



# Optical Encoders

## SERIES 62HS High Torque

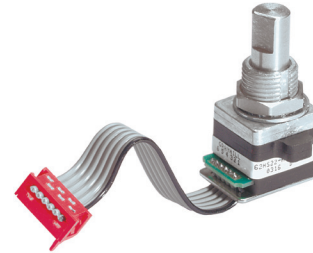
### FEATURES

- High Rotational Torque Provides Positive Tactile Feedback
- Optically Coupled for More than a Million Cycles
- Optional Integral Pushbutton
- Compatible with CMOS, TTL and HCMOS Logic

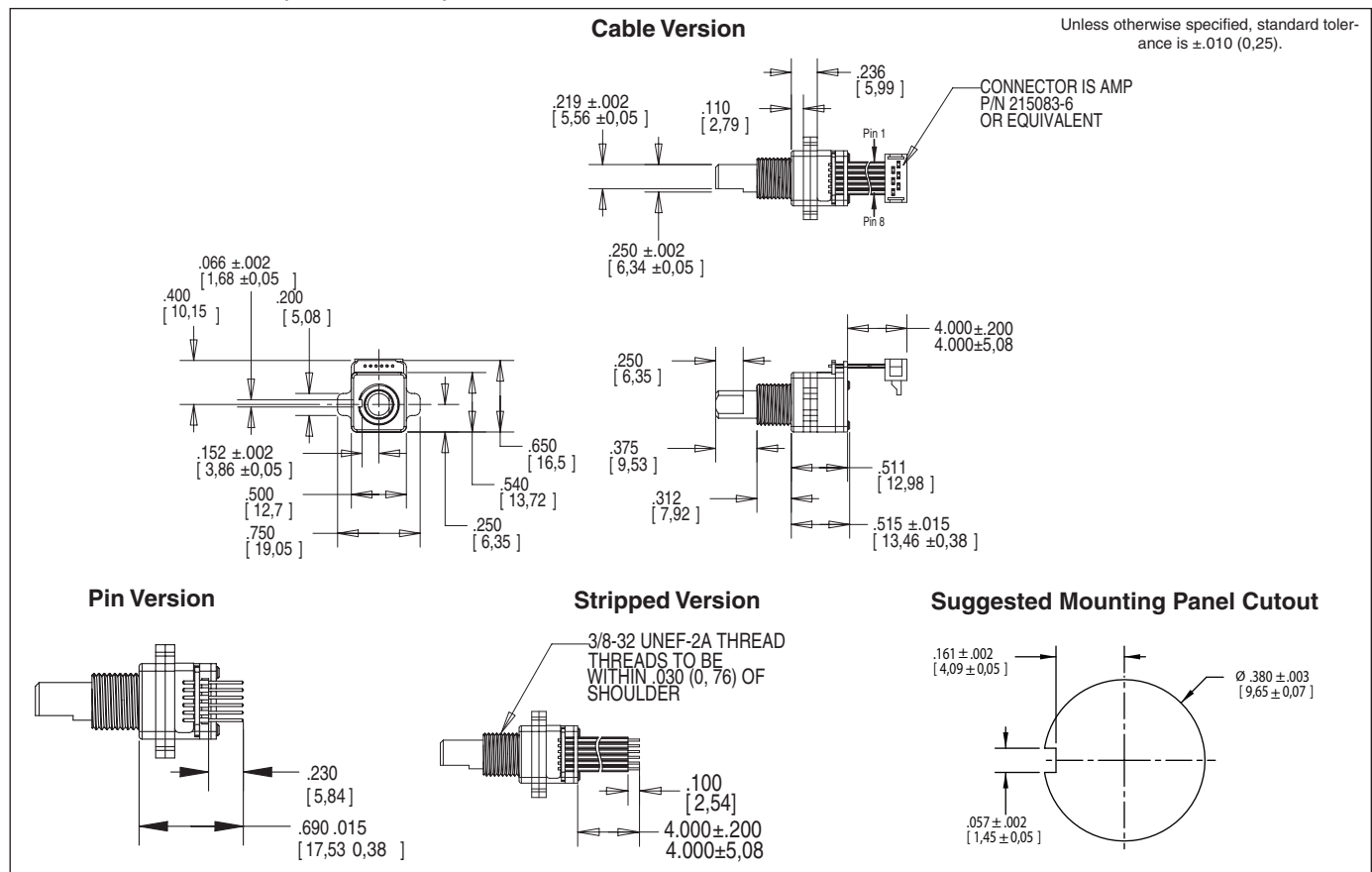
- Available in 8, 12 and 16 Detent Positions
- Choice of Cable Length and Terminations

