



## HE2 Series

Ruggedized hall effect fingertip joystick

**ALTHEN**  
SENSORS & CONTROLS



## HE2 Series

### MAIN FEATURES

- Up to three axis
- IP67 above panel sealing
- Rugged design with metal mechanism
- 5 million lifecycles
- Precise center tolerances: +/-50mV
- Full voltage outputs at corner positions
- USB protocol output options



### ■ DESCRIPTION

The HE2 Series is a ruggedized, multi-axis Hall effect joystick. Constructed with a metal mechanism and providing IP67 above panel sealing, the HE2 Series is designed for strenuous applications that require precision fingertip joystick positioning. Ideal applications include wireless remote controls and marine propulsion systems.

### ■ SPECIFICATIONS\*

MECHANICAL SINGLE AXIS	
Angular travel:	40° total (20° each direction from center)
Expected life:	5 million operations
Centering:	Spring return
Mass/weight:	120 grams**
Maximum horizontal load:	150 lbF

\* Specifications subject to change without notice.

\*\* Approximate weight. Actual weight dependent on configuration.

### MECHANICAL Z AXIS

Rotational travel:	90° total (45° each direction from center)
Centering:	Spring return
Maximum horizontal load:	14 lbFin

### ELECTRICAL

Technology:	Hall effect sensor, single
Resolution:	12 bit
Supply voltage:	5.00VDC +/- 0.01VDC regulated, transient free
Supply voltage tolerance:	5.00VDC +/- 0.25VDC
Ratiometric output voltage:	See output options
Return to center voltage tolerance:	+/-50mV*
Transient overvoltage max:	20VDC
Reverse polarity max:	-10VDC
Output current:	8mA
Output impedance:	2Ω
Start up time:	15ms max

\* Based on supply voltage 5.00VDC +/- .01VDC. Outputs are ratiometric and dependent upon supply voltage.

## ■ SPECIFICATIONS

ENVIRONMENTAL	
Operating temperature:	-40°C +85°C
Storage temperature:	-40°C +85°C
Above panel sealing:	IP67*
EMC immunity level:	EN61000-4-3** Compliance to 30A/m
EMC emissions level:	EN61000-6-3
ESD immunity level:	EN61000-4-2** Compliance to +/-15kV/+/-8kV
Vibration:	Per SAE J1455 Section 4.9 & MIL-STD810G 514.6
Mechanical shock:	Per SAE J1455 Section 4.10 & MIL-STD-202G

\* Above panel sealing. All configurations. Product is idle and not in use.

\*\* Extended testing levels.

## MATERIALS

Plastic housing and handles:	Mineral & glass filled nylon
Boots & actuators:	Silicone (with tear resistant additive) & glass filled nylon

## ■ CONNECTIONS: ANALOG OUTPUTS/OUTPUT OPTIONS 1-4

The HE2 Series joystick (Output options 1-4) features a Hirose DF11-12DP-2DS(24) header (male receptacle). The joystick is supplied with a mating wire harness featuring Hirose DF11-12DS-2C(05) connector (female socket).

