

## ED-21

### Analog Output Series Magnetic Encoder

#### SPECIFICATIONS

- ◆ Analog voltage or current output
- ◆ Low profile
- ◆ IP52 sealing
- ◆ Ball bearing

The ED-21 series magnetic encoder is designed to replace traditional mechanical potentiometers.

This product is offered with a ball bearing supported shaft.

Two standard output options are available: 0.5 VDC to 4.5 VDC or 4 mA to 20 mA.

The magnetic technology used in the ED-21 offers advantages over conventional electromechanical potentiometers with sealed electronics, extended temperature ranges, and virtually unlimited life as there are no mechanical parts to wear out.



#### FEATURES

- ◆ Magnetic sensing technology
- ◆ Encapsulated electronics/sealed
- ◆ Harsh environment compatibility
- ◆ Analog voltage or current outputs
- ◆ Low profile
- ◆ Consistent torque
- ◆ Resistant to contamination
- ◆ Excellent stability
- ◆ Metallic threaded bushing mounting
- ◆ Wide operational temperature range (-40 °C to 85 °C)
- ◆ IP52 sealing

#### APPLICATIONS

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

## PERFORMANCE SPECS (NOTE1)

Analog voltage output:

Parameters	ED-21-BB-0545-V-P
Standard output range 0 - 360°	0.5 VDC to 4.5 VDC
Supply current	15 mA
Operating voltage (Vcc)	5 VDC
Resolution	1.4°
Accuracy	2.8°
Operating temperature	-40 °C to 85 °C

Analog current output:

Parameters	ED-21-BB-0420-I-P
Standard output range 0 - 360°	4.0 mA to 20.0 mA
Supply Current	15 mA + output current loop
Operating voltage (Vcc)	8 VDC to 26 VDC
Resolution	1.4°
Accuracy	2.8°
Operating temperature	-40°C to 85 °C

Bearing:

Parameters	ED-21-BB-XXXX-X-P
Bearings	Ball
Maximum speed	3000 RPM
Bearing life	30,000,000 cycles

