



## Optical Encoders

### SERIES 62R

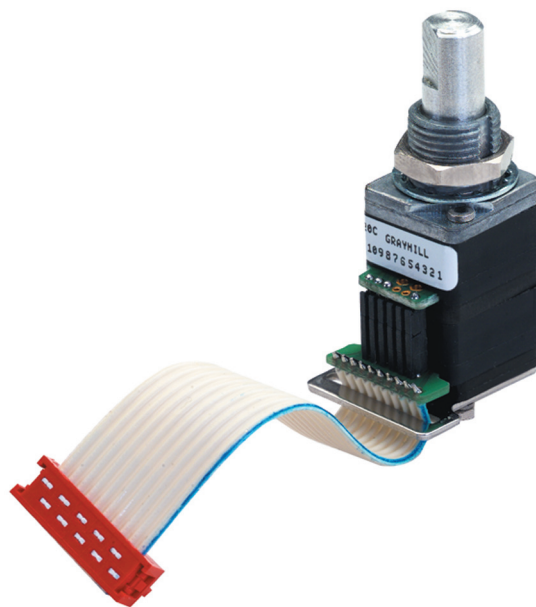
1/2" Package, Redundant Circuitry

#### FEATURES

- Redundant Circuitry
- 1 Million Rotational Cycles
- Compatible with CMOS, TTL and HCMOS Logic
- Optional Integral Pushbutton
- Available in 12, 16, and 24 Detent Positions
- Choices of Cable Length and Terminations
- Ideal for Critical Applications

