

HF series

Hall effect joysticks

Distinctive features and specifications



- 1, 2 & 3 axis configurations
- CANbus J1939 and CANopen options
- USB 2.0 HID interface option
- Dual sensors for redundancy
- Voltage regulator, 24V supply option
- Connectorized housing

<p style="text-align: center;">MECHANICAL (FOR X, Y AXIS)</p> <ul style="list-style-type: none"> 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 	<p style="text-align: center;">ENVIRONMENTAL</p> <ul style="list-style-type: none"> Operating Temperature: -40°C to 85°C (-40°F to 185°F) Storage Temperature: -40°C to 85°C (-40°F to 185°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 Output linearity: ±200mV Dual output interlinearity (X/Y): ±400mV Dual output interlinearity (Z): ±600mV
<p style="text-align: center;">MECHANICAL (FOR Z AXIS)</p> <ul style="list-style-type: none"> 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 	<p style="text-align: center;">ELECTRICAL</p> <ul style="list-style-type: none"> Sensor: Hall effect Supply Voltage Operating: 5VDC ±200VDC Reverse Polarity Max: -10VDC Transient Overvoltage Max: 20VDC Ratiometric Output Voltage: See options Output Impedance: 2Ω Return to center Voltage: ±200mV

NOTES:

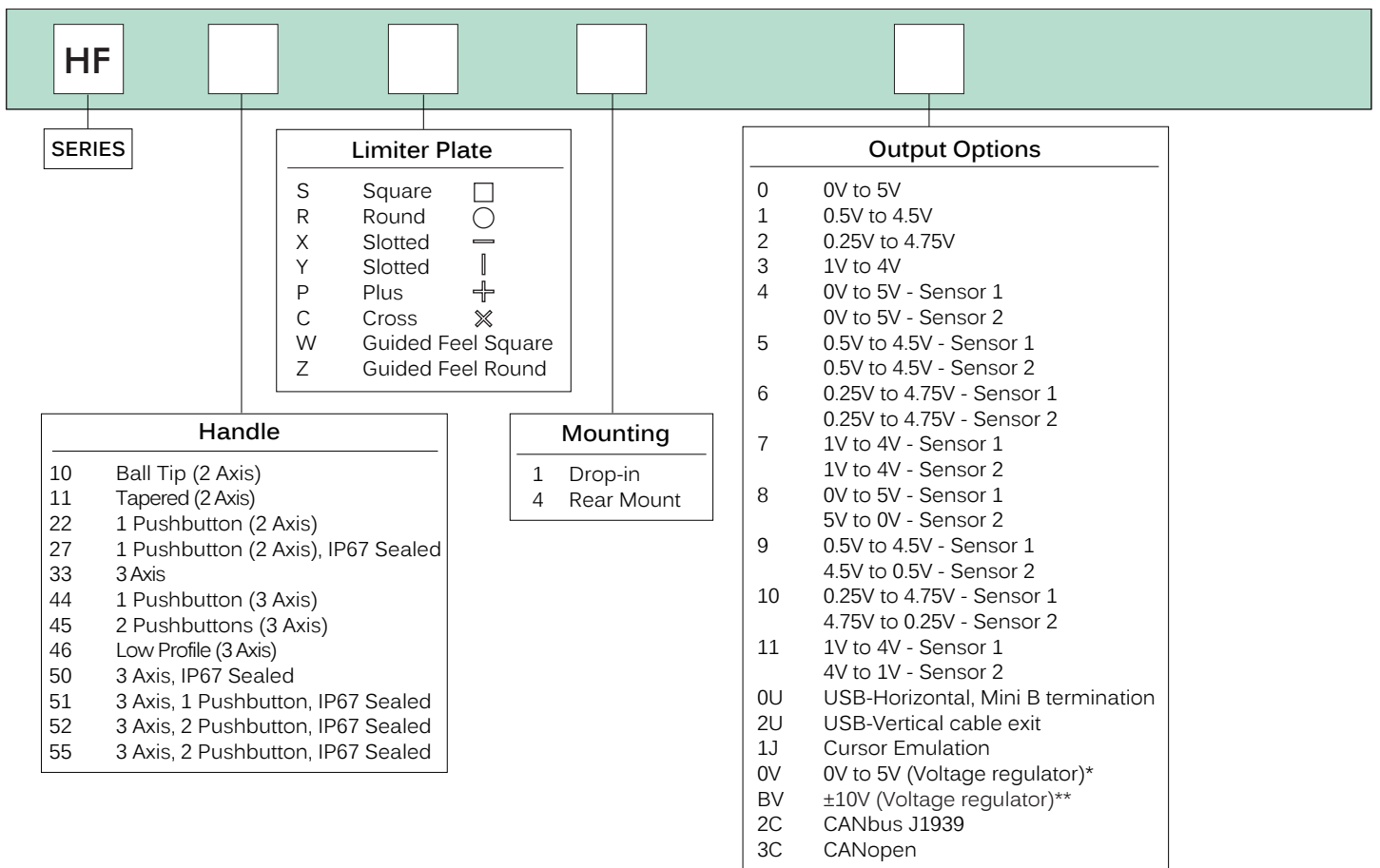
- All values are nominal.
- Exact specifications may be subject to configuration. Contact Technical Support for the performance of your specific configuration.
- * Excludes some handle options.



