



SERIES 68P

Long Life Potentiometer Substitute

FEATURES

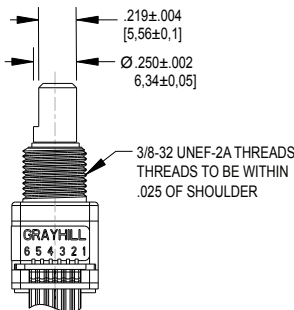
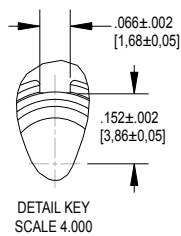
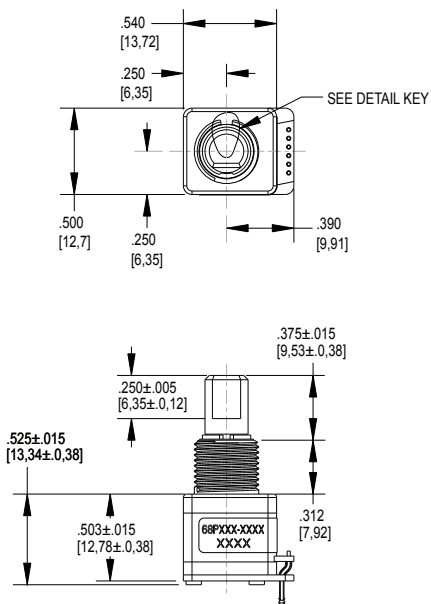
- Ratiometric analog output
- Debris resistant Hall-effect sensor technology
- 3 million rotational cycles
- Redundant output
- Custom output options
- Optional shaft and panel seal
- Reverse voltage and overvoltage protection

APPLICATIONS

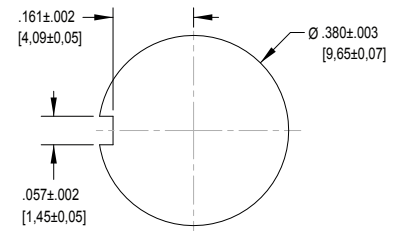
- Test and measurement equipment
- Audio/Visual equipment
- Potentiometer substitute with long life
- Agriculture and construction engine speed control



DIMENSIONS in inches [and millimeters]



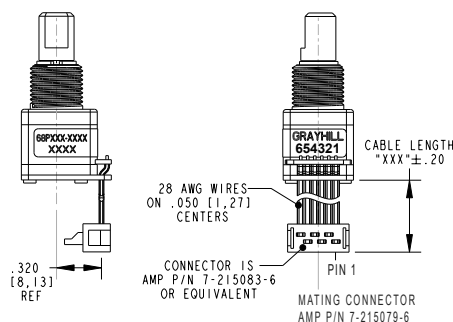
Suggested Mounting Panel Cutout



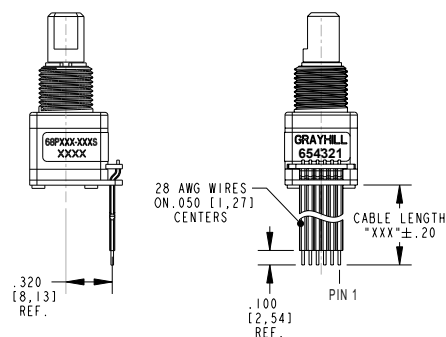
Mounting Panel Recommendations for Panel Seal Version

1. Panel thickness should not exceed 0.157".
2. Mounting hole diameter to be per recommended dimensions.
3. 0.470" x 0.020" counter bore required for proper sealing.
4. Anti-rotation feature is recommended. Feature should be designed to lock into bushing keyway.

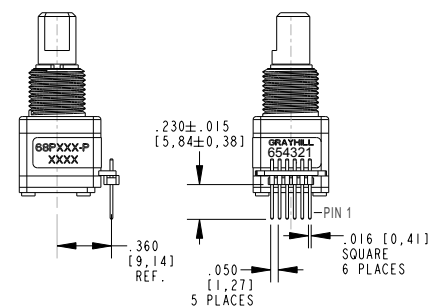
Termination Options



.050-in. Connector



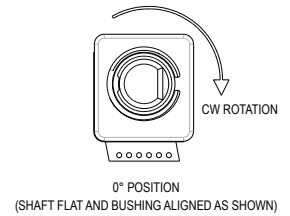
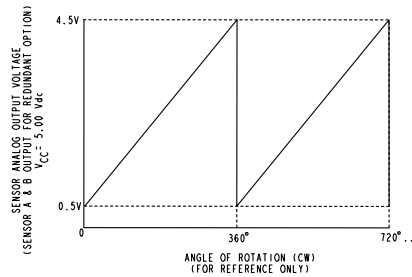
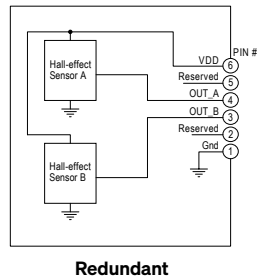
.050-in. Stripped Cable



