

UP TO 10 MILLION OPERATIONAL CYCLES IN ALL DIRECTIONS



Handle Style 32 with 2 Pushbuttons



Handle Style 61 with Rocker and 5 Switches

The JHM series Medium Hall Effect Joystick is a full function operator control that will fit in an armrest, on a panel, or any other location where a shallow behind panel depth joystick is needed. It utilizes Hall effect technology for long life and reliability. Electronics are sealed up to IP68S with an operational life of ten million cycles in all directions.

The standard JHM offers 16 handle styles, 18 output configuration choices and 9 gating options.

Output options include CANopen, J1939, PWM, USB, analog and digital control outputs, and redundant sensors. The JHM offers a variety of switches and handle styles such as a ball handle, a lockout handle, a G3-D grip and handles with pushbuttons, rockers and 5-button keypads.

Gating options include single axis, dual axis, friction y-axis, and various omnidirectional selections that include omnidirectional round smooth feel, omnidirectional on-axis and off-axis guided feel and omnidirectional square on-axis guided feel.

Features:

- **Designed for armrest & panel mounting**
- **Shorter behind panel depth**
- **Contactless analog output Hall effect technology**
- **Electronics sealed up to IP68S**
- **Up to 10 million operational cycles in all directions**
- **Available with a variety of grip & switch options**
- **Redundant sensors available**
- **Various output configurations**
 - CANopen
 - J1939
 - USB
 - PWM
 - Serial
 - Analog
- **Variety of gating options**
- **RoHS compliant**

Standard Characteristics/Ratings:

Sensor Type: Hall effect analog, factory programmed with temperature compensation, ground and supply line break detection, and over voltage and reverse voltage protection options.

Design: Contactless sensing

Magnet: Dual bar permanent magnet

ELECTRICAL RATINGS: Joystick Rated at 5V @ 20°C, Load = 1ma (4.7kΩ)

Electrical	Units	Min	Typ	Max
Supply Voltage, Vcc	VDC	4.5	5.0	5.5
Output Voltage Tolerance at Center AA, BB, CC, DD, EE, FF, GG & HH @ 5V Vcc	VDC	-0.25	N/A	+0.25
Output Voltage Tolerance at Center AT, BT, CT, DT, ET & FT @ 5V Vcc	VDC	-0.15	N/A	+0.15
Output Voltage Tolerance Full Travel @ 5V Vcc	VDC	-0.25	N/A	+0.25
Supply Current Per Sensor	mA	N/A	N/A	10.00
Output Source Current Limit	mA	-1.00	N/A	1.00

ELECTRICAL RATINGS: U2 Rated at Vcc = 5V @ 25°C, Load = 1ma (4.7kΩ)

Electrical	Units	Min	Typ	Max
Supply Voltage, Vcc	VDC	4.5	5.0	5.5
Output Voltage +, - 0° Deflection @ 5V Vcc	VDC	2.25	2.50	2.75
Output at Full Travel Direction -Z @ 5V Vcc	VDC	0.45	0.50	0.75
Output at Full Travel Direction +Z @ 5V Vcc	VDC	4.25	4.50	4.55
Supply Current B-0, Vcc=5V, I _o =0	mA	N/A	N/A	10.00

ELECTRICAL RATINGS: P9 Switches Rated at 10mA Resistive Load at 5VDC

Electrical Life: 1,000,000 cycles

MECHANICAL (JOYSTICK):

Mechanical Life: In all directions, 2,500,000 cycles min up to 10,000,000 cycles depending on configuration. (Boot life varies depending on configuration.)