### APPLICATIONS

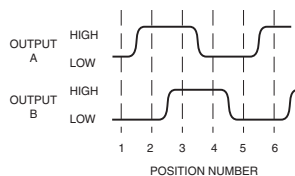
- Avionics



### DIMENSIONS in inches (and millimeters)



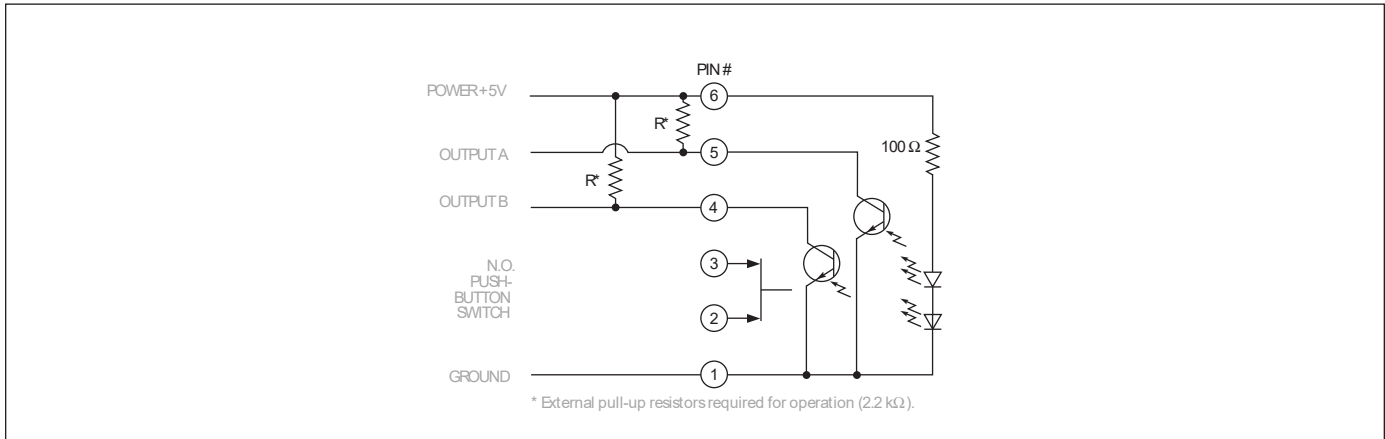
### WAVEFORM AND TRUTH TABLE



| Clockwise Rotation |          |          |
|--------------------|----------|----------|
| Position           | Output A | Output B |
| 1                  |          |          |
| 2                  | ●        |          |
| 3                  | ●        | ●        |
| 4                  |          | ●        |

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

**CIRCUITRY**



**SPECIFICATIONS**

**Pushbutton Switch Ratings**

**Rating:** at 5 Vdc, 10 mA, resistive  
**Contact Resistance:** less than 10 ohms (TTL or CMOS compatible)  
**Pushbutton Life:** 3 million actuations minimum  
**Voltage Breakdown:** 250 Vac between mutually insulated parts  
**Contact Bounce:** less than 4 mS at make and less than 10 mS at break  
**Actuation Force:** 1100 ±300g  
**Shaft Travel:** .025+/- .010 inch

