



The HJLG3 medium Hall effect joystick with grip allows you to easily create a standard, catalog codable solution that handles loads up to 250 lbs., has a compact behind-panel size, and a long life. Choose from a variety of grips, faceplates, outputs and gating options to match your application.

G3-A, G3-B, G3-C, G3-CK and G3-M Universal Grips, as well as the G3-D Control Grip, altogether offer nearly 50 standard faceplate design options.

Analog and digital outputs, CANopen, CANbus J1939, PWM, USB, and redundant sensor output selections are available. Gating options are single axis, single axis with center detent, dual axis, and various omnidirectional selections that include square smooth feel, on-axis and off-axis guided feel, square on-axis guided feel and center detent.

The HJLG3 serves agriculture, construction, off-highway, material handling and industrial equipment markets.

Features:

- **Compact design made for armrest and panel mounting**
- **Contactless Hall effect technology**
- **Mechanical life up to 6 million cycles**
- **Handles loads up to 250 lbs.**
- **Multiple output options, both analog and digital**
- **Electronics sealed to IP68S**
- **Redundant sensors available**
- **Variety of gating options**
- **Modular design**
- **Left or right handed**
- **RoHS compliant**
- **CANbus J1939 and CANopen outputs with integral Deutsch connector option**

JOYSTICK WITH GRIP OPTIONS

HJLG3
MEDIUM
JOYSTICK
WITH GRIP

HALL EFFECT JOYSTICK WITH GRIP

Standard Characteristics/Ratings:

ELECTRICAL:

Joystick

Rated at Vcc = 5V @ 20°C Load = 1 ma (4.7 KΩ)	Units	Min	Typ	Max
Supply Voltage	VDC	4.5	5.0	5.5
Output Voltage Tolerance at Center	VDC @ 5V Vcc	-.25	N/A	+.25
Output Voltage Tolerance at Full Travel	VDC @ 5V Vcc	-.25	N/A	+.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	1.0	N/A

Joystick CAN Open

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

Joystick J1939

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

Grip Touch Switch*

Supply Voltage	VDC	3.15	NA	5.5
Output Active (Low)	VDC	NA	NA	0.60
Output Current Sink	mA	N/A	NA	10

Operator Presence

Electrical Rating	10mA Resistive Load @ 5VDC			
Logic Level Electrical Life	1,250,000 Cycles			

Keypads

Circuit Configuration	SPST N.O.			
Voltage	1-32 VDC			
Current	10-100 mA Resistive			

P9 Switches

Electrical Rating	10mA Resistive Load @ 5VDC			
Logic Level Electrical Life	1,250,000 Cycles			

K1 Switches

Electrical Rating	10mA Resistive Load @ 5VDC			
Electrical Life	100,000 Cycles			

HPL Switches

Supply Voltage	VDC	4.5	5.0	5.5
Output Voltage (Button Up)	VDC @ 5V Vcc	0.35	0.50	0.65
Output Voltage (Button Down)	VDC @ 5V Vcc	4.35	4.50	4.65
Supply Current per Die B=0, Vcc=5V, Iout=0	mA	N/A	8.00	10
Continuous Output Current	mA	-1.2	N/A	1.2

HTW & HTWF Switches

Supply Voltage	VDC	4.5	5.0	5.5
Output Voltage Tolerance at Center	VDC @ 5V Vcc	-.15	NA	+.15
Output Voltage Tolerance at Full Travel	VDC @ 5V Vcc	-.25	N/A	-.25
Supply Current per Die B=0, Vcc=5V, Iout=0	mA	N/A	N/A	10

HTWM Switches

Supply Voltage	VDC	4.5	5.0	5.5
Output Voltage Tolerance at Center	VDC @ 5V Vcc	-.25	NA	+.25
Output Voltage Tolerance at Full Travel	VDC @ 5V Vcc	-.25	N/A	-.25
Supply Current per Die B=0, Vcc=5V, Iout=0	mA	N/A	N/A	10

Standard Characteristics/Ratings (continued):

HTWS Switches

Supply Voltage	VDC	4.5	5.0	5.5
Output Voltage Tolerance at Center	VDC @ 5V Vcc	-.25	NA	+.25
Output Voltage Tolerance at Full Travel	VDC @ 5V Vcc	-.25	N/A	+.25
Supply Current per Die B=0, Vcc=5V, Iout=0	mA	N/A	N/A	20

HTLT4 Switches

Supply Voltage	VDC	4.5	5.0	5.5
Output Voltage Tolerance at Center	VDC @ 5V Vcc	-.25	NA	+.25
Output Voltage Tolerance at Full Travel	VDC @ 5V Vcc	-.25	N/A	-.25
Supply Current per Die B=0, Vcc=5V, Iout=0	mA	N/A	10	12

TC-5 Switches

Electrical Rating @ 1-32 VDC	10-100mA			
Electrical Life	3,000,000 Cycles			

MECHANICAL:

Joystick	Units	Min	Typ	Max
Mechanical Life, Return to Center	6,000,000 cycles; 1,000,000 cycles (Detent) 250,000 cycles with Friction			
Travel Angle	Degrees	18	20	22
Op. Force (w/Bellows) Low Force @ GRP, Ret. to Ctr.	Lbs.	.25	.50	1.0
Op. Force (w/Bellows) Low Force @ GRP, Ret. to Ctr., Detent	Lbs.	.50	1.0	1.5
Op. Force (w/Bellows) Medium Force @ GRP, Ret. to Ctr.	Lbs.	.75	1.0	1.5
Op. Force (w/Bellows) Medium Force @ GRP, Ret. to Ctr., Detent	Lbs.	2.0	2.5	3.0
Op. Force (w/Bellows) High Force @ GRP, Ret. to Ctr.	Lbs.	1.5	2.0	2.5
Op. Force (w/Bellows) High Force @ GRP, Ret. to Ctr., Detent	Lbs.	2.0	4.0	6.0
Op. Force (w/Bellows) @ GRP, Friction Y-Axis	Lbs.	1.0	3.5	6.0
Maximum Allowable Load @ 5" GRP	Lbs.			250 Lbs.

