

HIGH PERFORMANCE, COST-EFFECTIVE, SEALED



Offering high performance in a cost-effective, sealed Hall effect joystick, the JHL series boasts a cycle life of up to 6 million cycles and can handle up to 250 lbs. static load strength. Electronics are sealed to IP68S and it offers excellent immunity to RFI and EMI per SAE J1113.

The standard JHL is a top mount joystick. Available as a joystick only or with a ball handle, it has multiple gating options and various output configurations including single analog output, dual analog output, CANopen, CANbus J1939, and redundant sensors.

The JHL can also be paired with an OTTO G3 series universal grip or a G3-D control grip for a more complete solution. See the HJLG3 series.

## Features:

- **Contactless analog output Hall effect technology**
- **Electronics sealed to IP68S**
- **Up to 250 lbs. static load strength at grip reference point (GRP)**
- **Top mount is standard**
- **Excellent EMI/RFI immunity**
- **Up to 6 million cycle mechanical life (1 million cycle life with detent)**
- **Multiple output configurations available**
- **Available with grips in the HJLG3 series**
- **CANbus J1939 with Deutsch connector and CANopen with Deutsch connector output options**

## Standard Characteristics/Ratings:

### ELECTRICAL RATINGS

Joystick	Units	Min	Typ	Max
Rated at 5V @ 20°C, Load = 1ma (4.7kΩ)				
Supply Voltage, Vcc	VDC	4.5	5.0	5.5
Output Voltage Tolerance at Center (See Appropriate Graph)	VDC @ 5V Vcc	-0.25	N/A	+0.25
Output Voltage Tolerance at Full Travel (See Appropriate Graph)	VDC @ 5V Vcc	-0.25	N/A	+0.25
Output at Full Travel +X, +Y Direction	VDC @ 5V Vcc	4.25	4.50	4.75
Supply Current Per Die B=0, Vcc=5V, Iout=0	mA	N/A	10	12
Output Impedence	kΩ	N/A	1.00	N/A

### Joystick CANopen

Supply Voltage	VDC	9	N/A	32
Node Identifier (configurable)	Dec.		10	
Baud Rate (configurable)	B/S		125K	

### Joystick J1939

Supply Voltage	VDC	9	N/A	32
Source Address (configurable)	Dec.		51	
Baud Rate	B/S		250K	

### MECHANICAL

Joystick	Units	Min	Typ	Max
<b>Mechanical Life</b>		6,000,000 Cycles (1,000,000 cycles, with detent)		
<b>Mech. (Operating Force w/Bellows)</b>				
Travel Angle	Degrees	18	20	22
Low Force @ GRP, Ret. to Ctr.	Lbs.	0.25	0.5	1.0
Low Force @ GRP, Ret. to Ctr., Detent	Lbs.	0.5	1.0	1.5
Medium Force @ GRP, Ret. to Ctr.	Lbs.	0.75	1.0	1.5
Medium Force @ GRP, Ret. to Ctr., Detent	Lbs.	2.0	2.5	3.0
High Force @ GRP, Ret. to Ctr.	Lbs.	1.5	2.0	2.5
High Force @ GRP, Ret. to Ctr., Detent	Lbs.	2.0	4.0	6.0
Maximum Allowable Load @ GRP	Lbs.		250 Lbs	

### ENVIRONMENTAL

Joystick	°C	-40	20	85
Operating Temperature				
Humidity	96% RH, 70°C, 96 HRS.			
Vibration	10g, 24Hz - 2Khz, Swept Sinusoidal			
Electrical Enclosure Design	IP68S			
EMI/RFI Withstand	Per SAE J1113, Contact Factory for Details			

