

HF series

Hall effect joysticks

Distinctive features and specifications



- 1, 2 & 3 axis configurations
- CANbus J1939 and CANopen options
- USB 1.1 HID interface option
- Dual sensors for redundancy
- Voltage regulator, 24V supply option
- Connectorized housing

MECHANICAL (FOR X, Y AXIS)	ENVIRONMENTAL
<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 	<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
MECHANICAL (FOR Z AXIS)	ELECTRICAL
<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 	<ul style="list-style-type: none"> Sensor: Hall effect Supply Voltage Operating: 5VDC±0.01VDC Reverse Polarity Max: -10VDC Overvoltage Max: 20VDC Output Voltage: See options Output Impedance: 2Ω

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.

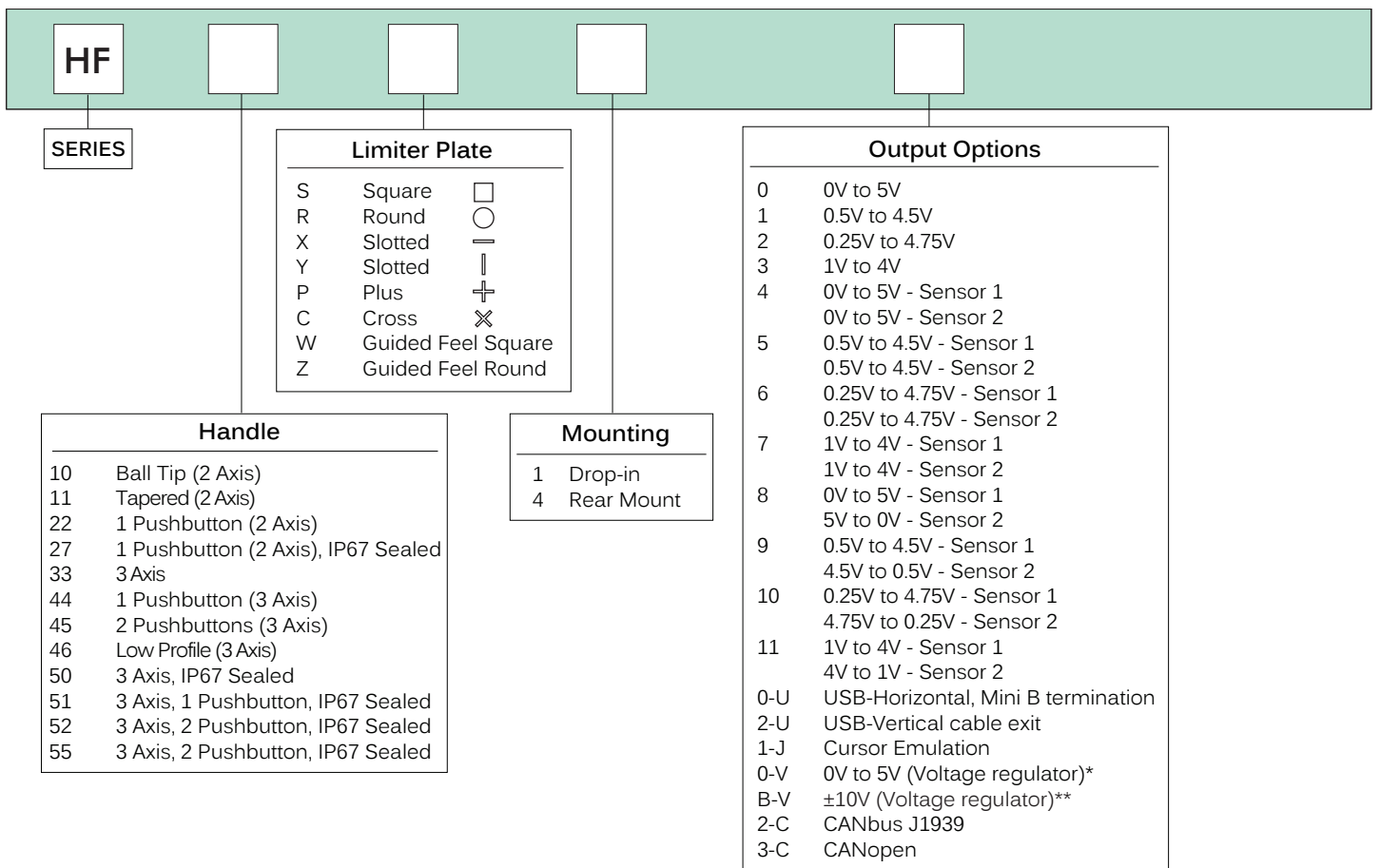


Note: The company reserves the right to change specifications without notice.

