SERIES 67B

Hall-Effect Joystick

FEATURES

- Proportional output joystick, pushbutton, and momentary rotary select in one device
- Shaft and panel seal to IP67
- Rugged and compact: 1.25 inch diameter
- Long operational life
- RoHS compliant
- i²c output (see www.grayhill.com for User Manual)

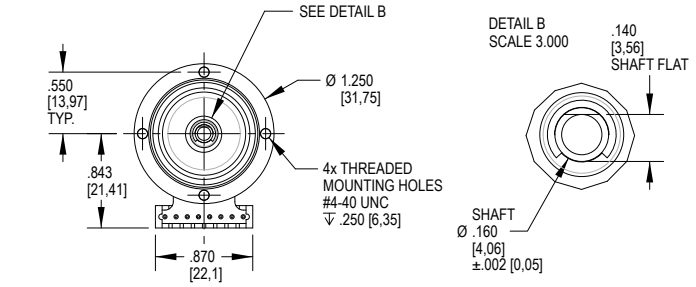
APPLICATIONS

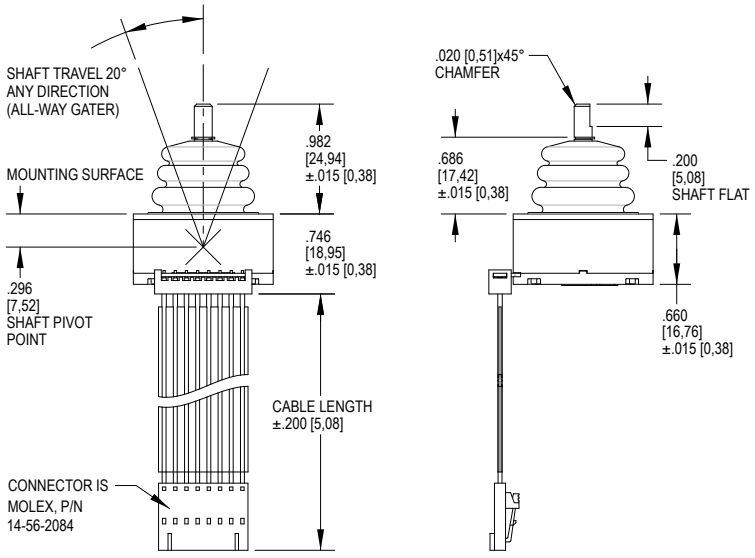
- Medical imaging: X-ray, CT scanner, MRI patient tables
- Military vehicles: display navigation
- Handheld remote control devices
- Material handling equipment and crane operations

Actual Size

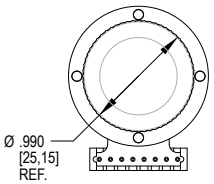
DIMENSIONS in inches [and millimeters]

With Sealing Boot





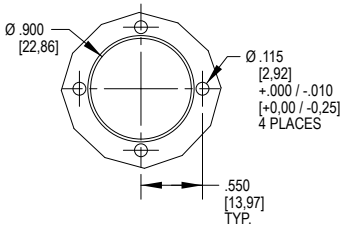
SHOWN WITH
GRAYHILL P/N 677702 KNOB
SOLD SEPARATELY



Recommended Panel Cutout

PANEL THICKNESS SHOULD NOT EXCEED .075"
IN AREA OF Ø.900 FOR SEALED VERSIONS

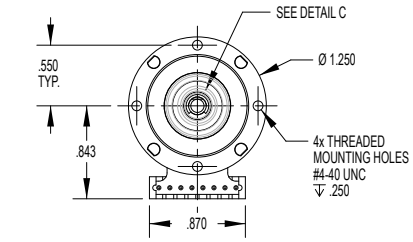
SHOWN WITH .025x45° CHAMFER ON Ø.900

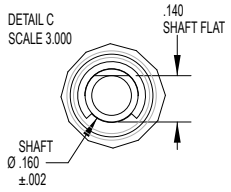


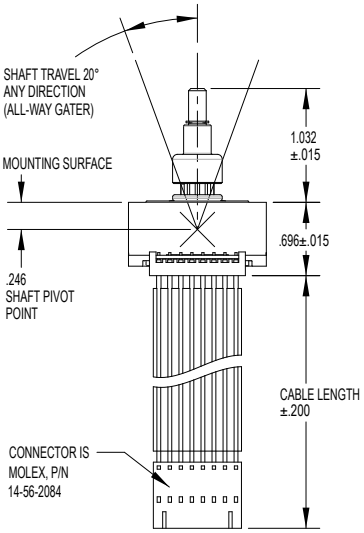
Specifications are subject to change.

