

## SERIES 68P

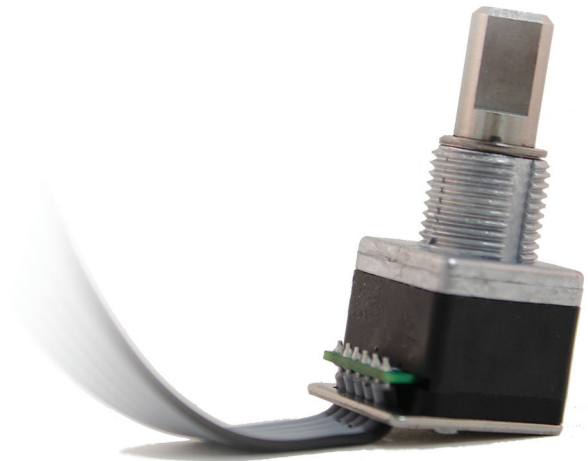
### Long Life Potentiometer Substitute

#### FEATURES

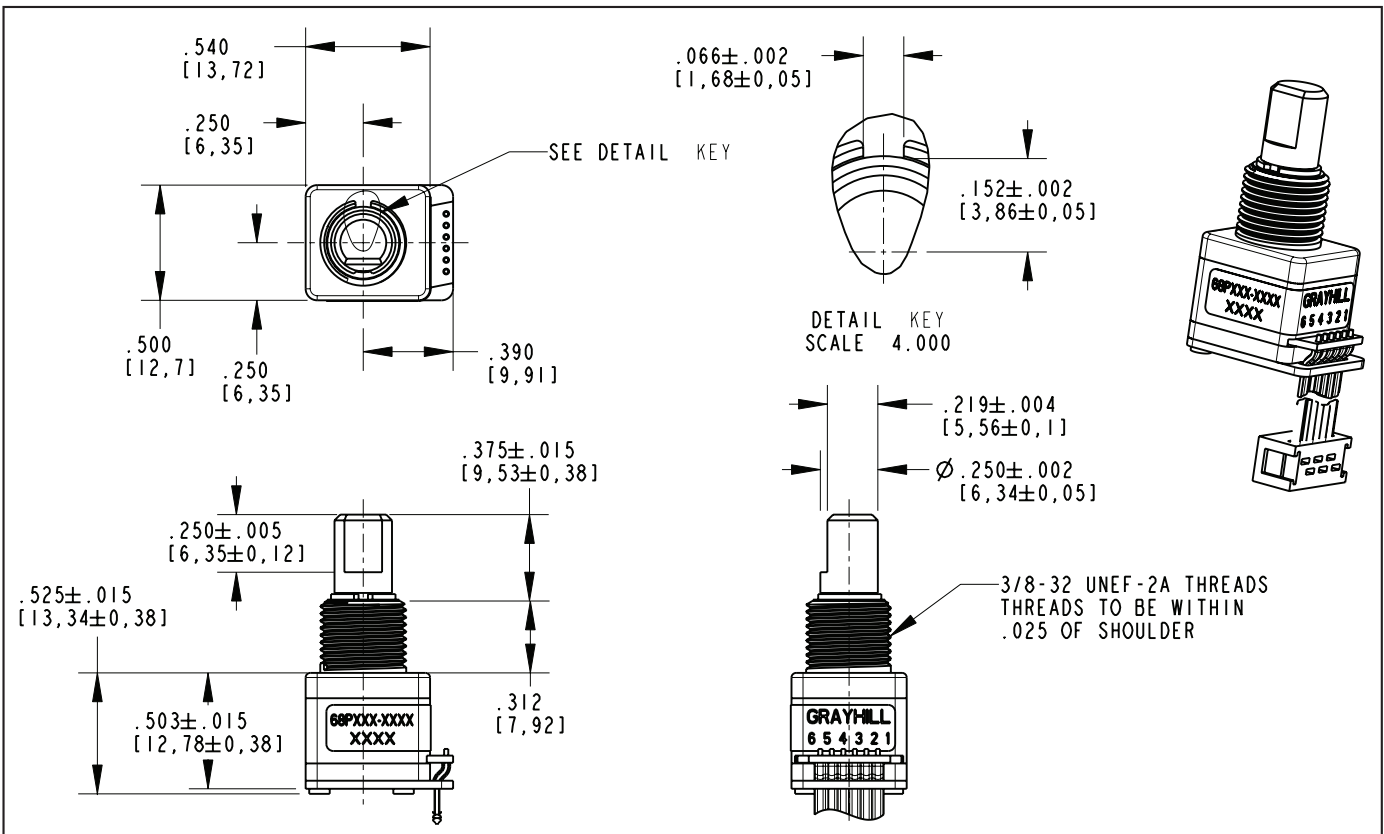
- Ratiometric analog output
- Debris resistant Hall effect sensor technology
- 3 million rotational cycles
- Single or redundant output
- Custom output options

