TSD Series

Micro Hall effect joystick

MAIN FEATURES

- Micro size
- One or two axis
- Hall effect sensing
- Features M2 or M3 threaded shaft
- IP67 above panel sealing
- 2.5 million lifecycles

The TSD Series is a micro, multi-axis Hall effect joystick purposely designed for uncrewed systems and robotics applications. Available with choice of M3 male or M2 or M3 female threading, the TSD Series allows users to easily adapt their own handle. The TSD Series is rated for over 2.5M actuations and features IP67 above panel sealing as standard.

STANDARD CHARACTERISTICS/SPECIFICATIONS*

MECHANICAL (X & Y AXIS)	
Angular travel:	30° total (15° each direction from center)
Expected life:	2.5 million operations
Centering:	Spring return
Mass/weight:	13 grams**
Maximum vertical load:	50 lbF`
Maximum horizontal load:	15 lbF***
Actuation force:	0.7 +/- 0.1N
Mounting torque:	.3N applied to nut

* Specifications subject to change without notice
** Approximate weight. Actual weight dependent on configuration
*** Measured 0.62" above panel surface

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3258 Grey Hawk Ct., Carlsbad, CA 92010
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SPECIFICATIONS

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
Supply current:	20mA max
Ratiometric output voltage:	See output options
Return to center voltage tolerance:	+/-100mV*
Transient overvoltage max:	20VDC
Reverse polarity max:	-10VDC
Output impedance:	2Ω
Start up time:	15ms max

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

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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: 2001 + A1:20011 + AC:2012 FCC 47 CFR Part 15, Subpart B – Verification ICES-003 Issue 7: 2020
ESD immunity level:	EN61000-4-2** Compliance to +/-15kV/+/-8kV EN61000-6-1: 2007
Vibration:	Per SAE J1455 Section 4.9 & MIL-STD810G 514.6
Mechincal 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:	Thermoplastic
Shaft:	Stainless steel
Boot:	Silicone (with tear resistant additive

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CONNECTIONS

PIN #*	WIRE COLOR**	DESCRIPTION**
1	RED	POWER (+5V)
2	YELLOW	Y AXIS SENSOR
3	BLUE	X AXIS SENSOR
4	BLACK	GROUND

* Pin # requires Termination Option C. Mating wire harness may be specified from product configuration guide.

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TSD SERIES PRODUCT CONFIGURATION

LIMITER OPTION	
S	SQUARE
R	ROUND
Y	Y LIMITER
G	GUIDED FEEL*

OUTPUT OPTION	
1	0V - 5V
2	0.5V - 4.5V
3	0.25V - 4.75V
4	1V - 4V

BOOT COLOR	
BK	BLACK

HANDLE OPTION	
N	NOT INCLUDED

SHAFT OPTION	
1	M3 MALE THREAD, 5MM L
2	M3 MALE THREAD, 12MM L
3	M3 FEMALE THREAD
4	M2 FEMALE THREAD

MOUNTING OPTION	
T	1/2"-20 THREADED HOUSING

TERMINATION	
B	.049 (1.25MM) JST CONNECTOR WIHOUT MATING WIRE HARNESS
C	.049" (1.25MM) JST CONNECTION*
W	24AWG PIGTAIL, 14" LENGTH
Z	28AWG PIGTAIL, 14" LENGTH

SPRING FORCE	
1	STANDARD
2	-25%

* "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 refined.

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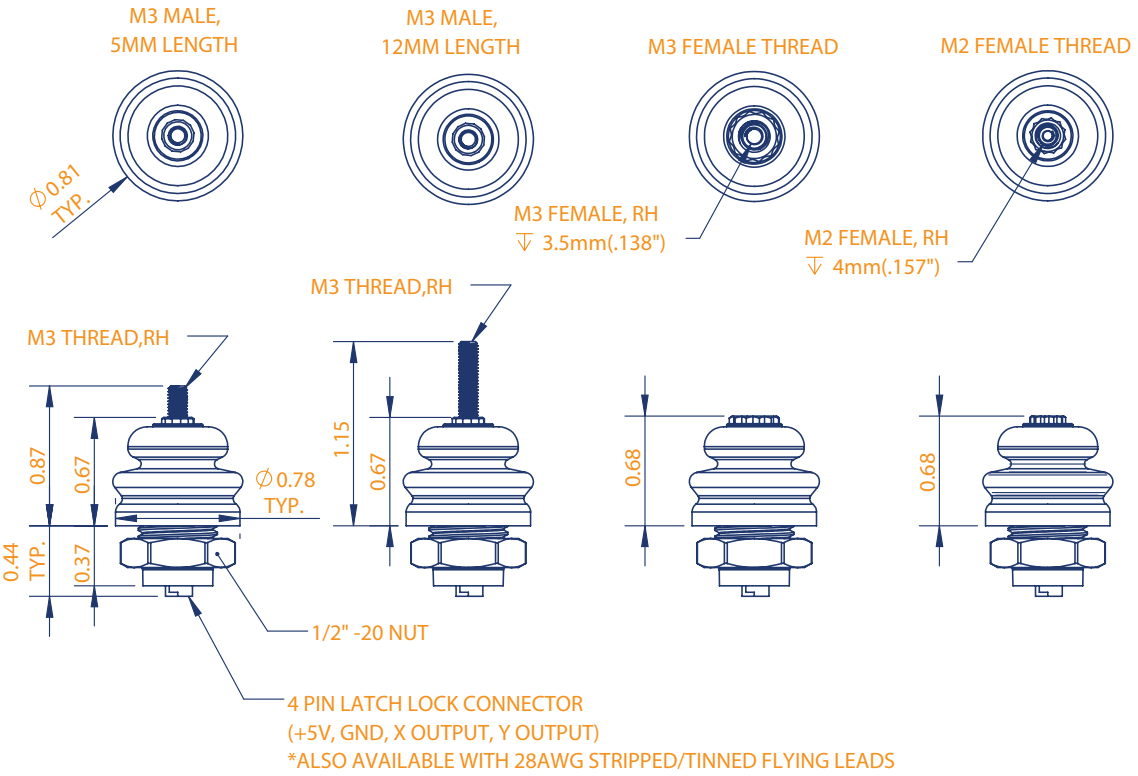
SHAFT OPTION