### MATERIAL

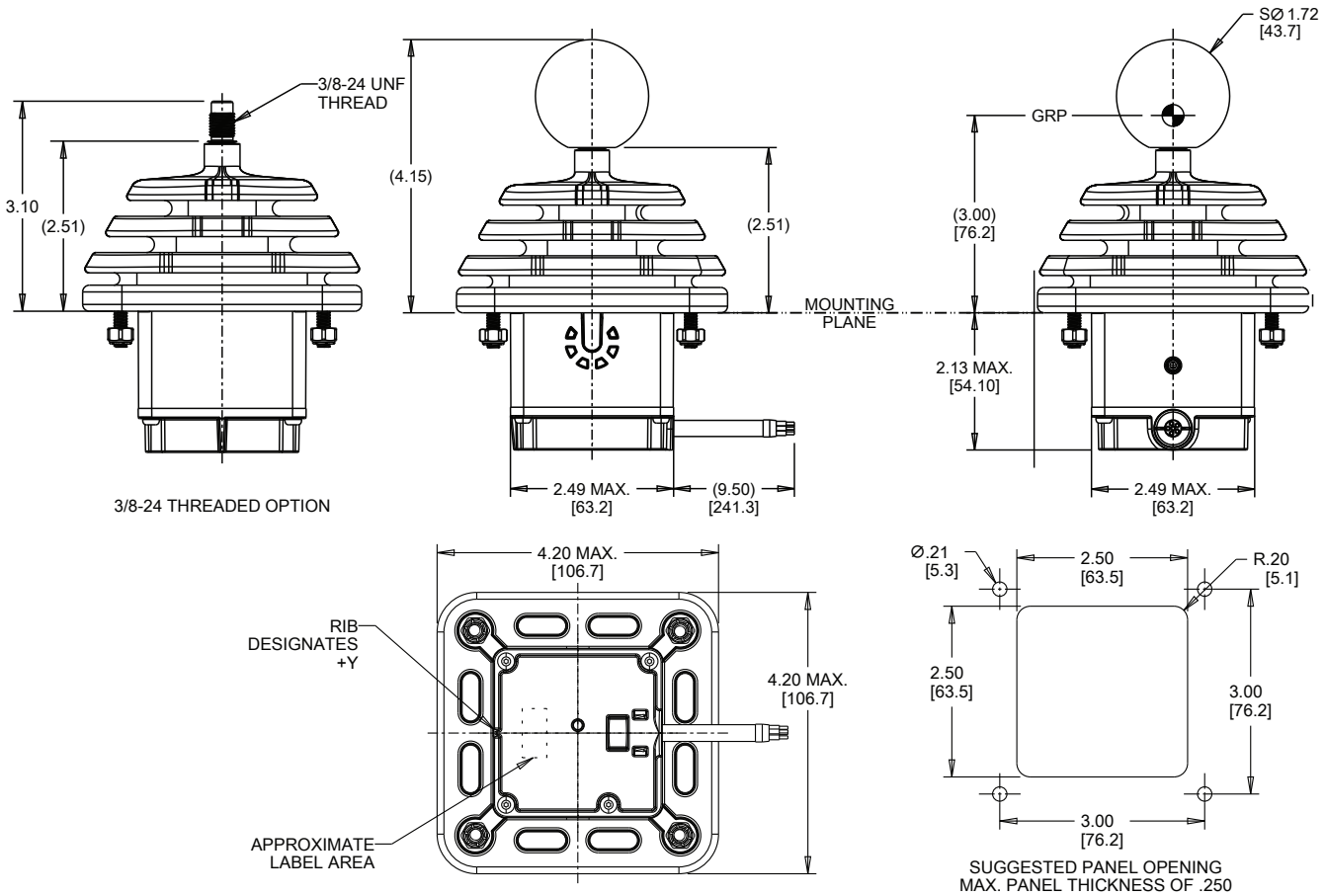
Joystick	
Plunger	Thermoplastic
Housing	Thermoplastic, Black
Bellows	Silicone, Black
Ball Knob	Thermoset, Black
Cable	Output Option AA, DD, JJ & KK: 22 AWG (19 strands of 34 AWG TSC) PVC/Polyurethane Blend Outer Jacket Output Option BB, CC, EE, FF, GG & HH: 22 AWG (19 strands of 34 AWG TSC) PVC/Polyurethane Blend Outer Jacket
Mounting Hardware	#10-24 x 3/4 Carriage Bolts Self Locking Nuts

