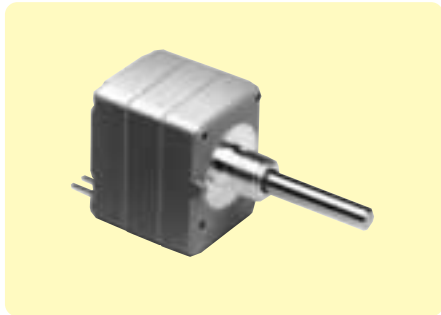


BOURNS type EN

A self-contained rotary optical encoder which produces a 2-bit quadrature signal, suitable for digital systems, where both magnitude and direction of adjustment must be provided. Ideal for use as a digital panel control or as a position sensing device in applications where long life, reliability, high resolution and precise linearity are critical.

The EN encoder converts rotary input into electrical signals, which can be used by microprocessors without A/D conversion, whilst outputs are square wave digital pulses which do not require de-bounce circuitry. These features make it possible to significantly reduce the memory overhead, wiring and interconnects required by other types of control devices.



- ◆ Resolution up to 256PPR
- ◆ Two channel quadrature output
- ◆ Square wave signal
- ◆ CMOS and TTL compatible
- ◆ Choice of bush/shaft size
- ◆ Bearing option for extended life



Specification

Electrical Characteristics

Resolution range	64PPR to 256PPR
Output	2-bit gray code, Channel A leads Channel B by 90° (electrical) with clockwise rotation
Supply voltage	5Vdc ±0.25Vdc
Supply current	26mA max.
Output voltage	
low output	0.8V max.
high output	4V min.
Output current	
low output	25mA min.
Insulation resistance	1,000MΩ min. at 500Vdc
Rise/fall time	200ns typ.
Shaft rpm	3,000 rpm max. (ball bearing)
Power consumption	136mW max.
Pulse width	180° ±45° typ. (electrical degrees/channel) 360° ±90° typ. (index channel)
Phase	90° ±45° typ. (electrical degrees, channel A to B)
Index channel	0° ±45° (centred on 1-1state combination of A and B channels)

Environmental Characteristics

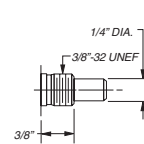
Temperature range	
storage	-40°C to +85°C
operating	-40°C to +75°C
Vibration	5G
Shock	50G
Humidity	MIL-STD-202, method 103B, condition B

Mechanical Characteristics

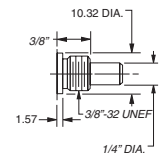
Operating torque	
A & C code bushes	1Ncm max. (spring loaded)
S & T code bushes	0.07Ncm max. (ball bearing)
Mechanical rotation	Continuous
Shaft end play	0.3mm T.I.R. max.
Shaft radial play	0.12mm T.I.R. max.
Rotational life	
A & C code bushes	10,000,000 revolutions (300 rpm max.)*
S & T code bushes	200,000,000 revolutions (3,000 rpm max.)*

*For resolutions ≤128 quadrature cycles per shaft revolution

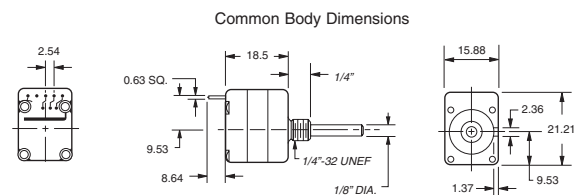
Dimensions (mm) Bush/shaft sizes shown in inches



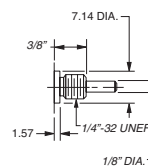
Bush Style A



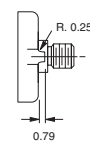
Bush Style S (Ball Bearing)



Bush Style C

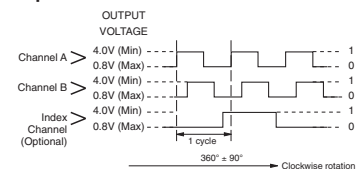


Bush Style T (Ball Bearing)

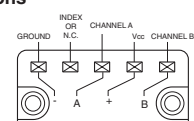


Anti-Rotation Lug View

Output Table



Terminations



Resolution (Pulses Per Revolution)	Mounting Bush Configuration		Shaft		Manf. Part No. & Anglia Order Code
	Dimensions	Style	Dia.	Length*	
64	3/8" Dia. x 3/8" L, Threaded	A	1/4"	5/8"	ENA1J-B20-L00064
				7/8"	ENA1J-B28-L00064
100	3/8" Dia. x 3/8" L, Threaded (Ball Bearing)	S	1/4"	7/8"	ENS1J-B28-L00100
				7/8"	ENA1J-B28-L00128
128	1/4" Dia. x 1/4" L, Threaded	C	1/8"	7/8"	ENC1J-D28-L00128
				7/8"	ENT1J-D28-L00128
256	3/8" Dia. x 3/8" L, Threaded (Ball Bearing)	S	1/4"	7/8"	ENS1J-B28-L00256

*Measured from mounting surface