



# Optical Encoders

## SERIES 62N 1/2" Package, non-turn, Dedicated Shaft

### FEATURES

- Non-turn Pushbutton to Ensure Pushbutton Text and Orientation
- Separate Pushbutton Function
- Low Cost
- Economical Size
- Optically Coupled for More than a Million Cycles
- Compatible with CMOS, TTL and HCMOS Logic

- Available in 12, 16, 24, and 32 Detent Positions (Non-detent also available)
- Choices of Cable Length and Terminations

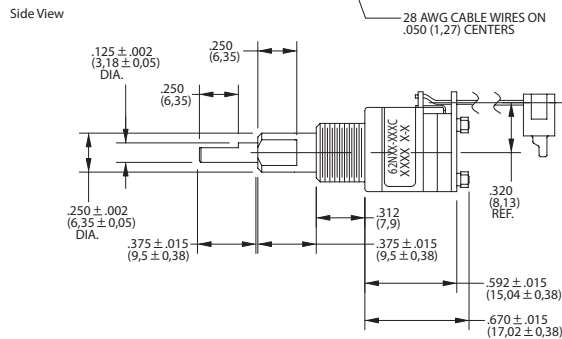
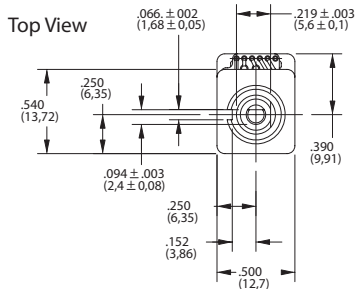
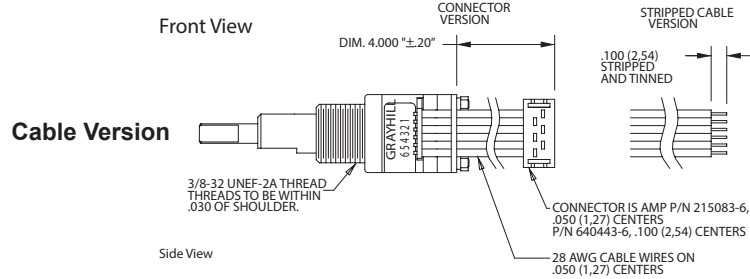
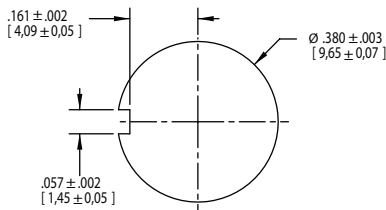
### APPLICATIONS

- Global Positioning/Driver Information Systems
- Medical Equipment
- Cockpit Controls

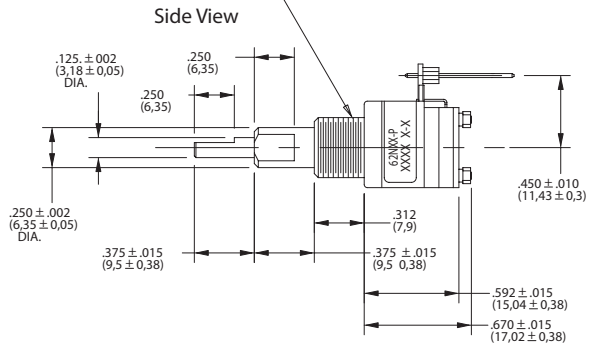
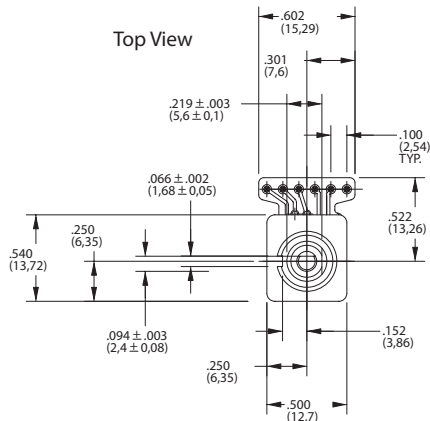
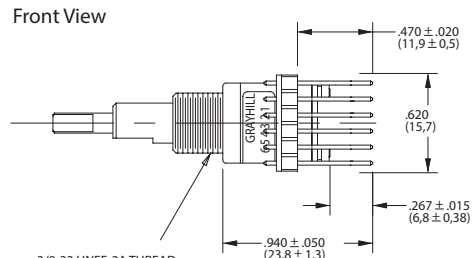


### DIMENSIONS in inches (and millimeters)

#### RECOMMENDED PANEL CUTOUT



#### Pin Version



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

**SPECIFICATIONS**

**Pushbutton Switch Ratings**

**Rating:** at 5 Vdc, 10 mA, resistive  
**Contact Resistance:** less than 10 ohms (TTL or CMOS compatible)  
**Pushbutton Life:** 3 million actuations minimum  
**Voltage Breakdown:** 250 Vac between mutually insulated parts  
**Contact Bounce:** less than 4 mS at make and less than 10 mS at break  
**Actuation Force:** 1000 ±300g  
**Pushbutton Travel:** .010/.025 inch

**Encoder Ratings**

**Coding:** 2-bit quadrature coded output  
**Operating Voltage:** 5.0 ±.25 Vdc  
**Supply Current:** 30 mA maximum@5.0 Vdc  
**Logic Output Characteristics:**  
**Logic High:** 3.8 Vdc minimum  
**Logic Low:** 0.8 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 for 5 Vdc  
**Power Consumption:** 150mW maximum  
**Output:** open collector phototransistor  
**Logic Rise and Fall Times:** less than 30 mS maximum

**Operating Torque:**

Detent: 2.0 in-oz ±70% initially  
 Non-Detent: less than 1.5 in-oz initially  
**Shaft Push Out Force:** 45 lbs minimum  
**Mounting Torque:** 15 in-lbs maximum  
**Terminal Strength:** 15 lbs cable pull-out force minimum  
**Operating Speed:** 100 RPM maximum

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

**Materials and Finishes**

**Code Housing:** Reinforced thermoplastic  
**Shafts:** 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/top coated wire, PVC coated on .050" or .100" centers (cabled version)  
**Header Pins:** Phosphor bronze, tin-plated  
**Spacer:** Thermoplastic  
**Endcap:** Thermoplastic  
**Non-turn Pin:** Stainless steel  
**Backplate/Strain Relief:** Stainless steel  
**Studs:** Stainless steel

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

Clockwise Rotation		
Position	Output A	Output B
1		
2	•	
3	•	•
4		•

• Indicates logic high; blank indicates logic low. Code repeats every 4 positions.

**ORDERING INFORMATION**

**62N22-040S**

**Series and Style =** 1/2" package, non-turn, dedicated shaft  
**Angle of Throw:** Detent Non-detent  
 11 = 11.25° or 32 pos. 01 = 11.25° or 32 positions  
 15 = 15° or 24 positions 05 = 15° or 24 positions  
 22 = 22.25° or 16 positions 02 = 22.5° or 16 positions  
 30 = 30° or 12 positions 00 = 30° or 12 positions

**Termination:** S = Stripped cable; .050" centers  
 SH = Stripped cable; .100" centers  
 C = Connector; .050" centers  
 CH = Connector; .100" centers  
 P = Pin; .100" centers

**Cable Termination:** 040 = 4.0in. Cable is terminated with Amp Connector P/N 215088-6. See Amp Mateability Guide for mating connector details.  
 \*Eliminate cable length if ordering pins (Ex: 62N22-P)

These switches have Quadrature 2-bit code output and an optional shaft actuated pushbutton switch.

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

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