HF series

Hall effect joysticks

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.


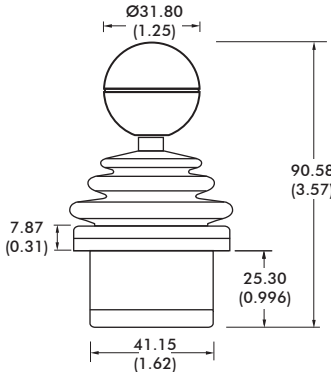
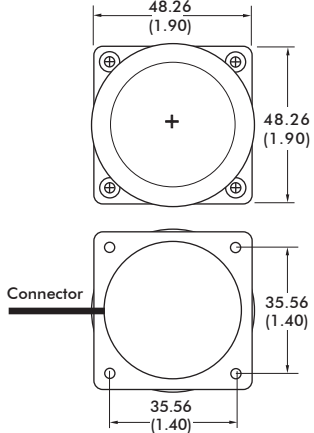

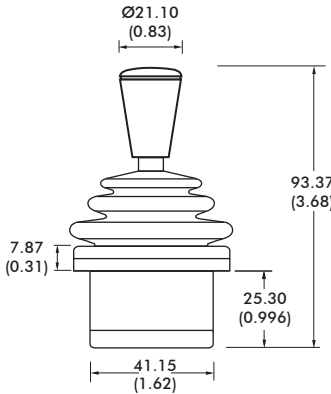
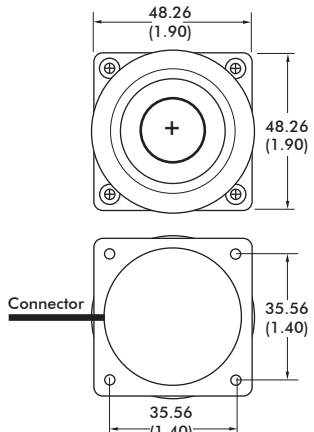

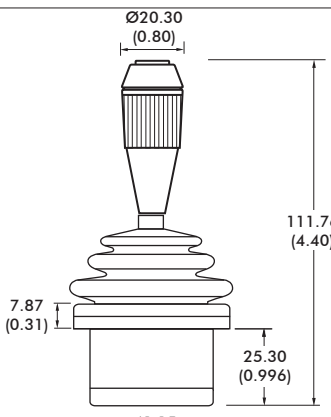
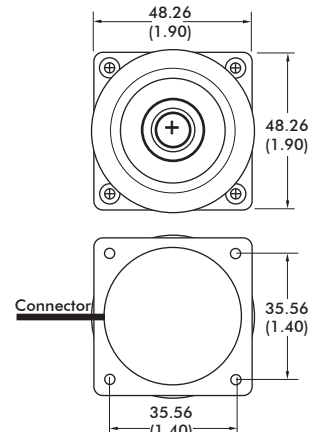

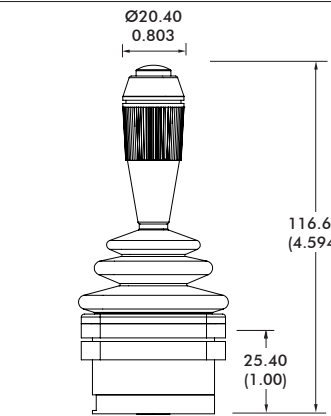
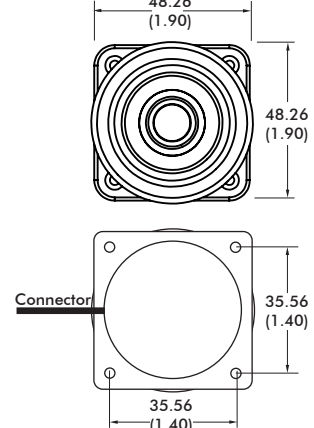


Note: The company reserves the right to change specifications without notice.

