

MODEL 260 – INCREMENTAL ENCODER



Ø2.0"

FEATURES

- Low Profile 1.19"
- Up to 12 Pole Commutation
- Thru-Bore and Hollow Bore (Blind) Styles
- Simple, Innovative Flexible Mounting System
- Incorporates Opto-ASIC Technology
- CE Marking Available

The Model 260's larger bore (up to 0.625") and low profile make it the perfect solution for many machine and motor applications. Available in two distinct formats—a Hollow Bore and a complete Thru-Bore—the Model 260 uses EPC's pioneering Opto-ASIC design. The Model 260 uses EPC's innovative anti-backlash mounting system, allowing simple, reliable, and precise encoder attachment. Unlike traditional kit or modular encoder designs, its integral bearing set provides stable and consistent operation without concerns for axial or radial shaft runout. For brushless servo motor applications, the Model 260 can be specified with three 120° electrical phase tracks to provide up to 12 pole commutation feedback. The optional extended temperature capability allows servo motors to operate at higher power outputs and duty cycles.

COMMON APPLICATIONS

Brushless Servo Motor Commutation, Robotics, Motor-Mounted Feedback, Assembly Machines, Digital Plotters, High Power Motors

MODEL 260 ORDERING GUIDE

Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

260	N	T	01	S	0256	Q	OC	1	S	SF	1	N
MODEL 260 Ultra Versatile Commutated Thru-Bore	COMMUTATION ¹ N No Commutation C4 4 Pole C6 6 Pole C8 8 Pole C10 10 Pole C12 12 Pole	BORE SIZE ² 01 1/4", 0.250" 02 3/8", 0.375" 76 7/16", 0.4375" 10 1/2", 0.500" 11 5/8", 0.625" 06 5 mm 04 6 mm 14 8 mm 05 10 mm 09 11 mm 12 12 mm 13 14 mm 15 15 mm	CYCLES PER REVOLUTION 1-10,000 See CPR Options below Price adder >1999	NUMBER OF CHANNELS ⁴ Channel A Leads B Q Quadrature A & B R Quadrature A & B with Index Channel B Leads A K Reverse Quadrature A & B D Reverse Quadrature A & B with Index See http://www.encoder.com/literature/index-phasing.pdf for additional options, and waveforms.	OUTPUT TYPE OC Open Collector PP Push-Pull HV Line Driver OD Open Collector with Differential Outputs	CONNECTOR ⁵ TYPE S 18" Cable ⁶ J00 18" Cable with 5-pin M12 ⁷ K00 18" Cable with 8-pin M12 ⁷ SMJ 5-pin Body Mount M12 ⁷ SMK 8-pin Body Mount M12 ⁷ SMH 10-pin Body ⁸ Mount Bayonet	CERTIFICATION N None CE CE Marked ⁹	SEALING 1 IP50 for Thru-Bore 2 IP64 for Thru-Bore 3 IP64 for Hollow Bore 4 IP50 for Hollow Bore	HOUSING STYLE B Hollow Bore (Blind) T Front Clamp Thru-Bore R Rear Clamp Thru-Bore	MAXIMUM FREQUENCY 1 Standard 2 Extended See specifications for explanation.	MOUNTING SD 1.575" (40 mm) BC Flex Mount SF 1.811" (46 mm) BC Flex Mount SL 2.36" (60 mm) BC Flex Mount XF 2.250" BC 3-point Flex Mount NF 2.375" BC 3-point Flex Mount FA 1.06" to 1.81" BC Flex Arm FB 1.50" to 3.13" BC Flex Arm	OPERATING TEMPERATURE ³ L -40° to 70° C S 0° to 70° C H 0° to 100° C V 0° to 120° C

MODEL 260 CPR OPTIONS

0001 thru 0189*	0200	0250	0254	0256
0300	0360	0400*	0500	0512
0720	0800	0840	1000	1024
1220	1250	1270	1500	1800
2048	2500	2540	3000	3600
4096	5000	6000	8192	7200
				10,000

*Contact Customer Service for availability.

