

ENCODER DATA SHEET
Features:

- Housed Optical Encoder
- Absolute Non-Volatile Serial Output
- All Electronics Contained in Unit
- Light Weight 9.0 lb (Max)
- Sample Rate up to 8.0 kHz
- Angular Velocity up to 5 RPS
- Running Torque = 15.0 oz-in max @ 25°C
- Bearings Rated Life of 10⁹ revolutions (Min)
- Optional Internal and External Couplings
- Bearings Can Support Payloads up to 50 lb
- Operating Temperature Range -40 to +75°C
- The nanoSeries nSH/80 can be configured as a drop in replacement for the legacy Microseries μS/80 housed encoders.
- The Optional Tachometer feature reports real-time position data.
- The Tachometer Outputs 2¹⁸ counts per revolution and consists of two square waves in quadrature.
- The Tachometer is Operational up to 30 RPM.

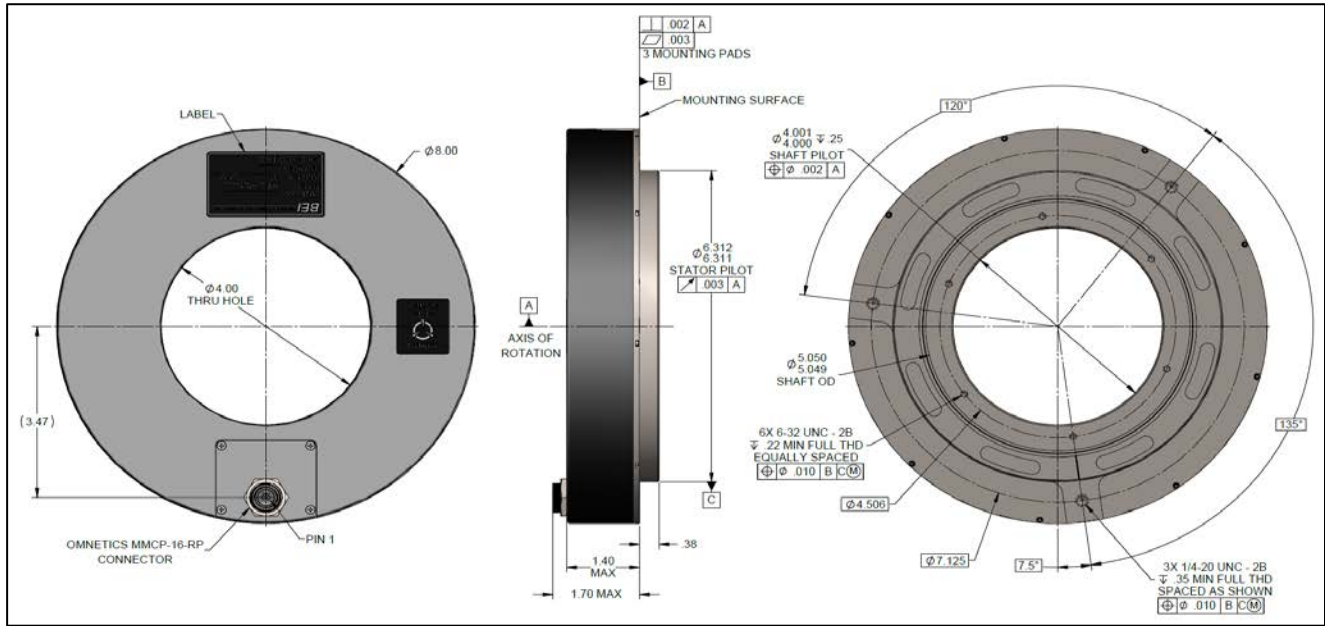

General Description

NanoSeries Housed Encoders are thin, through-hole, absolute, optical encoders. They have substantially better accuracy than other shaft angle digitizers. These encoders are designed for applications where high resolution, minimum height, and insensitivity to power interruptions are desired. The nSH/80 family of encoders incorporates BEI Precision's latest technology with AIME-II read stations. The AIME-II modular design reduces build complexity, lead time, and cost while providing overall performance improvements when compared to legacy Microseries encoder systems. The nSH/80 Encoder options include LCRS read mode or LCNS update mode and ultimately provides a modern replacement for the Microseries μS/80 housed encoders operating in these modes.

Typical applications include aerospace/weapon systems, radar/optical tracking systems, and astronomical telescopes.

ENCODER PROPERTIES					
Model	Stations	Resolution		RMS Accuracy (Min)	Max Power
		(Quanta)	(ENOB)		
nSH28/80	1	28 bits	24 bits	2.0 arc-sec	2.2W
nSH29/80	2	29 bits	25 bits	0.8 arc-sec	2.9W
nSH30/80	4	30 bits	26 bits	0.5 arc-sec	5.0W