Mechanical (Operating Force w/Boot)	Units	Min	Typ	Max
Travel Angle	Degrees	18°	20°	22°
High Force @ 2" GRP (Return to Center)	Lbs.	0.5	1.25	2.0
Low Force @ 2" GRP (Return to Center)	Lbs.	0.5	1.0	1.5
High Force @ 3" GRP (Return to Center)	Lbs.	0.5	1.0	1.5
Low Force @ 3" GRP (Return to Center)	Lbs.	0.4	0.7	1.0
High Force @ 4" GRP (Return to Center) Handle Styles 51, 52, 53	Lbs.	1.2	2.5	3.8
Low Force @ 4" GRP (Return to Center) Handle Styles 51, 52, 53	Lbs.	0.4	0.8	1.2
Friction @ 2" GRP	Lbs.	1.5	4.5	7.5
Friction @ 3" GRP	Lbs.	1.0	3.5	6.0
Friction @ 4" GRP Handle Styles 51, 52, 53	Lbs.	0.8	2.4	4.0

MECHANICAL (U2 SWITCH):

Mechanical Life:	2,500,000 cycles			
Mechanical	Units	Min	Typ	Max
Operating Force	Oz.	3.5	6.5	9.5

MECHANICAL (P9 SWITCH):

Mechanical Life:	1,000,000 cycles			
Mechanical	Units	Min	Typ	Max
Operating Force	Oz.	8	12	16

MECHANICAL (5 BUTTON KEYPAD PUSHBUTTONS):

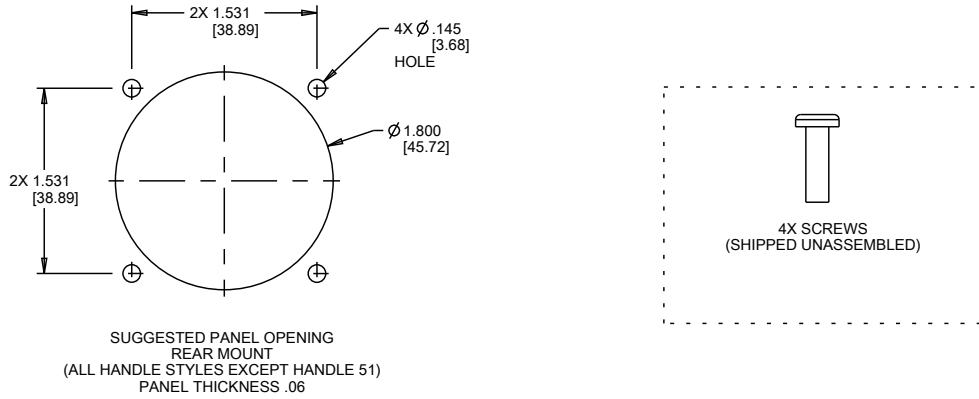
Mechanical Life:	3,000,000 cycles			
Mechanical	Units	Min	Typ	Max
Operating Force	Oz.	2	8	10

Seal: Handle styles 34 and 35 panel sealed to IP68S

RFI / EMI Withstand per SAE J1113

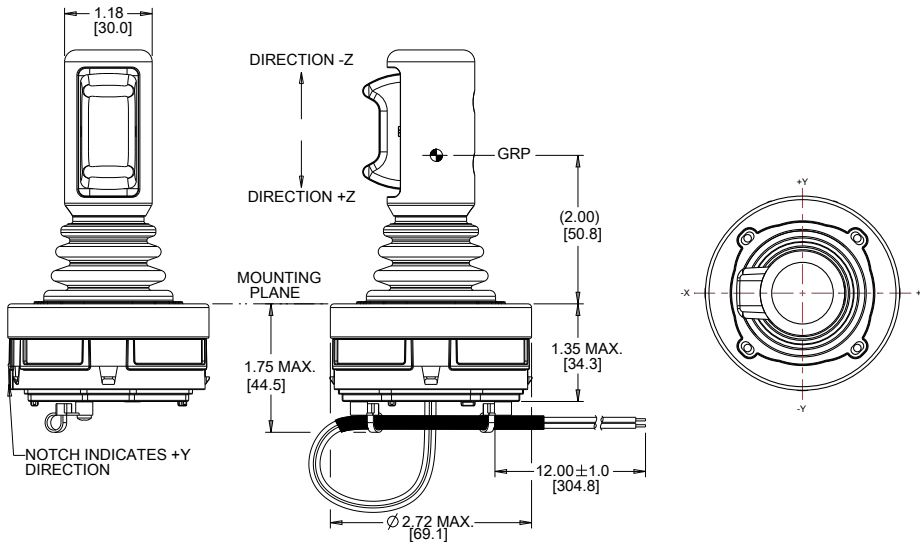
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JHM Suggested Panel Opening