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Overview



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

- * Requires operating voltage $6V \geq 35V$
- ** Requires operating voltage $11V \geq 35V$



Up to IP68 available.



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


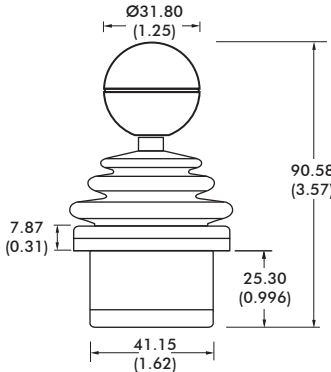
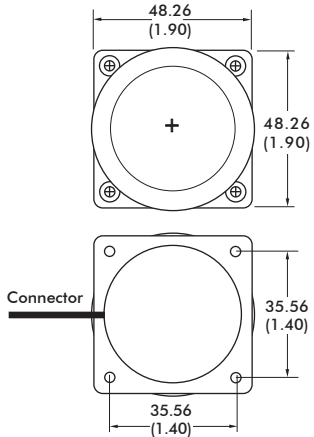

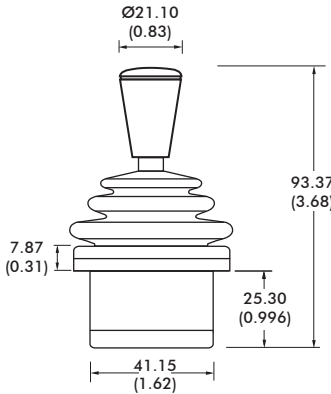
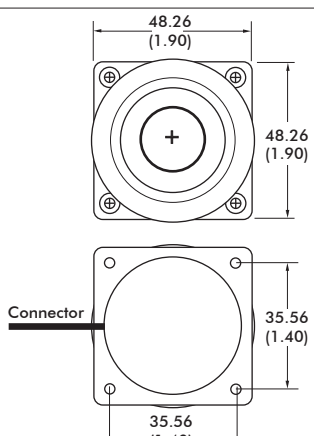

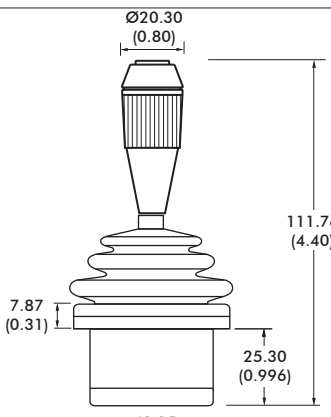
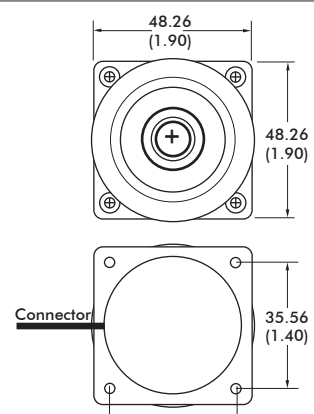

