

## SIZE 12 SERIES E5

INCREMENTAL MODULAR / KIT ENCODER (Mounting Kit Required)



### FEATURES

# WORLD ENCODERS

brand, Made in USA

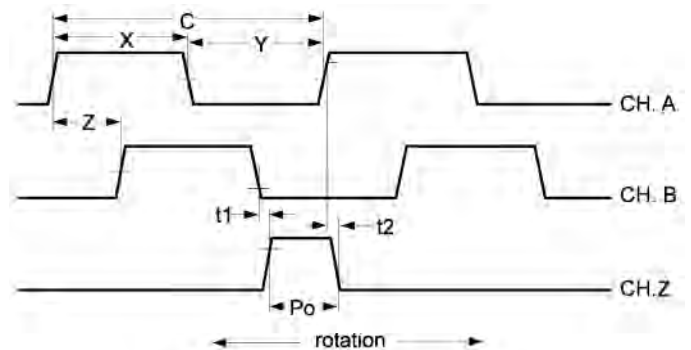
- 1.2" W x 1.85" L Modular / Kit light duty designed
- Thickness .65" Rugged screw-together housing
- Positive finger-latching connector
- Up to 1250 P/R, 5v TTL and 5v Line driver Output
- Hub ID size 5, 6mm, 1/4", 8mm, 3/8" available
- RoHS compliant
- Mounting compatibility with Agilent HEDS-5500
- Wide gap 0.025" (0.635mm)

### SPECIFICATIONS

#### Electrical

Pulse per Revolution	Up to 1250 P/R
Supply Voltage	5vdc TTL, 5vdc Line Driver
Output Format	Dual Square Wave in Quadrature W/O Index in 5vdc TTL W/ Index in 5vdc Line Driver
Output Circuit	Line Driver 26C31 Receiver 26C32 (recommended) TTL Output
Supply Voltage	5vdc ±0.5
Current Consumption	88mA Max. No Load
Output Voltage	Sourcing to +5 Sinking to Ground
Frequency Response	100KHz
Cycle Error	Typ. 3.0°, Max 5.5°
Symmetry	Min. 150°, Typ. 180°, Max. 210°
Quadrature & Index Pulse width	Min. 60°, Typ. 90°, Max. 120°

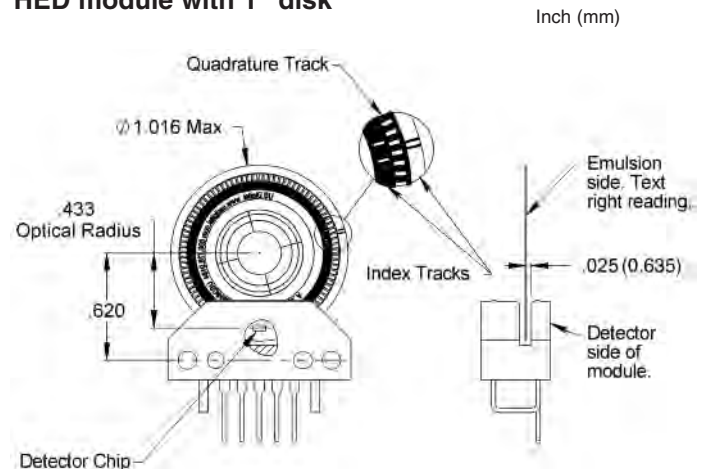
### OUTPUT WAVE FORM



Shaft Rotation for a Kit Encoder: (View the encoder so the cover side is facing up.)

A leads B in a clockwise rotation; B leads A in a counter-clockwise rotation.

