



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

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## SERIES 63K

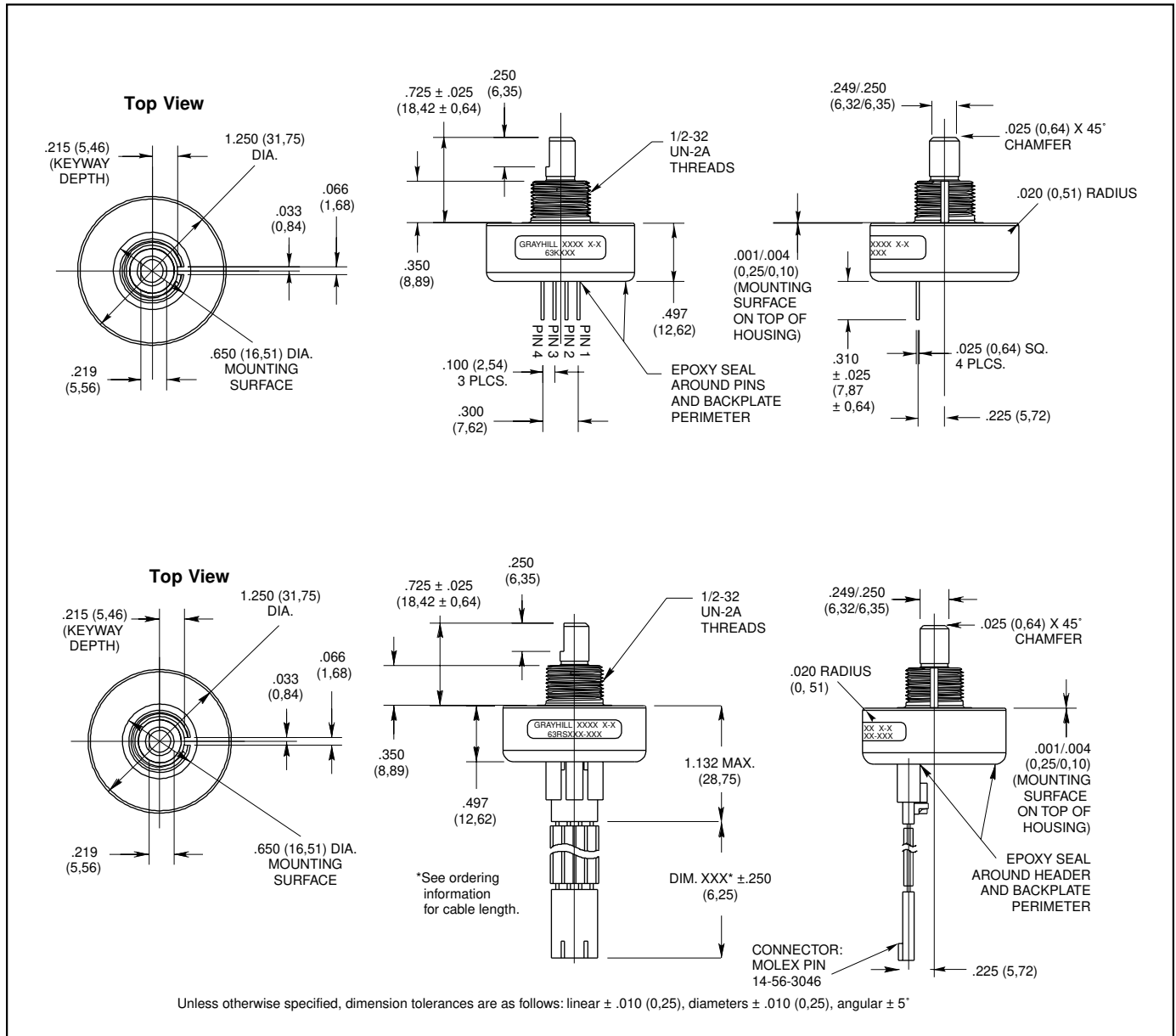
High Resolution, Ball Bearing,  
4-Pin

### FEATURES

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

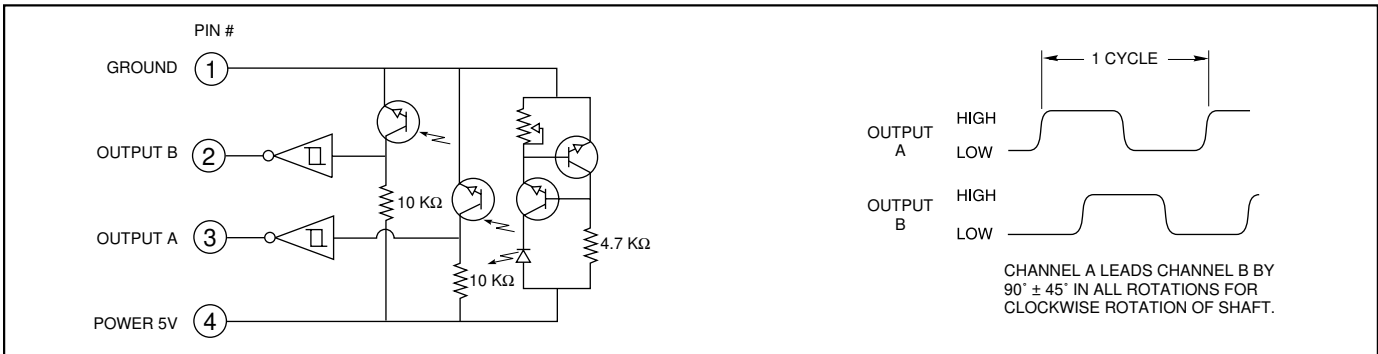


### DIMENSIONS In inches (and millimeters)



Optical and Mechanical Encoders



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

**SPECIFICATIONS**
**Electrical Ratings**
**Operating Voltage:** 5.0  $\pm$  .25 Vdc

**Supply Current:** 30 mA maximum at 5 Vdc

**Logic Output Characteristics:**

 Output Type: Open collector with integrated Schmitt Trigger and 10 K $\Omega$  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

**Operating Torque:** 0.5 in-oz maximum (no detents) for unsealed versions

**Externally Applied Shaft Force:** Axial: 15 lbs maximum; Radial: 15 lbs maximum

**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:** 6262-T9 aluminum alloy

**Housing:** Hiloy 610B

**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)

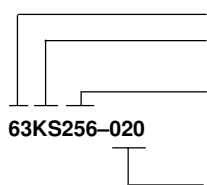
**Connector:** Glass-filled PCT, UL94V-0

**Bearing Subassembly**
**Bearing:** NSK ABEC 5 (stainless steel)

**Preload Collar:** 303 (stainless steel)

**Spacer:** 303 (stainless steel)

**Bellville Spring:** spring steel (stainless steel)

**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: 020 = 2.0 inches minimum to 250 = 25 inches maximum. Provided in increments of 1/2 inch. (Example 035 = 3.5", 060 = 6".) Cable is terminated with standard Molex part no. 14-56-3046. Use any standard .100 center 4-pin header to interface with cable. Recommended to be mounted with Molex header part no. 70543-0003 or 70553-0003.

Control knobs available, see page E-39.

