

HF series

Hall effect joysticks

Distinctive features and specifications



- Connectorized housing
- Voltage regulator, 24V supply option
- Shallow mounting depth <1.00"
- USB 1.1 HID interface option
- 1, 2 and 3 axis configurations

MECHANICAL (FOR X, Y AXIS)

- Break Out Force: 1.3N (0.3lbf)
- Operating Force: 2.8N (0.63lbf)
- Maximum Applied Force: 200N (45.00lbf)
- Mechanical Angle of Movement: 36° (18° from center)
- Expected Life: 5 million
- Material: Glass filled nylon
- Package Size: 5.75" x 4.50" x 3.25"
- Lever Action: Single spring, omnidirectional

ENVIRONMENTAL

- Operating Temperature: -40°C to 70°C (-40°F to 158°F)
- Storage Temperature: -40°C to 70°C (-40°F to 158°F)
- Sealing (IP): Up to IP68*
- EMC Immunity Level (V/M): EN61000-4-3
- EMC Emissions Level: EN61000-6-3:2001
- ESD: EN61000-4-2

MECHANICAL (FOR Z AXIS)

- Break Out Torque: 0.09N·m (0.80lbf-in)
- Operating Torque: 0.121N·m(1.07lbf-in)
- Maximum Allowable Torque: 2.50N·m(22.13lbf-in)
- Hand Mechanical Angle: 60° (30° from center)
- Handle Action: Spring centering, rotational
- Expected Life: 5 million

ELECTRICAL

- Sensor: Hall effect
- Resolution: 1.22mV
- Supply Voltage Operating: 5VDC±0.01VDC
- Reverse Polarity Max: -10VDC
- Overvoltage Max: 20VDC
- Output Voltage: See options
- Output Impedance: 2Ω
- Return to Center Voltage (No Load): ±200mV
- Error signal: 1.0%

NOTES:

- All values are nominal.
- Exact specifications may be subject to configuration. Contact Technical Support for the performance of your specific configuration.
- * Excludes some handle options.

