

## Key Features

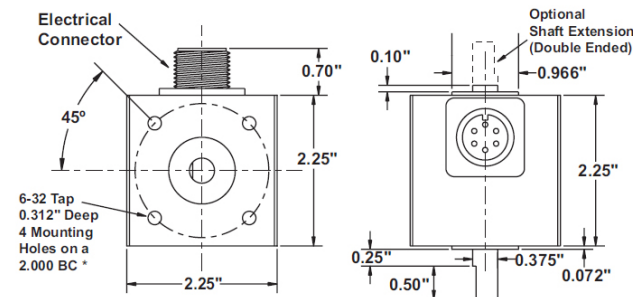
- Ideal for use on slow-speed applications
- Multiple mounting configurations for easy installation
- Wide variety of pulse per revolution (PPR) counts available
- Provides precise pulse train for use with tachometers, Counters, Speed Switches and Speed-to-Analog Converters



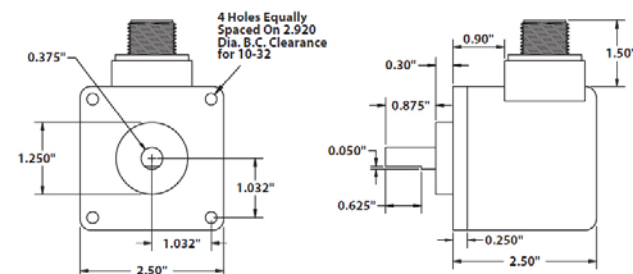
## Description

Rotary Shaft Encoders are ideal for use on any Rotating shaft to provide a digital output signal to tachometers, counters, speed switches, and motor controls. Flexible shaft couplings are available as an option to compensate for shaft misalignment, and are recommended for most applications. The **#380 Encoder** is a standard industrial grade encoder available with single channel or quadrature output. The **#470 Encoder** has a size 25 heavy-duty industrial housing with rugged sealed ball bearings and an anti-backlash flexible shaft coupling to isolate the internal high precision encoder from both axial and radial shaft loading. The #470 supplies a quadrature output with an index pulse, and optional line driver output.

### Encoder 380



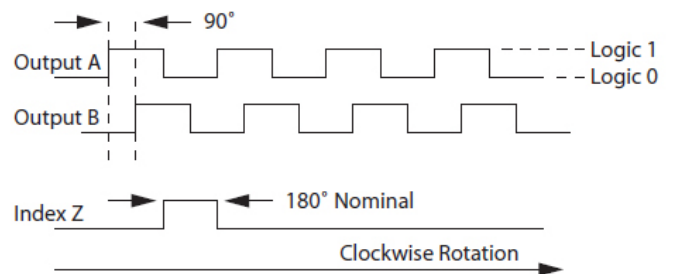
### Encoder 470



## Principle of Operation

Electro-Sensors' Rotary Shaft Encoders convert shaft rotation into square wave output pulses. They provide an accurate means of transmitting actual speed information for detecting rate, position, or direction of rotation. The output pulses are produced using precision etched discs and opto-electronics for high accuracy and extended reliability. The number of output pulses per shaft revolution is determined by the number of clear and opaque segments on the disc. Quadrature models have a second LED and sensor positioned 90 degrees apart to produce two square wave signals.

### Outputs • Waveform Timing:



### Standard Output: Output A only

50% duty cycle square wave output signal in either direction of rotation.

### Quadrature Output: Output A & B

Provides two square wave output pulses offset from each other by 90°. The pulses lead or lag each other, depending on the direction of rotation.

### Quadrature with Index: Output A & B, with Index Z

Outputs an Index Pulse in addition to the two square waves provided from the quadrature output (Outputs A & B). This gives one index pulse per revolution (Index Z)