### HED module with 1" disk



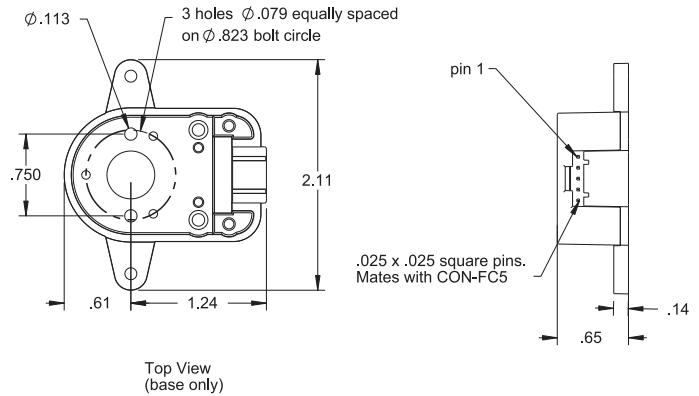
## SIZE 12 SERIES E5

### INCREMENTAL MODULAR / KIT ENCODER (Mounting Kit Required)

#### Mechanical

Hub I.D.	5mm, 6mm, 1/4", 8mm, 3/8"
Moment of Inertia	8.0 x 10 <sup>-6</sup> oz. in. s <sup>2</sup>
Hub Set Screw Size	3-48 or 4-48 in.
Hex Wrench Size	0.05 in.
Base Plate Thickness	0.135 in.
3 Mounting Screws Size	0-80 on 0.823 B.C. in.
2 Mounting Screws Size	2-56 or 4-40 on 0.750 B.C. in.
Required Shaft Length	0.445 to 0.570 in.
Weight	Polycarbonate 1.0 oz. Metal 1.4 oz.
Torque: Hub Set Screw	2-3 in. lbs.
Cover (4-40)	2-3 in. lbs.
Base Plate	4-6 in. lbs.
Mtg. Adapter	4-6 in. lbs.

#### E5S-Sgl. ended Dimensions

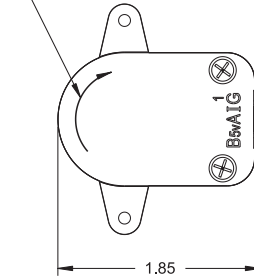


#### Environmental

Temperature	Operating: -40 - +100°C Storage: -55 - +125°C
Operation Humidity	35 - 85% without condensation
Vibration	Max. 20g (5 to 2kHz)
Acceleration	250,000 rad/sec <sup>2</sup>
Shaft Axial End Play	±0.01"
Shaft Eccentricity Plus Radial Play*	0.004"

\*Note: Radial play translates directly to position inaccuracy.

In this view, channel A leads channel B for clockwise shaft rotation.



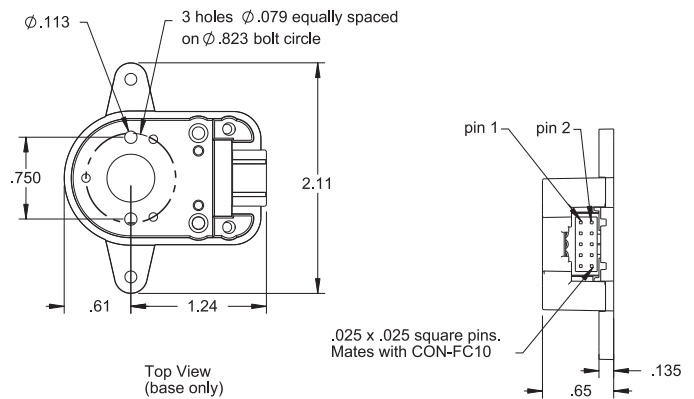
#### Wiring Diagram

PIN #	5 Pin Sgle-ended*	10 Pin-Diff. Line Driver**	10 Pin-Agilent (L-option L.D.)**
1	Gnd	Gnd	N/C
2	Index Z	Gnd	+5vdc
3	A ch.	Index Z not	Gnd
4	+5vdc	Index Z	N/C
5	B ch.	A ch. not	A ch. not
6		A ch.	A ch.
7		+5vdc	B ch. not
8		+5vdc	B ch.
9		B ch. not	Index Z not
10		B ch.	Index Z

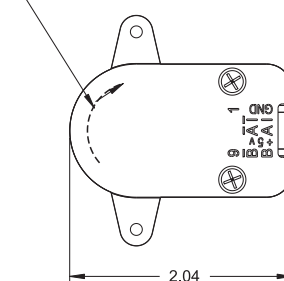
\*Note: 5 pin Single-ended: Molex #14-56-7052 (AWG22) or Molex #14-60-0052 (AWG24)

\*\*Note: 10 pin-Diff. Line Driver: Molex #15-04-5104 (Shell) Molex #14-60-0048 (2 Inserts) (AWG22-26)

#### E5D-L.D. Dimensions



In this view, channel A leads channel B for clockwise shaft rotation.



# SIZE 12 SERIES E5S (Single-ended)

## Assembly Instructions:

### Base Mounting

Secure base to mounting surface using two or three screws. If a centering tool is used, slip it over shaft and into center hole of base. Tighten mounting screws. Remove centering tool.



### Spacer Installation

Place spacer tool around shaft as shown.



### Hub Disk Assembly Installation

Slip hub disk assembly over shaft with codewheel disk towards top until it bottoms out against spacer tool. Tighten set screw with hex wrench provided while pressing down on hub.



### Encoder Module Installation

Slip optical module into position until the two alignment pins slip into holes of module (thick side of module towards bottom). Secure with 4-40 x 1/2" screws (supplied).