HF series

Hall effect joysticks

Overview

<p style="text-align: center;">10</p> 	 <p> $\text{Ø}31.80$ (1.25) 90.58 (3.57) 7.87 (0.31) 25.30 (0.996) 41.15 (1.62) </p>	 <p> 48.26 (1.90) 48.26 (1.90) Connector 35.56 (1.40) 35.56 (1.40) </p>
<p style="text-align: center;">11</p> 	 <p> $\text{Ø}21.10$ (0.83) 93.37 (3.68) 7.87 (0.31) 25.30 (0.996) 41.15 (1.62) </p>	 <p> 48.26 (1.90) 48.26 (1.90) Connector 35.56 (1.40) 35.56 (1.40) </p>
<p style="text-align: center;">22</p> 	 <p> $\text{Ø}20.30$ (0.80) 111.76 (4.40) 7.87 (0.31) 25.30 (0.996) 41.15 (1.62) </p>	 <p> 48.26 (1.90) 48.26 (1.90) Connector 35.56 (1.40) 35.56 (1.40) </p>
<p style="text-align: center;">27</p> 	 <p> $\text{Ø}20.40$ 0.803 116.69 (4.594) 25.40 (1.00) 41.15 (1.62) </p>	 <p> 48.26 (1.90) 48.26 (1.90) Connector 35.56 (1.40) 35.56 (1.40) </p>

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


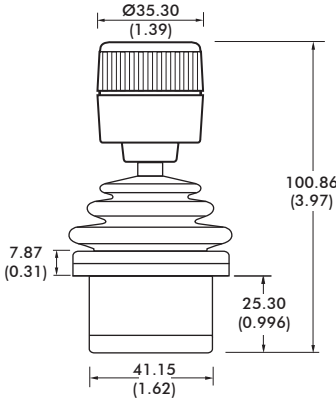
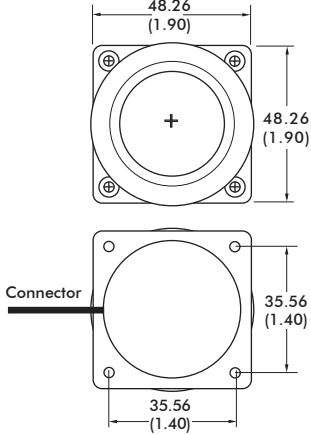

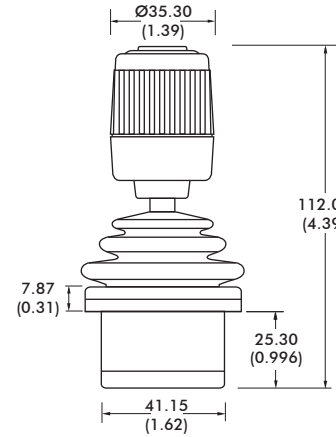
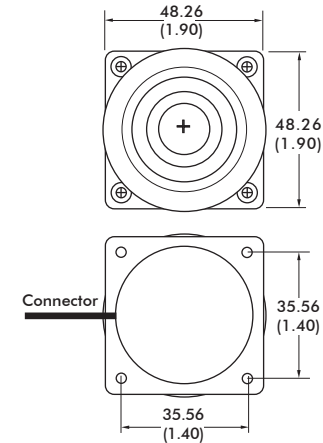

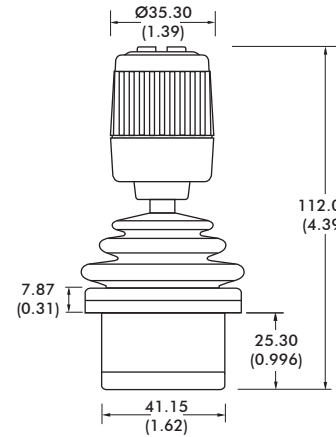
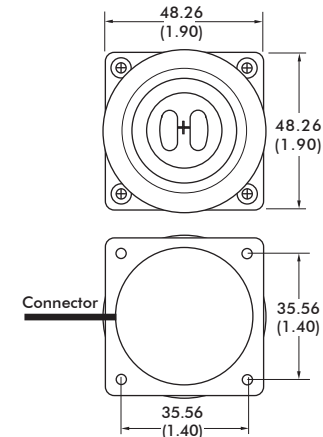

