

MODEL 121 – THRU-BORE MODULAR ENCODER



Ø2.1"
Patent #6,608,300B2

FEATURES

- Simple, Hassle Free Mounting
- Accepts Larger Shafts up to 5/8" (or 15 mm)
- Up to 12 Pole Commutation Available
- 0° to 100° C Operating Temperature Available
- Patented Design
- Includes IP50 Dust Seal Kit

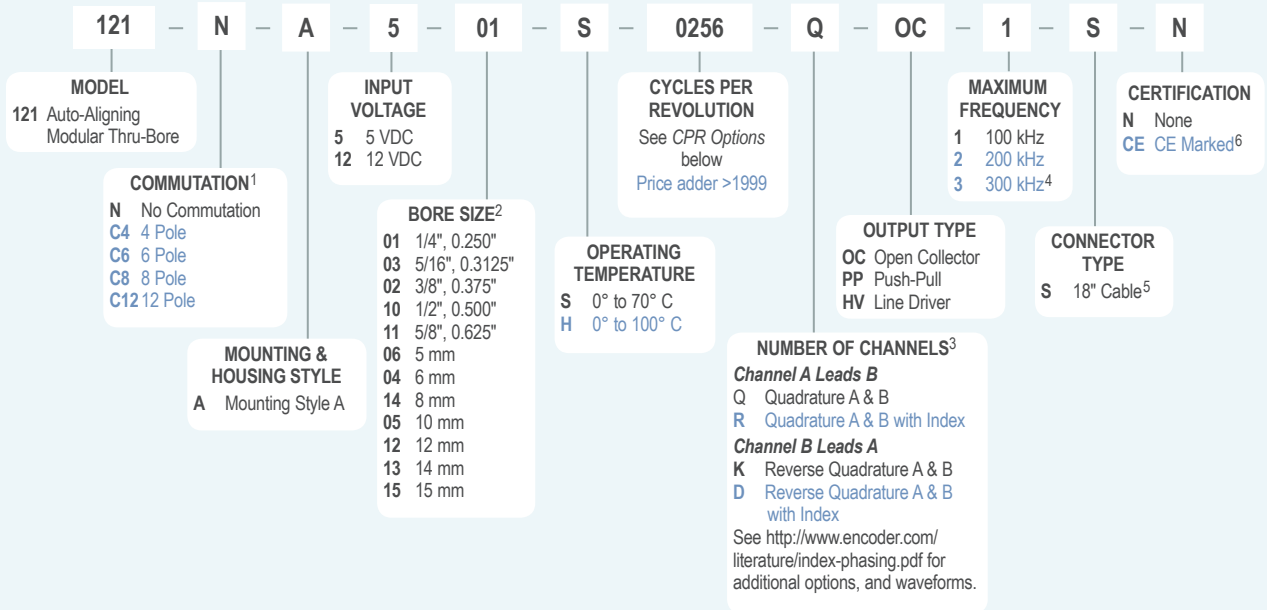
EPC has taken the performance of modular encoders to a new level with the Model 121 Auto-Aligning Modular Encoder. This new and innovative design requires no calibration, gapping or special tools for hassle-free installation. The Model 121 incorporates the latest Opto-ASIC technology for enhanced performance. Common problems with other modular encoder designs are warping and deflection, caused by their extensive use of plastic, both of which are virtually eliminated by the Model 121's all metal construction. For brushless servo motor applications, the Model 121 can be specified with three commutation tracks to provide motor feedback. The optional 100° C temperature capability allows servo motors to operate at higher power outputs and duty cycles.

COMMON APPLICATIONS

Servo Motor Control, Robotics, Specialty Assembly Machines, Digital Plotters, High Power Motors

MODEL 121 ORDERING GUIDE

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



MODEL 121 CPR OPTIONS

0200 0250 0254 0256 0300 0360 0500
0512 0600 0720 0800 0840 1000 1024
1200 1250 1800* 2000* 2048* 2500*

*Contact Customer service for application analysis.

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.