#### APPLICATIONS

- Test & Measurement equipment
- Audio / Visual equipment
- Agriculture & Construction throttle control
- Potentiometer substitute with long life

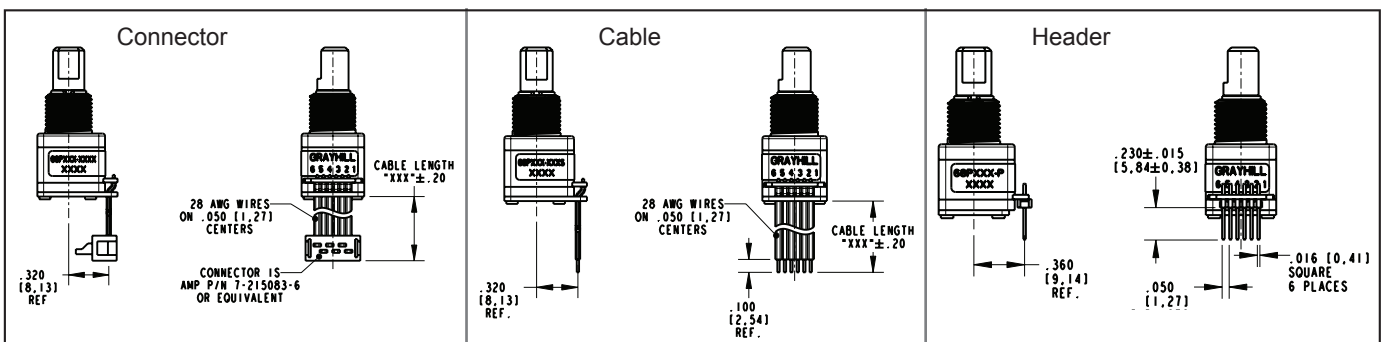


#### DIMENSIONS in inches [millimeters]

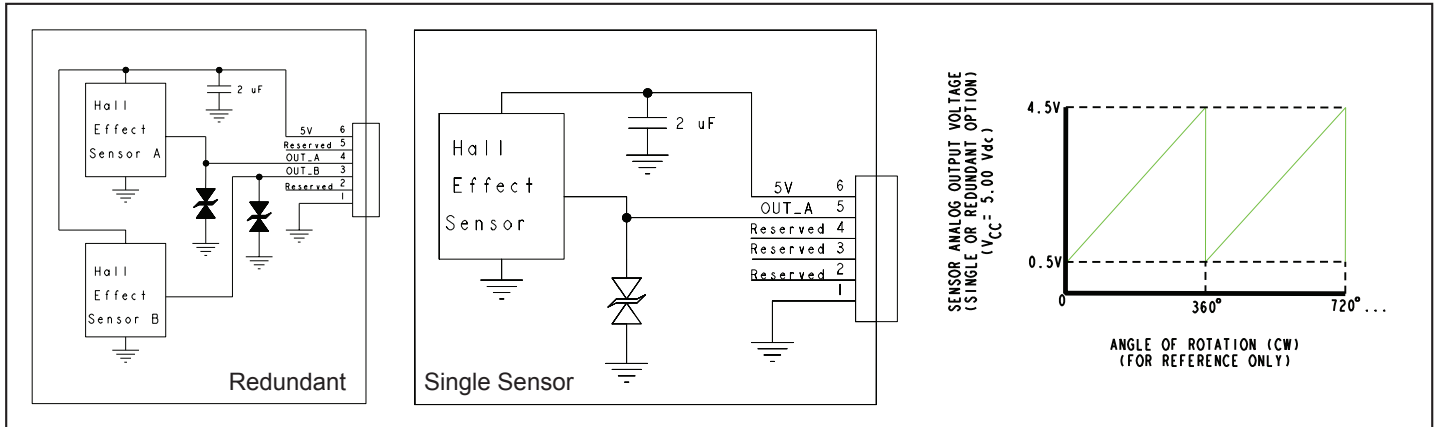


Hall Effect

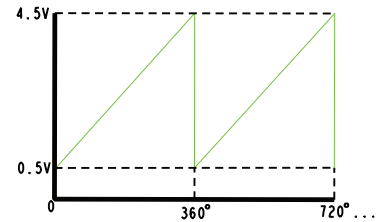
#### TERMINATION OPTIONS



## ELECTRICAL SCHEMATIC



SENSOR ANALOG OUTPUT VOLTAGE  
(SINGLE OR REDUNDANT OPTION)  
( $V_{CC} = 5.00 \text{ Vdc}$ )



ANGLE OF ROTATION (CW)  
(FOR REFERENCE ONLY)

\* Customized electrical outputs are available. Contact Grayhill for additional details.

