**FEATURES**

Standard Size 20 package (2” x 2”)
- Flange and Servo mounting
- Up to 30,000 CPR
- 80 lb maximum axial and radial shaft loading
- IP67 sealing

The Model 702 Size 20 Accu-Coder® is a heavy duty, extremely rugged, reliable, yet compact industry standard 2” diameter encoder, designed for harsh factory and plant floor environments. The double shielded ball bearings are rated at 80 lb maximum axial and radial shaft loading to ensure a long operating life. Made to withstand the harsh effects of the real world, both the flange and servo models are rated IP67 with the optional heavy duty shaft seal. With a variety of mounting options in both the flange and servo models, the Model 702 is ideal for both new applications and replacements. If you need an encoder that won’t let you down, the Model 702 is it.

**COMMON APPLICATIONS**

Motion Control Feedback, Conveyors, Elevator Controls, Machine Control, Food Processing, Process Controls, Robotics, Material Handling, Textile Machines

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**MODEL 702 ORDERING GUIDE**

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

<table>
<thead>
<tr>
<th>MODEL</th>
<th>702</th>
<th>Size 20 (2.0”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING TEMPERATURE</td>
<td>S</td>
<td>0° to 70° C</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>-40° to 70° C</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>0° to 100° C</td>
</tr>
<tr>
<td>CYCLES PER REVOLUTION</td>
<td>1-30,000</td>
<td></td>
</tr>
<tr>
<td>PRICE ADDER</td>
<td>See CPR Options below</td>
<td></td>
</tr>
<tr>
<td>MAXIMUM FREQUENCY</td>
<td>1 MHz &gt; 10,000 CPR</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

1. Contact Customer Service for additional options.
2. Shaft with Size 25 Mounting Adapter, J or K mounting only.
3. Low temperature option not available with resolutions of 3000 CPR or higher.
4. 0° to 85° C for certain resolutions, see CPR Options.
5. Contact Customer Service for non-standard index gating options.
6. 24 VDC max for high temperature option.
7. Line Driver not available with 5-pin M12 or 6-pin MS connector. Available with 7-pin MS connector only without Index Z.
8. 24 VDC max for high temperature option.
9. H5 and P5 outputs are not available with CE option or any end mount MS connector.
10. Standard temperature, 60 to 3000 CPR only. Not available with 2400 CPR, 2540 CPR, or 2880 CPR.
11. Contact Customer Service for High Temperature Option (H).
12. For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: G/6 = 6 feet of cable.

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**MODEL 702 CPR Options**

<table>
<thead>
<tr>
<th>Value</th>
<th>0001</th>
<th>0002*</th>
<th>0004*</th>
<th>0005*</th>
<th>0006*</th>
<th>0007*</th>
<th>0008*</th>
<th>0010*</th>
<th>0011*</th>
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<td>0024*</td>
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<td>Value</td>
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<td>Value</td>
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<td>0192*</td>
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<td>0512</td>
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<td>0899</td>
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<td>14,400*</td>
<td>15,000*</td>
<td>18,000*</td>
<td>20,000*</td>
<td>25,000*</td>
<td>20,000*</td>
<td>25,000*</td>
<td>30,000*</td>
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* Contact Customer Service for High Temperature Option (H).

