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

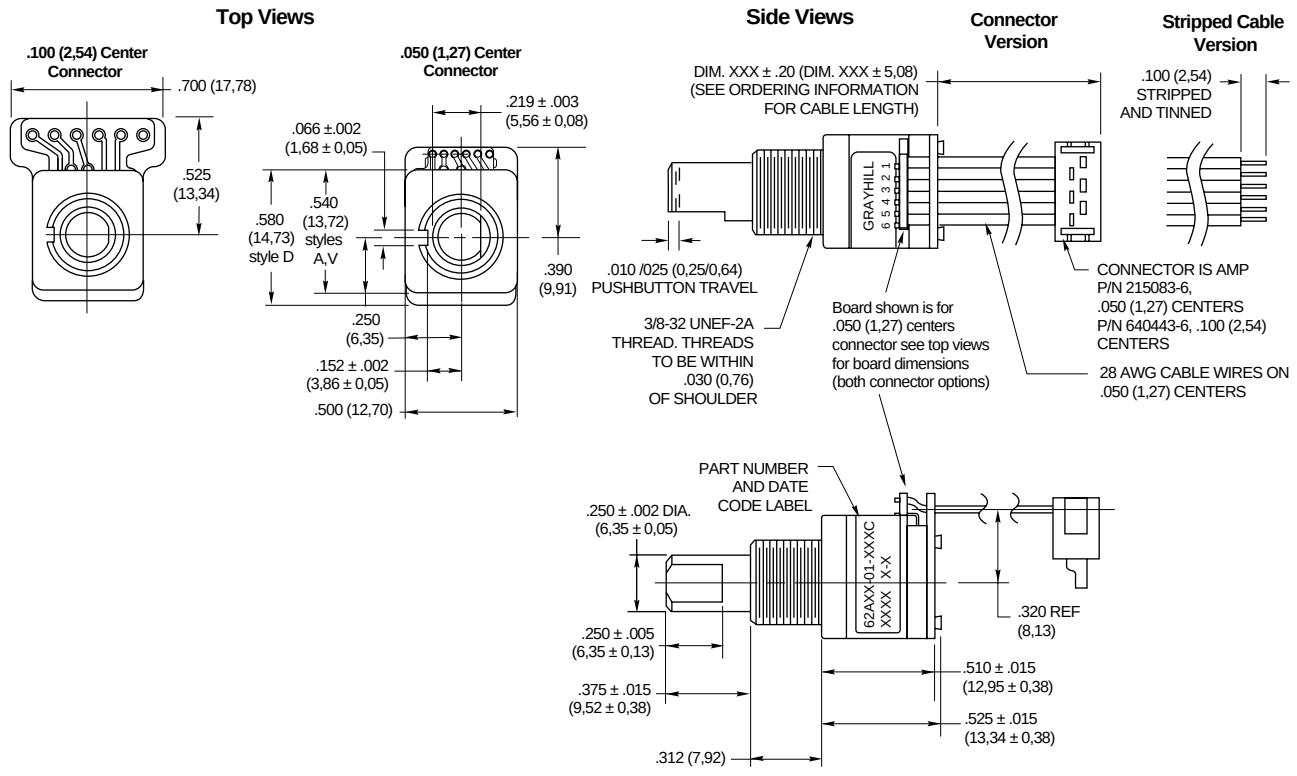
APPLICATIONS

- Global Positioning/Driver Information Systems
- Medical Equipment



DIMENSIONS In inches (and millimeters)

Cable Version



Unless otherwise specified, standard tolerance is ±.010 (0,25).