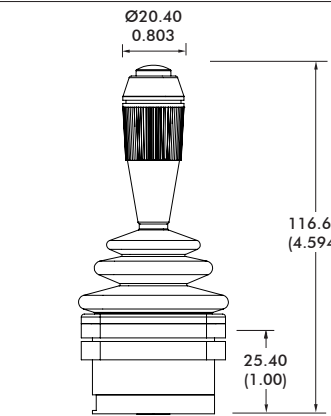
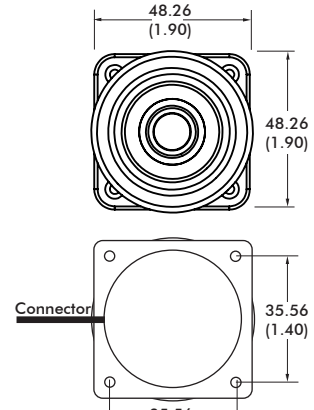


Note: The company reserves the right to change specifications without notice.

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<p style="text-align: center;">11</p> 		
<p style="text-align: center;">22</p> 		
<p style="text-align: center;">27</p> 		

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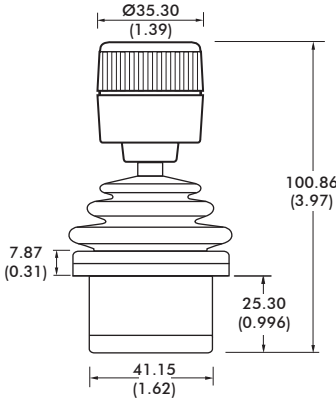
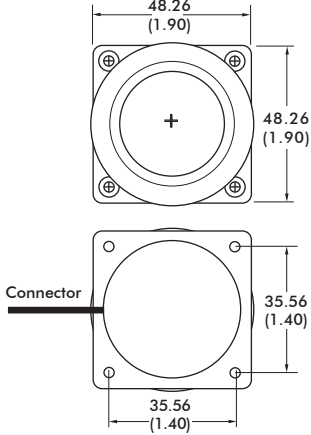

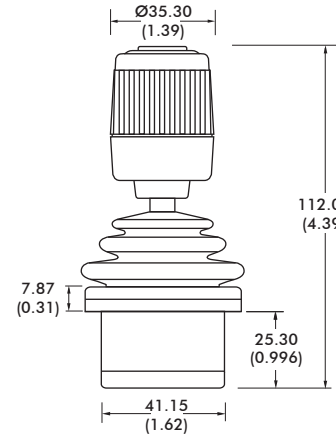
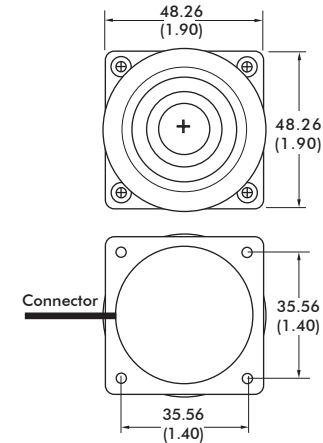

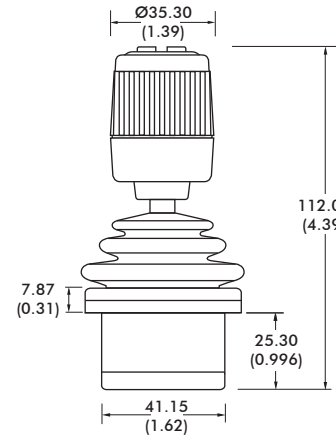
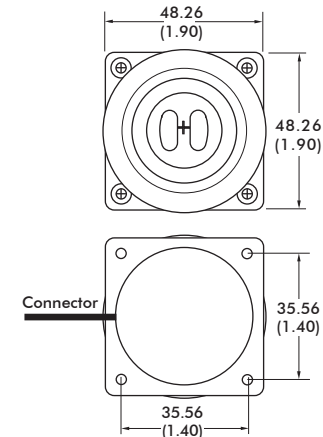

