ED-20

Quadrature Output Series Magnetic Encoder

SPECIFICATIONS

- **High or low profile differential or NPN outputs**
- **Wide operational temperature range**
- **IP52 sealing**
- **Ball bearing**

The ED-20 series magnetic encoder is designed for medium duty industrial feedback applications with ball bearing supported shaft. Resolutions are available from 200 to 400 counts per revolution.

This encoder series also features line drivers with active termination for long cable runs as well as reverse voltage protection.

The ED-20 also offers the option of high voltage differential, low voltage differential or open collector (NPN) outputs. An index channel drives a pulse every 180º.

The magnetic technology used in the ED-20 series offers many advantages over conventional optical encoder technology such as sealed electronics and extended temperature ranges. Furthermore, since there are no LED/LD degradation issues, the ED-20 has a virtually unlimited life.

FEATURES

- Magnetic sensing technology
- Encapsulated electronics/sealed unit
- Harsh environment compatibility
- Quadrature outputs
- High or low profile differential or NPN outputs
- Consistent rotational torque
- Resistant to contamination
- IP52 sealing
- Metallic threaded bushing mounting
- Excellent stability – no optical degradation

APPLICATIONS

- Marine, avionics, motor speed and position control
- Marine steering
- Monitor pump speed and direction
- Camera position and control
- XY stage positioning
- Motor feedback
- Medical diagnostic equipment
- Video and sound editing equipment
- Valve position
- Syringe pump

PERFORMANCE SPECS (NOTE1)

Low and high voltage differential output:

Parameters	**ED-20-LVD-XXXX-Q-P**	**ED-20-HVD-XXXX-Q-P**
Supply current	25 mA	25 mA
Operating voltage (Vcc)	5 VDC ± 0.25 VDC	12 VDC to 32 VDC
Voltage output high	Vcc – 0.4 V	
Voltage output low	400 mV	
Duty circle	50% ± 25%	
Standard resolutions	400, 200 counts per revolution (4 counts = 1 pulse)	
Operating temperature	-40 °C to 85 °C	

NPN open collector output:

Parameters	**ED-20-NPN-XXXX-Q-P**
Supply current	15 mA
Operating voltage (Vcc)	5 VDC ± 0.25 VDC
Voltage output high	Vcc – 0.4 V
Voltage output low	125 mV
Duty circle	50% ± 25%
Standard resolutions	400, 200 counts per revolution (4 counts = 1 pulse)
Operating temperature	-40 °C to 85 °C

Bearing:

Parameters	**ED-20-XXX-XXXX-Q-P**
Bearings	Ball
Maximum speed	3000 RPM
Bearing life	30,000,000 cycles

(NOTE1): Vcc = 5 V | 24 V, Ambient Temperature 25 °C

MECHANICAL

Parameters	**ED-20-XXX-XXXX-Q-P**
Axial load (max.)	20 N
Radial load (max.)	10 N
Shaft end play axial (max.)	0.13 mm
Shaft radial play (max.)	0.25 mm (15.3 mm from thread)
Shaft push-in force	9 N
Shaft pull-out force	1.3 N
Run out (max.)	0.25 mm (19 mm from thread)
Bushing mounting torque	1.1 Nm

