Excellent Integrated System Limited

Stocking Distributor

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Grayhill, Inc.
61S64-1-060

For any questions, you can email us directly:
sales@integrated-circuit.com

Optical Encoders

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
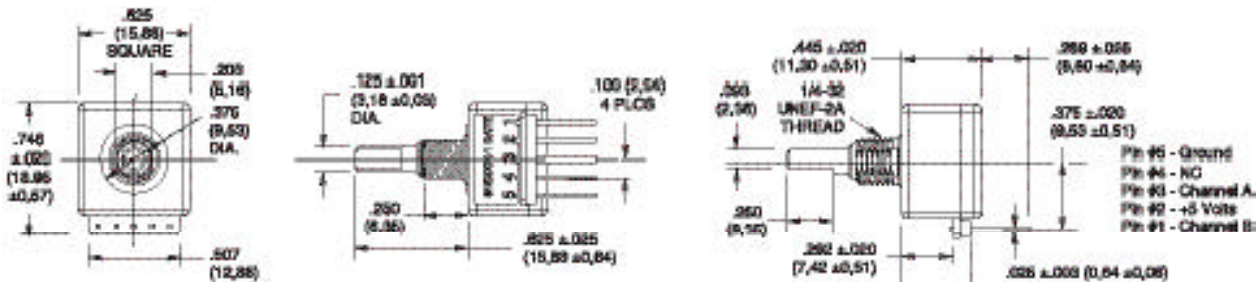- Drop-In Industry Replacement

APPLICATIONS
- Audio Mixing Consoles
- Medical Equipment
- Test and Measurement Equipment
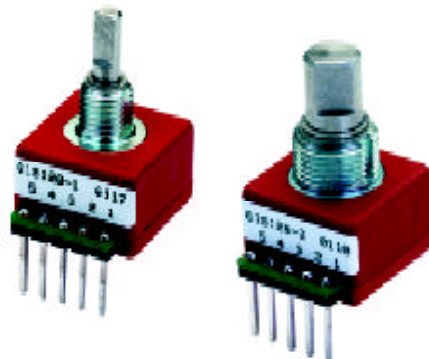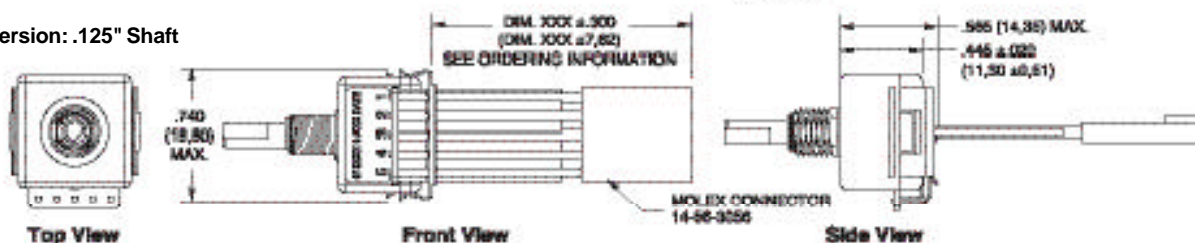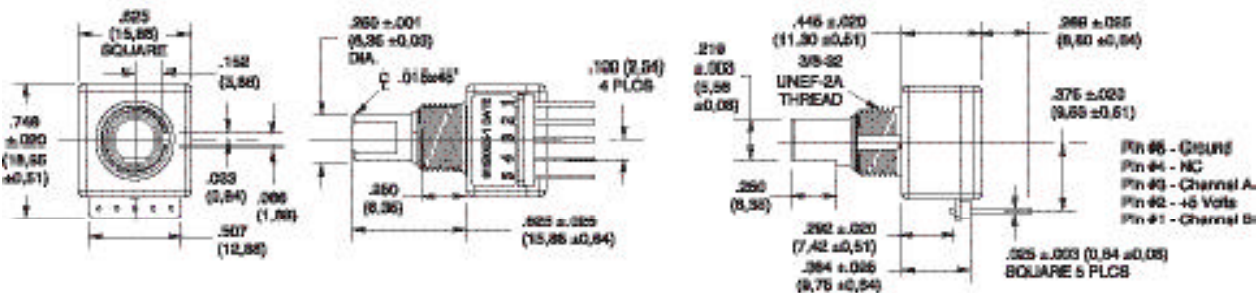
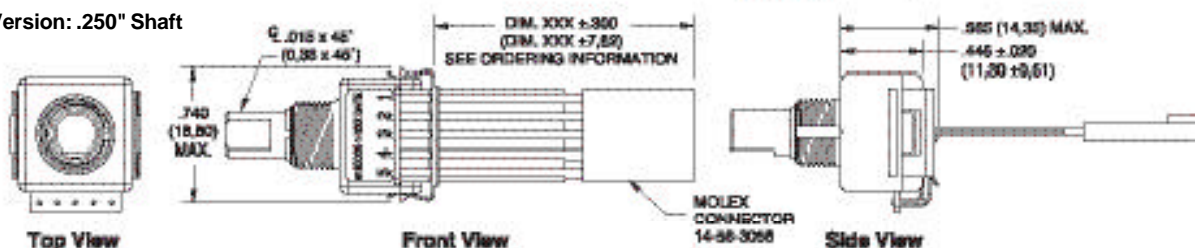### DIMENSIONS In inches (and millimeters)