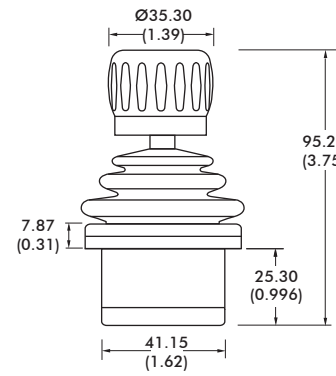
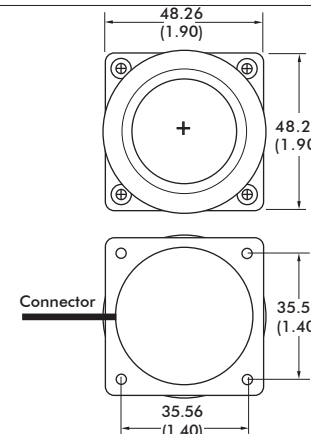
APEM

www.apem.com

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Overview

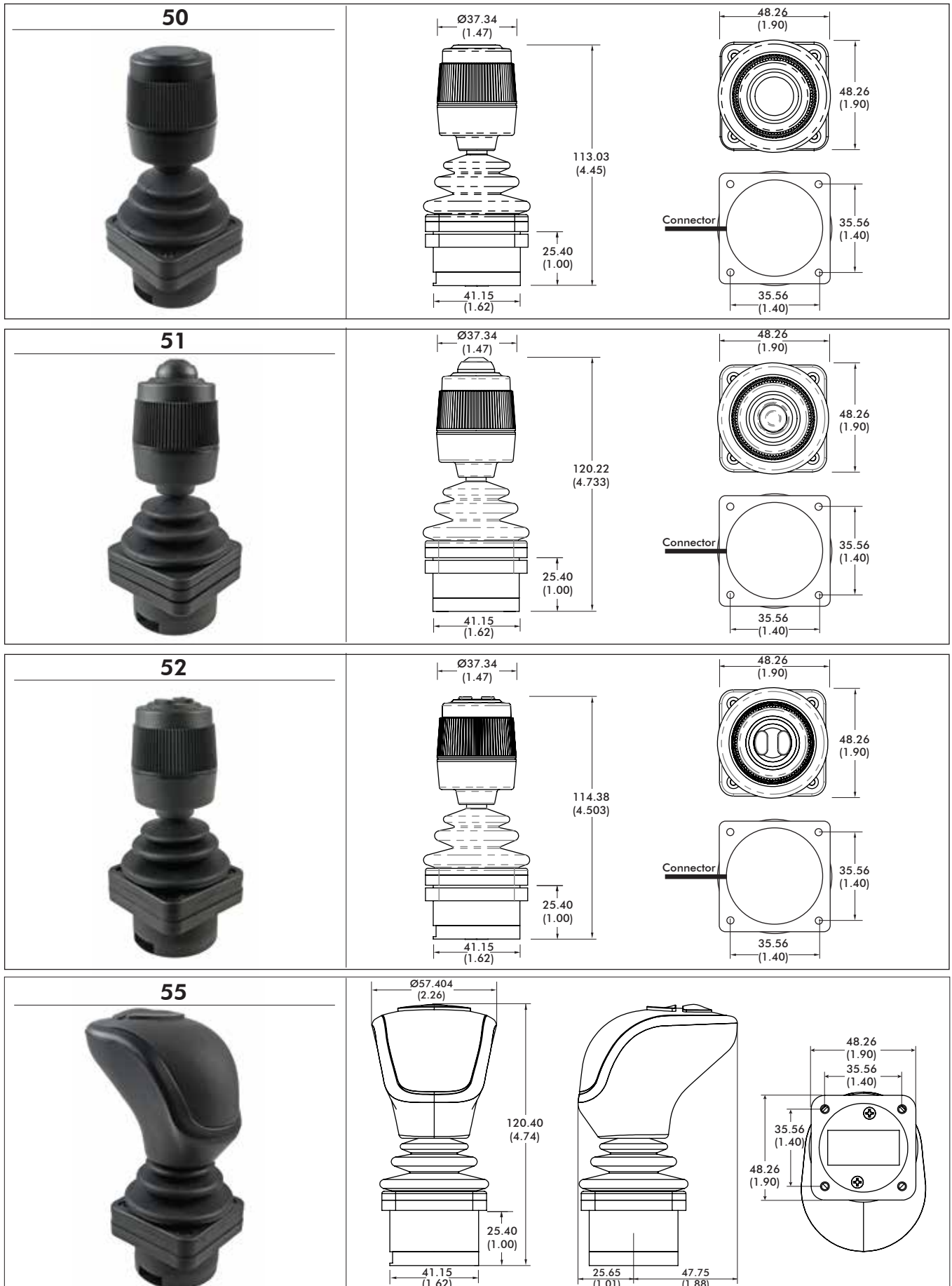
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<p style="text-align: center;">45</p> 		
