

# ENC-A4TD Miniature Differential Encoder Without Index



## FEATURES

- Miniature Size
- Off-Axis Mounting Tolerance of 0.010"
- Tracks 0 to 30,000 Cycles Per Second
- Operating Temperature of -20° to +100°C
- 100 to 1000 Cycles Per Revolution (CPR)
- 400 to 1,440 Pulses Per Revolution (PPR)
- Power From a Single +5VDC Power Supply
- 2-Channel Quadrature TTL Squarewave Output
- RoHS Compliant and REACH Certified



## DESCRIPTION

With an acceptable minimum shaft length of .375" and shaft sizes ranging from .059" to .250" in diameter, the ENC-A4TD is a differential miniature encoder designed for high volume applications with space limitations. The ENC-A4TD 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 miniature encoder consists of LED source lens and monolithic detector IC enclosed in a smaller polymer package. These modules implement phased array detector technology providing superior performance and tolerances over traditional aperture mask type encoders. The ENC-A4TD 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 - A4TD - 0100 - 250 - H - M

CPR	
0100	0256
0108	0300
0120	0360
0125	0400
0128	0500
0200	0512
0250	1000

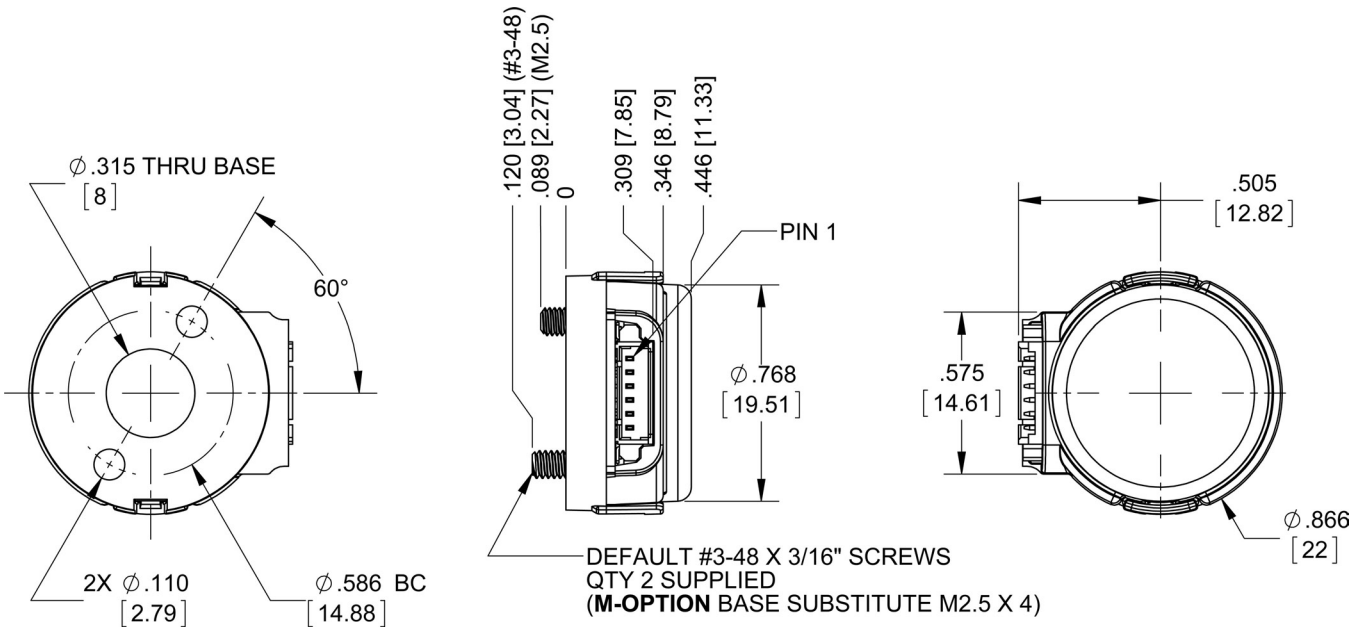
Bore Size	
079 = 2mm	157 = 4mm
091 = 2.3mm	188 = 3/16"
098 = 2.5mm	197 = 5mm
118 = 3mm	236 = 6mm
125 = 1/8"	250 = 1/4"

Cover Options
H = Hole in Cover
Blank = Cover

Base Options
M = Metric Mounting Screws
Blank = Default

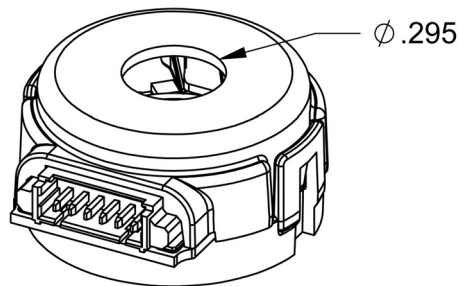
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DIMENSIONS

