



# Optical Encoders

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

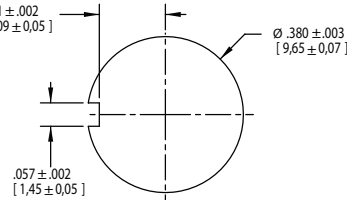
### FEATURES

- 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

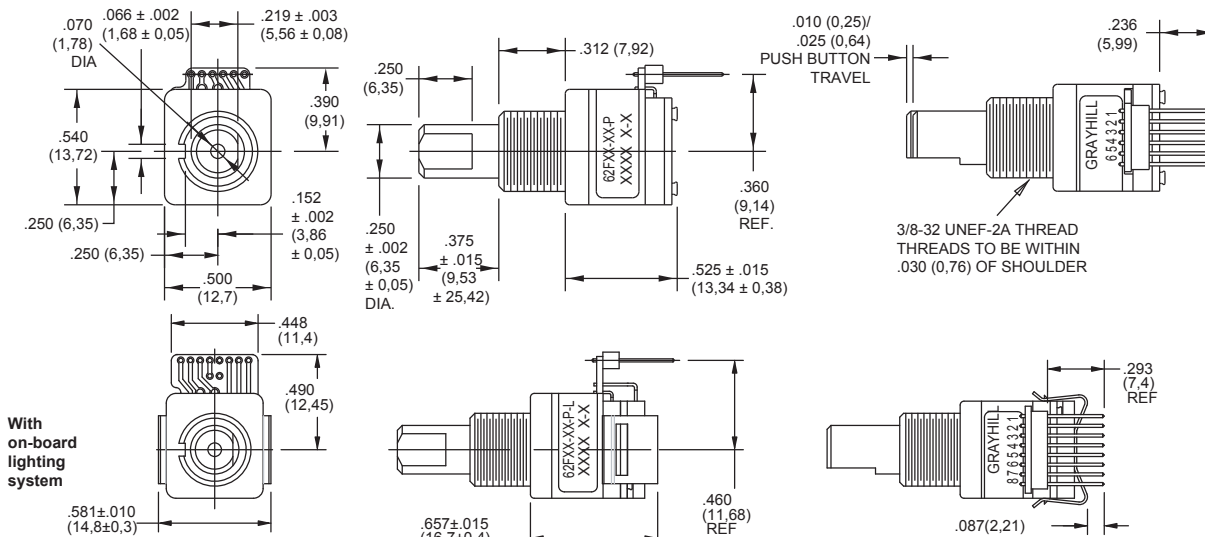
- Global Positioning
- Driver Information Systems
- Medical Equipment
- Cockpit Controls
- Mixing Boards

### Suggested Mounting Panel Cutout

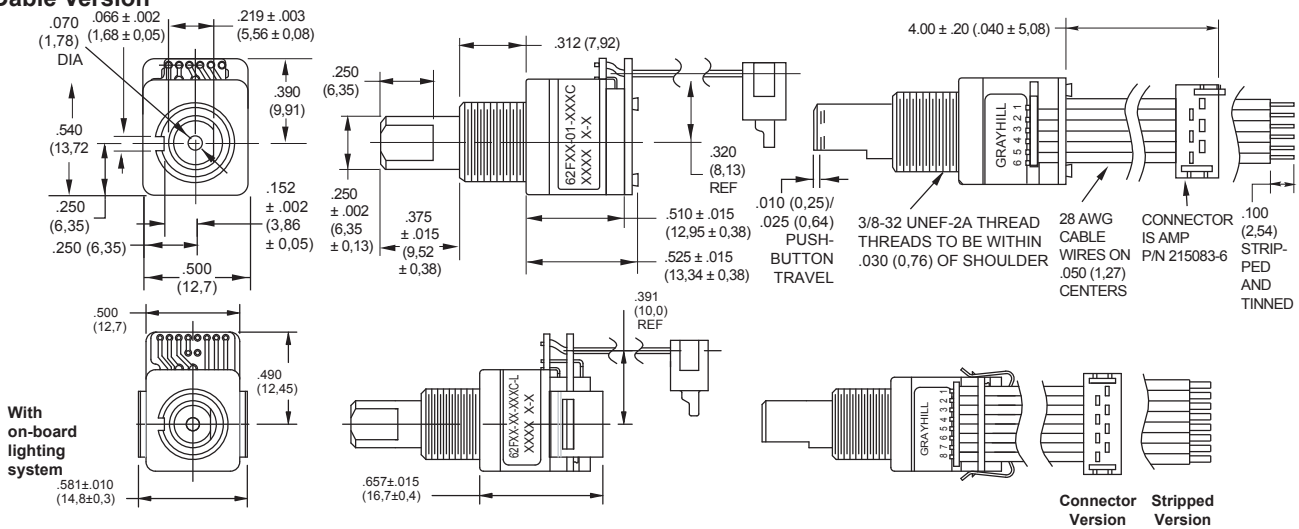


### DIMENSIONS in inches (and millimeters)

#### Pin Version



#### Cable Version



Unless otherwise specified, standard tolerance is  $\pm .010$  (0,25).

Optical and Mechanical Encoders

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

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)
- 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**

**62F22-01-040S-L**

<b>Series</b>	<b>Series</b>	<b>Non-detent</b>
<b>Angle of Throw: Detent</b>	11 = 11.25° or 32 pos.	01 = 11.25° or 32 positions
	15 = 15° or 24 positions	05 = 15° or 24 positions
	18 = 18° or 20 pos.	08 = 18° or 20 positions
	22 = 22.5° or 16 positions	02 = 22.5° or 16 positions
<b>Pushbutton Option:</b>	01 = w/o pushbutton, 02 = with pushbutton	
<b>LED:</b>	blank = no LED, L = supplied with LED	
<b>Termination:</b>	S = Stripped cable; S-L = Stripped cable, LED; C = Connector; C-L = Connector, LED; P = Pin; P-L = Pin, LED	
<b>Cable Termination:</b>	040 = 4.0in. Cable is terminated with Amp P/N 215083-6. See Amp Mateability guide for mating connector details.	
	*Eliminate cable length if ordering pins. (Ex: 62A22-02-P)	

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.