The E15 with Integral Shaft Coupling is designed for convenient motor installation. It mounts on industry standard bolt circle patterns and is available to accommodate a choice of shaft sizes.

The Series E15 includes precision bearings and an O-ring seal and accommodates a 1/4” or 3/8” diameter stainless steel shaft.

Series E15 incorporates the latest in micro-electronic packaging, LED light sources, and matched sensors. Outputs are designed to be compatible with most 5V TTL circuits with options for higher voltage 12 and 15 VDC. Shielded cable is standard. Line drivers with complementary outputs are available for longer cable runs and/or higher ambient electrical noise immunity.

Typical Applications
- Motor-mounted feedback
- Industrial equipment
- Assembly machinery
- Robotics

Mechanical and Environmental Features
- Durable metal housing
- O-ring housing seal
- Accommodates rugged 1/4” or 3/8” diameter stainless steel shafts
- Up to 5000 RPM

Electrical Features
- Up to 1024 pulses per revolution including an optional marker pulse
- Higher electronic operating speed up to 100 kHz (index to 50 kHz)
- LED light source and matched sensors
- Choice of 5, 12, or 15 VDC units
- Shielded cable and line driver available for higher electrical noise immunity

SPECIFICATIONS

Electrical
- Code: Incremental
- Resolution: 100 to 1024 PPR (pulses/revolution)
- Format: Two channel quadrature (AB) with optional Index (Z) outputs
- Phase Sense: A leads B for CW shaft rotation as viewed from the shaft end of the encoder; Reverse phasing available, see Ordering Information
- Accuracy: ±3 x (360° / PPR) or ±2.5 arc-min worst case pulse to any other pulse, whichever is less
- Quadrature Phasing: 90° ± 36° electrical
- Symmetry: 180° ± 18° electrical
- Index: 360° ± 90° electrical
- Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

Input Power:
- TTL: 5 VDC ± 5% at 135 mA max.; Line Driver: 5 VDC ± 5% at 210 mA max.; CMOS: 12 or 15 VDC ± 10% at 100 mA max.; not including output loads

Outputs:
- 5 VDC TTL: Logic “1” V_{OH}: 2.5 V min. at 10 TTL gate load or 10 mA source; Logic “0” V_{OL}: 0.4 V max. at 20 mA sink
- 5 VDC Line Driver: 75158 or equivalent, 40 mA sink and source
- 12 or 15 VDC CMOS: Logic “1” V_{OH}: Vcc–1.5V min. at 200 Ω load or 10 mA source; Logic “0” V_{OL}: 0.4 V max. at 20 mA sink

Frequency Response: 100 kHz min. data channels; 50 kHz min. Index channel

Mechanical
- Bearing Life: (16 x 10^6 / RPM) hours min.
- Shaft Speed: 5,000 RPM max.
- Starting Torque: 0.1 oz-in max. at 25 °C
- Running Torque: 0.8 oz-in max. at 25 °C
- Moment of Inertia: 4.5 x 10^–5 oz-in–sec^2
- Weight: 3.0 oz. max.

Environmental
- Operating Temperature: 0 to +70 °C
- Storage Temperature: –25 to +70 °C
- Humidity: to 98% without condensation
- Enclosure Rating: NEMA12/IP54 (dirt tight, splashproof)
### Approximate Dimensions (inches/mm)

**E15 for NEMA Size 23 Motors**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>1.376 in (35 mm)</td>
</tr>
<tr>
<td>Diameter</td>
<td>2.10 in (53.3 mm)</td>
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<tr>
<td>Diameter</td>
<td>1.00 in (25.4 mm)</td>
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<tr>
<td>Diameter</td>
<td>.75/19.1 mm</td>
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</table>

**E15 for NEMA Size 34 Motors**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>1.50 in (38.1 mm)</td>
</tr>
<tr>
<td>Diameter</td>
<td>1.25 in (31.8 mm)</td>
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<tr>
<td>Diameter</td>
<td>.187 in (4.8 mm)</td>
</tr>
<tr>
<td>Diameter</td>
<td>.4 in (10.2 mm)</td>
</tr>
</tbody>
</table>