Keypads

Mechanical Life	3,000,000 Cycles			
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P9 Switches

Mechanical Life	1,250,000 Cycles			
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K1 Switches

Mechanical Life	1,000,000 Cycles			
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HPL Switches

Mechanical Life	100,000 Cycles			
Full Stroke Per Button				
Button Travel	IN	.135	.150	.160
Operating Force 25°C @ .150"	Lbs.	N/A	3.0	3.8
Reset Force @ 25°C	Oz.	5	N/A	N/A

HTW & HTWF Switches

Mechanical Life, Full Forward to Full Back, Ret. to Ctr.	3,000,000 Cycles			
Mechanical Life, Full Forward to Full Back, Friction	250,000 Cycles			
Operating Force (HTW) 25°C at Top of Roller, Return to Ctr.	Oz.	2.0	5.0	8.0
Operating Force (HTWF) 25°C at Top of Roller, Friction	Oz.	2.0	4.0	6.0
Maximum Allowable (HTW & HTWF) Radial Load	Lbs.	N/A	N/A	30

HTWM Switches

Mechanical Life, Full Forward to Full Back, Ret. to Ctr.	3,000,000 Cycles			
Operating Force 25°C at Top of Roller	Oz.	2.0	5.0	8.0
Maximum Allowable Radial Load	Lbs.	N/A	N/A	30.0

HALL EFFECT JOYSTICK WITH GRIP

Standard Characteristics/Ratings (continued):				
HTWS Switches				
Mechanical Life, Full Forward to Full Back	3,000,000 Cycles			
Operating Force 25°C at Top of Roller	Oz.	2.0	5.0	8.0
Maximum Allowable Radial Load	Lbs.	N/A	N/A	15.0
HTLT4 Switches				
Mechanical Life,	3,000,000 Cycles			
Operating Force (w/Boot) Top of Roller @ 20°C	Oz.	5.0	8.0	16.0
Maximum Allowable Vertical Force on Button	Lbs.	N/A	N/A	25.0
Maximum Allowable Radial Force on Top of Knob	Lbs.	N/A	N/A	25.0
Maximum Allowable Torque on Button about Shaft Axis	In-Lbs	N/A	N/A	5.0
TC-5 Switches				
Mechanical Life	3,000,000 Cycles			
Operating Force	Oz.	8.0	16.0	24.0
ENVIRONMENTAL:				
Joystick	Units	Min	Typ	Max
Operating Temperature	°C	-40	20	85
Humidity	96% RH, 70°C, 96 Hrs.			
Vibration	10g, 24 Hz – 2KHz Swept Sinusoidal			
Electrical Enclosure Design	ISO 20653, IP6K8S – Dusttight, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			
EMI/RFI Withstand	Per SAE J1113 (Contact factory for details)			
Keypads	Units	Min	Typ	Max
Operating Temperature	°C	-40	20	85
Faceplate and Side Keypad Enclosure Design	ISO 20653, IP6K8S – Dusttight, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			
P9 Switches	Units	Min	Typ	Max
Operating Temperature	°C	-40	20	85
Electrical Enclosure Design	ISO 20653, IP6K8S – Dusttight, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			
K1 Switches	Units	Min	Typ	Max
Operating Temperature	°C	-30	20	85
Electrical Enclosure Design	ISO 20653, IP6K8S – Dusttight, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			
HPL Switches	Units	Min	Typ	Max
Operating Temperature	°C	-40	20	85
Electrical Enclosure Design	ISO 20653, IP6K8S – Dusttight, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			
HTW & HTWF Switches	Units	Min	Typ	Max
Operating Temperature	°C	-40	20	85
Electrical Enclosure Design	ISO 20653, IP6K8S – Dusttight, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			
HTWM Switches	Units	Min	Typ	Max
Operating Temperature	°C	-40	20	85
Electrical Enclosure Design	ISO 20653, IP6K8S – Dusttight, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			
HTWS Switches	Units	Min	Typ	Max
Operating Temperature	°C	-40	20	85
Electrical Enclosure Design	ISO 20653, IP5K8S – Dust-protected, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			
HTLT Switches	Units	Min	Typ	Max
Operating Temperature	°C	-40	20	85
Electrical Enclosure Design	ISO 20653, IP6K8S – Dusttight, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			

Standard Characteristics/Ratings (continued):				
TC-5 Switches				
Operating Temperature	°C	-40	20	85
Electrical Enclosure Design	ISO 20653, IP6K8S – Dusttight, Continuous Immersion, 1 meter for 31 minutes, Stationary during test(s)			
Grip	Units	Min	Typ	Max
Operating Temperature	°C	-40	20	85
Electrical Enclosure Design	Unsealed			
MATERIAL:				
Joystick				
Plunger	Thermoplastic			
Housing	Thermoplastic, Black			
Bellows	Silicone, 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: 24 AWG (19 strands of 34 AWG TSC) PVC/Polyurethane Blend Outer Jacket			
Mounting Hardware	#10–24 x 3/4 Carriage Bolts Self Locking Nuts			
Keypads				
Keypads	Silicone Rubber, Black			
Keypads, Lighted	Silicone Rubber, Black with White Graphic			
P9 Switches				
Button	Thermoplastic			
Housing	Thermoplastic			
K1 Switches				
Button	Thermoplastic			
Housing	Thermoplastic			
HTW & HTWF Switches				
Button Top	Thermoplastic			
Housing	Thermoplastic			
HTWM Switches				
Button Top	Thermoplastic			
Housing	Thermoplastic			
HTWS Switches				
Button Top	Thermoplastic			
Housing	Thermoplastic			
HTLT4 Switches				
Housing and Flange	Thermoplastic			
Bellows	Silicone, Black			
TC-5 Switches				
Housing	PBT			
Keypad	Silicone Rubber			
Grip				
Handle	Thermoplastic, Glass Reinforced, Black			
Faceplate	Thermoplastic, Glass Reinforced, Black			
Wires	22 AWG, UL Style 1569 (8.5 in. long from bottom of joystick)			
Side Keypad Wires	24 AWG, (26/.10TA) Insulation Diameter: .037 Insulation Type: PVC (40 in. from bottom of joystick)			

