**SERIES 62SG**
Compact / Cost Effective

**FEATURES**
- Just 0.3-inch behind panel depth
- Over 1 million rotational cycles
- 2-bit gray code output
- Quadrature coding
- Available in 16, 24 and 32 detent positions
- Optional integrated pushbutton
- Light pipe technology
- Cost competitive with mechanical encoders at higher volumes

**APPLICATIONS**
- Automotive
  - audio systems
  - navigation systems
- Medical
  - patient monitoring systems
- Test & Measurement
  - analyzers
  - oscilloscopes
- Audio & Video
  - consumer electronics
  - professional editing equipment

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Offset</th>
<th>Tolerance</th>
<th>Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear</td>
<td>± .025</td>
<td>[± 0.025]</td>
</tr>
<tr>
<td>Diameter</td>
<td>± .010</td>
<td>[± 0.010]</td>
</tr>
<tr>
<td>Angle</td>
<td>± 2.0°</td>
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</tr>
</tbody>
</table>

**OTHER TERMINATION OPTIONS**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAC - Right Angle Connector</td>
<td>.050&quot; Stripped Cable .050&quot; Pin Header</td>
</tr>
</tbody>
</table>

**SUGGESTED MOUNTING PANEL CUTOUT**

Unless otherwise specified, standard tolerances are:

- Linear ± .025
- Diameter ± .010
- Angle ± .02°
**SPECIFICATIONS**

**Environmental Specifications**
- **Operating Temperature:** -40°C to 85°C
- **Storage Temperature:** -40°C to 85°C
- **Humidity:** 96 hours @ 90-95% humidity @ 40°C

**Mechanical Vibration:**
- Harmonic motion with amplitude of 15g within a varied frequency of 10 to 2000 Hz for 12 hours

**Mechanical Shock:**
- Test 1: 100g for 6 ms half-sine wave with a velocity change of 12.3 ft/s.
- Test 2: 100g for 6 ms sawtooth wave with a velocity change of 9.7 ft/s.

**Rotary Electrical and Mechanical Specifications**
- **Operating Voltage:** 5.00 ± 0.25 Vdc
- **Supply Current:** 30 mA maximum
- **Logic Output Characteristics:**
  - **Logic High:** $V_{OH} = 3.0$ Vdc MIN at $V_{CC} = 4.75$ Vdc with 10 kΩ PULL-UP RESISTOR
  - **Logic Low:** $V_{OL} = 1.0$ Vdc MAX at $V_{CC} = 5.25$ Vdc with 10 kΩ PULL-UP RESISTOR
- **Output:** Open Collector Phototransistor
- **Optical Rise Time:** 30ms maximum
- **Optical Fall Time:** 30ms maximum

**Mechanical Life:** 1,000,000 cycles of operation. 1 cycle is a rotation through all positions and a full return

**Mounting Torque:** 15in-lbs. maximum

**Shaft Pushout Force:** 45 lbs. minimum

**Terminal Strength:** 15 lbs. cable pull out force minimum

**Solderability:** 95% free of pin holes & voids

**Pushbutton Electrical and Mechanical Specifications**
- **Rating:** 30 mA @ 5 Vdc
- **Contact Resistance:** <10 Ω (Compatible with CMOS or TTL)
- **Life:** 1 million actuations minimum
- **Contact Bounce:** <4 ms make, <10ms break
- **Actuation Force:** 5 = 550 ± 200 grams
- **9 = 1050 ± 200 grams
- **Shaft Travel:** .020 ± .008 inch

**Materials and Finishes**
- **Bushing:** Zamak 2
- **Shaft:** Zamak 2
- **Detent Ball:** 302 Stainless Steel
- **Detent Spring:** Music Wire
- **Retaining Ring:** 301 Stainless Steel
- **Code Housing:** Nylon 6/6 25% glass reinforced. Zytel FR-50
- **Light Pipe:** Lexan, GE
- **Code Rotor:** Delrin 100
- **Pushbutton Actuator:** Glass Reinforced nylon 6/6. Zytel 70G33L. UL 94
- **Pushbutton Dome:** 301 Stainless Steel
- **Printed Circuit Board:** NEMA Grade FR4, Double clad with copper, Plated with gold over nickel
- **Backplate:** 302 Stainless Steel
- **Connector (.050 center):** PA4.6 with tin/nickel plated phosphor bronze.

**Code Housing:**
- Available as standard P/N, for additional options, please contact Grayhill

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**Code Table:**

<table>
<thead>
<tr>
<th>Series</th>
<th>Style</th>
<th>Angle of Throw</th>
<th>Termination</th>
<th>Cable Length</th>
</tr>
</thead>
</table>
| 62SGXX-XX-XXXX | SG | 11 = 11.25° code change and 32 detent positions; 15 = 15° code change and 24 detent positions; 22 = 22.5° code change and 16 detent positions | C = .050 Center Ribbon Cable with connector, S = .050 Center Ribbon Cable with .100 stripped end, P = .050 Center Pin, RAC = Right Angle Connector, .050” centers | 020 = 2.00” Cable, 040 = 4.00” Cable, 060 = 6.00” Cable, leave blank if pinned | *Eliminate cable length if ordering “P” or “RAC” termination option

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