(NOTE1): Vcc = 5 V | 12 V, Ambient Temperature 25 °C

## MECHANICAL

Parameters	ED-21-BB-XXXX-X-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

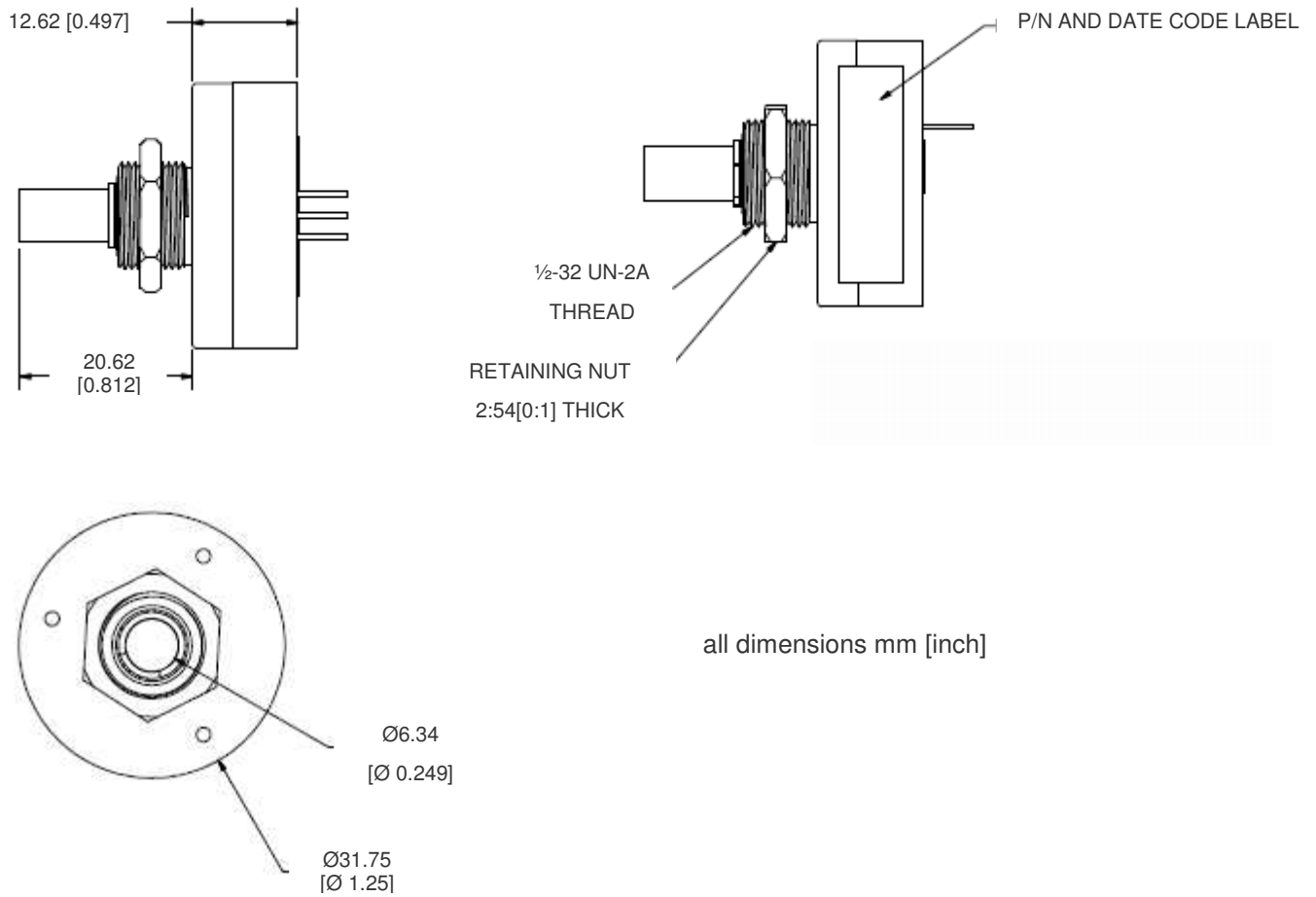


Figure 1: Dimensions of the ED-21

### PINNING

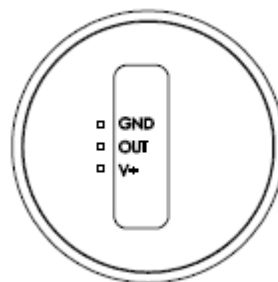


Figure 2: Pinning of the ED-21 (bottom view)

