



Optical Encoders

SERIES 62AG

Price Competitive Solution

FEATURES

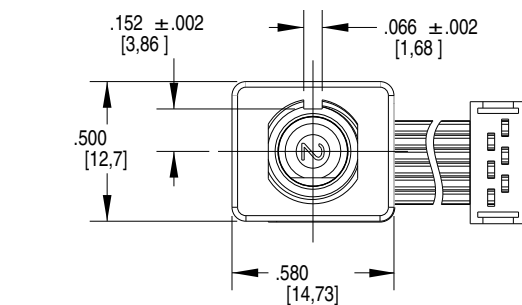
- Over 1 million rotational cycles
- 2-bit gray code output
- Quadrature coding
- Available in 16, 20, 24 and 32 detent positions
- Choices of cable length and terminations
- Available for 5Vdc and 3.3Vdc
- Optional integrated pushbutton
- Patented light pipe technology
- Cost competitive with mechanical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

APPLICATIONS

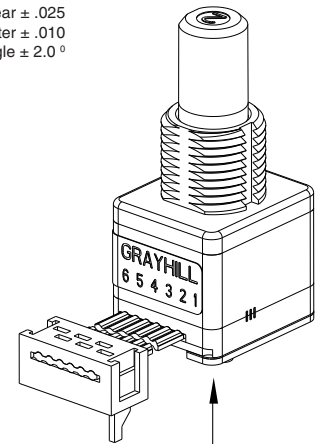
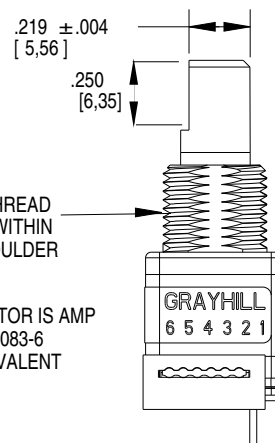
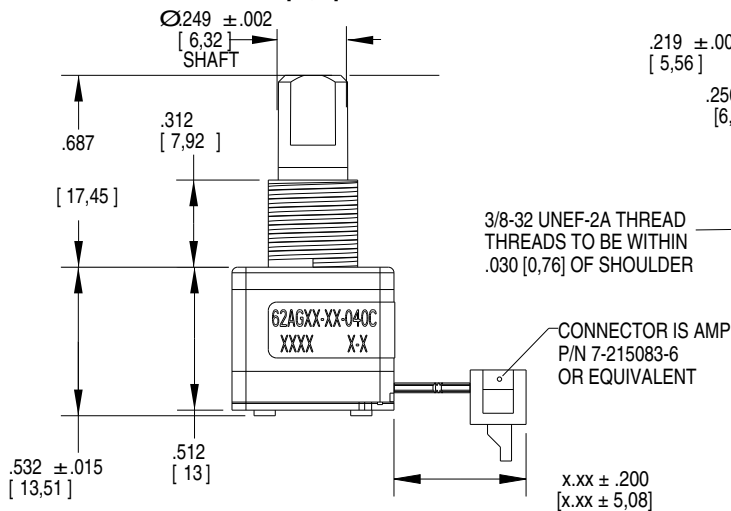
- Automotive
 - audio systems
 - navigation systems
- Medical
 - patient monitoring systems
- Test & Measurement
 - analyzers
 - oscilloscopes
- Audio & Video
 - consumer electronics
 - professional editing equipment



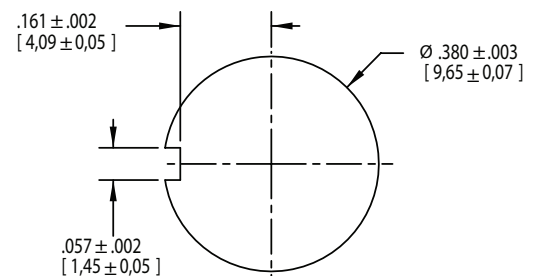
DIMENSIONS in inches (and millimeters)



Unless otherwise specified, standard tolerances are:
 Linear $\pm .025$
 Diameter $\pm .010$
 Angle $\pm 2.0^\circ$



NOTE: GRAYHILL ALLOWS MULTIPLE ORIENTATIONS FOR THE GRAYHILL TEXT ON THE BACKPLATE.

