

# Optical Encoder

## Series 62A, V, D

### Compact, 1/2" Package



#### FEATURES

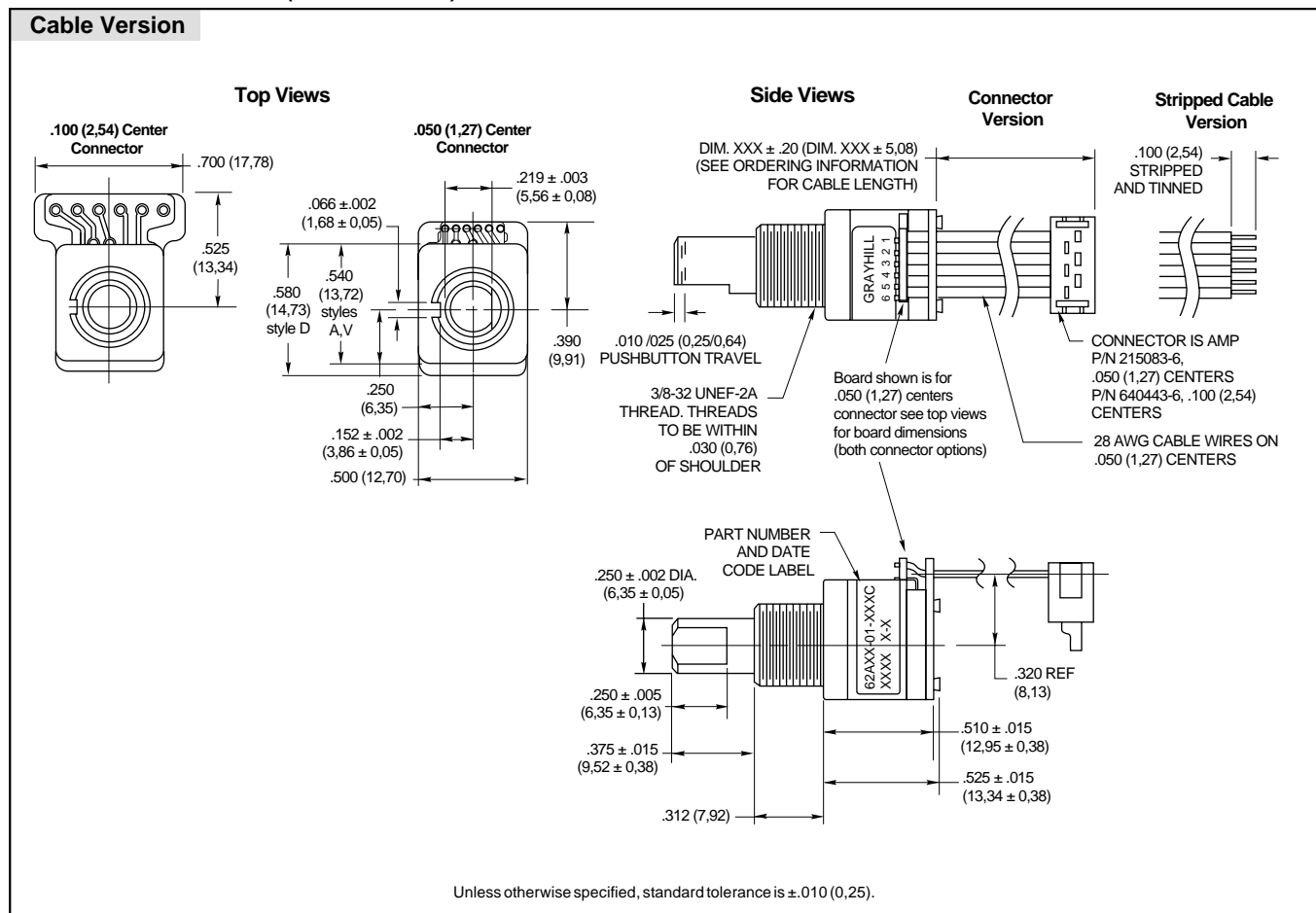
- Low Cost
- Long Life
- Available in 3.3 or 5.0 Vdc Operating Voltages
- High Torque Version to Emphasize Rotational Feel
- Economical Size
- Optically Coupled for More than a Million Cycles
- Optional Integral Pushbutton
- Compatible with CMOS, TTL and HCMOS Logic
- Available in 12, 16, 20, 24 and 32 Detent Positions (Non-detent Also Available)
- Choices of Cable Length and Terminations