# LARGE HALL EFFECT JOYSTICK

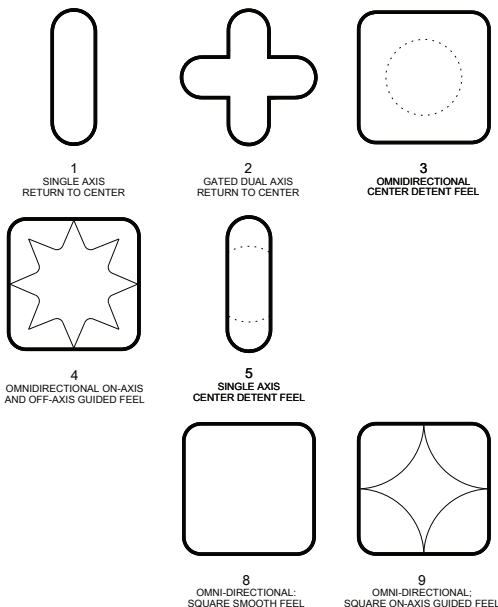
**JHL**  
HALL EFFECT  
JOYSTICK

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## JHL DRAWINGS



## JHL GATING ICONS



## JHL PART NUMBER CODE

JHL	-	X	X	XX	X
Actuator Options	Gating Options	Joystick Output 1*	Joystick Output 2**	Force	
1. 3/8-24 Threaded	1. Gated Single Y-Axis: Return to Center	AA. 2.5 +/- 2.0VDC	NONE	1. Low	
2. 1.72 Ball Knob	2. Gated; Dual Axis – Return to Center	BB. 2.5 +/- 2.0VDC	2.5 +/- 2.0VDC	2. Medium	
	3. Omni-directional; Center Detent Feel	CC. 2.5 +/- 2.0VDC	2.5 +/- 2.0VDC	3. High	
	4. Omni-directional: On-Axis and Off-Axis Guided Feel	DD. 2.5 +/- 1.5VDC	NONE		
	5. Gated Single Y-Axis: Center Detent Feel	EE. 2.5 +/- 1.5VDC	2.5 +/- 1.5VDC		
	8. Omni-directional: Square Smooth Feel	FF. 2.5 +/- 1.5VDC	2.5 +/- 1.5VDC		
	9. Omni-directional: Square On-axis Guided Feel	GG. 0.5 - 4.5VDC	0.5 - 4.5VDC		
		HH. 1.0 - 4.0VDC	1.0 - 4.0VDC		
		JJ. CANbus J1939	NONE		
		KK. CANopen	NONE		
		LL. CANbus J1939 w/ Deutsch Connector	NONE		
		MM. CANopen w/ Deutsch Connector	NONE		

\*Outputs are from the center to the full travel position in each direction. Options "AA", "BB", "CC", "DD", "EE", "FF" provide increased voltage in +x, +y; and decreasing voltage in -x, -y direction from 1 output per axis. Options "GG" and "HH" provide increasing voltages in all directions (+x, +y, -x, -y) from 2 outputs per axis.

\*\*Options "BB" and "EE" provide redundant output 2 which duplicates output 1. Options "CC" and "FF" provide redundant output 2 which is inverse of output 1.