ENCODER DATA SHEET



3D CAD MODELS AVAILABLE ON REQUEST

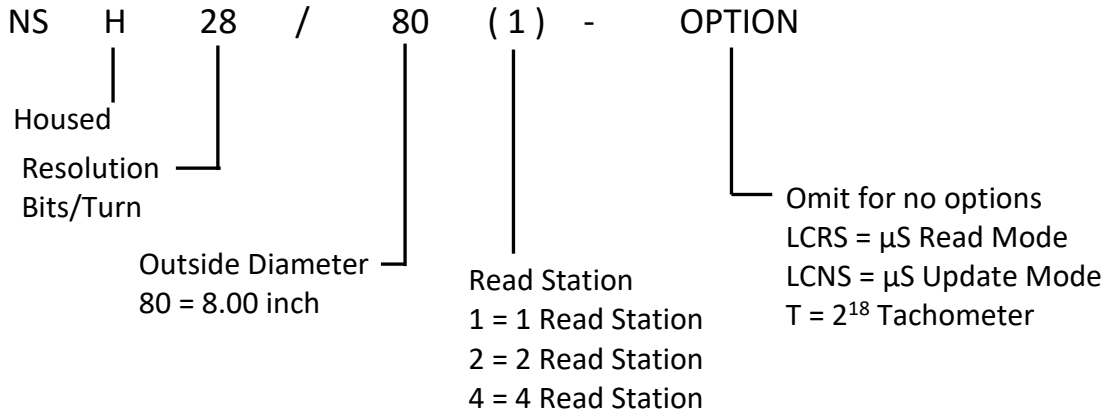
General Specifications

	Quanta		Resolution (quanta)		RMS Accuracy (Min)	
	Per Revolution	Arc-sec	Nanoradian	Arc-sec	Microradian	
nSH28/80	268,435,456	0.0048	23.41	2.0	9.6963	
nSH29/80	536,870,912	0.0024	11.70	0.8	3.8785	
nSH30/80	1,073,741,824	0.0012	5.85	0.5	2.4241	
Input Voltage	5.0 ±10% VDC					
Interrogation Rate	8.0 kHz max					
Data Clock Rate	10.0 MHz max					
Data Relevancy	27 µS					
Signaling	RS-422 per EIA-422					
Operating Speed	5 RPS max ⁽¹⁾ 30 RPM with Tachometer option					
Rotation (for increasing count)	Clockwise facing mounting surface					
Slew Speed (non-operating)	200 RPM max					
Operating Temperature Range	-40 to +75° C (Consult factory for extended range)					
Storage Temperature Range	-55 to +90° C					
Vibration – Locked Shaft	MIL-STD-202, Method 214, Condition 1, Profile F (20.7 grms)					
Floating Shaft, 0 lb payload	MIL-STD-202, Method 214, Condition 1, Profile A (5.35 grms)					
Shock – Locked Shaft	MIL-STD-202, Method 213B, Condition A (50 g's, 11 msec pulse, half-sine)					
Altitude	70,000 ft					
Torque – Breakaway	15.0 oz-in max at 25°C					
Running	15.0 oz-in max at 25°C					
Moment of Inertia	0.84 oz-in-sec ² max (excluding coupling)					
Shaft Loading – Axial	50 lb max					
Radial	50 lb max (@ Shaft Mounting Face)					
Weight	9.0 lb (excluding coupling)					
Rated Life, Bearings	10 ⁹ revolutions min					
Rated Life, LED	100,000 hours min					
Sealing	IP50 (dust protected)					

(1) nSH/80 is a strobed encoder, higher speeds = greater position lag

ENCODER DATA SHEET

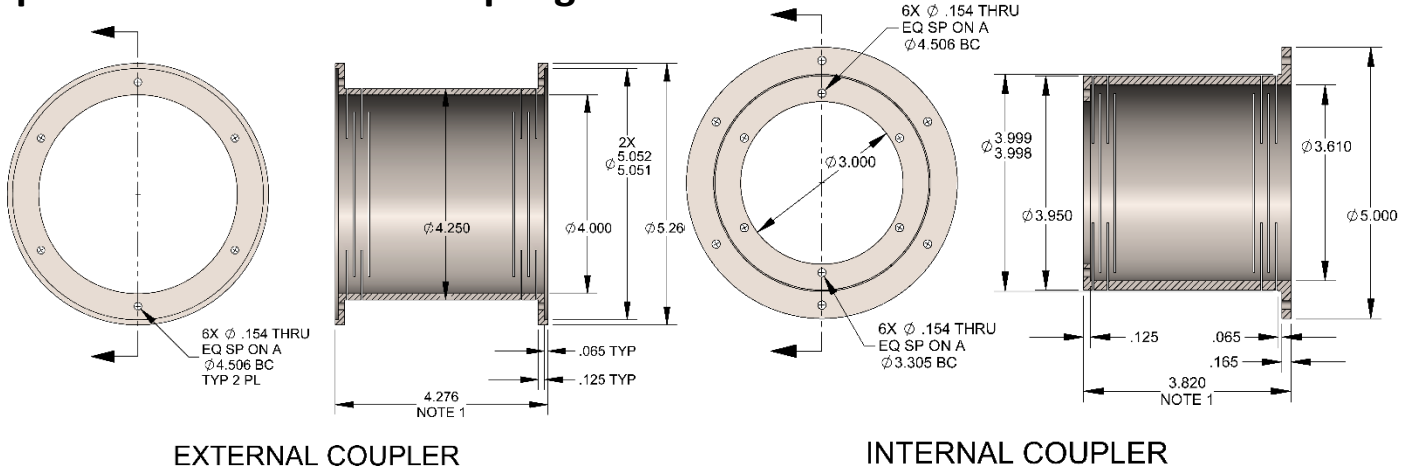
Ordering Information:



Special Models:

Many other sizes, configurations, and resolutions are possible at a nominal NRE fee. Available options (priced separately) include vacuum rating, special materials, cable or connector variations, etc. Contact the factory for price and delivery information.

Optional BEI Precision Couplings Available:



NOTES: 1. Consult BEI PSSC for other Lengths

Misalignment Specifications

- | | |
|--------------------------------------|---------------|
| 1. Parallel Misalignment Range | 0.004 FIM |
| 2. Mounting Surface Perpendicularity | 0.001 FIM |
| 3. Drive Shaft Runout | 0.001 FIM |
| 4. Axial Displacement Range | +0.000/-0.010 |