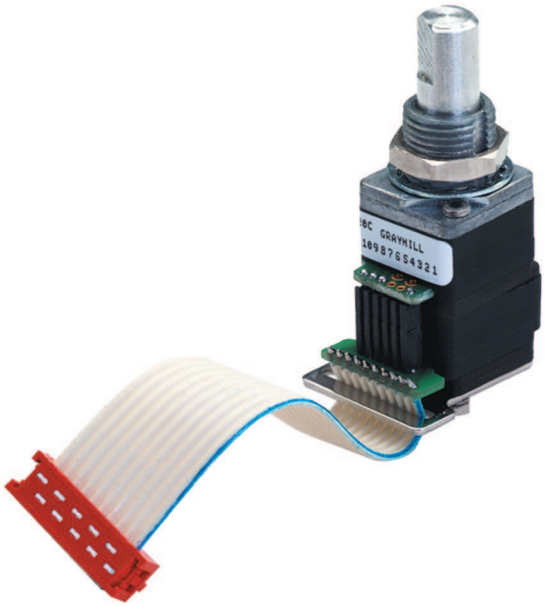
# SERIES 62R

1/2" Package, Redundant Circuitry



## FEATURES

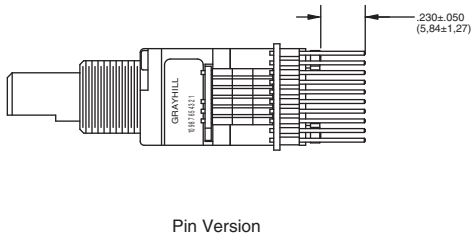
- Redundant Circuitry
- 1 Million Rotational Cycles
- Compatible with CMOS, TTL and HCMOS Logic
- Optional Integral Pushbutton
- Available in 12, 16, and 24 Detent Positions
- Choices of Cable Length and Terminations
- Ideal for Critical Applications

## APPLICATIONS

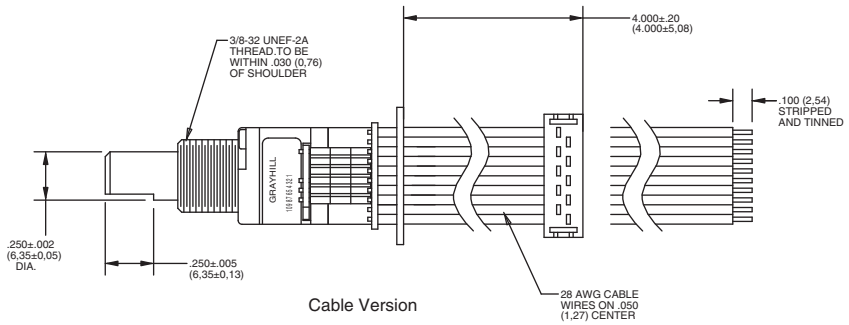
- Cockpit Controls
- Medical Equipment



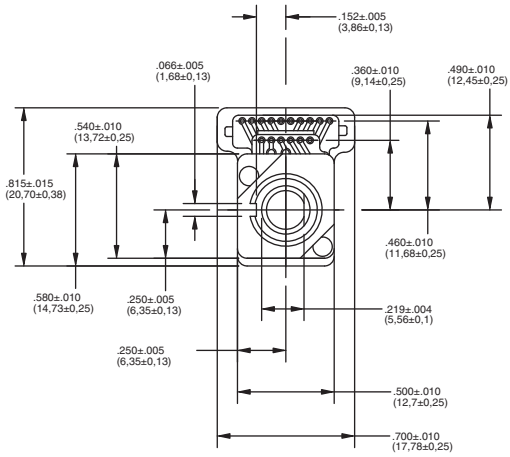
## DIMENSIONS in inches (and millimeters)

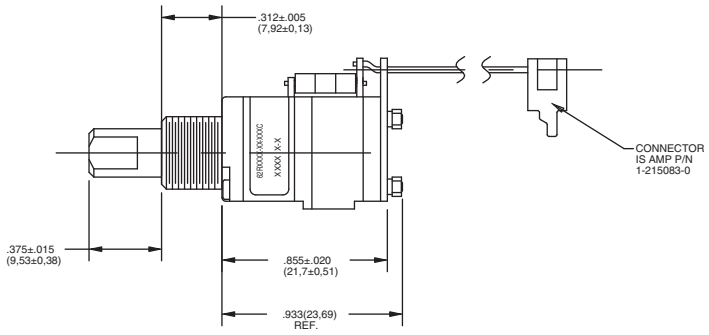



Pin Version




Cable Version

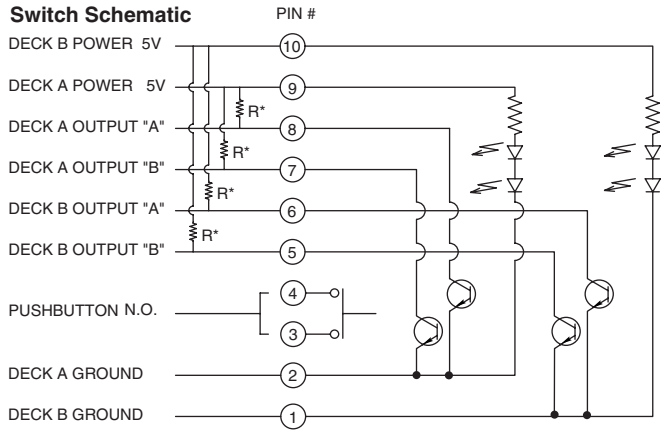



Unless otherwise specified, standard tolerances are ±0.10 (0,25)

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

### Switch Schematic



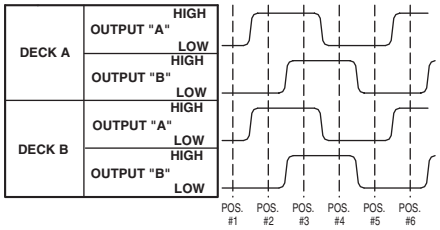

* 2.2k EXTERNAL PULL-UP RESISTORS REQUIRED FOR OPERATION

### Truth Table (CW Rotation)

| POSITION | DECK A | | DECK B | |
|---|---|---|---|---|
| | OUTPUT "A" | OUTPUT "B" | OUTPUT "A" | OUTPUT "B" |
| 1 | | | | |
| 2 | ● | | ● | |
| 3 | ● | ● | ● | ● |
| 4 | | ● | | ● |

● INDICATES LOGIC HIGH. BLANK INDICATES LOGIC LOW. CODE REPEATS EVERY 4 POSITIONS

### Wave Form (CW Rotation)




## 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 Characterisitics:**
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

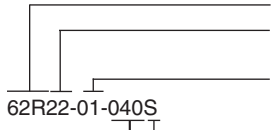
**Shaft:** Aluminum
**Bushing:** Zinc casting
**Shaft Retaining Ring:** Stainless steel
**Detent Spring:** Stainless steel
**Printed Circuit Boards:** NEMA grade FR-4 gold over nickel or palladium
**Terminals:** Brass, tin-plated

**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




Series
Angle of Throw: 15 = 15° or 24 pos, 22 = 22.5° or 16 positions, 30 = 30° or 12 Positions
Pushbutton Option: 01 = w/o pushbutton, 02 = with pushbutton

Termination: .050" centers; S = Stripped cable, C = Connector, P = Pin
Cable Length: 040 = 4.0 inches. Cable is terminated with Amp Connector P/N 215083-8. See Amp Mateability Guide for mating connector details.
*Eliminate cable length if ordering pins. (Ex: 62R22-02-P)

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.