

## SERIES 62AG

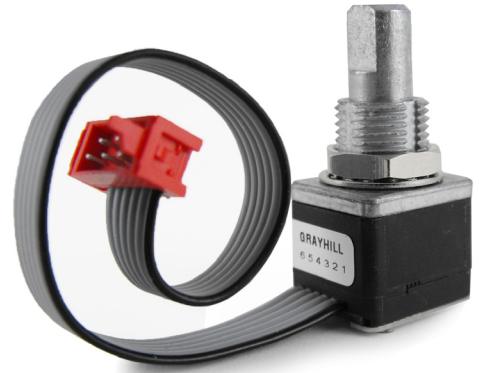
### Price Competitive Solution

#### FEATURES

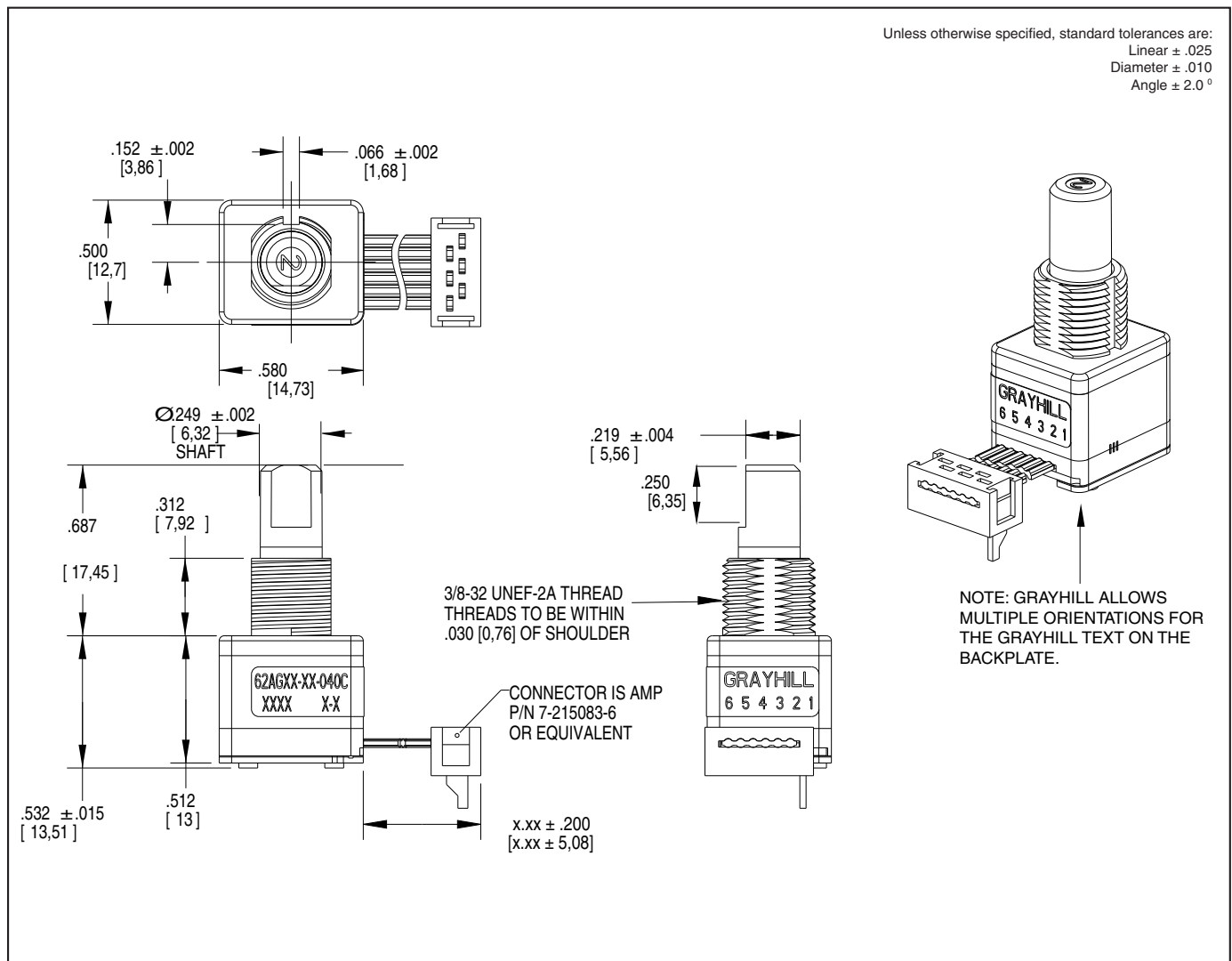
- Over 1 million rotational cycles
- 2-bit gray code output
- Quadrature coding
- Available in 16, 20, 24 and 32 detent positions
- Choices of cable length and terminations
- Available for 5Vdc and 3.3Vdc
- Optional integrated pushbutton
- Patented light pipe technology
- Cost competitive with mechanical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

