ED-17

Serial Output Magnetic Encoder

SPECIFICATIONS

- **9-bit absolute encoder**
- **Serial SSI interface**
- **IP52 sealing**
- **Ball bearing**
- **Excellent stability – no optic degradation**

The ED-17 magnetic encoder is an absolute encoder with 9-bit resolution.

The device can be easily mounted onto an existing shaft.

The serial output provides absolute angular position information even when power is cycled.

The encoder is designed with modular and flexible construction methods.

FEATURES

- Magnetic sensing technology
- Encapsulated electronics/sealed unit
- Digital SSI interface
- Low profile
- Consistent rotational torque
- IP52 sealing
- Metallic threaded bushing mounting
- Industrial temperature range (-40°C to 85°C)
- Excellent stability – no optic degradation

APPLICATIONS

- Marine, avionics position control
- Marine steering
- Pump monitoring and control
- Camera position and control
- XY stage positioning
- Radio controls
- Medical diagnostic equipment
- Valve position
- Throttle position control/feedback

PERFORMANCE SPECS (Note1)

Parameters	**ED-17-BB-512-S-P**
Supply current	30 mA
Operating voltage (Vcc)	5 VDC ± 5%
Resolution	0.7°
Accuracy	1.4°
Operating temperature range	-40 °C to 85 °C
Power-up time	20 ms

Bearing:

Parameters	**ED-17-BB-512-S-P**
Bearings	Ball
Maximum speed	3000 RPM
Bearing life	30,000,000 cycles

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

MECHANICAL

Parameters	**ED-17-BB-512-S-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

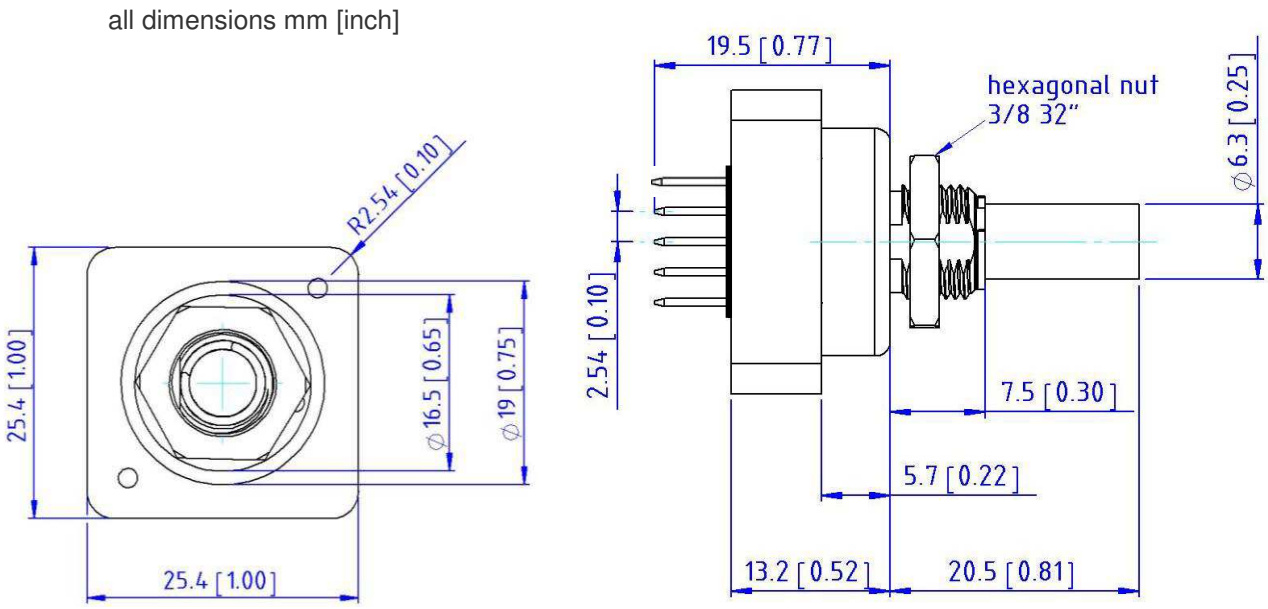

Figure 1: Dimensions of the ED-17-BB-512-S-P (top and side view)

