SERIES 62SG

Compact / Cost Effective

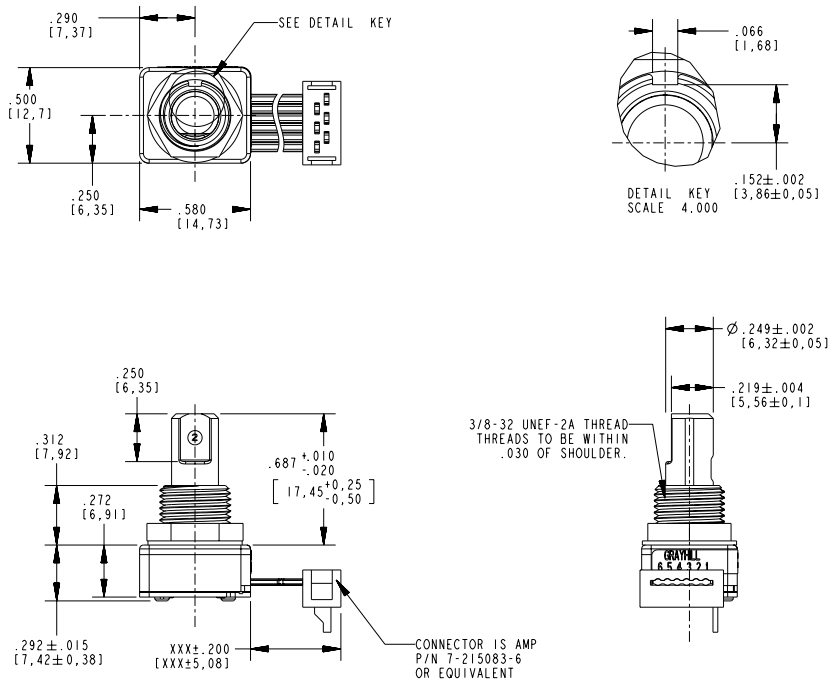
FEATURES

- 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
- Optional shaft and panel seal

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)

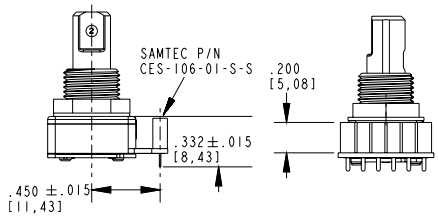


MOUNTING PANEL RECOMMENDATIONS
FOR PANEL SEAL VERSIONS:

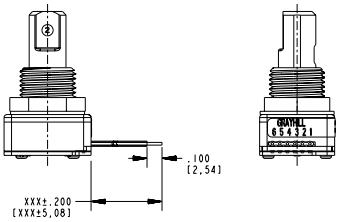
1. PANEL THICKNESS SHOULD NOT EXCEED .157.
2. MOUNTING HOLE TO BE ∅.375 – ∅.385.
3. ∅.470x.020 DEEP COUNTERBORE ON REVERSE OF PANEL REQUIRED FOR PROPER SEALING.
4. ANTI-ROTATION FEATURE IS RECOMMENDED. FEATURE SHOULD BE DESIGNED TO LOCK INTO BUSHING KEYWAY.

Unless otherwise specified, standard tolerances are:
Linear ± .025
Diameter ± .010
Angle ± 2.0 °

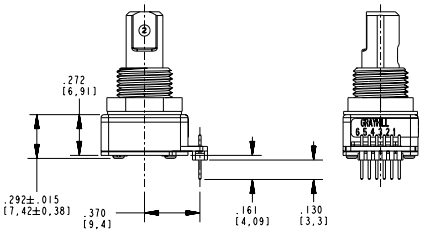
OTHER TERMINATION OPTIONS



RAC - Right Angle Connector

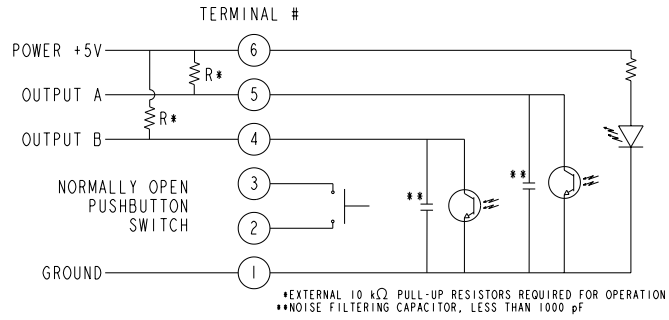


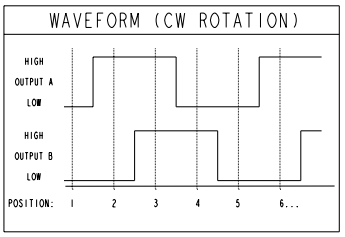
.050" Stripped Cable



.050" Pin Header

WAVEFORM AND TRUTH TABLE





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
Seal: Meets IP67 (above panel for sealed options only)

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

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

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
Shaft and Panel Seals: Silicone Rubber
Detent Ball: 302 Stainless Steel
Detent Spring: Music Wire

Retaining Ring: 301 Stainless Steel
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.

Without Shaft Seal

TORQUE TABLE (IN-OZ)	L	M	H
16-POSITION	1.70±1.05	2.10±1.20	3.05±1.50
24-POSITION	1.15±0.75	1.50±0.75	2.80±1.40
32-POSITION	1.00±0.65	1.20±0.8	1.50±0.9

With Shaft Seal

TORQUE TABLE (IN-OZ)	L	M	H
16-POSITION	1.80±1.20	2.35±1.30	3.30±1.60
24-POSITION	1.35±1.00	1.75±1.10	2.75±1.00
32-POSITION	1.40±0.7	1.60±0.8	1.75±0.9

40% of initial value after 1 million cycles.

62SGXX-XXX-XXXX

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
Seal Option: Blank = No shaft & panel seal, **S** = Shaft & panel seal
('S' option cannot be used with '5' pushbutton option)
Termination:
S = Stripped Cable, **C** = Connector, **P** = Header
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

ROTATIONAL TORQUE AND PUSHBUTTON AVAILABILITY

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

Optical and Mechanical Encoders