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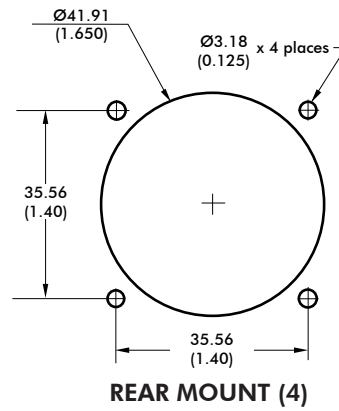
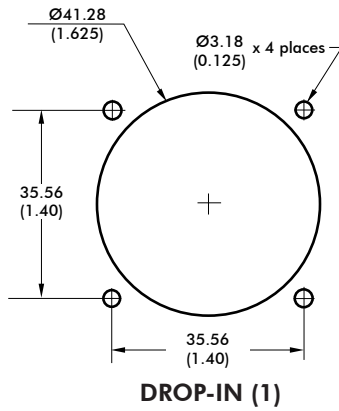
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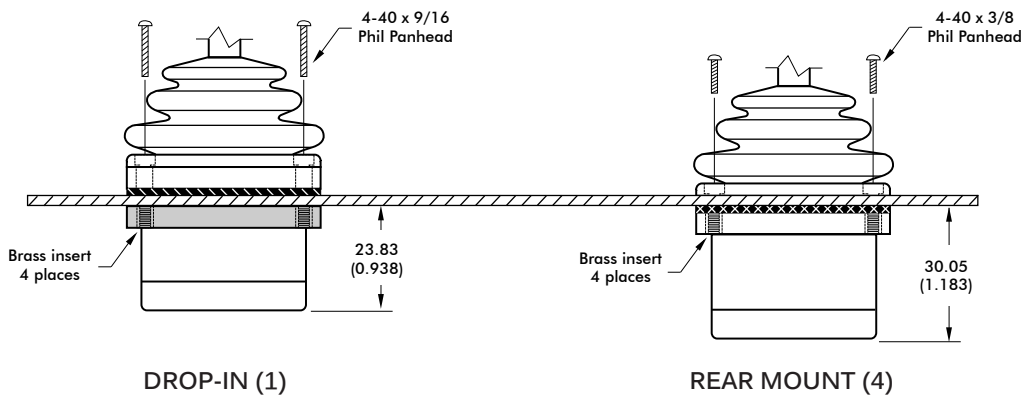
Overview