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

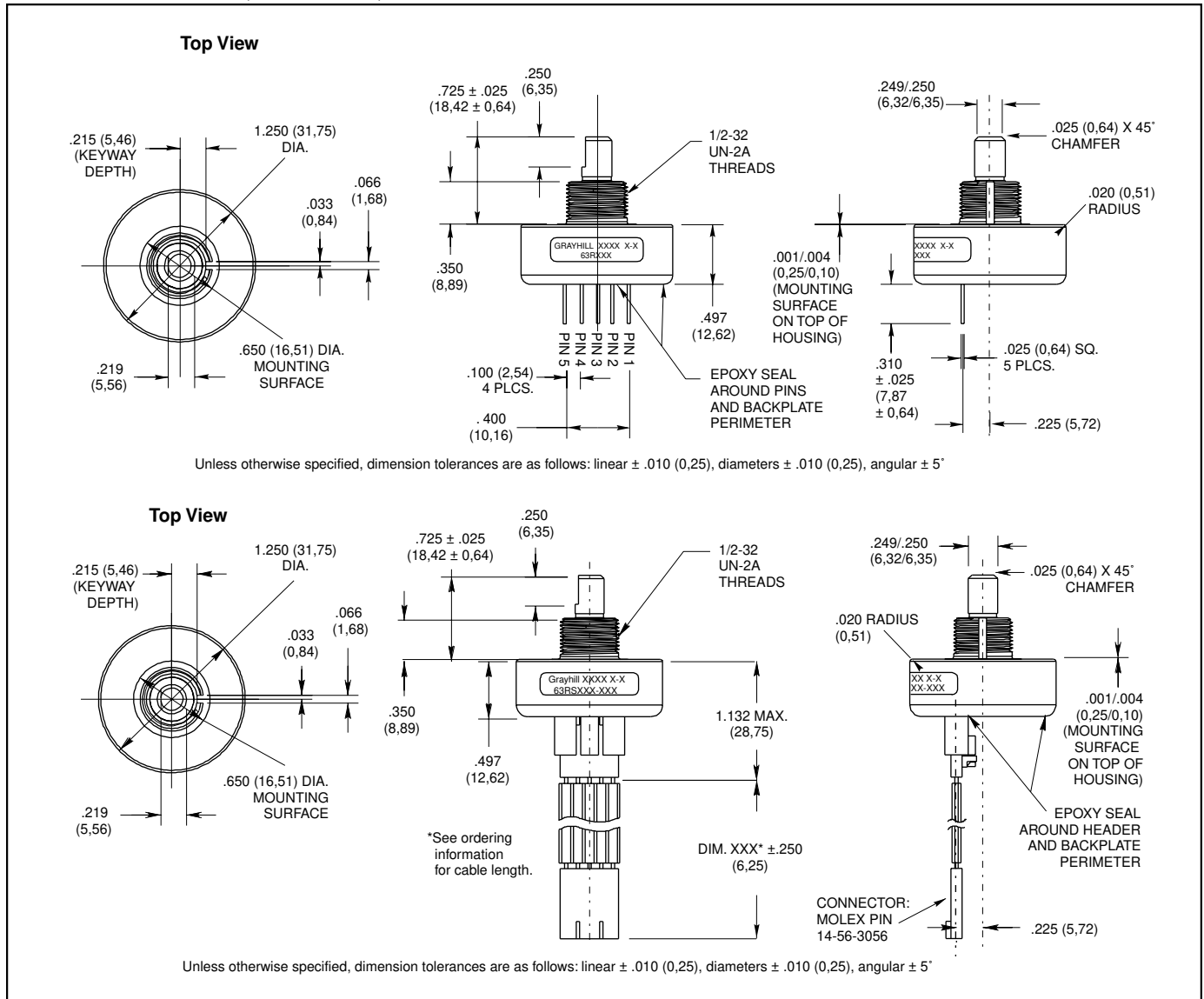
**SERIES 63R**  
**High Resolution, Ball Bearing,**  
**5-pin (Polarized Connection)**

**FEATURES**

- 25, 32, 50, 64, 100, 128 and 256 Cycles per Revolution Available
- Sealed Version Available
- Rugged Construction
- Cable or Pin Versions
- 300 Million Life Cycles
- 5000 RPM Shaft Rotation
- Index Pulse Available