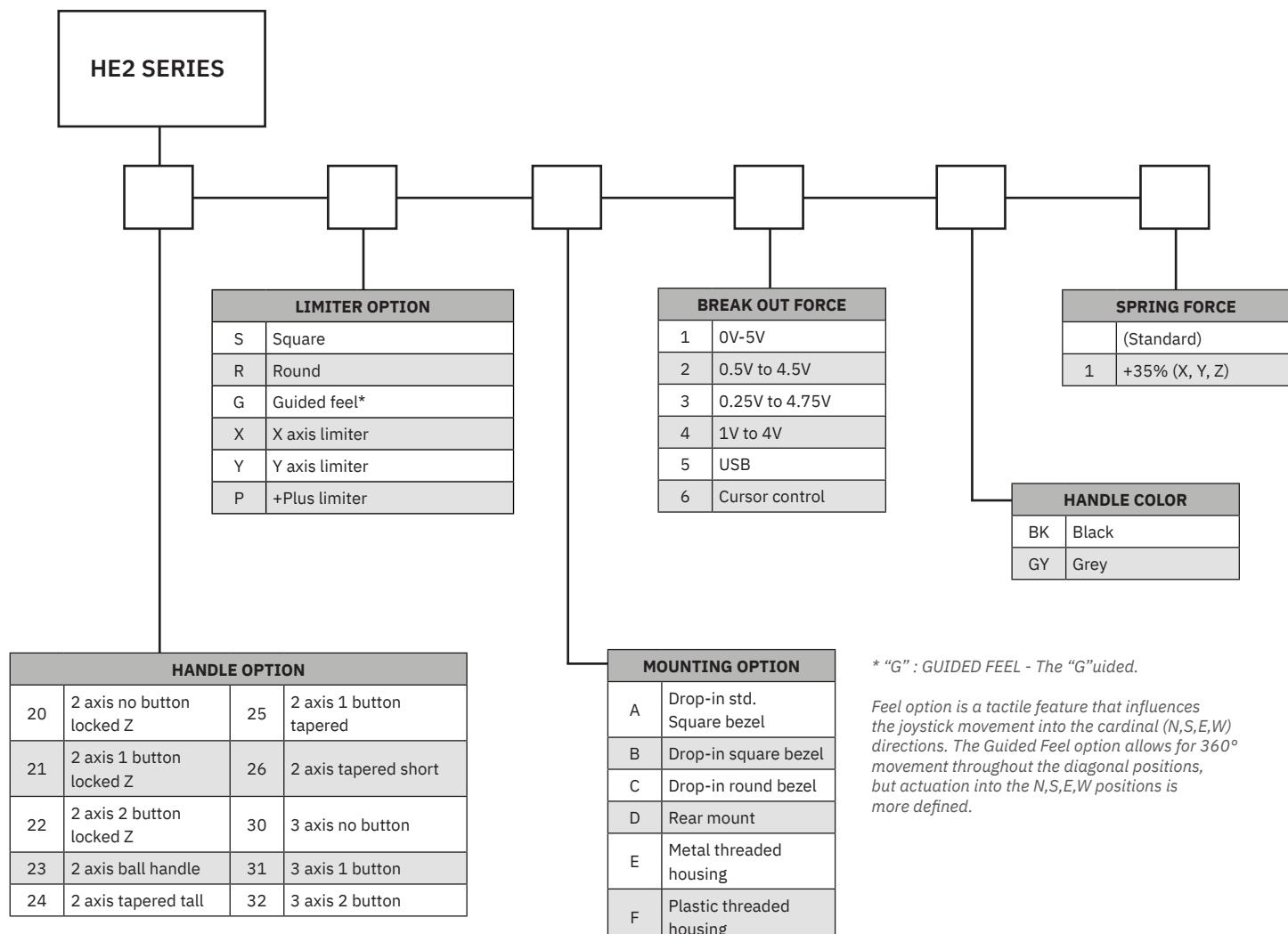
**Joystick body:** Hirose DF11-12DP-2DS(24).

**Mating wire harness:** Hirose DF11-12DS-2C(05) to stripped & tinned wire leads 10", 11 x PTFE 28AWG, heat shrink cable jacket.



PIN #	WIRE COLOR	DESCRIPTION
1	BLACK	Ground
2	RED	Power (+5V)
3	PINK	N/A
4	BLUE	X axis sensor
5	GREY	N/A
6	YELLOW	Y axis sensor
7	BROWN	N/A
8	GREEN	Z axis sensor
9	ORANGE	Button 1
10	WHITE	Button common
11	VIOLET	Button 2
12	N/A	N/A

