

Optical Encoders

SERIES 62SG

Compact / Cost Effective

FEATURES

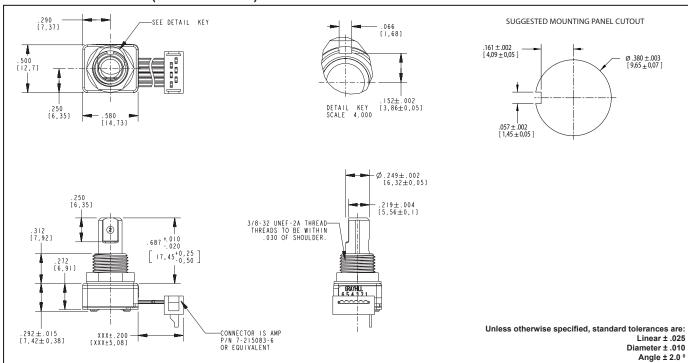
- Just 0.3-inch behind panel depth
- Over 1 million rotational cycles
- · 2-bit gray code output
- Quadrature coding
- Available in 16, 24 and 32 detent positions
- Optional integrated pushbutton
- · Light pipe technology
- Cost competitive with mechanical encoders at higher volumes

APPLICATIONS

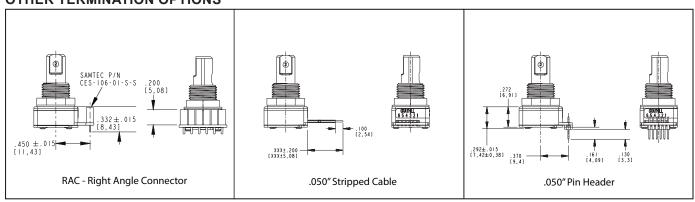
- Automotive
 - audio systems
 - navigation systems
- Medical
 - patient monitoring systems
- Test & Measurement
 - analyzers
 - oscilloscopes
- · Audio & Video
 - consumer electronics
 - professional editing equipment



DIMENSIONS in inches (and millimeters)



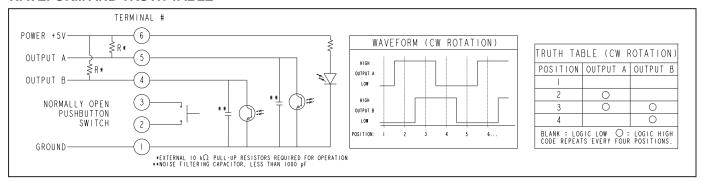
OTHER TERMINATION OPTIONS



Optical Encoders



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: 5.00 ± 0.25 Vdc Supply Current: 30 mA maximum **Logic Output Characteristics:**

Logic High: $V_{OH} = 3.0 \text{ Vdc MIN at } V_{CC} = 4.75$ Vdc with 10 $k\Omega$ 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

TORQUE TABLE (IN-OZ)	L	м	Н
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

40% 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

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

 $9 = 1050 \pm 200 \text{ grams}$ Shaft Travel: $.020 \pm .008$ inch

Materials and Finishes

Bushing: Zamak 2 Shaft: Zamak 2

Detent Ball: 302 Stainless Steel Detent Sprina: 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.

