



## Optical Encoders

### SERIES 62F 1/2" Package, Lighted Shaft

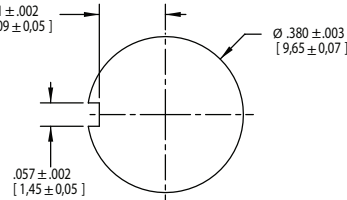
#### FEATURES

- Integrated Self-Lighting System for Knob Illumination
- 1 Million Rotational Cycles
- 1/2" Package
- Compatible with CMOS, TTL and HCMOS Logic
- Optional Integral Pushbutton
- Choices of Cable Length and Terminations
- Customized Solutions Available

#### APPLICATIONS

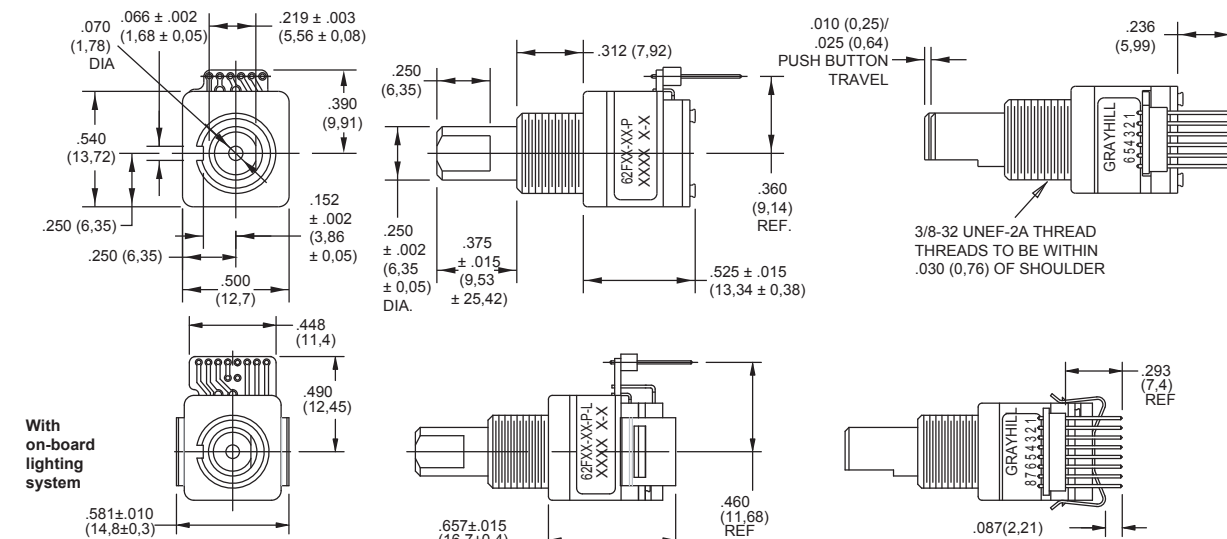
- Global Positioning
- Driver Information Systems
- Medical Equipment
- Cockpit Controls
- Mixing Boards