Contact Customer Service for other disk resolutions. Not all disk resolutions available with every commutation option.

NOTES:

- Not available in all configurations. Contact Customer Service for availability.
- Contact Customer Service for additional options not shown.
- 5 to 16 VDC supply only for H option; 5 VDC supply only for V option. Contact Customer Service for availability and additional information.
- Contact Customer Service for non-standard index gating options.
- For mating connectors, cables, and cordsets see Encoder Accessories on page 102 or visit www.encoder.com. For Pin Configuration Diagrams, see page 107 or visit www.encoder.com.
- For non-standard cable lengths add a forward slash (/) plus cable length expressed in feet. Example: S/6 = 6 feet of cable. Frequency above 300 kHz standard cable lengths only.
- Not available with commutation or extreme temperature (V) option. 5-pin not available with Line Driver (HV) output. Additional cable lengths available. Please consult Customer Service.
- Not available with commutation.
- Please refer to **Technical Bulletin TB100: When to Choose the CE Option** at www.encoder.com.

MODEL 260 SPECIFICATIONS

Electrical

Input Voltage.....4.75 to 28 VDC for temperatures up to 70° C
 5 to 16 VDC for 0° to 100° C operating temperature
 5 VDC for 0° to 120° C operating temperature

Input Current100 mA max with no output load
 Output Format.....Incremental- Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the mounting face.
 See *Waveform Diagrams*.

Output Types.....Open Collector- 20 mA max per channel
 Push-Pull- 20 mA max per channel
 Line Driver- 20 mA max per channel (Meets RS 422 at 5 VDC supply)

Index.....Once per revolution gated to channel A.
 See *Waveform Diagrams*.

Max. FrequencyStandard Frequency Response is 200 kHz for CPR 1 to 2540
 500 kHz for CPR 2541 to 5000
 1 MHz for CPR 5001 to 10,000
 Extended Frequency Response (optional) is 300 kHz for CPR 2000, 2048, 2500, and 2540

Noise Immunity.....Tested to BS EN61000-6-2; BS EN50081-2; BS EN61000-4-2; BS EN61000-4-3; BS EN61000-4-6, BS EN55011

Quadrature.....67.5° electrical or better is typical,
 Edge Separation.....54° electrical minimum at temperatures > 99° C

Accuracy.....Within 0.01° mechanical from one cycle to any other cycle, or 0.6 arc minutes.

CommutationUp to 12-pole. Contact Customer Service for availability.

Comm. Accuracy.....1° mechanical

Mechanical

Max Shaft Speed.....7500 RPM. Higher shaft speeds may be achievable, contact Customer Service.
 Note: For extreme temperature operation, de-rate temperature by 5° C for every 1000 RPM above 3000 RPM

Bore Tolerance-0.0000" / +0.0006"

User Shaft Tolerances

Radial Runout0.007" max
 Axial Endplay.....±0.030" max
 Starting TorqueIP50 Thru-Bore: 0.50 oz-in
 IP50 Hollow Bore: 0.30 oz-in
 IP64 Thru-Bore: 2.50 oz-in
 IP64 Hollow Bore: 2.0 oz-in
 Note: Add 3.0 oz-in for -40° C operation