NOTES:

- Not available in all configurations. Contact Customer Service for availability.
- Contact Customer Service for additional options not shown.
- Contact Customer Service for non-standard index gating options.
- Standard 0° to 70° C operating temperature only.
- For Non-Standard Cable Lengths add a forward slash (/) plus cable length expressed in feet. Example: S/6 = 6 feet of cable.
- Please refer to **Technical Bulletin TB100: When to Choose the CE Mark** at www.encoder.com.

MODEL 121 SPECIFICATIONS

Electrical

Input Voltage..... 5 VDC +10% Fixed Voltage
12 VDC +10% Fixed Voltage

Input Current..... 100 mA maximum 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. Index optional.

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

Index..... Once per revolution gated to channel A. Contact Customer Service for additional gating options.

Max Frequency 100 kHz standard, 200 kHz, and 300 kHz optional

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

Quadrature..... 67.5° electrical or better is typical, 54°

Edge Separation .. electrical minimum at temperatures > 99° C

Accuracy..... Within 0.1° mechanical from one cycle to any other cycle, or 6 arc minutes

Commutation Optional – three 120° electrical phase tracks for commutation feedback. (4, 6, 8, or 12 poles. Others available upon request.)

Comm. Accuracy 1° mechanical

Mechanical

Max. Shaft Speed..... Determined by maximum frequency response

Bore Tolerance +0.0007" (max) -0.0000" (Based on H7 bore fit for g6 shaft Class LC5 per ANSI B-4.1 standard)

User Shaft Tolerance

Radial Runout 0.002" max

Axial End Play..... ±0.015" for CPR ≤ 512
±0.010" for CPR 513 to 1250
±0.005" for CPR > 1250

Moment of Inertia ... 2.5 x 10⁻⁴ oz-in-sec²

Max. Acceleration ... 5 x 10⁵ rad/sec²

Housing All Metal Aluminum and Zinc Alloy

Weight..... 4 oz typical

Environmental

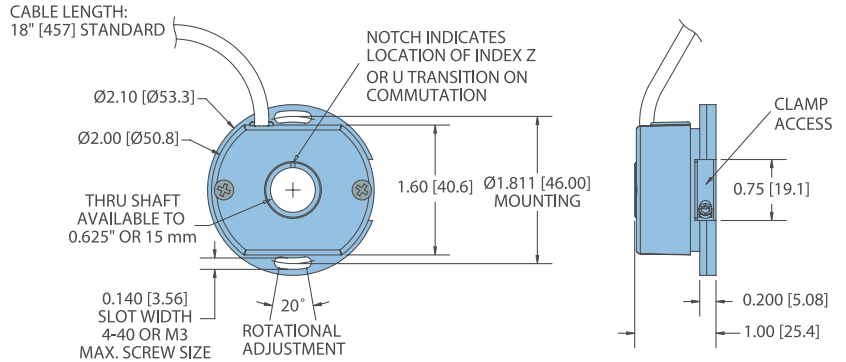
Storage Temp -25° to 100° C

Humidity..... 98% RH non-condensing

Vibration..... 10 g @ 58 to 500 Hz

Shock..... 50 g @ 11 ms duration

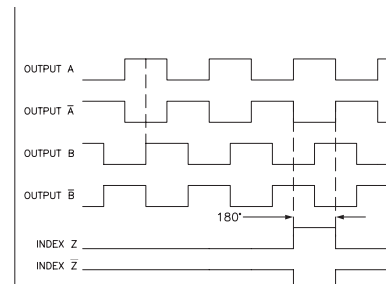
MODEL 121 AUTO-ALIGNING MODULAR (A)



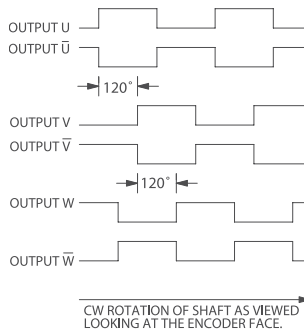
All dimensions are in inches with a tolerance of +0.005" or +0.01" unless otherwise specified. Metric dimensions are given in brackets [mm].



WAVEFORM DIAGRAMS



NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES.



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

WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable.

Function	Flying Leads Cable† Wire Color
Com	Black
+VDC	White
A	Brown
A'	Yellow
B	Red
B'	Green
Z	Orange
Z'	Blue
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.

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