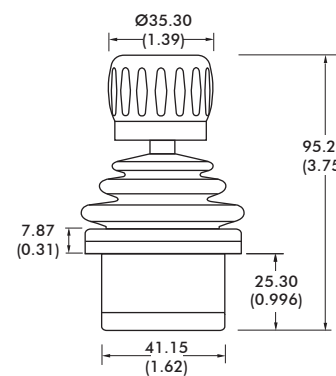
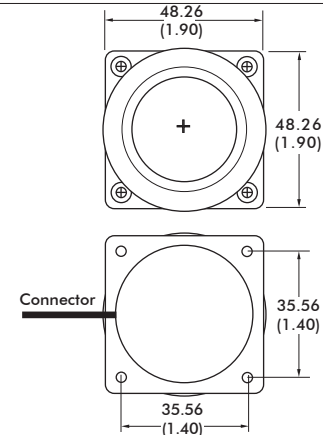
APEM

www.apem.com

HF series

Hall effect joysticks

Overview

<p style="text-align: center;">33</p> 		
<p style="text-align: center;">44</p> 		
<p style="text-align: center;">45</p> 		
<p style="text-align: center;">46</p> 		

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

HF series

Hall effect joysticks

Overview



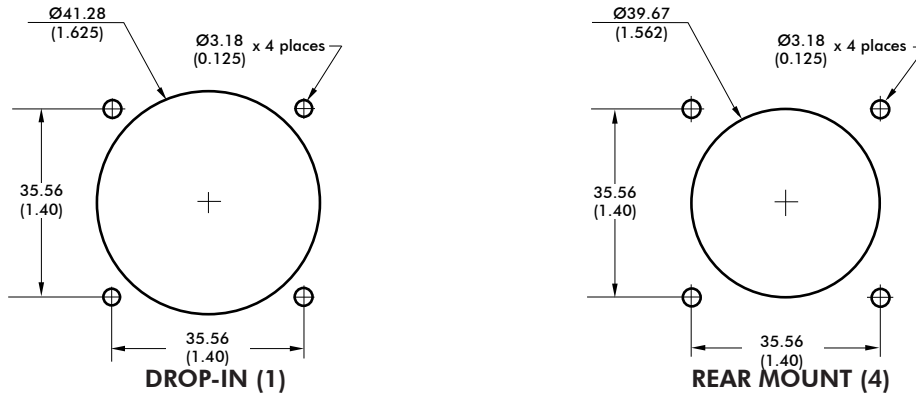
Note: The company reserves the right to change specifications without notice.

