visit Accessories on our website.*

### Centering Tools:

Centering tools are optional, but recommended for a more precise installation.

## ENC-MCTOOL - 250

Bore Size	
059=1.5mm	188=3/16"
079=2mm	197=5mm
125=1/8"	236=6mm
156=5/32"	250=1/4"
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\* Unloaded high level output voltage is 4.80V typically, 4.2V minimum.