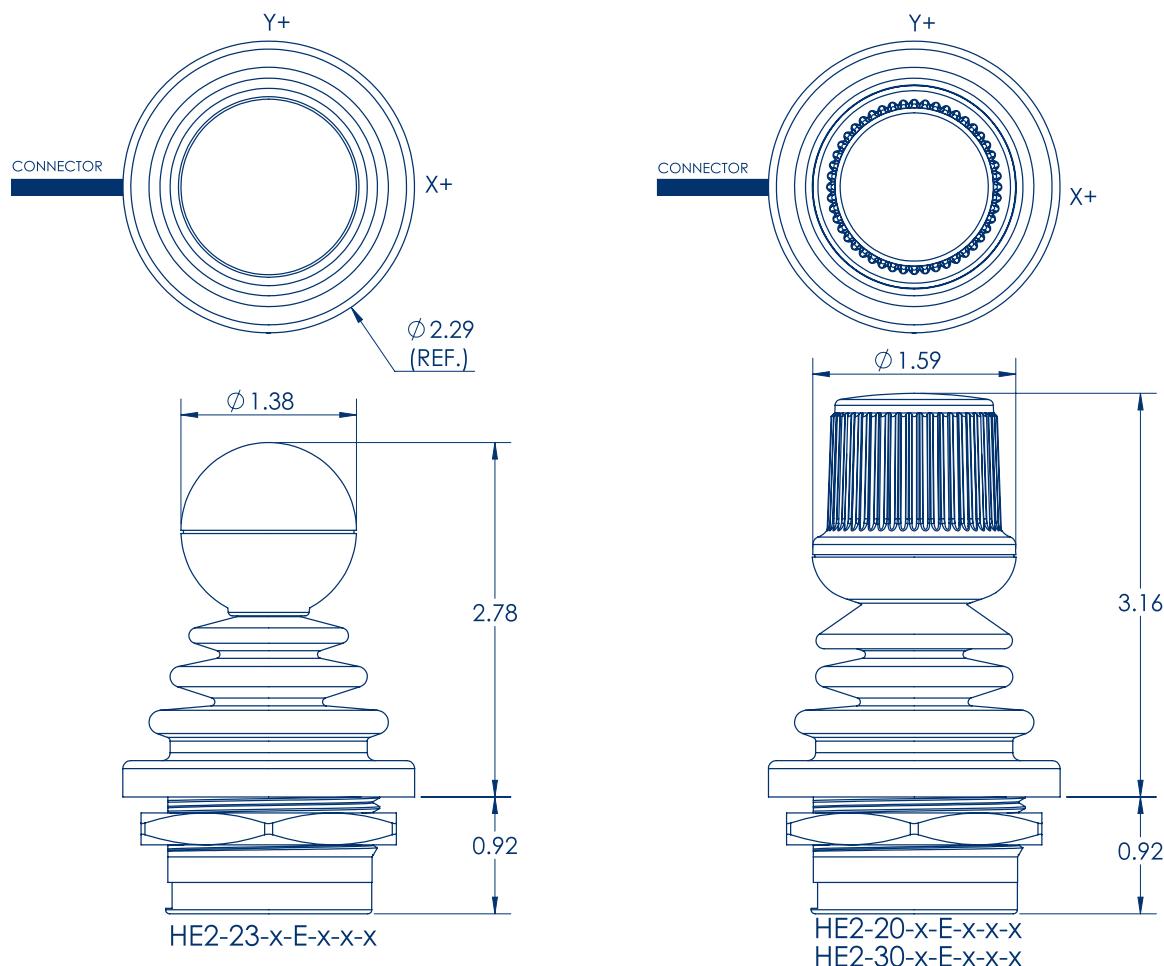
■ HE2 SERIES PRODUCT CONFIGURATION



\* "G" : GUIDED FEEL - The "G"uided.

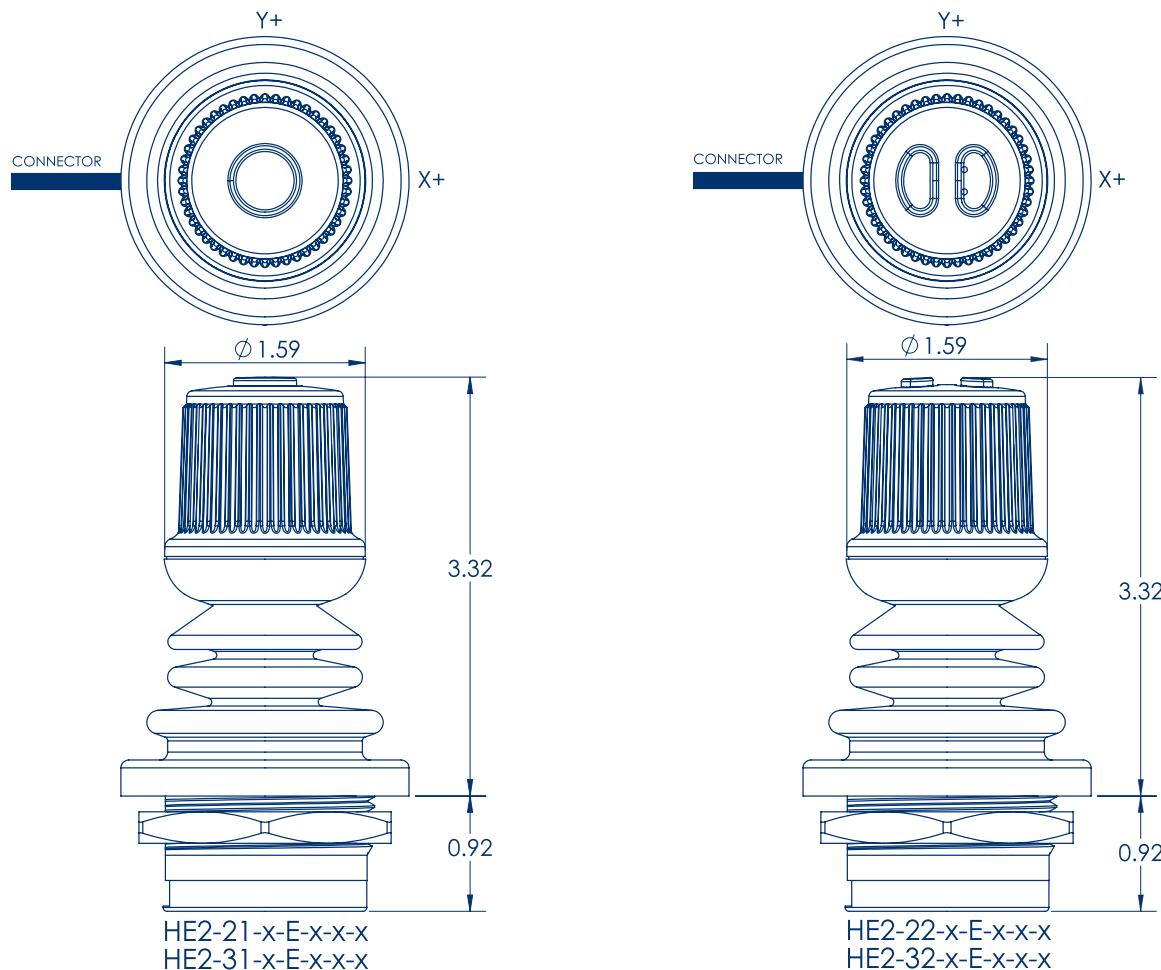
Feel option is a tactile feature that influences the joystick movement into the cardinal (N,S,E,W) directions. The Guided Feel option allows for 360° movement throughout the diagonal positions, but actuation into the N,S,E,W positions is more defined.

