

HIGH PERFORMANCE, COST-EFFECTIVE, SEALED



JHL is a high-performance, cost-effective, sealed, Hall effect joystick, boasting a cycle life of up to 6 million cycles and excellent immunity to RFI and EMI.

Output configurations include single analog, redundant analog, CANopen and J1939. The JHL has a PLd option for functional safety applications: It has been designed in accordance with Safety Standard ISO 13849-1, performance level D, Category 3 to enable communications on two separate channels.

The standard JHL is a top-mount joystick with a threaded shaft or a ball knob. Or pair the JHL with an OTTO G3 Universal Grip or a G3-D Control Grip for an integrated solution. Reference the HJLG3 product pages.

Features:

- Contactless Hall effect technology
- Electronics sealed to IP68S
- Compatible with multiple OTTO grips
- Option for ISO 13849-1 PLd for functional safety applications*
- Excellent EMI/RFI immunity per SAE J1113
- Up to 6 million cycle mechanical life (1 million cycle life with detent and 250,000 cycle life with friction)
- Multiple gating and output configurations
- CANopen and J1939 outputs with integral Deutsch® connector option
- Handles up to 225 lbs. static load strength

* Contact factory for ordering information.

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 Impedance	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	

Joystick PLd

Supply Voltage	VDC	9	N/A	32
Inputs or Measure PWM		24 analog and digital inputs; six inputs can decode J2716 SENT protocol signals or measure PWM		
Outputs		Two PWM outputs		

MECHANICAL

Joystick

Mechanical Life	6,000,000 Cycles (1,000,000 cycles, with detent) (250,000 cycles, with friction)			
Mech. (Operating Force w/Bellows)	Units	Min	Typ	Max
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
Friction @ GRP, Y-Axis	Lbs.	1.0	3.5	6.0
Maximum Allowable Load @ GRP	Lbs.			225 Lbs

ENVIRONMENTAL

Joystick

Operating Temperature	°C	-40	20	85
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

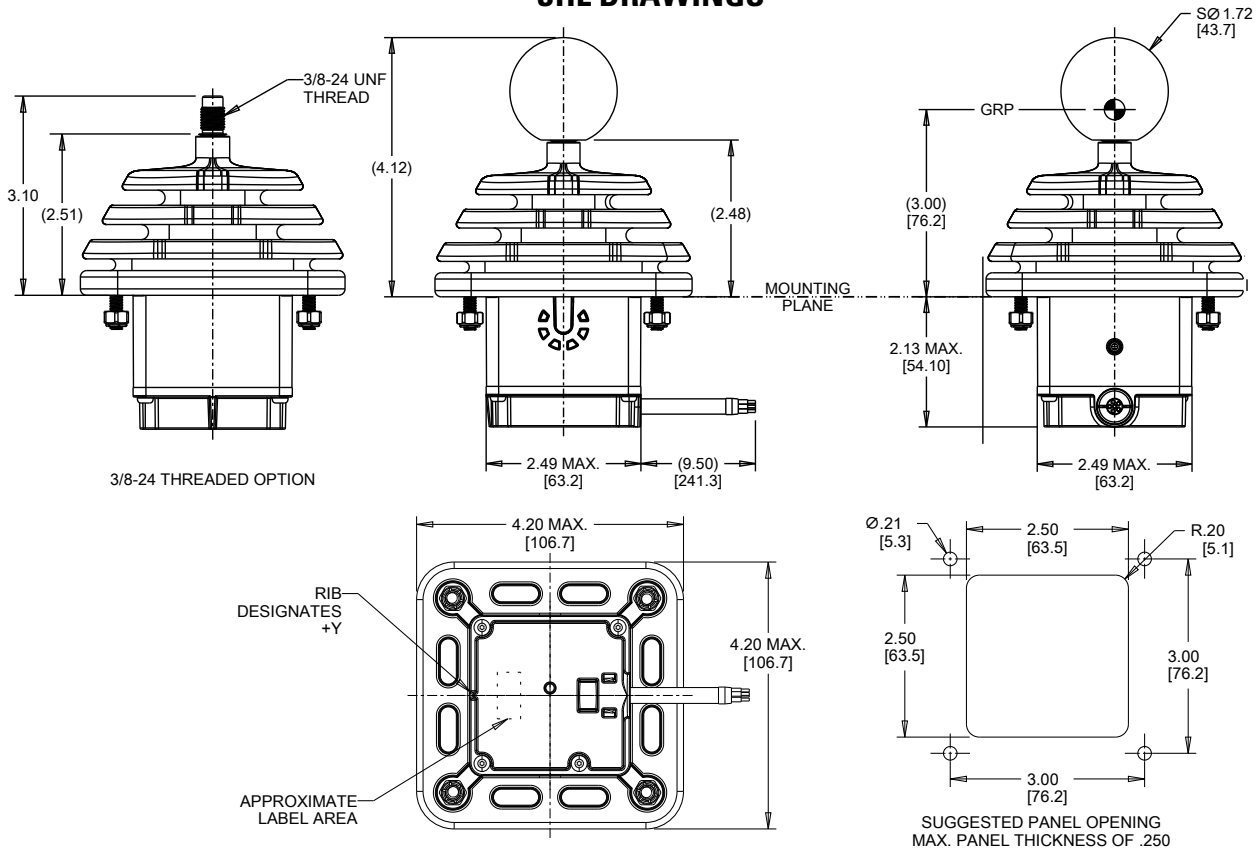
Plunger	Thermoplastic
Housing	Thermoplastic, Black
Bellows	Silicone, Black
Ball Knob	Thermoset, Black
Cable	Output Option AA, DD, JJ & KK: 22 AWG PVC/Polyurethane Blend Outer Jacket Output Option BB, CC, EE, FF, GG & HH: 24 AWG PVC/Polyurethane Blend Outer Jacket
Mounting Hardware	#10-24 x 3/4 Carriage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

