

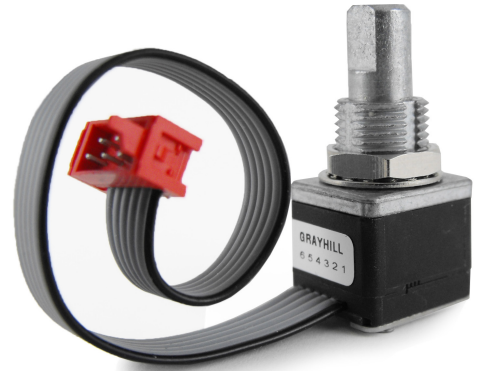
**SERIES 62AG**  
Price Competitive Solution

**FEATURES**

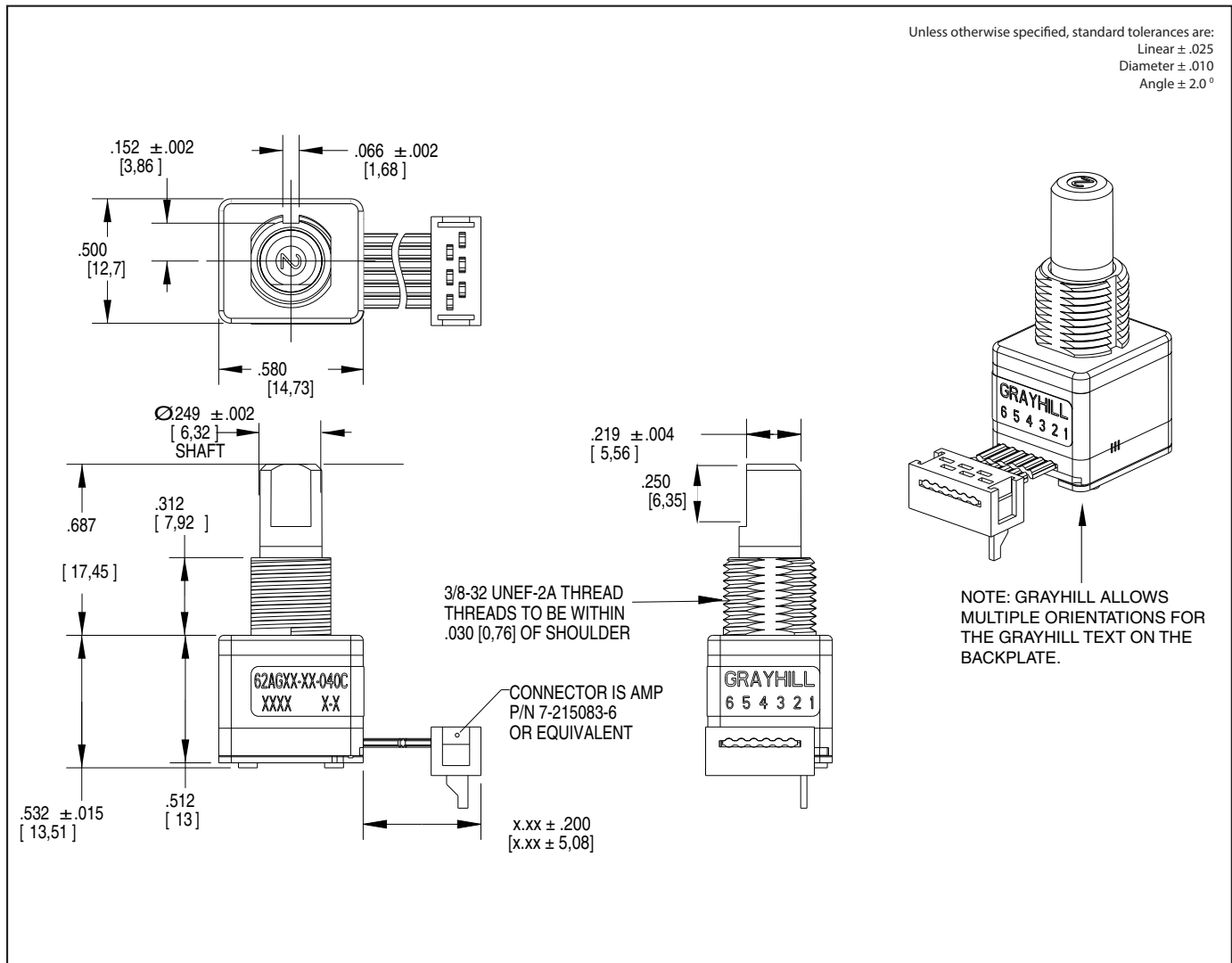
- Over 1 million rotational cycles
- 2-bit gray code output
- Quadrature coding
- Available in 16, 20, 24 and 32 detent positions
- Choices of cable length and terminations
- Available for 5Vdc and 3.3Vdc
- Optional integrated pushbutton
- Patented light pipe technology
- Cost competitive with mechanical encoders at higher volumes