■ HANDLE OPTION



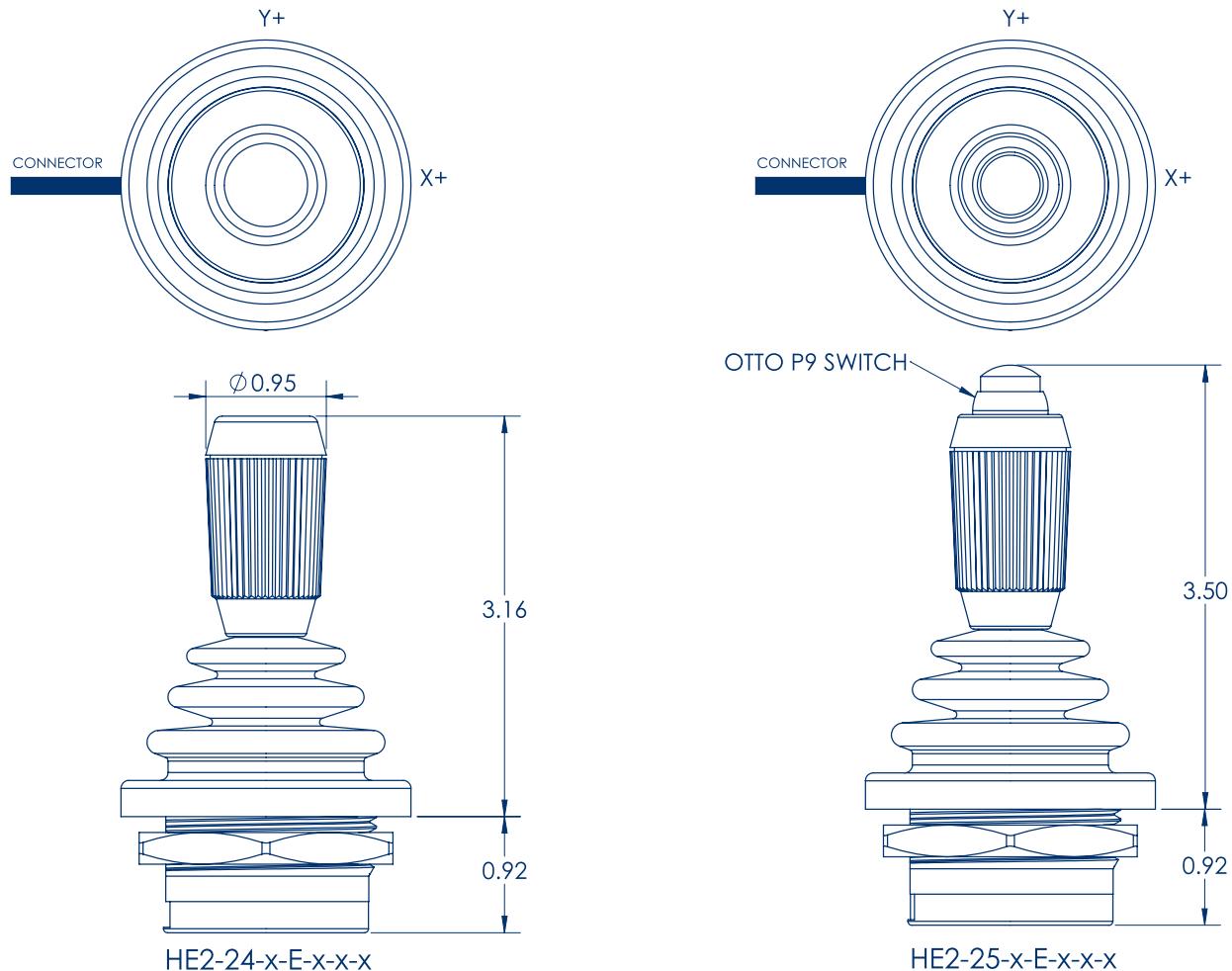
ALL HANDLE OPTIONS SHOWN WITH METAL THREADED HOUSING MOUNTING OPTION "E"

