

H5D**Differential Ball Bearing Optical Shaft Encoder****Description:**

The H5D differential ball bearing optical incremental encoder is fully assembled with a shaft, two 1/4" ID by 1/2" OD heavy duty ball bearings and a mounting plate. This design tolerates increased radial and axial loads. This design also allows for an optional rear shaft extension. The mounting plate comes with 2 mounting holes for screws #6 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 H5D 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 approximately 20mA per pair, or 60 mA 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
- > Heavy duty ball bearings track up to 10,000 RPM
- > -40 to +100°C operating temperature
- > Single +5VDC supply

Phase Relationship:

B leads A for clockwise shaft rotation, A leads B for counter clockwise shaft rotation viewed from the shaft/bushing side of the encoder (see the *EM1 & HEDS data sheet*).

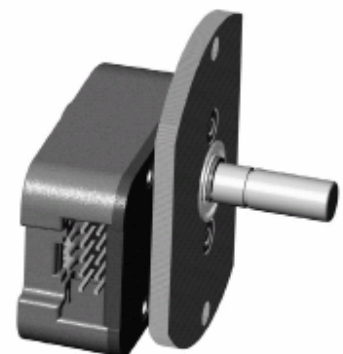
Electrical Specifications:

Specification	Min.	Typ.	Max.	Units	Notes
Supply	4.5	5.0	5.5	Volts	
Current Consumption					
Index - 32 CPR	-	28	53	mA	No load
Index - 720, 900, 1000, 1024, 1250 CPR	-	56	59	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:

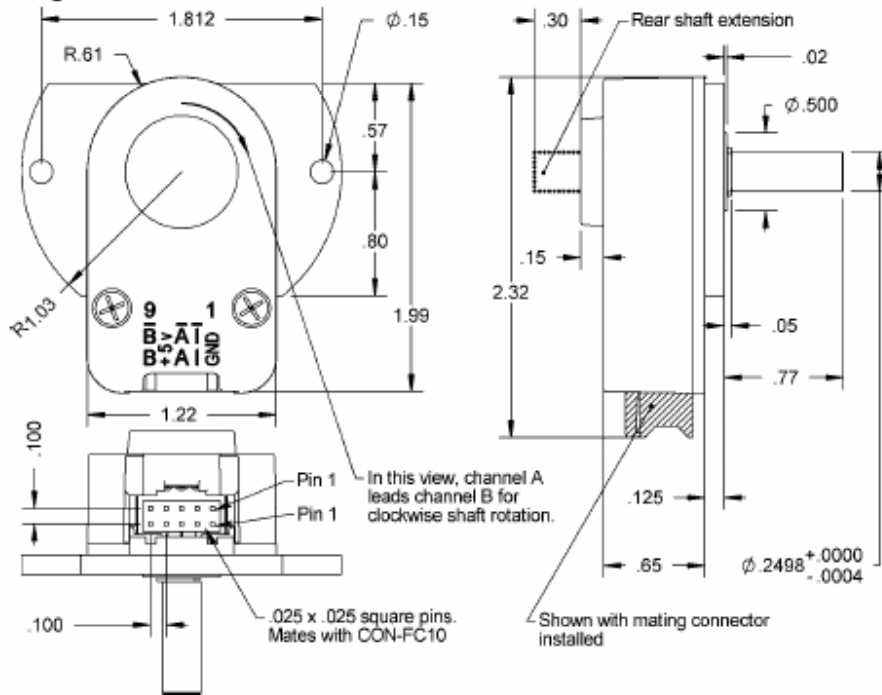
Shaft Speed	10,000 RPM max. continuous
Acceleration	10,000 rad/sec ²
Shaft Torque	0.05 in. oz. max.
Shaft Loading	2 lbs. max.
Bearing Life	(90/P) ³ - life in millions of revs. where P = radial load in pounds.
Weight	1.83 oz.
Shaft Runout	.0006 T.I.R. max.
Moment of Inertia	.0001 oz. in. s ²
Vibration	20 g. 5 to 2KHz



H5D

Differential Ball Bearing Optical Shaft Encoder

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:

H5D - -

CPR:

32***

50

98

100

110**

120***

192

200

250

258

380

400

500

540**

720***

900***

1000

1018**

1024

1250***

Options: (specify in order shown)

I = Index (3rd channel).

L = Agilent compatible pin-out.

E = Rear shaft extension.

Notes:

* Index / resolutions ≥ 1000 CPR.

** Index option not available.

*** 32, 720, 900, 1250 CPR only available with index.