## SPECIFICATIONS

## Electrical Ratings

**Operating Voltage:** Minimum 4.5V, maximum 5.5V (VDD)

**Supply Current Redundant Sensors:** Typical 22mA, maximum 40mA

**Supply Current Single Sensor:** Typical 11mA, maximum 20mA

**Isource:** 6mA (Vout Error  $\leq 1\%$ )

**Isink:** -6mA (Vout Error  $\leq 1\%$ )

**Power-Up Time:** 10ms

**System Propagation Delay:** 100  $\mu\text{s}$

**Output Leakage Current:** Minimum -20 $\mu\text{A}$ , maximum 20 $\mu\text{A}$

**DC Supply Voltage @ PIN VDD**

**Overvoltage:** Minimum -18V, maximum 27V

**Sensor Error:** When an internal sensor error occurs, the output goes to  $\leq 4\%$  of supply (VDD)

## EMC Ratings

**Radiated Immunity:** IEC 61000-4-3

**Conducted Immunity:** IEC 61000-4-6

**Radiated Emissions:** ANSI C63.4

**Conducted Emissions:** EN 55022

**Electrostatic Discharge:** IEC 61000-4-2

**Power Frequency Magnetic Field:**

Tested per IEC 61000-4-8

## Physical &amp; Mechanical Ratings

**Mechanical Life:** 3,000,000 cycles of operation. 1 cycle is a rotation through all positions and a full return

**Average Rotational Torque:** 1.5 in-oz maximum

**Maximum rotational speed:** 100 rpm

**Mounting Torque:** 15 in-lbs. maximum

**Shaft Pushout / Pullout Force:** 45 lbs. / 45 lbs. minimum

**Terminal Strength:** 15 lbs. minimum. Cable or Header pullout force

**Solderability:** 95% free of pin holes & voids

## Environmental Ratings

**Operating Temperature:** -40°C to 85°C

**Storage Temperature:** -55°C to 100°C

**Humidity:** 96 hours

@ 90-95% humidity @ 40°C

**Mechanical Vibration:** Harmonic motion

with amplitude of 15g within a varied frequency of 10 to 2000 Hz for 12 hours

**Mechanical Shock:**

Test 1: 100g for 6 ms half-sine wave with a velocity change of 12.3 ft/s.

Test 2: 100g for 6 ms sawtooth wave with a velocity change of 9.7 ft/s.

**Seal:** IP67, Meets IEC 60529

## Materials and Finishes

**Bushing:** Zamak 2

**Shaft:** Stainless Steel

**Housing:** Zytel FR - 50; Glass Reinforced Nylon 6/6

**Hex Nut:** Nickel plated brass

**Washers:** 302 Stainless Steel

**Shaft Seal:** Silicone

**Panel Seal:** Silicone

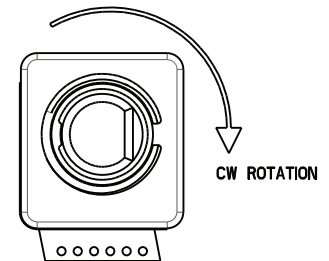
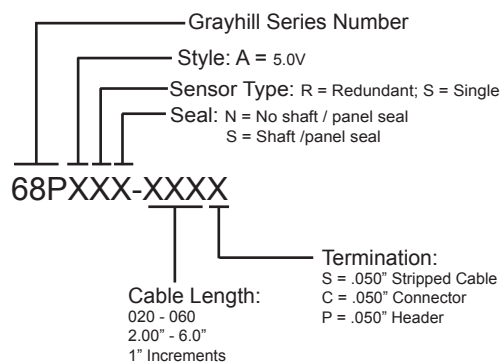
**Header Pins:** Tin plated phosphate bronze

**Lockwasher:** Spring steel, zinc plate with clear trivalent chromate finish

**Cable:** Copper stranded with topcoat in PVC

Encoder has ratiometric analog output (output levels are proportional to the supply voltage). Specifications on this datasheet apply @ VDD = 5.00 V.

## ORDERING INFORMATION



0° POSITION  
(SHAFT FLAT AND BUSHING  
KEYWAY ALIGNED AS SHOWN)

For prices and custom configurations, contact a local sales office, an authorized distributor, or Grayhill's sales department.