PANEL CUT-OUT DIMENSIONS

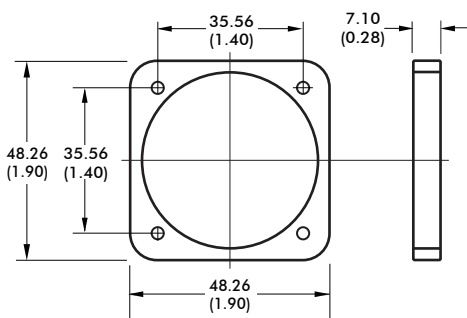


* Not available for Option 11 and 55 Handles

MOUNTING OPTIONS



CLAMPING RING



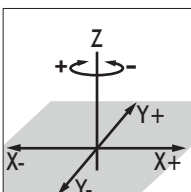
NOTES:

- 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 7.11mm (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:

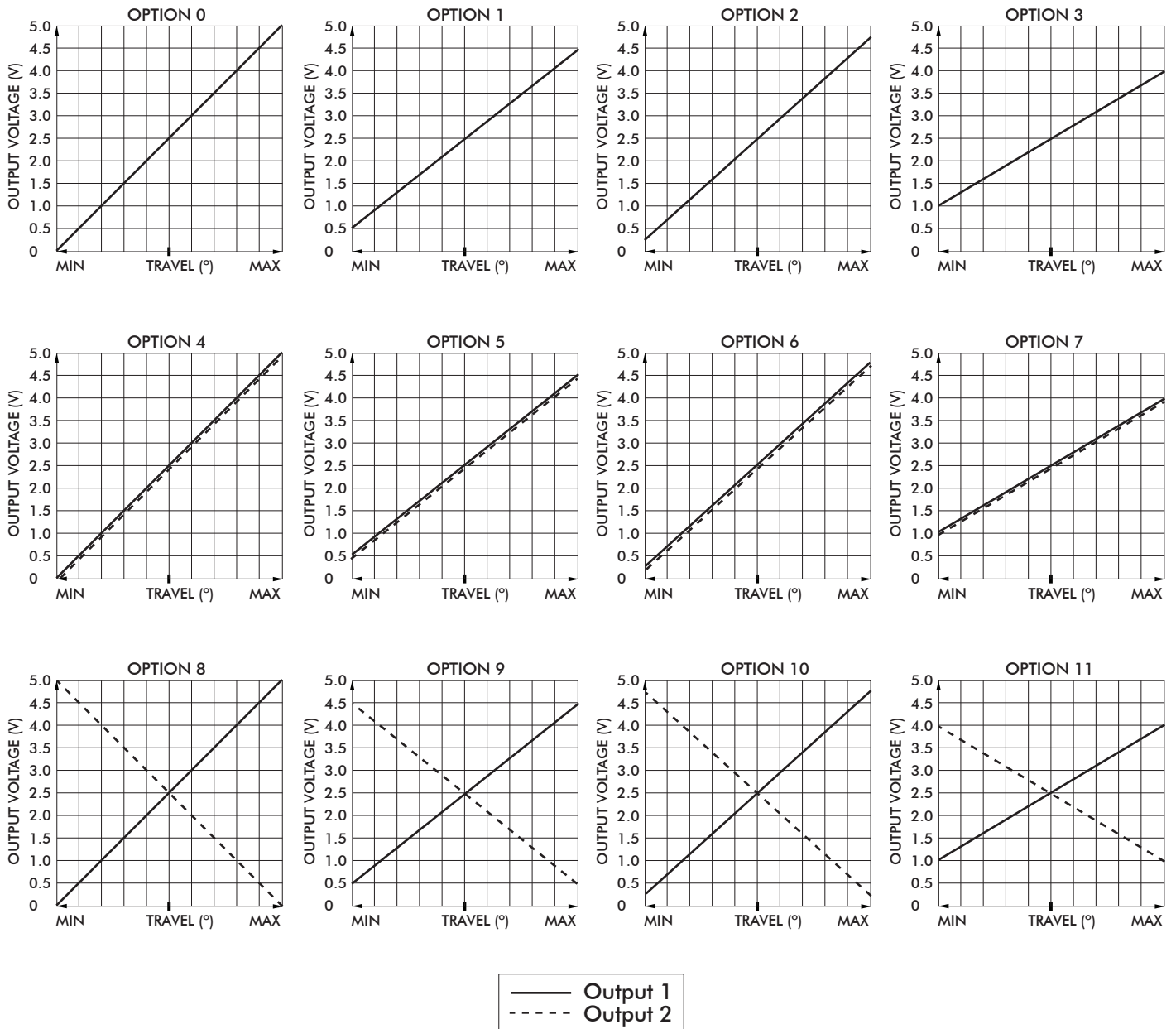


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VOLTAGE OUTPUT OPTIONS



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USB

USB

Featuring USB 2.0 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. Joystick button and axis assignments are dependent upon the controlled application.

FEATURES

- USB 2.0 HID compliant "game controller" device
- Easy to install and operate
- Functions determined by controlled application
- Standard Male Type A Connector

CURSOR EMULATION

The Cursor Emulation option converts a multi-axis joystick into a mouse, trackball, or cursor control device.

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

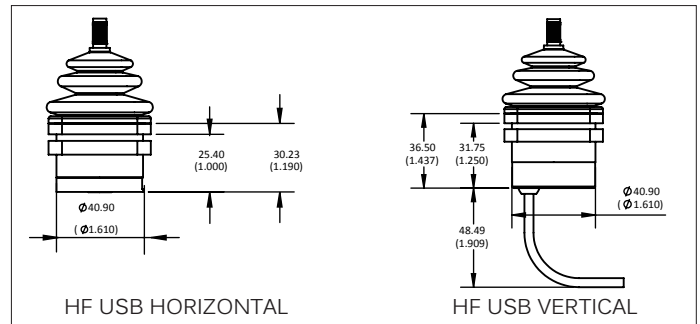
- HID compliant "pointing device"
- Plug-and-play with USB option
- Ideal for marine GPS and navigation

TERMINATION OPTIONS

- 0-U USB Male Type A to mini B
- 2-U USB Male Type A to verticle cable termination

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 operating supply voltage is 11V to 35V..