■ **HANDLE OPTION**



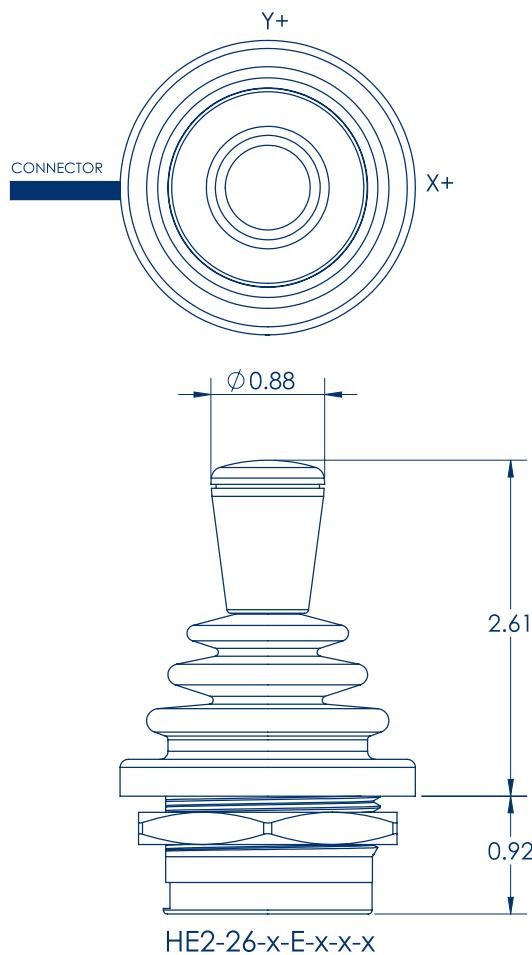
*ALL HANDLE OPTIONS SHOWN WITH METAL THREADED HOUSING MOUNTING OPTION "E"*

■ **HANDLE OPTION**



*ALL HANDLE OPTIONS SHOWN WITH METAL THREADED HOUSING MOUNTING OPTION "E"*

■ **HANDLE OPTION**

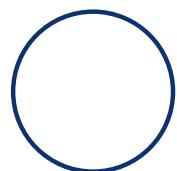


*ALL HANDLE OPTIONS SHOWN WITH METAL THREADED HOUSING MOUNTING OPTION "E"*

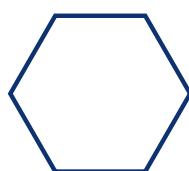
■ **HANDLE OPTION**



S: SQUARE



R: ROUND



G: GUIDED FEEL



X: X AXIS



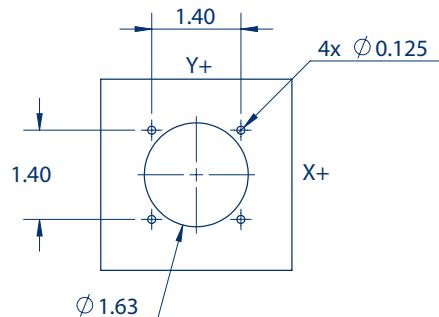
Y: Y AXIS



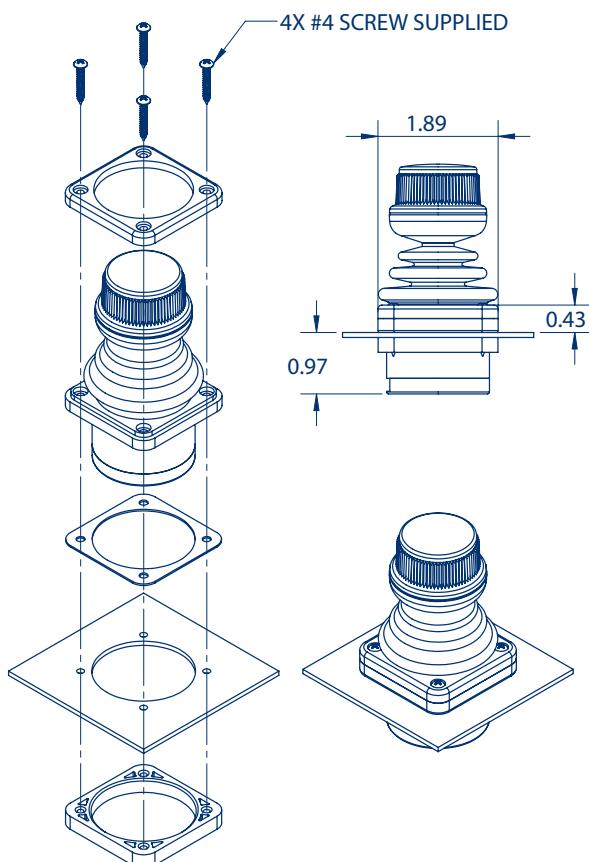
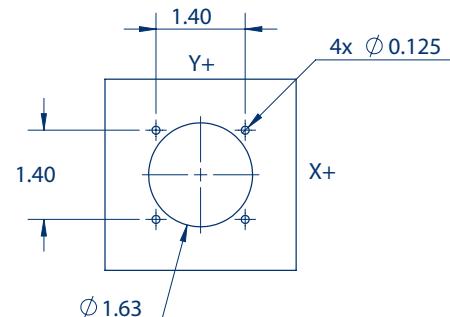
P: PLUS

■ MOUNTING PANEL DIMENSIONS

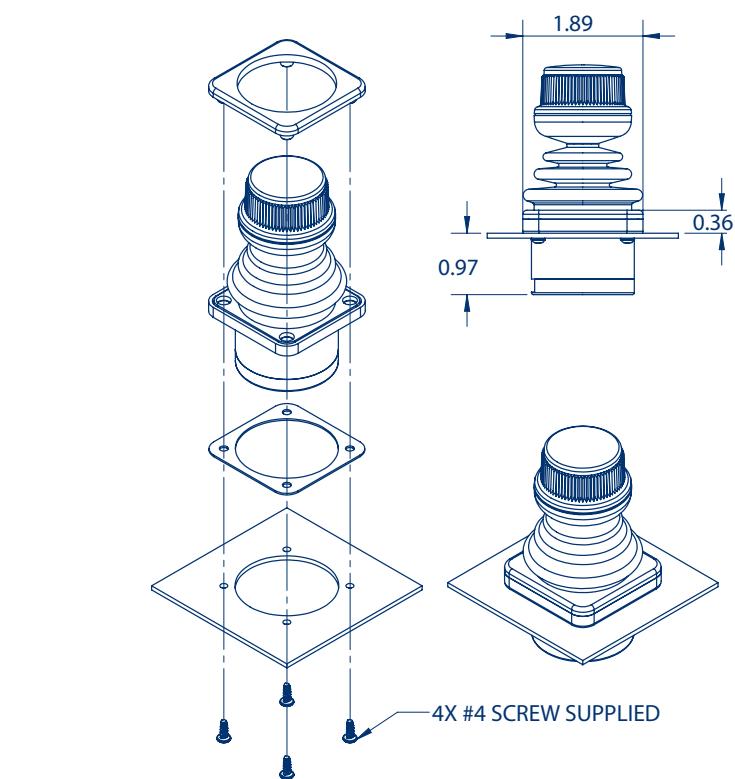
DROP-IN SQUARE PANEL DIMENSIONS



DROP-IN SQUARE PANEL DIMENSIONS  
(UNDER PANEL SCREWS)



