

Description

The E4P miniature encoder is designed to provide digital quadrature encoder feedback for high volume applications with limited space constraints. The E4P version utilizes an innovative push-on codewheel which accepts shaft diameters of 1.5mm to .250".

The E4P encoder is the leader for high quantity OEM applications, but the E4 is the ideal choice when a set-screw codewheel encoder is required (see the E4 page).

The E4P miniature encoder base provides mounting holes for two 3-48 x 1/4" or two 2.5mm x 6mm screws on a .586" bolt circle. When mounting holes are not available, a pre-applied transfer adhesive (with peel-off backing) is available for "stick-on" mounting.

The encoder cover is easily snapped onto the base and is embossed with the connector pin-out.

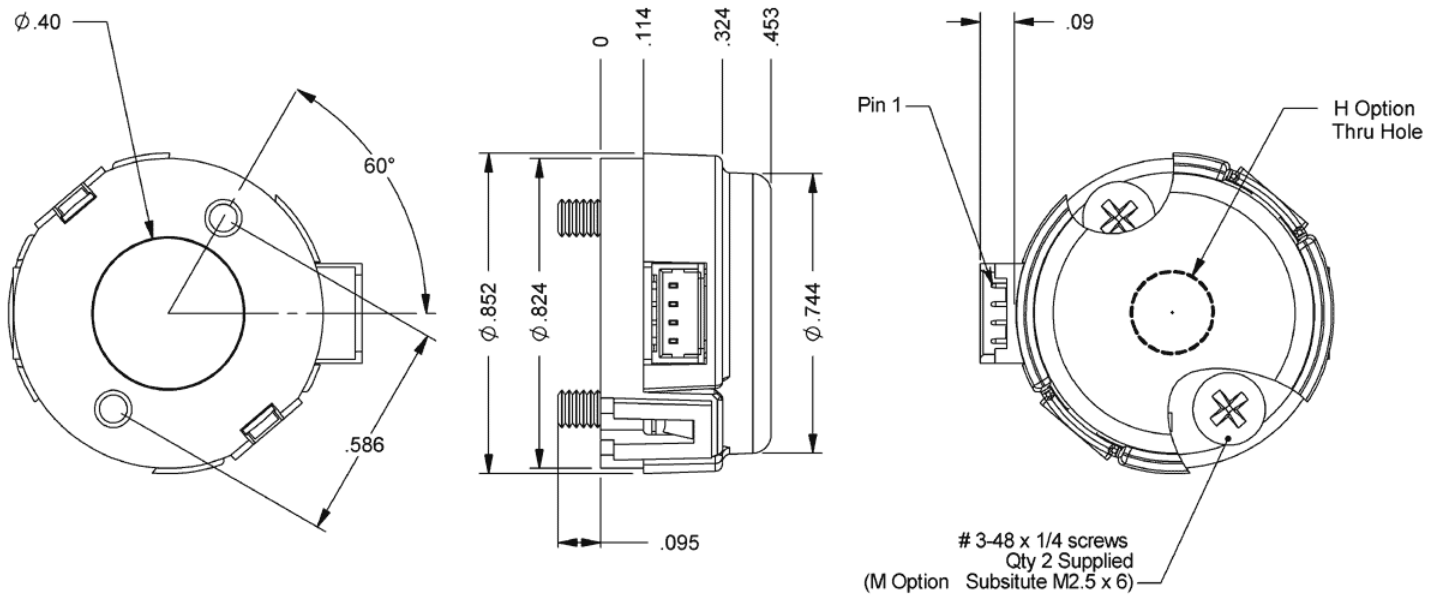
The E4P series encoder can be connected by using a (high retention 4-conductor snap-in polarized 1.25mm pitch) connector. Mating cables and connectors (see the Cables / Connectors web page) are not included and are available separately.



Features

- ▶ Miniature size
- ▶ Push-on hub - spring loaded collet design
- ▶ Minimum shaft length of .375"
- ▶ Fits shaft diameters of .059" to .250"
- ▶ Accepts +/- .020" Axial shaft play
- ▶ Off-axis mounting tolerance of .010"
- ▶ Tracks from 0 to 30,000 cycles/sec
- ▶ 100 to 360 cycles per revolution (CPR)
- ▶ 400 to 1440 pulses per revolution (PPR)
- ▶ Single +5V supply

 **Mechanical Drawing**



 **Mechanical**

Parameter	Dimension	Units
Moment of Inertia	3.0×10^{-6}	oz-in-s ²
Mounting Screw Size	#3-48 x 1/4"	-
M-option Screw Size	2.5mm x 6mm	-
Screw Bolt Circle Diameter	$.586 \pm .002$	in.
Required Shaft Length*	$.375$ to $.395$	in.
Axial Length Codewheel	$.270$	in.

* Includes axial play.

 **Absolute Maximum Ratings**

Parameter	Min.	Max.	Units
Vibration (5 to 2kHz)	-	20	g
Shaft Axial Play	-	.020	in.
Off-axis Mounting Tolerance	-	.010	in.
Acceleration	-	250,000	rad/sec ²
Storage Temperature	-40	85	C
Relative Humidity	-	90	%

Parameter	Min.	Max.	Units
Storage Temperature	-40	100	C
Operating Temperature	-20	100	C

Phase Relationship

A leads B for clockwise shaft rotation, B leads A for counter clockwise shaft rotation viewed from the shaft/bushing side of the encoder (see the AEDR page).

Electrical

For complete details see the AEDR page.

Torque

Parameter	Torque
Base to Mounting Surface	2-3 in.-lbs.

