

ED-17 SERIES MAGNETIC ENCODER

Reliable and Consistent Sensing

Control in Low Speed Applications

DESCRIPTION

The **ED-17 Series Magnetic Encoder** can be used as either a rotational feedback sensor or as a human machine interface (HMI) device. As a light duty feedback sensor it can provide rotation speed, direction or positioning information. The optional serial interface provides absolute angular position information even when power is cycled on and off. This unique capability provides functionality not found in similar devices.

As an HMI device it can be used as a rotary input control for use on instrumentation panels. The ED - 17 Series is designed with our modular and flexible construction methods. We can customize housings, shafts and terminations to meet your exact specifications with little or no tooling costs.



FEATURES

- ◆ Magnetic Sensing Technology
- ◆ Encapsulated Electronics/Sealed unit
- ◆ Harsh Environment Compatibility
- ◆ SSI (Syncro-Serial Interface) or Quadrature Outputs
- ◆ Low Profile
- ◆ Consistent Rotational Torque
- ◆ Resistant to Contamination
- ◆ IP52 Sealing
- ◆ Metallic Threaded Bushing Mounting
- ◆ Wide Operational Temperature Range (-40°C to 85°C)
- ◆ Custom Housings, Shafts, Connectors Available in Most Cases with No Additional Tooling Required
- ◆ Sleeve, Ball or Composite Bearing Options

APPLICATIONS

- ◆ Marine or Avionics Motor Speed and Position Control
- ◆ Marine Steering & Throttle Position Control/Feedback
- ◆ Marine Ruder Position and Control
- ◆ Monitor Pump Speed & Direction
- ◆ Camera Position and Control
- ◆ X/Y Stage Positioning
- ◆ Radio Controls
- ◆ Medical Diagnostic Equipment
- ◆ Video and Sound Editing Equipment

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performance specifications

MSI Sensors reserves the right to update and change these specifications without notice.

Standard Resolution	512, 256, 128 and 64 counts per revolution (CPR)
Operating Temperature	-40°C to +85°C (Extended temperature range available, contact factory for details)
Maximum Speed	Up to 3000 RPM depending on the bearing option
Bearing Life	3,000,000 to 30,000,000 cycles
Bearings	Sleeve, Ball and Composite
Run Out	.010" max @ .75 from mounting surface
Bushing Mounting Torque	10 in-lb max

electrical

Maximum Current Draw	24 mA
Operating Voltage (VDC)	5 +/- 0.25 VDC
Voltage Output High (Voh)	Minimum 4.0 Vdc, with Ioh -3ma
Voltage Output Low (Vol)	Maximum 1.0Vdc, With Ioh 3ma
Duty Cycle	50 % +/- 25%
Phase Angle	90° +/-45° (Ch. A leads Ch. B Clockwise)

Note: All specifications are specified with Vdd @ 5.00 Vdc, and Ambient Temperature Ta @ 25 Degrees Celsius.

mechanical

Axial Load (lbs)	4.5 [20 N] Max.
Radial Load (lbs)	2.25 [10 N] Max.
Operating Speed (rpm)	300 = Sleeve & Composite 3000 = Ball
Shaft End Play (in)	.005 [.10] Max.
Shaft Radial Play (in)	.010 [.25] Max. @ .6 [15.2] from mounting surface
Shaft Push/Pull Force (lbs)	40 [9 N]

environmental

Vibration	MIL-STD-202F Method 204D Test Condition B
Shock	MIL-STD-202F Method 213B Test Condition C
Humidity	MIL-STD-202F Method 103B Test Condition A
Thermal Shock	MIL-STD-202F Method 107G Test Condition A
Operating Temperature	-40 to +85 °C
Storage Temperature	-55 to 125 °C

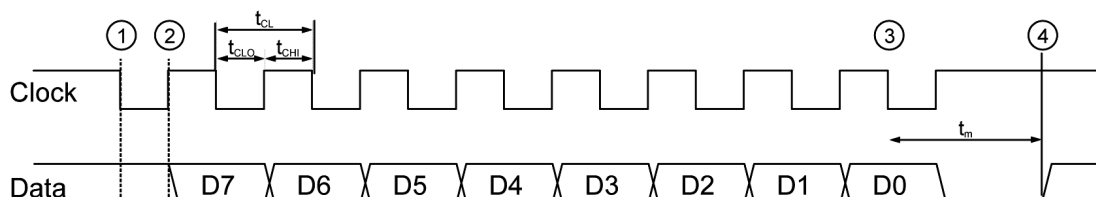
ordering information

ED-17 - XX - RRR - O - C	
Bearing	Connection
BB= Ball Bearing	C= Cable
CB= Composite Bearing	P= pin header
SB= Sleeve Bearing	Output
	Q= Quadrature
	S= Serial
	Range
	064= 64 counts/ rev (pending)
	128= 128 counts/ rev
	256= 256 counts/ rev
	512= 512 counts/ rev