***WARNING ON PERSONAL INJURY AND ANY USE AS SAFETY RELATED:**

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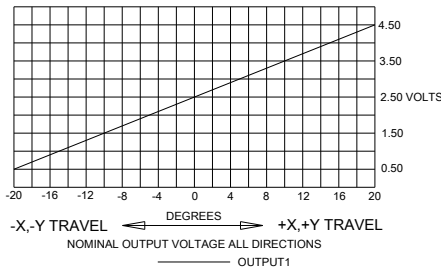
JOYSTICK WITH GRIP OPTIONS

HJLG3
MEDIUM
JOYSTICK
WITH GRIP

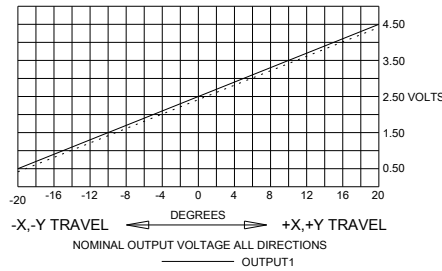
HALL EFFECT JOYSTICK WITH GRIP

HJLG3 OUTPUT CONFIGURATIONS

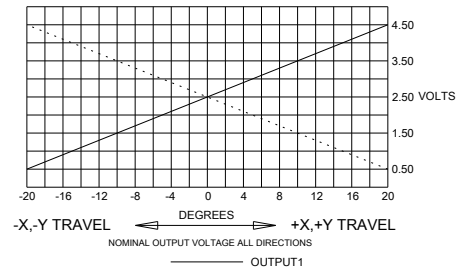
OPTION AA



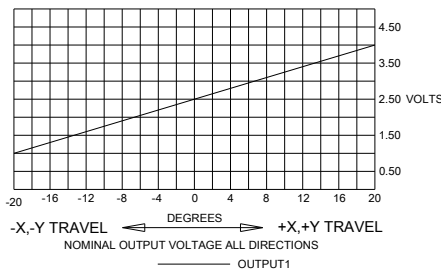
OPTION BB



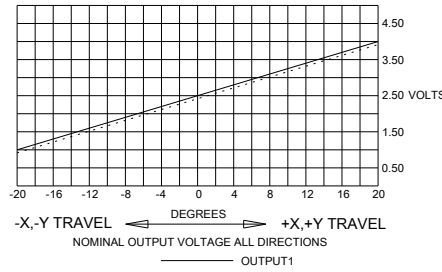
OPTION CC



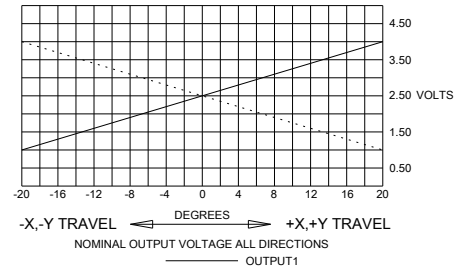
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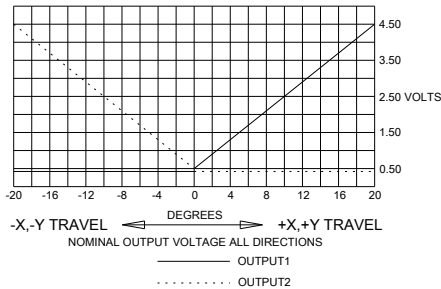
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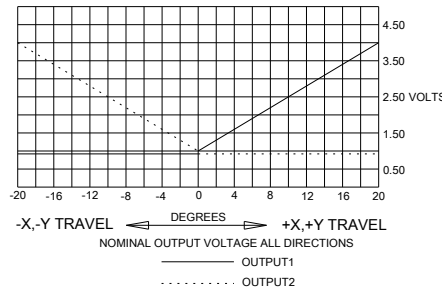
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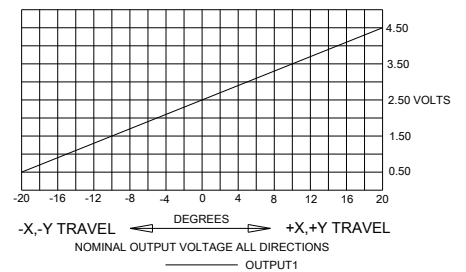
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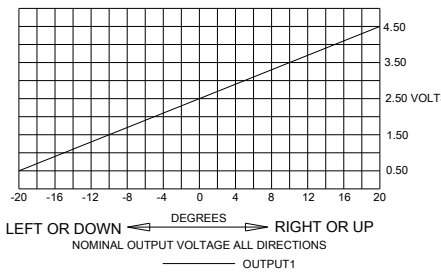
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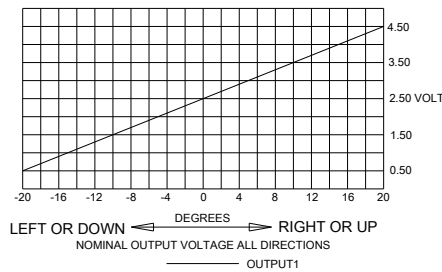
HTLT4 OUTPUT