DIMENSIONS

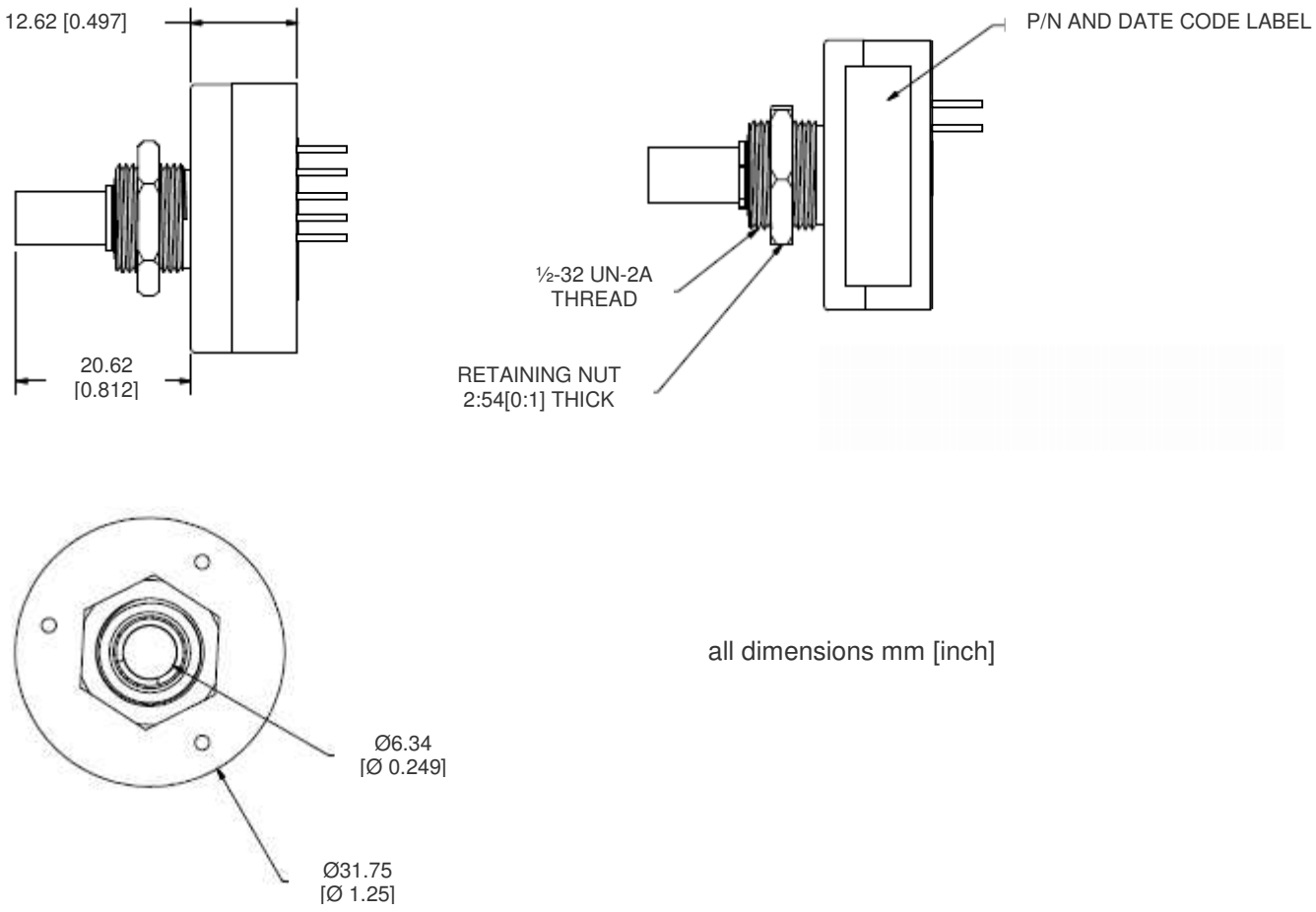

Figure 1: Dimensions of the ED-20

PINNING

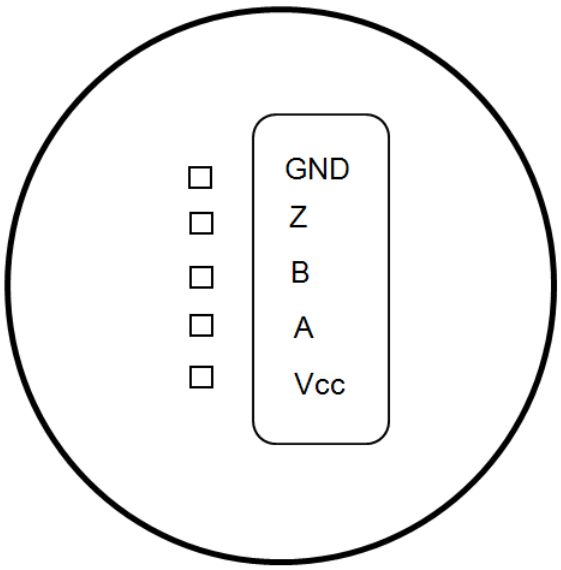

Figure 2: Pinning of the ED-20 (NPN)