MEDIUM HALL EFFECT JOYSTICK

JHL
HALL EFFECT
JOYSTICK

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JHL DRAWINGS



JHL PART NUMBER CODE

JHL	-	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 ①	NONE	1. Low
2. 1.72 Ball Knob		2. Gated; Dual Axis – Return to Center		BB. 2.5 +/- 2.0VDC ②	2.5 +/- 2.0VDC	2. Medium
		3. Omni-directional; Center Detent Feel		CC. 2.5 +/- 2.0VDC ②	2.5 +/- 2.0VDC	3. High
		4. Omni-directional; On-Axis and Off-Axis Guided Feel		DD. 2.5 +/- 1.5VDC ①	NONE	
		5. Gated Single Y-Axis: Center Detent Feel		EE. 2.5 +/- 1.5VDC ②	2.5 +/- 1.5VDC	
		6. Friction – Single Axis		FF. 2.5 +/- 1.5VDC ②	2.5 +/- 1.5VDC	
		7. Friction Y-Axis; Return-to-Center X-Axis		GG. 0.5 - 4.5VDC ②	0.5 - 4.5VDC	
		8. Omni-directional: Square Smooth Feel		HH. 1.0 - 4.0VDC ②	1.0 - 4.0VDC	
		9. Omni-directional: Square On-Axis Guided Feel		JJ. CANbus J1939 ①	NONE	
				KK. CANopen ①	NONE	
				LL. CANbus J1939 w/ Deutsch Connector	NONE	
				MM. CANopen w/ Deutsch Connector	NONE	
				NN. PLd	NONE	