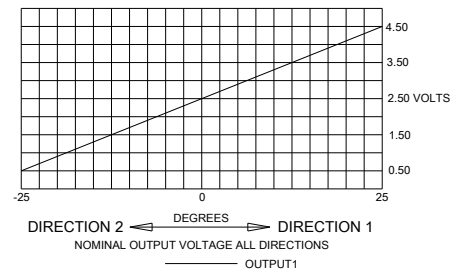
HTWM OUTPUT



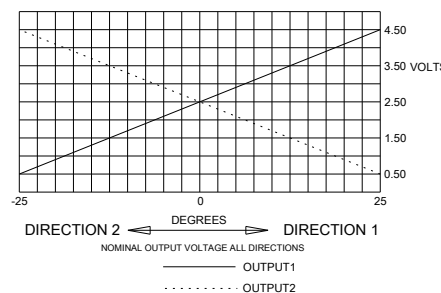
HTWS OUTPUT



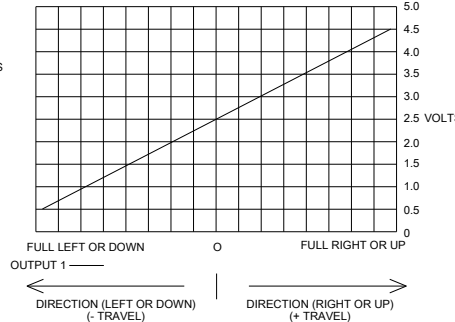
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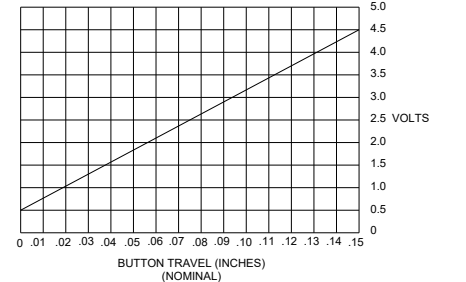