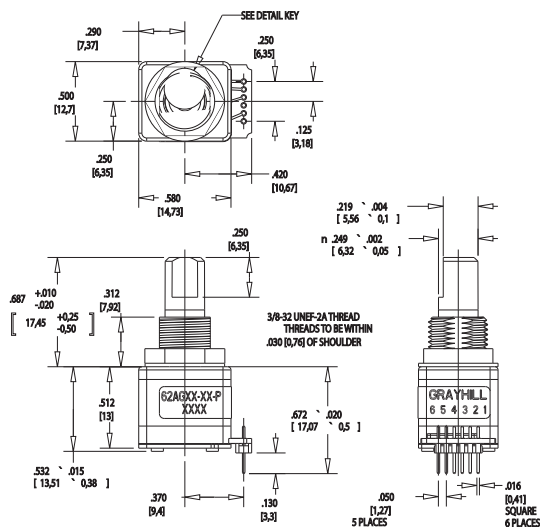


Suggested Mounting Panel Cutout

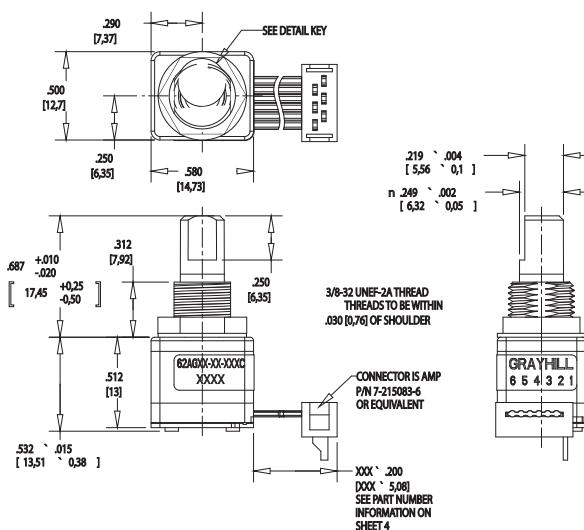


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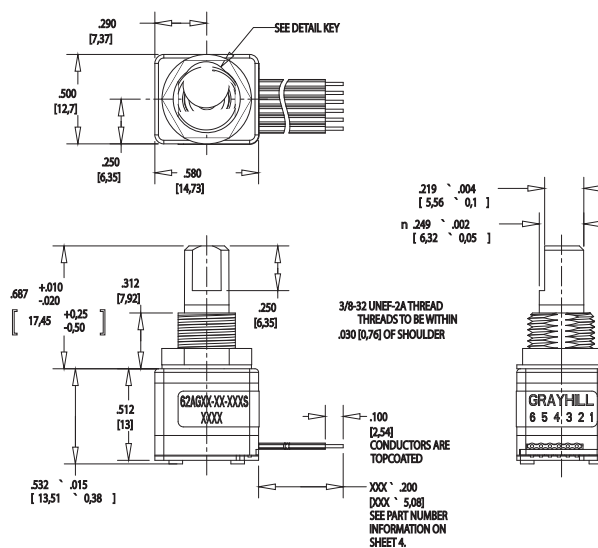
Termination Options