Moment of Inertia ...3.9 X 10⁻⁴ oz-in-sec²

Max Acceleration1 X 10⁵ rad/sec²

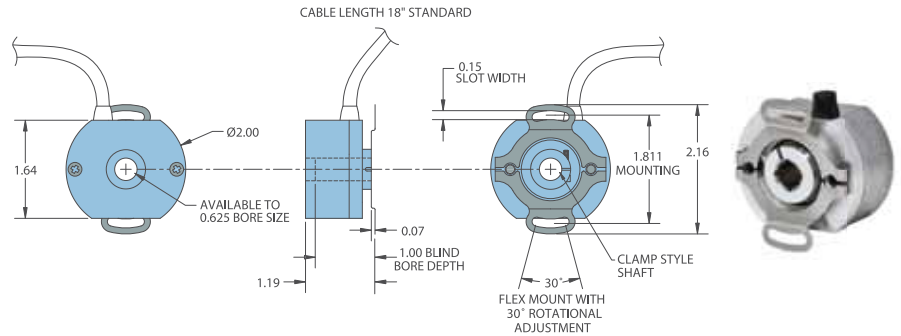
HousingNon-corrosive material

Weight.....3.5 oz typical

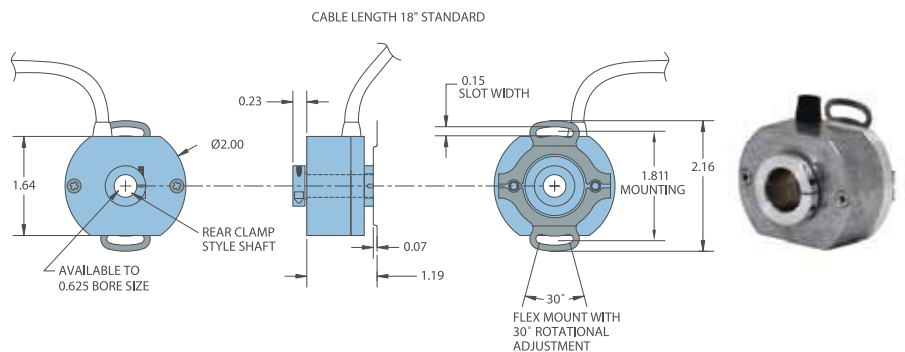
Environmental

Storage Temp-40° to +100° C
 Humidity.....98% RH non-condensing
 Vibration.....10 g @ 58 to 500 Hz
 Shock.....50 g @ 11 ms duration
 Sealing.....IP50; IP64 available

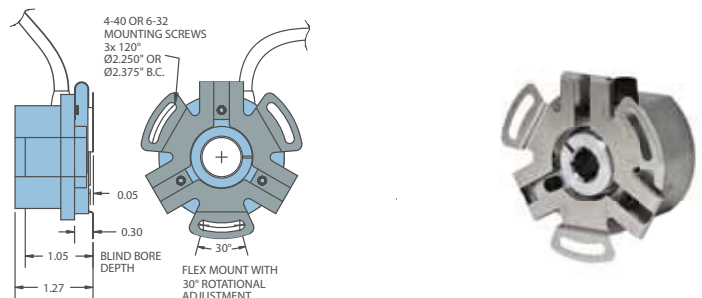
MODEL 260 WITH FRONT SHAFT CLAMP (T) WITH 1.811" (46 MM) BC SLOTTED FLEX (SF)



MODEL 260 REAR CLAMP (R) WITH 1.811" (46 MM) BC SLOTTED FLEX (SF)

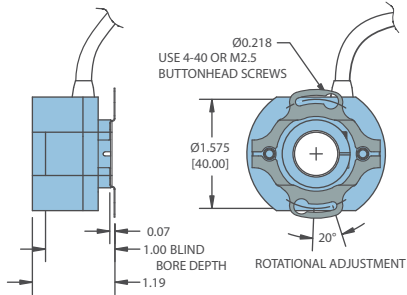


THREE POINT FLEX MOUNT (XF, NF)

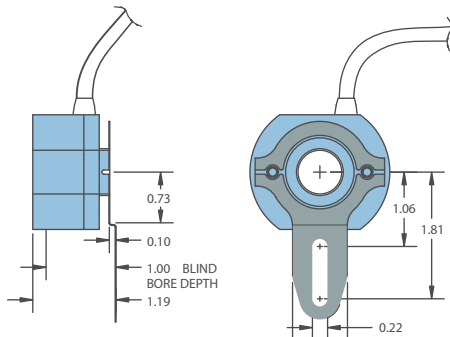


All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified.