Your official representative

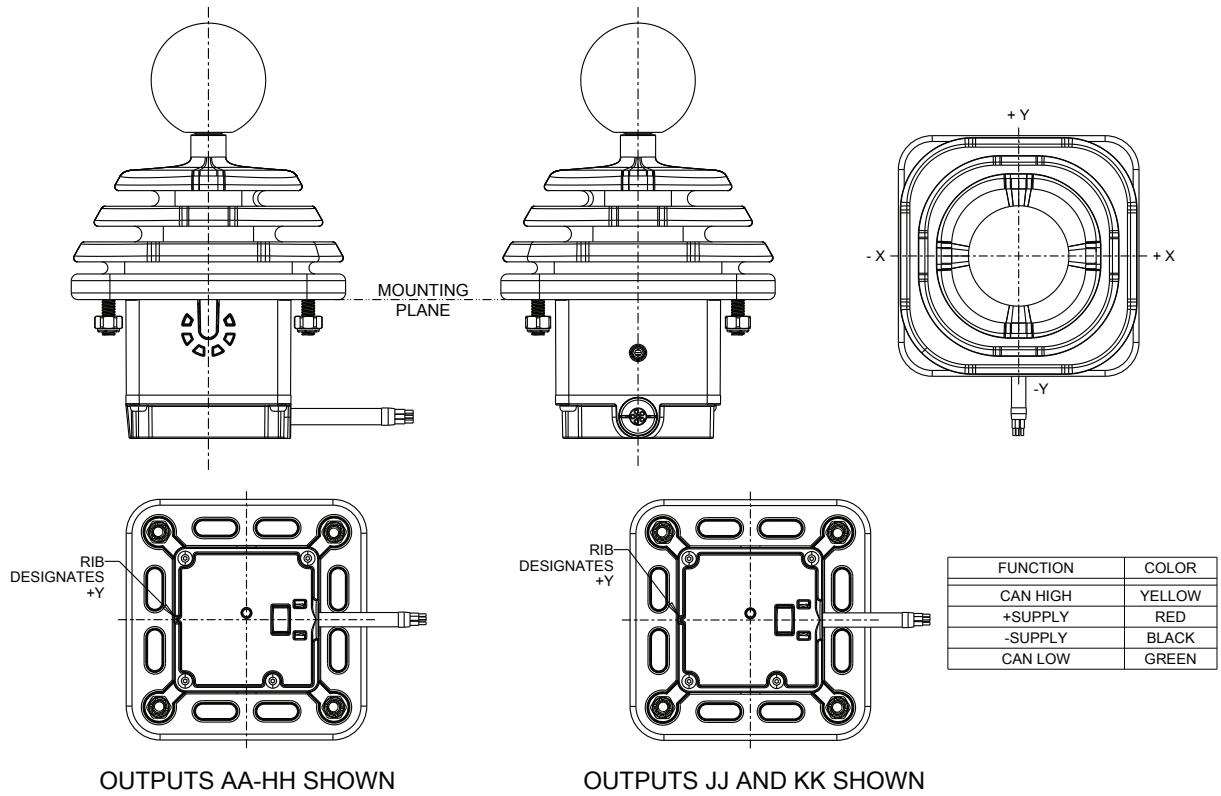


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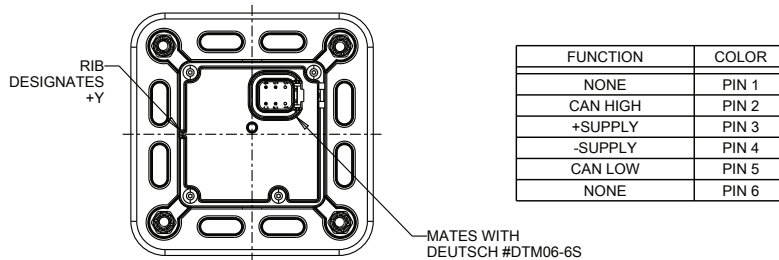
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## JHL OUTPUT DRAWINGS



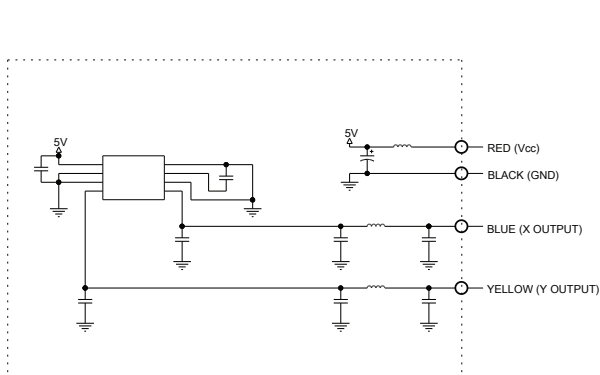
OUTPUTS AA-HH SHOWN

OUTPUTS JJ AND KK SHOWN

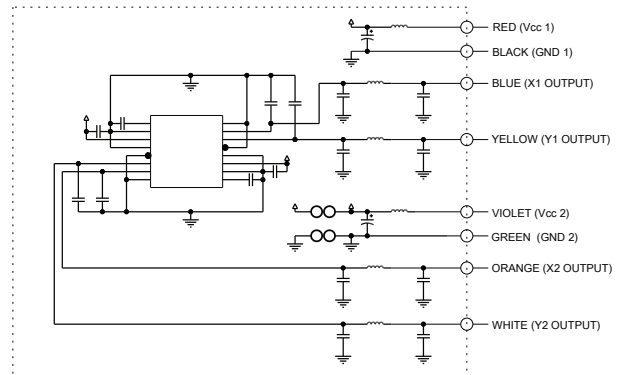


OUTPUTS LL AND MM SHOWN

## JHL SCHEMATICS



JOYSTICK SCHEMATIC  
(AA AND DD OUTPUTS)



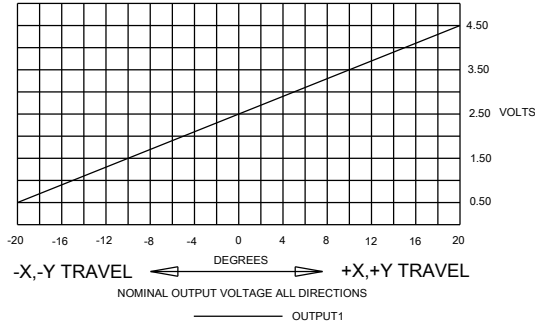
JOYSTICK SCHEMATIC  
(BB, CC, EE, FF, GG, & HH OUTPUTS)