#### APPLICATIONS

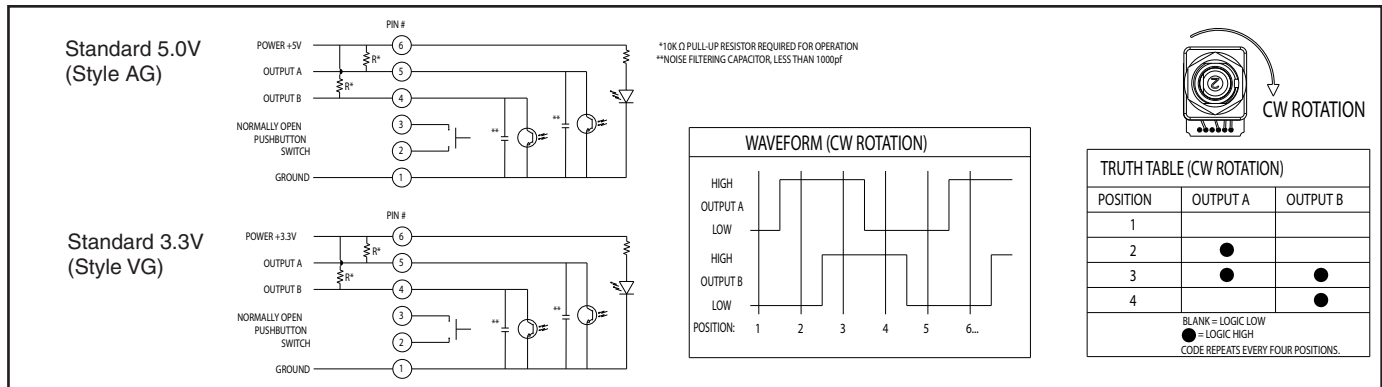
- Automotive
  - audio systems
  - navigation systems
- Medical
  - patient monitoring systems
- Test & Measurement
  - analyzers
  - oscilloscopes
- Audio & Video
  - consumer electronics
  - professional editing equipment



#### DIMENSIONS in inches (and millimeters)



## 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.

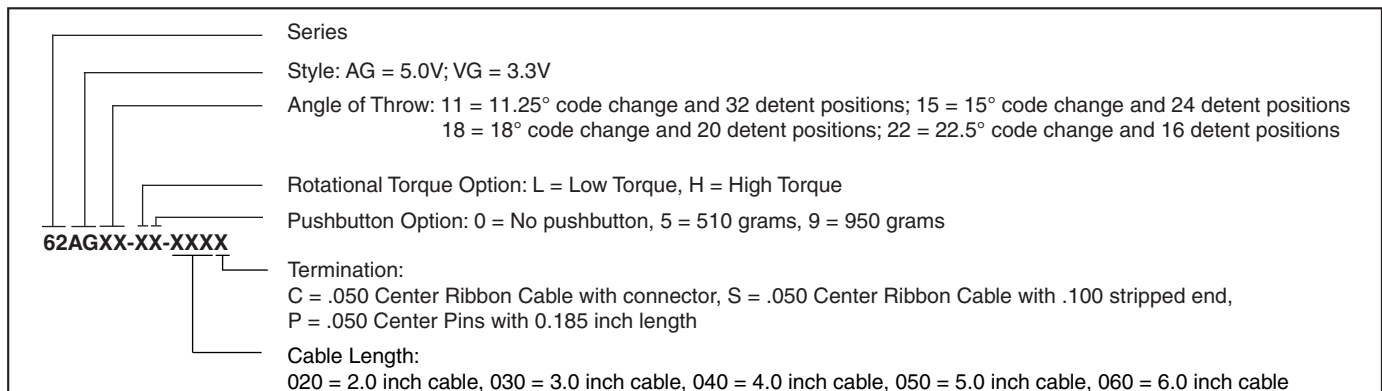
50% of initial value after 1 million cycles.

**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  $\Omega$  (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.