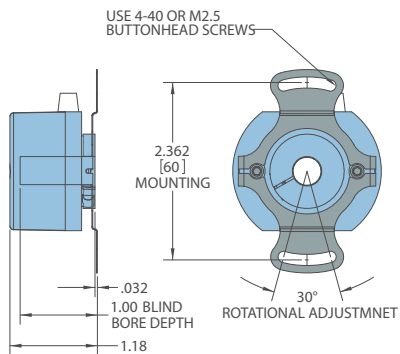
1.575" (40 MM) BC FLEX MOUNT (SD)



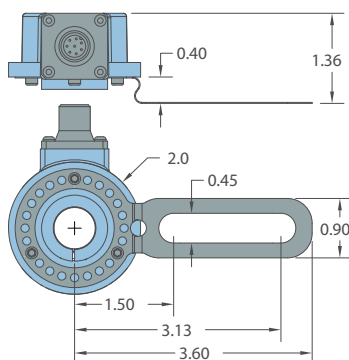
1.06" TO 1.81" FLEX ARM (FA)



2.36" (60 MM) BC FLEX MOUNT (SL)



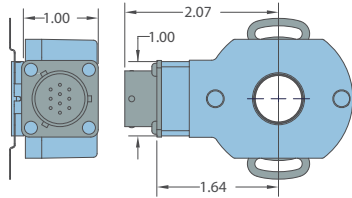
1.50" TO 3.13" FLEX ARM (FB)



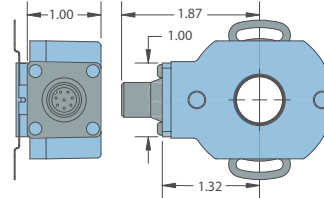
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MODEL 260 CONNECTOR OPTIONS

BODY MOUNT 10-PIN BAYONET (SMH)

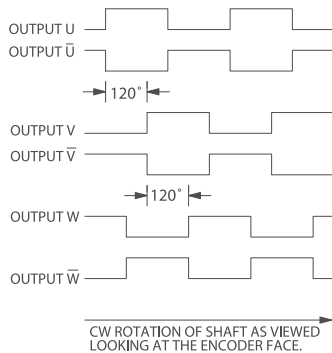
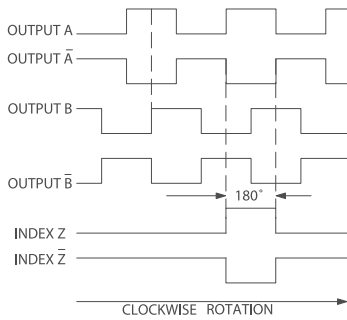


BODY MOUNT M12 (SMJ, SMK)



All dimensions are in inches with a tolerance of $\pm 0.005"$ or $\pm 0.01"$ unless otherwise specified.

WAVEFORM DIAGRAMS



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. WAVEFORM SHOWN WITH OPTIONAL COMPLEMENTARY SIGNALS \bar{A} , \bar{B} , \bar{Z} FOR HV AND OD OUTPUTS ONLY.

WIRING TABLE

Function	Cable [†] Wire Color	5-pin M12 ^{**}	8-pin M12 ^{**}	10-pin Bayonet [†]
Com	Black	3	7	F
+VDC	White	1	2	D
A	Brown	4	1	A
A'	Yellow	--	3	H
B	Red	2	4	B
B'	Green	--	5	J
Z	Orange	5	6	C
Z'	Blue	--	8	K
U	Violet	--	--	--
U'	Gray	--	--	--
V	Pink	--	--	--
V'	Tan	--	--	--
W	Red/Green	--	--	--
W'	Red/Yellow	--	--	--
Shield	Bare*	--	--	--

*CE Option: Cable shield (bare wire) is connected to internal case.

**Non-CE Option: Cable shield is connected to M12 connector body.

CE Option: Cable shield and M12 connector body is connected to internal case.

[†]CE Option: Pin G is connected to internal case.

[†]Standard cable for non-commutated models is 24 AWG. For commutated units, conductors are 28 AWG.