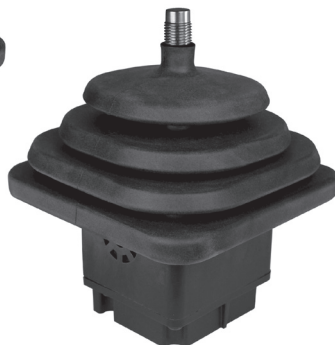


JHL Medium Hall Effect Joystick



JHL with Ball
Actuator



JHL with Threaded Shaft

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 IP6K8S
- 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

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 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	

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	Up to 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:

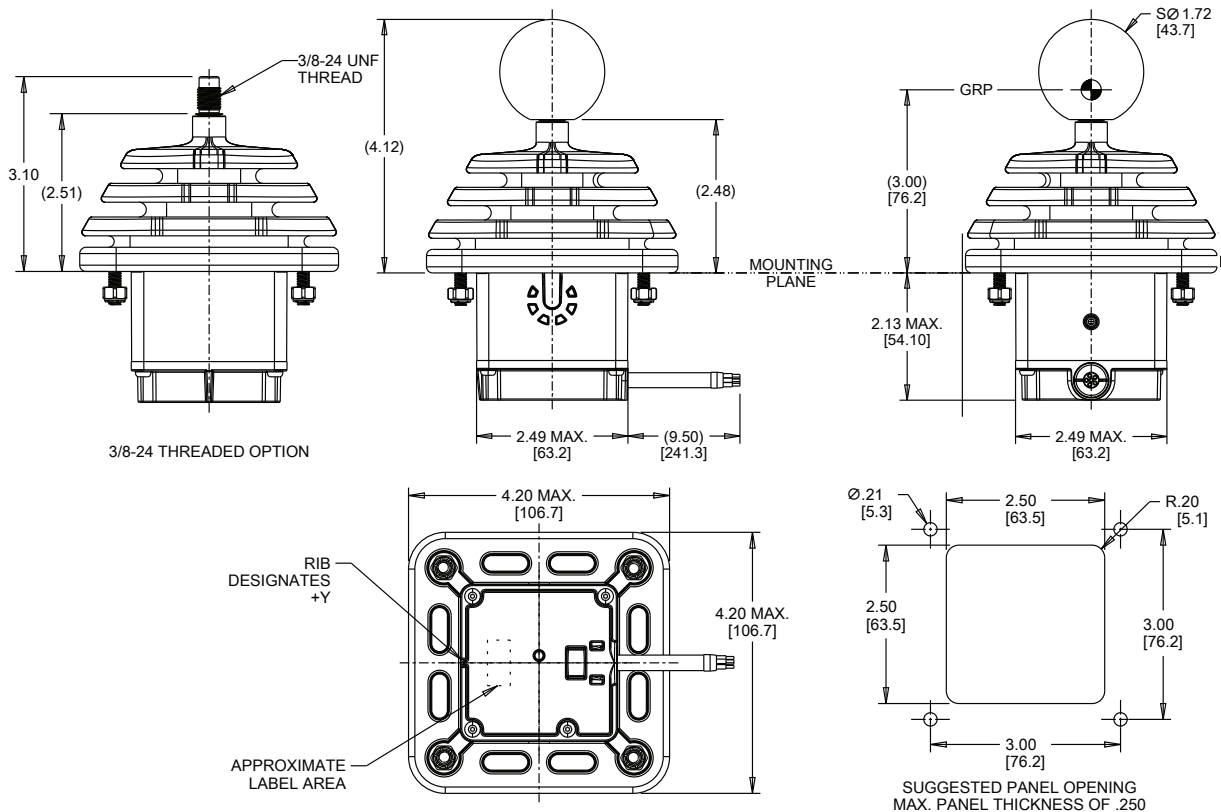
Joystick

Operating Temperature	°C	-40	20	85
Humidity	96% RH, 70°C, 96 HRS.			
Vibration	10g, 24Hz - 2Khz, Swept Sinusoidal			
Electrical Enclosure Design	IP6K8S			
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
Mounting Hardware	#10-24 x 3/4 Carriage Bolts Self Locking Nuts



