



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

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**SERIES 62AG**  
Price Competitive Solution

**FEATURES**

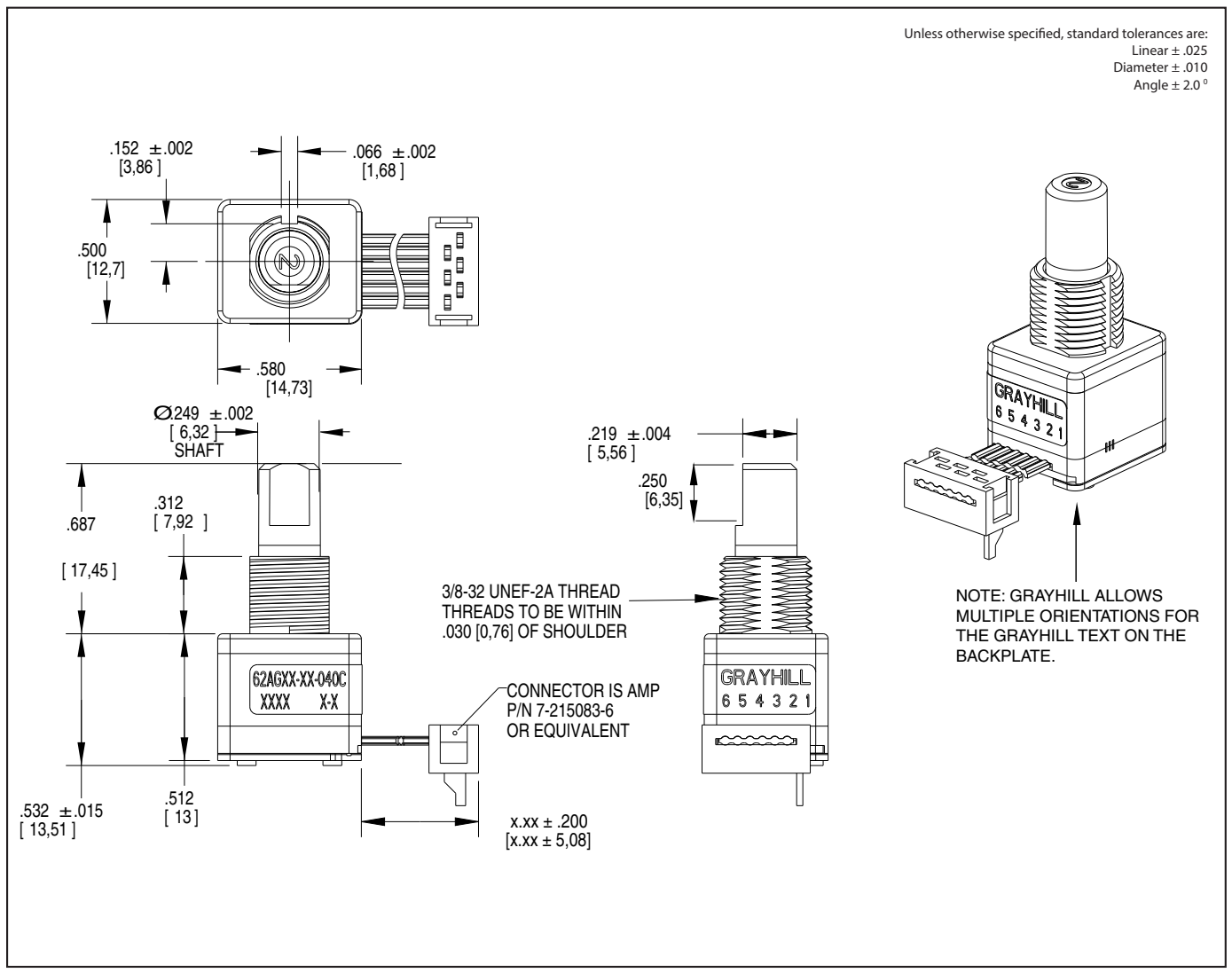
- Over 1 million rotational cycles
- 2-bit gray code output
- Quadrature coding
- Available in 16, 20, 24 and 32 detent positions
- Choices of cable length and terminations
- Available for 5Vdc and 3.3Vdc
- Optional integrated pushbutton
- Patented light pipe technology
- Cost competitive with mechanical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

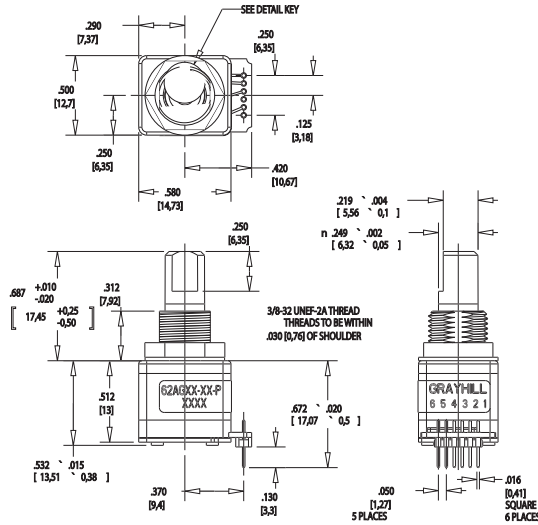


**DIMENSIONS** in inches (and millimeters)

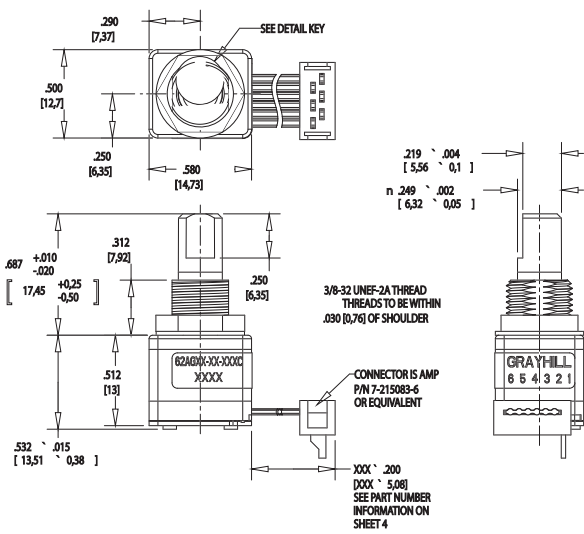


Optical and Mechanical Encoders

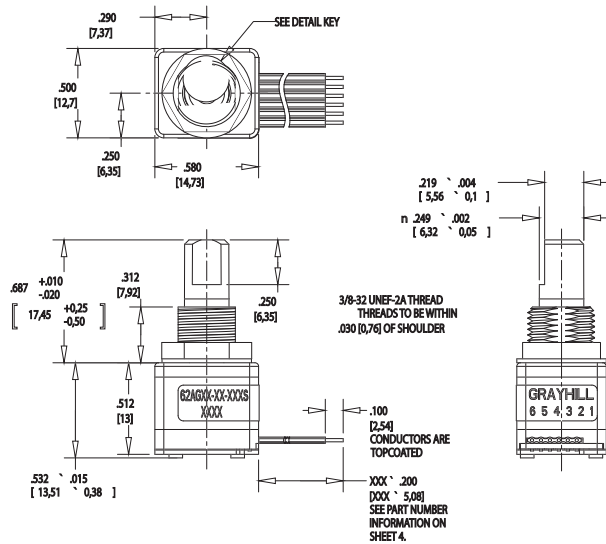
Termination Options



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

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

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

Available from your local Grayhill Distributor. For prices and discounts, contact a local sales office, an authorized distributor, or Grayhill.