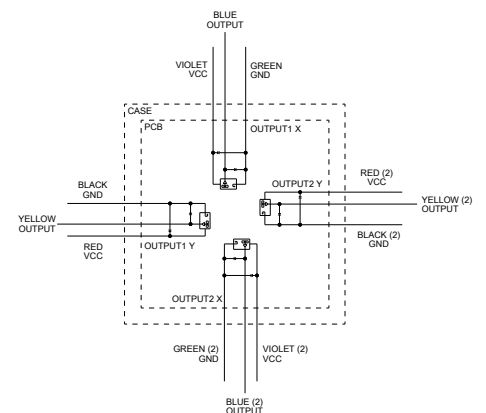
Mounting Hardware Information

MOUNTING HARDWARE INFORMATION	
MATERIAL:	
MOUNTING HARDWARE (EXCEPT HANDLE STYLE 51)	4X M3X0.5X14MM



JHM Outputs AA-FT and LL (Output Graph at end of JHM section)

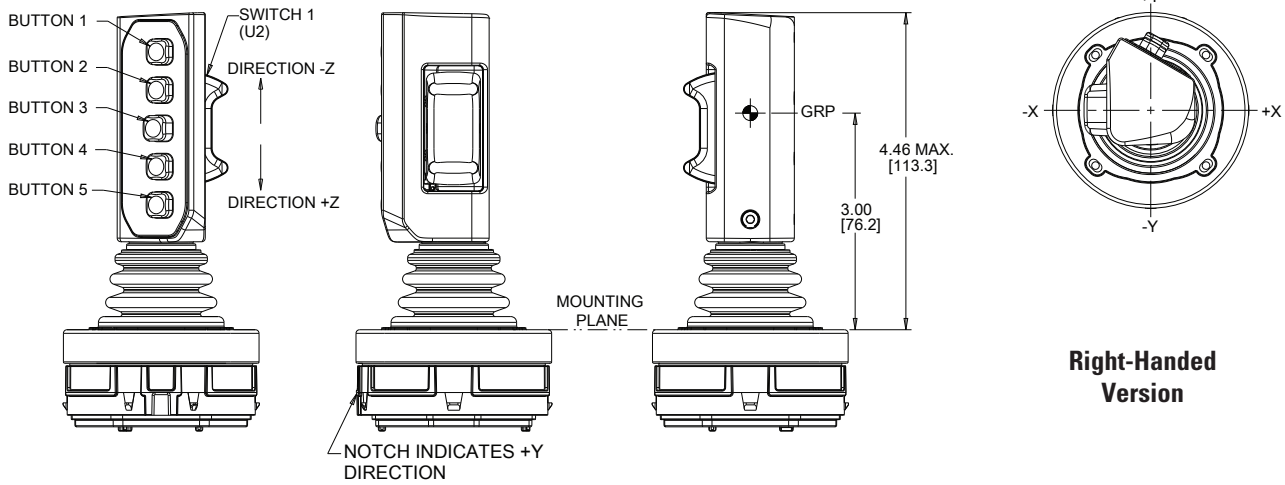
PWM PRODUCT SPECIFICATIONS				
ELECTRICAL:				
PWM INTERFACE				
SUPPLY VOLTAGE, Vcc	VDC	4.5	N/A	18.0
OUTPUT FREQUENCY	Hz	460	500	540
AMPLITUDE LOW	A	0.0	N/A	.020
AMPLITUDE HIGH PULLUP REQUIRED	VDC	3.0	N/A	12.0
PWM OUTPUT @ +X AND +Y FULL TRAVEL	%	80.0	90.0	92.0
PWM OUTPUT @ ZERO TRAVEL	%	42.0	50.0	58.0
PWM OUTPUT @ -X AND -Y FULL TRAVEL	%	8.0	10.0	20.0



HALL EFFECT TECHNOLOGY JOYSTICK

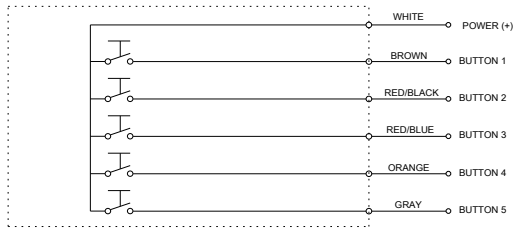
HANDLE 61

(5-BUTTON KEYPAD & HALL ROCKER RIGHT)
(HANDLE NOT TOOLED)