JHL Large Hall Effect Joystick

Part Number Code

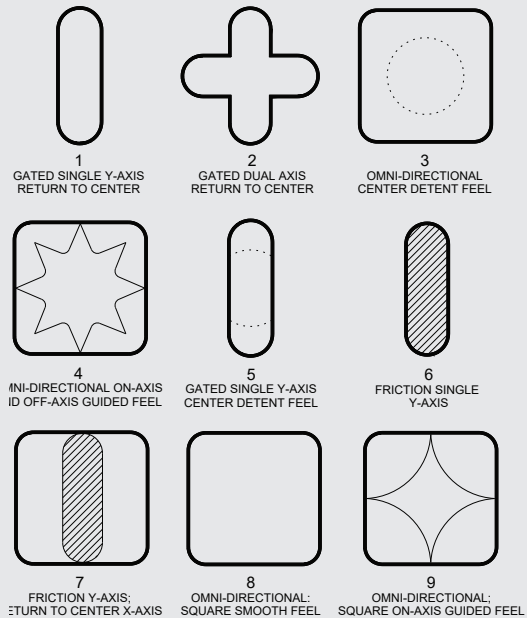
JHL Gating Icons

JHL -	X	X	X	X	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	

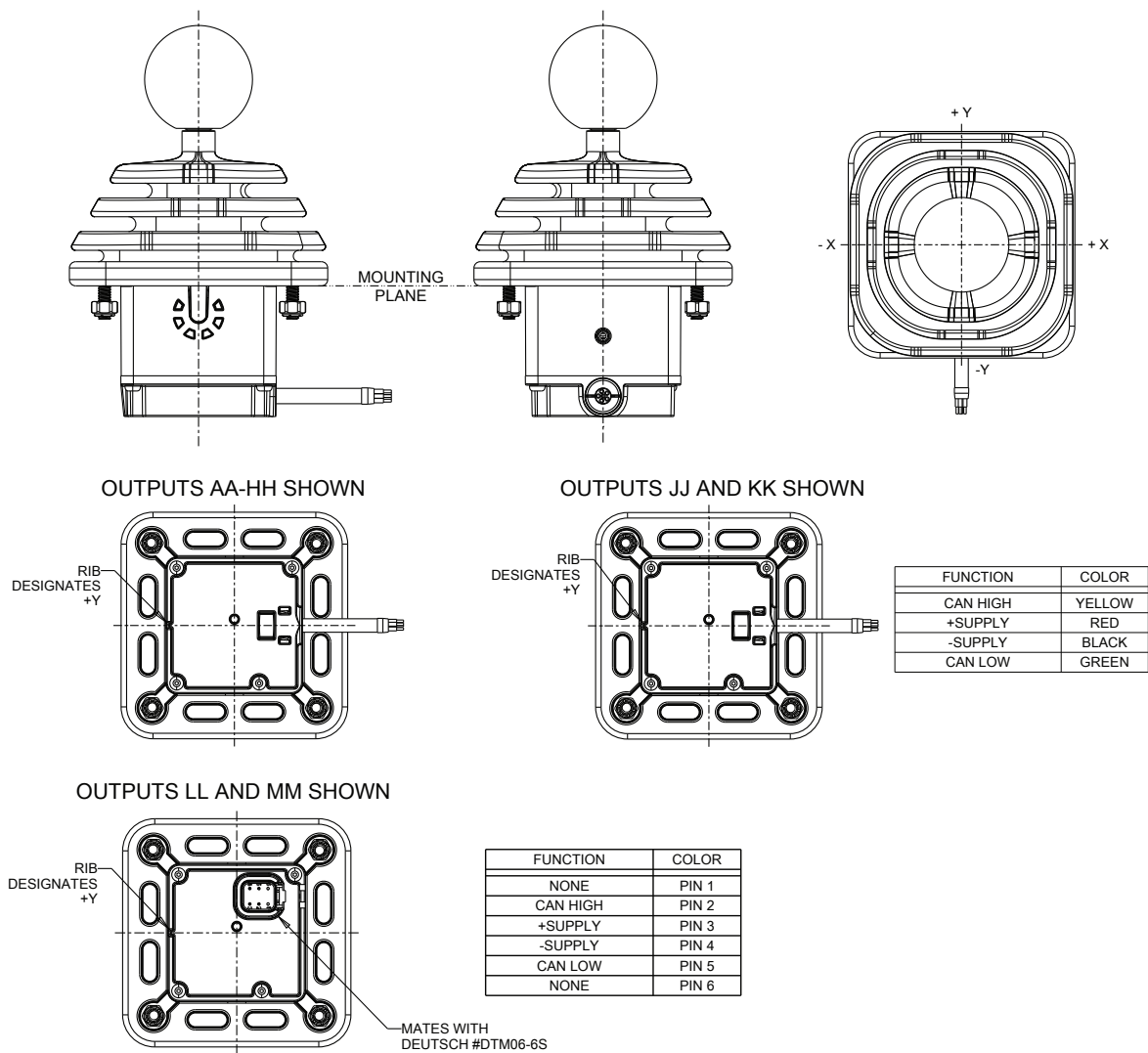
*Outputs are from the center to the full travel position in each direction. Options "AA", "BB", "CC", "DD", "EE", "FF" provide increased voltage in +x, +y; and decreasing voltage in -x, -y direction from 1 output per axis. Options "GG" and "HH" provide increasing voltages in all directions (+x, +y, -x,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



JHL Joystick Output Drawings



JHL Joystick Schematics

