

## SERIES 67A Hall Effect Joystick

### FEATURES

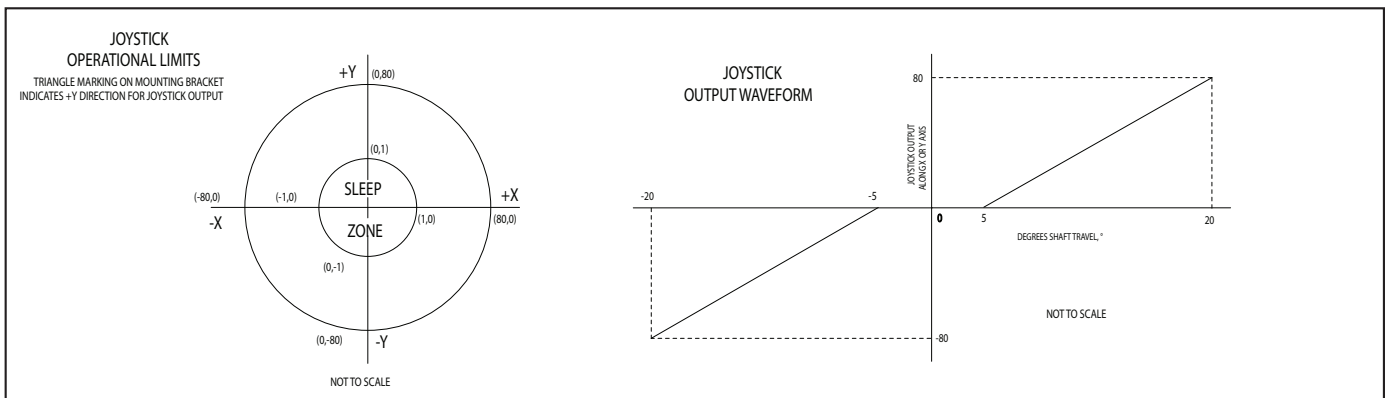
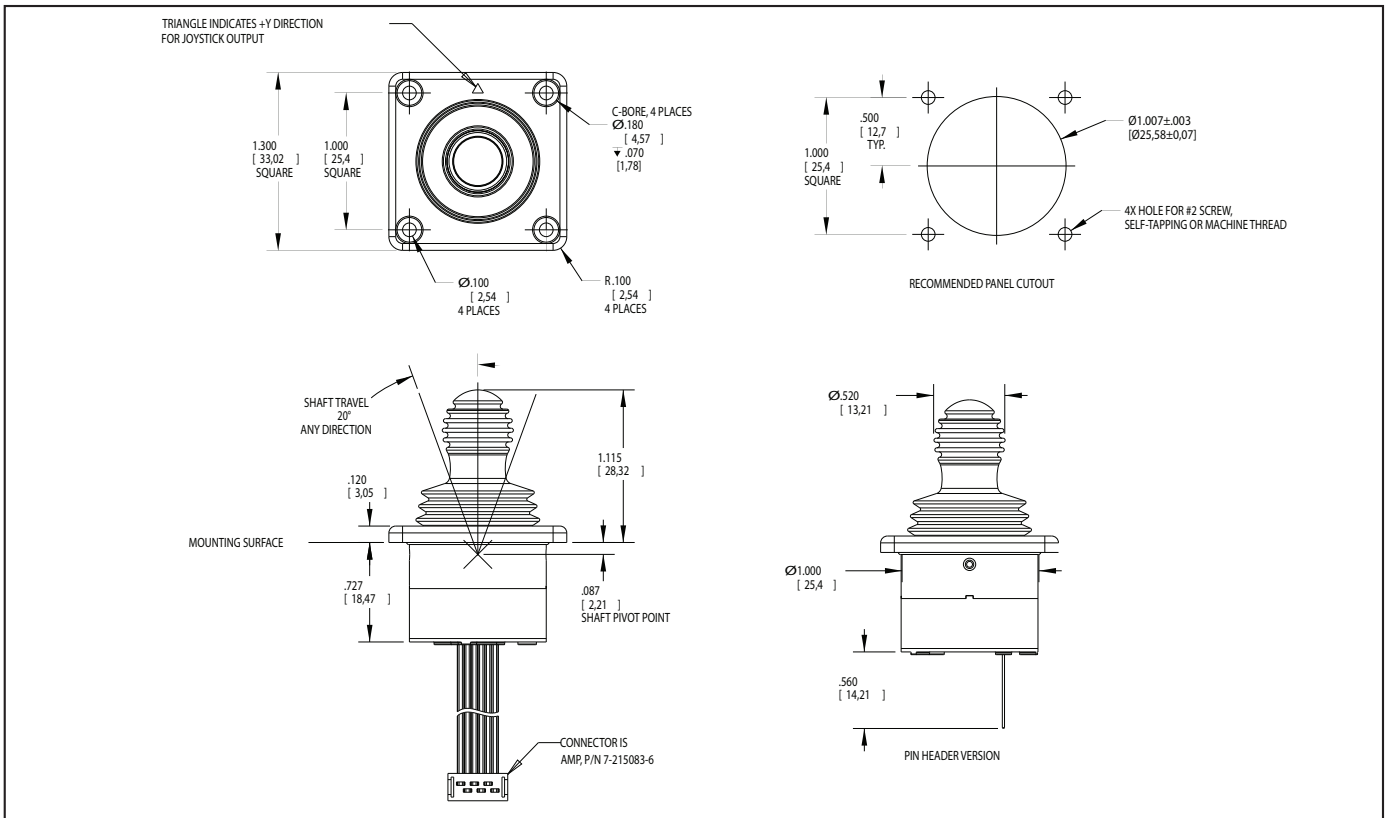
- Various digital outputs available
- Proportional output
- Shaft and panel seal to IP67
- Compact: 1-inch square flange
- Long operational life
- RoHS compliant