Z-AXIS DUAL OUTPUT



HTW OUTPUT



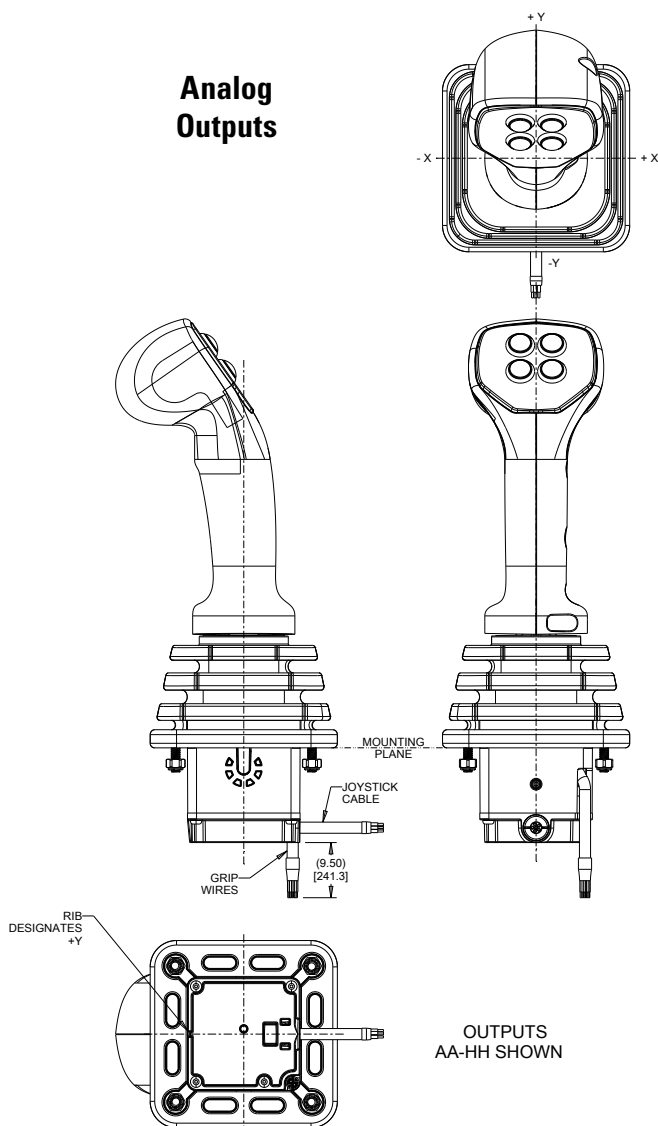
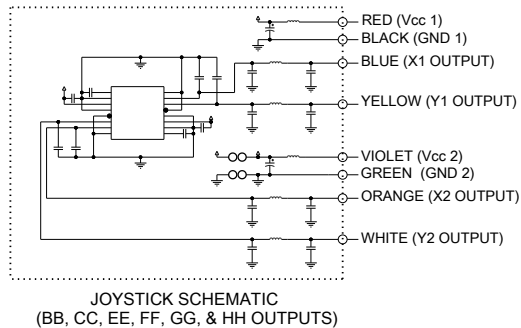
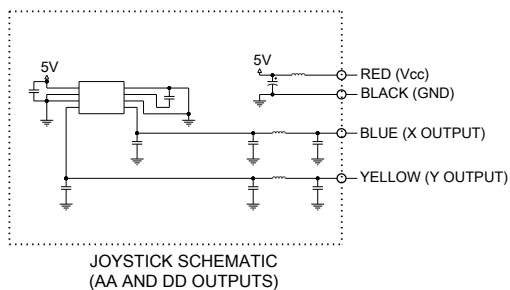
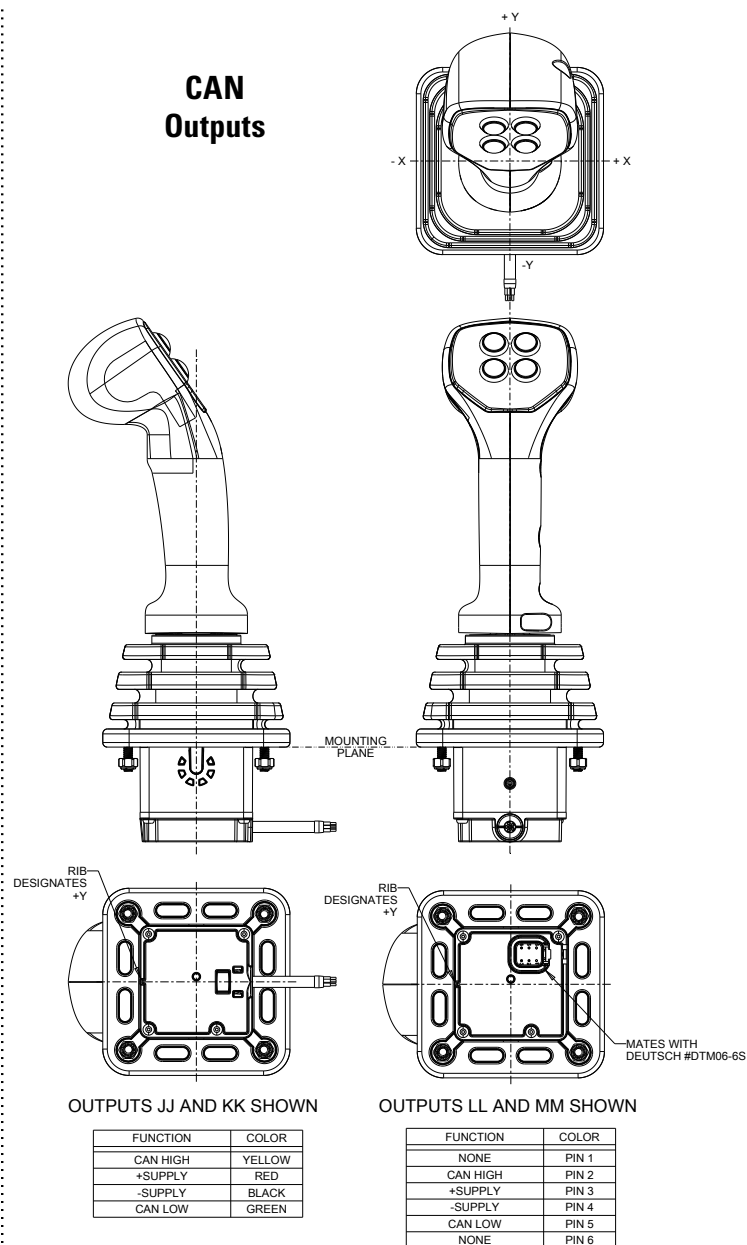
HPL OUTPUT



