

# Model 121 Auto-Aligning Modular



Incremental Thru-Bore  
& Motor Mount Encoders

## Features

- Simple, Hassle Free Mounting
- Accepts Larger Shafts up to 15mm
- Up to 12 Pole Commutation Available
- 0° to 100°C Operating Temperature Available
- Patented Design
- Includes New IP50 Dust Seal Kit

A reliable modular encoder that requires no calibration, gapping, or special tools to install! We have taken the performance of modular encoders to a new level with the Model 121 Auto-Aligning Modular Encoder. This new and innovative design provides simple, reliable, hassle free installation. Simply tighten the shaft clamp, install the mounting screws, and you're done!

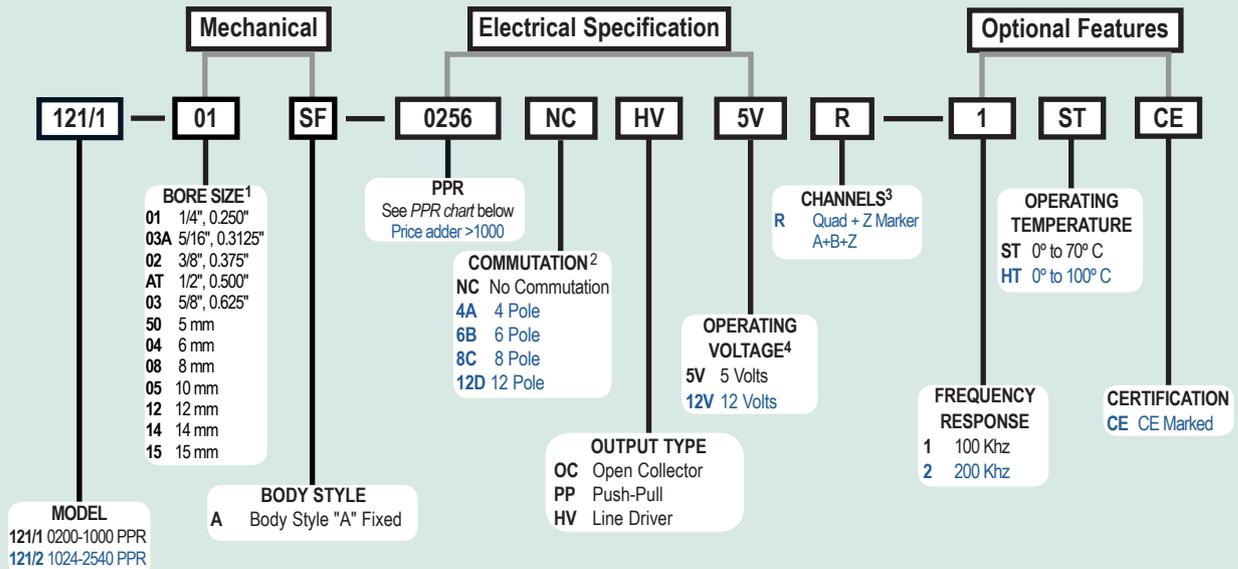
The Model 121 incorporates the latest Optical ASIC technology for greatly enhanced performance. Common problems with other modular encoder designs are warping and deflection, caused by their extensive use of plastic, both of which are virtually eliminated by the Model 121's all metal construction. For 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, Speciality 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.



For specification assistance call  
Customer Service at  
**+44 (0)1978 262100**

### Model 121 PPR 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 PPR 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:

- 1 Contact Customer Service for additional options not shown.
- 2 Not available in all configurations, Contact Customer Service for availability.
- 3 Contact Customer Service for non-standard index gating options.
- 4 Please note - Fixed operating voltages, please specify.

# Model 121 Auto-Aligning Modular



## Model 121 Specifications

### Electrical

Input Voltage.....5 Vcc  $\pm 10\%$  Fixed Voltage  
 12 Vcc  $\pm 10\%$  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.

Freq. Response.....100 kHz standard, 200 kHz,

Symmetry.....180° ( $\pm 18^\circ$ ) electrical at 100 kHz

Quad. Phasing.....90° ( $\pm 22.5^\circ$ ) electrical at 100 kHz

Min. Edge Sep.....67.5° electrical at 100 kHz

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 Size.....6mm through 15mm

Bore Tolerance .....H7 bore fit for g6 shaft Class LC5

User Shaft Tolerance

Radial Runout.....0.05mm max

Axial End Play..... $\pm 0.40$  for PPR  $\leq 512$   
 $\pm 0.250$  for PPR 513 to 1250  
 $\pm 0.125$  for PPR  $> 1250$

Electrical Conn .....0.5 Metre cable (foil and braid shield, 24 AWG conductors non-commutated, 28 AWG commutated)

Housing.....All Metal Aluminum and Zinc Alloy

Mounting.....Two screws on a 46mm PCD. (M3 maximum screw size)

Weight.....150 grams typical

### Environmental

Operating Temp.....0° to 70° C for standard models  
 0° to 100° C for high temperature option

Storage Temp.....-25° to +100° C

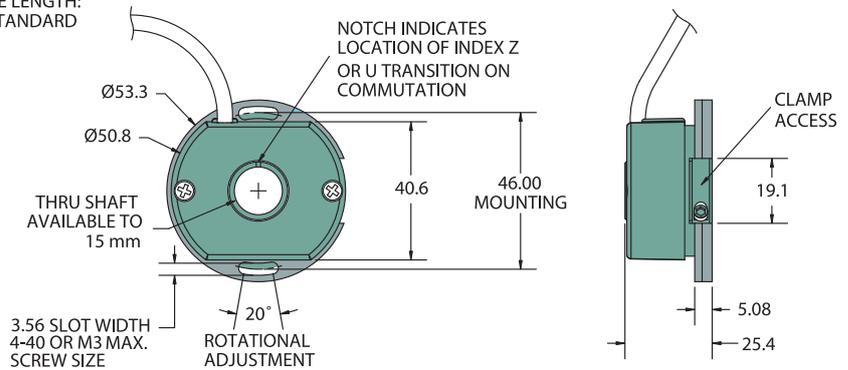
Humidity.....98% RH non-condensing

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

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

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CABLE LENGTH:  
2M STANDARD

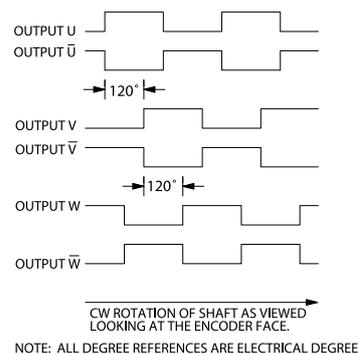
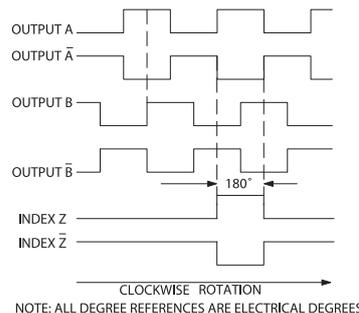


All dimensions are in mm with a tolerance of  $\pm 0.127$  or  $\pm 0.254$  unless otherwise specified.



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### Waveform Diagrams



### Wiring Table

Function	Cable Wire Color
Com	Black
+Vcc	White
A	Brown
A'	Yellow
B	Red
B'	Green
Z	Orange
Z'	Blue
U	Violet
U'	Gray
V	Pink
V'	Tan or Turq
W	Red/Green
W'	Red/Yellow
Shield	Bare