

MODEL 121 - INCREMENTAL 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 New IP50 Dust Seal Kit

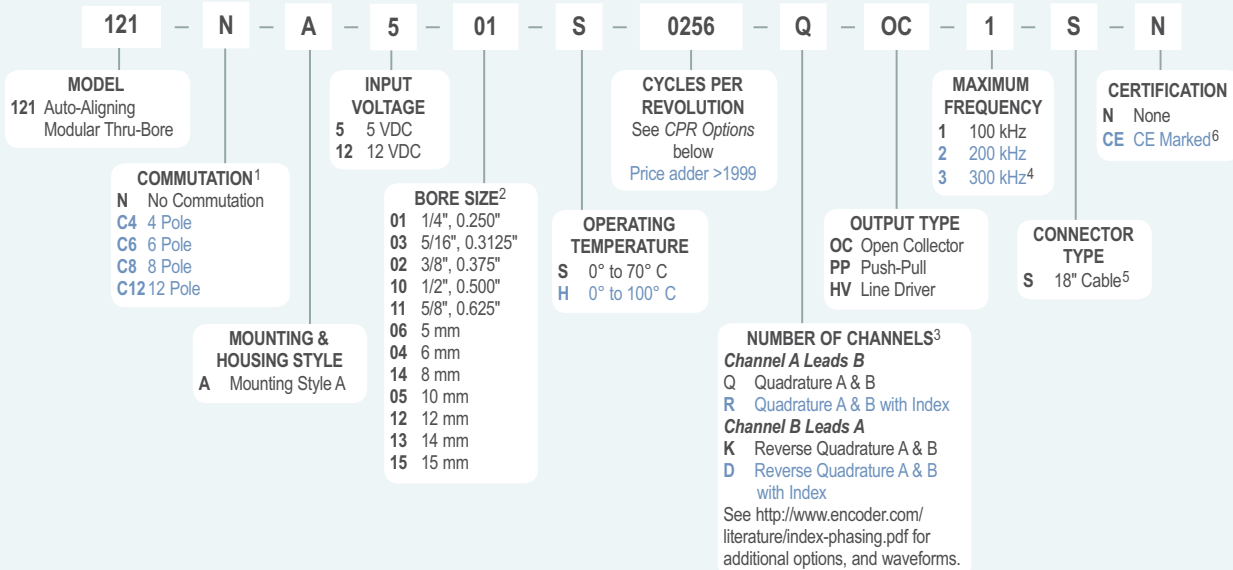
EPC has taken the performance of modular encoders to a new level with the Model 121 Auto-Aligning Modular Encoder. This new and innovative design requires no calibration, gapping or special tools for hassle-free installation. The Model 121 incorporates the latest Optical ASIC technology for enhanced 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
1500 1800* 2000* 2048* 2500* 2540*

*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 Option** 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

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

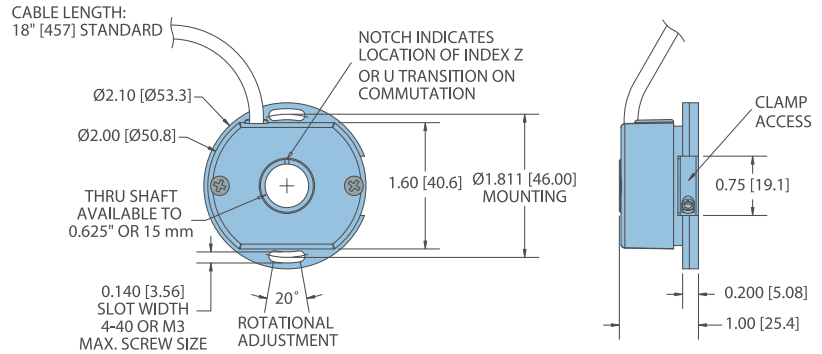
Max. Acceleration ... 5 x 10⁵ rad/sec²

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

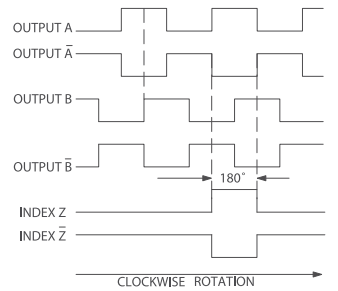
MODEL 121 AUTO-ALIGNING MODULAR (A)



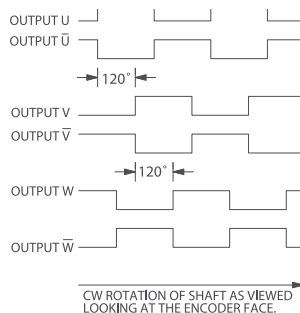
All dimensions are in inches with a tolerance of +0.005" or +0.01" unless otherwise specified. Metric dimensions are given in brackets [mm].



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

Function	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.