HALL EFFECT JOYSTICK WITH GRIP

OUTPUTS AND JOYSTICK SCHEMATICS

HJLG3-C with Faceplate shown

Analog
OutputsCAN
Outputs

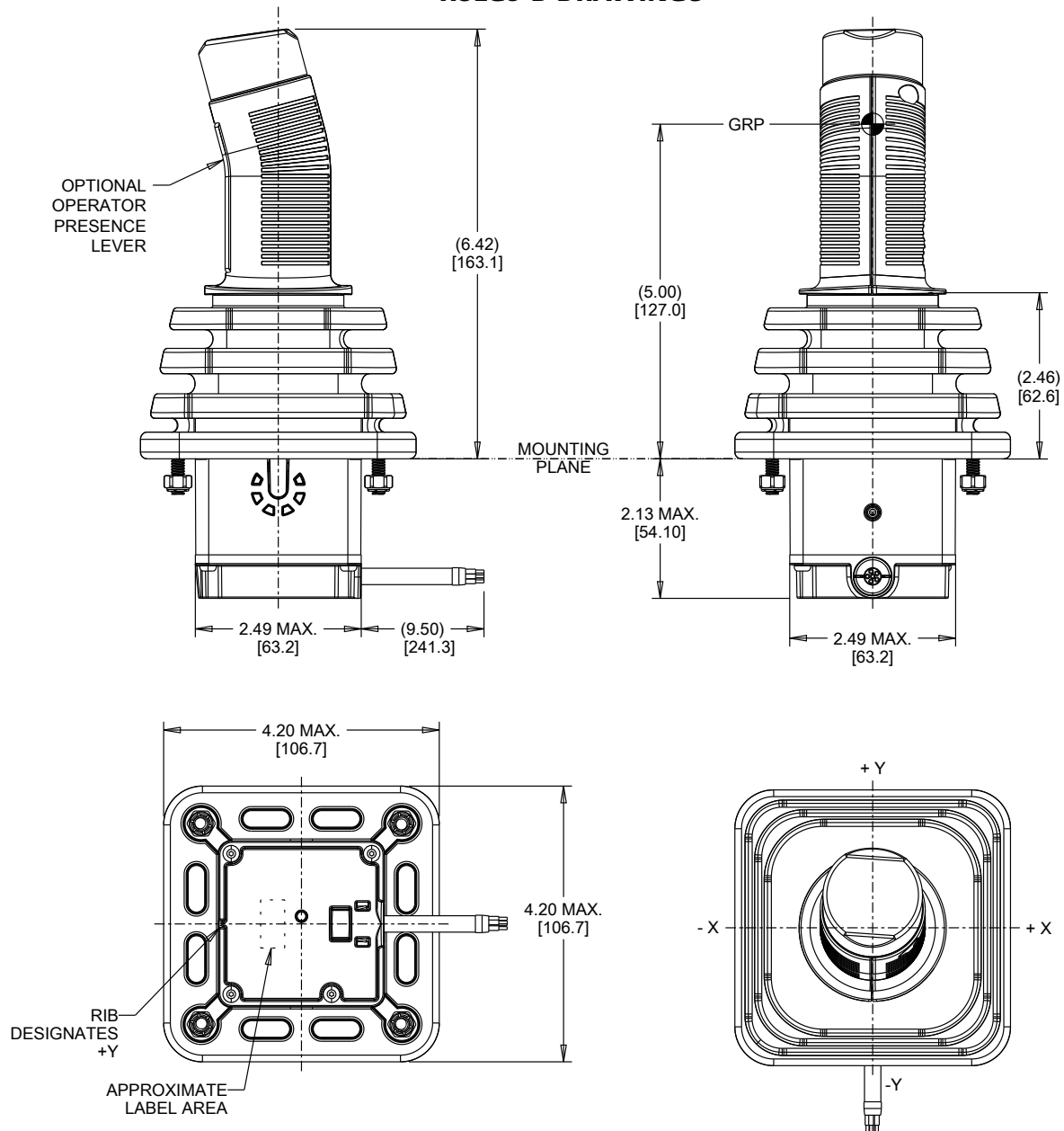
JOYSTICK WITH GRIP OPTIONS

HJLG3-D

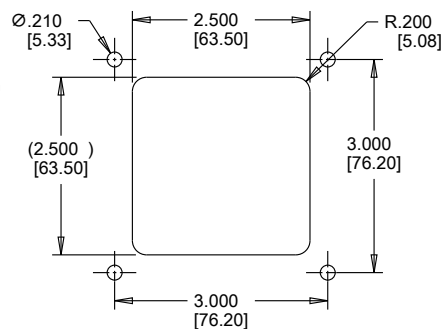
MEDIUM
JOYSTICK
WITH GRIP

HALL EFFECT JOYSTICK WITH G3-D CONTROL GRIP

HJLG3-D DRAWINGS



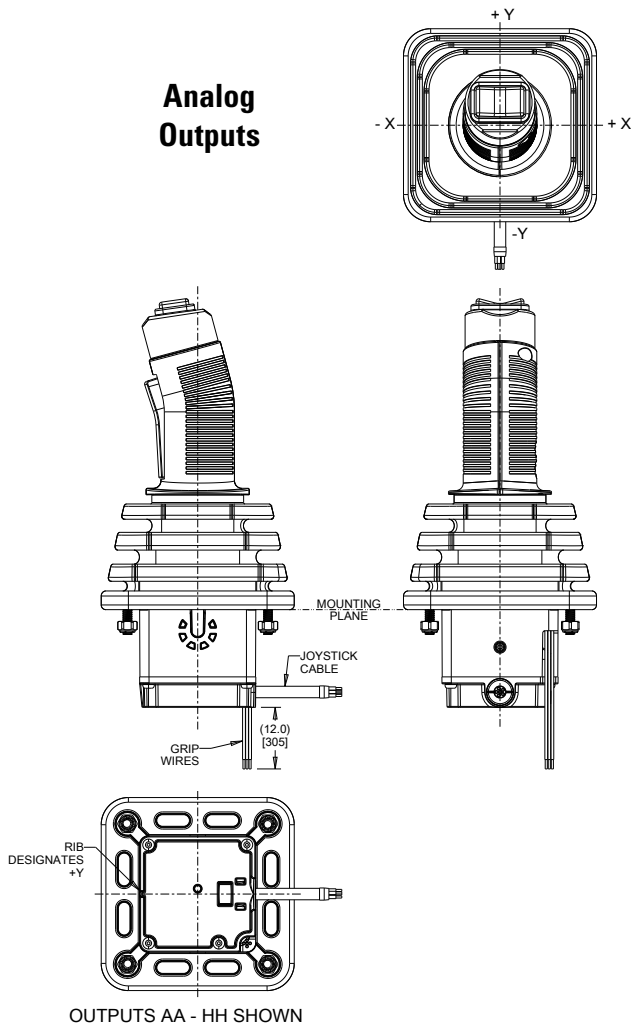
HJLG3 SUGGESTED PANEL OPENING



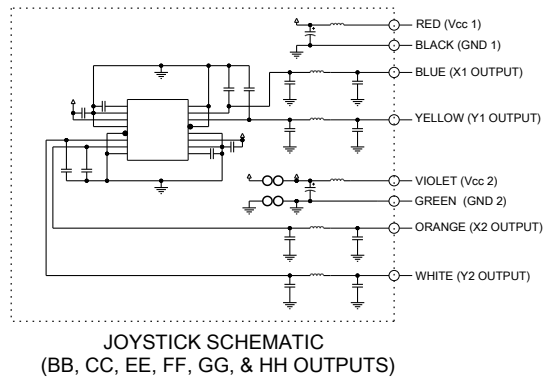