HF series

Hall effect joysticks

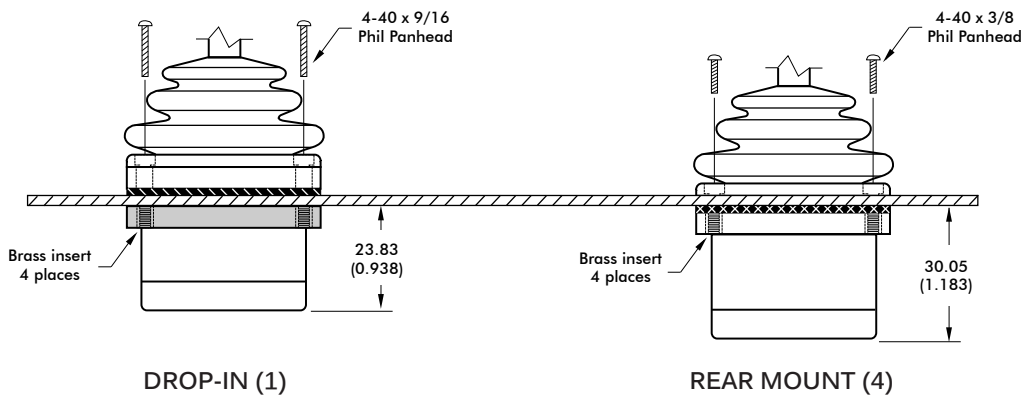
Overview

PANEL CUT-OUT DIMENSIONS

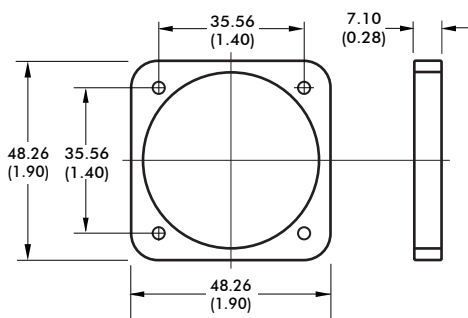


* Not available for Option 11 and 55 Handles

MOUNTING OPTIONS



CLAMPING RING



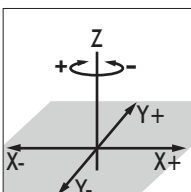
NOTES:

- 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:



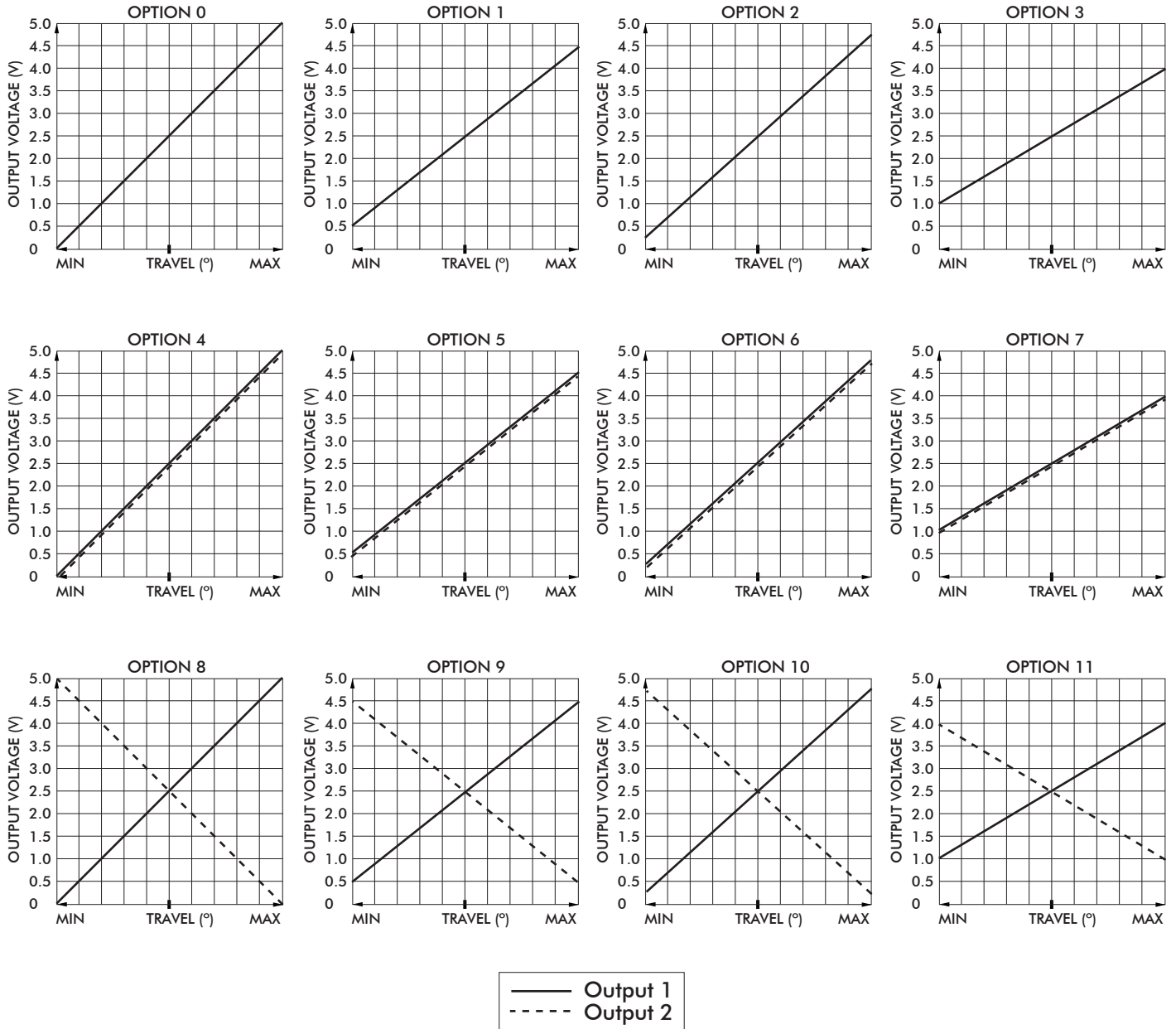
Note: The company reserves the right to change specifications without notice.