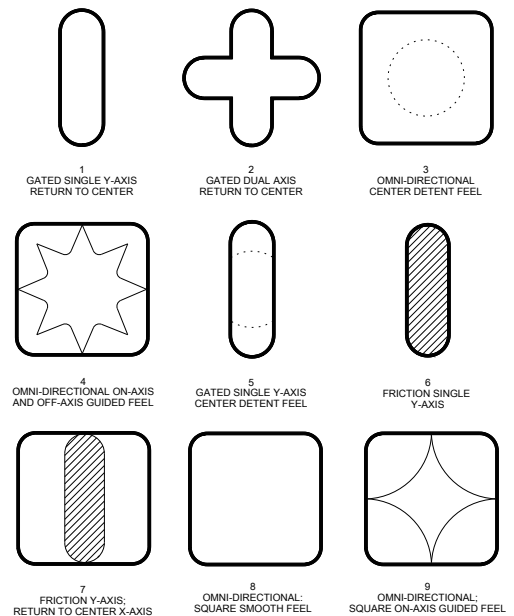
*Outputs are from the center to the full travel position in each direction. Options "AA", "BB", "CC", "DD", "EE", "FF" provide increased voltage in +x, +y; and decreasing voltage in -x, -y direction from 1 output per axis. Options "GG" and "HH" provide increasing voltages in all directions (+x, +y, -x,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

- ① 22 AWG Cable
- ② 24 AWG Cable

Specifications Subject To Change Without Notice

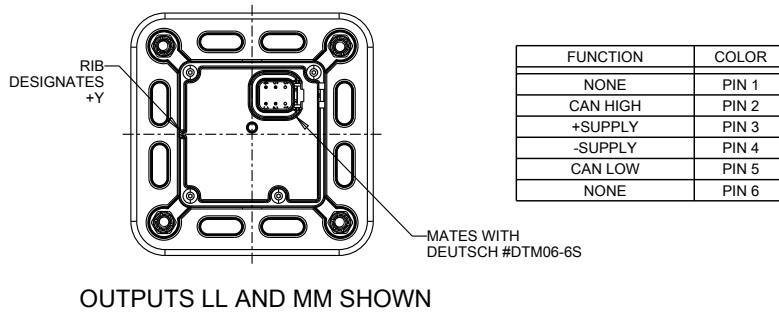
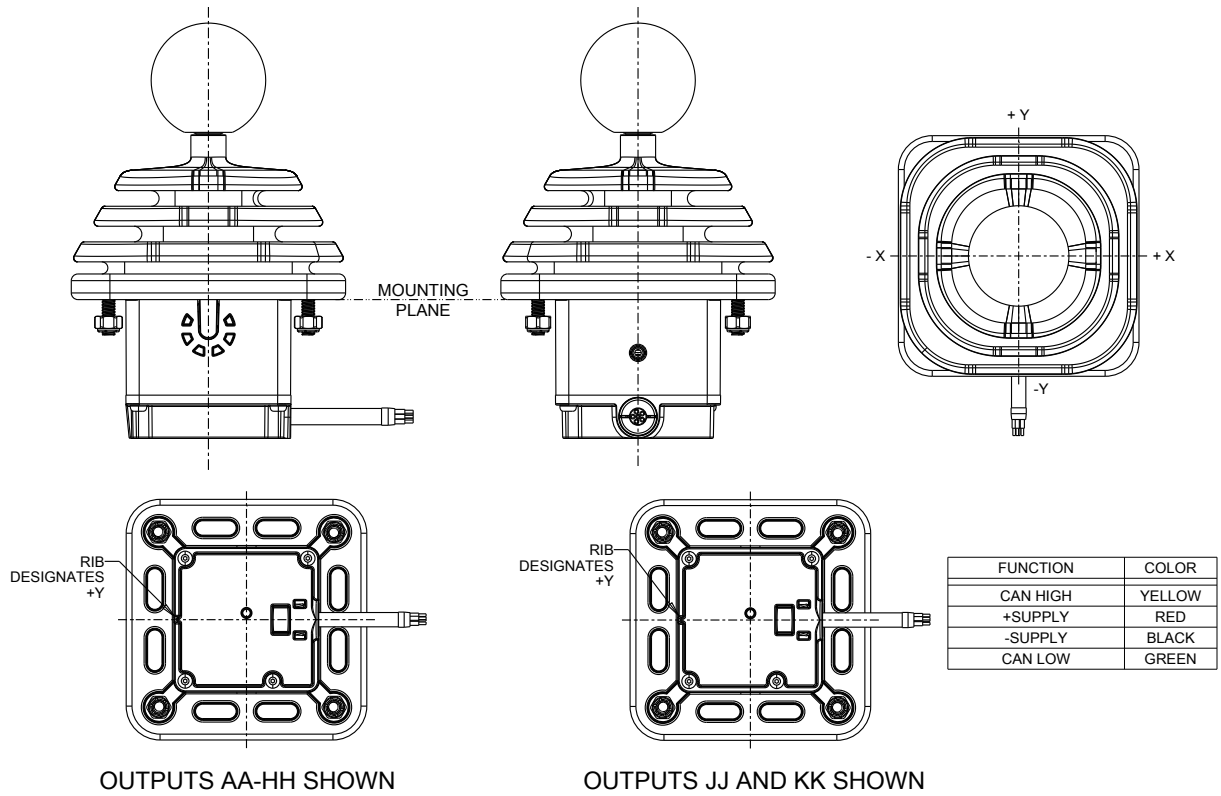
JHL GATING ICONS



