Hercules Encoders

Series 2000

Medium Duty Incremental Rotary Shaft Encoder

- Enclosure: Standard Series - Industry Standard 2.25" Cube NEMA 12/13 or NEMA 4 type Sealing
- Flush or Flanged Base Styles
- Anti-Jitter Circuitry, Shatterproof Metal Code Discs - up to 600 PPR Quadrature
- Internally and Externally Shielded ABEC 5 Stainless Steel Bearings, Mounted Internally
- 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 -20° to +70° C (-4° to +158° F)

Specifications

Mechanical

Shaft Speed	6000 RPM maximum
Shaft Direction	Bidirectional
Standard Shaft Sizes (Dia.)	.2497", .3747"
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	30 lbs. Operating
Axial Loading	15 lbs. Operating
Accuracy	±0.1° of Shaft Rotation Typical
Housing	Black Anodized Aluminum
Weight	Standard: 14 oz., Sealed: 19 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 (5Vdc/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.	-20° to +70° C (-4° to +158° 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

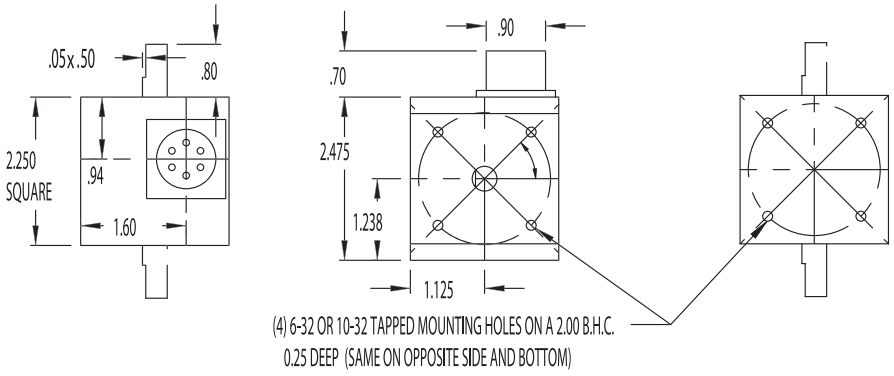
Function	6 Pin	Cable Out	Color
+V	B	D	Red
Common	A	F	Black
Channel A	D	A	Blue
Channel B	E	B	Brown
Channel $\overline{A}$	C	E	White
Channel $\overline{B}$	F	G	Green
Index	C or E*	C	White
Index	F	G	Green

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

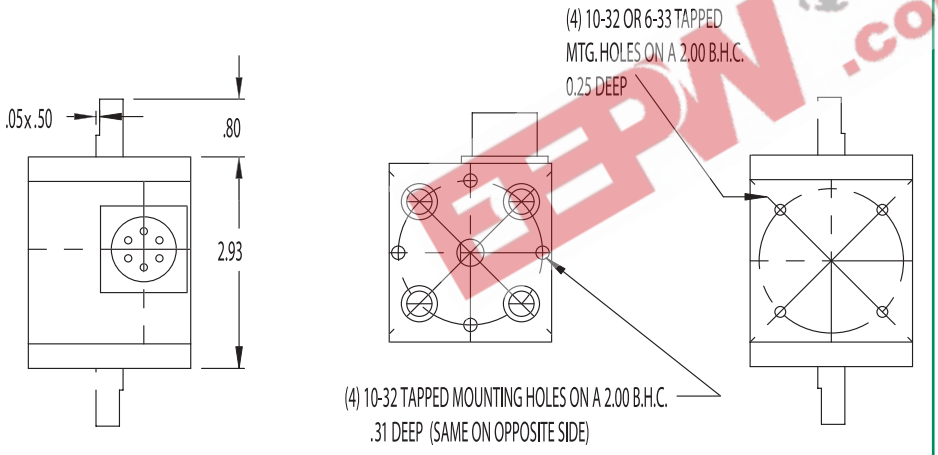
For the latest specifications visit our website
www.herculesencoders.com

Dimensional Drawings

Series 2000 Standard

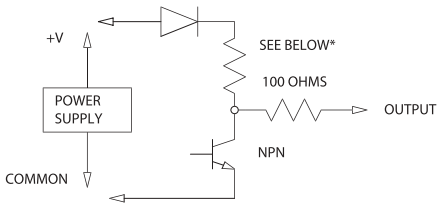


Series 2000 Sealed



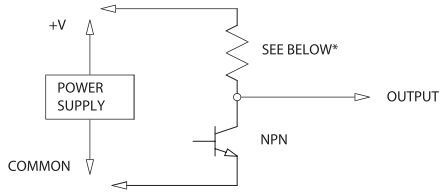
Wire Drawings

OUTPUT TYPES A. B & D



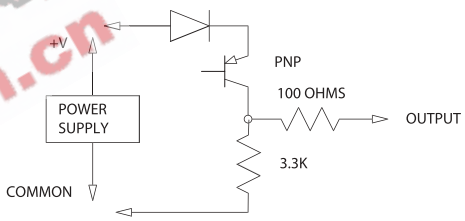
+8 to +28Vdc *Maxium of 18Vdc for "D" output
*3.3K pullup on "A", Not installed on "B", 1.5K on "D"

OUTPUT TYPES F & G



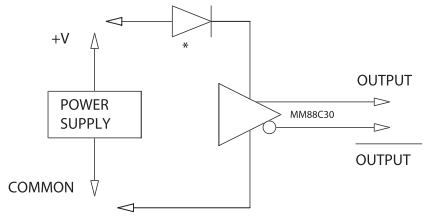
+5 Vdc
*3.3K Pullup on "F", Not installed on "G"

OUTPUT TYPE H



+8 TO +28Vdc

OUTPUT TYPES K & L



+8 TO +15Vdc on "L", +5V on "K"
*Only installed on "L"

Ordering Information

2 3 2 1 S — A Q 0600 — AQ0120

Series

Shaft Diameter
1=1/4"(0.2497")
3=3/8" (0.3747)

Shaft Extension
1=Single
2=Double

Mounting Type
0=6-32 BHC on Ends
1=10-32 BHC on Shaft Ends & Base
2=Flanged Base (10-32BHC on Shaft Ends)

Encoder Type
_=Standard Encoder
S=Sealed (Elastomer)
T=Sealed (PTFE)

Channel Outputs
A=NPN w/3.3K Pullup
B=NPN Open Collector
D=1.5K Pullup, No Ser. R
F=5Vdc TTL NPN w/Pullup
G=5Vdc TTL NPN OC
H=PNP Sourcing Output
K=5Vdc Line Driver
L=8 to 15 Vdc Line Driver

Channel Types
S=Single Channel
Q=Quadrature Outputs
I=Index Pulse

PPR (Pulses per Revolution)

0025	0030	0050	0060
0090	0093	0100	0120
0125	0128	0150	0180
0186	0250	0256	0300
0360	0372	0500	0512
0600			

Consult factory for PPR not listed

Optional Index Channel or Add. Encoder
(Same types of Channel Outputs)
Order the Secondary Channel like a Primary Channel