

# Hercules Encoders

## Series N25

### Heavy Duty Incremental Rotary Shaft Encoder

- Enclosure: N25-2.5" Dia. NEMA 4 type Sealing Servo, Flush or Flanged Mounting
- Vibration-resistant Anti-Jitter Circuitry, Shatterproof Metal Code Discs
- Shielded ABEC 5 Stainless Steel Spindle Bearings, Standard and Self-Mounting options
- Low Supply Current Requirement - 30 milliamps 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	.3747", .4997"
Shaft Extension(s)	Std 0.875", .50 x .05" flat
Shaft Seals	Neoprene or PTFE Options
Mounting	Refer to dimensional drawings
Bearings	.5000" ID ABEC 5 Spindle
Radial Loading	90 lbs. Operating
Axial Loading	45 lbs. Operating
Accuracy	±0.1° of Shaft Rotation Typical
Housing	Black Anodized Aluminum
Weight (N25)	22 oz.
Connector	6, 7, 10 Pin MS3102E or 18" Cable Out

### Electrical

Pulse Rate	15 kHz typical, up to 200 kHz available
Outputs	NPN w/ 3.3K pullup or open collector PNP sourcing Line Driver (with 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 TTL output
Supply Current, per channel	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 4X equiv. — Water-tight

### Electrical Connections

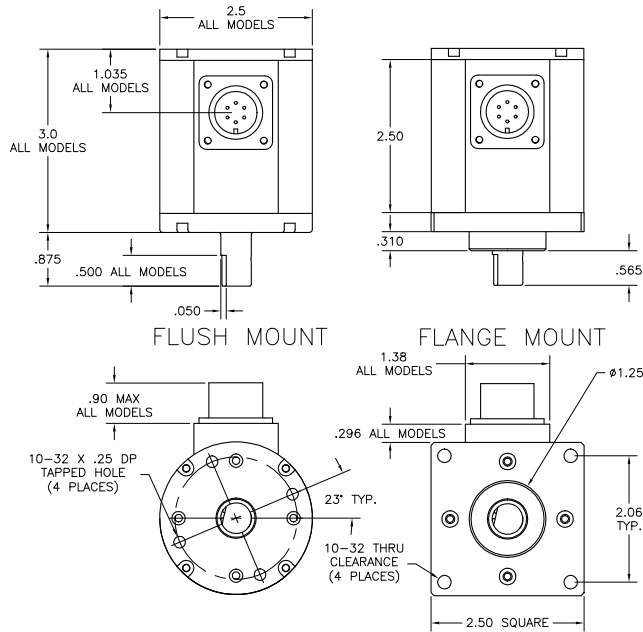
Function	6 Pin	7 Pin	10 Pin	Cable Out	Color
+V	B	D	D	D	Red
Common	A	F	F	F	Black
Channel A	D	A	A	A	Blue
Channel B	E	B	B	B	Brown
Channel A	C	E	H	E	White
Channel B	F	G	I	G	Green
Index	C or E*	C	C	C	White
Index	F	G	J	G	Green

\* C is standard; for outputs "KI" or "LI" (line driver with index), index pin is E

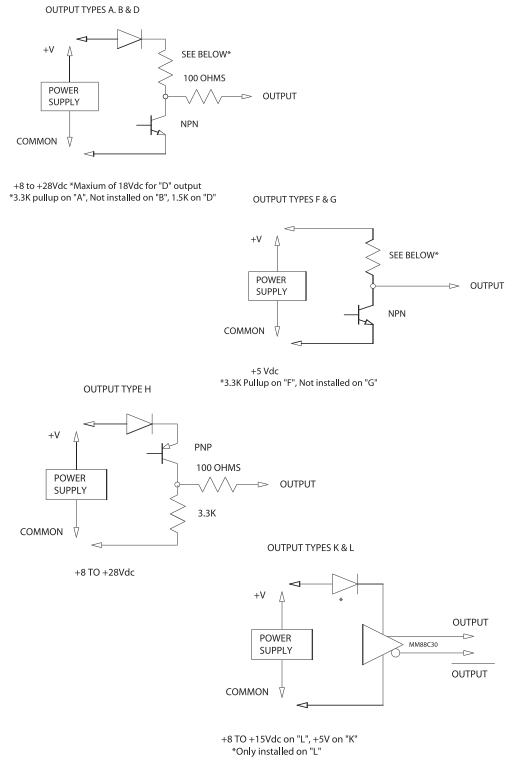
For the latest specifications visit our website  
[www.herculesencoders.com](http://www.herculesencoders.com)

# Dimensional Drawings

## Series N25 Standard



# Wire Drawings



# Ordering Information

**N25SA — 1 1 2 — A Q 0600 — AI**

<p><b>Size</b> N25SA=Sealed (Elastomer) N25TA=Sealed (PTFE)</p> <p><b>Mounting Style</b> 1=Flush mount 3=Flange mount</p> <p><b>Shaft Style</b> 1=3/8" Standard Shaft 2=1/2" Standard Shaft</p>	<p><b>Connector Style</b> 1=6 Pin rear mounted 2= 6 Pin side mounted 3= 7 Pin rear mounted 4= 7 Pin side mounted 5=10 Pin rear mounted 6=10 Pin side mounted 7=Cable rear mounted 8=Cable side mounted</p>	<p><b>Channel Outputs</b> (All outputs available with complementary outputs) A=NPN w/Pullup Res. B=NPN Open Collector F=5Vdc w/Pullup Res. G=5Vdc Open Collector H=PNP Sourcing Output K=5Vdc Line Driver L=8 to 15 Vdc Line Driver</p>	<p><b>Channel Types</b> Q=Quadrature Outputs P=1st Output CW Pulses 2nd Output CCW Pulses U=1st Output Pulse Train 2nd Output Logic High For CW Rotation, Low For CCW Rotation I=Index Pulse</p>	<p><b>PPR</b> Channel Types "U" "P" &amp; "Q"</p> <table border="1"> <tr> <td>0090</td> <td>0093</td> <td>0125</td> <td>0128</td> </tr> <tr> <td>0180</td> <td>0186</td> <td>0250</td> <td>0256</td> </tr> <tr> <td>0360</td> <td>0372</td> <td>0500</td> <td>0512</td> </tr> <tr> <td>0720</td> <td>1000</td> <td>1024</td> <td></td> </tr> <tr> <td colspan="4"><b>If "P" or "U" add (Square Wave)</b></td> </tr> <tr> <td>1440</td> <td>2000</td> <td>2048</td> <td></td> </tr> <tr> <td colspan="4"><b>If "P" or "U" add (Pulsed)</b></td> </tr> <tr> <td>1488</td> <td>4000</td> <td>4096</td> <td></td> </tr> </table> <p><i>Consult factory for PPR not listed</i></p>	0090	0093	0125	0128	0180	0186	0250	0256	0360	0372	0500	0512	0720	1000	1024		<b>If "P" or "U" add (Square Wave)</b>				1440	2000	2048		<b>If "P" or "U" add (Pulsed)</b>				1488	4000	4096		<p><b>Index Channel</b> (same types as Channel Outputs)</p>
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