

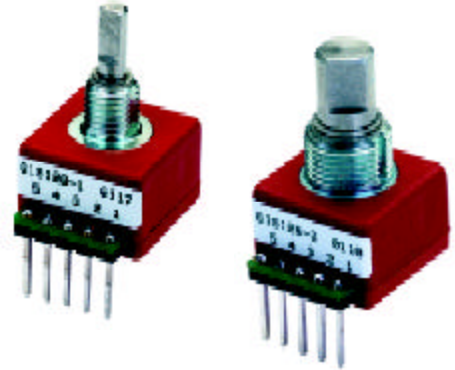
**SERIES 61S**  
High Resolution, 5/8" Package

**FEATURES**

- Compact, 5/8" Package
- .125" or .250" Shaft Diameter
- 10 Million Rotational Cycles
- Compatible with CMOS, TTL and HCMOS Logic
- Available in 50, 64, 75, 100 and 128 Quadrature Cycles per Revolution
- Choices of Cable Length and Terminations
- Drop-In Industry Replacement

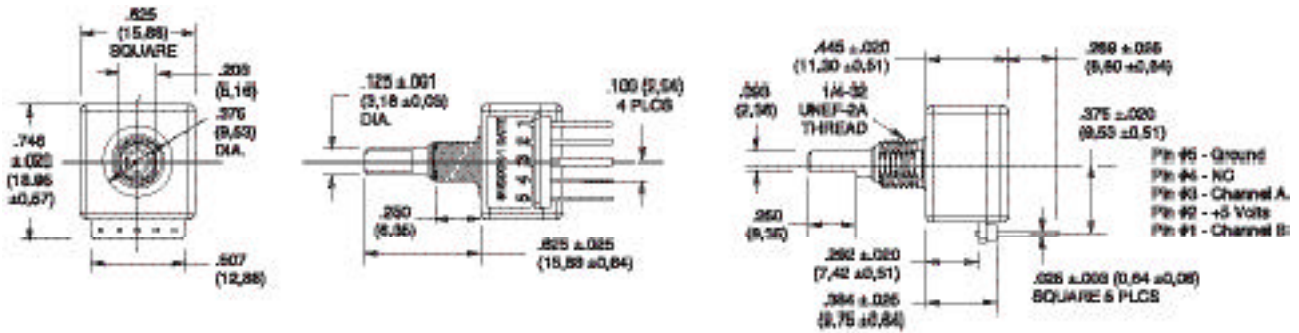
**APPLICATIONS**

- Audio Mixing Consoles
- Medical Equipment
- Test and Measurement Equipment

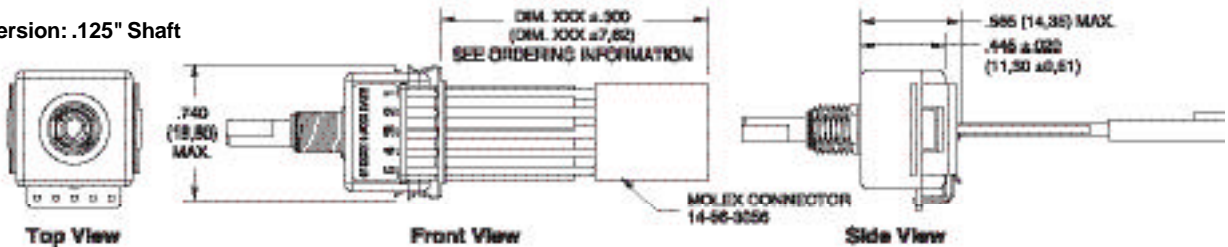


**DIMENSIONS** In inches (and millimeters)

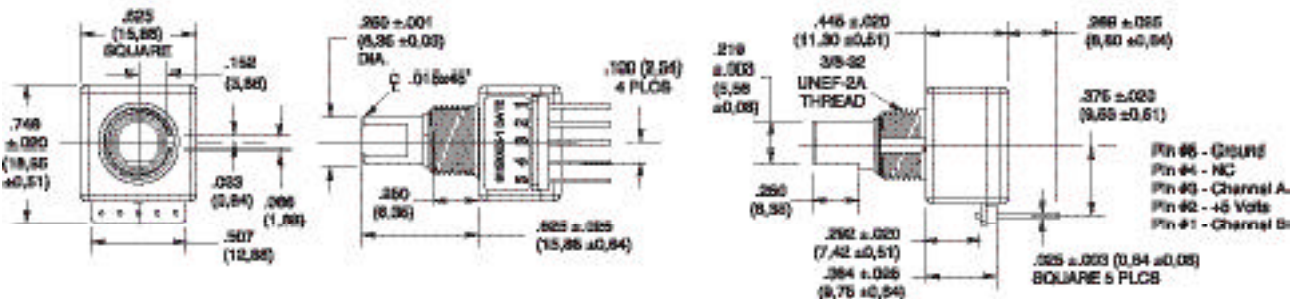
**Pin Version: .125" Shaft**



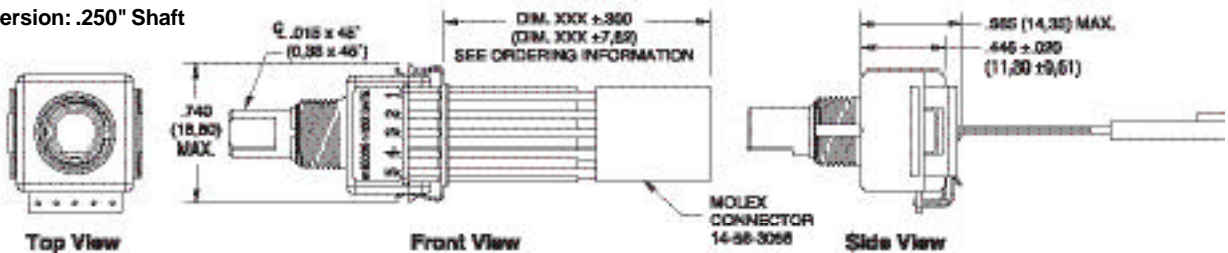
**Cable Version: .125" Shaft**



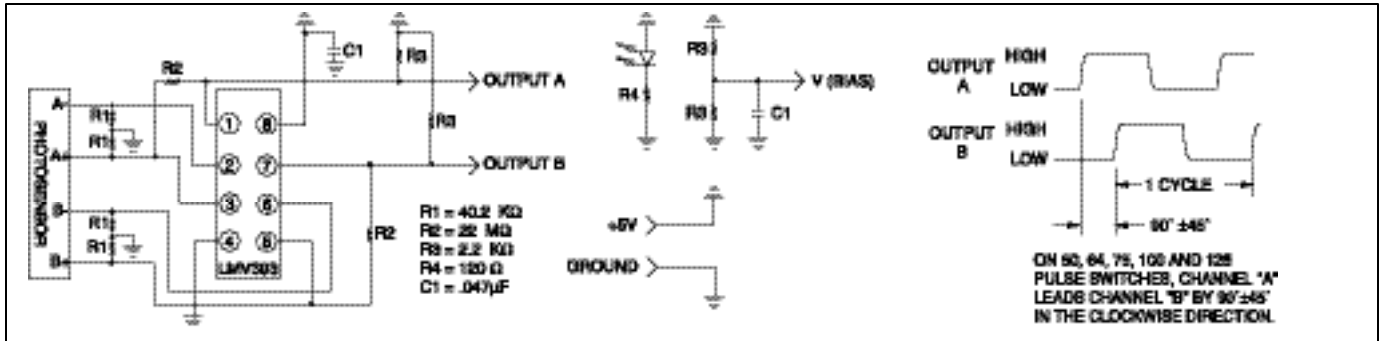