### APPLICATIONS

- Medical
- Military vehicles and devices
- Mobile electronics for outdoor use



### DIMENSIONS in inches (and millimeters)



Joysticks

**SPECIFICATIONS**

**Electrical Ratings**

**Supply Voltage (VVD):** 3.3V ± 0.3V  
**High Level Input Voltage (VIH, Min):** 0.7\*VDD on SCL & SDA / 0.25\*VDD+0.8 on AIn  
**Low Level Input Voltage (VIL, Max):** 0.3\*VDD on SCL & SDA / 0.15\*VDD on AIn  
**Current Draw In Active Mode (IDD1):** 3mA Maximum @ VDD = 3.3V  
**Current Draw In Sleep Mode (IDD2):** 100uA Maximum @ VDD = 3.3V  
**Maximum Current Sunk By Any I/O Pin:** 25mA  
**Leakage Current:** ±5 nA Typ., ±125 nA Max  
**Low Level Output Voltage (VOL):** 0.6V On INTn & SDA @ IOL = 6mA, @ VDD = 3.3V  
**Measurement Frequency (Active Mode):** 50 Samples/Sec  
**Response Time, Active Mode (T1):** 20ms\*  
**Response Time, Sleep Mode (T2):** 80ms\*  
**Output @ Maximum Joystick Deflection (XMax, YMax):** 80 Units  
**Output With Joystick Shaft Released (Center Position):** (0,0)  
**Nominal Startup Time (TP, W):** 300ms, Max

**Physical & Mechanical Ratings**

**Vibration:** Random, Tested per MIL-STD-810G, Method 514.6, Procedure I  
**Mechanical Shock:** Tested per MIL-STD 202, Method 213B Test Condition A  
**Transit Drop:** Tested per MIL-ST-810G, Method 516.6, Procedure II  
**Terminal Strength:** 10 lbs. Minimum, Tested per MIL-STD-202, Method 211A  
**Push-Out Force:** 60 lbs. Minimum  
**Pull-Out Force:** 60 lbs. Minimum  
**Shaft Impact:** 0.5 lbs. Weight dropped 20x from height of 1m  
**Shaft Side-Load:** 45 lbs. Minimum  
**Mounting Torque:** 3-5 in-lbs recommended, 8 in-lbs. Maximum  
**Joystick Actuation Force:** 300g Peak ± 25%  
**Joystick Life:** 1 million cycles minimum\*\*

**Environmental Ratings**

**Seal:** IP67, Tested per IEC 60529  
**Altitude:** Tested per MIL-STD 202, Method 105C  
**Thermal Shock:** Tested per MIL-STD 202, Method 107G  
**Operating High Temperature:** +85°C, Tested per IEC 68-2-14, Test Na  
**Operating Low Temperature:** -40°C, Tested per IEC 68-2-14, Test Na

**Storage High Temperature:** +100°C, Tested per IEC 68-2-2, Method Ba

**Storage Low Temperature:** -55°C, Tested per IEC 68-2-1, Method Aa

**Humidity:** Tested per MIL-STD 202, Method 103B

**Humidity, 85/85:** Tested per MIL-STD 202, Method 103B, 500 hours

**Solar Radiation:** Tested per MIL-STD 810G, Method 505.5, Procedure II

**Chemical Resistance:** Tested per ISO 16750-5

**Dielectric:** Tested per MIL-STD 202G, Method 301

**Insulation Resistance:** Tested per MIL-STD 202G, Method 302

**EMC Ratings**

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

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

**Radiated Emissions:** Tested per ANSI C63.4

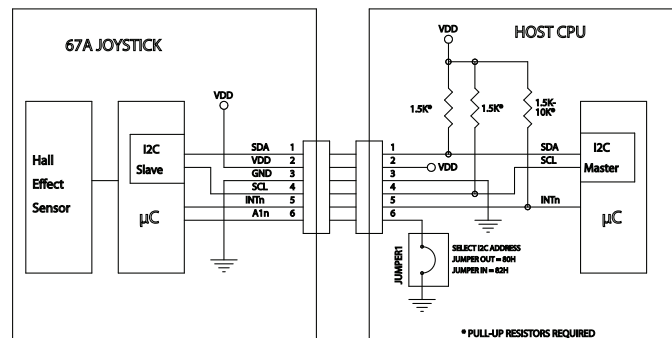
**Conducted Emissions:** Tested per EN 55022

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

**Power Frequency Magnetic Field:** Tested per IEC 61000-4-8



**Block Diagram**



\*Response time is the time from joystick movement to when new X,Y position data is available.

\*\*One cycle is defined as a complete revolution of the shaft around the fixed perimeter, or one actuation in each of the 4 main directions, with return to center between each actuation.

**ORDERING INFORMATION**

Grayhill Series Number  
 Number of Axes: S = Single Axis†, D = Dual Axis (X&Y)  
 Knob Style: F = Fingertip

**67A - DF - 3C - 030C**

Termination: C = .050 Cable with Connector, P = .050 Pin Header  
 Cable Length: 020 = 2.0 inches through 6.0 inches (060). 1 inch increments  
 Leave blank if pinned. Example: 67A-DF-3C-P  
 Interface: C = I2C, R = RS485†, P = PWM†  
 Voltage: 3 = 3.3V, 5 = 5V†

†Currently not available

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