HF series

Hall effect joysticks

Overview

VOLTAGE OUTPUT OPTIONS



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

HF series

Hall effect joysticks

Overview

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

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.

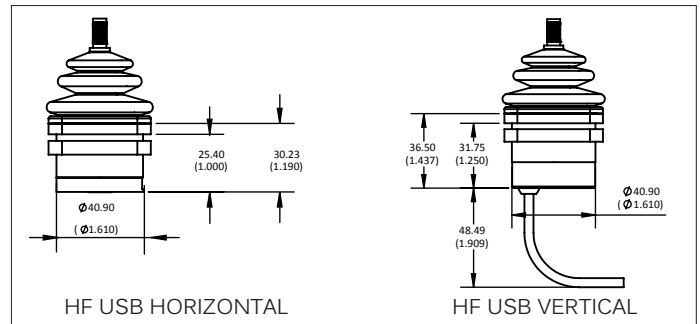
FEATURES

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

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:



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

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

HF series

Hall effect joysticks

Overview

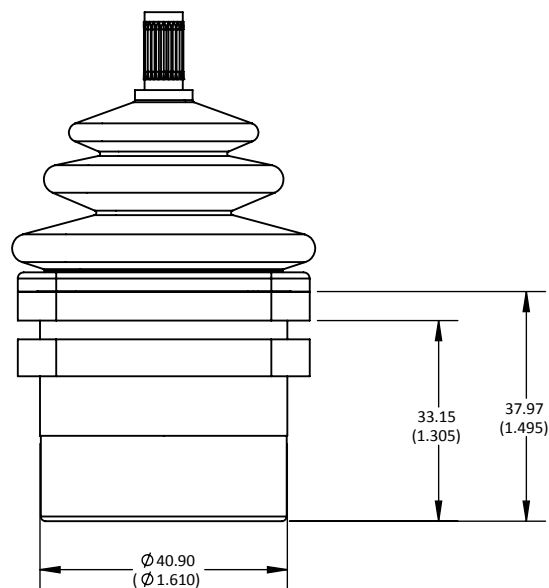
CANbus

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](#) [HF10R11](#) [HF44S10](#) [HF45S10U](#) [HF45R10](#) [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](#) [HF44S10MJBLK](#)
[HF27P10](#) [HF44R10](#) [HF27P111](#) [HF45S10UMJ4SBLK](#) [HF45S10UMJ4CBLK](#) [HF11S11](#) [HF45S1075](#) [HF33S00UMJ4C](#)
[HF46S10](#) [HF11X10](#) [HF45Y10](#) [HF44S12](#) [HF45S40U](#) [HF11S00U](#) [HF44R01](#) [HF46S411](#) [HF44S10UMJ0](#) [HF45S40](#)
[HF11R11](#) [HF11R10](#) [HF33S40](#) [HF45R41](#) [HF27R10](#) [HF27Y10](#) [HF45P12](#) [HF22Y10U](#) [HF46S41](#) [HF45S41J](#)
[HF22S00U](#) [HF10Y40](#) [HF22S10](#) [HF22X10U](#) [HF22P111](#) [HF11R10U](#) [HF27Y12](#) [HF33R10](#) [HF33S11J](#) [HF22P11](#)
[HF45R10U](#) [HF22X10](#) [HF11P11](#) [HF45P10](#) [HF44P10](#) [HF10Y10](#) [HF44R11](#) [HF44S11](#) [HF11R15](#) [HF44R12](#)
[HF46S10U](#) [HF33R00U](#) [HF44R10MJ0BLK](#) [HF22P10](#) [HF33R10U](#) [HF44R10U](#) [HF33S11](#) [HF22P13](#) [HF10S10U](#)
[HF45S11J](#) [HF45R41J](#) [HF46P10](#)