

# MODEL 755A NEMA – INCREMENTAL ENCODER



## FEATURES

- Standard NEMA Mounting
- Up to 30,000 CPR
- High Temperature Option

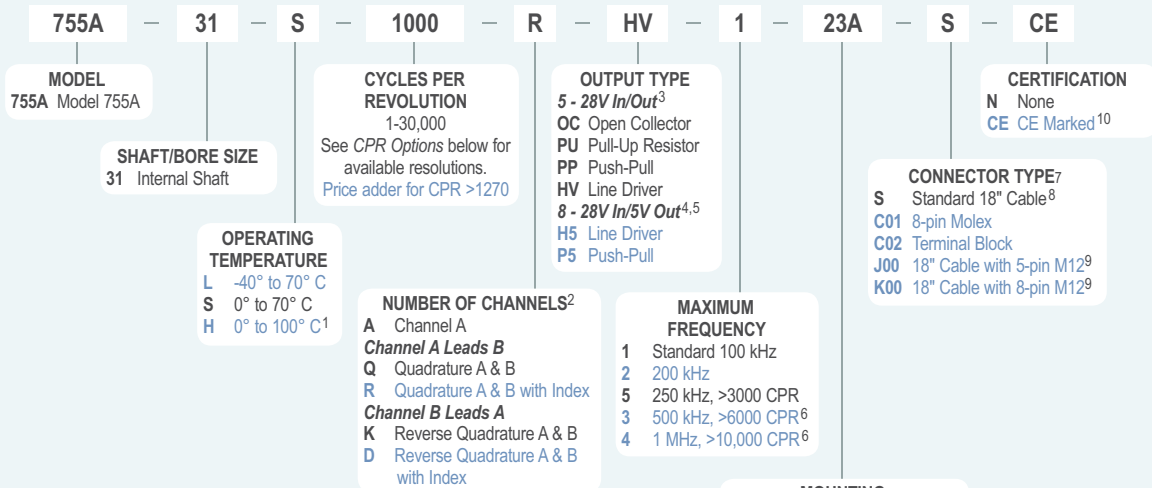
The Model 755A NEMA Mount Accu-Coder™, with its integral shaft coupling, mounts directly onto NEMA motors. It is designed for easy installation on industrial size 23 or 34 motor frames. It features standard bolt circle patterns, and can accommodate shaft sizes of 0.250", 0.375", or 6 mm. With its rugged all metal housing, and a wide range of CPR options, it will fit in many different applications, providing years of trouble free use.

## COMMON APPLICATIONS

- Robotics, Assembly Machines, Motor-Mounted Feedback,
- Phototypesetters, Printers & Digital Plotters, Elevator Controls,
- Medical Diagnostic Equipment

## MODEL 755A NEMA ORDERING GUIDE

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



### MODEL 755A NEMA 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                | 0900*             |
| 1000                | 1024                | 1200                | 1201 <sup>a</sup>   | 1203 <sup>a</sup>   | 1204 <sup>a</sup>   | 1250 <sup>a</sup>   | 1270 <sup>a</sup> |
| 1440                | 1500                | 1800                | 2000                | 2048                | 2400 <sup>a</sup>   | 2500                | 2540 <sup>a</sup> |
| 2880 <sup>a</sup>   | 3000 <sup>a</sup>   | 3600 <sup>a</sup>   | 4000 <sup>a</sup>   | 4096 <sup>a</sup>   | 5000 <sup>a</sup>   | 6000 <sup>a</sup>   | 7200 <sup>a</sup> |
| 7500 <sup>a</sup>   | 9000 <sup>a</sup>   | 10,000 <sup>a</sup> | 10,240 <sup>a</sup> | 12,000 <sup>a</sup> | 12,500 <sup>a</sup> | 14,400 <sup>a</sup> |                   |
| 15,000 <sup>a</sup> | 18,000 <sup>a</sup> | 20,000 <sup>a</sup> | 20,480 <sup>a</sup> | 25,000 <sup>a</sup> | 30,000 <sup>a</sup> |                     |                   |

\*Contact Customer Service for High Temperature Option.

<sup>a</sup>High 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.

### MOUNTING

- 23A NEMA 23 - 0.250" coupling
- 23B NEMA 23 - 0.375" coupling
- 23C NEMA 23 - 6 mm coupling
- 34A NEMA 34 - 0.250" coupling
- 34B NEMA 34 - 0.375" coupling
- 34C NEMA 34 - 6 mm coupling

### NOTES:

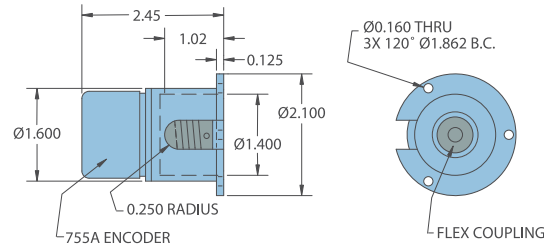
- 0° to 85° C for certain resolutions, see CPR Options.
- Contact Customer Service for index gating options.
- 24 VDC max for high temperature option.
- Standard temperature, 60 to 3000 CPR only.
- H5 and P5 outputs are not available with CE option.
- Standard cable lengths only. For details, please refer to **Technical Bulletin TB 116: Noise and Signal Considerations**, at [www.encoder.com](http://www.encoder.com).
- For mating connectors, cables, and cordsets see **Encoder Accessories** on page 102 or visit [www.encoder.com](http://www.encoder.com). For Pin Configuration Diagrams, see page 107 or visit [www.encoder.com](http://www.encoder.com).
- For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: S/6 = 6 feet of cable.
- 5-pin not available with Line Driver (HV, H5) outputs. Additional cable lengths available. Please consult Customer Service.
- Please refer to **Technical Bulletin TB100: When to Choose the CE Option**.

