

H6D

Differential Ball Bearing Optical Shaft Encoder

Description:

The H6D differential ball bearing optical shaft encoder is a non-contacting rotary to digital converter that features internal differential line drivers. The H6D is fully assembled with a shaft, two 1/4" ID by 1/2" OD heavy duty ball bearings and a mounting plate. This design also allows for an optional rear shaft extension. The mounting plate comes with 4 mounting holes for screws #8 or smaller.

The mating connector has 10 pins, is polarized and latches into the encoder. Depressing the latch tab allows the connector to be unplugged.

The H6D has an internal differential line driver (26C31) that can source and sink 20mA at TTL levels. The cable that connects to this encoder should have 3 twisted pairs plus power and ground. Group each pair of differential signals. The recommended receiver is industry standard 26C32. Maximum noise immunity is achieved when the differential receiver is terminated with a 110 ohm resistor in series with a .0047mf capacitor placed across each differential pair. The capacitor simply conserves power; otherwise power consumption would increase by 20mA per pair, or 60mA for 3 pairs.

Features:

- > Small size
- > Low cost
- > Optional Agilent compatible pin-out
- > Positive finger-latching polarized connector
- > 2-channel quadrature, TTL squarewave outputs
- > 3rd channel index option
- > Differential line driver outputs
- > Tracks from 0 to 100,000 cycles/sec
- > 64 to 2500 cycles per revolution (CPR)
- > 268 to 10,000 pulses per revolution (PPR)
- > Heavy duty ball bearings track up to 10,000 RPM
- > -40 to +100°C operating temperature
- > Single +5VDC supply

Phase Relationship:

B leads A in a clockwise shaft rotation, and A leads B in counterclockwise shaft rotation viewed from the shaft side of the encoder (see the *EM1 / HEDS data sheet*).

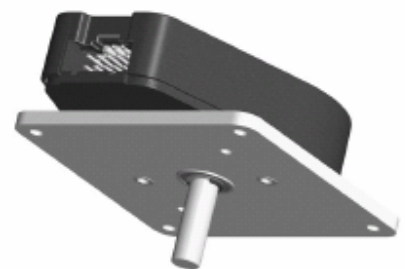
Electrical Specifications:

Specification	Min.	Typ.	Max.	Units	Notes
Supply	4.5	5.0	5.5	Volts	
Current Consumption					
Index - 64 CPR	-	28	53	mA	No load
Index - 900, 1800, 2500 CPR	-	58	88	mA	No load
Index - All Other Resolutions	-	58	88	mA	No load
Non-index <1000 CPR	-	18	43	mA	No load
Non-index >=1000 CPR	-	58	88	mA	No load
Output Voltage					
Sourcing to +5	2.4	3.4	-	Volts	@ -20mA
Sinking to Ground	-	0.2	0.4	Volts	@ 20mA

> For complete details see the *EM1 / HEDS data sheet*.

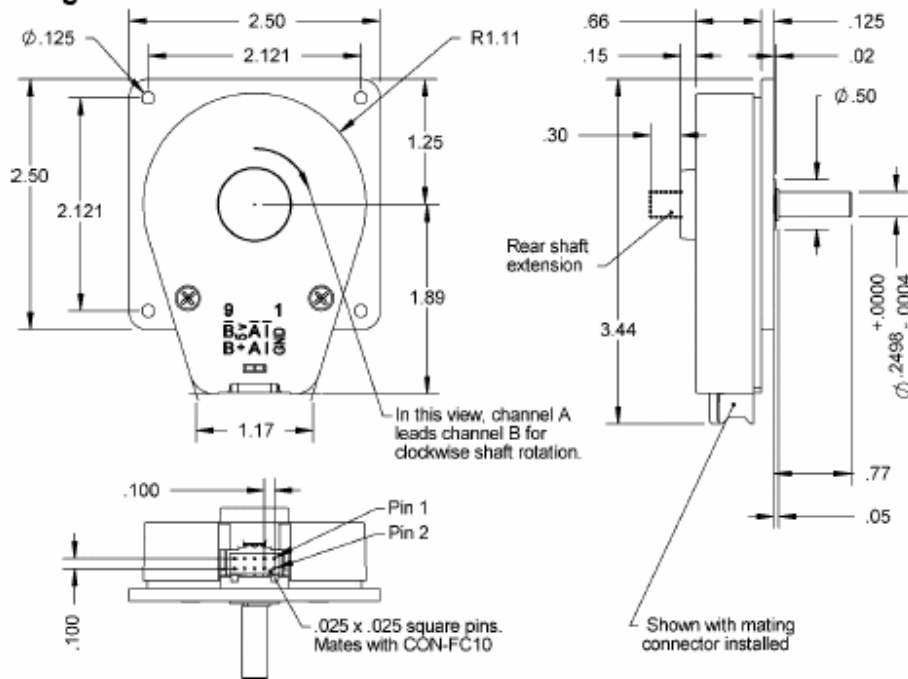
Mechanical Specifications:

Shaft Speed	10,000 RPM max. continuous
Acceleration	10,000 rad/sec ²
Shaft Torque	0.05 in. oz. max.
Shaft Loading	2 lbs. max.
Bearing Life	(90/P) ³ - life in millions of revs. where P = radial load in pounds.
Weight	3.10 oz.
Shaft Runout	.0008 T.I.R. max.
Moment of Inertia	.0001 oz. in. s ²
Vibration	20 g. 5 to 2KHz



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Mechanical Drawing:



Compatible Cables & Connectors:

10-pin Finger-latching:

Part Number	Description
CON-FC10	Connector
CA-4217-8FT	Connector on one end of a 8' shielded round cable
CA-4174-8FT	Same as CA-4217, but for L-option only
CA-3819-8FT	Connector on both ends of a 8' shielded round cable
CA-3807-8FT	Same as CA-3819, but for L-option only

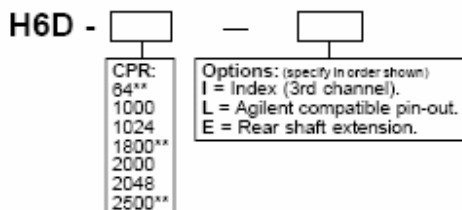
Attention:

- > Specify cable length when ordering.
- > Custom cable lengths are available. See the Cables & Connectors data sheet for more information.

Pin-outs:

Pin	Standard	Agilent (L-option)
1	Ground	No connection
2	Ground	+5VDC power
3	Index-	Ground
4	Index+	No connection
5	A- channel	A- channel
6	A+ channel	A+ channel
7	+5VDC power	B- channel
8	+5VDC power	B+ channel
9	B- channel	Index-
10	B+ channel	Index+

Ordering Information:



Notes:
* Index / resolutions ≥ 2000 CPR.
** 64, 1800, 2500 CPR only available with index.