



Optical Encoders

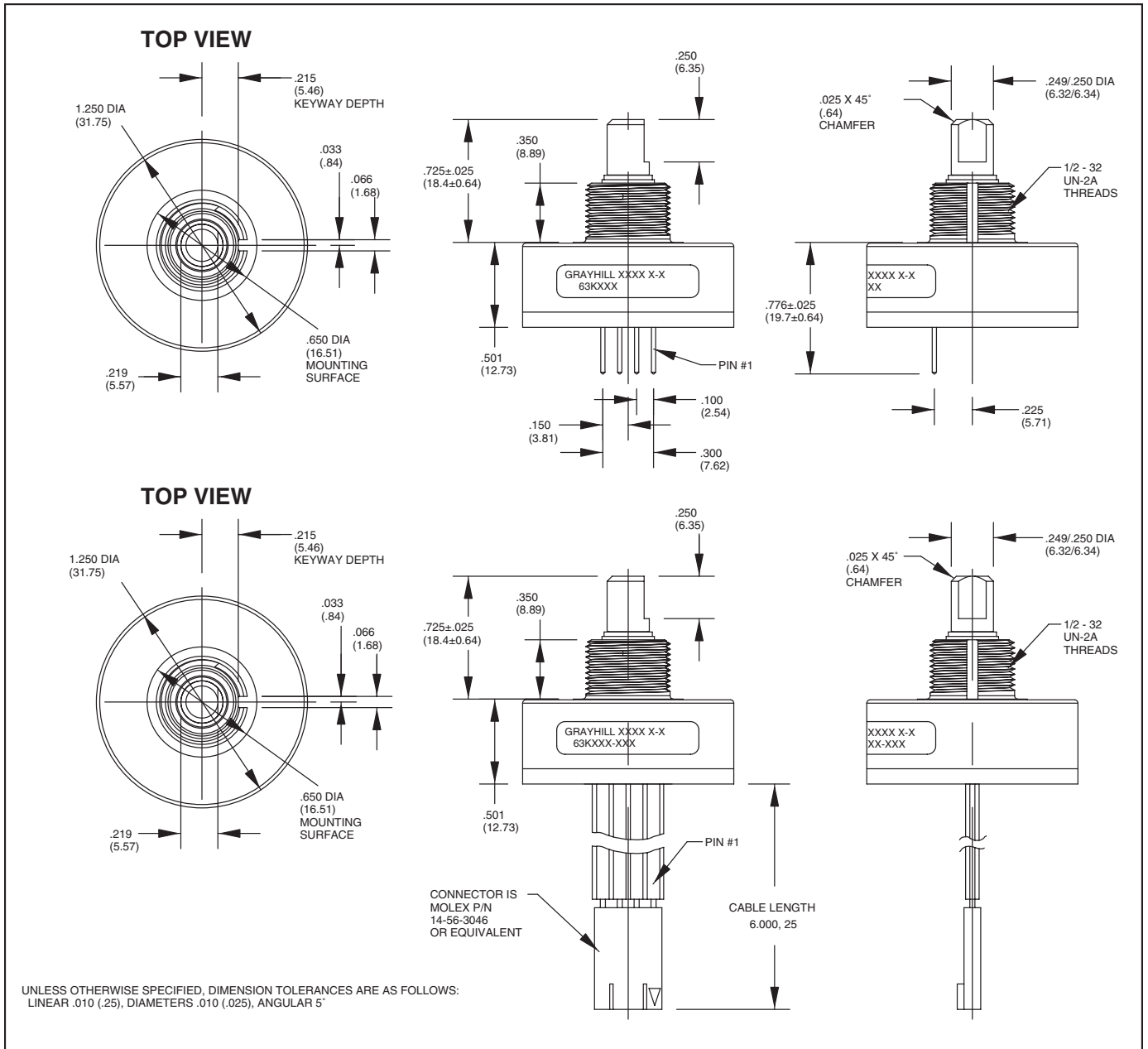
**SERIES 63K**  
**High Resolution, Ball Bearing,**  
**4-Pin**

**FEATURES**

- 25, 32, 50, 64, 100, 128 and 256 Cycles per Revolution Available
- Sealed Version Available
- Rugged Construction
- Cable or Pin Version
- 300 Million Rotational Cycles
- 5,000 RPM Shaft Rotation