#### Suggested Mounting Panel Cutout

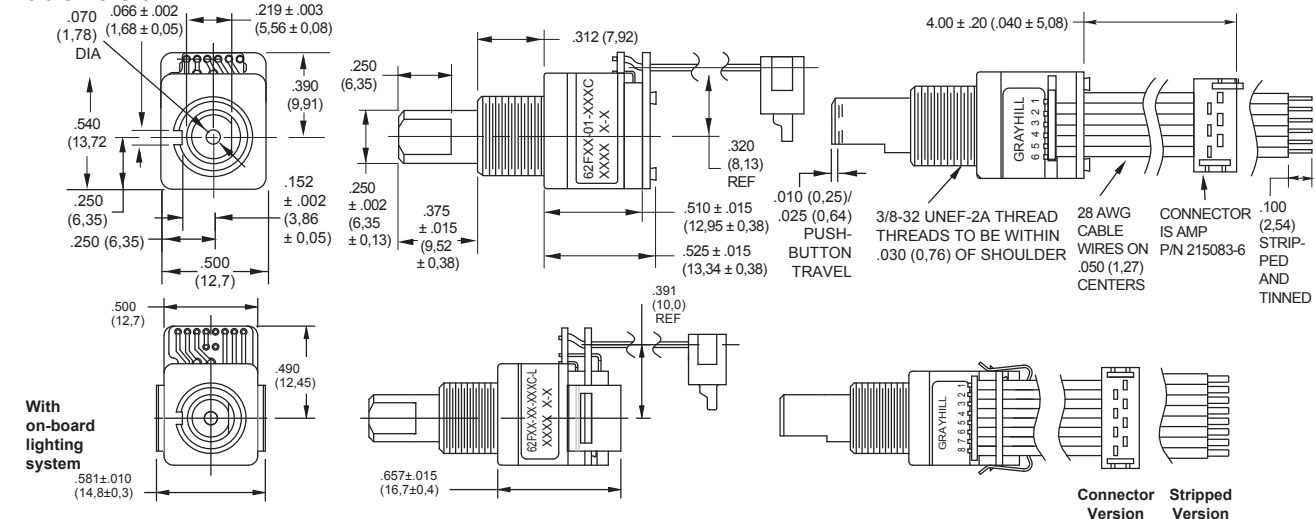


#### DIMENSIONS in inches (and millimeters)

##### Pin Version

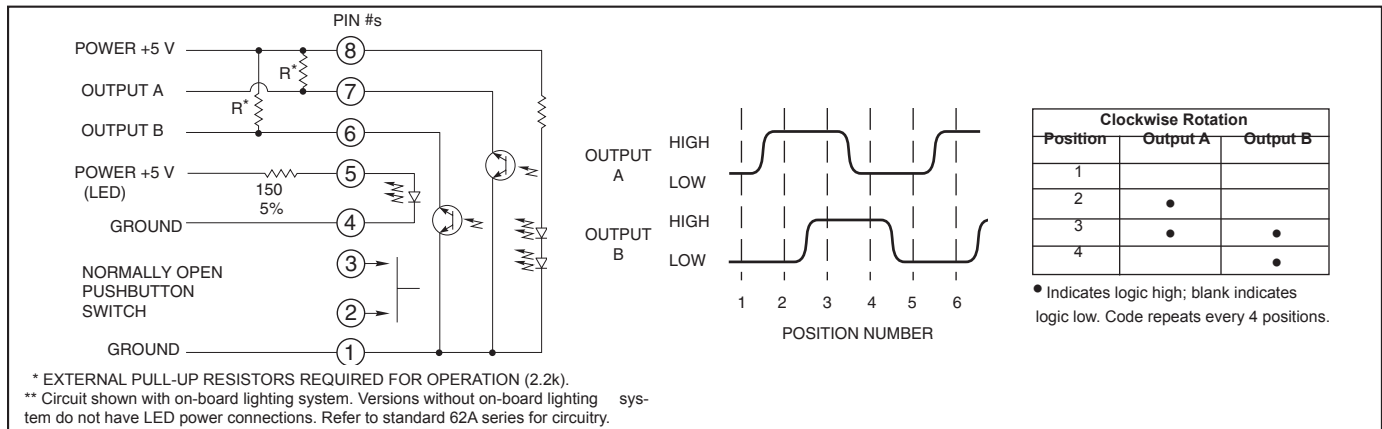


##### Cable Version



Unless otherwise specified, standard tolerance is  $\pm 0.10$  (0.25).

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



## SPECIFICATIONS

## Pushbutton Switch Ratings

**Rating:** 5 Vdc, 10 mA, resistive  
**Contact Resistance:** less than 10 ohms (TTL or CMOS compatible)  
**Pushbutton Life:** 3 million actuations minimum  
**Contact Bounce:** less than 4 mS at make and less than 10 mS at break  
**Actuation Force:** 1000 ± 300 grams  
**Pushbutton Travel:** .010/.025 inch

## Switch Ratings

**Coding:** 2-bit quadrature coded output  
**Operating Voltage:** 5.0 ± .25 Vdc  
**Voltage Breakdown:** 250 Vac between mutually insulated parts  
**Supply Current:** 30 mA maximum  
**Logic Output Characteristics:**  
**Logic High:** 3.8 Vdc minimum  
**Logic Low:** 0.8 Vdc maximum  
**Rotational Life:** 1,000,000 cycles minimum (One cycle is a rotation through all positions and a full return)  
**Minimum Sink Current:** 2.0 mA  
**Power Consumption:** 150mW maximum  
**Optical Rise and Fall Times:** less than 30 mS maximum