**Pin Version: .250" Shaft**



**Cable Version: .250" Shaft**



**CIRCUITRY AND WAVEFORM** Standard Quadrature 2-Bit Code



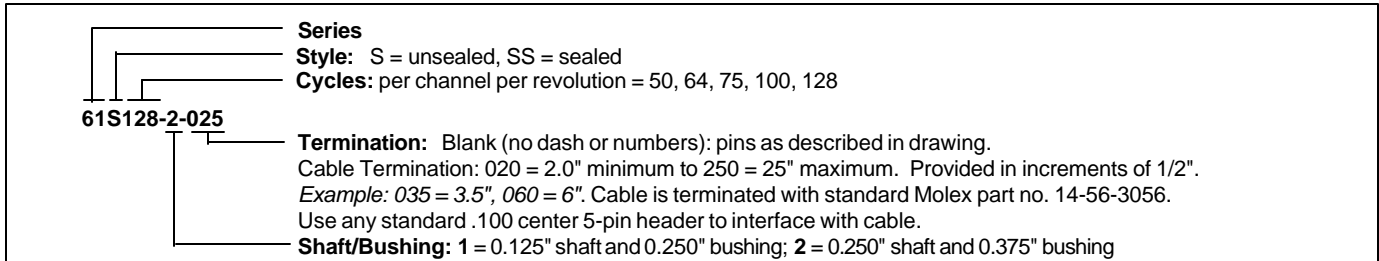
**SPECIFICATIONS**

**Electrical Ratings**  
**Operating Voltage:** 5.0 ± .25 Vdc  
**Supply Current:** 50 mA maximum at 5 Vdc  
**Logic Output Characteristics:**  
 Output Type: 2-bit gray code with channel A leading channel B by 90° ± 45° when the shaft is turned clockwise  
**Power Consumption:** 250 mW maximum  
**Rise/Fall Times:** (25" standard cable ASM/ 13.3 PF measurement probe)  
 Rise Time: 1.0 microseconds typical  
 Fall Time: .440 microseconds typical  
**Mechanical Ratings**  
**Mechanical Life:** 10 million revolutions  
**Mounting Torque:** 20 in-lbs maximum  
**Operating Torque:** 1.5 in-oz maximum  
**Push Out Force:** 50 lbs minimum

