

JHL Sealed, Hall Effect Joystick



JHL with Ball Actuator



JHL with Threaded Shaft

OTTO's JHL is a high-performance, cost-effective, sealed Hall effect joystick base for demanding commercial applications. The JHL comes on its own or with a ball handle. Or pair it with an OTTO G3 series grip to make an integrated HJLG3 grip and joystick assembly.

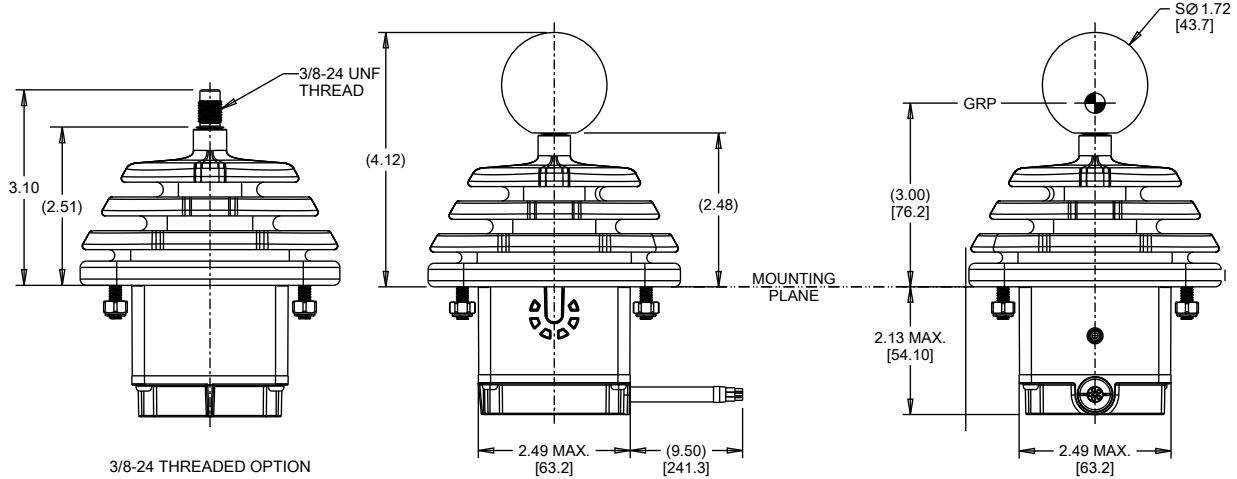
Output configurations include single analog, redundant analog, CANopen and J1939. The JHL has a PLd option for functional safety applications: It has been designed in accordance with Safety Standard ISO 13849-1, performance level D, Category 3 to enable communications on two separate channels.

Product Features

- Compatible with G3 series grips
- Electronics sealed to IP68S
- Up to 225 lbs. static load strength
- Excellent EMI/RFI immunity
- Up to 6 million cycle mechanical life; up to 1 million with detent
- Multiple output configuration options, including PLd

Standard Characteristics/Ratings:				
ELECTRICAL RATINGS				
Joystick				
Rated at 5V @ 20°C, Load = 1ma (4.7kΩ)	Units	Min	Typ	Max
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			

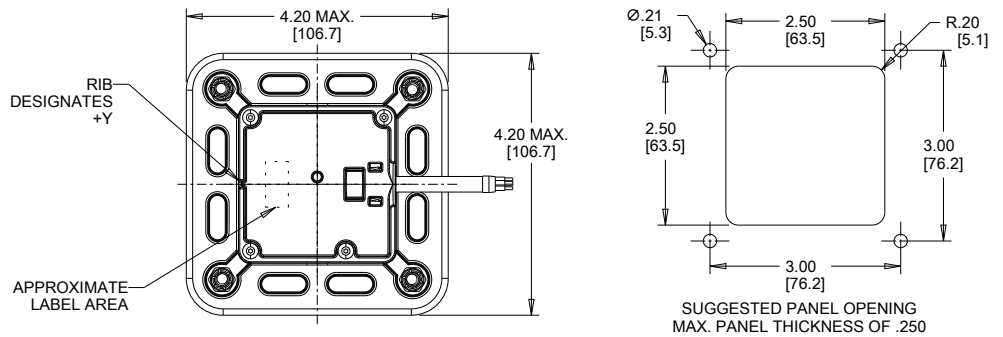
JHL DRAWINGS



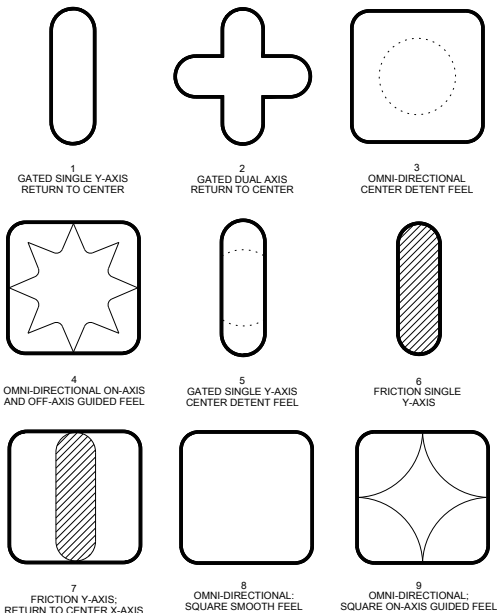
*Outputs are from the center to the full travel position in each direction. Options "AA", "BB", "CC", "DD", "EE", "FF" provide increased voltage in +x, +y; and decreasing voltage in -x, -y direction from 1 output per axis. Options "GG" and "HH" provide increasing voltages in all directions (+x, +y, -x,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