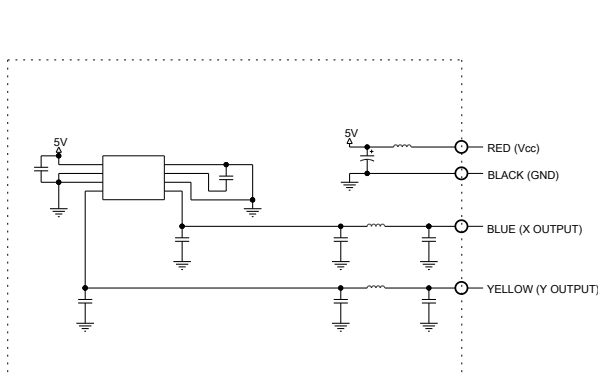
HALL EFFECT CONTROLS

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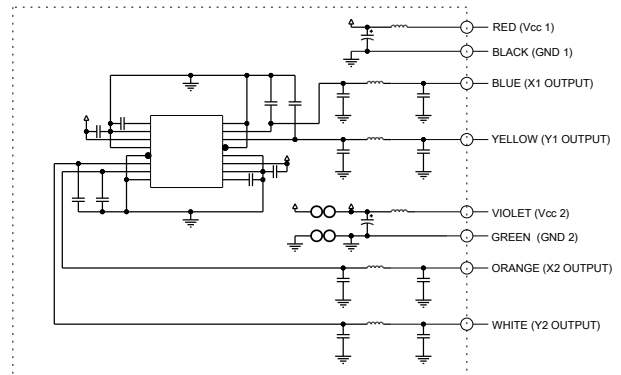
JHL OUTPUT DRAWINGS



JHL SCHEMATICS



JOYSTICK SCHEMATIC
(AA AND DD OUTPUTS)



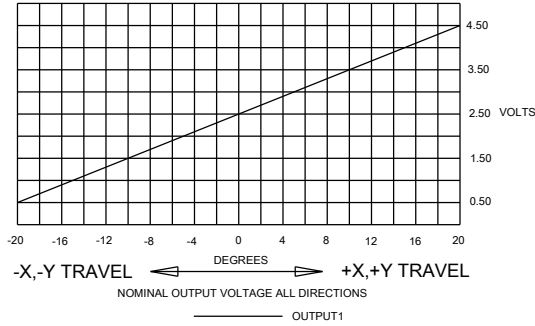
JOYSTICK SCHEMATIC
(BB, CC, EE, FF, GG, & HH OUTPUTS)