## Encoder 380 & 470 Specifications

Input	Encoder 380	Encoder 470
Voltage	5-28 Vdc	5-28 Vdc
Current	100 mA	150 mA Max
Regulation	± 5%	± 5%
Output	Encoder 380	Encoder 470
Amplitude	80% of Input voltage (min)	N/A
Type	Open Collector NPN	Two Square Waves in Quadrature
Current	Sink 100 mA (Max)	Sink 100 mA (Max)
Polarity	Positive	Positive
Pulse Rate	0-20,000Hz, Standard Model	0-100KHz, opt. 0-200KHz
Pulses Per Revolution	1-1270 (Specify)	60-6000 (Specify)
Mechanical	Encoder 380	Encoder 470
Shaft Speed	6,000 RPM MAX	6,000 RPM MAX
Shaft Rotation	Bi-Directional	Bi-Directional
Bearings	Double Sealed Ball Bearings	ABEC3 Double Sealed Ball Bearings
Radial Loading	20 lbs operating	30 lbs operating
Axial Loading	10 lbs operating	20 lbs operating
Moment of inertia	N/A	0.2 ounce-inches <sup>2</sup>
Shaft Size	.375" diameter	.375" diameter
Operating Life	100,000 Hours avg.	100,000 Hours avg.
Housing	Anodized Aluminum	Non-Corrosive finish
Mounting	3 sides-tapped threads	Flange
Environmental	Encoder 380	Encoder 470
Operating Temp.	0° C to + 70° C	-10° C to + 70° C

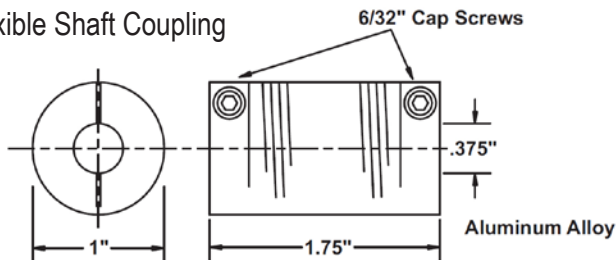
Specifications subject to change without notice.

## Ordering

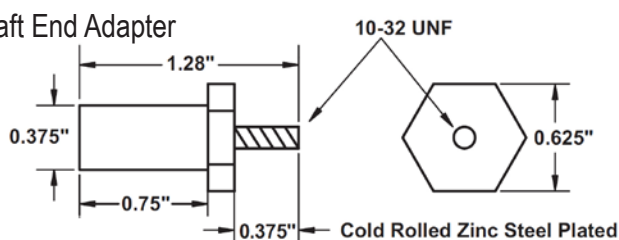
Model Description (Standard)	Part Number
Encoder 380S (60 PPR 5-28 Vdc)	775-006202
Encoder 380S (100 PPR 5-28 Vdc)	775-006303
Encoder 380S (360 PPR 5-28 Vdc)	775-006402
Encoder 380S (600 PPR 5-28 Vdc)	775-006503
Encoder 380S (1000 PPR 5-28 Vdc)	775-006603
Encoder 380S (1200 PPR 5-28 Vdc)	775-007302
Model Description (Quadratic)	Part Number
Encoder 380Q (60 PPR 5-28 Vdc)	775-006306
Encoder 380Q (100 PPR 5-28 Vdc)	775-006301
Encoder 380Q (360 PPR 5-28 Vdc)	775-006404
Encoder 380Q (600 PPR 5-28 Vdc)	775-006501
Encoder 380Q (1000 PPR 5-28 Vdc)	775-006605
Encoder 380Q (1200 PPR 5-28 Vdc)	775-006304
Encoder 470 HD (60 PPR 5-28 Vdc)	775-006407
Encoder 470 HD (100 PPR 5-28 Vdc)	775-006311
Encoder 470 HD (360 PPR 5-28 Vdc)	775-006405
Encoder 470 HD (600 PPR 5-28 Vdc)	775-006505
Encoder 470 HD (1000 PPR 5-28 Vdc)	775-006606
Encoder 470 HD (1200 PPR 5-28 Vdc)	775-007305
Model Description (Quadratic)	Part Number
380S mating connector with 10' cable	775-006701
380Q mating connector with 10' cable	775-006702
470 mating connector with 10' cable	775-006703
380 S/Q mating connector w/o cable	775-006-700
Mounting Hardware	Part Number
Flexible Shaft Coupling	312-000800
Shaft End Adapter	312-001000
Encoder mounting "L" bracket	260-004400

\*More options available, view website or contact Sales.

### Flexible Shaft Coupling



### Shaft End Adapter



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## Customization

If one of our standard products does not meet your specifications, please call one of our applications specialists. Many of our products can be customized to fit specific needs.

## Additional Information

See our website or contact sales for more information on Electro-Sensors' Shaft Rotation Encoders.