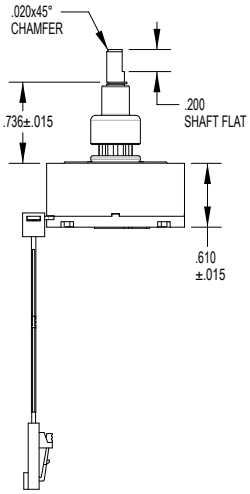
DIMENSIONS in inches [and millimeters]

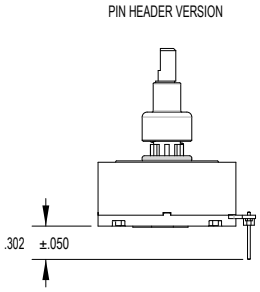
Without Sealing Boot





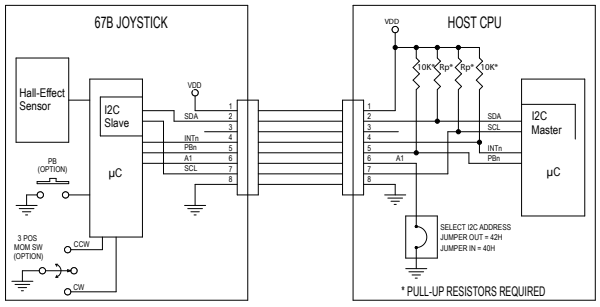


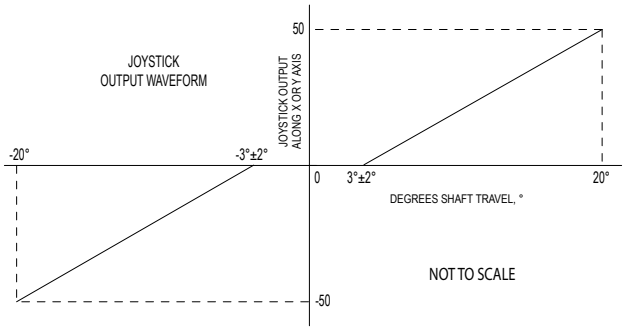




BLOCK DIAGRAM AND JOYSTICK OUTPUT WAVEFORM

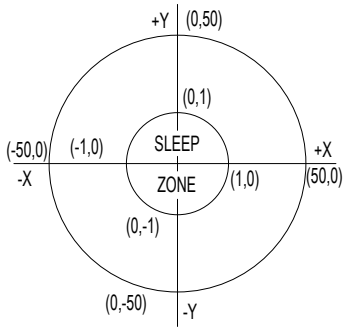
BLOCK DIAGRAM





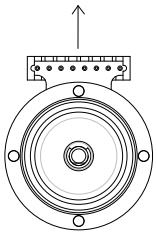
JOYSTICK OPERATIONAL LIMITS

SIDE OF PRINTED CIRCUIT BOARD PROTRUSION
INDICATES +Y DIRECTION FOR JOYSTICK OUTPUT



NOT TO SCALE

+Y JOYSTICK OUTPUT



SHAFT FLAT OPPOSITE
PCB PROTRUSION

SPECIFICATIONS

Electrical Ratings

Supply Voltage (VVD)	3.3 V ± .0.3 V
High Level Input Voltage (VIH, Min)	0.7*VDD on SCL & SDA / 0.25*VDD+0.8 on AI
Low Level Input Voltage (VIL, Max)	0.3*VDD on SCL & SDA / 0.15*VDD on AI
Current Draw in Active Mode (IDDI)	3mA maximum at VDD = 3.3 V (J & P options only)
Current Draw in Sleep Mode (IDD2)	100uA maximum at VDD = 3.3 V (J & P options only)
Current Draw in Active Mode (IDD3)	4mA maximum at VDD = 3.3 V (R option has active mode only)
Typical Operating Current	4.0 mA at Vcc = 3.3 V, T = 25 °C
Maximum Operating Current	7.0 mA over 3.0 < Vcc < 3.6 V, -40 °C < T < 85 °C
Maximum Current Sunk by Any I/O Pin	25mA
Leakage Current	±5 nA typ., ±125 nA maximum
Low Level Output Voltage (VOL)	0.6 V on INTn & SDA at IOL = 6 mA, at VDD = 3.3 V
Measurement Frequency (Active Mode)	50 samples/sec
Response Time, Active Mode (T1)	20 ms*
Response Time, Sleep Mode (T2)	80 ms*
Output at Maximum Joystick Deflection (XMax, YMax)	50 units
Output with Joystick Shaft Released (Center Position)	(0,0)
Nominal Startup Time (TP, W)	300 ms

Physical and Mechanical Ratings

Vibration	Random, meets MIL-STD-810G, Method 514.6, Procedure I
Mechanical Shock	Meets per MIL-STD 202, Method 213B Test Condition A
Transit Drop	Meets per MIL-ST-810G, Method 516.6, Procedure II
Impact Strength	227 grams, dropped from 40 cm, 3 times
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 Side-Load	45 lbs. minimum
Mounting Torque	3-5 in-lbs. recommended, 8 in-lbs. maximum
Joystick Actuation Force	300 g peak ± 25%
