Series 600 Optical Rotary Encoder

Monthly Update: Jun.6.2015

For more information about this product, visit our website at: www.potentiometers.com

**Description**

The series 600 controls are manually-operated, rotary, optical encoders that output two square waves in quadrature at a rate of 128 pulses per channel per revolution as a standard, with other resolutions down to 10 pulses available.

The outputs are TTL compatible. The variation by construction is the terminal configuration, with one model having 4 cable leads, and the other model having 4 pin leads and internal resistors.

**Features**

- **Long Life - 10 million revolutions minimum (contactless)**
- **Cost effective - Elimination of A/D converters**
- **Rugged - Stainless-steel shafts and nickel-plated bushings in various lengths**
- **Stability - -40°C to +65°C operating temperature.**
- **Variability - Cable and printed circuit terminations available**

**Electrical Specifications**

*Input Power*

5 volts DC ±5% @ 30ma maximum plus external requirements.

*Output Rate*

128 pulses/revolution per channel, standard. Other pulses/revolution between 10 and 180 are available

*Channels*

Two separate output channels in quadrature, 90° ±45°

*Output Voltage*

High level voltage - 2.4 volts min. with 10Kohms load to ground.

Low level voltage - 0.4 volt max.

**Mechanical Specifications**

*Shaft Rotation*

Continuous in either direction

*Body Size*

(Single module) .5 in (12.70 mm) square ±.031 in (.790 mm), except at standoffs

*Operating Speed*

300 rpm maximum

*Rotational Life*

10 million revolution minimum

*Rotational Torque*

1.5 oz. in. minimum.

Other torque ranges available.

*Shaft*

1/4 in.(6.35 mm) dia. standard

1/8 in.(3.175 mm) dia. available, stainless steel

*Bushing*

3/8 in.(9.53 mm) dia. standard

1/4 in.(6.35 mm) dia. available, brass, nickel-plated

*Shaft End Play*

.005 in. (.127 mm) max.

*Shaft Radial Play*

.010 in. (.254 mm) max @ 1 in. (25.4 mm) FMS with 3/8 in. (9.53mm) long bushing

*Axial Force*

15 lb. minimum push or pull force applied to shaft end.

*Terminals*

PC Type: .025 in. (0.635mm) by .012 in. (0.305mm) thick brass, gold plated to facilitate soldering.

Cable Type: Four lead ribbon cable, color-coded, with .050 in. (1.27mm) spacing, 28 AWG.

*Strength:*

Terminals withstand 2 lb. push or pull and a 90° bend.

Mechanical Specifications continued on next page
Operational Specifications

Storage Temperature
-55°C to +110°C.

Operating Temperature
-40°C to +65°C.

Humidity
85% RH @ 40°C, 240 hours

Vibration
10 to 2000 Hz., 15G peak MIL-STD-202; method 204, test C

Shock
100G @ 6 MS per MIL-STD-202; method 213, condition I
**Series 600 - Standard Stock Options**

**Stocked Part Numbers**

- 600EN-128-B66: PC Terminals Type B-66
- 600EN-128-C24: PC Terminals Type C-24
- 600EN-128-CBL: 7.5 in. (190.5mm) Long cable/lead
- 600EN-128-CNI: 7.5 in. (190.5mm) Long cable/connector

**Series 600 - How to Order**

Example: **600-E-N-128-B66**

<table>
<thead>
<tr>
<th>600</th>
<th>Series</th>
<th>Encoder</th>
<th>Shaft &amp; Bushing</th>
<th>128</th>
<th>Pulses</th>
<th>B66</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Shaft: 1/4&quot; dia. x 7/8&quot; FMS long (6.35mm x 22.23mm)</td>
<td></td>
<td>Number of pulses per Revolution</td>
<td>Terminal Configuration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bushing: 3/8&quot; dia. x 3/8&quot; long (9.53mm x 9.53mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**

1. "A" Cable length standard 7 1/2 in. ±1/2 in. (190.5mm ±12.70mm)
2. A AND B OUTPUTS ARE TTL COMPATIBLE ON ALL MODELS.

**CABLE CODE**

<table>
<thead>
<tr>
<th>COLOR</th>
<th>PIN #</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>1</td>
<td>5VDC ±5% @ 30mg MAX.</td>
</tr>
<tr>
<td>ORANGE</td>
<td>3</td>
<td>B CHANNEL</td>
</tr>
<tr>
<td>YELLOW</td>
<td>4</td>
<td>A CHANNEL</td>
</tr>
<tr>
<td>GREEN</td>
<td>5</td>
<td>GROUND</td>
</tr>
</tbody>
</table>

**NOTE 1**

- "A" ±.50"