### Cover Installation

Place housing (cover) over assembly and secure with two 4-40 x 5/8" cover screws (supplied).



# SIZE 12 SERIES E5D (Diff. Line Driver)

### Encoder Module Installation

Slip optical module into position until the two alignment pins slip into holes of module (thick side of module towards bottom). Secure with 4-40 x 1/2" screws (supplied).



### Cover Installation

Place housing (cover) over assembly and secure with two 4-40 x 5/8" cover screws (supplied).



## Cables/Colors

CA3131-6 FT (5 pin-Sgl.-ended)

PIN #	Channel	Color
1	GRD	Black
2	Z	Green
3	A	White
4	5V	Red
5	B	Brown

CA4217-6 FT (10 pin-L.D. Std.)

PIN #	Channel	Color
1	GRD	Drain (connected on one end)
2	GRD	Green w/White Stripe
3	Z not	White w/Orange Stripe
4	Z	Orange w/White Stripe
5	A not	White w/Blue Stripe
6	A	Blue w/White Stripe
7	5V	White w/Green Stripe
8	—	—
9	B not	White w/Brown Stripe
10	B	Brown w/White Stripe

CA4174-6 FT (10 pin-L.D. Agilent Compatible)

PIN #	Channel	Color
1	—	—
2	5V	Orange w/White Stripe
3	GRD	White w/Orange Stripe
4	—	—
5	A not	White w/Blue Stripe
6	A	Blue w/White Stripe
7	B not	White w/Green Stripe
8	B	Green w/White Stripe
9	Z not	White w/Brown Stripe
10	Z	Brown w/White Stripe

# Size 12 Series E5 Modular/Kit Encoder

Model	Housing Material/Output	Resolution	Hub I.D.	Options
E5	<input type="checkbox"/>	- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	- <input type="checkbox"/> <b>G</b>

**ORDERING INFORMATION**

E5	S: Polycarbonate Housing Single Ended 5vdc (Std.)	50* 400*	Code = Size	I = Index (Z ch.)
	D: Polycarbonate Housing Line Driver 5vdc (Std.) Differential	100 500	197 = 5mm	L = Agilent compatible Pin - out
		120* 512	237 = 6mm	
		200* 720*	250 = 1/4"	
		250 1000	315 = 8mm	
		256 1024	375 = 3/8"	G = Adds 1.81" Mounting B.C. "ears" to base
		360 1250*		

**PRICING INFORMATION**

Model	Version	Resolution	HUB I.D.	Options
E5S	Base Price \$52.00 (A,B channels only Std.)	50 Thru N/C 720	5mm, 6mm, 8mm 1/4", 3/8"	I = Index (Z channel) Add \$8.00 (Effects in Sgl. Ended E5S)
E5D	Base Price \$77.00 (A,B,Z, A not, B not, Z not channels Index Std.)	1000 Thru Add \$10.00 1250 (Effects in Sgl-ended E5S. Not in L.D. E5D)	N/C	L* = Agilent Compatible Pin - out N/C G = Add 1.81" Mounting B.C. "ears" to base Std. - N/C

Standard Stock Items: Shipped immediately. \*Lead Time: 7 - 10 days to ship.

**Series E5 Return Policy & Warranty**

World Encoders warrants its products against defects in material for one year from shipment.

World Encoders Series E5 products are not intended for applications where a failure could result in a **costly, dangerous or life threatening** situation.

World Encoders will not be responsible for Series E5 damages or losses greater than the cost of the World Encoders replacement parts.

**World Encoders will not accept Series E5 returns for Unpacked items, mis-alignment, mis-gapping, entering higher voltage than 5V or improper usage by customer's wrong handling or wrong usage.**

