

## SERIES 62AG

### Price Competitive Solution

#### FEATURES

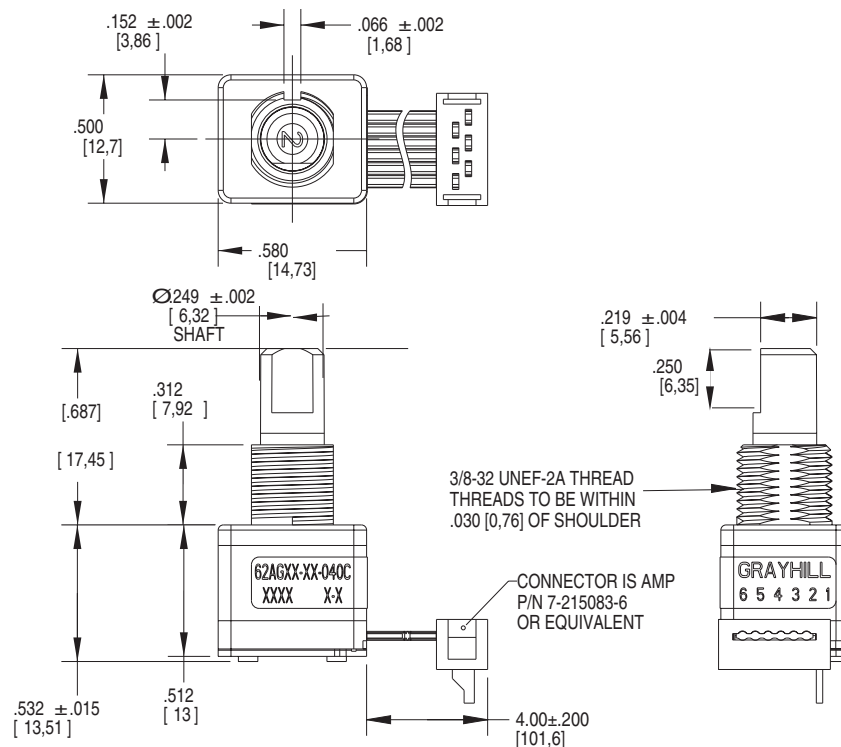
- Over 1 million rotational cycles
- 2-bit gray code output
- Quadrature coding
- Available in 16 detent positions
- 4 inch cable/connector assembly
- RoHS compliant
- Optional integrated pushbutton
- Patented light pipe technology
- Cost competitive with mechanical encoders at higher volumes

#### APPLICATIONS

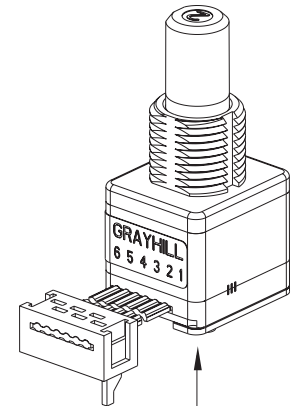
- Automotive
  - audio systems
  - navigation systems
- Medical
  - patient monitoring systems
- Test & Measurement
  - analyzers
  - oscilloscopes
- Audio & Video
  - consumer electronics
  - professional editing equipment



#### DIMENSIONS in inches (and millimeters)

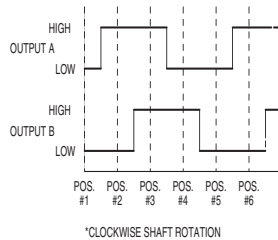
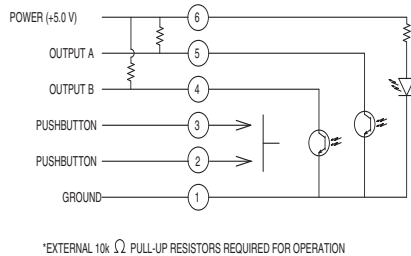


Unless otherwise specified, standard tolerances are:  
 Linear  $\pm .025$   
 Diameter  $\pm .010$   
 Angle  $\pm 2.0^\circ$



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

## WAVEFORM AND TRUTH TABLE



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

● INDICATES LOGIC HIGH; BLANK INDICATES LOGIC LOW.  
CODE REPEATS EVERY FOUR POSITIONS.

## SPECIFICATIONS

### Environmental Specifications

**Operating Temperature Range:** -40°C to 85°C

**Storage Temperature:** -40°C to 85°C

**Humidity:** 96 Hours at 90-95% humidity at 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:** 5.00±0.25 Vdc

**Supply Current:** 30 mA maximum at 5 Vdc.

#### Logic Output Characteristics:

Logic high shall be no less than 3.0 Vdc Logic low shall be no greater than 1.0 Vdc

**Minimum sink current:** 0.5 mA for 5 Vdc. (Preliminary)

**Power Consumption:** 150 mW maximum for 5 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 and 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:** 510±150 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.

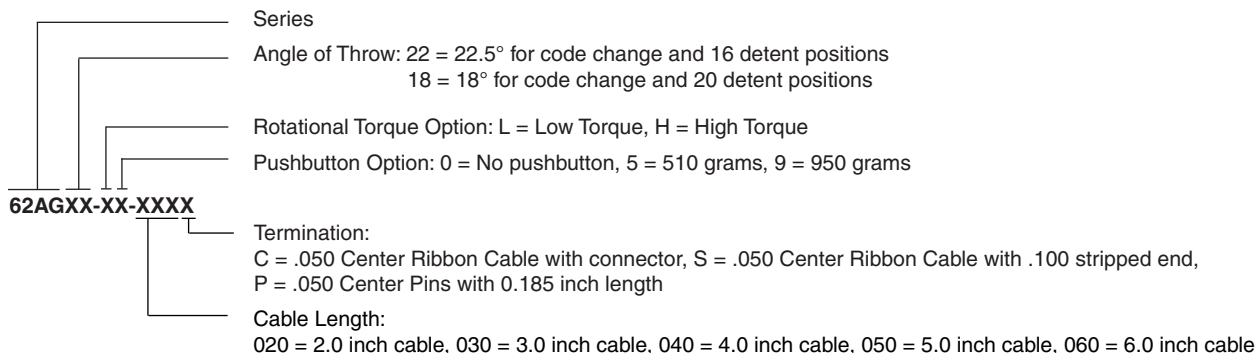
**Solder:** 96.5% tin / 3% silver / 0.5% copper. No clean.

**Hex Nut:** Brass, Plated with nickel

**Lockwasher:** Stainless steel

**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.