

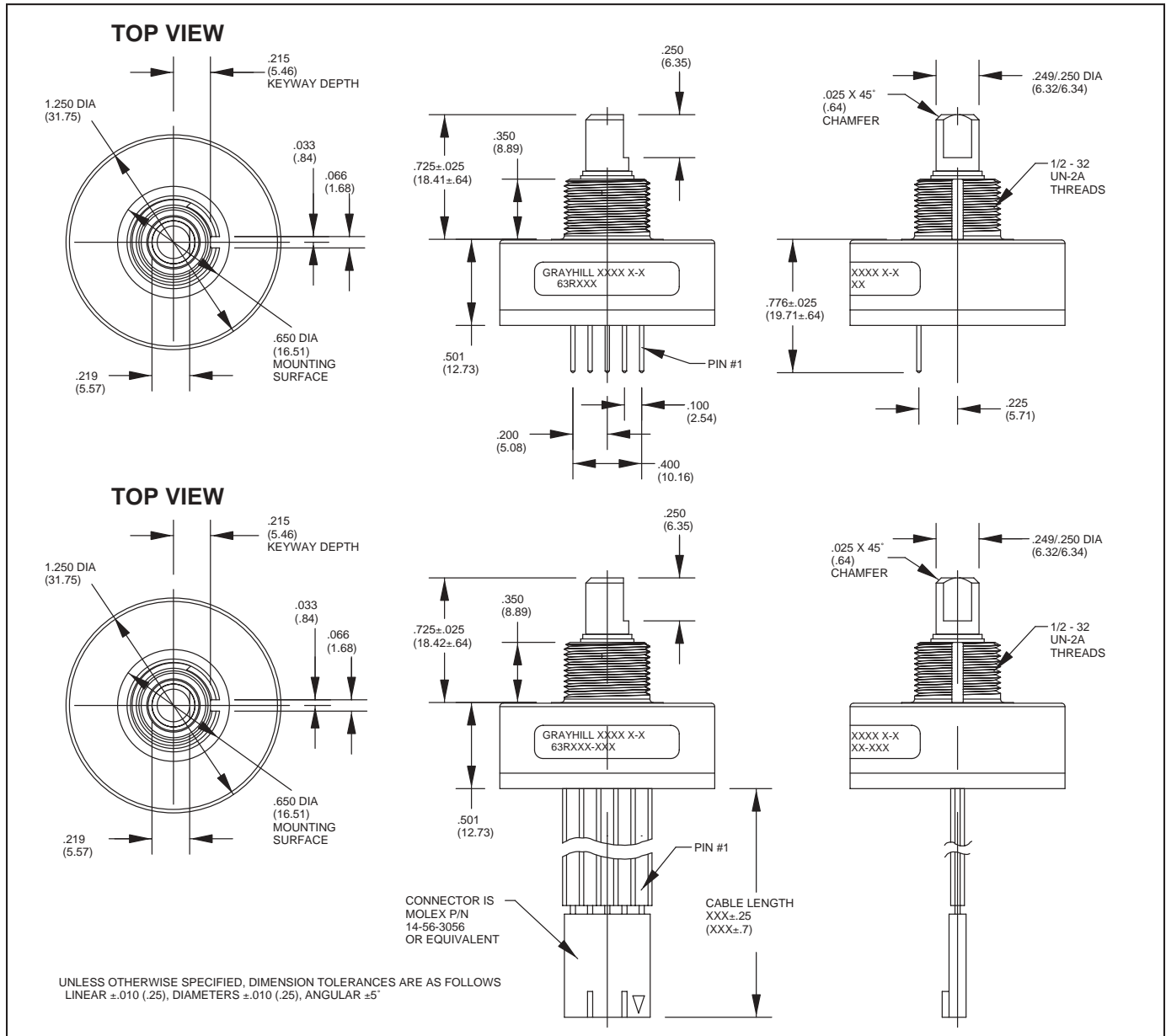
**SERIES 63R**  
**High Resolution, Ball Bearing,**  
**5-pin (Polarized Connection)**

