MODEL 260 - INCREMENTAL ENCODER

FEATURES
Low profile 1.19”
Up to 12 pole commutation
Available in Thru-Bore and Blind Hollow Bore
Simple, innovative flexible mounting system
Incorporates Opto-ASIC technology
CE marking available

With a bore up to 0.625” and a low profile, the Model 260 Accu-Coder™ is the perfect solution for many machine and motor applications. Available in both hollow bore and a complete thru-bore, 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. And of course, the Model 260 uses EPC’s pioneering Opto-ASIC design, so you’ll always get a clean, reliable signal.

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

**NOTES:**
- Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.
- 1 Not available in all configurations. Contact Customer Service for availability.
- 2 Contact Customer Service for additional options not shown.
- 3 S to 16 VDC supply only for H option; 5 VDC supply only for V option. Contact Customer Service for availability and additional information.
- 4 Contact Customer Service for non-standard index gating options.
- 5 Line Driver not available with 5-pin Body Mount M12 connector type.
- 6 For mating connectors, cables, and cardboards see Accessories at encoder.com. For Connector Pin Configuration Diagrams, see Technical Information or see Connector Pin Configuration Diagrams at encoder.com.
- 7 For non-standard cable lengths add a forward slash (/) plus cable length expressed in feet. Example: 5/6 = 6 feet of cable. Frequency above 300 kHz standard cable lengths only.
- 8 M12 Connector Type not available with commutation or with V temperature option. Additional cable lengths available. Please consult Customer Service.
- 9 Not available with commutation.
- 10 Please refer to Technical Bulletin TB-100: When to Choose the CE Mark at encoder.com.

**MODEL 260 ORDERING GUIDE**

**NUMBER OF CHANNELS**
- 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 Quadrature Phasing and Index Gating Options for additional options and waveforms at encoder.com

**OUTPUT TYPE**
- OC Open Collector
- PP Push-Pull
- HV Line Driver
- OD Open Collector with Differential Outputs

**SEALING**
- 1 IP50 for Thru-Bore
- 2 IP64 for Thru-Bore
- 3 IP64 for Hollow Bore
- 4 IP50 for Hollow Bore

**CONNECTOR TYPE**
- S 18” Cable
- J00 18” Cable with 5-pin M12
- K00 18” Cable with 8-pin M12
- SMJ 5-pin Body Mount M12
- SMK 8-pin Body Mount M12 standard wiring
- SMZ 8-pin Body Mount M12 optional wiring
- SMH 10-pin Body Mount Bayonet

**CERTIFICATION**
- N None (Std)
- CE CE Marked

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

**Model 260 CPR Options**
- 0001 thru 0189
- 0198
- 0200
- 0250
- 0254
- 0256
- 0300
- 0360
- 0400
- 0500
- 0512
- 0600
- 0720
- 0800
- 1000
- 1024
- 1200
- 1250
- 1270
- 1500
- 1800
- 2000
- 2048
- 2500
- 2540
- 3000
- 3600
- 4000
- 4096
- 5000
- 6000
- 7200
- 8192
- 10,000

*Contact Customer Service for availability.
New CPR values are periodically added to those listed. Contact Customer Service to determine all currently available values. Special disk resolutions are available upon request and may be subject to a one-time NRE fee.

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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 Current................................. 130 mA max (< 100 mA typical) with no output load
Output Format............................... 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. Frequency............................. Standard 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
Electrical Protection..................... Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage.
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 Edge Separation...... 67.5° electrical or better is typical, 54° electrical minimum at temperatures > 99° C
Accuracy.......................................Within 0.01° mechanical from one cycle to any other cycle, or 0.6 arc minutes.
Commutation............................... Up to 12 pole. Contact Customer Service for availability.

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 Runout............................ 0.007 max
Axial Endplay............................. ±0.030 max
Starting Torque........................... IP50 Thru-Bore: 0.50 oz-in
IP64 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 10^6 oz-in^2
Housing................................. Non-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)

1.575” (40 MM) BC FLEX MOUNT (SD)

All dimensions are in inches with a tolerance of ±0.005” or ±0.01” unless otherwise specified.
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1.06" TO 1.81" FLEX ARM (FA)

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

1.50" TO 3.13" FLEX ARM (FB)

MODEL 260 CONNECTOR OPTIONS
Body Mount 10-Pin Bayonet (SMH)  Body Mount M12 (SMJ, SMK)

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

CLOCKWISE ROTATION AS VIEWED FROM THE MOUNTING FACE

NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. Waveform shown with optional complementary signals A, B, Z for HV and OD outputs only.

WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable. Trim back and insulate unused wires.

<table>
<thead>
<tr>
<th>Function</th>
<th>Flying Leads Cable† Wire Color</th>
<th>5-pin M12**</th>
<th>8-pin M12** standard wiring</th>
<th>8-pin M12** optional wiring</th>
<th>10-pin Bayonet+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Com</td>
<td>Black</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>F</td>
</tr>
<tr>
<td>+VDC</td>
<td>White</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>D</td>
</tr>
<tr>
<td>A</td>
<td>Brown</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>A'</td>
<td>Yellow</td>
<td>--</td>
<td>3</td>
<td>4</td>
<td>H</td>
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<tr>
<td>B</td>
<td>Red</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>B</td>
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<tr>
<td>B'</td>
<td>Green</td>
<td>--</td>
<td>5</td>
<td>6</td>
<td>J</td>
</tr>
<tr>
<td>Z</td>
<td>Orange</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>C</td>
</tr>
<tr>
<td>Z'</td>
<td>Blue</td>
<td>--</td>
<td>8</td>
<td>8</td>
<td>K</td>
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<tr>
<td>U</td>
<td>Violet</td>
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<td>--</td>
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<td>--</td>
</tr>
<tr>
<td>U'</td>
<td>Gray</td>
<td>--</td>
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<td>--</td>
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<tr>
<td>V</td>
<td>Pink</td>
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</tr>
<tr>
<td>V'</td>
<td>Tan</td>
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</tr>
<tr>
<td>W'</td>
<td>Red/Yellow</td>
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<td>--</td>
</tr>
<tr>
<td>Shield</td>
<td>Bare*</td>
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<td>--</td>
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<td>--</td>
</tr>
</tbody>
</table>

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

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

**CE Option: Use cable cordset with shield connected to M12 connector coupling nut.

+CE Option: Pin G is connected to internal case.