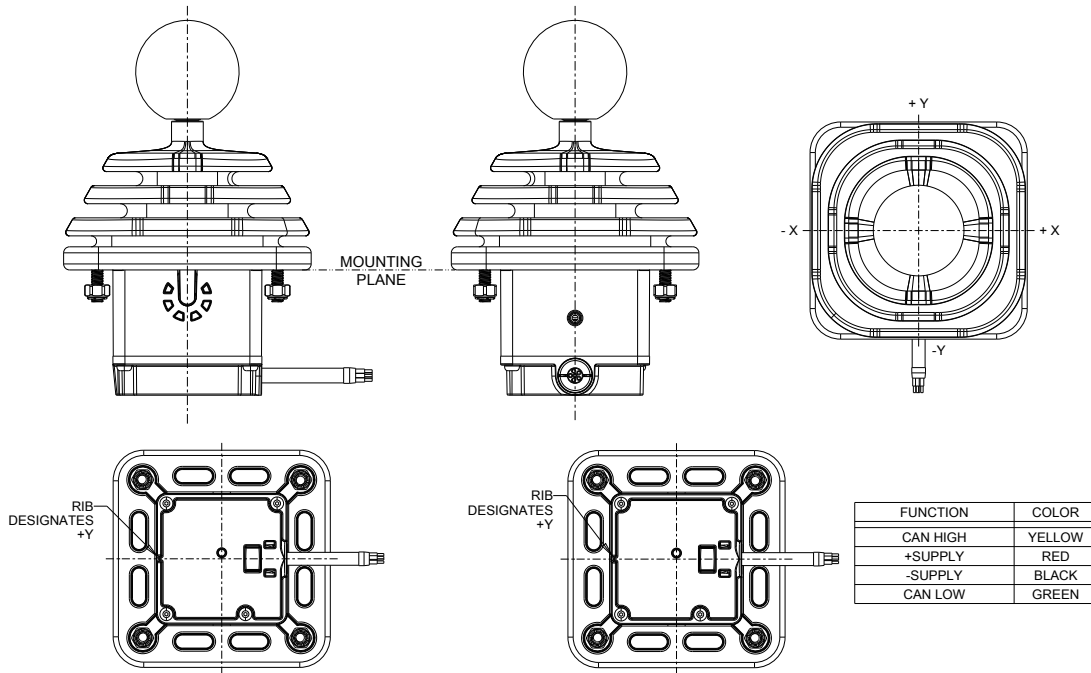
JHL GATING ICONS



JHL PART NUMBER CODE

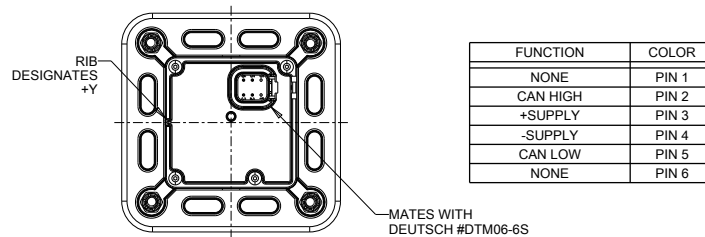
JHL	-	X	X	XX	X	Force
Actuator Options		Gating Options		Joystick Output 1*	Joystick Output 2**	
1. 3/8-24 Threaded		1. Gated Single Y-Axis: Return to Center		AA. 2.5 +/- 2.0VDC ①	NONE	1. Low
2. 1.72 Ball Knob		2. Gated; Dual Axis – Return to Center		BB. 2.5 +/- 2.0VDC ②	2.5 +/- 2.0VDC	2. Medium
		3. Omni-directional; 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	

