MODEL 702 - INCREMENTAL MOTOR MOUNT ENCODER

FEATURES
Up to 30,000 CPR
IP66 sealing available
Mounting flange available with boss

The compact, industry standard 2-inch diameter Model 702 Motor Mount Accu-Coder® is designed to withstand harsh factory and plant floor environments. The mounting flange, with integral shaft and coupling, allows for easy installation on a motor or shaft assembly, without the need for additional brackets or couplings. With the ability to handle shaft speeds of up to 8000 RPM and withstand the shock and vibration of high speed servo motors, the Model 702 Motor Mount Accu-Coder® is heavy duty, ultra-rugged, and reliable.

COMMON APPLICATIONS
Servo and Stepper Motor Control, Robotics, X-Y Positioning Tables, Machine Tools

Ø3.5"
MODEL 702 SPECIFICATIONS

**Electrical**
- **Input Voltage**: 4.75 to 28 VDC max for temperatures up to 70° 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, 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.
- **Noise Immunity**: Tested to BS EN61000-4-2; IEC801-3; BS EN55011-4-4; DDENV 50141; DDENV 50204; BS EN55022 (with European compliance option); BS EN61000-6-2; 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.
- **Starting Torque**: 1.0 oz-in typical with IP64 seal or no seal
- **Moment of Inertia**: 5.2 x 10⁻⁴ oz-in-sec²
- **Max Acceleration**: 1 x 10⁵ rad/sec²
- **Bearing**: Precision ABEC ball bearings
- **Weight**: 14 oz typical

**Environmental**
- **Storage Temp**: -25° to 85° C
- **Humidity**: 98% RH non-condensing
- **Vibration**: 20 g @ 58 to 500 Hz
- **Shock**: 75 g @ 11 ms duration
- **Sealing**: IP66 (NEMA 13 and 4/4X) with shaft seal; IP64 available

MODEL 702 WITH INTEGRAL COUPLING (I)

MODEL 702 WITH INTEGRAL COUPLING AND BOSS (B)

All dimensions are in inches with a tolerance of ±0.005” or ±0.01” unless otherwise specified. Metric dimensions are given in brackets [mm].
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. Waveform shown with optional complementary signals \( \overline{A}, \overline{B}, \overline{Z} \) for HV output 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>Gland Cable† Wire Color</th>
<th>5-pin M12** Standard Wiring</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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</thead>
<tbody>
<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>
<td>9</td>
<td>F</td>
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<tr>
<td>+VDC</td>
<td>Red</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>B, 1</td>
<td>A</td>
<td>D</td>
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<tr>
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<td>White</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>A</td>
<td>A, A</td>
<td>A</td>
<td>D, B</td>
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<td>A</td>
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<tr>
<td>A'</td>
<td>Brown</td>
<td>--</td>
<td>3</td>
<td>4</td>
<td>H</td>
<td>C</td>
<td>--</td>
<td>--</td>
<td>3</td>
<td>H</td>
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<tr>
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<td>4</td>
<td>5</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>E</td>
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<td>5</td>
<td>6</td>
<td>I</td>
<td>E</td>
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<td>--</td>
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<td>6</td>
<td>7</td>
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<td>C</td>
<td>C</td>
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* 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.