#### APPLICATIONS

- Global Positioning/Driver Information Systems
- Medical Equipment



#### DIMENSIONS In inches (and millimeters)



Call in CHINA(Beijing) : Phone: (010)6851-9097, Fax: (010)6851-5578

## DIMENSIONS In inches (and millimeters)

### Pin Version



Unless otherwise specified, standard tolerance is ±.010 (0.25)

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

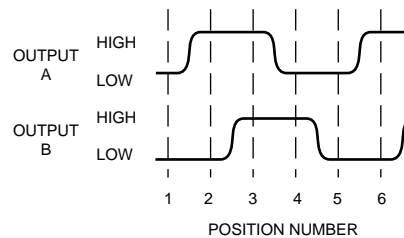
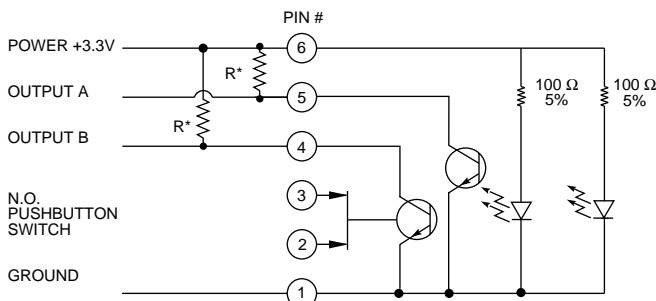
### Standard 5.0 Volt (Styles A and D)



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

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

### 3.3 Volt (Style V only)



## SPECIFICATIONS

### Mechanical Ratings

**Rating:** 5 Vdc, 10 mA, resistive  
**Contact Resistance:** less than 10 ohms (TTL or CMOS compatible)  
**Pushbutton Life:** 3 million actuations minimum  
**Contact Bounce:** less than 4 mS at make and less than 10 mS at break  
**Actuation Force:** 1000 ±300 grams  
**Pushbutton Travel:** .010/.025 inch  
**Coding:** 2-bit quadrature coded output  
**Operating Voltage:** 5.0 ±.25 Vdc, 3.30±.125 Vdc (style V only)  
**Voltage Breakdown:** 250 Vac between mutually insulated parts  
**Supply Current:** 30 mA maximum  
**Logic Output Characteristics:**  
 Logic High: 3.8 Vdc (5.0 Vdc); 2.3 (3.3 Vdc) minimum  
 Logic Low: 0.8 Vdc maximum  
**Rotational 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; 1.0 mA for 3.3 Vdc  
**Power Consumption:** 150 mW maximum for 5 Vdc; 80 mW for 3.3 Vdc

**Optical Rise and Fall Times:** less than 30 mS maximum  
**Operating Torque:**  
 Style A and V: 2.0 ±1.4 in-oz. initially  
 Style D: 3.5 ±1.4 in-oz 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  
**Axial Shaft Play:** .010 maximum

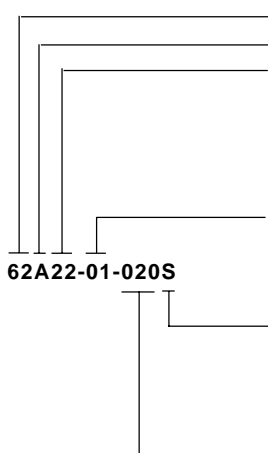
### Environmental Ratings

**Operating Temperature Range:** -40°C to 85°C  
**Storage Temperature Range:** -55°C to 100°C  
**Relative Humidity:** 90–95% at 40°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  
**Mechanical Shock:** Test 1: 100G for 6 mS, half sine, 12.3 ft/s; Test 2: 100G for 6 mS, sawtooth, 9.7 ft/s

### Materials and Finishes

**Code Housing:** Reinforced thermoplastic  
**Shaft:** Zinc or 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/top coated wire, PVC coated on .050" or .100" centers (cabled version)  
**Header Pins:** Phosphor bronze, tin-plated  
**Spacer:** ABS  
**Backplate/Strain Relief:** Stainless steel

## ORDERING INFORMATION



### Series

**Style:** A = 1/2" package, 5.0 Vdc Input, D = high torque w/5.0 Vdc input, V = 3.3 Vdc input

### Angle of Throw:

#### Detent

11 = 11.25° or 32 positions  
 15 = 15° or 24 positions  
 18 = 18° or 20 positions  
 22 = 22.5° or 16 positions  
 30 = 30° or 12 positions (Styles A&V only)

#### Non-detent

01 = 11.25° or 32 positions  
 05 = 15° or 24 positions  
 08 = 18° or 20 positions  
 02 = 22.5° or 16 positions  
 03 = 30° or 12 positions (Styles A&V only)

**Pushbutton Option:** 01 = w/o pushbutton, 02 = with pushbutton

### Termination:

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

**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: 62A22-02-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.