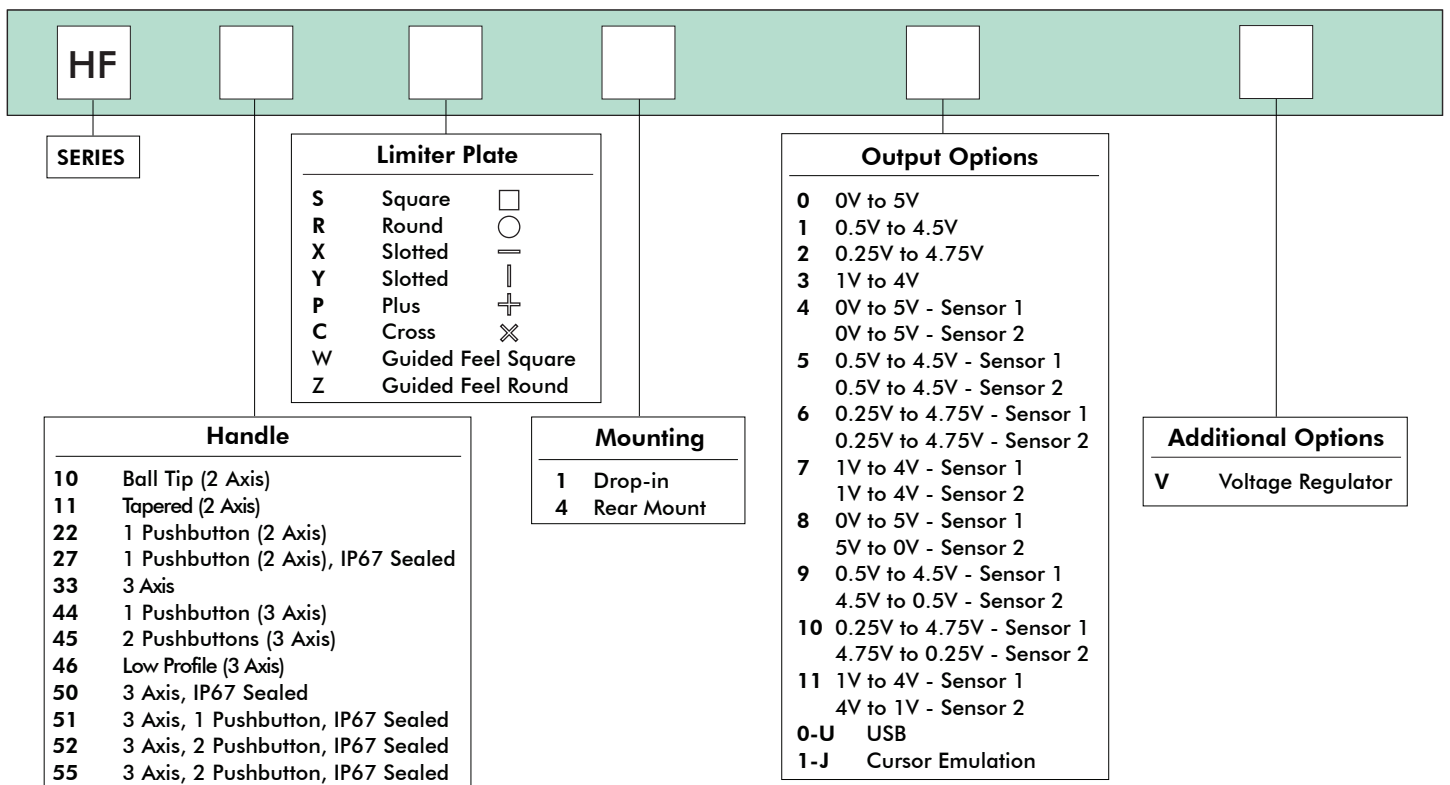


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NOTES

- The HF Series joysticks are supplied with a Hirose DF11-12DP-2DS9(24) connector (male receptacle). (Fig 1)
Cable not included. Please request at order entry. Cable connector (female socket) is Hirose DF11-12DS-2C. (Fig 2)
Connector specifications: 12 position 2mm pitch dual row (2x6) pin header.

Wire Color	Description
Black	Ground
Red	Power
Blue/White	X-Axis (Dual Output)
Blue	X-Axis
Yellow/Black	Y-Axis (Dual Output)
Yellow	Y-Axis
Green/Black	Z-Axis (Dual Output)
Green	Z-Axis
Orange	Button 1
White	Button Common
Violet	Button 2



Up to IP68 available.



Mounting accessories. Standard hardware includes: gasket, clamping ring, and four #4-40x3/4 Phil Ph MS SS screws.


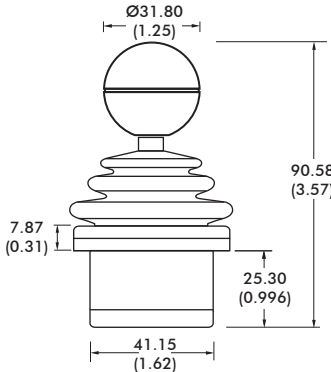
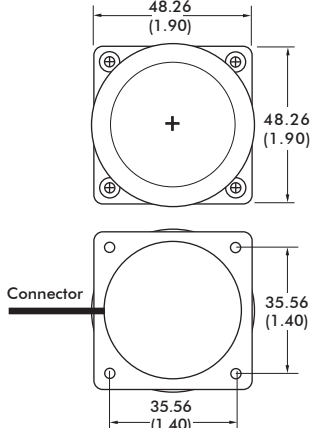

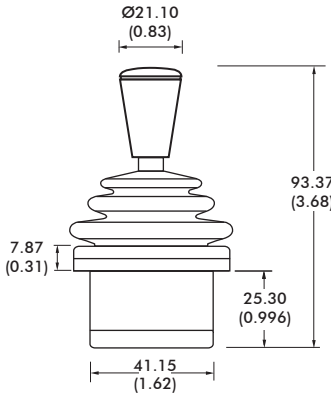
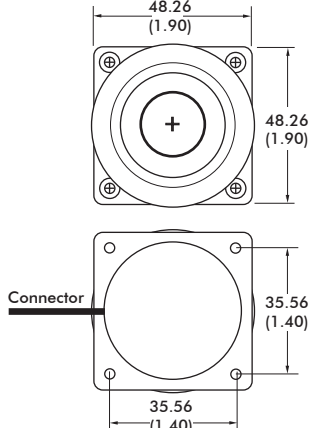