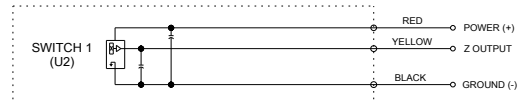


**Right-Handed
Version**

BUTTON SCHEMATIC

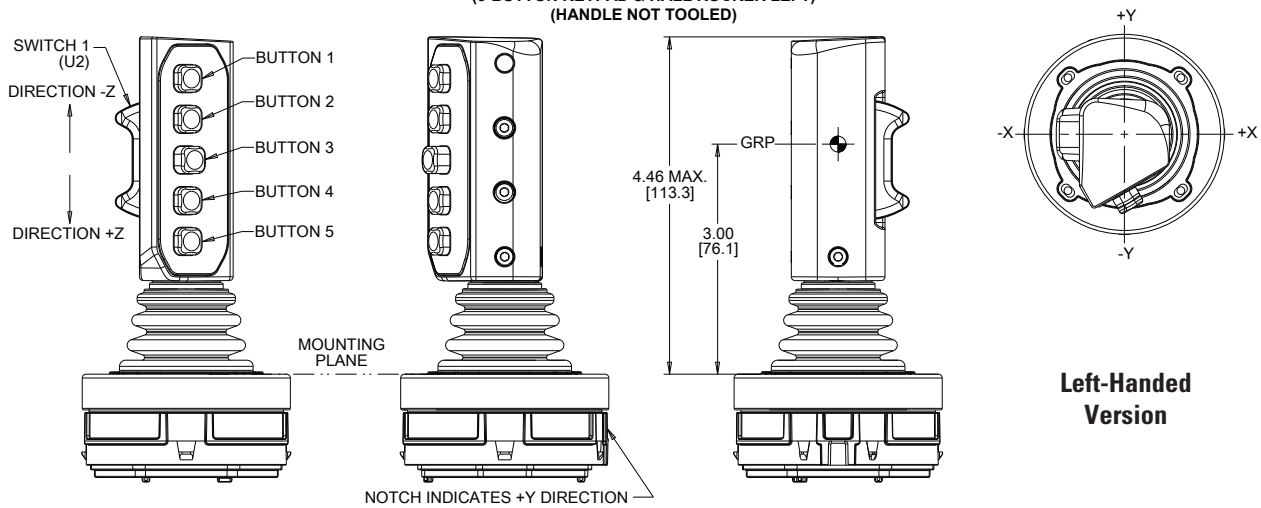


HANDLE SCHEMATIC



HANDLE 62

(5-BUTTON KEYPAD & HALL ROCKER LEFT)
(HANDLE NOT TOOLED)



**Left-Handed
Version**

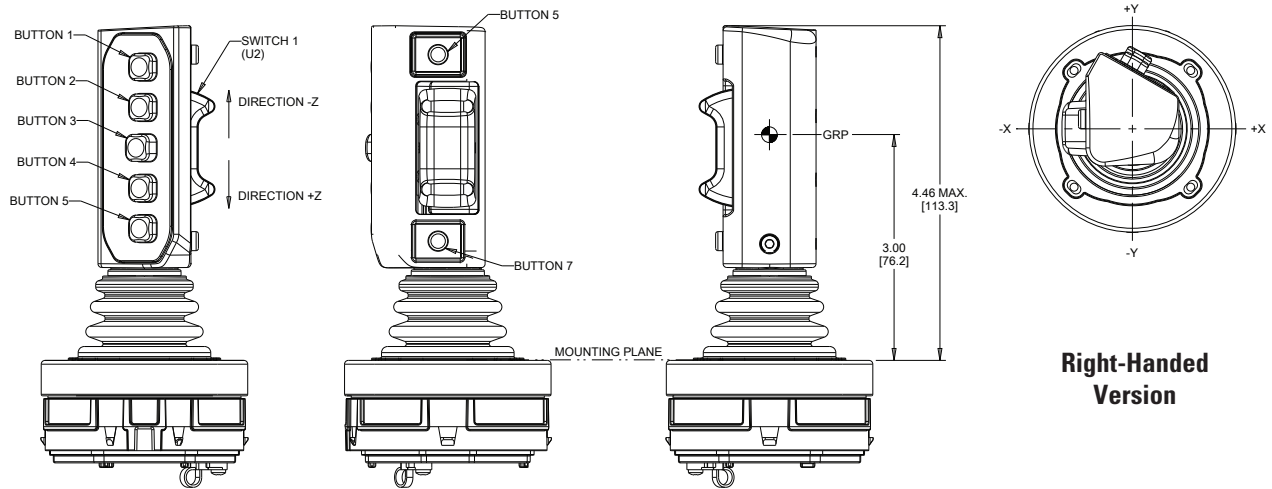
Wires and Strain Relief not shown in all views for clarity.

