

# Optical Encoders

# SERIES 62C Concentric Shaft

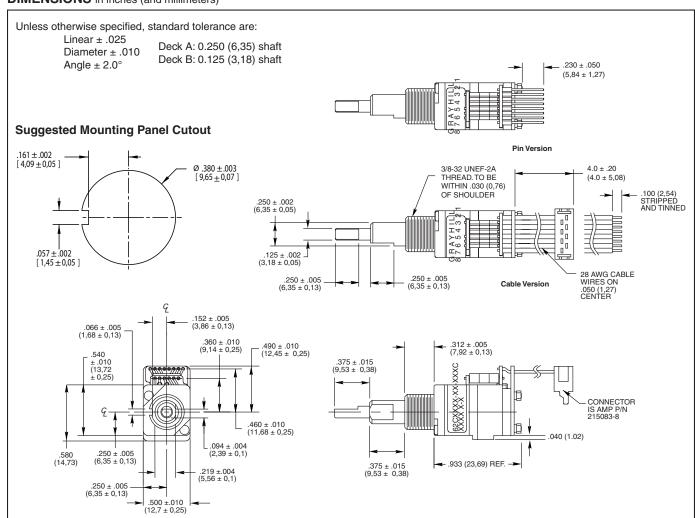
# **FEATURES**

- Economical Size
- Combined Functionality
- Optically Coupled for more than a Million Cycles of Operations
- Optional Integral Pushbutton
- Compatible with CMOS, TTL, and HCMOS Logic
- Available with 12, 16, 24, and 32
   Detent Positions for Deck
- Choices of Cable Length and Terminations
- Available in 3.3 Volt Input (contact Grayhill for details)

### **APPLICATIONS**



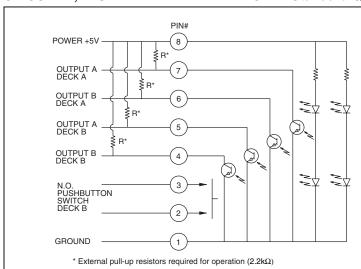
# **DIMENSIONS** in inches (and millimeters)



# **Optical Encoders**

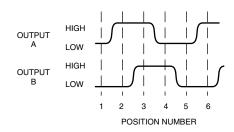


# CIRCUITRY, TRUTH TABLE AND WAVEFORM: Standard Quadrature 2-Bit Code



Clockwise Rotation		
Position	Output A	Output B
1		
2	•	
3	•	•
4		•

 Indicates logic high; blank indicates logic low. Code repeats every 4 positions.



#### **SPECIFICATIONS**

## **Pushbutton Switch Ratings**

Rating: 5 Vdc, 10 mA, resistive Contact Resistance: less than 10 ohms (TTL or CMOS compatible)

Voltage Breakdown: 250 Vac between

mutually insulated parts

Contact Bounce: less than 4 mS at make,

less than 10 mS at break

Actuation Life: 3,000,000 operations Actuation Force:  $1000 \pm 300$  grams Pushbutton Travel: .010 / .025 inch

### **Encoder Ratings**

Coding: 2-bit quadrature coded output

Operating Voltage:  $5 \pm .25 \, \text{Vdc}$ 

Supply Current: 50 mA maximum at 5 Vdc

Logic High: 3.8V minimum

**Logic Low:** 0.8V maximum

Logic Rise and Fall Times: less than 30 mS

Operating Torque: 2.0 in-oz ± 1.4 in-oz

initially

Rotational Life: more than 1,000,000 cycles of operation (1 cycle = 360° rotation)
Shaft Push Out Force: 45 lbs minimum
Mounting Torque: 15 in-lbs maximum
Operating Speed: 100 RPM maximum
Axial Shaft Play: 0.010 max. for each shaft

### **Environmental Ratings**

Operating Temp. Range: -40°C to 85°C Storage Temp. Range: -55°C to 100°C Relative Humidity: 90–95% at 40°C, 96 hrs. Vibration Resistance: Harmonic motion with amplitude of 15g, within a varied 10 to 2000 Hz frequency for 12 hours per MIL-STD-202, Method 204

Shock Resistance: Test 1: Tested at 100g for 6 mS, half sine, 12.3 ft/s Test 2: 100g for 6

mS, sawtooth, 9.7 ft/s

# **Materials and Finishes**

**Bushing:** Zinc casting **Shaft:** Aluminum

Shaft Retaining Ring: Stainless steel

Detent Spring: Stainless steel

Printed Circuit Board: NEMA grade FR-4

Terminals: Brass, tin-plated

**Mounting Hardware:** One brass, nickel-plated nut and zinc-plated spring steel with clear trivalent chromate finish lockwasher supplied with each switch. (Nut is 0.094 inches thick by

0.433 inches across flats) **Rotor:** Thermoplastic

Code Housing: Reinforced thermoplastic Pushbutton Dome: Stainless steel Pushbutton Housing: Thermoplastic Pushbutton Contact: Brass, nickel-plated Dome Retaining Disk: Thermoplastic

Strain Relief: Stainless steel

**Cable:** 28 AWG, stranded/top coated wire, PVC coated on .050 centers (cable version) **Header Pins:** Phosphor bronze, tin-plated

Insulator: Glass-filled polyester

Spacer: Zinc casting

### **ORDERING INFORMATION**