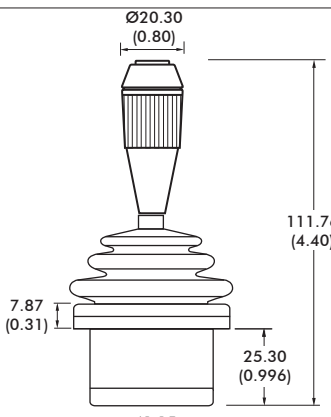
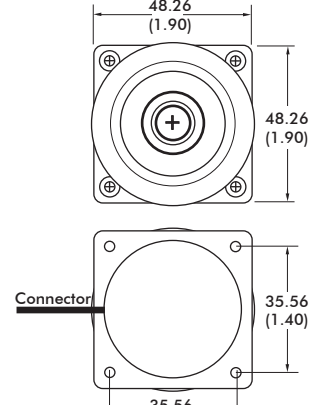

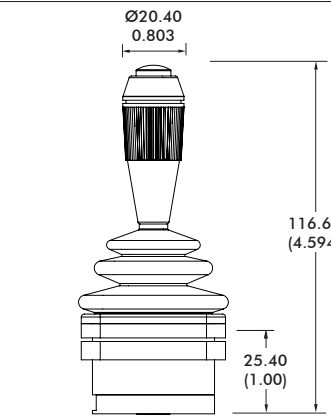
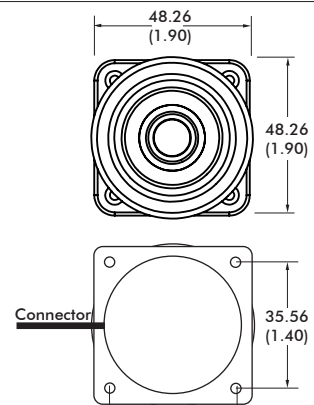


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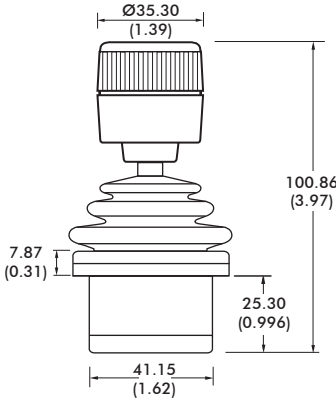
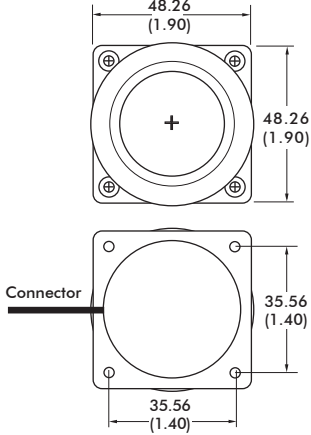

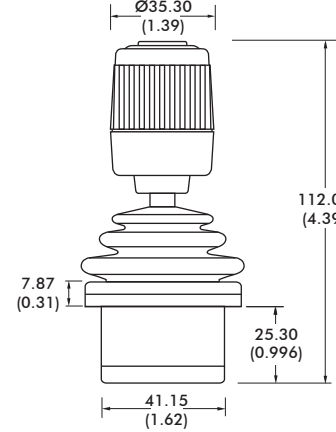
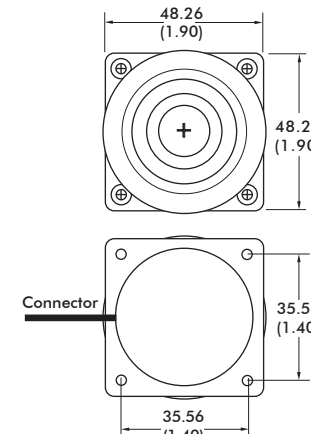