JHL OUTPUT DRAWINGS



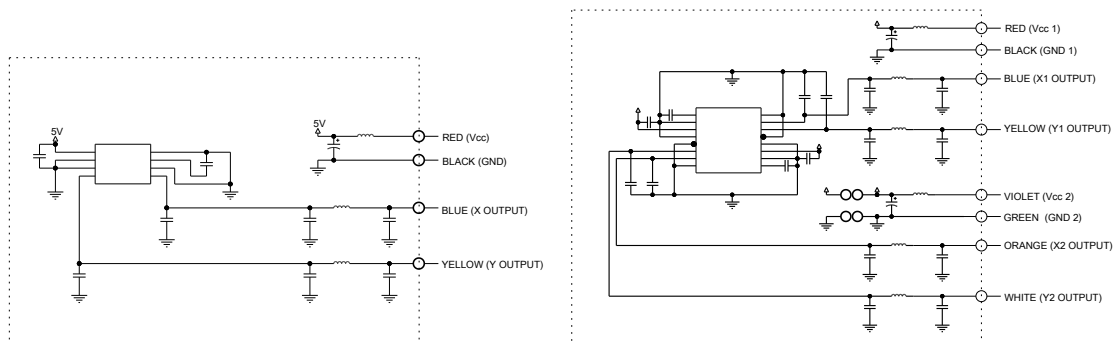
OUTPUTS AA-HH SHOWN

OUTPUTS JJ AND KK SHOWN



OUTPUTS LL AND MM SHOWN

JHL SCHEMATICS

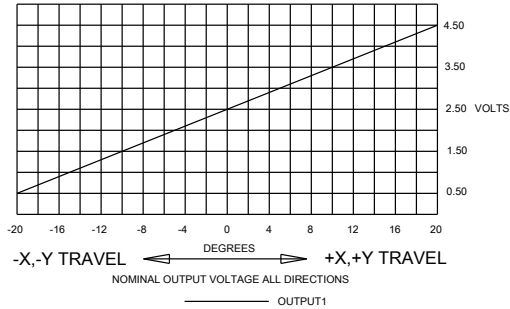


JOYSTICK SCHEMATIC
(AA AND DD OUTPUTS)

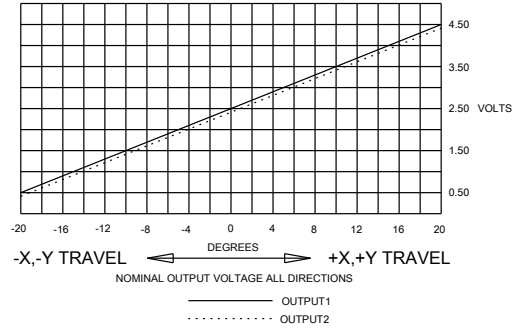
JOYSTICK SCHEMATIC
(BB, CC, EE, FF, GG, & HH OUTPUTS)

JHL OUTPUTS

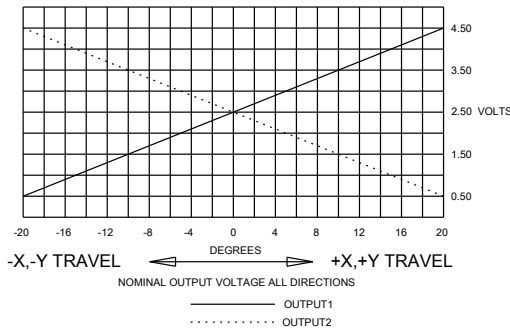
OPTION AA



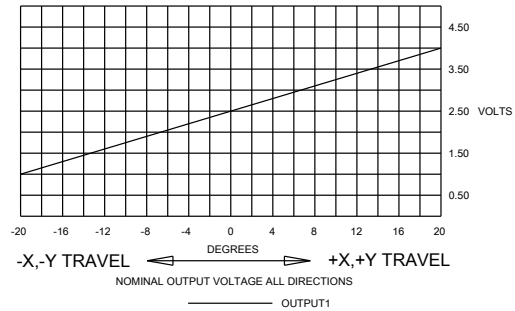
OPTION BB



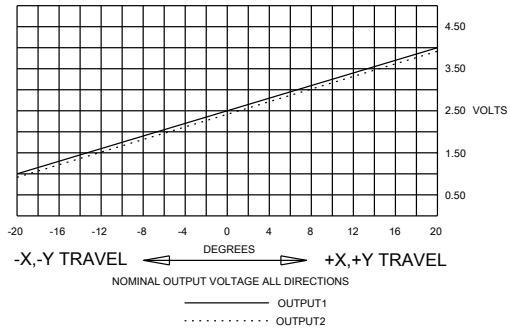
OPTION CC



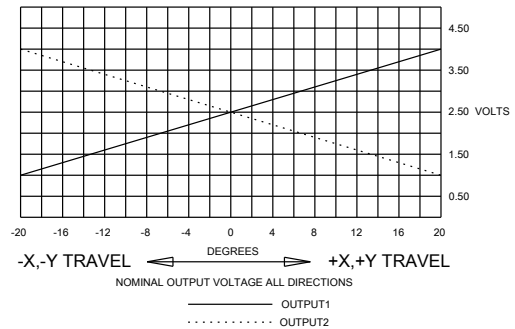
OPTION DD



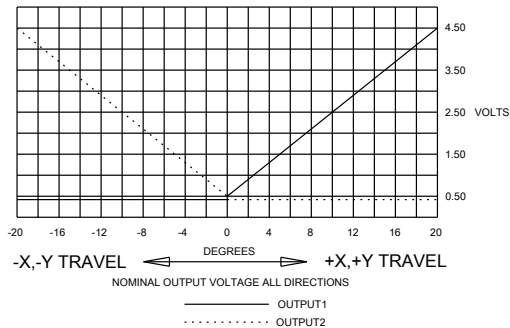
OPTION EE



OPTION FF



OPTION GG



OPTION HH

