

SERIES 62SG Compact / Cost Effective

FEATURES

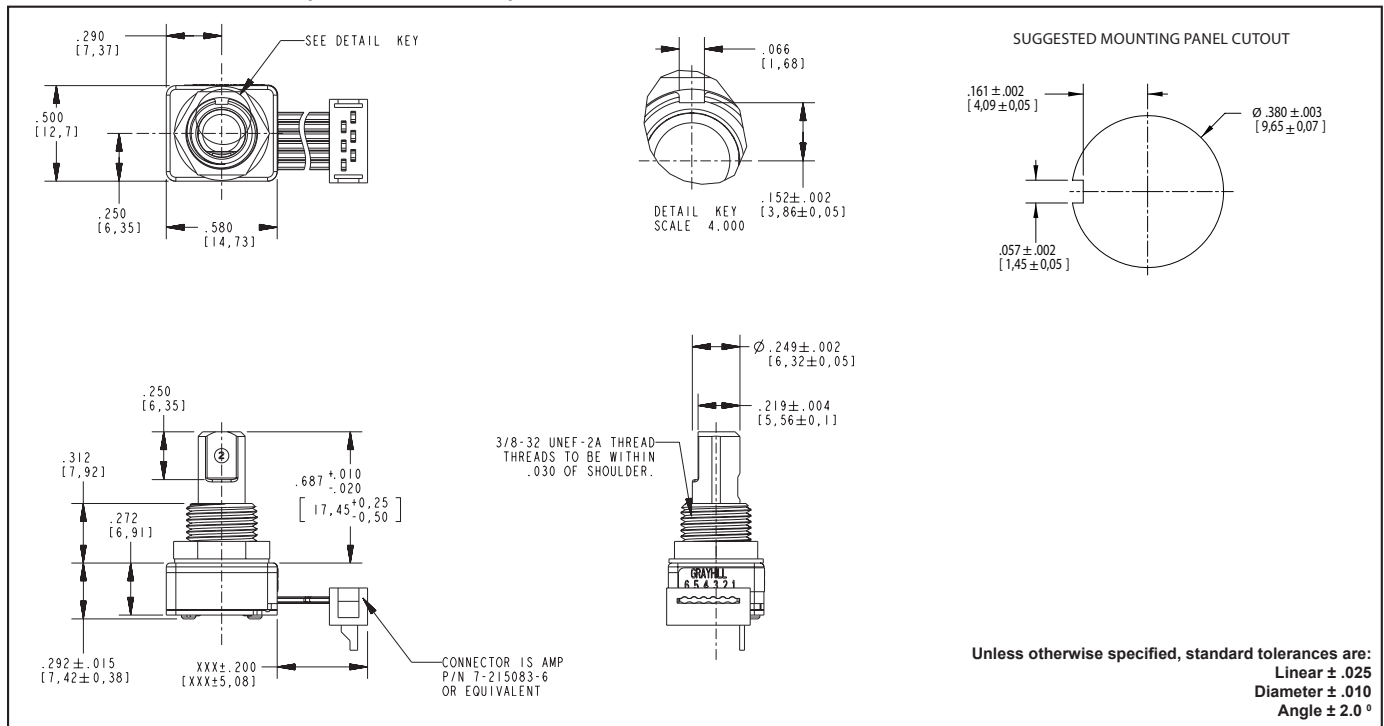
- Just 0.3-inch behind panel depth
- Over 1 million rotational cycles
- 2-bit gray code output
- Quadrature coding
- Available in 16, 24 and 32 detent positions
- Optional integrated pushbutton
- Light pipe technology
- Cost competitive with mechanical encoders at higher volumes