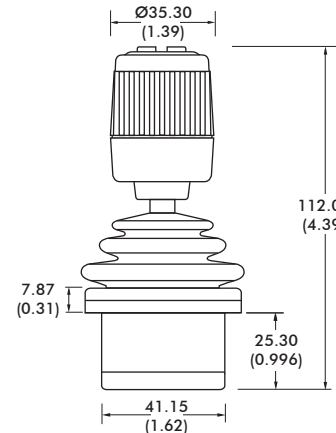
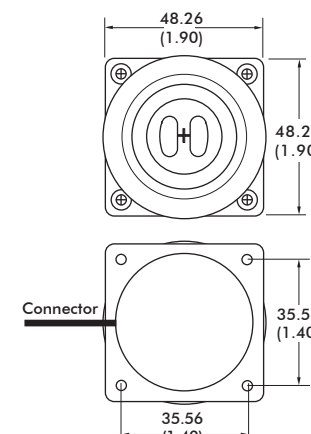

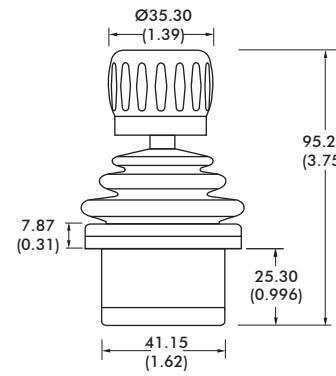
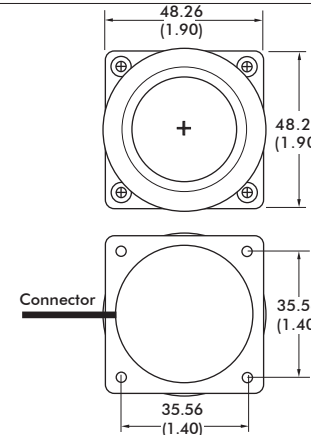
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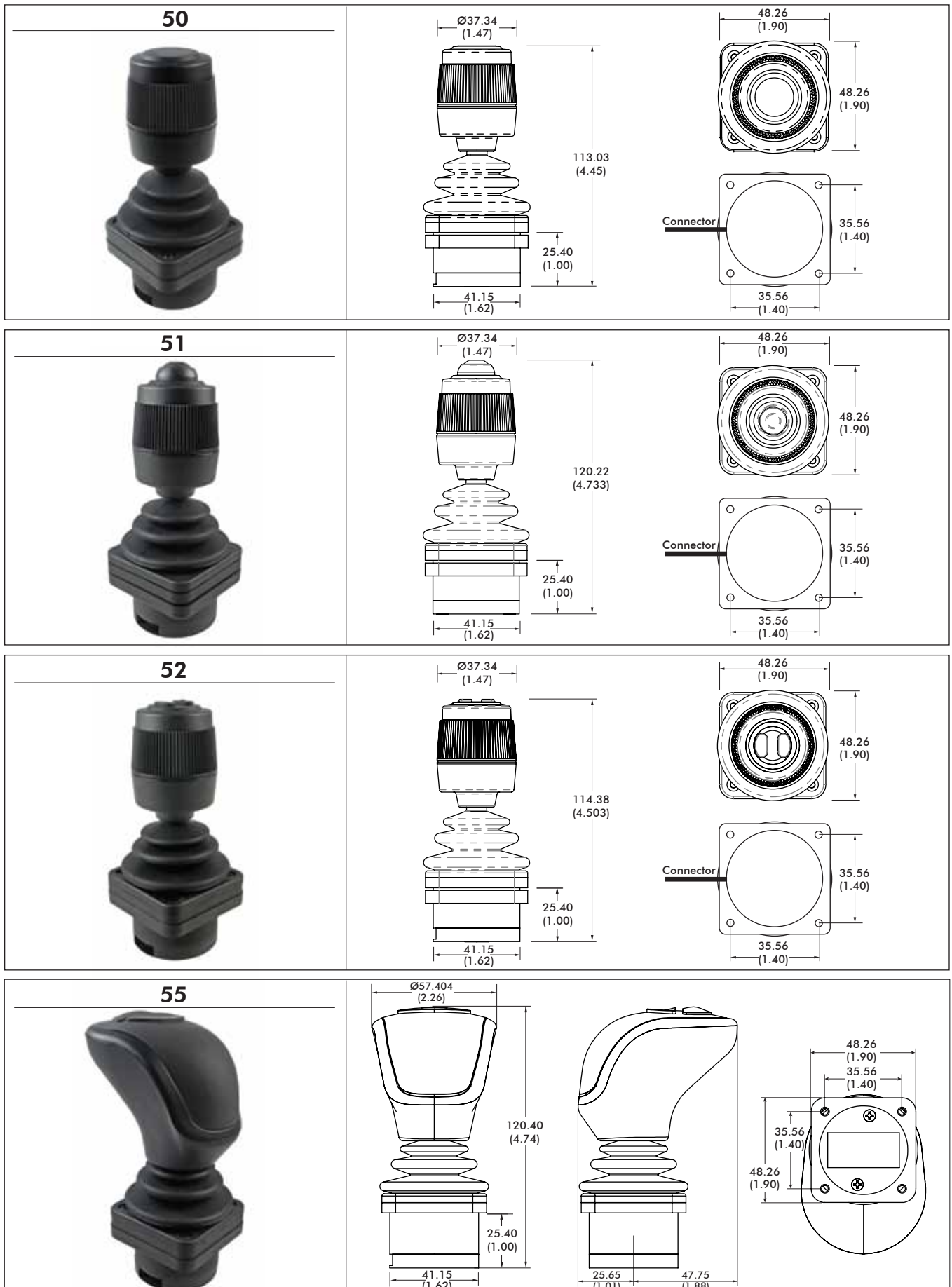