**Rotational Torque:** 1.5 in. oz. max.  
**Terminal Strength:** 5 lbs terminal pull-out force minimum (pinned version)  
**Environmental Ratings**  
**Operating Temperature Range:** -40°C to 85°C  
**Storage Temperature Range:** -55°C to 100°C  
**Relative Humidity:** 90-95% at 40°C for 96 hours  
**Vibration Resistance:** Harmonic motion with amplitude of 15g, within a varied 10 to 2000 Hz frequency for 12 hours per MIL-STD-202, Method 204  
**Mechanical Shock:** Test 1: 100g for 6 ms, half-sine wave with velocity change of 12.3 ft/s. Test 2: 100g for 6 ms, sawtooth wave with velocity change of 9.7 ft/s.  
**Materials and Finishes**  
**Bushing:** Zinc plated brass  
**Housing:** Nylon (Hiloy 610B)

**Shaft:** Stainless steel  
**Code Rotor:** Chemically etched stainless steel/ electroformed nickel  
**Printed Circuit Board:** NEMA Grade FR-4. Five microinches minimum gold over 100 microinches minimum nickel over copper  
**Backplate:** Nylon (Hiloy 610B)  
**Header:** Phosphor bronze, 200 microinches tin over 50 microinches nickel (pinned version)  
**Retaining Ring and Thrust Washers:** Stainless steel  
**Photo Sensor:** Planar silicon  
**Infrared Emitter:** Gallium aluminum arsenide  
**Cable:** 26 AWG, stranded/tinned wire, PVC coated on .100 (2,54) centers (cabled version)  
**Connector:**  
 Housing: glass-filled polyester 94V-0, black  
 Terminals: 15 microinches gold in select area over 50 microinches minimum

**ORDERING INFORMATION**



Available from your local Grayhill Component Distributor. For prices and discounts, contact a local Sales Office, an authorized local Distributor, or Grayhill.

**ACCESSORIES**

**Non-turn Washers**  
 The Series 61 S bushing has a non-turn keyway to prevent rotation of the switch body when the panel is cut to fit. Another way to keep the switch from turning is to use a nonturn washer.  
**Part Number 50J1066:** 302-2B stainless steel  
**Part number 12C1087-1:** cadmium-plated

**Part Number SHH694-11:** 302-2B stainless steel, no plating

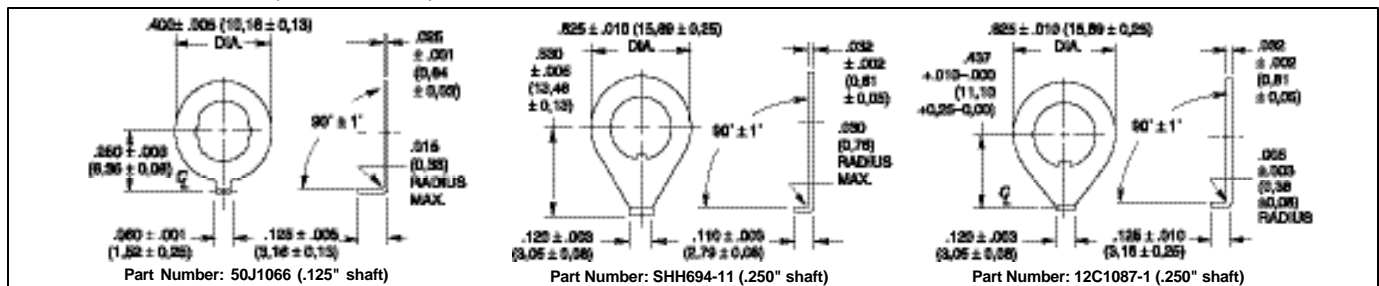
**Shaft and Panel Seal**  
 For shaft and panel seal version, the shaft is sealed by an o-ring inside the bushing. The panel is sealed by a flat gasket .045" thick at the base of the bushing. The panel seals will increase the behind panel dimension by .020"

to .040", when the switch is mounted. The panel seal is silicon rubber. The shaft seal is an o-ring per MIL-P-5516B.

**OPTIONS**

Contact Grayhill for custom terminations, shaft and bushing configurations, and resolutions. Control knobs are also available.

**DIMENSIONS** In inches (and millimeters)



Optical and Mechanical Encoders

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