Catalogue Units
ED-17-SB-128-Q-P
ED-17-SB-256-Q-P
ED-17-SB-256-S-P
ED-17-BB-512-Q-P
ED-17-BB-512-S-P
ED-17-CB-512-Q-P
ED-17-SB-512-Q-C
all others will be subject to minimum order quantities

serial timing diagram

Parameter	Symbol	Min.	Max.	Unit
Clock period	t_{CL}	0.8	16	μs
Clock high	t_{CHI}	0.4	15.6	μs
Clock low	t_{CLO}	0.4	15.6	μs
Monoflop time	t_m	16	22	μs



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quadrature timing

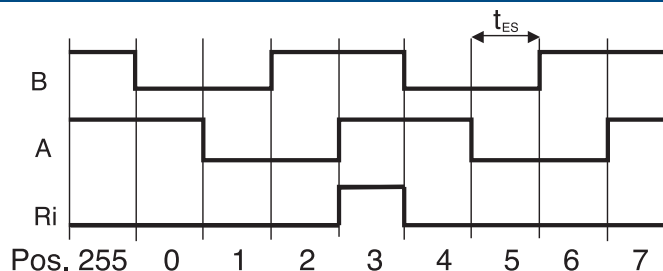


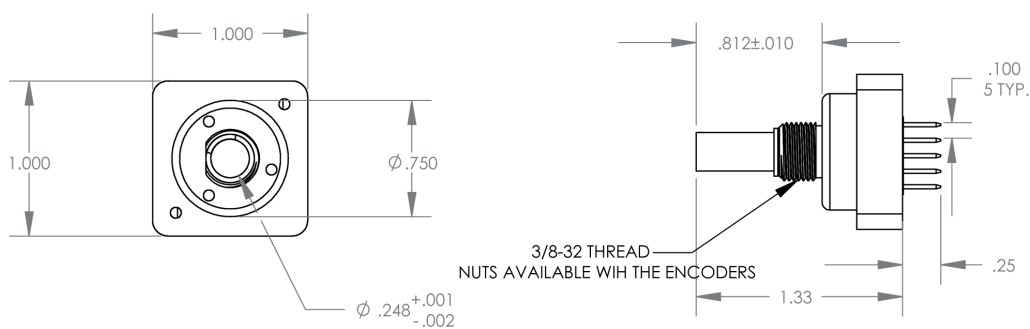
Fig. 6: Timing diagram for incremental output

Edge separation time for 64 ppr.

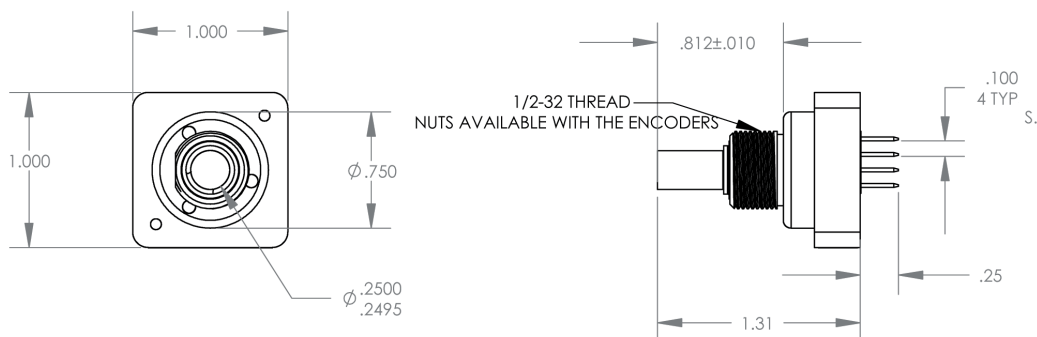
Parameter	Symbol	Ideal	Min.	Unit	Note
Edge separation time	t_{ES}	39	25	μs	At 6,000 rpm
Edge separation time	t_{ES}	7.8	4.5	μs	At 30,000 rpm

dimensions

SLEEVE BEARING



BALL AND COMPOSITE BEARING



CABLE OPTION