## Operating Torque:

**Detent:** 2.0 ± 1.4 in-oz initially  
**Non-detent:** less than 1.5 in-oz initially  
**Shaft Push Out Force:** 45 lbs minimum  
**Mounting Torque:** 15 in-lbs maximum  
**Terminal Strength:** 15 lbs cable pull-out force minimum  
**Operating Speed:** 100 RPM maximum  
**Axial Shaft Play:** .010 maximum

## Environmental Ratings

**Operating Temperature Range:** -40°C to 85°C  
**Storage Temperature Range:** -55°C to 100°C  
**Relative Humidity:** 90–95% at 40°C for 96 hours  
**Vibration Resistance:** Harmonic motion with amplitude of 15G's, within a varied 10 to 2000 Hz frequency for 12 hours per MIL-STD-202, Method 204  
**Mechanical Shock:** Test 1: 100G for 6 mS, half sine, 12.3 ft/s; Test 2: 100G for 6 mS, sawtooth, 9.7 ft/s

## Materials and Finishes

**Code Housing:** Reinforced thermoplastic

**Shaft:** Aluminum

**Bushing:** Zinc casting

**Shaft Retaining Ring:** Stainless steel

**Detent Spring:** Stainless steel

**Printed Circuit Boards:** NEMA grade FR-4

gold over nickel or palladium

**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:** Thermoplastic

**Pushbutton Dome:** Stainless steel

**Dome Retaining Disk:** Thermoplastic

**Pushbutton Housing:** Thermoplastic

**Phototransistor:** Planar Silicon NPN

**Pushbutton Contact:** Brass, nickel-plated

**Flex Cable:** 28 AWG, stranded/top coated wire, PVC coated on .050 or .100" centers (cabled version)

**Header Pins:** Phosphor bronze, tin-plated

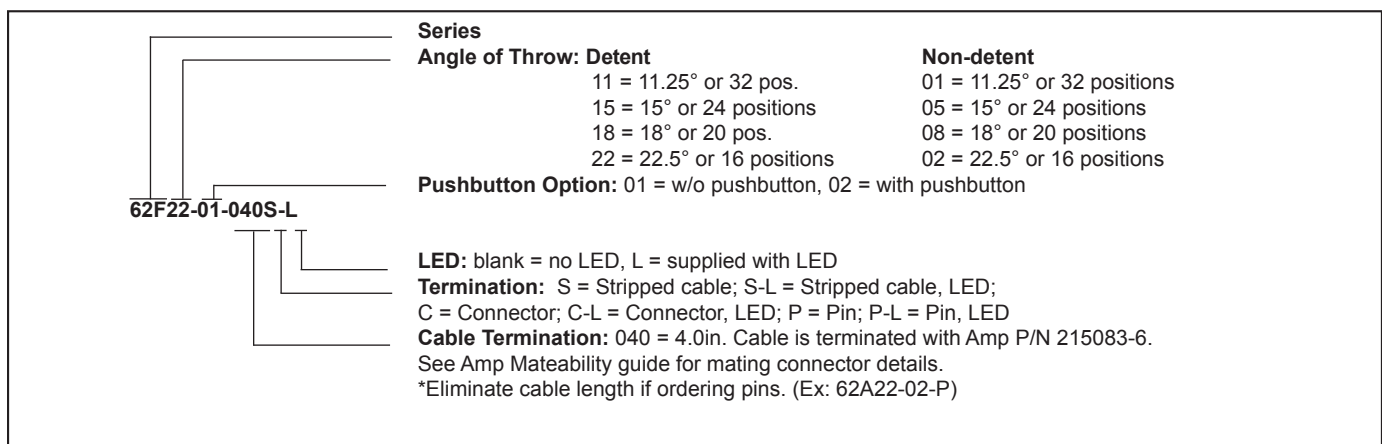
**Spacer:** ABS

**Backplate/Strain Relief:** Stainless steel

**Light Pipe:** Thermoplastic

**LED Housing:** Thermoplastic

## ORDERING INFORMATION



Custom materials, styles, colors, and markings are available. Control knobs available.

**Available from your local Grayhill Component Distributor.** For prices and discounts, contact a local Sales Office, an authorized local Distributor, or Grayhill.