User Specified Output Voltage:

- 0-5VDC
- ±10VDC

ELECTRICAL SPECIFICATIONS	
• Supply Voltage:	11V 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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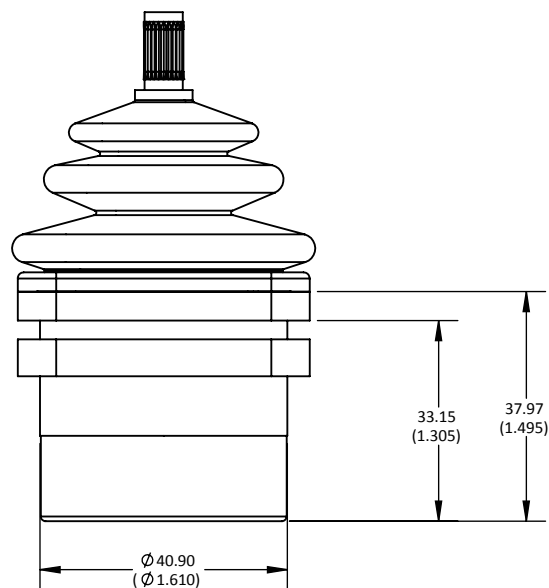
CANbus

CANbus ELECTRICAL SPECIFICATIONS

- Operating voltage: 6V to 35V
- Current consumption: TBD
(typical: 35mA @ 12V, 18mA @ 24V, 15mA @ 30V)
- Output signal: CANbus
- Reverse connection protected: Yes
- Short-circuit protected against + UB max: Yes
- Short-circuit protected against GND: Yes
- CAN: ISO 11898, CAN specification 2.0A/ 2.0B
- Protocol: CANJ1939, CANJ1939-71, CANopen
- Baud rate: 125kbit/s, 250kbit/s, 500kbit/s, 1Mbit/s
- CAN ID: 11/29 bit/s as requested
- BJM/EJM cycle time: 50ms (standard)/15ms (optional)
- Terminating resistor: Optional
- Operating temperature: -40° to +85°C (-40°F to 185°F)
- Storage temperature: -40° to +85°C (-40°F to 185°F)
- Wiring specifications: 22AWG, PTFE, 22" ±.125"
 - Red: Supply power
 - Black: Ground
 - Green: CAN High data
 - White: CAN Low data
 - Blue: Identifier Select LSB
 - Orange: Identifier Select MSB

MOUNTING

Below panel dimensions for CANbus configurations



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Apem:

[HF-33S10](#) [HF-45S10](#) [HF-44S10-U](#) [HF-11S10](#) [HF-27S10](#) [HF10S11](#) [HF45S12](#) [HF22Y12](#) [HF10S10](#) [HF10P10](#)
[HF22Y10](#) [HF33Y10](#) [HF45R11J](#) [HF11P13](#) [HF45S11](#) [HF10Y41](#) [HF33S12](#) [HF11S19](#) [HF45R12](#) [HF27Y11](#)
[HF11P111](#) [HF22R10](#) [HF11S10U](#) [HF46Y10](#) [HF11R40](#) [HF11P10](#) [HF44Y10](#) [HF33P10](#) [HF27R11](#) [HF22R10U](#)
[HF22S10U](#) [HF36R10U](#) [HF44S410](#) [HF11Y10](#) [HF27S10U](#) [HF27P10](#) [HF44R10](#) [HF27P111](#) [HF11S11](#) [HF45S1075](#)
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[HF11R10](#) [HF33S40](#) [HF45R41](#) [HF27R10](#) [HF27Y10](#) [HF45P12](#) [HF22Y10U](#) [HF46S41](#) [HF45S41J](#) [HF22S00U](#)
[HF10Y40](#) [HF22S10](#) [HF22X10U](#) [HF22P111](#) [HF11R10U](#) [HF27Y12](#) [HF33R10](#) [HF33S11J](#) [HF22P11](#) [HF45R10U](#)
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