Options

H-option (Hole In Cover)

The H-option adds a hole in the cover for the shaft to pass through:

- For shaft diameters of 1.5mm to 2.5mm, a 0.143" hole is supplied.
- For shaft diameters of 3mm and 1/8", a 0.170" hole is supplied.
- For shaft diameters of 5/32" to 5mm, a 0.242" hole is supplied.
- For shaft diameters of 6mm and 1/4", a 0.295" hole is supplied.

L-option (Low Power Strobe)

To reduce the average power requirements, the L-option version of the E4P power can be strobed on just long enough to sample outputs A and B. This option is the same as our standard E4P, except the internal power bypass capacitor is not installed. The outputs settling time is typically 200 to 400 nano seconds after power up. The minimum sample frequency must be less than the maximum RPM X the CPR / 10.

M-option (Metric Mounting Screws)

Provides alternate metric 2.5mm x 6mm screws. When M-option is NOT specified the default is 3-48 x 1/4" screws.

T-option (Transfer Adhesive)

When mounting holes are not available, a pre-applied transfer adhesive (with peel-off backing) is available for "stick-on" mounting. Use the centering tool (above) to position the base. T-option specifies transfer adhesive.

Before installation, cleaning the mounting surface with alcohol is recommended to remove dust and oil.

Accessories

Centering Tool

Part #: MCTOOL - (Shaft Diameter*)

Description:This reusable tool provides a simple method for accurately centering the E4Pbase onto the shaft.

Material:Aluminum.

Please note:A centering tool is highly recommended when using the T-option transfer adhesive.

* See Ordering Information below for available Shaft Diameters.

Spacer Tool

Part #: SPACER-E4P

Description:This reusable tool is used to properly space the codewheel from the encoder base. Provides air gap of 0.07" to 0.03".

Material:Plastic.

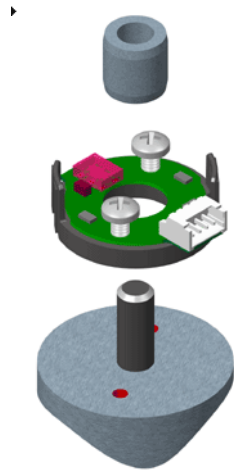
Please note:Each order includes at least one spacer tool per 100 encoders.

Pin-out

Pin	Description
1	+5VDC power
2	A channel
3	Ground
4	B channel

Assembly Instructions

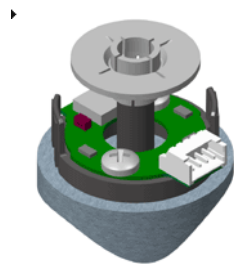
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1. Base Mounting

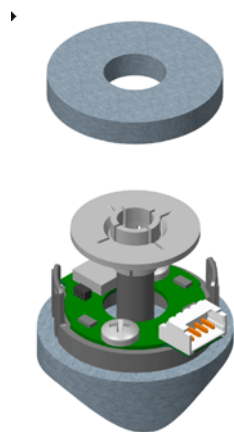
Place base onto shaft. Secure base to mounting surface using two screws.

Transfer Adhesive: Peel off paper backing, place centering tool into center hole of base, slip centering tool onto shaft and slide base and centering tool down onto mounting surface as one piece. Press to form a good bond, then slip centering tool off shaft and continue with standard mounting instructions.



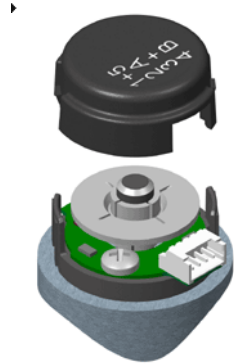
2. Codewheel Placement

Place codewheel onto shaft with pattern-side down towards base.



3. Codewheel Installation

Position spacer / installation tool onto codewheel. Spacer / installation tool provides an air gap of 0.07" 0.03". Press down firmly until tool bottoms out on base latching ears.



4. Cover Installation

Place housing (cover) on. With thumb and finger, squeeze ears together to insure that cover fully latches.

Ordering Information

E4P	-		-		-		-		-		-	
CPR		Bore		Power		Cover		Base		Packaging		
100		059 =		D =Default		D =Default		D =Default		B =Encoder components packaged in bulk. One spacer tool per 100 encoders.		
108		1.5mm		L =Low Power		H =Hole in Cover		M =Alternate metric screws		1 =Each encoder packaged individually with one spacer tool per 100 encoders.		
120		079 =2mm		Strobe				T =Transfer Adhesive		2 =Each encoder packaged individually with one spacer tool per encoder.		
125		091 =								3 =Each encoder packaged individually with one spacer tool and one centering tool per encoder.		
128		2.3mm										
200		098 =										
250		2.5mm										
256		118 =3mm										
300		125 =1/8"										
360		156 =										
		5/32"										
		157 =4mm										
		188 =										
		3/16"										
		197 =5mm										
		236 =6mm										
		250 =1/4"										

Notes

- Cables and connectors are not included and must be ordered separately.
- US Digital warrants its products against defects in materials and workmanship for two years. See complete warranty for details.

Pricing

Quantity	Price
1	\$22.95
10	\$18.04
50	\$15.69
100	\$13.83

- Add 15% per unit for **Base** of Transfer Adhesive
- Add \$3.00 per unit for **Packaging** of Each encoder packaged individually with one spacer tool per 100 encoders.
- Add \$4.00 per unit for **Packaging** of Each encoder packaged individually with one spacer tool per encoder.
- Add \$7.00 per unit for **Packaging** of Each encoder packaged individually with one spacer tool and one centering tool per encoder.