.050-in. Pin Header

ELECTRICAL SCHEMATIC

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



SPECIFICATIONS

Electrical Ratings

Operating Voltage	Minimum 4.5 V, maximum 5.5 V (VDD)
Absolute Maximum Voltage* on Pin 6 (VDD)	-18 V to +27 V *Exceeding the Absolute Maximum Voltage may result in permanent damage to the device. This is a stress rating only and functional operation of the device at those or any other conditions above those indicated in the operation listings of this specification is not implied.
Supply Current Redundant Sensors	Typical 22 mA, maximum 40 mA
Supply Current Single Sensor	Typical 11 mA, maximum 20 mA
Output Current	2.5 mA max
Recommended Load	2 K-5.6 K Ohms pull-down resistor
Power-Up Time	20 ms
Sensor Error	When an internal sensor error occurs, the output goes to < 4% of supply (VDD)

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

Soldering Recommendation

Hand solder only per IPC J-STD-001

Physical and 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, MIL-STD-202, Method 211A, Test Condition A
Solderability	95% free of pin holes & voids, MIL-STD-202, Method 208

Environmental Ratings

Operating Temperature	-40 °C to 85 °C, IEC 68-2-1, Test Aa and IEC 68-2-2, Test Aa
Storage Temperature	-55 °C to 85 °C, IEC 68-2-1, Method Aa and IEC 68-2-2, Method Ba
Humidity	96 hrs at 90-95% humidity at 40 °C, MIL-STD-202, Method 103B
Mechanical Vibration	Harmonic motion with amplitude of 15 g within a varied frequency of 10 to 2000 Hz for 12 hrs, MIL-STD-202, Method 204, Test Condition B
Mechanical Shock	Test 1: 100 g 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, MIL-STD-202, Method 213, Test Condition C and I
Thermal Shock	25 cycles from -55 °C to 100 °C, MIL-STD-810F, Method 503.4, procedure I
Seal	IP67, meets IEC 60529

Materials and Finishes

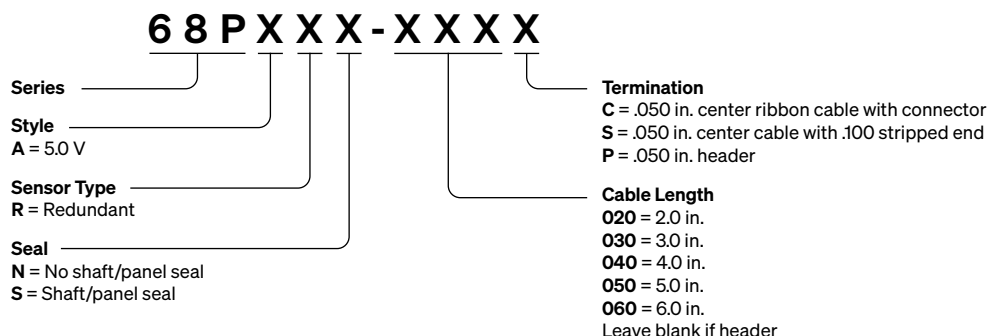
Bushing	Zinc
Shaft	Stainless Steel
Hex Nut	Nickel-plated brass
Lockwasher	Spring steel, zinc plate with clear trivalent chromate finish
Cable	Copper stranded with topcoat in PVC, 28 AWG (cable version only)
Header Pins	Tin-plated phosphor bronze
ROHS Compliant	Yes

EMC Ratings

Radiated Immunity	Meets ANSI/ASAE EP455 5.16 (100 V/m, 0.014-1000 MHz, 3 orientations)
Conducted Immunity	Meets IEC 61000-4-6, Level 3
Radiated Emissions	Meets ISO 14982, Sec 6.4 (Broadband), Sec 6.5 (Narrowband) limits
Conducted Emissions	Meets CISPR 25, Class 3
Electrostatic Discharge	Meets ANSI/ASAE EP455 5.12, Level 1
Power Frequency Magnetic Field	Meets IEC 61000-4-8, 100 V/m

ORDERING INFORMATION

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



Specifications are subject to change.