Pin Version: .125" Shaft

Cable Version: .125" Shaft

Top View   Front View   Side View

Pin Version: .250" Shaft

Cable Version: .250" Shaft

Top View   Front View   Side View

Optical Encoders

CIRCUITRY AND WAVEFORM   Standard Quadrature 2-Bit Code

$R1 = 40.2\ K\Omega$
$R2 = 22\ M\Omega$
$R3 = 2.2\ K\Omega$
$R4 = 120\ \Omega$
$C1 = .047\mu F$

ON 50, 64, 75, 100 AND 128 PULSE SWITCHES, CHANNEL "A" LEADS CHANNEL "B" BY 90° ±45° IN THE CLOCKWISE DIRECTION.
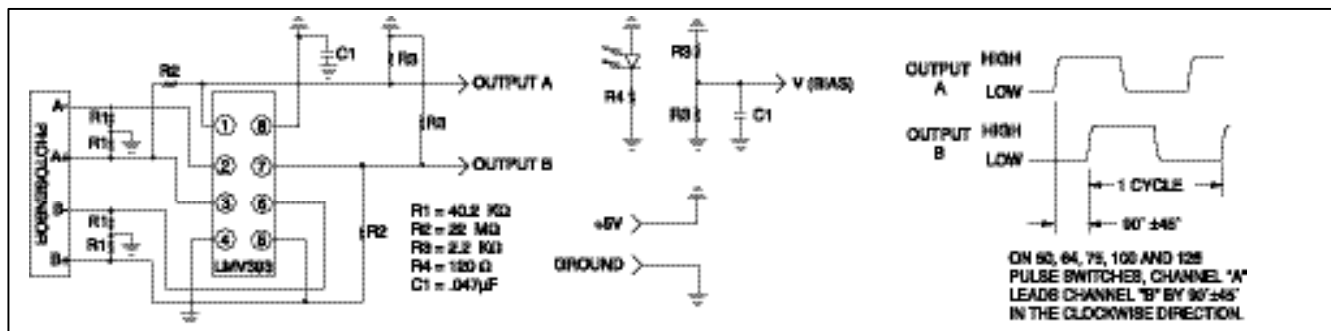
SPECIFICATIONS

Electrical Ratings
Operating Voltage: $5.0 \pm .25$ 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 $90° \pm 45°$ 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 **Shaft**
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

Series
Style: S = unsealed, SS = sealed
Cycles: per channel per revolution = 50, 64, 75, 100, 128

61S128-2-025

Termination: Blank (no dash or numbers): pins as described in drawing.
Cable Termination: 020 = 2.0" minimum to 250 = 25" maximum. Provided in increments of 1/2".
Example: 035 = 3.5", 060 = 6". Cable is terminated with standard Molex part no. 14-56-3056.
Use any standard .100 center 5-pin header to interface with cable.
Shaft/Bushing: **1** = 0.125" shaft and 0.250" bushing; **2** = 0.250" shaft and 0.375" bushing

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 61S 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: cadium-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)

Part Number: 50J1066 (.125" shaft)

Part Number: SHH694-11 (.250" shaft)

Part Number: 12C1087-1 (.250" shaft)