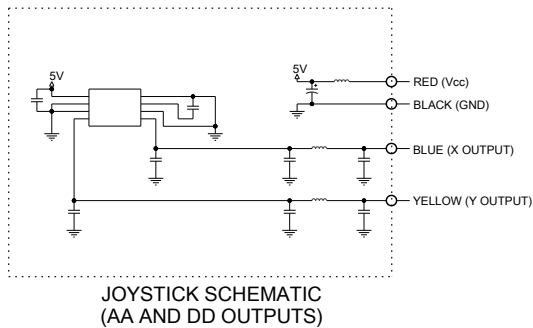
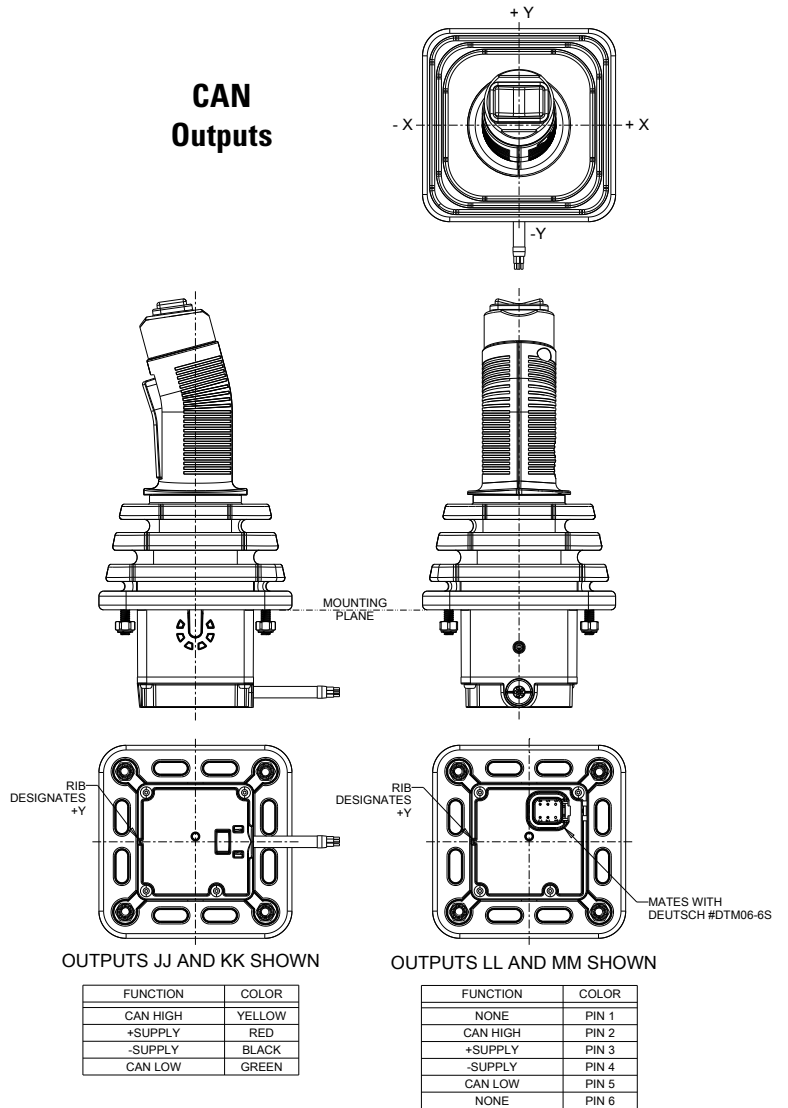
SUGGESTED PANEL OPENING
MAX. PANEL THICKNESS OF .250

HJLG3-D OUTPUTS AND JOYSTICK SCHEMATICS

Analog Outputs



CAN Outputs

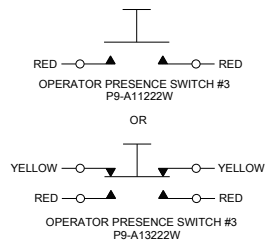
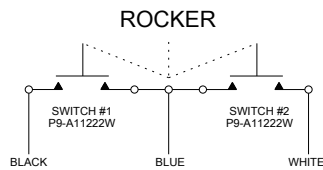
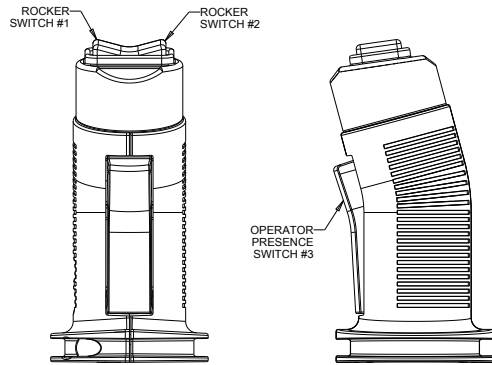


JOYSTICK WITH GRIP OPTIONS

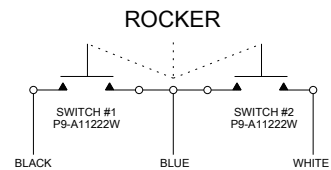
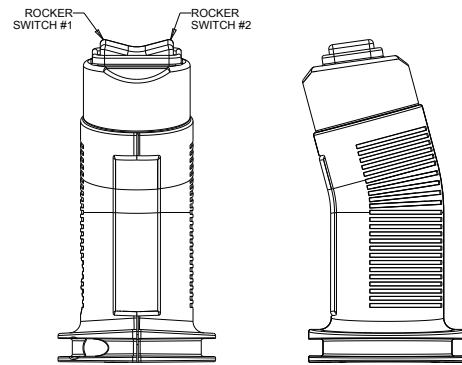
HALL EFFECT JOYSTICK WITH G3-D CONTROL GRIP