MEDIUM HALL EFFECT JOYSTICK

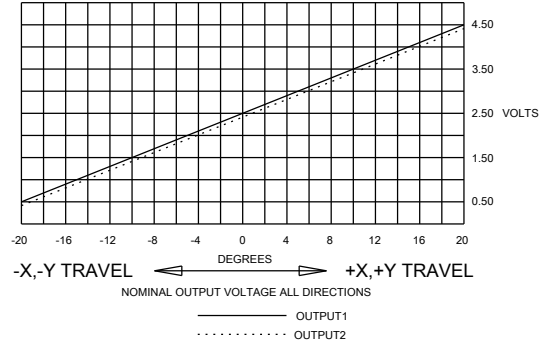
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JHL OUTPUTS

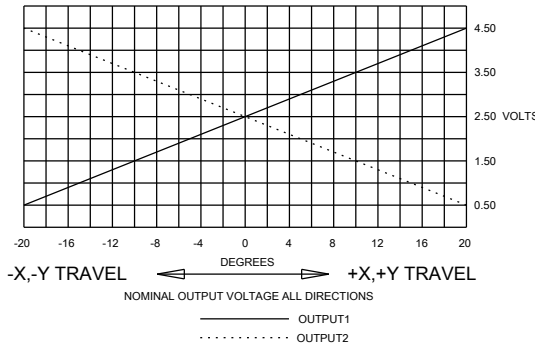
OPTION AA



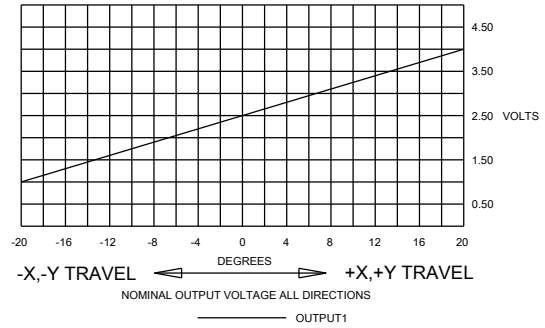
OPTION BB



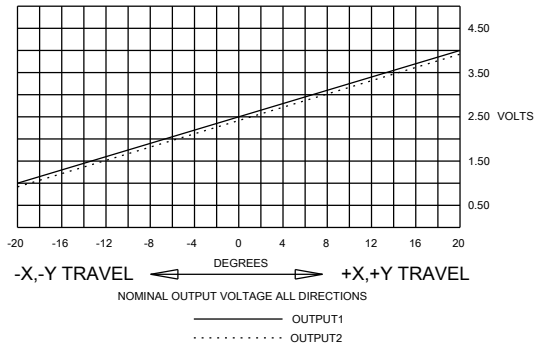
OPTION CC



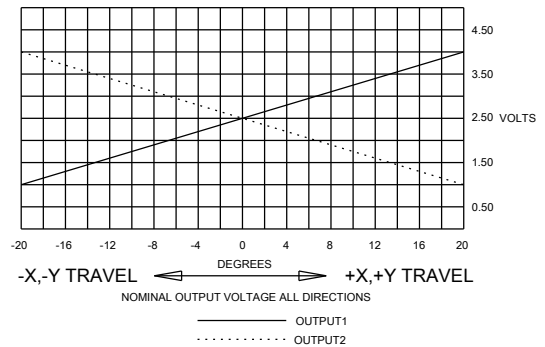
OPTION DD



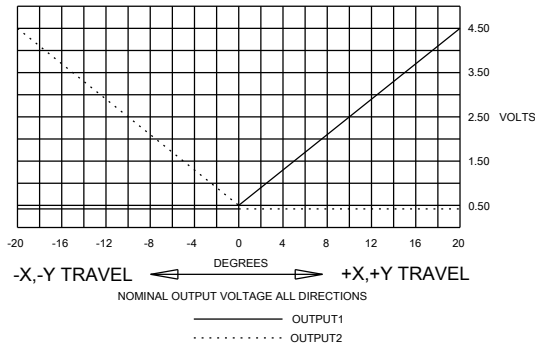
OPTION EE



OPTION FF



OPTION GG



OPTION HH