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**CONTACT US**

1-800-366-5412 | encoder.com | sales@encoder.com

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MODEL 702 SPECIFICATIONS

**Electrical**
- Input Voltage: 4.75 to 28 VDC max for temperatures up to 70°C. 4.75 to 24 VDC for temperatures between 70°C and 100°C.
- Input Current: 100 mA max with no output load.
- Input Ripple: 100 mV peak-to-peak at 0 to 100 kHz.
- Output Format: Incremental - Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the encoder mounting face. See Waveform Diagrams.
- Output Types: Open Collector – 100 mA max per channel, Pull-Up – Open Collector with 2.2K ohm internal resistor, 100 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: Occurs once per revolution. The index for units >3000 CPR is 90° gated to Outputs A and B. See Waveform Diagrams.
- Max Frequency: Up to 1 MHz.
- Electrical Protection: Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage.
- Noise Immunity: Tested to BS EN61000-4-2; IEC801-3; BS EN50081-2.
- Symmetry: 1 to 6000 CPR: 180° (±18°) electrical at 100 kHz output.
- Quad Phasing: 1 to 6000 CPR: 90° (±22.5°) electrical at 100 kHz output.
- Min Edge Separation: 1 to 6000 CPR: 67.5° electrical at 100 kHz output.
- Rise Time: Less than 1 microsecond.
- Accuracy: Instrument and Quadrature Error: For 200 to 1999 CPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle. For 2000 to 3000 CPR, 0.01° mechanical (0.6 arc minutes) from one cycle to any other cycle. Interpolation error (units >3000 CPR only) within 0.005° mechanical. (Total Optical Encoder Error = Instrument + Quadrature + Interpolation).

**Mechanical**
- Max Shaft Speed: 8000 RPM. Higher shaft speeds may be achievable, contact Customer Service.
- Shaft Rotation: Bi-directional.
- Radial Shaft Load: 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5 x 10⁶ revolutions.
- Axial Shaft Load: 80 lb max. Rated load of 20 to 40 lb for bearing life of 1.5 x 10⁶ revolutions.
- Starting Torque: 1 oz-in typical with IP64 seal or no seal.
- Moment of Inertia: 5.2 x 10⁻⁶ oz-in² sec².
- Housing: Black non-corrosive finish.
- Bearings: Precision ABEC ball bearings.
- Weight: 11 oz typical.

**Environmental**
- Storage Temp: -25°C to 85°C.
- Humidity: 98% RH non-condensing.
- Vibration: 20 g @ 5 Hz to 500 Hz.
- Shock: 75 g @ 11 ms duration.
- Sealing: IP50 standard, IP64, IP66 or IP67 optional.

**Models**
- **MODEL 702 2.0” SERVO MOUNT (S)**
- **MODEL 702 2.0” SERVO MOUNT (C)**
- **MODEL 702 2.0” SERVO MOUNT (P)**

**Optional Pilots for Flange & Servo Mounts**
- G, T, D, R
- L, U, E, Q

All dimensions are in inches with a tolerance of ±0.005” or ±0.01” unless otherwise specified. Metric dimensions are given in brackets [mm].
MODEL 702 - INCREMENTAL SHAFT ENCODER

MODEL 702 2.0" FLANGE MOUNT (F)

MODEL 702 WITH 2.5" FLANGE MOUNT (K)

MODEL 702 WITH 2.5" SERVO MOUNT (J)

All dimensions are in inches with a tolerance of ±0.005" or ±0.01" unless otherwise specified. Metric dimensions are given in brackets [mm].
MODEL 702 - INCREMENTAL SHAFT ENCODER

WAVEFORM DIAGRAMS

Line Driver and Push-Pull

Open Collector and Pull-Up

CLOCKWISE ROTATION AS VIEWED FROM THE MOUNTING FACE

NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES. Index is positive going.

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>Gland 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 MS</th>
<th>7-pin MS HV/H5</th>
<th>7-pin MS PU, PP, OC, P5</th>
<th>6-pin MS PU, PP, OC, P5</th>
<th>9-pin D-sub</th>
<th>10-pin Bayonet</th>
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<tr>
<td>Com</td>
<td>Black</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>A, F</td>
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<td>+VDC</td>
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<td>2</td>
<td>D</td>
<td>D</td>
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</tr>
</tbody>
</table>

*   CE Option: Cable shield (bare wire) is connected to internal case.
† Standard cable is 24 AWG conductors with foil and braid shield.
** CE Option: Use cable cordset with shield connected to M12 connector coupling nut.