**Mounting Kit / E5-MK-Hub I.D.**



**Mating Connector w/6 ft. Cable Assy.**



## Series E5S - Single Ended

PART NUMBER	LIST PRICE	PART NUMBER	LIST PRICE
E5S-100-237-G	\$52.00	E5S-1024-237-G	\$62.00
E5S-100-250-G	\$52.00	E5S-1024-250-G	\$62.00
E5S-100-315-G	\$52.00	E5S-1024-315-G	\$62.00
E5S-100-375-G	\$52.00	E5S-1024-375-G	\$62.00
E5S-200-197-G	\$52.00	<b>MOUNTING KIT</b>	
E5S-200-237-G	\$52.00	E5-MK-197 (5mm)	\$10.00
E5S-250-237-G	\$52.00	E5-MK-237 (6mm)	\$10.00
E5S-250-250-G	\$52.00	E5-MK-250 (1/4")	\$10.00
E5S-250-315-G	\$52.00	E5-MK-315 (8mm)	\$10.00
E5S-250-375-G	\$52.00	E5-MK-375 (3/8")	\$10.00
E5S-256-237-G	\$52.00	Standard Stock Items: Shipped immediately. *Non Stock Items Lead Time: 7 - 10 days to ship.	
E5S-256-250-G	\$52.00		
E5S-256-315-G	\$52.00		
E5S-256-375-G	\$52.00		
E5S-360-237-G	\$52.00		
E5S-360-250-G	\$52.00		
E5S-360-315-G	\$52.00		
E5S-360-375-G	\$52.00		
E5S-400-197-G	\$52.00		
E5S-400-237-G	\$52.00		
E5S-500-237-G	\$52.00		
E5S-500-250-G	\$52.00		
E5S-500-315-G	\$52.00		
E5S-500-375-G	\$52.00		
E5S-512-237-G	\$52.00		
E5S-512-250-G	\$52.00		
E5S-512-315-G	\$52.00		
E5S-512-375-G	\$52.00		
E5S-1000-237-G	\$62.00		
E5S-1000-250-G	\$62.00		
E5S-1000-315-G	\$62.00		
E5S-1000-375-G	\$62.00		

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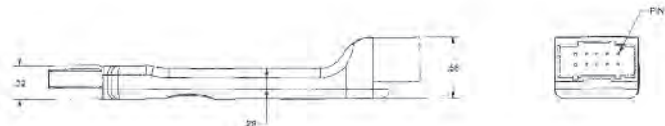
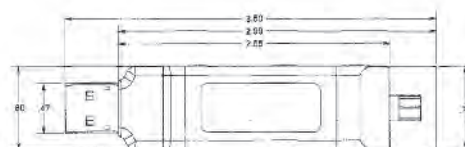
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### New! USB data acquisition device

Features-count Quadrature and Index signals from E5D encoder, provide digital I/O. for (1)Differential quadrature interface & 1-bit of digital I/O

PART NUMBER	LIST PRICE
QSB-D	\$75.00
(Optional 6ft. Cable w/10 pin mating Conn. Both ends. # CA3619-6FT)	

Note: Software CD included.



## Series E5D-Differential Line Driver

PART NUMBER	LIST PRICE	PART NUMBER	LIST PRICE
E5D-100-237-IG	\$77.00	<b>MOUNTING KIT</b>	
E5D-100-250-IG	\$77.00	E5-MK-237 (6mm)	\$10.00
E5D-100-315-IG	\$77.00	E5-MK-250 (1/4")	\$10.00
E5D-100-375-IG	\$77.00	E5-MK-315 (8mm)	\$10.00
E5D-250-237-IG	\$77.00	E5-MK-375 (3/8")	\$10.00
E5D-250-250-IG	\$77.00		
E5D-250-315-IG	\$77.00		
E5D-250-375-IG	\$77.00		
E5D-360-237-IG	\$77.00		
E5D-360-250-IG	\$77.00		
E5D-360-315-IG	\$77.00		
E5D-360-375-IG	\$77.00		
E5D-500-237-IG	\$77.00		
E5D-500-250-IG	\$77.00		
E5D-500-315-IG	\$77.00		
E5D-500-375-IG	\$77.00		
E5D-1000-237-IG	\$77.00		
E5D-1000-250-HG	\$77.00		
E5D-1000-250-IG	\$77.00		
E5D-1000-315-IG	\$77.00		
E5D-1000-375-IG	\$77.00		
E5D-1024-237-IG	\$77.00		
E5D-1024-250-IG	\$77.00		
E5D-1024-315-IG	\$77.00		
E5D-1024-375-IG	\$77.00		

## E2 / E5 Connectors/Cables

PART NUMBER		LIST PRICE
<b>CONNECTORS</b>		
CON-FC5-22	(5 pin Molex connector, 22AWG)	\$3.00
CON-FC10	(10 pin Molex connector, 22-26AWG)	\$8.00
<b>CABLES</b>		
CA-3132-1FT	(1 ft. 22 AWG wires w/5 pin connector on (1) end)	\$ 9.00
CA-3131-6FT	(6 ft. shielded cable w/5 pin connector on (1) end)	\$18.00
CA-4217-6FT	(6 ft. shielded cable w/10 pin connector on (1) end)	\$24.00
CA-4174-6FT	(Agilent compatible 6 ft. cable w/10 pin connector on (1) end)	\$24.00
CA-3620-6FT	(6 ft. Cable w/5 pin mating Conn. Both ends # CA3620-6FT)	\$24.00

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