**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

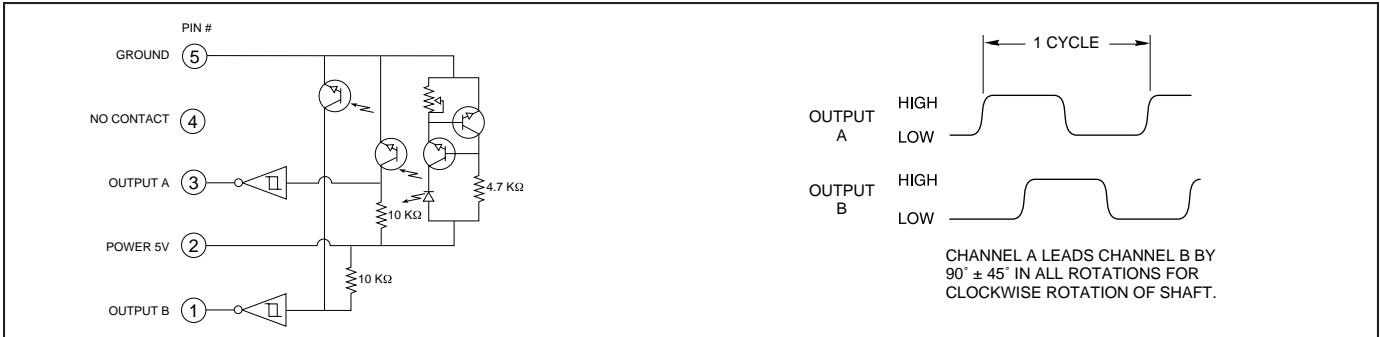


**DIMENSIONS** In Inches (and millimeters)



Optical and Mechanical Encoders

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



## SPECIFICATIONS

### Electrical Ratings

**Operating Voltage:**  $5 \pm .25$  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:**  $-40^\circ\text{C}$  to  $85^\circ\text{C}$

**Storage Temperature Range:**  $-55^\circ\text{C}$  to  $100^\circ\text{C}$

**Relative Humidity:** 90-95% at  $40^\circ\text{C}$  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 or zinc diecast

**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)

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

### Bearing Subassembly

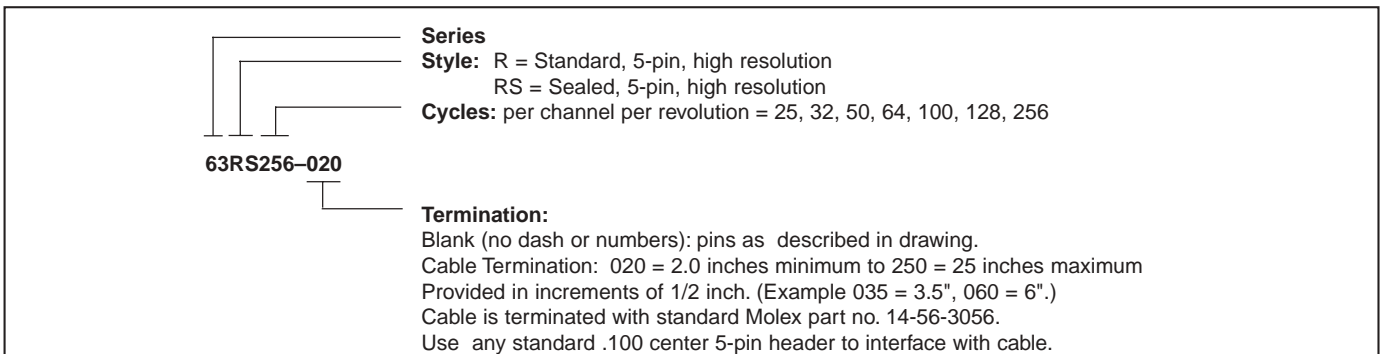
**Bearing:** NSK ABEC 5 (stainless steel)

**Preload Collar:** 303 stainless steel

**Spacer:** 303 stainless steel

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

## ORDERING INFORMATION



Control knobs available, see page I-57.

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