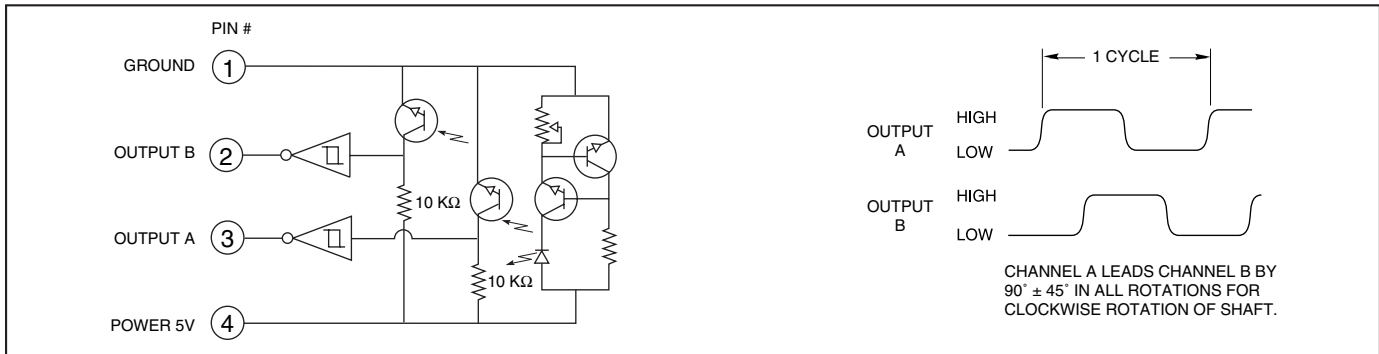


**DIMENSIONS** In inches (and millimeters)



Optical and Mechanical Encoders

### CIRCUITRY AND WAVEFORM: Standard Quadrature 2-Bit Code



### SPECIFICATIONS

#### Electrical Ratings

**Operating Voltage:** 5 ± .25 Vdc  
**Supply Current:** 30 mA maximum at 5 Vdc  
**Logic Output Characteristics:**  
 Output Type: Open collector with integrated Schmitt Trigger and 10 KW pull-up resistor  
 Maximum Sink Current: 16 mA at .40 volts  
**Power Consumption:** 150 mW maximum  
**Optical Rise Time:** 500 nS typical  
**Optical Fall Time:** 14 nS typical

#### Mechanical Ratings

**Mechanical Life:** 300 million revolutions  
**Time Life:** Guaranteed for 10 years of continuous operation (calculated from emitter degradation data)  
**Mounting Torque:** 20 in-lbs maximum  
**Terminal Strength:** 5 lbs terminal pull-out force minimum  
**Solderability:** 95% free of pin holes and voids  
**Externally Applied Shaft Force:**  
 Axial: 15 lbs maximum; Radial: 15 lbs maximum  
**Operating Torque:** 0.5 in-oz maximum (no detents) for unsealed versions

#### 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  
**Shock Resistance:** 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 diecast  
**Housing:** Zytel FR-50  
**Shaft:** Stainless steel insert molded into nylon rotor support  
**Code Rotor and Aperture:** Chemically etched stainless steel/electroformed nickel  
**Printed Circuit Board:** NEMA Grade FR-4. Five microinches minimum gold over 100 microinches minimum nickel over copper  
**Optical Barrier:** Polyphenylene sulfide, 94 V-0

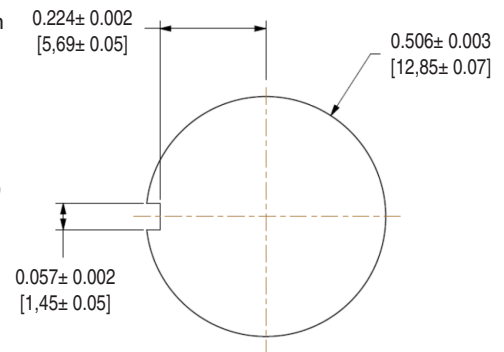
#### Backplate:

Polyester  
**Header:** Phosphor bronze, 200 microinches tin over 50 microinches nickel (pin version only)  
**Infrared Emitter:** Gallium aluminum arsenide  
**Photo IC:** Planar silicon  
**Retaining Ring:** Stainless steel  
**Cable:** 26 AWG, stranded/tinned wire, PVC coated on .100 (2,54) centers (cable version only)  
**Connector:** Glass-filled PCT, UL94V-0

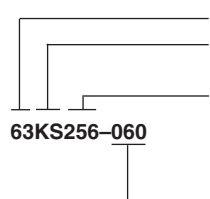
#### Bearing Subassembly

**Bearing:** NSK ABEC 5 (stainless steel)  
**Preload Collar:** 303 stainless steel

### RECOMMENDED PANEL CUTOUT



### ORDERING INFORMATION



**Series**  
**Style:** K = Standard, 4-pin, high resolution  
 KS = Sealed, 4-pin, high resolution  
**Cycles:** per channel per revolution = 25, 32, 50, 64, 100, 128, 256

**Termination:**  
 Blank (no dash or numbers): pins as described in drawing.  
**Cable Termination:** 060 = 6.0in. Cable is terminated with Molex Connector P/N 14-56-3046.

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



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