**APPLICATIONS**

- Automotive
  - audio systems
  - navigation systems
- Medical
  - patient monitoring systems
- Test & Measurement
  - analyzers
  - oscilloscopes
- Audio & Video
  - consumer electronics
  - professional editing equipment

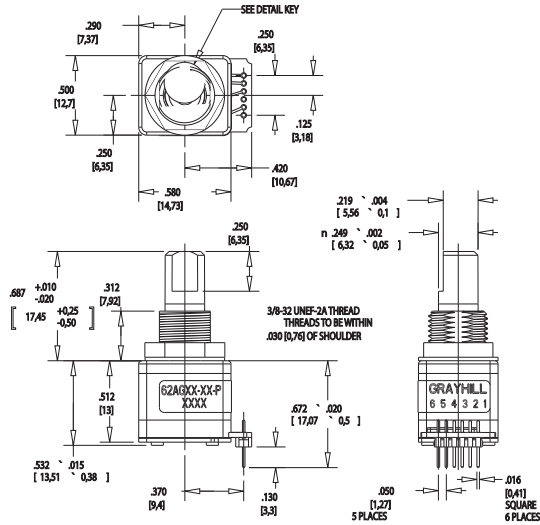


**DIMENSIONS** in inches (and millimeters)

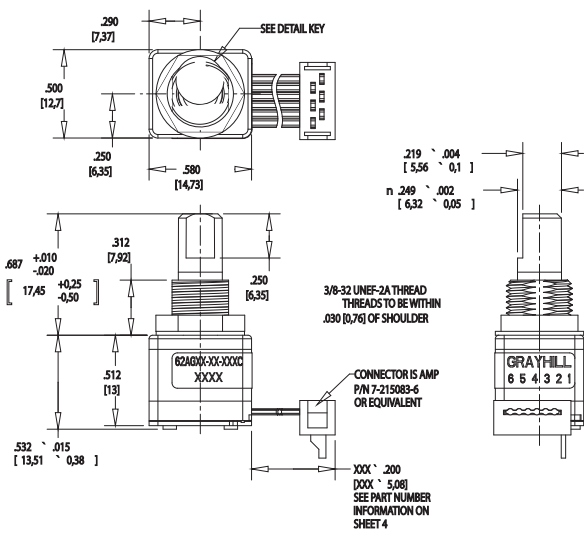


Optical and Mechanical Encoders

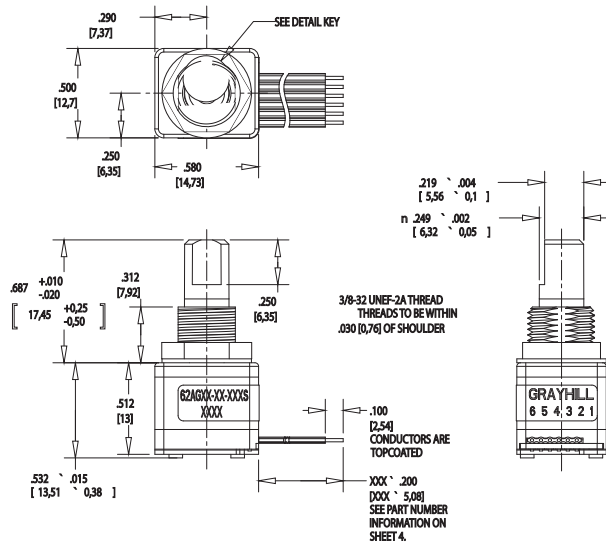
Termination Options



P - .050 Center Pins with 0.185 inch length



C - .050 Center Ribbon Cable with connector



S - .050 Center Ribbon Cable with .100 stripped end

Optical and Mechanical Encoders

WAVEFORM AND TRUTH TABLE

**Standard 5.0V (Style AG)**

**Standard 3.3V (Style VG)**

**WAVEFORM (CW ROTATION)**

**TRUTH TABLE (CW ROTATION)**

POSITION	OUTPUT A	OUTPUT B
1		
2	●	
3	●	●
4		●

● BLANK = LOGIC LOW  
● = LOGIC HIGH  
CODE REPEATS EVERY FOUR POSITIONS.

