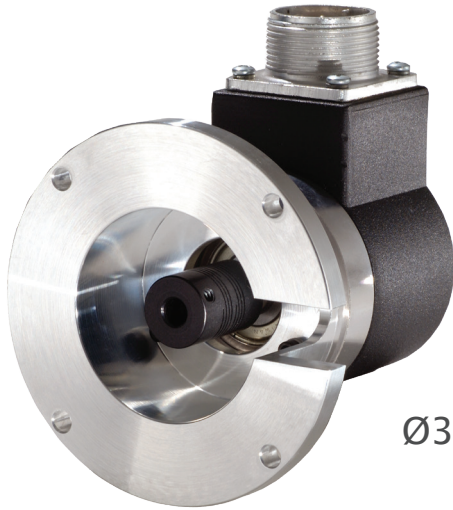


MODEL 702 - INCREMENTAL MOTOR MOUNT



Ø3.5"

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 & Stepper Motor Control, Robotics, X-Y Positioning Tables, Machine Tools

MODEL 702 ORDERING GUIDE

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

702	31	S	1000	R	HV	1	B	1	E	X	N	CE
MODEL 702 Size 20 (2.0")	COUPLING BORE 31 1/4", 0.250" 32 3/8", 0.375" 33 1/2", 0.500"	OPERATING TEMPERATURE S 0° to 70° C H 0° to 100° C ¹	CYCLES PER REVOLUTION 1-30,000 See CPR Options below for available resolutions. Price adder for CPR >1270	NUMBER OF CHANNELS² A Channel A 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	OUTPUT TYPE 5 - 28V In/Out ³ OC Open Collector PU Pull-Up Resistor PP Push-Pull HV Line Driver ⁴ 8 - 28V In/5V Out ^{5,6} H5 Line Driver ⁴ P5 Push-Pull	MAXIMUM FREQUENCY 1 100 kHz (Standard) 2 200 kHz ≤ 3000 CPR 5 250 kHz, >3000 CPR 3 500 kHz, >6000 CPR ⁷ 4 1 MHz, >10,000 CPR ⁷	SEALING N No Seal 1 IP66 2 IP64	CONNECTOR LOCATION E End S Side	MOUNTING I Integral Shaft Coupling B Integral Coupling w/Boss	MATING CONNECTOR N No Y Yes	CERTIFICATION N None CE CE Marked ¹⁰	CONNECTOR TYPE⁸ W 6-pin MS ⁴ Y 7-pin MS ⁴ X 10-pin MS 9D 9-pin D-subminiature J 5-pin M12 (12 mm) ⁴ K 8-pin M12 (12 mm) Standard Wiring Z 8-pin M12 (12 mm) Optional Wiring G Gland, 24" Cable ⁹ H 10-pin Bayonet

MODEL 702 MOTOR MOUNT CPR OPTIONS

0001*	0002*	0004*	0005*	0006*	0007*	0008*	0010*
0011*	0012*	0014*	0020	0021*	0024*	0025*	0028*
0030*	0032*	0033*	0034*	0035*	0038*	0040*	0042*
0045*	0050*	0060	0064*	0100	0120	0125	0128*
0144*	0150*	0160*	0192*	0200	0240*	0250	0254*
0256*	0300	0333*	0360	0400	0500	0512	0600
0625*	0635	0665*	0720	0768*	0800	0889	1000
1024	1200	1204 ^a	1250 ^a	1270 ^a	1440	1500	1800
2000	2048	2400 ^a	2500	2540 ^a	2880 ^a	3000 ^a	3600 ^a
4000 ^a	4096 ^a	5000 ^a	6000 ^a	7200 ^a	7500 ^a	9000 ^a	10,000 ^a
10,240 ^a	12,000 ^a	12,500 ^a	14,400 ^a	15,000 ^a	18,000 ^a	20,000 ^a	20,480 ^a
25,000 ^a	30,000 ^a						

*Contact Customer Service for High Temperature Option.

^aHigh Temperature Option (H) limited to 85° C maximum for these CPR options.

New CPR values are periodically added to those listed. Contact Customer Service to determine all currently available CPR values. Special disk resolutions are available upon request. A one-time NRE fee may apply.

NOTES:

- 0° to 85° C for certain resolutions, see CPR Options.
- Contact Customer Service for non-standard index gating options.
- 24 VDC max for high temperature option.
- Line Driver not available with 5-pin M12 or 6-pin MS connector. Available with 7-pin MS connector only without Index Z.
- Standard temperature, 60 to 3000 CPR only. Not available with 2540 CPR.
- H5 and P5 outputs are not available with CE option.
- Standard cable lengths only. For details, please refer to **Technical Bulletin TB 116: Noise & Signal Distortion Considerations** on the web at www.encoder.com.
- For mating connectors, cables, and cordsets see Accessories or visit www.encoder.com. For Pin Configuration Diagrams, see Technical Information or visit www.encoder.com.
- For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: G/6 = 6 feet of cable.
- Please refer to **Technical Bulletin TB100: When to Choose the CE Mark** at www.encoder.com.