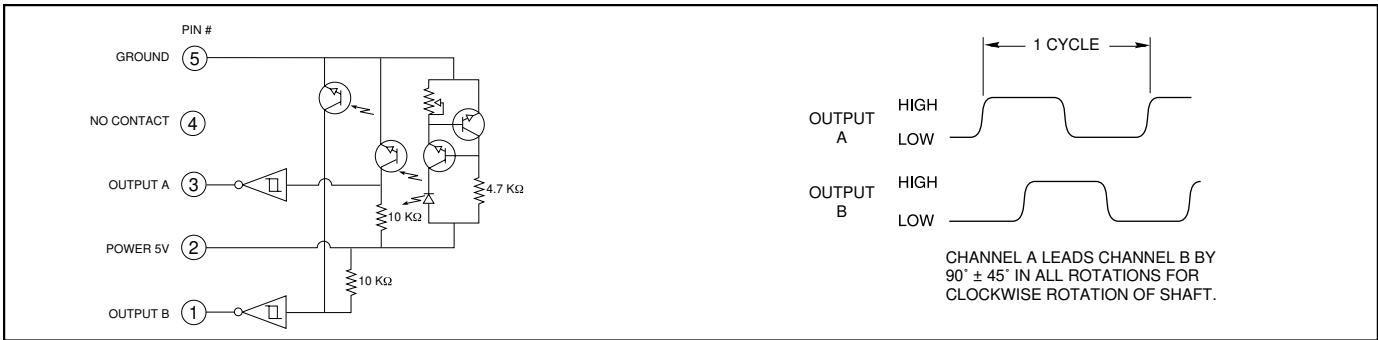


**DIMENSIONS** In Inches (and millimeters)



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**

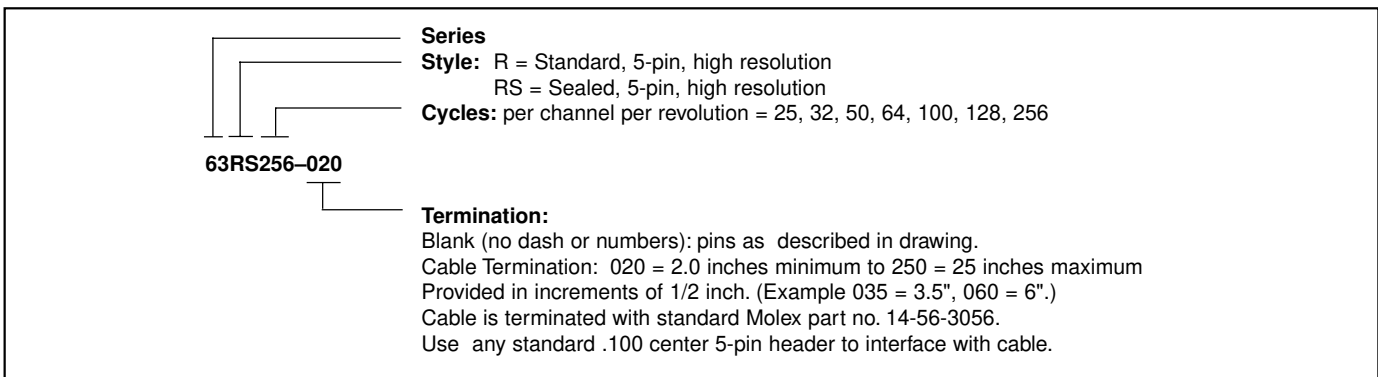
**Bushing:** 6262-T9 aluminum alloy  
**Housing:** Hiloy 610B  
**Shaft:** Stainless steel insert molded into nylon rotor support  
**Code Rotor and Aperture:** Chemically etched stainless steel/electroformed nickel  
**Printed Circuit Board:** NEMA Grade FR-4. Five microinches minimum gold over 100 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)  
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**Bearing:** NSK ABEC 5 (stainless steel)  
**Preload Collar:** 303 stainless steel  
**Spacer:** 303 stainless steel  
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