APPLICATIONS

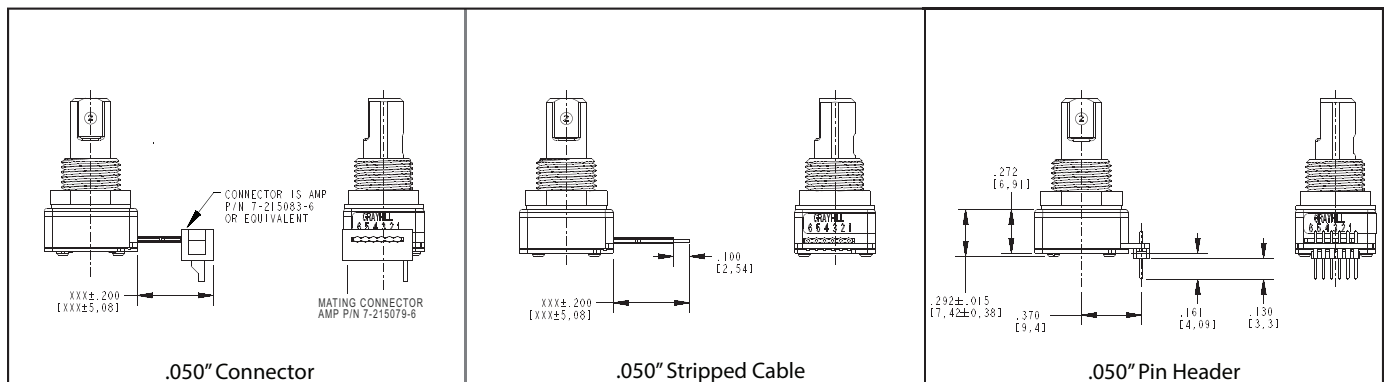
- Automotive
 - audio systems
 - navigation systems
- Medical
 - patient monitoring systems
- Test & Measurement
 - analyzers
 - oscilloscopes
- Audio & Video
 - consumer electronics
 - professional editing equipment



DIMENSIONS in inches (and millimeters)



TERMINATION OPTIONS



WAVEFORM AND TRUTH TABLE

TERMINAL #

POWER +5V

OUTPUT A

OUTPUT B

NORMALLY OPEN PUSHBUTTON SWITCH

GROUND

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.

*EXTERNAL 10 kΩ PULL-UP RESISTORS REQUIRED FOR OPERATION
**NOISE FILTERING CAPACITOR, LESS THAN 1000 pF

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.

- 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

- Code Housing: Nylon 6/6 25% glass reinforced. Zytel FR-50
- Light Pipe: Lexan, GE
- Code Rotor: Delrin 100
- Pushbutton Actuator: Glass Reinforced nylon 6/6. Zytel 70G33L. UL 94
- Pushbutton Dome: 301 Stainless Steel
- Printed Circuit Board: NEMA Grade FR4, Double clad with copper, Plated with gold over nickel
- Infrared Emitting Diode: Gallium Aluminum Arsenide
- Phototransistor Diode: NPN Silicon
- Resistor: Metal oxide on ceramic substrate
- Spacer: Pet plastic
- Backplate: 302 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: 5.00 ± 0.25 Vdc
- Supply Current: 30 mA maximum
- Logic Output Characteristics:
 - Logic High: $V_{OH} = 3.0$ Vdc MIN at $V_{CC} = 4.75$ Vdc with 10 kΩ PULL-UP RESISTOR
 - Logic Low: $V_{OL} = 1.0$ Vdc MAX at $V_{CC} = 5.25$ Vdc with 10 kΩ PULL-UP RESISTOR
- Output: Open Collector Phototransistor
- Optical Rise Time: 30ms maximum
- Optical Fall Time: 30ms maximum

Pushbutton Electrical and Mechanical Specifications

- Rating: 30 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 = 550 ± 200 grams
9 = 1050 ± 200 grams
- Shaft Travel: .020 ± .008 inch

Materials and Finishes

- Bushing: Zamak 2
- Shaft: Zamak 2
- Detent Ball: 302 Stainless Steel
- Detent Spring: Music Wire
- Retaining Ring: 301 Stainless Steel

TORQUE TABLE (IN-OZ)	L	M	H
16-POSITION (±1.0 IN-OZ)	1.80	2.10	2.55
24-POSITION (±0.5 IN-OZ)	1.25	1.65	2.45
32-POSITION (±0.5 IN-OZ)	1.00	1.20	1.50

40% of initial value after 1 million cycles.

Optical and Mechanical Encoders

Series

Style: SG

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

Rotational Torque Option: L = Low Torque, M = Medium Torque, H = High Torque

Pushbutton Option: 0 = No pushbutton, 5 = 550 grams, 9 = 1050 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 = 2.00" Cable, 030 = 3.00" Cable, 040 = 4.00" Cable, 050 = 5.00" Cable, 060 = 6.00" Cable, leave blank if pinned

62SGXX-XX-XXXX

ROTATIONAL TORQUE AND PUSHBUTTON AVAILABILITY				
		PUSHBUTTON		
		0 NONE	5 550 GRAMS	9 1050 GRAMS
ROTATIONAL TORQUE	L	L0	L5	L9
	M	M0	M5	M9
	H	H0	NOT AVAILABLE	H9

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