## MODEL 755A NEMA SPECIFICATIONS

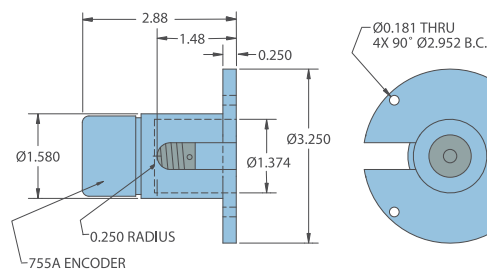
### Electrical

|                        |   |
|------------------------|---|
| Input Voltage.....     | 4.75 to 28 VDC max for temperatures up to 70° C<br>4.75 to 24 VDC for temperatures between 70° C to 100° C  |
| Input Current .....    | 100 mA max with no output load  |
| Input Ripple.....      | 100 mV peak-to-peak at 0-100 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 <i>Waveform Diagrams</i> .   |
| Output Types.....      | Open Collector- 100 mA max per channel<br>Pull-Up- 100 mA max per channel<br>Push-Pull- 20 mA max per channel<br>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 <i>Waveform Diagrams</i> .   |
| Max Frequency .....    | Up to 1 MHz.  |
| Noise Immunity.....    | Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; 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<br>6001 to 20,480 CPR: 180° (±36°) electrical at 100 kHz output   |
| Quad Phasing.....      | 1 to 6000 CPR: 90° (±22.5°) electrical at 100 kHz output<br>6001 to 20,480 CPR: 90° (±36°)  |
| Min Edge Sep.....      | 1 to 6000 CPR: 67.5° electrical at 100 kHz output<br>6001 to 20,480 CPR: 54° electrical<br>>20,480 CPR: 50° electrical  |
| Rise Time.....         | Less than 1 microsecond   |
| Accuracy.....          | Instrument and Quadrature Error:<br>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) |
| <b>Mechanical</b>      |   |
| Max Shaft Speed.....   | 7500 RPM. Higher shaft speeds may be achievable, contact Customer Service.  |
| Starting Torque .....  | 0.14 oz-in typical<br>4.0 oz-in typical for -40° C operation  |
| Moment of Inertia ...  | 2.8 x 10 <sup>-4</sup> oz-in-sec <sup>2</sup>   |
| Max Acceleration ..... | 1 x 10 <sup>5</sup> rad/sec <sup>2</sup>  |
| Housing .....          | Black non-corrosive finish  |
| Bearings.....          | Precision ABEC ball bearings  |
| Weight.....            | 4.50 oz typical on NEMA 23<br>6.75 oz typical on NEMA 34  |
| <b>Environmental</b>   |   |
| Storage Temp .....     | -25° to +85° C  |
| Humidity.....          | 98% RH non-condensing   |
| Vibration.....         | 10 g @ 58 to 500 Hz   |
| Shock.....             | 50 g @ 11 ms duration   |

## MODEL 755A SIZE 23 NEMA MOUNT (23A, 23B, 23C)



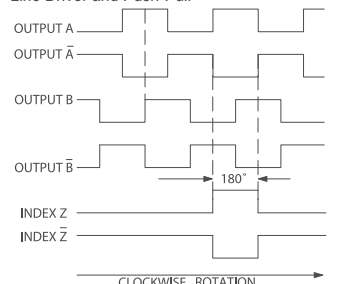
## MODEL 755A SIZE 34 NEMA MOUNT (34A, 34B, 34C)



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

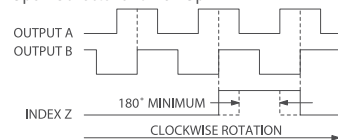
### WAVEFORM DIAGRAMS

#### 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

| Function | Cable†<br>Wire Color | Terminal<br>Block | 8-pin<br>Molex | 5-pin<br>M12** | 8-pin<br>M12** |
|----------|----------------------|-------------------|----------------|----------------|----------------|
| Com      | Black                | 7                 | 2              | 3              | 7              |
| +VDC     | White                | 8                 | 1              | 1              | 2              |
| A        | Brown                | 1                 | 8              | 4              | 1              |
| A'       | Yellow               | 2                 | 7              | --             | 3              |
| B        | Red                  | 3                 | 4              | 2              | 4              |
| B'       | Green                | 4                 | 3              | --             | 5              |
| Z        | Orange               | 6                 | 6              | 5              | 6              |
| Z'       | Blue                 | 5                 | 5              | --             | 8              |
| Shield   | Bare*                | --                | --             | --             | --             |

\*CE Option: Cable shield (bare wire) is connected to internal case.

\*\*CE Option: Read Technical Bulletin TB111. Available at [www.encoder.com](http://www.encoder.com).

†Standard cable is 24 AWG conductors with foil and braid shield.