Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

SERIES 68A

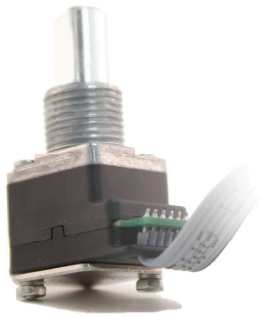
Hall Effect Encoder

FEATURES

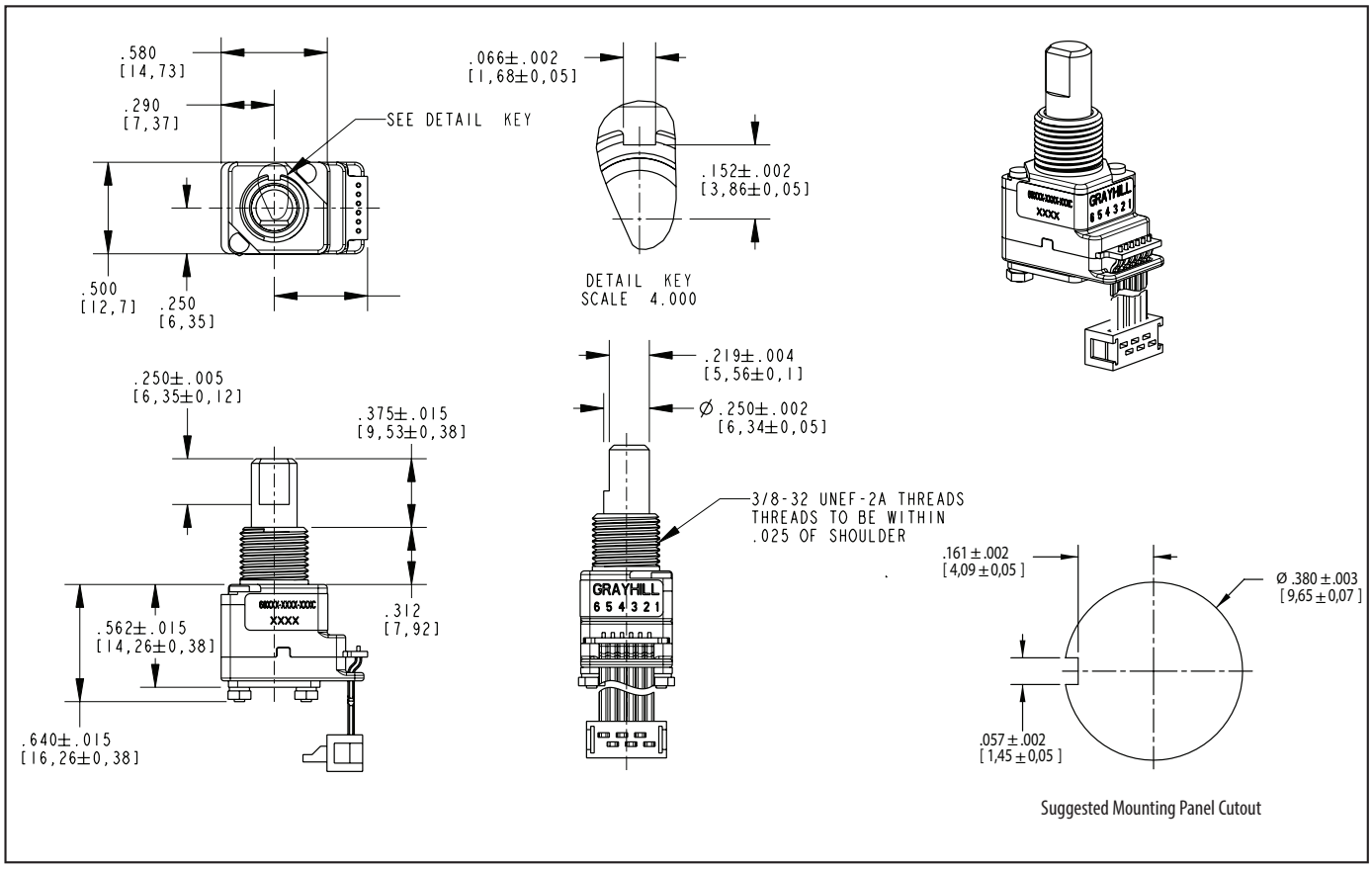
- Quadrature output - (push / pull type)
- Debris resistant hall effect sensor technology
- Over 1 million rotational cycles
- Optional integrated pushbutton
- Low power consumption
- Reverse voltage protection
- Choice of cable lengths and termination
- Available in 5Vdc and 3.3Vdc
- High torque version available