### Electrical Connections

<table>
<thead>
<tr>
<th>Wire Color Code</th>
<th>Power Source</th>
<th>Signal A</th>
<th>Signal B (if used)</th>
<th>Signal Z (if used)</th>
<th>No Connection</th>
<th>Floating</th>
<th>Floating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Power Source</td>
<td>Signal A</td>
<td>Signal B (if used)</td>
<td>Signal Z (if used)</td>
<td>No Connection</td>
<td>Floating</td>
<td>Floating</td>
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<tr>
<td>Black</td>
<td>Common</td>
<td>Signal A</td>
<td>Signal B</td>
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<tr>
<td>White</td>
<td>Signal A</td>
<td>Signal A</td>
<td>Signal B</td>
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<tr>
<td>Green</td>
<td>Signal B</td>
<td>Signal A</td>
<td>Signal B</td>
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<tr>
<td>Orange</td>
<td>Signal Z</td>
<td>No Connection</td>
<td>Signal B</td>
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<tr>
<td>Blue</td>
<td>No Connection</td>
<td>No Connection</td>
<td>Signal A</td>
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</tbody>
</table>

### Field Installed Kit:

Field installed kits are available by ordering either Model No. E15-N1 (integral housing and mounting hardware for NEMA size 23 motors) or Model No. E15-N2 (integral housing & mounting hardware for NEMA size 34 motors), and the appropriate coupling listed in the table above.

### Ordering Information

<table>
<thead>
<tr>
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<tbody>
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<td>E15</td>
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<tr>
<td>E15 Size 15, with Integral Shaft Coupling</td>
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<td>0100</td>
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### Flange Adapter Ordering Codes

<table>
<thead>
<tr>
<th>Factory Option Code</th>
<th>Motor Frame Size</th>
<th>Motor Shaft Diameter</th>
<th>Model No. of Coupling Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>23</td>
<td>1/4&quot;</td>
<td>CPL01000250</td>
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<tr>
<td>B</td>
<td>23</td>
<td>3/8&quot;</td>
<td>CPL01000250</td>
</tr>
<tr>
<td>C</td>
<td>34</td>
<td>3/8&quot;</td>
<td>CPL01000250</td>
</tr>
</tbody>
</table>

Other couplings available; consult factory.

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### Dependencies

- **E15** includes the model number with code numbers from the table below:

  - **Code 1**: Model
  - **Code 2**: Pulses/Rev
  - **Code 3**: Mechanical
  - **Code 4**: Output
  - **Code 5**: Electrical
  - **Code 6**: Termination

- **E15** Size 15, with Integral Shaft Coupling

  - **Code 1**: E15
  - **Code 2**: 0100
  - **Code 3**: A
  - **Code 4**: 0
  - **Code 5**: 0
  - **Code 6**: 0

  - NEMA Size 23 Flange Mount with 1/4" Motor Shaft Coupling

- **E15** Size 15, with Integral Shaft Coupling

  - **Code 1**: E15
  - **Code 2**: 0200
  - **Code 3**: A
  - **Code 4**: 0
  - **Code 5**: 0
  - **Code 6**: 0

  - NEMA Size 23 Flange Mount with 3/8" Motor Shaft Coupling

- **E15** Size 15, with Integral Shaft Coupling

  - **Code 1**: E15
  - **Code 2**: 0250
  - **Code 3**: A
  - **Code 4**: 0
  - **Code 5**: 0
  - **Code 6**: 0

  - NEMA Size 23 Flange Mount with 1/4" Motor Shaft Coupling

- **E15** Size 15, with Integral Shaft Coupling

  - **Code 1**: E15
  - **Code 2**: 0360
  - **Code 3**: A
  - **Code 4**: 0
  - **Code 5**: 0
  - **Code 6**: 0

  - NEMA Size 23 Flange Mount with 3/8" Motor Shaft Coupling