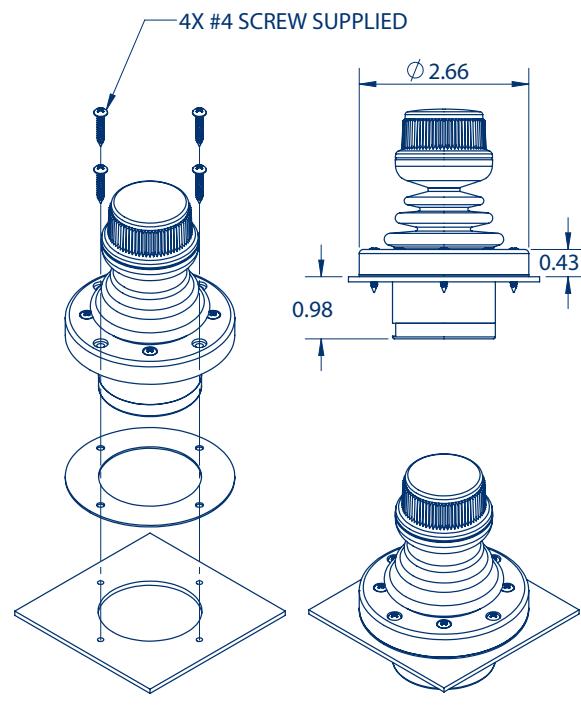
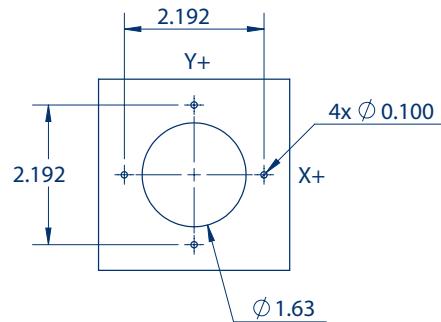
DROP-IN STANDARD SQUARE BEZEL