**Encoder Ratings**

**Coding:** 2-bit quadrature coded output  
**Operating Voltage:** 5.0 ±.25 Vdc  
**Supply Current:** 30 mA maximum@5.0 Vdc  
**Logic Output Characteristics:**  
**Logic High:** 3.0 Vdc minimum  
**Logic Low:** 1.0 Vdc maximum  
**Mechanical Life:** 1,000,000 cycles minimum (One cycle is a rotation through all positions and a full return)  
**Minimum Sink Current:** 2.0 mA for 5 Vdc  
**Power Consumption:** 150mW maximum  
**Output:** open collector phototransistor  
**Logic Rise and Fall:** less than 30 mS max

**Operating Torque:** 5.0 in-oz +/- 1.5 in-oz initial  
**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

**Environmental Ratings**

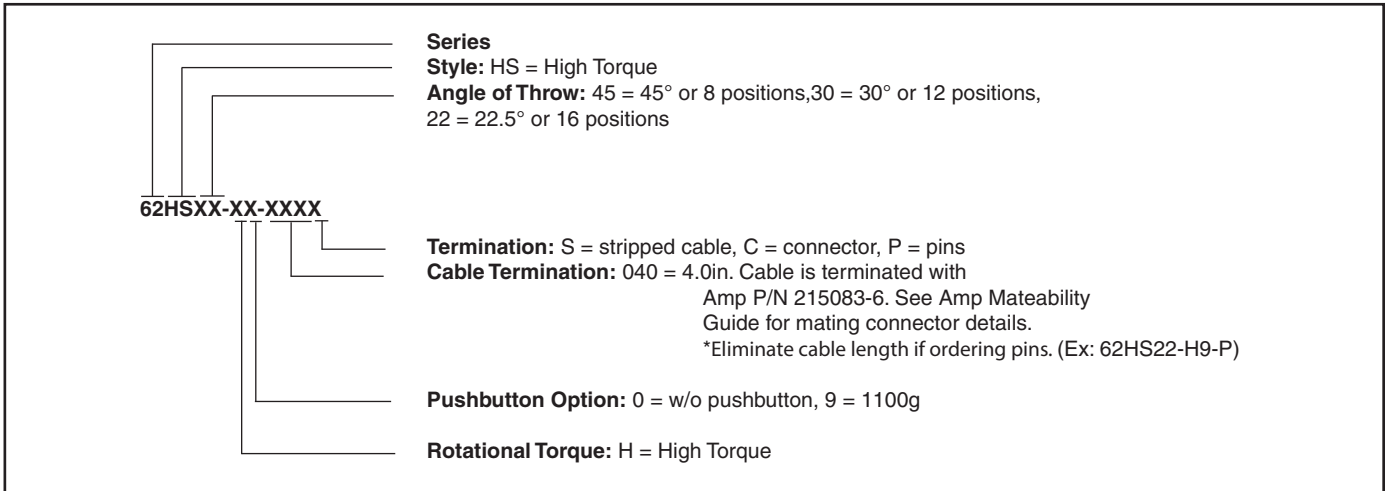
**Operating Temperature Range:** -40°C to 85°C  
**Storage Temperature Range:** -55°C to 100°C  
**Vibration Resistance:** Harmonic motion with amplitude of 15G, within a varied 10 to 2000 Hz frequency for 12 hours  
**Mechanical Shock:** Test 1: 100G, 6 mS, half sine, 12.3 ft/s; Test 2: 100G, 6 mS,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

**Materials and Finishes**

**Code Housing:** Reinforced thermoplastic  
**Shaft:** Stainless steel

**Bushing:** Zinc casting  
**Shaft Retaining Ring:** Stainless steel  
**Detent Spring:** High carbon steel  
**Detent Ball:** Stainless steel  
**Detent Section:** Hiloy 610  
**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  
**Pushbutton Dome:** Stainless steel  
**Phototransistor:** Planar Silicon NPN  
**Infrared Emitter:** Gallium aluminum arsenide  
**Flex Cable:** 28 AWG, stranded/top coated wire, PVC coated on .050" centers (cabled version)  
**Header Pins:** Brass, tin-plated  
**Spacer:** Hiloy 610  
**Shim:** Stainless Steel  
**Backplate/Strain Relief:** Stainless steel

**ORDERING INFORMATION**



Optical and Mechanical Encoders