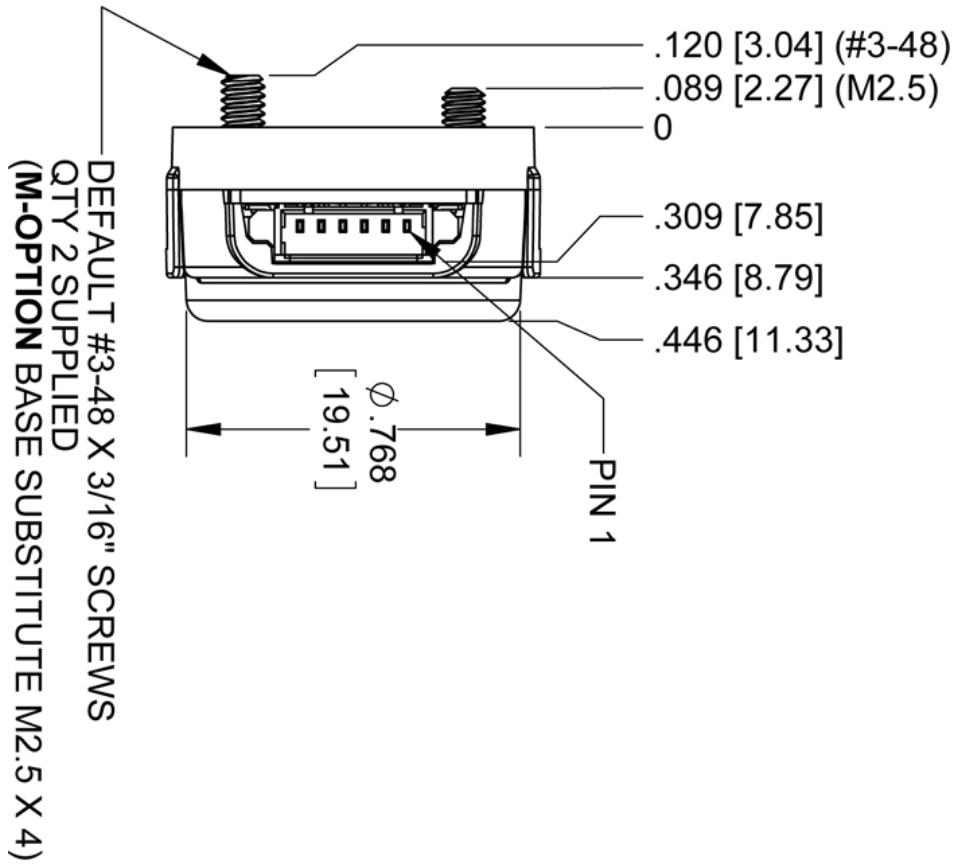


COVER OPTIONS

H-OPTION COVER  
(COVER HOLE FOR EXTENDED SHAFTS)

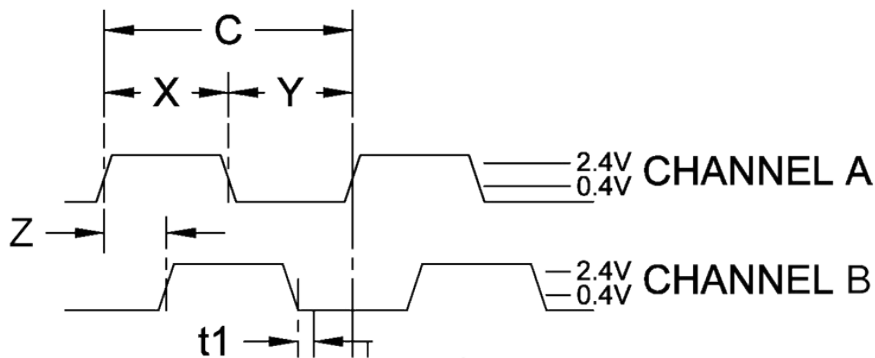


BASE OPTIONS



PIN/TIMING DIAGRAMS

DIFFERENTIAL ENCODER TIMING DIAGRAMS



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

DIFFERENTIAL ENCODER PINOUT  
TOP OF ENCODER FACING PLUG

Pin #	Function
1	GND
2	A Channel
3	A- Channel
4	+5VDC
5	B Channel
6	B- Channel

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	Max	Units	Recommended Operating Conditions	Min	Max	Units
Vibration (5 to 2kHz)	20	g	Temperature	-20	100	°C
Shaft Axial Play	+/- 0.02	in.	Max Relative Humidity	-	90	%
Off-Axis Mounting Tolerance	0.010	in.	Load Capacitance	-	100	pF
Acceleration	250,000	rad/sec <sup>2</sup>	Count Frequency	-	100	kHz

Parameter	Min	Typ	Max	Units	Parameter	Typ	Units
Supply Voltage	4.5	5.0	5.5	Volts	Symmetry, S	180 ± 16	°e
Supply Current (No Load)	-	23	29	mA	Quadrature Delay, Q	90 ± 12	°e
Differential Output Voltage (RL = 100 ohm)	2.4	-	-	Volts			
Differential Output Rise/Fall Time	-	-	20	ns			

Speed Calculation	Units
All CPR Values (30,000/CPR)*60	RPM

\*60,000 RPM is the maximum RPM due to mechanical limitations.

## Cables:

The following cables are compatible with Anaheim Automation's A4TD series encoder. Select a cable length from the table below:

Cable Part Number	Length
ENC-CBL-CA-MIC6-SH-NC-1	1 ft.
ENC-CBL-CA-MIC6-SH-NC-5	5 ft.
ENC-CBL-CA-MIC6-SH-NC-10	10 ft.
ENC-CBL-CA-MIC6-SH-NC-20	20 ft.

## Mating Connector:

Micro mating connector shell (Molex# 51021-0600) and 6 pins for 26-28 AWG wires (Molex # 50079-8100)

*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"
157=4mm	