P - .050 Center Pins with 0.185 inch length

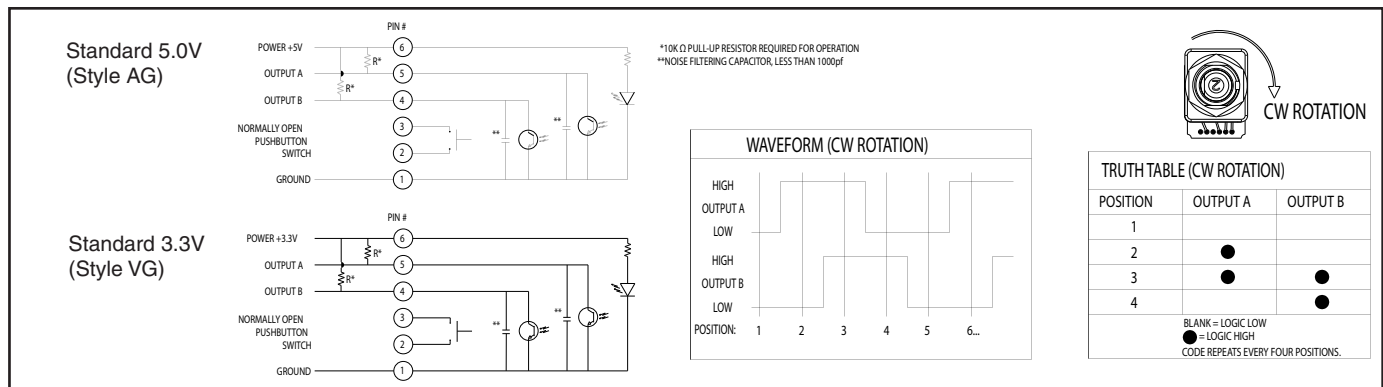


C - .050 Center Ribbon Cable with connector



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

WAVEFORM AND TRUTH TABLE



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.

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.**Average Rotational Torque:**

Low = 2.0±1.4 in-oz initially.

High = 3.5±1.4 in-oz initially.

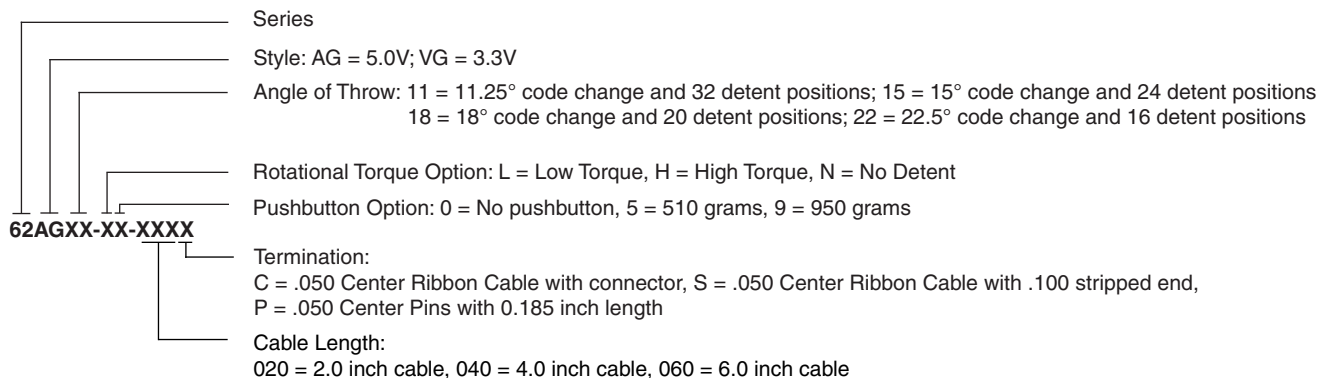
50% of initial value after 1 million cycles.

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.

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**Detent Rotor:** Reinforced Nylon Zytel 70G33L UL 94**Detent Spring:** 303 Stainless Steel**Housing, Upper:** Nylon 6/6 25% glass reinforced. Zytel FR-50**Light Pipe:** Lexan, GE**Code Rotor:** Delrin 100**Housing, Lower:** Nylon 6/6 25% glass reinforced. Zytel 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.

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