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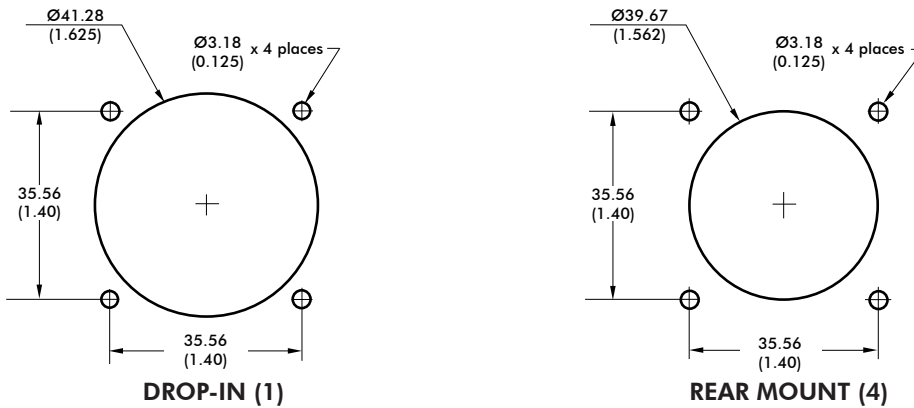
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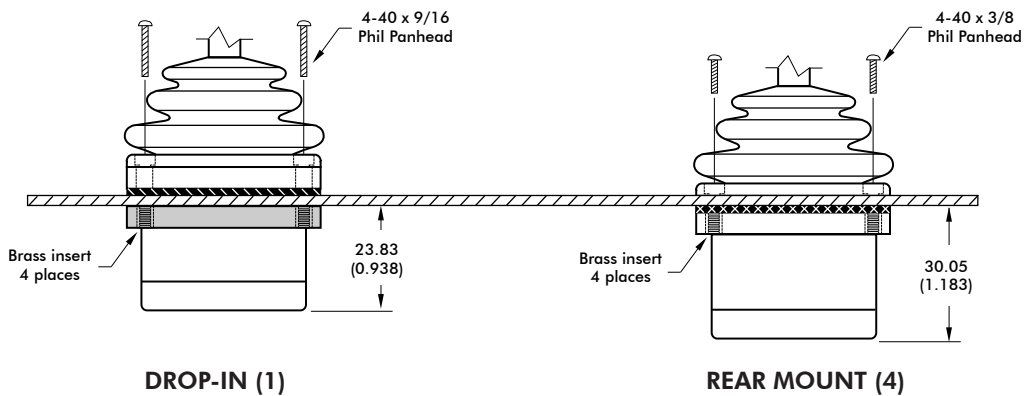
Overview