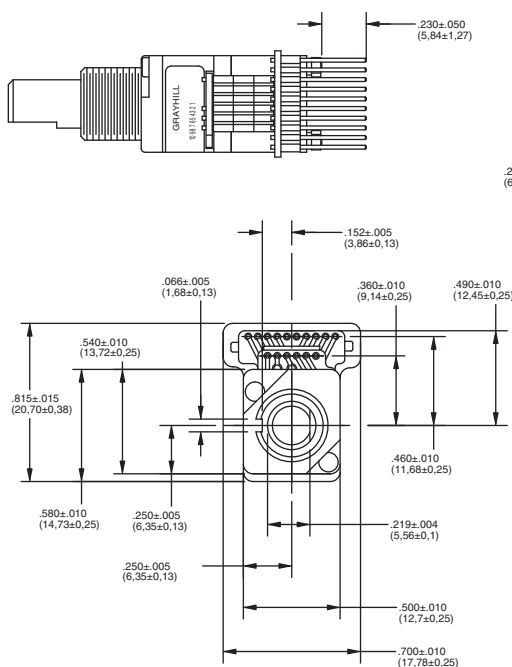
#### APPLICATIONS

- Cockpit Controls
- Medical Equipment

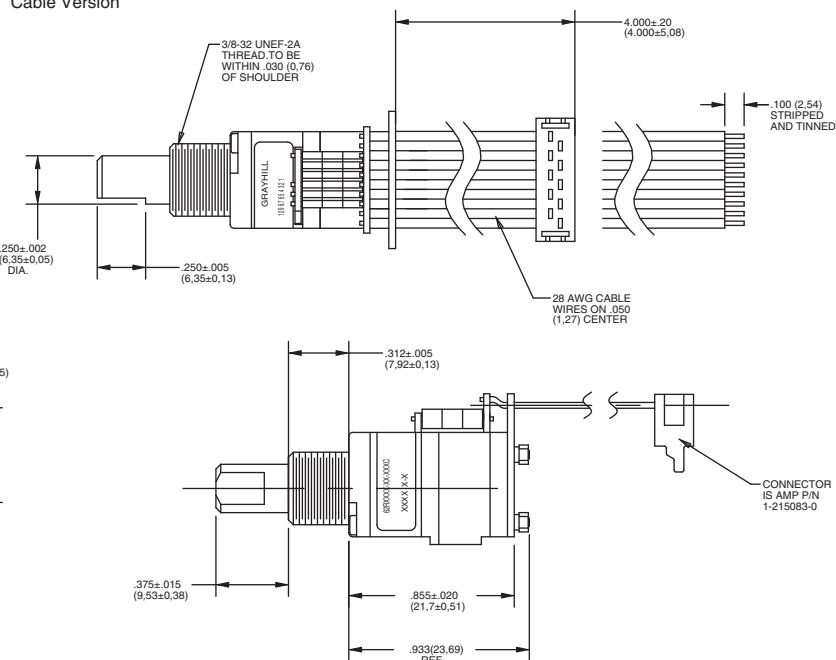


#### DIMENSIONS in inches (and millimeters)

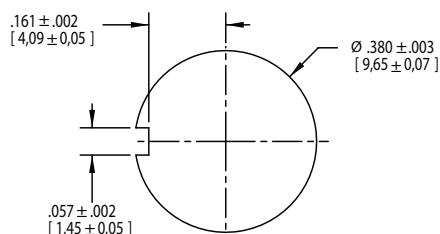
Pin Version



Cable Version

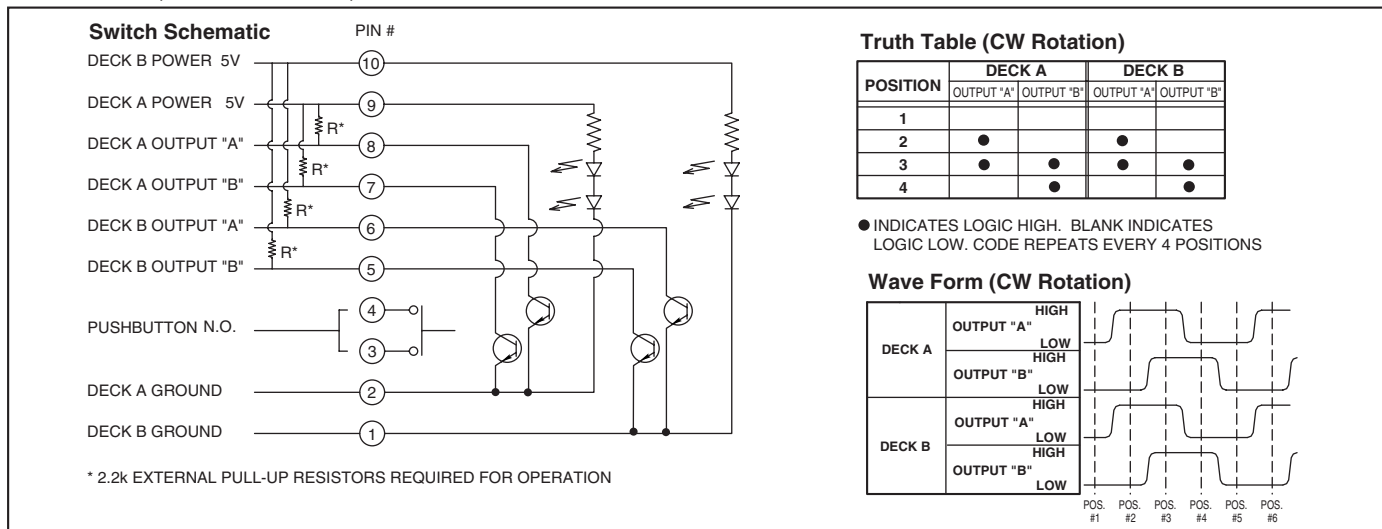


#### RECOMMENDED PANEL CUTOUT



Unless otherwise specified, standard tolerances are  $\pm 0.10$  (0,25)

