SERIES 62S
Compact 1/2” Package

FEATURES
• Compact Size
• Requires Minimal Behind Panel Space
• 1 Million Rotational Cycles for Low and Medium Torque, 1/2 Million for High
• 3 Million Rotations for Non-Detent Styles
• Optional Integral Pushbutton
• Choices of Cable Length and Terminations

APPLICATIONS
• Global Positioning/Driver Information Systems
• Medical Equipment

DIMENSIONS in inches (and millimeters)

Unless otherwise specified, standard tolerance is ±.010 (0.25)

CABLE LENGTH XXX.20 (XXX5.1)

CONNECTOR IS AMP P/N 215083-6 OR EQUIVALENT

SCALE 0.500

3/8-32 UNEF-2A THREAD

PINS ARE .016 SQUARE

SCALE 0.500

3/8-32 UNEF-2A THREAD

PINS ARE .016 SQUARE (0.41)
CIRCUITRY, TRUTH TABLE, AND WAVEFORM  
Standard Quadrature 2-Bit Code

**SPECIFICATIONS**

**Environmental Specifications**
- **Operating Temp. Range:** -40°C to 85°C
- **Storage Temp. Range:** -55°C to 100°C
- **Humidity:** 96 Hours at 90–95% humidity at 40°C–50°C
- **Mechanical Vibration:** Harmonic motion with amplitude of 15G’s, within a varied frequency of 10 to 2000 Hz
- **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:** 25mA max at 5.25Vdc
- **Output:** Open collector phototransistor, external pull up resistors are required
- **Output Code:** 2-Bit quadrature, channel A leads channel B by 90° electrically during clockwise rotation of the shaft
- **Logic Output Characteristics:**
  - Logic High shall be no less than 3.8 Vdc
  - Logic Low shall be no greater than 0.8Vdc
- **Minimum Sink Current:** 20mA
- **Power Consumption:** 132mW maximum (includes power in 2 pull-up resistors)

**Mechanical Life:**
- **Non-Detent:** 3 Million Cycles
- **Low & Medium:** 1 Million Cycles
- **High:** 1/2 Million Cycles
  - 1 cycle is a rotation through all positions and a full return

**AVERAGE ROTATIONAL TORQUE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>POSITION</th>
<th>LOW</th>
<th>MEDIUM</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1.00</td>
<td>1.85</td>
<td>2.75</td>
</tr>
<tr>
<td>12</td>
<td>1.00</td>
<td>1.70</td>
<td>2.50</td>
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<tr>
<td>16</td>
<td>1.40</td>
<td>2.35</td>
<td>3.40</td>
</tr>
<tr>
<td>20</td>
<td>1.35</td>
<td>2.05</td>
<td>2.80</td>
</tr>
<tr>
<td>24</td>
<td>1.25</td>
<td>1.95</td>
<td>2.70</td>
</tr>
</tbody>
</table>

Torque shall be within 50% of initial value throughout life
- **Mounting Torque:** 15 in-lbs maximum
- **Shaft Push-Out Force:** 45 lbs minimum
- **Shaft Pull-Out Force:** 45 lbs minimum
- **Terminal Strength:** 15 lbs minimum terminal pull-out force for cable or header termination
- **Solderability:** 95% free of pin holes and voids

**Pushbutton Electrical & Mechanical Specifications**
- **Rating:** 10 mA at 5 Vdc
- **Contact Resistance:** <10Ω
- **Contact Bounce:** <4 ms Make, <10 ms Break
- **Actuation Force:** 9-950±150 grams, 5-510±150 grams, 4-400±100 grams, 3-300±90 grams, 2-200±75 grams
- **Shaft Travel:** .025±.010 inch

**Materials and Finishes**
- **Bushing:** Zamak 2
- **Shaft:** Aluminum or Zamak 2
- **Retaining Ring:** Stainless steel
- **Pushbutton Actuator:** Zytel 70G33L
- **Detent Spring:** Music wire
- **Detent Ball:** Stainless steel

**OPTIONS**
- Contact Grayhill for custom terminations, shaft and bushing configurations, rotational torque pushbutton force, and code output.

**ORDERING INFORMATION**

- **Termination**
  - **C** = .050 Center Ribbon Cable with Connector
  - **S** = .050 Center Ribbon Cable with .100 Stripped End
  - **P** = .050 Center Pins with .130 Length
  - **CH** = .100 Center Ribbon Cable with Connector
  - **SH** = .100 Center Ribbon Cable with .100 Stripped End
  - **PH** = .100 Center Pins with .230 Length

- **Cable Length**
  - Cable Termination: 040=4.0in or 040in. Cable is terminated with Amp Connector P/N 3-640442-6
  - See AmpMateability Guide for mating connector details.

- **Pushbutton Option**
  - **N = Non-detent**
  - **L = Low Torque** (available with 0, 4, 5, 9 pushbutton only)
  - **M = Medium Torque** (available with 0, 5, 9 pushbutton only)
  - **H = High Torque** (available with 0, 9 pushbutton only)
  - **9 = 950 Grams**
  - **5 = 510 Grams**
  - **4 = 400 Grams**
  - **3 = 300 Grams**
  - **2 = 200 Grams**

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