# LARGE HALL EFFECT JOYSTICK

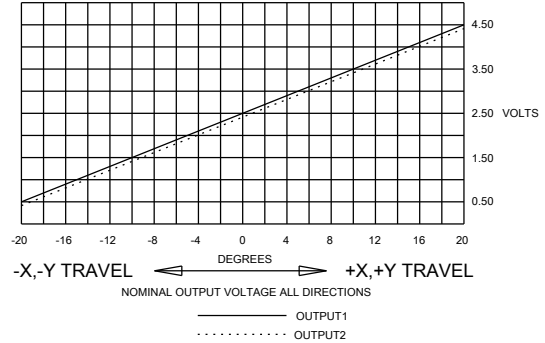
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## JHL OUTPUTS

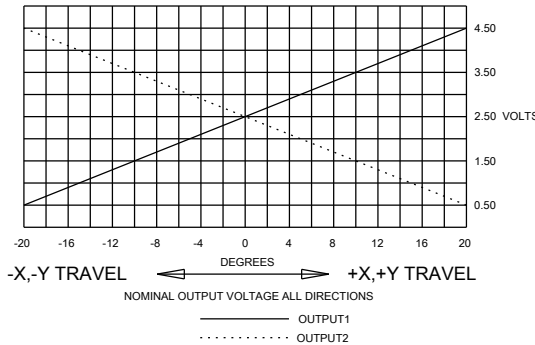
**OPTION AA**



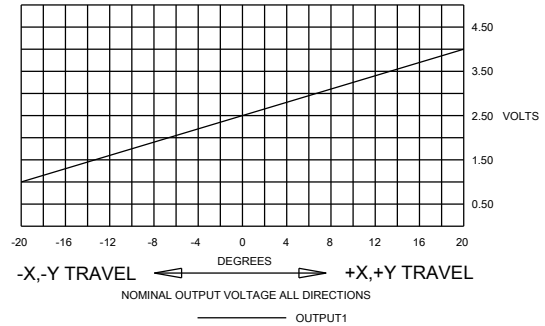
**OPTION BB**



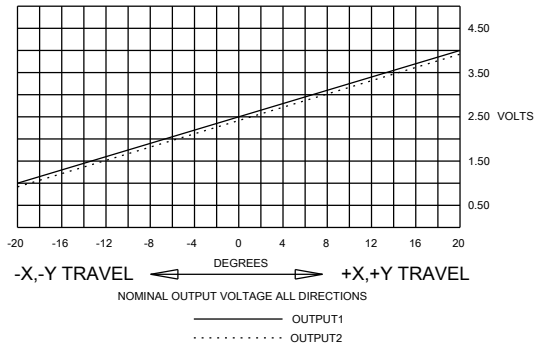
**OPTION CC**



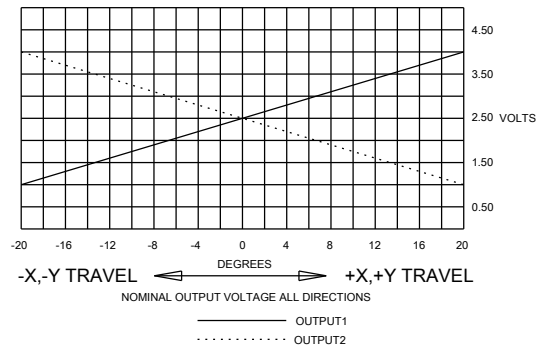
**OPTION DD**



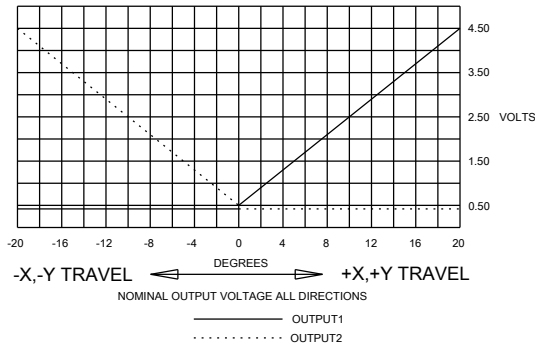
**OPTION EE**



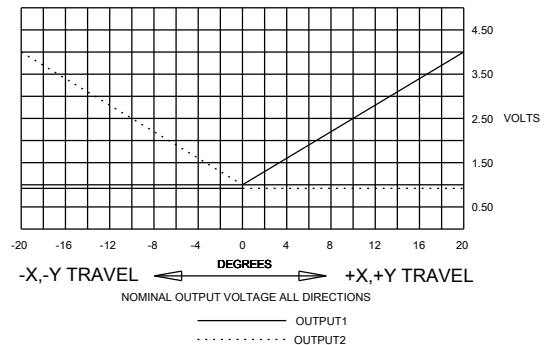
**OPTION FF**



**OPTION GG**



**OPTION HH**



HALL EFFECT CONTROLS