MEDIUM HALL EFFECT JOYSTICK

UP TO 10 MILLION OPERATIONAL CYCLES IN ALL DIRECTIONS

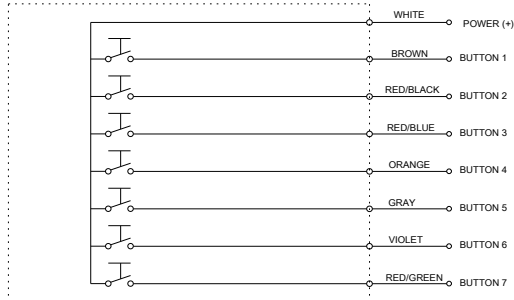
HANDLE 63

(7-BUTTON KEYPAD & HALL ROCKER RIGHT)
(HANDLE NOT TOOLED)

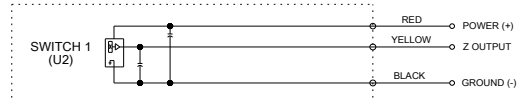


**Right-Handed
Version**

BUTTON SCHEMATIC

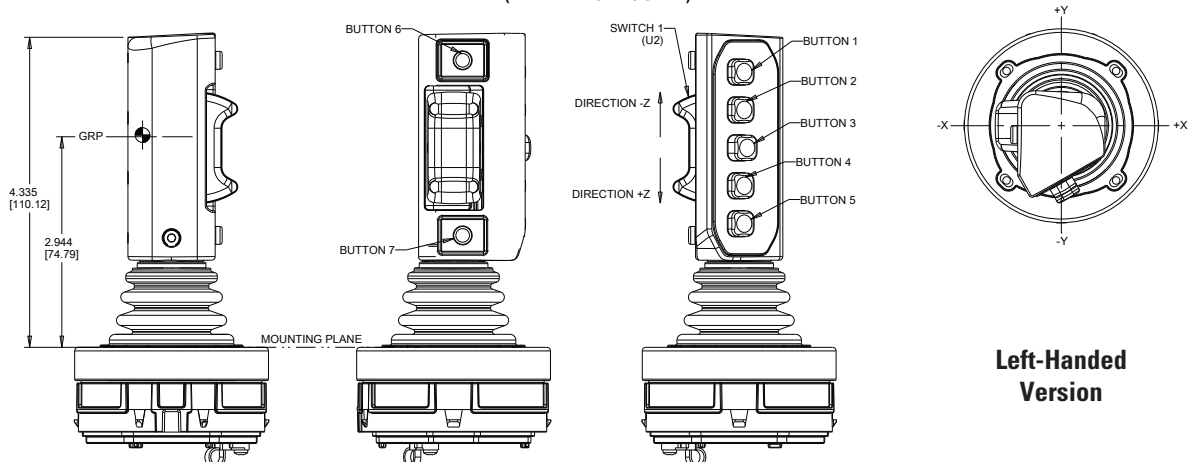


HANDLE SCHEMATIC



HANDLE 64

(7-BUTTON KEYPAD & HALL ROCKER LEFT)
(HANDLE NOT TOOLED)