Joystick Life	1 million cycles minimum**
Pushbutton Life	1 million actuations, minimum
Rotational Life	1 million turns, minimum in each direction

Materials and Finishes

Housing	Thermoplastic
Backplate	Thermoplastic
Lockwashers	304 stainless steel
Hex Nuts	303 stainless steel
Shim Washers	304 stainless steel
Shaft	303 stainless steel
Cable Assembly	26 AWG stranded copper conductors
Connector Body	Thermoplastic
Terminals	Phosphor bronze
O-Rings	Fluorosilicone
Sealing Boot	Silicone rubber molded over thermoplastic insert

Environmental Ratings

Seal	IP67, meets IEC 60529 (sealed version only)
Altitude	Tested per MIL-STD 202, Method 105C
Thermal Shock	Meets 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	Meets MIL-STD 202, Method 103B
Humidity, 85/85	500 hours tested per MIL-STD 202, Method 103B
Solar Radiation	Tested per MIL-STD 810G, Method 505.5, Procedure II
Chemical Resistance	Meets ISO 16750-5
Dielectric	Meets MIL-STD 202G, Method 301
Insulation Resistance	Tested per MIL-STD 202G, Method 302

EMC Ratings

Radiated Immunity	Meets IEC 61000-4-3, 10 V/m,80 MHz-1000 MHz
Conducted Immunity	Meets IEC 61000-4-6, 10 V RMS, 150 KHz to 80 MHz
Radiated Emissions	Meets ANSI C63.4, Class B
Conducted Emissions	Meets EN 55022, Class B
Electrostatic Discharge	Meets IEC 61000-4-2, 8 kV contact/15 kV air discharge
Power Frequency Magnetic Field	Meets IEC 61000-4-8, 30 A/m

*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

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

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Series

Available Functions
J = Joystick only
P = Joystick + pushbutton
R = Joystick + pushbuttons + momentary turn

Joystick Shaft Limiting
2 = 2-way 20° either direction
4 = 4-way 20° in four main directions
A = All-way 20° in any direction

Voltage
3 = 3.3 V

Interface
C = I2C

Seal Option
S = With sealing boot
U = Without sealing boot

Cable Length
020 = 2.0 in. cable
030 = 3.0 in. cable
040 = 4.0 in. cable
050 = 5.0 in. cable
060 = 6.0 in. cable
Leave blank if pinned.
Example: 67B-PA-3C-S-P

Termination:
C = Cable with connector
P = Pin header

Specifications are subject to change.