

Hercules Encoders

Series N35

Heavy Duty Incremental Rotary Shaft Encoder

- Enclosure: N35-3.5" 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 | 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 (N35) | 36 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 \bar{A} | C | E | H | E | White |
| Channel \bar{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

Dimensional Drawings

Series N35 Standard



Wire Drawings



Ordering Information

Size
N35S=Sealed (Elastomer)
N35T=Sealed (PTFE)

Mounting Style
1=Flush mount
2=Servo mount
3=Flange mount

Shaft Style
3=3/8" Standard Shaft
4=1/2" Standard Shaft

N35T

3 3 5

K Q 1000

KI

Index Channel
(same types as Channel Outputs)

Connector Style

- 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

Channel Outputs

- (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

Channel Types

- 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

Channel Types "P" "U" & "Q"

| | | | | |
|------|------|------|------|------|
| 0025 | 0030 | 0050 | 0060 | 0064 |
| 0075 | 0090 | 0093 | 0096 | 0100 |
| 0120 | 0125 | 0128 | 0135 | 0150 |
| 0180 | 0186 | 0192 | 0200 | 0240 |
| 0250 | 0256 | 0270 | 0300 | 0360 |
| 0372 | 0400 | 0480 | 0500 | 0512 |
| 0540 | 0600 | 0720 | 0840 | 0960 |
| 1000 | 1024 | | | |

If "P" or "U" add (Square Wave)

| | | | |
|------|------|------|------|
| 0800 | 1080 | 1200 | 1440 |
|------|------|------|------|

If "P" or "U" add (Pulsed)

| | | | | |
|------|------|------|------|------|
| 0768 | 1488 | 1600 | 2160 | 2400 |
| 2880 | 3360 | 3840 | 4000 | 4096 |

Consult factory for PPR not listed