

# Optical Encoders

## Series 62HN

### High Torque, Non-Turn Concentric Shaft



#### FEATURES

- High Rotational Torque Provides Positive Tactile Feedback
- Non-turn Pushbutton to Ensure Pushbutton Text and Orientation
- Optically Coupled for More than a Million Cycles
- Separate Pushbutton Function

- Compatible with CMOS, TTL and HCMOS Logic
- Available in 8, 12 and 16 Detent Positions
- Choice of Cable Length and Terminations

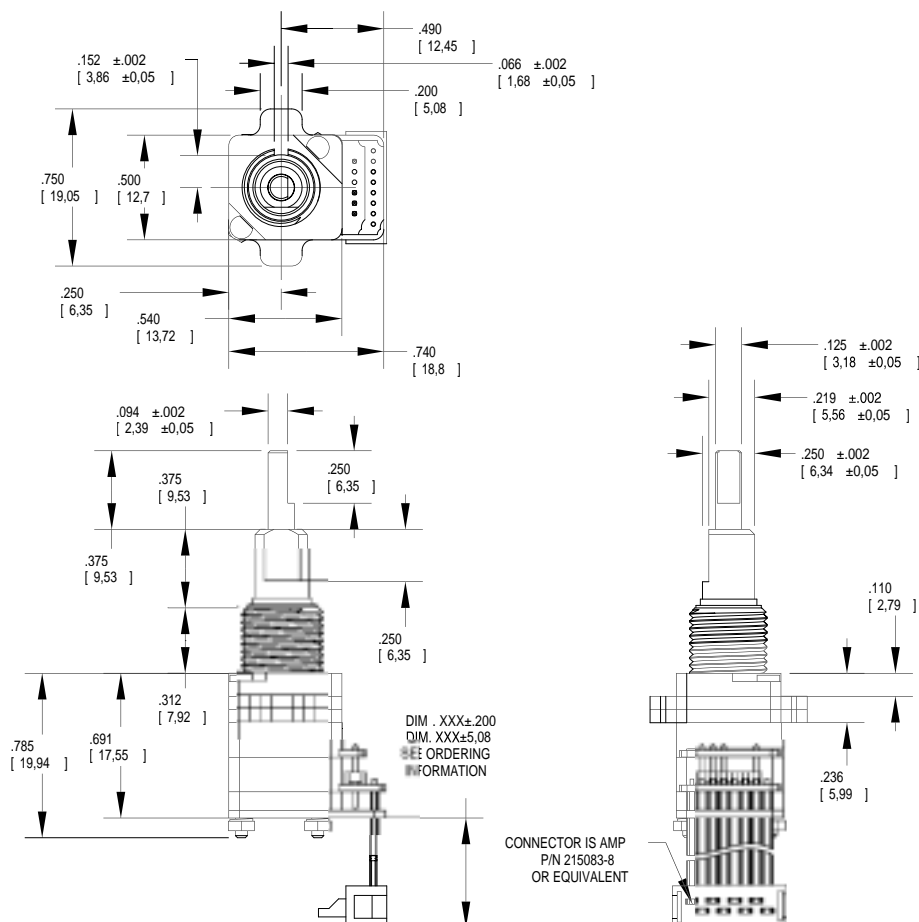
#### APPLICATIONS

- Avionics



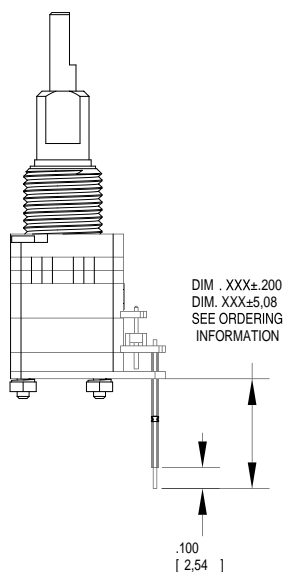
#### DIMENSIONS In inches (and millimeters)

##### Cable Version

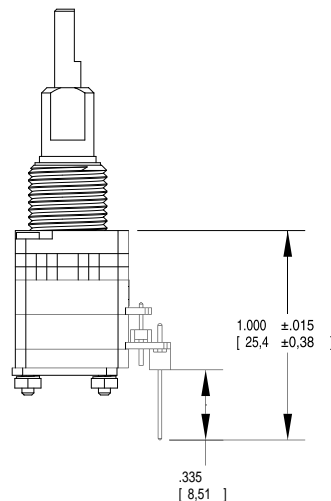


Unless otherwise specified, standard tolerance is ±.010 (0,25).

