

Optical Encoder

Series 62A, V, D

Compact, 1/2" Package



FEATURES

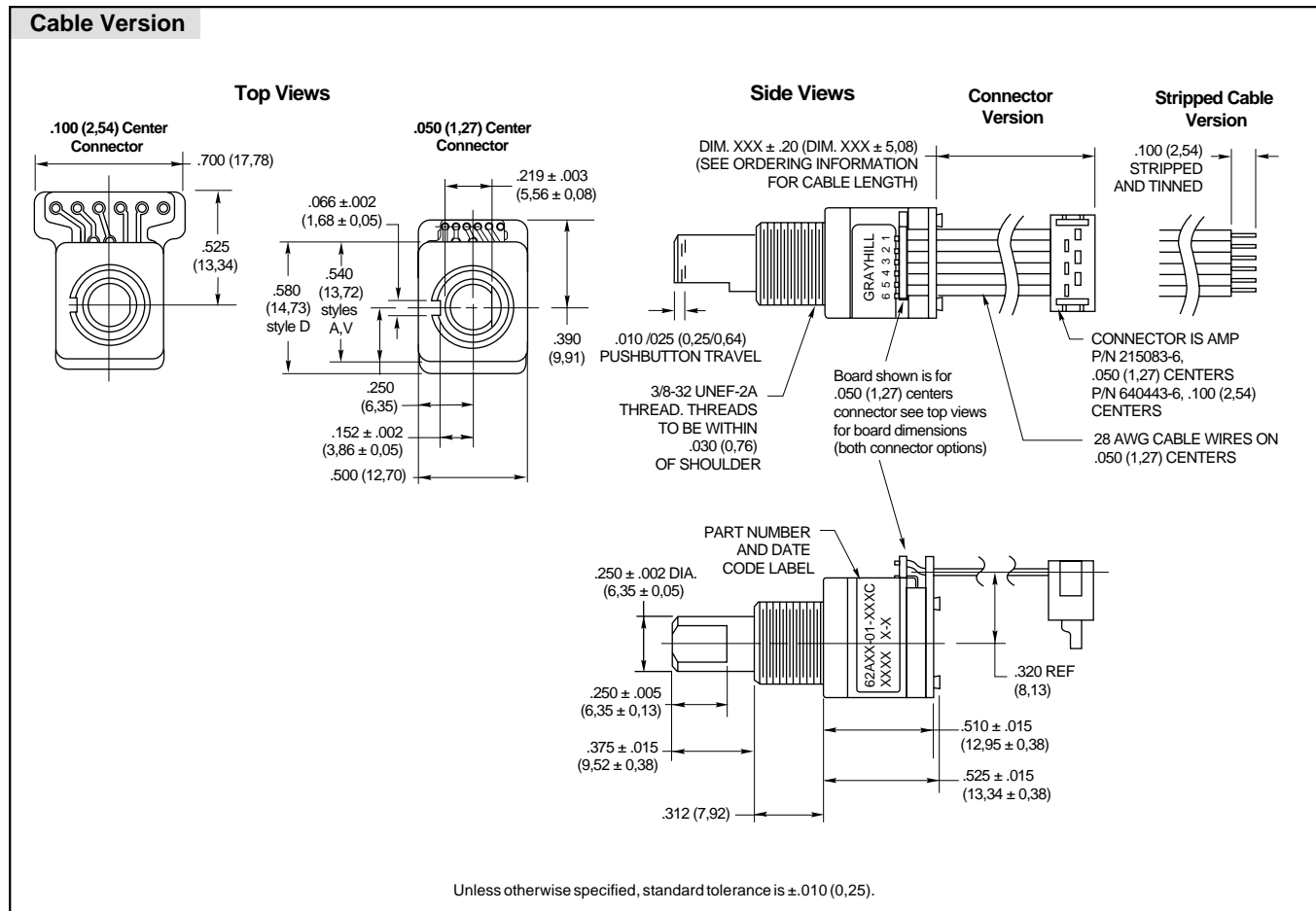
- Low Cost
- Long Life
- Available in 3.3 or 5.0 Vdc Operating Voltages
- High Torque Version to Emphasize Rotational Feel
- Economical Size
- Optically Coupled for More than a Million Cycles
- Optional Integral Pushbutton
- Compatible with CMOS, TTL and HCMOS Logic
- Available in 12, 16, 20, 24 and 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)



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 resistors required for operation (2.2k Ω)



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

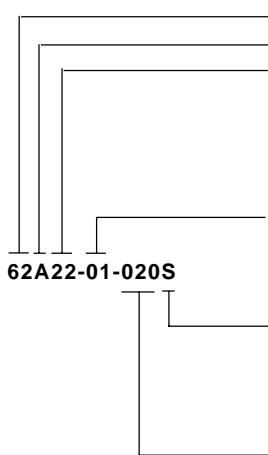
Environmental Ratings

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.

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For prices and discounts, contact a local Sales Office, an authorized local Distributor, or Grayhill.

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