APPLICATIONS

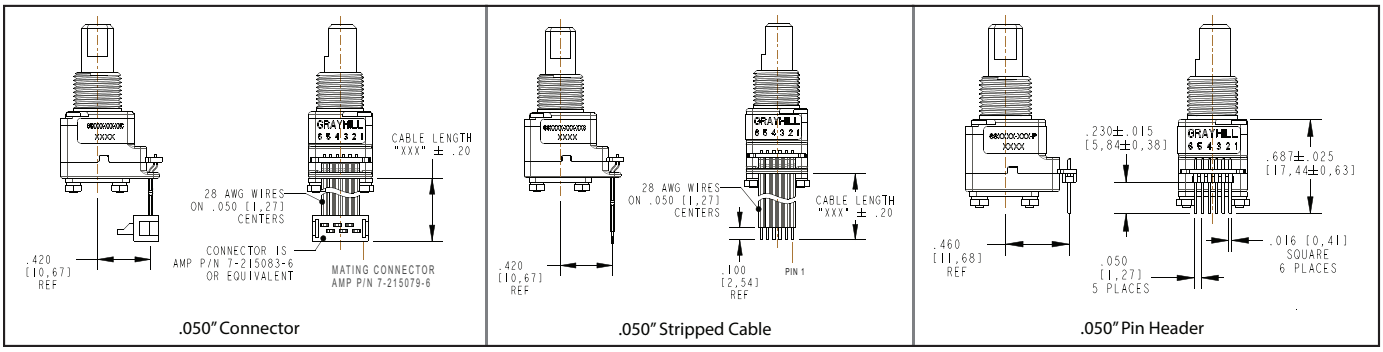
- Medical Equipment
- Test & Measurement
- Audio / Visual
- Agriculture & Construction Vehicles



DIMENSIONS in inches (and millimeters)

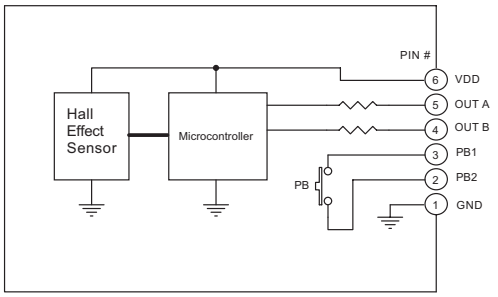


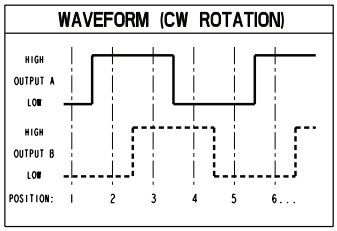
TERMINATION OPTIONS



SCHEMATICS, WAVEFORM, AND TRUTH TABLE

FIG. 1 - 68A ELECTRICAL CONNECTION DIAGRAM

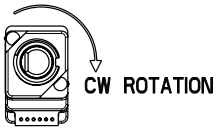




TRUTH TABLE (CW ROTATION)

POSITION	OUTPUT A	OUTPUT B
1		
2	O	
3	O	O
4		O

BLANK = LOGIC LOW O = LOGIC HIGH
CODE REPEATS EVERY FOUR POSITIONS.