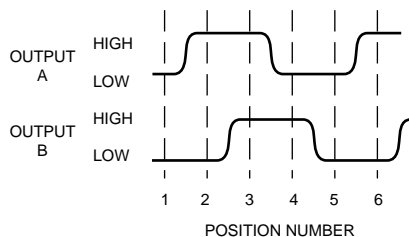
## Stripped Version



## Pin Version

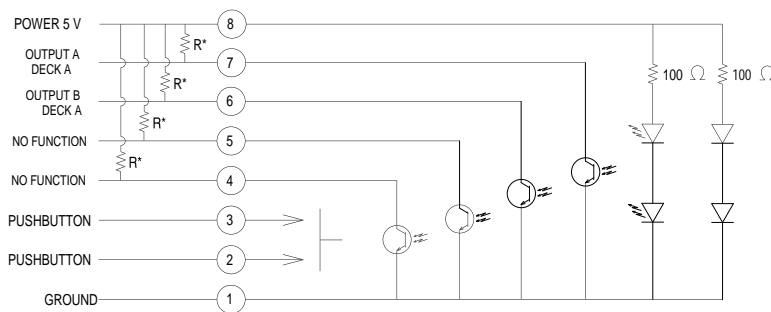


## CIRCUITRY, WAVEFORM AND TRUTH TABLE



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

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



\*EXTERNAL 2.2kΩ PULL-UP RESISTORS REQUIRED FOR OPERATION

## 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

### 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 Times:** less than 30 mS maximum  
**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

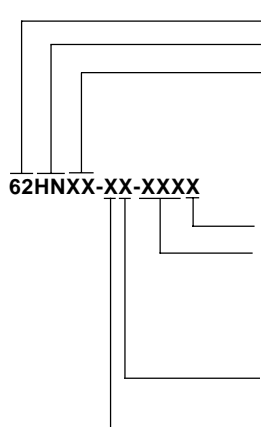
**Operating Temperature Range:** -40°C to 85°C  
**Storage Temperature Range:** -55°C to 100°C  
**Vibration Resistance:** Harmonic motion with amplitude of 15G, within a varied 10 to 2000 Hz frequency for 12 hours  
**Mechanical Shock:** Test 1: 100G, 6 mS, half sine, 12.3 ft/s; Test 2: 100G, 6 mS,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

### Materials and Finishes

**Code Housing:** Reinforced thermoplastic  
**Shafts:** Stainless Steel  
**Bushing:** Zinc casting  
**Shaft Retaining Rings:** Stainless steel  
**Detent Spring:** Stainless 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 stainless steel lockwasher supplied with each switch. Nut is 0.094 inches thick by 0.562 inches across flats  
**Rotor:** Thermoplastic  
**Code Housing:** Thermoplastic  
**Pushbutton Dome:** Stainless steel  
**Dome Retaining Disk:** Thermoplastic  
**Pushbutton Housing:** Thermoplastic  
**Phototransistor:** Planar Silicon NPN  
**Infrared Emitter:** Gallium aluminum arsenide  
**Pushbutton Contact:** Brass, nickel-plated  
**Flex Cable:** 28 AWG, stranded/top coated wire, PVC coated on .050 or .100" centers (cabled version)  
**Header Pins:** Brass, tin-plated  
**Spacer:** Hiloy 610  
**Shim:** Stainless Steel  
**Endcap:** Thermoplastic  
**Non-turn Pin:** Stainless steel  
**Backplate/Strain Relief:** Stainless steel  
**Lockwashers:** Stainless steel  
**Hex Nuts:** Stainless steel  
**Studs:** Stainless steel

## ORDERING INFORMATION



### Series

**Style:** HN = High Torque, Concentric, Non-Turn

**Angle of Throw:** 45 = 45° or 8 positions, 30 = 30° or 12 positions, 22 = 22.5° or 16 positions

**Termination:** S = stripped cable, C = connector, P = pins

**Cable Length\*:** 020 = 2.0 inches min. to 250 = 25.0 inches max. Provided in increments of 1/2 inch.

Example: 035 = 3.5", 060 = 6"

\*Eliminate cable length if ordering pins. (Ex: 62H2222-02-P)

**Pushbutton Option:** 1 = w/o pushbutton, 9 = 900g pushbutton

**Rotational Torque:** H = High Torque

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.