DROP-IN SQUARE BEZEL, UNDER PANEL SCREWS

■ MOUNTING PANEL DIMENSIONS

DROP-IN ROUND PANEL DIMENSIONS

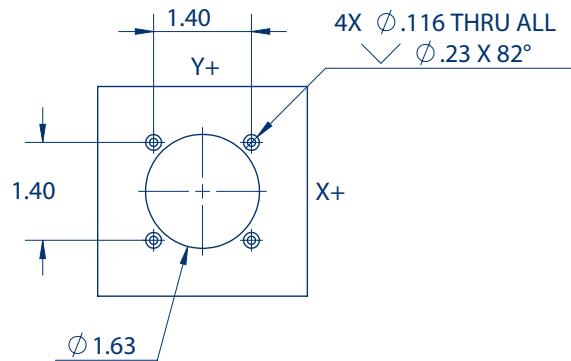


DROP-IN ROUND BEZEL

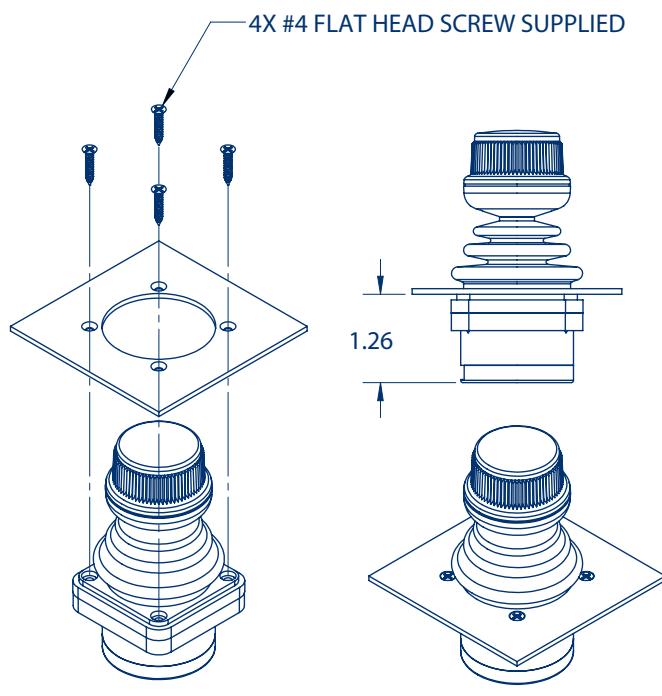
\*HANDLE SHOWN FOR REFERENCE ONLY

■ MOUNTING PANEL DIMENSIONS

REAR MOUNT PANEL DIMENSIONS

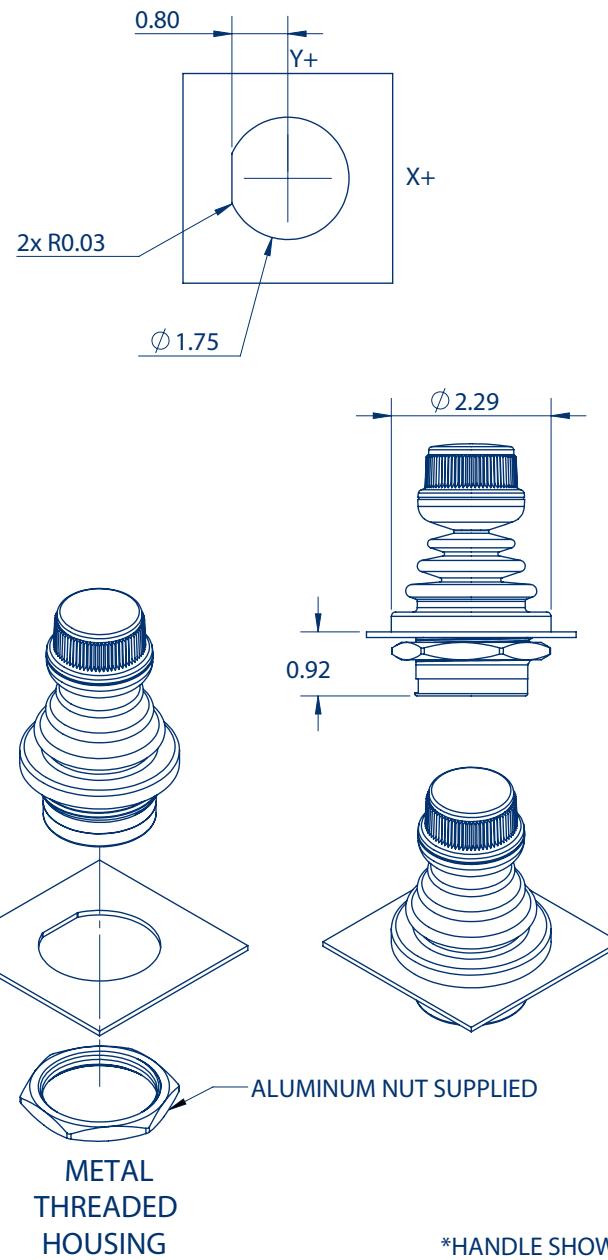


4X #4 FLAT HEAD SCREW SUPPLIED

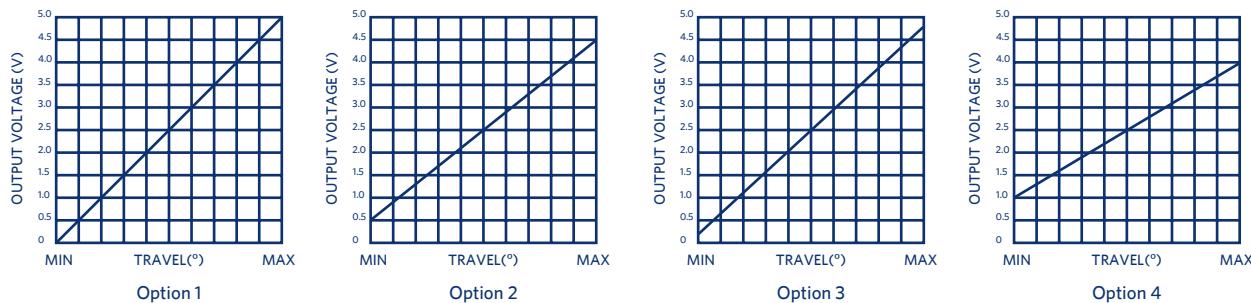


■ MOUNTING PANEL DIMENSIONS

METAL OR PLASTIC THREADED  
HOUSING PANEL DIMENSIONS



## ■ VOLTAGE OUTPUT OPTIONS



## ■ USB OUTPUT OPTIONS

### USB OUTPUT OPTION (OPTION 5)

Featuring USB 1.1 HID compliant interface, USB Output Option 5 provides HID compliant “Game Controller” interface.

Althen's USB joysticks are plug-and-play with most versions of WINDOWS.

Joystick button and axis assignment 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
Resolution:	10 Bit
Supply voltage:	5VDC via USB cable
Software:	WINDOWS (ALL), OSX, Linux
Supported protocols:	USB HID 1.1 Game Controller Standard DirectX HID drivers Joystick: Up to 3 HID axis Pushbuttons: Up to 2 buttons
Vibration:	Per SAE J1455 Section 4.9 & MIL-STD810G 514.6
Cable:	Overmolded USB Male Type A to Right Angle Mini B (60") length

### CURSOR CONTROL OUTPUT OPTION (OUTPUT OPTION 6)

The Cursor Control Output Option converts multi-axis joystick output into USB HID compliant mouse / cursor control / pointing device interface.

Features:	HID Compliant “mouse” device
Resolution:	10 Bit
Supply voltage:	5VDC via USB cable
Software:	WINDOWS (ALL), OSX, Linux
Supported protocols:	USB HID 1.1 Game Controller Standard DirectX HID drivers Joystick: Up to 3 HID axis Pushbuttons: Up to 2 buttons
Cable:	Overmolded USB Male Type A to Right Angle Mini B (60") length