

# Hercules Encoders

## Series 4000

### Heavy Duty Incremental Rotary Shaft Encoder

- Enclosure: SLIMLINE — 3" x 3" x 1½" Space-Saver NEMA 12/13 or NEMA 4 type Sealing — Flush or Flanged Base Styles
- Inherently Anti-Jitter Circuitry, Shatterproof Metal Code Discs
- Internally and Externally Shielded ABEC 5 Stainless Steel Bearings, Mounted Internally
- Low Supply Current Requirement — 30milliamps typical per encoder, maximum of 50 mA
- Operating Voltage Flexibility — 8 to 28 Vdc or 5 Vdc TTL Output, 5V or 8-15V with Line Driver
- Operating Temperature Rating designed for extremes, from -40° to +85° C (-40° to +185° F)

## Specifications

### Mechanical

Shaft Speed	6000 RPM maximum
Shaft Direction	Bidirectional
Standard Shaft Sizes (Dia.)	.2497", .3747", .4997"
Shaft Extension(s)	0.80" with .50x.05" flat
Shaft Seals	Neoprene or PTFE Options
Mounting	Refer to dimensional drawings
Bearings	ABEC 5 Shielded
Radial Loading	(3/8") 30 lbs. Operating (1/2") 70 lbs. Operating
Axial Loading	(3/8") 15 lbs. Operating (1/2") 35 lbs. Operating
Accuracy	±0.1° of Shaft Rotation Typical
Housing	Black Anodized Aluminum
Weight	Standard: 17 oz., Sealed: 26 oz.
Connector	6 Pin MS3102 or 18" Cable Out

### Electrical

Pulse Rate	10 kHz, up to 200 kHz
Outputs	NPN w/ pullup; NPN open collector; PNP sourcing Line Drivers (5 Vdc/ TTL level, 8 to 15 Vdc) All line drivers have complementary outputs.
Output Ratings	
Open Collector Transistor	40 Vdc maximum
Line Drivers 8-15 Vdc	15 Vdc maximum
5 Vdc TTL	5.5 Vdc maximum
Supply Voltage	8 to 28 Vdc 5 Vdc with 5V TTL level output
Supply Current	30 mA typical, 50 mA maximum
Current Sinking	250 mA maximum
Output Duty Cycle	50/50 w/ ±20% typical tolerance Tighter to ±5% by spec
Pulsed Outputs	5-10 µsec or 25-35 µsec
Rise/Fall Times	1 µsec typical, other options available
	See Wiring Diagrams for Pin Outs

### Environmental

Operating Temp.	-40° to +85° C (-40° to +185° F)
Shock	50 g's for 11 Milliseconds
Vibration	5 to 2000 Hertz at 20 g's
Humidity	100% Relative Humidity
Enclosures (Sealed)	NEMA 4 type — Water-tight
(Std)	NEMA 12/13 equiv. — Dust-, Oil-Tight

### Electrical Connections

Function	Pin	Color
+V	B	Red
Common	A	Black
Channel A	D	Blue
Channel B	E	Brown
Channel $\bar{A}$	C	White
Channel $\bar{B}$	F	Green

For the latest specifications visit our website  
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