

## SERIES 62R

### 1/2" Package, Redundant Circuitry

#### FEATURES

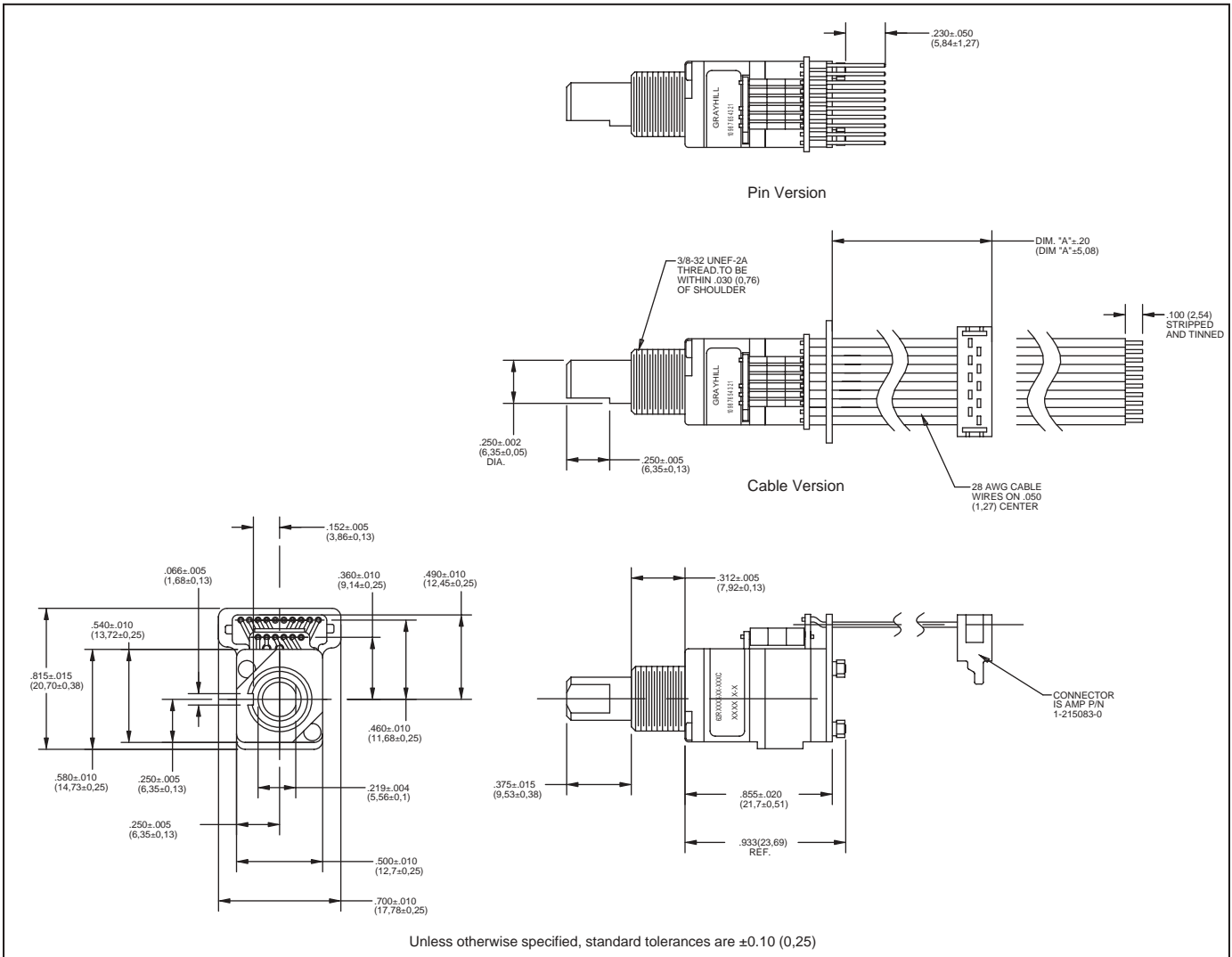
- Redundant Circuitry
- 1 Million Rotational Cycles
- Compatible with CMOS, TTL and HCMOS Logic
- Optional Integral Pushbutton
- Available in 12, 16, 24, and 32 Detent Positions
- Choices of Cable Length and Terminations
- Ideal for Critical Applications

#### APPLICATIONS

- Cockpit Controls
- Medical Equipment



#### DIMENSIONS In inches (and millimeters)



**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 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, 12.3ft/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 stainless steel lockwasher supplied with each switch. Nut is 0.094 inches thick by 0.562 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
- Lockwasher(s):** Stainless steel
- Hex Nuts:** Stainless steel
- Studs:** Stainless steel

**OPTIONS**

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

**ORDERING INFORMATION**

**62R22-01-020S**

**Series**

**Angle of Throw:** 11 = 11.25° or 32 pos., 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:** 020 = 2.0 inches minimum to 250 = 25.0 inches maximum. Provided in increments of 1/2 inch. Example: 035 = 3.5", 060 = 6.0". \*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.