### TYPICAL PERFORMANCE CURVES

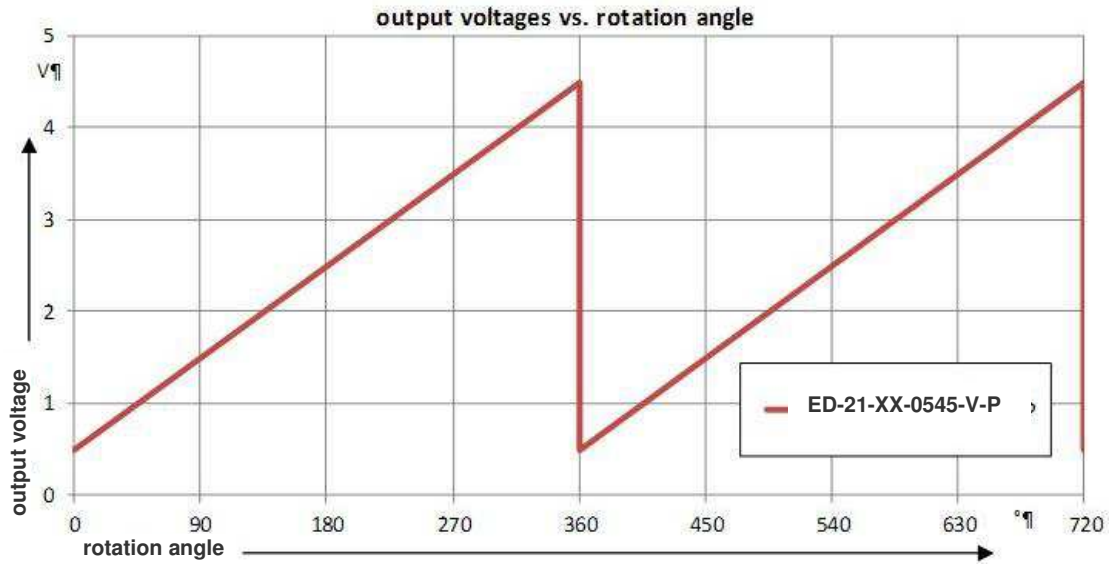


Figure 3: Output voltage vs. rotation angle

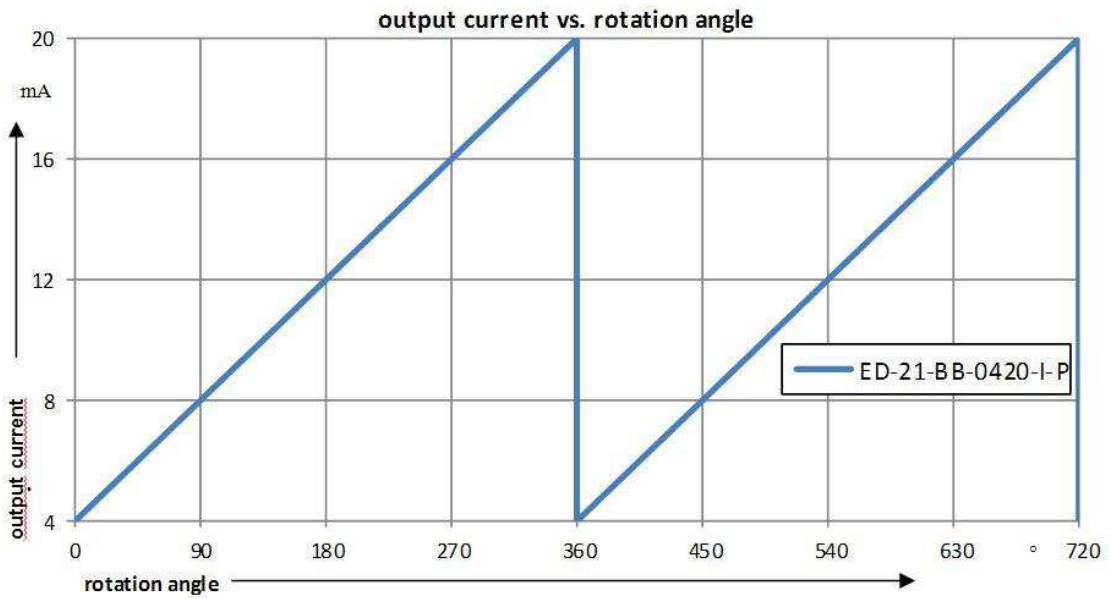


Figure 2: Output current vs. rotational angle

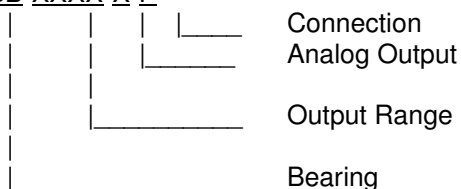
## ENVIRONMENTAL

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 - Bearing - Output Range - Analog Output - Connection - Assembly Variant

ED-21-BB-XXXX-X-P



Options:

P = Pin header

V = Voltage

I = Current

0545 = 0.5 VDC to 4.5 VDC

0420 = 4 mA to 20 mA

BB = Ball bearing

Example: ED-21-BB-0545-V-P

Model ED-21, ball bearing, analog output voltage from 0.5 VDC to 4.5 VDC, pin header

**STANDARD CONFIGURATIONS: ED-21-BB-0545-V-P & ED-21-BB-0420-I-P**

*Consult factory for other available models.*

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