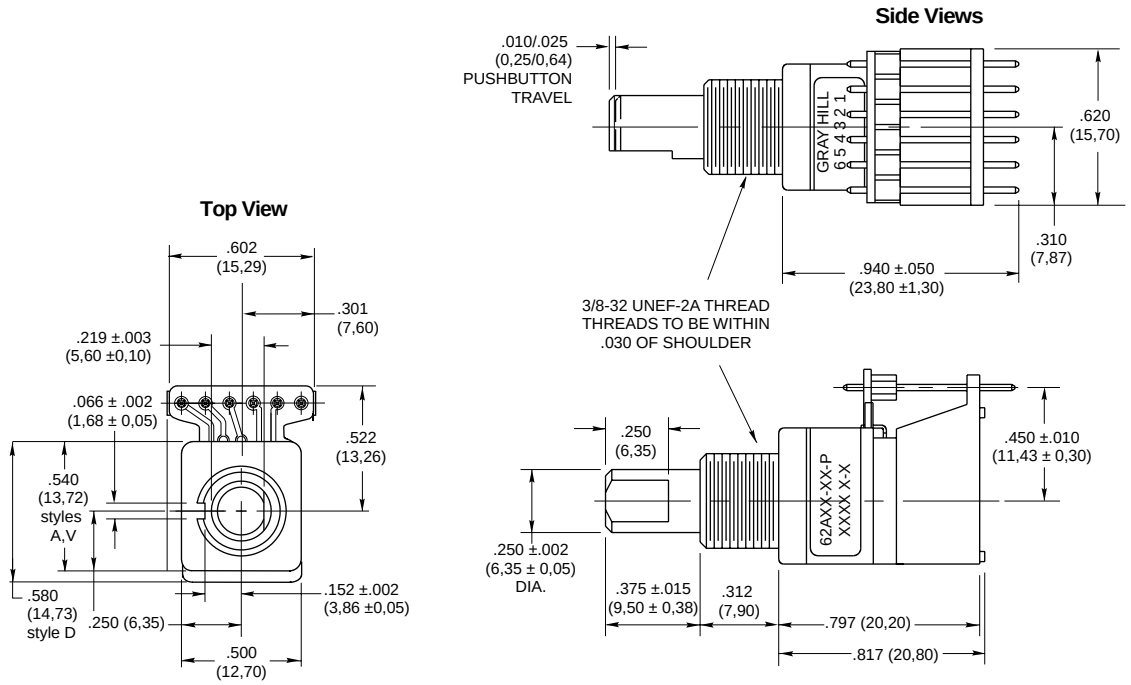
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Compact, 1/2" Package

DIMENSIONS In inches (and millimeters)

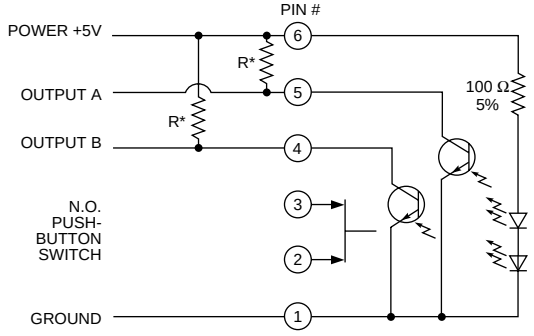
Pin Version



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)

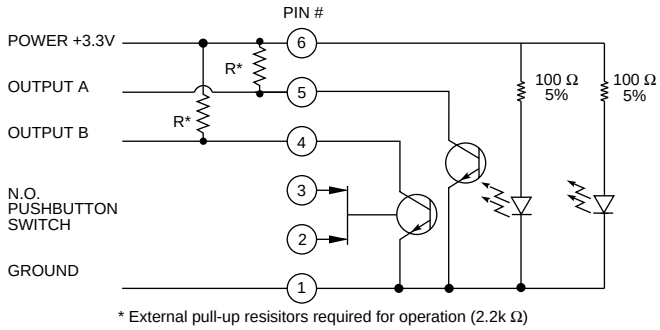


* External pull-up resistors required for operation (2.2 kΩ).

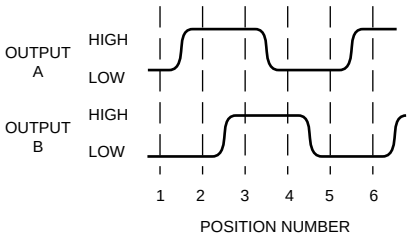
Clockwise Rotation		
Position	**Output A**	**Output B**
1		
2	●	
3	●	●
4		●

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

3.3 Volt (Style V only)



* External pull-up resisitors required for operation (2.2k Ω)



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Bulletin #725
Revised 08232001

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Series 62A,V,D

Compact, 1/2" Package

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 Characterisitics:
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

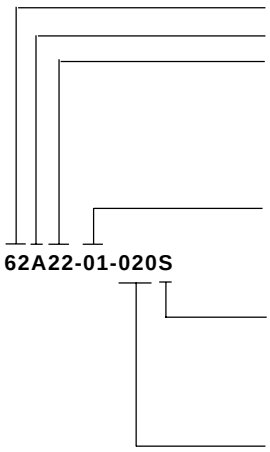
Environmental Ratings

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	Non-detent
11 = 11.25° or 32 positions	01 = 11.25° or 32 positions
15 = 15° or 24 positions	05 = 15° or 24 positions
18= 18° or 20 positions	08= 18° or 20 positions
22 = 22.5° or 16 positions	02 = 22.5° or 16 positions
30 = 30° or 12 positions (Styles A&V only)	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.

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