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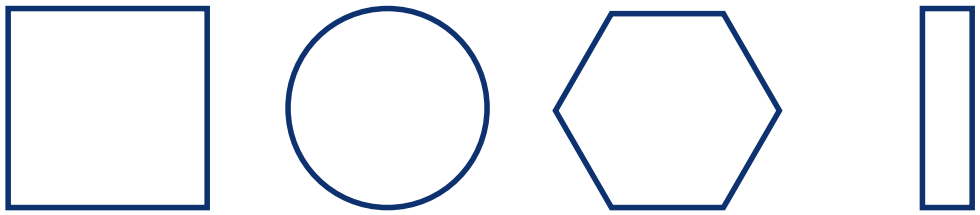
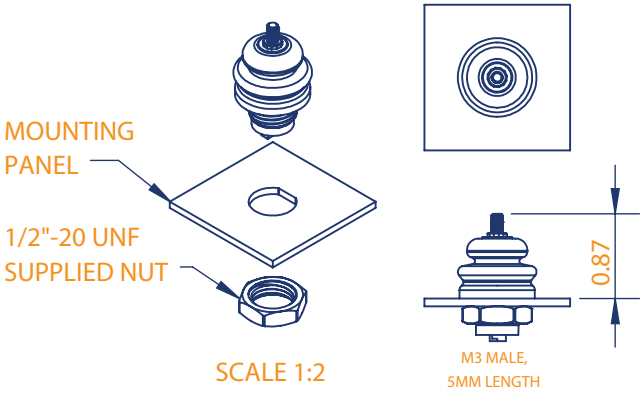
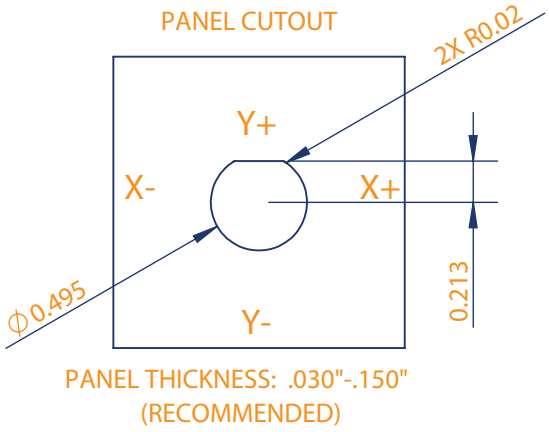
LIMITER PLATE OPTION



S: SQUARE R: ROUND G: GUIDED FEEL Y: Y AXIS

PANEL MOUNTING AND CUTOUT





PANEL THICKNESS: .030"-.150"
(RECOMMENDED)

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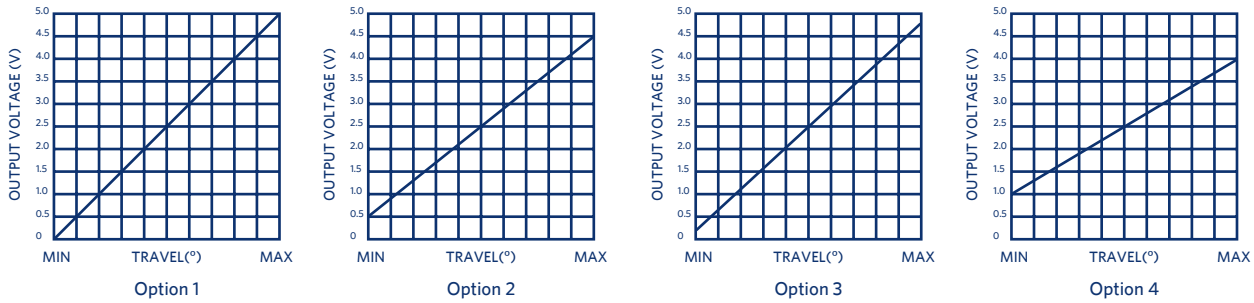
VOLTAGE OUTPUT OPTIONS



TERMINATION OPTIONS

Termination Option B – Connectorized joystick housing without mating wire harness

Termination Option C – Connectorized joystick housing with mating wire harness

Housing body: Friction lock PCB header: JST: BM04B-GHS-TBT(LF)(SN)(N)
Mating wire harness: 10″ 28AWG PTFE to five position connector housing: JST GHR-04V-S

Termination Options W and Z – Potted flying leads

Termination option W - 24AWG Pigtail, PTFE 14″

Termination option Z - 28AWG Pigtail, PTFE 14″

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