HJLG3-D FACEPLATE OPTIONS

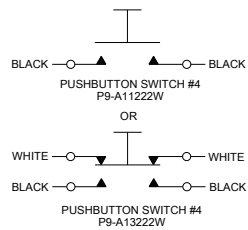
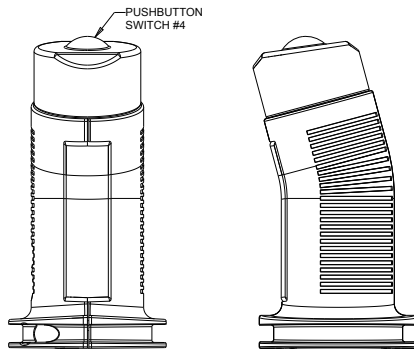
ROCKER AND OPERATOR PRESENCE



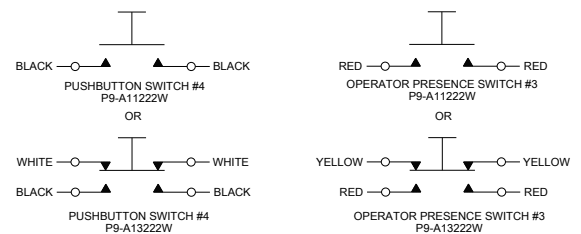
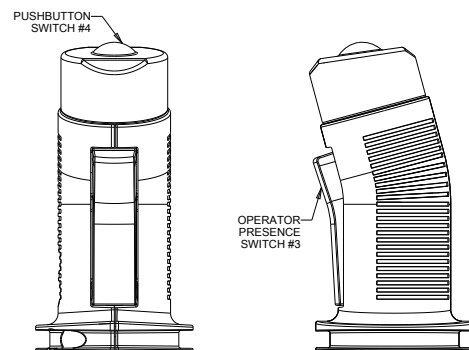
ROCKER



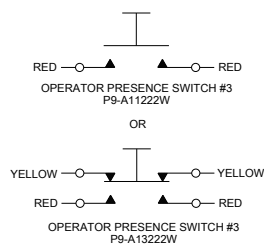
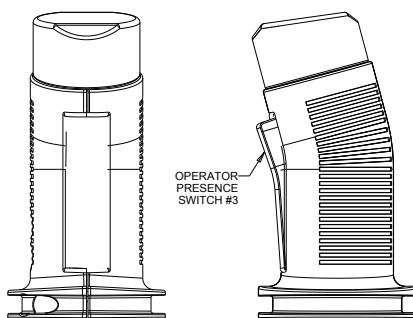
ONE PUSHBUTTON



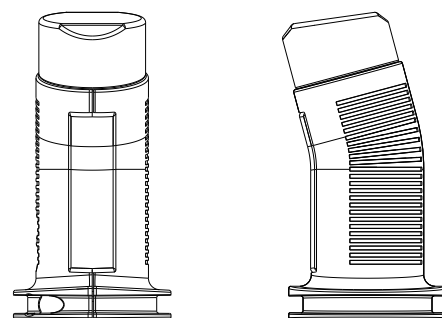
ONE PUSHBUTTON AND OPERATOR PRESENCE



NO PUSHBUTTON AND OPERATOR PRESENCE



BLANK



HALL EFFECT JOYSTICK WITH G3-D CONTROL GRIP

HJLG3-D PART NUMBER CODE

HJLG3-D	—	X	XX	X	XX	X
Gating			Joystick Output 1*	Joystick Output 2**	Operate Force	Faceplate Options
1. Gated Single Y-Axis; Return to Center			AA. 2.5 +/- 2.0VDC ①	NONE	1. Low	11. Rocker (On)-Off-(On) and Operator Presence
2. Gated Dual Axis; Return to Center			BB. 2.5 +/- 2.0VDC ②	2.5 +/- 2.0VDC	2. Medium	22. Rocker (On)-Off-(On) and No Operator Presence
3. Omni-directional; Center Detent Feel			CC. 2.5 +/- 2.0VDC ②	2.5 +/- 2.0VDC	3. High	33. One Pushbutton and Operator Presence
4. Omni-directional; On-Axis and Off-Axis Guided Feel			DD. 2.5 +/- 1.5VDC ①	NONE		44. One Pushbutton and No Operator Presence
5. Gated Single Y-Axis; Center Detent Feel			EE. 2.5 +/- 1.5VDC ②	2.5 +/- 1.5VDC		55. No Pushbutton, No Rocker and Operator Presence
6. Friction – Single Axis			FF. 2.5 +/- 1.5VDC ②	2.5 +/- 1.5VDC		66. No Pushbutton, No Rocker and No Operator Presence
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		

OP & PB Configuration

1. None^③
 2. Normally Open (NO)
 3. 2 Circuit (NO/NC)^④
 4. 2 Circuit (NO/NC)^⑤
- ^③ Can only be used with configurations 22 and 66.
^④ For options 11 (Operator Presence), 44, 55.
^⑤ For option 33.

*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.

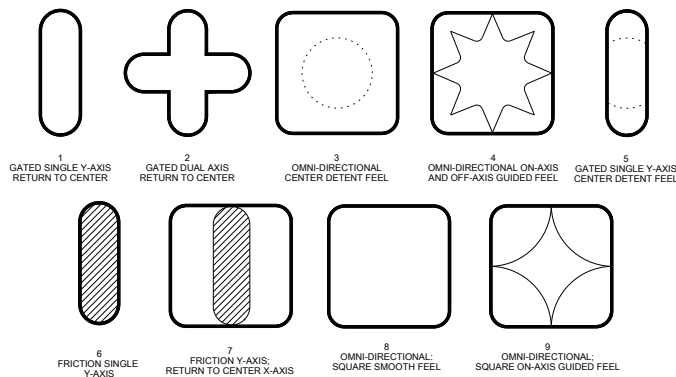
**Options "BB" and "EE" provide redundant output 2 which duplicates output 1.

Options "CC" and "FF" provide redundant output 2 which is inverse of output 1.

① 22 AWG Cable

② 24 AWG Cable

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