SPECIFICATIONS

Environmental Specifications

Operating Temperature: -40°C to 85°C  
 Storage Temperature: -40°C to 85°C  
 Humidity: 96 hours@90-95% humidity@40°C  
 Mechanical Vibration: Harmonic motion with amplitude of 15g within a varied frequency of 10 to 2000 Hz for 12 hours  
 Mechanical Shock:  
 Test 1: 100g for 6 ms half-sine wave with a velocity change of 12.3 ft/s.  
 Test 2: 100g for 6 ms sawtooth wave with a velocity change of 9.7 ft/s.

Average Rotational Torque:  
 Low = 2.0±1.4 in-oz initially.  
 High = 3.5±1.4 in-oz initially.  
 50% of initial value after 1 million cycles.  
 Mechanical Life: 1,000,000 cycles of operation. 1 cycle is a rotation through all positions and a full return.  
 Mounting Torque: 15in-lbs. maximum  
 Shaft Pushout Force: 45 lbs. minimum  
 Terminal Strength: 15 lbs. Cable pull out force minimum  
 Solderability: 95% free of pin holes & voids  
 Maximum rotational speed: 100 rpm.

Detent Rotor: Reinforced Nylon Zytel 70G33L UL 94  
 Detent Spring: 303 Stainless Steel  
 Housing, Upper: Nylon 6/6 25% glass reinforced. Zytec FR-50  
 Light Pipe: Lexan, GE  
 Code Rotor: Delrin 100  
 Housing, Lower: Nylon 6/6 25% glass reinforced. Zytec FR-50  
 Pushbutton Actuator: Reinforced nylon. Zytel 70G33L. UL 94  
 Pushbutton Dome: Stainless Steel  
 Printed Circuit Board: NEMA Grade FR4, Double clad with copper, Plated with gold over nickel  
 Infrared Emitting Diode: Gallium Arsenide  
 Phototransistor Diode: NPN Silicon  
 Resistor: Metal oxide on ceramic substrate  
 Spacer: Pet plastic  
 Backplate: Stainless Steel  
 Label: TT406 thermal transfer cast film.  
 Solder: 96.5% tin / 3% silver / 0.5% copper. No clean.  
 Hex Nut: Brass, Plated with nickel  
 Lockwasher: Zinc Plated Spring Steel with Clear Trivalent Chromate Finish  
 Cable: Copper Stranded with topcoat in PVC insulation  
 Connector (.050 center): PA4.6 with tin/nickel plated phosphor bronze.

Rotary Electrical and Mechanical Specifications

Operating Voltage:  
 AG Style 5.00±0.25 Vdc  
 VG Style 3.30±0.125 Vdc  
 Supply Current:  
 AG Style 30 mA maximum  
 VG Style 30 mA maximum  
 Logic Output Characteristics:  
 AG Style - Logic high no less than 3.0 Vdc.  
 Logic low shall be no greater than 1.0 Vdc.  
 VG Style - Logic high no less than 2.0 Vdc.  
 Logic low shall be no greater than 1.0 Vdc.  
 Output: Open Collector Phototransistor  
 Optical Rise Time: 30ms maximum.  
 Optical Fall Time: 30ms maximum.

Pushbutton Electrical and Mechanical Specifications

Rating: 10 mA @ 5 Vdc  
 Contact Resistance: <10 Ω (Compatible with CMOS or TTL)  
 Life: 1 million actuations minimum  
 Contact Bounce: <4 ms make, <10ms break  
 Actuation Force: 5 = 510±150 grams, 9 = 950±200 grams  
 Shaft Travel: .017 ± .008 INCH

Materials and Finishes

Bushing: Zamak 2  
 Shaft: Zamak 2

Optical and Mechanical Encoders

62AGXX-XX-XXXX

Series

Style: AG = 5.0V; VG = 3.3V

Angle of Throw: 11 = 11.25° code change and 32 detent positions; 15 = 15° code change and 24 detent positions  
 18 = 18° code change and 20 detent positions; 22 = 22.5° code change and 16 detent positions

Rotational Torque Option: L = Low Torque, H = High Torque, N = No Detent

Pushbutton Option: 0 = No pushbutton, 5 = 510 grams, 9 = 950 grams

Termination:  
 C = .050 Center Ribbon Cable with connector, S = .050 Center Ribbon Cable with .100 stripped end,  
 P = .050 Center Pins with 0.185 inch length

Cable Length:  
 020 = 2.0 inch cable, 030 = 3.0 inch cable, 040 = 4.0 inch cable, 050 = 5.0 inch cable, 060 = 6.0 inch cable

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