Hercules Encoders

Series 6000

Optical 3" Cube Encoder

The flagship of our heavy duty line, the Series 6000 provides 3" depth for a second or third channel or added circuitry functions. These added channels can be of any type, output or PPR, and can be totally isolated from other channels and the ground plane. This unit offers the rugged construction of .25" thick anodized aluminum walls, optional .500" shafts for greater loading capacity, numerous output possibilities and up to 4096 PPR (1024 in quadrature outputs). Our optical technology that utilizes totally encapsulated sensor packages compensates for sensor aging, LED degradation and misalignment from wear, vibration and shock, resulting in superior reliability and durability in application. Every unit built is tested and documented to our rigorous quality standards.

- Enclosures: NEMA 12/13 type enclosures provide reliable solids protection, NEMA 4 type offers MS3102E, enclosed case and neoprene seals for liquid protection; PTFE (Teflon®) shaft seals available for caustic moisture.
- 3" cube provides space for 2 Encoders and index channel with excellent space and cost-efficiency
- Operating Flexibility: 8 to 28 Vdc, 5V TTL
- Supply current only 50 mA
- .500"D shafts available for operation under 70 lb. radial load

Specifications

Mechanical

Shaft Speed	6000 RPM maximum
Shaft Direction	Bidirectional
Standard Shaft Sizes (Dia.)	.3747", .4997", 0.80" ext. w/ flat
Shaft Seals	Neoprene or PTFE
Bearings	.375" or .500" ID ABEC 5 Stainless Ball
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
Housing	Black Anodized Aluminum
Weight	24 oz.(NEMA 12/13), 34 oz. (NEMA 4)
Connection	6 Pin MS3102(E) or Cable

Electrical

Pulse Rate	10 kHz, up to 200 kHz available
Outputs	NPN pullup; NPN Open Collector; PNP sourcing
	Line Drivers have complementary outputs
Output Ratings	
Open Collector Transistor	40 Vdc maximum
Line Drivers 8-15 V	15 Vdc maximum
5 V TTL	5.5 Vdc maximum
Supply Voltage	8 to 28 Vdc
	5 Vdc TTL
Supply Current, per channel	30 mA typical, 50 mA maximum
Current Sinking	250 mA maximum
Output Duty Cycle	50/50 w/ ±20% (to ±5% available)
Pulsed Outputs	5-10 µsec or 25-35 µsec
Rise/Fall Times	1 µsec typical

Environmental

Operating Temp.	-40° to +85° C (-40° to +185° F)
Shock	50 g's for 11 Milliseconds
Vibration	Up to 2000 Hertz at 20 g's
Humidity	100% Relative Humidity (NEMA 4)

Electrical Connections

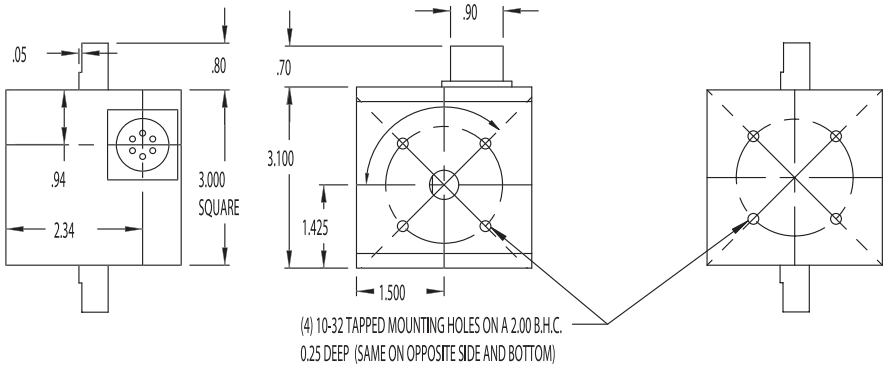
Function	6 Pin	Cable Out	Color
+V	B	B	Red
Common	A	A	Black
Channel A	D	D	Blue
Channel $\overline{B}$	E	E	Brown
Channel $\overline{A}$	C	C	White
Channel $\overline{B}$	F	F	Green
Index	C or E*	I	Orange
Index	F	H	Purple

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

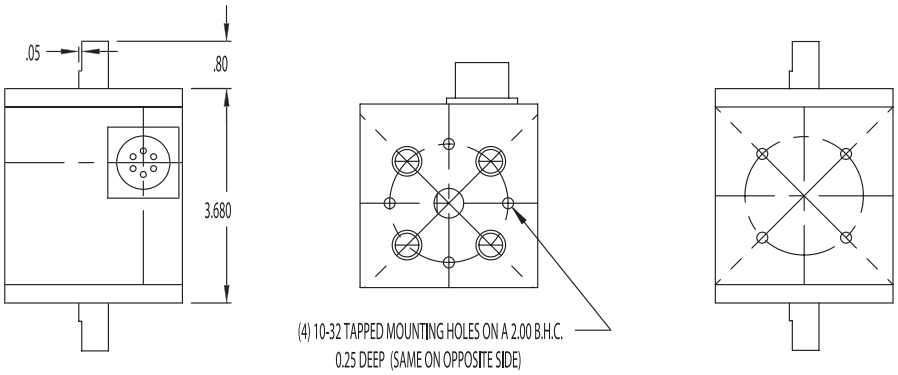
For the latest specifications visit our website
www.herculesencoders.com

Dimensional Drawings

Series 6000 NEMA 12/13 Flush Base Mount



Series 6000 NEMA 4X Flush Base Mount



Accessories

Description	Part No.
Mates with connector	18-2000
Watertight connector	18S-2000
10' connector/cable assembly	18-2010
10' watertight connector/cable assembly	18S-2010
12" circum. 80 durometer urethane measuring wheel	
.3747" shaft	81-8003
.5000" shaft	81-8004
Adjustable mounting bracket	
1 axis	80-0007
2 axis	80-0008
1" OD flexible shaft coupling	
.375/.375"	100-12-12
.500/.375"	100-16-12

Model Selection

Encoder Series

Shaft Diameter/Extension
31=.3747" sgl 32=.3747" dbl
41=.5000" sgl 42=.5000" dbl

Mounting
1=flush (10-32 ends/base) 2 =flange (10-32 ends)

Enclosure
blank=NEMA type 12/13 S=NEMA type 4X (neoprene shaft seal) T=NEMA type 4X (PTFE shaft seal)

Special Mechanical
blank=standard X=letter assigned for nonstandard spec, consult factory

Output
A=8-28V NPN w/Pullup B=8-28V NPN Open Collector
F=5V NPN w/Pullup G=5V NPN Open Collector H=PNP Sourcing
K=5V Line Driver L=8-15V Line Driver

Channel Type
S=Single Pulse Output Q=Quadrature P=CW/CCW
U=Pulse train, logic high CW, low CCW

Resolution
0025, 0030, 0050, 0060, 0100, 0120, 0125, 0128, 0150, 0180, 0200, 0210, 0250, 0256, 0300, 0360, 0372, 0400, 0420, 0480, 0500, 0512, 0540, 0600, 0720, 0840, 0960, 1000, 1024
add'l (square wave); PPR for non Q: 0744, 0800, 1080, 1200, 1440, 1680, 1920, 2000, 2048
add'l (pulsed [25 µsec typical]) PPR, non Q: 1488, 1600, 2160, 2400, 2880, 3360, 3840, 4000, 4096

Special Electrical
blank=standard X=letter assigned for nonstandard spec, consult factory

Additional Channel(s)
XI=index pulse, where X is "Output" spec above XXxxxx=add'l encoder choose from specs above