## CIRCUITRY, TRUTH TABLE, AND WAVEFORM Standard Quadrature 2-Bit Code



## SPECIFICATIONS

## Pushbutton Switch Ratings

**Pushbutton Rating:** 10 mA, 5 Vdc, resistive  
**Contact Resistance:** less than 10 ohms (TTL or CMOS compatible)

**Pushbutton Life:** 3 million actuations min.

**Contact Bounce:** less than 4 mS at make and less than 10 mS at break

**Actuation Force:** 1000 ±300 grams

**Pushbutton Travel:** .010/.025"

## Switch Ratings

**Coding:** 2-bit quadrature coded output

**Operating Voltage:** 5.0 ±.25 Vdc

**Voltage Breakdown:** 250 Vac between mutually insulated parts

**Supply Current:** 30 mA maximum@5.0 Vdc (per deck)

## Logic Output Characteristics:

Logic High: 3.5 Vdc minimum

Logic Low: 1.5 Vdc maximum

**Mechanical Life:** 1,000,000 cycles minimum (One cycle is a rotation through all positions and a full return)

**Minimum Sink Current:** 2.0 mA

**Power Consumption:** 150mW max. (per deck)

**Output:** open collector phototransistor

**Optical Rise and Fall Times:** less than 30 mS maximum

**Operating Torque:** 3.5 ±1.4 in-oz initially

**Shaft Push Out Force:** 45 lbs minimum

**Mounting Torque:** 15 in-lbs max.

**Terminal Strength:** 15 lbs cable pull-out force min.

**Operating Speed:** 100 RPM max.

## Environmental Ratings

**Operating Temperature Range:** -40°C to 85°C

**Storage Temperature Range:** -55°C to 100°C

**Vibration Resistance:** Harmonic motion with amplitude of 15G's, within a varied 10 to 2000 Hz frequency for 12 hours

**Mechanical Shock:** Test 1: 100g, 6 mS, half sine, 12.3 ft/s; Test 2: 100g, 6 mS, sawtooth, 9.7 ft/s

**Humidity:** 90–95% at 40°C for 96 hours

## Materials and Finishes

**Shaft:** Aluminum

**Bushing:** Zinc casting

**Shaft Retaining Ring:** Stainless steel

**Detent Spring:** Stainless steel

**Printed Circuit Boards:** NEMA grade FR-4

gold over nickel or palladium

**Terminals:** Brass, tin-plated

**Mounting Hardware:** One brass, nickel-plated nut and zinc-plated spring steel with clear trivalent chromate finish lockwasher supplied with each switch. (Nut is 0.094 inches thick by 0.433 inches across flats)

**Rotor:** Thermoplastic

**Code Housing:** Thermoplastic

**Pushbutton Dome:** Stainless steel

**Dome Retaining Disk:** Thermoplastic

**Pushbutton Housing:** Thermoplastic

**Phototransistor:** Planar Silicon NPN

**Infrared Emitter:** Gallium aluminum arsenide

**Pushbutton Contact:** Brass, nickel-plated  
**Flex Cable:** 28 AWG stranded, halogen-free polyolefin insulation on .050" centers (cabled version)

**Header Pins:** Phosphor bronze, tin-plated

**Spacer:** Zinc casting

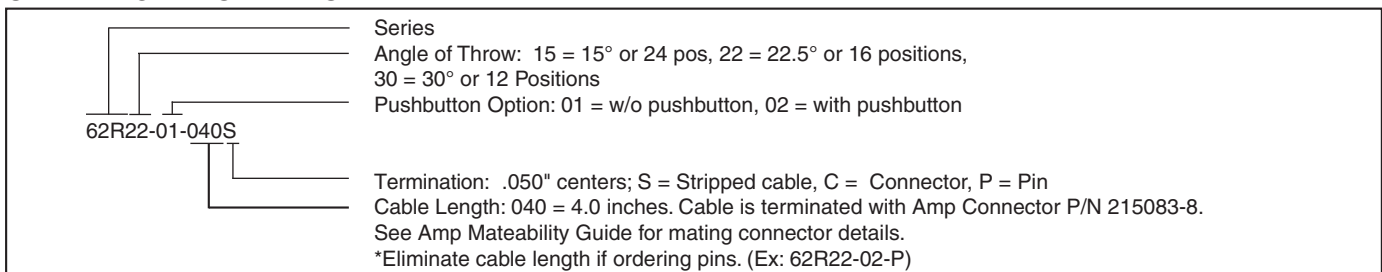
**Backplate/Strain Relief:** Stainless steel

**Studs:** Stainless steel

## OPTIONS

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

## ORDERING INFORMATION



Custom materials, styles, colors, and markings are available. Control knobs available.

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