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

SPECIFICATIONS

Electrical Specifications

Operating Voltage: Minimum 3.0 V, maximum 3.6 V (3.3V Style); minimum 4.5 V, maximum 5.5 V (5V Style)
Absolute Maximum Voltage* on VDD pin: -4.0 V min., +4.0 V max (3.3V style); -6.5 V min., +6.5 V max (5V style)
Avg Supply Current for 3.3V Style: Typical: 1.2 mA, Maximum: 2.0 mA (at 3.30 V)
Peak Supply Current for 3.3V Style: 12 mA (at 3.30 V)
Avg Supply Current for 5V Style: Typical: 1.8 mA, Maximum: 3.0mA (at 5.00 V)
Peak Supply Current for 5.0V Style: 12 mA (at 5.00 V)
Output Low Voltage: 0.6V maximum for IOL = 3mA, VDD = 3.3V and for IOL = 3mA, VDD = 5.0V
Output High Voltage: 2.6V minimum for IOH = -1.5mA, VDD = 3.3V, 4.3V minimum for IOH = -2mA, VDD = 5.0V
Power-Up Time: A & B outputs valid 120 ms (max) after VDD reaches 3.0 V (3.3 V Style) or 4.5 V (5V Style).

Soldering Recommendation

Hand solder only per IPC J-STD-001

Mechanical Specifications

Mechanical Life: 1,000,000 cycles of operation. 1 cycle is a rotation through all positions and a full return
Average Rotational Torque:
Low Detent = 2.0±1.4 in-oz initially
High = 3.5±1.4 in-oz initially
40% of initial value after 1 million cycles
Non-Detented: 1.5 in-oz maximum
Maximum rotational speed: 100 rpm
Mounting Torque: 15in-lbs. maximum
Shaft Pushout / Pulloutut 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 Specifications

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 hours @ 90-95% humidity @ 40°C, MIL-STD-202, Method 103B
Mechanical Vibration: Harmonic motion with amplitude of 15g within a varied frequency of 10 to 2000 Hz for 12 hours, MIL-STD-202, Method 204, Test Condition B
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, MIL-STD-202, Method 213, Test Condition C and I
Seal: IP67, Meets IEC 60529

Pushbutton Electrical and Mechanical Specifications

Electrical Ratings: 6.0 V max, 10 mA, Resistive
Absolute Maximum Voltage* on Pins 2 & 3: 6.0 V
Contact Resistance: <10 Ω
Contact Bounce: <4 mS make, <10mS break
Actuation Force: 5 = 1150 ± 300g
Pushbutton Travel: .017 ± .008in
Pushbutton Life Expectancy: 1 million actuations minimum

Materials and Finishes

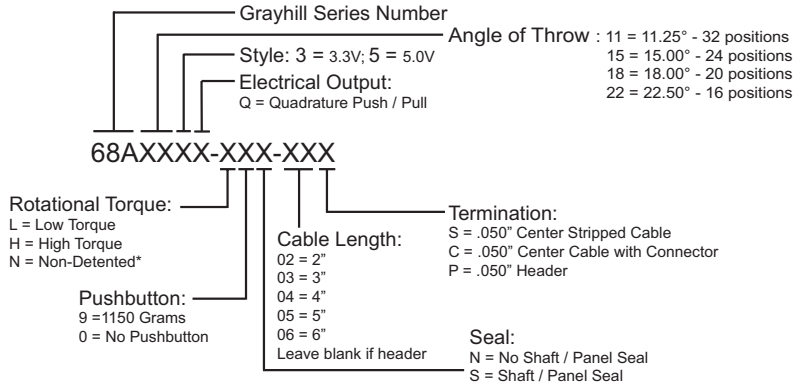
Bushing: Zinc
Shaft: Aluminum
Lockwasher: Spring steel, zinch plate with clear trivalent chromate finish
Cable: Copper stranded with topcoat in PVC insulation (Cable version only), 28 AWG
Header Pins: Tin plated phosphor bronze
Hex Nut: Nickel plated brass
ROHS Compliant.

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, surface: 25KV, connector: 15KV
Power Frequency Magnetic Field: Meets IEC 61000-4-8, 100 V/m

* 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.

ORDERING INFORMATION



* Grayhill recommends the use of a shaft seal for non-detented encoders to prevent inadvertant code output changes due to the lack of detent.

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

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.