

Description

The S4 miniature optical shaft encoder is a non-contacting rotary to digital converter. Useful for position feedback or manual interface, the encoder converts real-time shaft angle, speed, and direction into TTL-compatible quadrature outputs without index. The encoder utilizes an unbreakable mylar disk, metal shaft, and bushing or bearing. It operates from a single +5VDC supply.

The S4 encoder is available with ball bearings for motion control applications, or static drag to feel like a potentiometer for front-panel manual interface.

The reflective sensor incorporates an LED light source and a monolithic photo detector with signal shaping electronics, providing two channel bounceless quadrature TTL outputs.

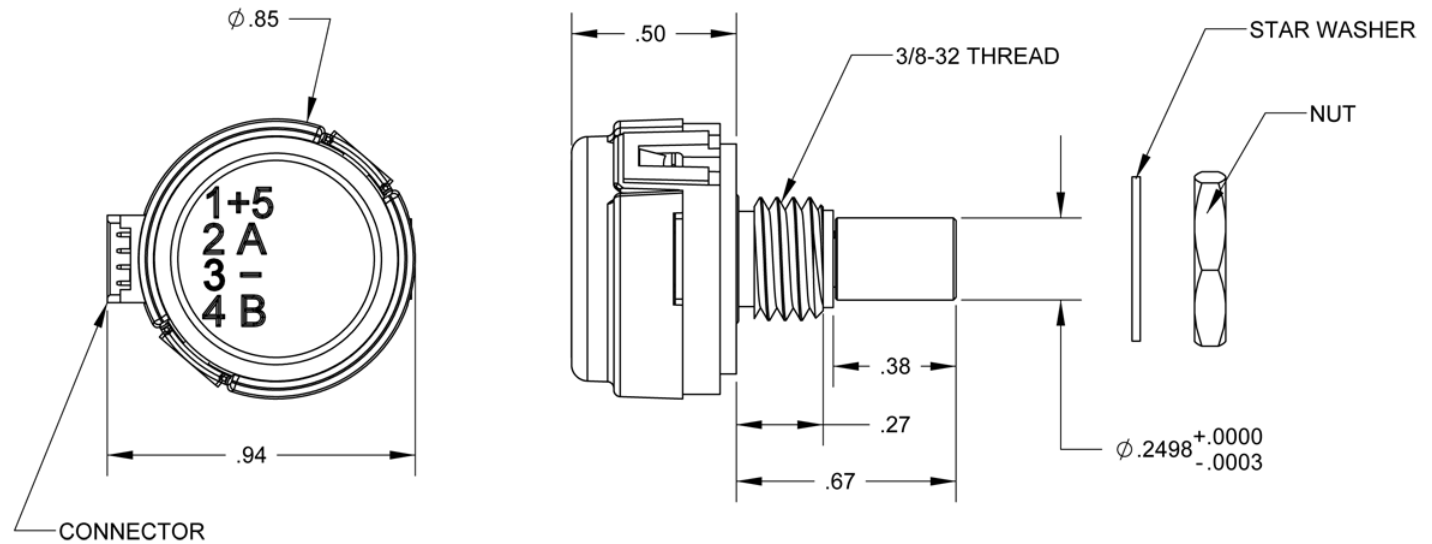
The S4 can be connected by using a high retention 4 conductor snap-in polarized 1.25mm pitch connector. The mating connector is polarized and should attach smoothly to the encoder; do not force. See below for Cables & Connectors.



Features

- ▶ Miniature size
- ▶ Low cost
- ▶ High retention snap-in polarized connector
- ▶ Tracks from 0 to 30,000 cycles/sec
- ▶ Ball bearing option tracks up to 7,000 or 15,000 RPM
- ▶ -10 to +85C operating temperature
- ▶ 100 to 360 cycles per revolution (CPR)
- ▶ 400 to 1440 pulses per revolution (PPR)
- ▶ 2 channel quadrature TTL squarewave outputs
- ▶ Low power strobe option available

 **Mechanical Drawing**



 **Mechanical**

Specification	Sleeve Bushing	Ball Bearing
Acceleration	10,000 rad/sec ²	250,000 rad/sec ²
Vibration	20 g. 5 to 2KHz	20 g. 5 to 2KHz
Shaft Speed	100 RPM max. continuous	15,000 RPM max. continuous
Shaft Torque	0.5 ±0.2 in. oz. 0.3 in. oz. max. (N-option)	0.05 in. oz.
Shaft Loading	2 lbs. max. dynamic 20 lbs. max. static	1 lb. max.
Bearing Life	-	(40/P) ³ = life in millions of revs. where P = radial load in pounds
Weight	0.46 oz.	0.42 oz.
Shaft Runout	0.0015 T.I.R. max.	0.0015 T.I.R. max.

 **Materials**

Shaft	Brass or Stainless
Bushing	Brass
Connector	Gold plated

 **Mounting**

Hole Diameter	0.375" +0.005 - 0
Panel Thickness	0.125 in. max.
Panel Nut Max. Torque	20 in.-lbs.

Phase Relationship

B leads A for clockwise shaft rotation, A leads B for counter clockwise shaft rotation viewed from the shaft/bushing side of the encoder (see the AEDR page).

Electrical

For complete details see the AEDR page.

Pin-out

Pin	Description
1	+5VDC power
2	A channel
3	Ground
4	B channel

Ordering Information

S4 - - - -

CPR	Shaft	Torque	Power
100	125 = 1/8"	D =Default	D =Default
108	236 =Metric 6mm diameter shaft	B =Ball Bearing	L =Low Power Strobe
120		N =Light Static Drag	
125	250 = 1/4"		
128			
200			
250			
256			
300			
360			

Notes

- For ordering information please see the Compatible Cables / Connectors section above.
- US Digital warrants its products against defects in materials and workmanship for two years. See complete warranty for details.

Pricing

Quantity	Price
1	\$46.95
10	\$39.51
50	\$35.03
100	\$31.13

- Add \$1.00 per unit for **Shaft** of Metric 6mm diameter shaft
- Add \$5.80 per unit for **Torque** of Ball Bearing