

## Incremental Linear Feedback Encoders



These Incremental encoders provide encoder quadrature square wave feedback signals that allow for direct integration to servo driven applications.

The recent advancements of Digital Signal Processors (DSPs) alongside of high-speed analog-to-digital conversion ICs has allowed the Spherosyn® technology to provide feedback for a wide range of motion control applications.

### PRINCIPLE OF OPERATION

The scale is comprised of a stainless steel or carbon-fiber tube that contains a column of high-precision, nickel-chrome ball bearings.



The reader head contains a series of coil assemblies along with the supporting electronics. An electromagnetic field is generated by a drive current that interacts with the balls contained in the scale. A set of pickup coils detect the variations in the induced field which are then processed to generate signals that vary in encoder TTL square wave form.

	MICROSYN® DIGITAL	SPHEROSYN® DIGITAL	SPHEROSYN® DIGITAL-SP
Output Signal	RS422 TTL level square wave, 1Vpp or 11µApp		
Reference Marker	Every 0.019" (5mm)	Every 0.5" (12.7mm)	Every 0.5" (12.7mm) or user selectable at 1" (254mm) increments within first/last 8" (203mm) of the travel
Accuracy/Meter	+/-0.0002" or +/-0.0004" (+/-5µm or +/-10µm)	+/-0.0004" (+/-10µm)	+/-0.0004" (+/-10µm)
Repeatability	Within 1 resolution count		
Resolutions	10µm, 5µm, 2µm, 1µm, 0.5µm or 0.2µm	10µm, 5µm, 2µm, 1µm, or 0.5µm	10µm, 5µm, 2µm, 1µm, or 0.5µm
Equivalent Line Count/Inch	635, 1270, 3175, 6350, 12,700, 31,750	635, 1270, 3175, 6350, 12,700	635, 1270, 3175, 6350, 12,700
Maximum Traverse Rate	65.6' (20M) per second (10µm), pro-rated to resolution		
Power Supply	5VDC +/-5%, <180mA		
Shock (11ms)	100g (IEC 69-2-6)		
Vibration (55-2000Hz)	30g (IEC 68-2-27)		
Sample Period	100µs		
Scale Travels	2" to 40" (51mm to 1016mm)	2" to 453" (51mm to 11.5M)	4" to 453" (102mm to 11.5M)
Environmental	IP67 (fully submersible) according to IEC 529. Exceeds NEMA Type 6.		
Operating Temperature	32° to 131°F (0° to 55°C)		
Coefficient of Expansions	12x10 <sup>-6</sup> /K		
Scale Material	Carbon Fiber	304 Stainless Steel	
Scale Diameter	0.257" (6.5mm)	0.601" (15.25mm)	
Overall Scale Length	Scale Travel Length + 7" (178mm)	Scale Travel Length + 10" (254mm)	
Encoder Dimensions	1.38"H x 2.95"L x 0.98"D (35mm x 75mm x 24mm)	2.04"H x 5.16"L x 1.10"D (52mm x 131mm x 28mm)	
Standard Cable	9 core, 11.5' (3.5M) Stainless Steel Armored		
Maximum Cable Length	82' (25M)		
Standard Connector	9 pin "D" type or flying lead		
EMC Compliance	BS EN 50081-2, BS EN 61000-6-2		

Contact MachineMate for other output protocols. Specifications subject to change without notice.

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