PINNING

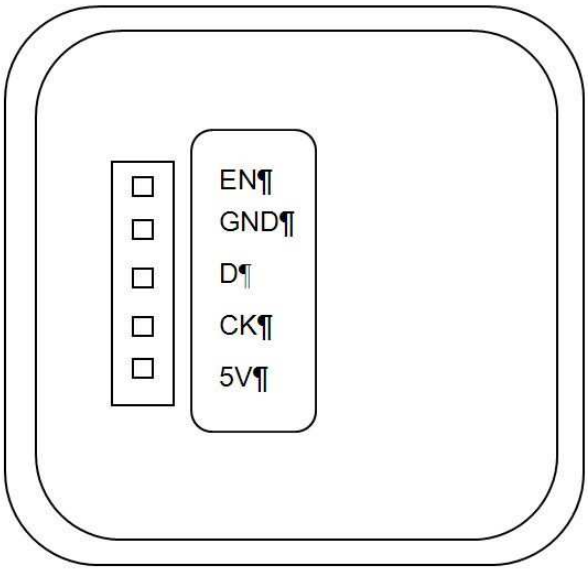

Figure 2: Pinning of the ED-17-BB-512-S-P (bottom view)

BINARY SYNCHRONOUS SERIAL INTERFACE (SSI)

Parameter	Symbol	Min.	Max.	Unit
Clock period	t_{CL}	1.2	16	µs
Clock high	t_{High}	0.6	15.4	µs
Clock low	t_{Low}	0.6	15.4	µs
Delay time	t_D	16	22	µs

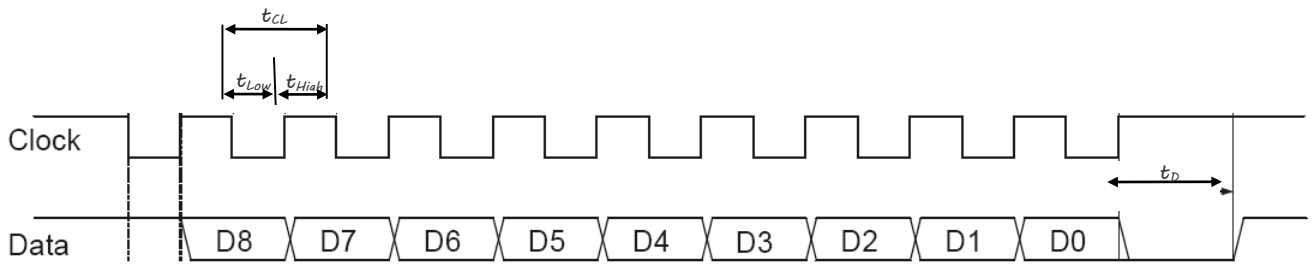

Figure 3: SSI timing diagram

The clock signal must always start from high. At the first low/high transition the encoder transmits the most significant bit (MSB) and at each low/high transition of the clock signal the next data bit is transferred. After sending the least significant bit (LSB) the data line is forced low and before a new position can be read a waiting time of t_D max. is required.

The absolute position can be calculated using (1).

$$rotation\ angle = SSIvalue_{decimal} \cdot \left(\frac{360\,°}{512} \right) \quad (1)$$

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 °C to 85 °C
Storage Temperature	-55 °C to 125 °C

ORDERING INFORMATION

PART NUMBERING Model Number+Bearing+Output resolution+Serial output +Connection

ED-17-BB-512-S-P

		Options:
Connection		P = Pin header
Output		S = Serial output
Output Range		512 = 9-bit resolution
Bearing		BB = Ball Bearing