MODEL 702 MOTOR MOUNT SPECIFICATIONS

Electrical

Input Voltage4.75 to 28 VDC max for temperatures up to 70° C
4.75 to 24 VDC for temperatures between 70° C and 100° C

Input Current100 mA max with no output load

Input Ripple100 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 TypesOpen 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 FrequencyUp to 1 MHz.

Electrical Protection ..Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage.

Noise ImmunityTested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DENV 50141; DENV 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 Sep.....1 to 6000 CPR: 67.5° electrical at 100 kHz output

6001 to 20,480 CPR: 54° electrical

> 20,480 CPR: 50° electrical

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 Torque1.0 oz-in typical with IP64 seal or no seal
3.0 oz-in typical with IP66 shaft seal

Moment of Inertia.....5.2 x 10⁻⁴ oz-in²

Max Acceleration.....1 x 10⁵ rad/sec²

HousingBlack non-corrosive finish

BearingsPrecision ABEC ball bearings

Weight.....14 oz typical

Environmental

Storage Temp-25° to 85° C

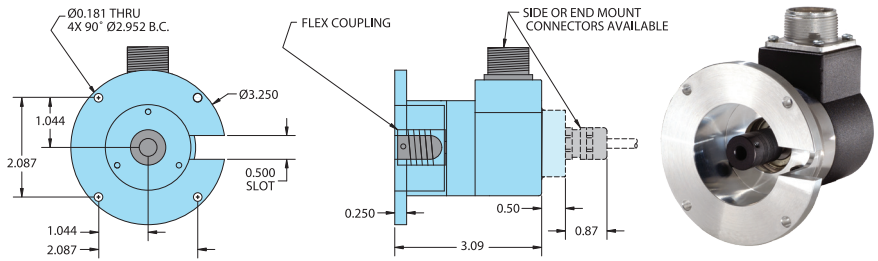
Humidity98% RH non-condensing

Vibration20 g @ 58 to 500 Hz

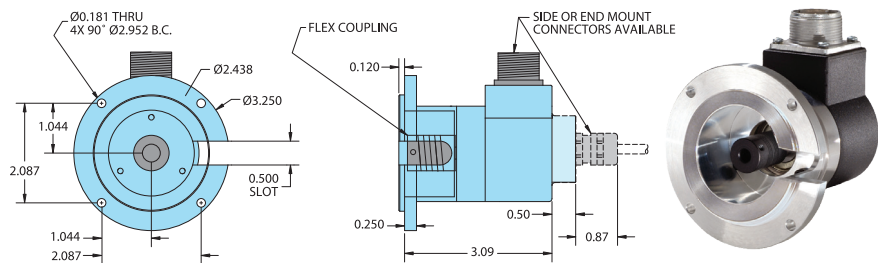
Shock.....75 g @ 11 ms duration

Sealing.....IP66 (NEMA 13 and 4/4X) with shaft seal; IP64 available

MODEL 702 WITH INTEGRAL COUPLING (I)



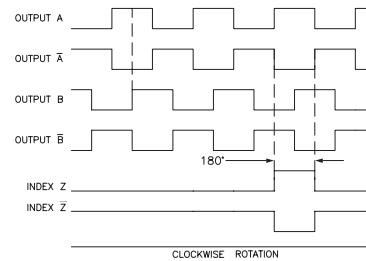
MODEL 702 WITH INTEGRAL COUPLING AND BOSS (B)



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

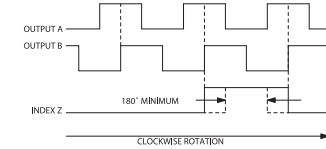
WAVEFORM DIAGRAMS

Line Driver and Push-Pull



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES.
WAVEFORM SHOWN WITH OPTIONAL COMPLEMENTARY SIGNALS
A, B, Z FOR HV OUTPUT ONLY.

Open Collector and Pull-Up



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.

Function	Gland Cable† Wire Color	5-pin M12**	8-pin Standard Wiring	8-pin M12** Optional Wiring	10-pin MS	7-pin MS HV, H5	7-pin MS PU, PP, OC, P5	6-pin MS PU, PP, OC, P5	9-pin D-sub	10-pin Bayonet
Com	Black	3	7	1	F	F	F	A, F	9	F
+VDC	Red	1	2	2	D	D	D	B	1	D
A	White	4	1	3	A	A	A	D	2	A
A'	Brown	–	3	4	H	C	–	–	3	H
B	Blue	2	4	5	B	B	B	E	4	B
B'	Violet	–	5	6	I	E	–	–	5	J
Z	Orange	5	6	7	C	–	C	C	6	C
Z'	Yellow	–	8	8	J	–	–	–	7	K
Case	Green	–	–	–	G	G	G	–	8	G
Shield	Bare*	–	–	–	–	–	–	–	–	–

*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