**Left-Handed
Version**

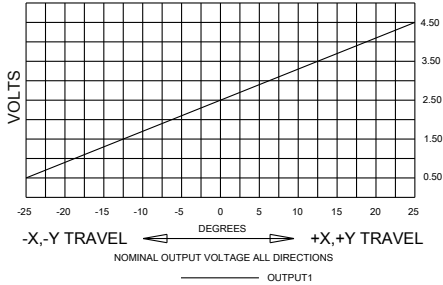
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MEDIUM HALL EFFECT JOYSTICK

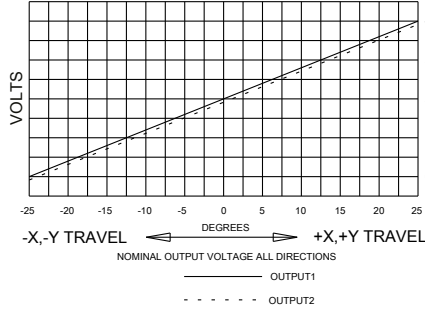
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JHM OUTPUTS

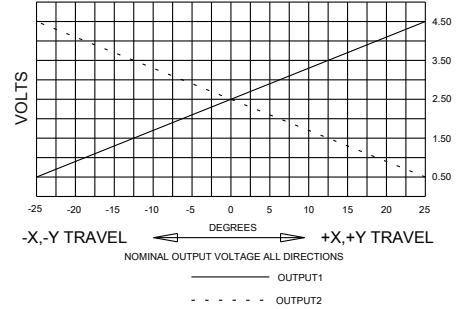
OPTION AA & AT



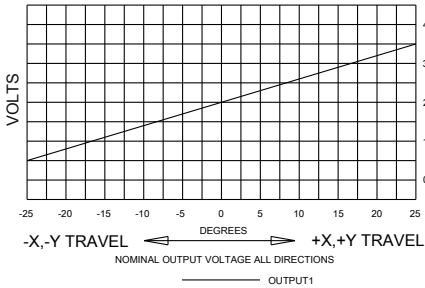
OPTION BB & BT



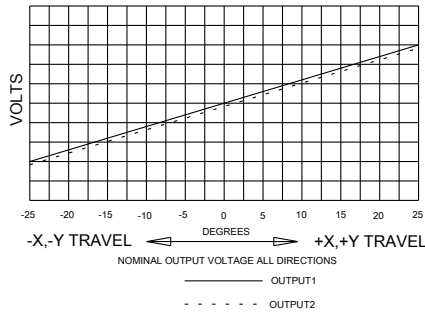
OPTION CC & CT



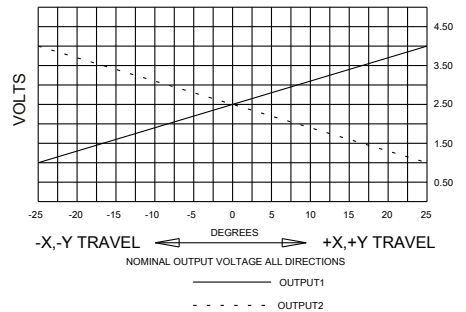
OPTION DD & DT



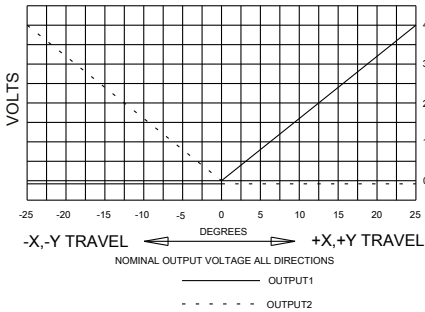
OPTION EE & ET



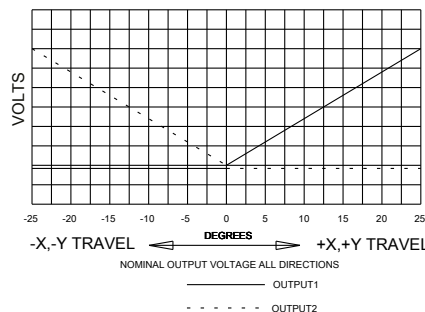
OPTION FF & FT



OPTION GG



OPTION HH



OPTION LL