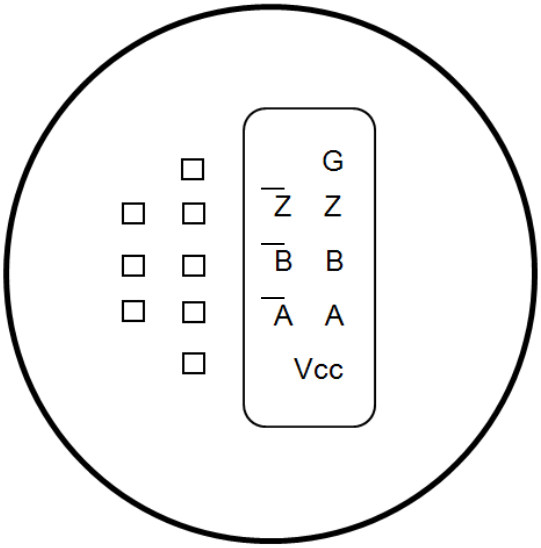

Figure 3: Pinning of the ED-20 (HVD and LVD)

TYPICAL PERFORMANCE CURVES

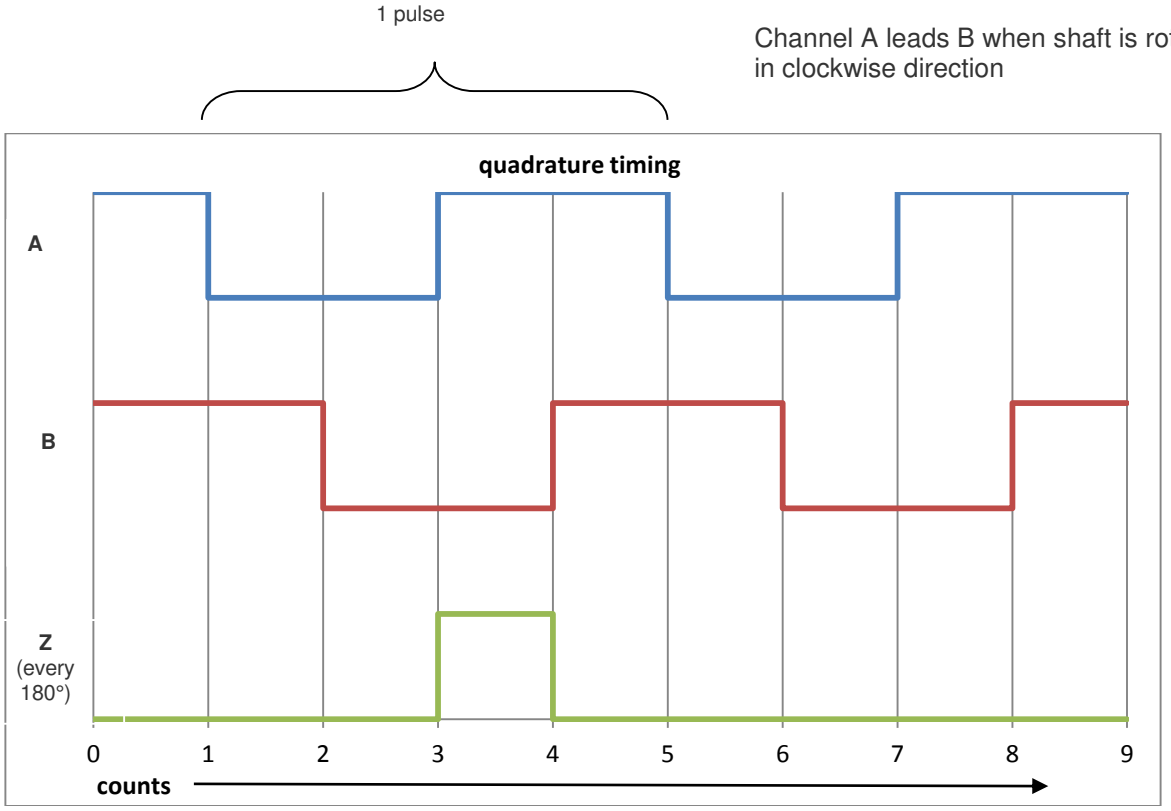

Figure 4: quadrature outputs

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

PART NUMBERING Model Number - Output - Range – Output type - Connection

ED-20-XXX-XXXX-Q-P

Connection	Options:
Output type	P = Pin header
Range	Q = Quadrature
	0200 = 200 counts per revolution
	0400 = 400 counts per revolution
Output	HVD = high voltage differential
	LVD = low voltage differential
	NPN = open collector

Example: ED-20-NPN-0400-Q-P

Model ED-20, quadrature output with open collector, 400 counts per revolution, pin header

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