PANEL CUT-OUT DIMENSIONS

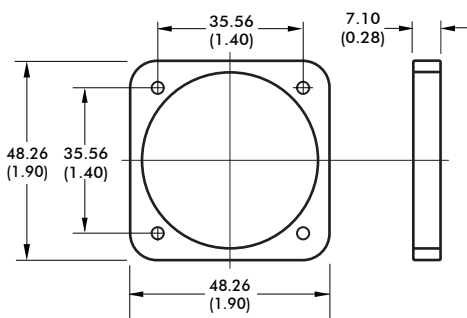


* Not available for Option 11 and 55 Handles

MOUNTING OPTIONS



CLAMPING RING



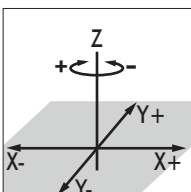
NOTES:

- For DROP-IN mounting, the panel thickness can be 1.17mm to 3.17mm (0.046in to 0.125in).
- For REAR MOUNT the maximum panel thickness is 1.6mm (0.063in).
- A panel thickness of 1/16" (1.6mm/0.063in) was considered for all the below-panel depth values.
- The below-panel depth is extended by 7.11 mm (0.28in) with the USB, Cursor Emulation, Voltage Regulator options.

- Panel
- Gasket
- Rear Mount Gasket

NOTES:

1. Dimensions are in mm/(inch).
2. Axis orientation:

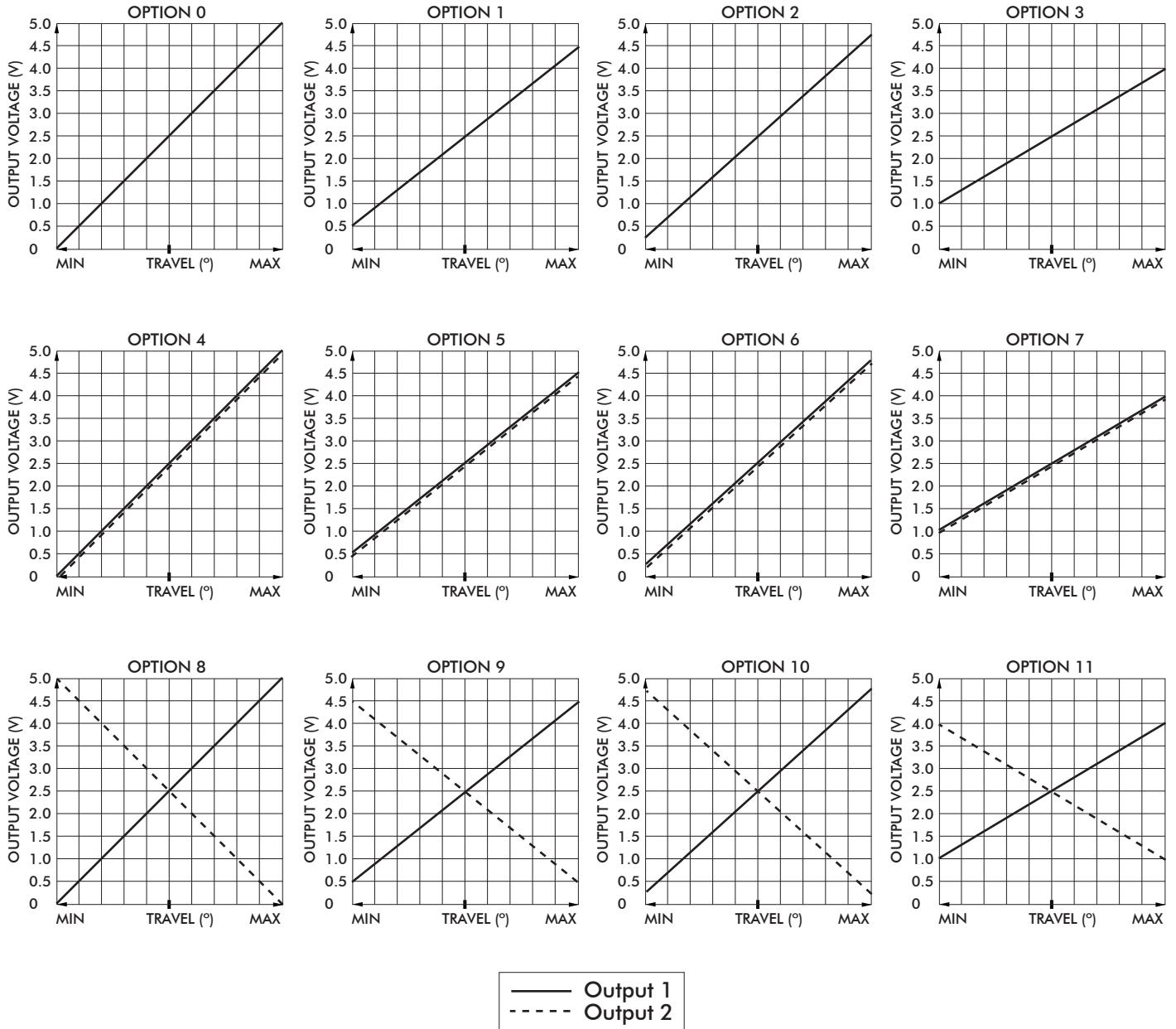


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VOLTAGE OUTPUT OPTIONS



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USB

USB

Featuring USB 1.1 HID compliant interface, APEM's USB joysticks are recognized as standard HID "game controller" devices. Adhering to the HID specification, APEM's USB joysticks are plug-and-play with most versions of Windows and Linux. Joystick button and axis assignments are dependent upon the controlled application.

FEATURES

- USB 1.1 HID compliant "game controller" device
- Easy to install and operate
- Functions determined by controlled application
- Standard Male Type A Connector

SUPPLIED WIRING

USB: USB Male Type A Connector with overmolded cable

CURSOR EMULATION

The Cursor Emulation option converts multi-axis joystick output into a mouse, trackball, or cursor control device. The joystick's internal microprocessor converts absolute axis position into a cursor velocity, which is translated as a relative trackball or mouse position.

APPLICATIONS

The Cursor Emulation option is ideal for vehicle applications subjected to dirt and high vibration which makes operating a traditional cursor control device difficult. The Cursor Emulation option is widely used in marine and military applications.

FEATURES

- HID compliant "pointing device"
- Plug-and-play with USB option
- Ideal for marine GPS and navigation

SUPPLIED WIRING

USB: USB Male Type A to mini B

I/O COMPLEMENT/ USER SPECIFIED PARAMETERS:

- USB 2 pushbuttons 2 or 3 axes (X, Y, and Z "scroll")

ADDITIONAL OUTPUT OPTIONS

VOLTAGE REGULATOR

The Voltage Regulator option may be used when the voltage is greater than 5V or when bipolar output is required.

User Specified Output Voltage:

- 0-5VDC
- ± 10 VDC

ELECTRICAL SPECIFICATIONS

- Supply Voltage: (Output Voltage + 1V) to 35V
- Supply Current: 90mA max

WIRING SPECIFICATION

- Red wire: Supply (+35V max.)
- Black wire: Ground
- Blue wire: X axis output
- Yellow wire: Y axis output
- Green wire: Z axis output
- White wire: Pushbutton common wire
- Orange, violet, grey, brown, pink, bl/wt/y/bk, gn/bk, gy/w wire: Pushbutton outputs

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