

COMPACT DESIGN



The JHT miniature series Hall effect joystick's compact design and robust construction is the ideal solution where space is limited and precision control is required. Ideal applications include: robotics, construction equipment, hydraulic controls, medical and surgery equipment, security and surveillance video cameras. The JHT has been tested to five million cycles with no degradation of electrical performance or boot wear. Electronics are sealed to IP68S and EMI/RFI immunity are per SAE J1113 specifications. See JHT Z-axis pages for z-axis options.

## Features:

- Compact design excellent for armrest & panel mounting
- Proven contactless analog output Hall effect technology
- 5 million operational cycles in all directions
- Electronics sealed per IP68S
- Single or omni-directional
- Optional pushbutton switch(es) available
- RoHS compliant

Standard Characteristics/Ratings:				
<b>GENERAL:</b>				
<b>Sensor Type:</b>	Hall effect analog, factory programmed ground and supply line break detection; over voltage and reverse voltage protection			
<b>Design:</b>	Contactless sensing			
<b>ELECTRICAL RATINGS: Rated at Vcc = 5V @ 20°C Load = 1ma (4.7KΩ)</b>				
<b>Electrical</b>				
	<b>Units</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>
Supply Voltage	VDC	4.5	5	5.5
Output Voltage Tolerance at Center	VDC @ 5V Vcc	-25	N/A	+25
Output Voltage Tolerance Full Travel	VDC @ 5V Vcc	-25	N/A	+25
Supply Current* (B = 0, Vcc = 5V, Io = 0)	mA	N/A	10	12
Output Impedance	kΩ	N/A	1	N/A
*Single output per axis. Dual output per axis available. Supply current 20mA typical.				
<b>MECHANICAL:</b>				
<b>Joystick Mechanical Life:</b> 5,000,000 cycles in all directions				
<b>P9 Mechanical Life:</b>	1,250,000 cycles			
<b>Travel Angle:</b>	18° min to 22° max, 20° typical			
<b>Overtravel Angle:</b>	0.5° min to 1.5° max, 1° typical			
<b>Joystick Operating Force:</b>	With bellows, at grip 0.5 lb. min to 1.5 lbs. max over temperature range			
<b>P9 Operating Force:</b>	@20°C 8 oz min to 16 oz max, 12 oz typical			
<b>ENVIRONMENTAL:</b>				
<b>Operating Temp Range:</b> -40°C to +85°C				
<b>Seal:</b>	Electronics seal to IP68S			
<b>RFI/EMI:</b>	Withstand per SAE J1113			
<b>MATERIALS:</b>				
<b>Housing:</b>	Thermoplastic, black			
<b>Bellows:</b>	Silicone, black. Additional materials available, contact factory.			

## JHT PART NUMBER CODE

JHT	-	XX	X	X	XX	X	X	
Switch/Boot Style		Gating*	Operating Force	Output 1	Output 2	Termination	P9 Button Color**	
11. With P9 Pushbutton & Full Boot		1. Gated: Single axis – Return to Center	1. 1 lb	AA. 2.5 +/- 2.0VDC	NONE	1. 24 AWG Wire Leads	1. None	
12. With P9 Pushbutton & Half Boot		2. Gated: Two axis – Return to Center		BB. 2.5 +/- 2.0VDC	2.5 +/- 2.0VDC	2. Cable, 22 AWG (19/34) PVC / Polyurethane outer jacket (11" long not shown)****	2. Black	
21. Without Pushbutton & with Full Boot		3. Omni-directional; Round Smooth Feel		CC. 2.5 +/- 2.0VDC	2.5 +/- 2.0VDC		3. Orange	
		4. Omni-directional; Round On-Axis and Off-Axis Guided Feel		DD. 2.5 +/- 1.5VDC	NONE		4. Yellow	
		5. Omni-directional; Round On-Axis Guided Feel		EE. 2.5 +/- 1.5VDC	2.5 +/- 1.5VDC		5. Green	
				FF. 2.5 +/- 1.5VDC	2.5 +/- 1.5VDC		6. Blue	
				GG. 0.5 - 4.5VDC	0.5 - 4.5VDC		7. Purple	
				HH. 1.0 - 4.0VDC	1.0 - 4.0VDC		8. Gray	
				JJ. SPI, 3.3V Supply***	NONE		9. White	
				KK. SPI, 5V Supply***	NONE			
				LL. CANopen****	NONE			
				MM. J1939****	NONE			

\*Gated = Restricted movement in XY axis only. Gating icons appear on page 111.

\*\*Applies only to half boot with pushbutton option.

\*\*\*P9'S are not part of the SPI output.

\*\*\*\*Outputs LL & MM must be used with termination option 2. Cable termination option only available with LL & MM options.

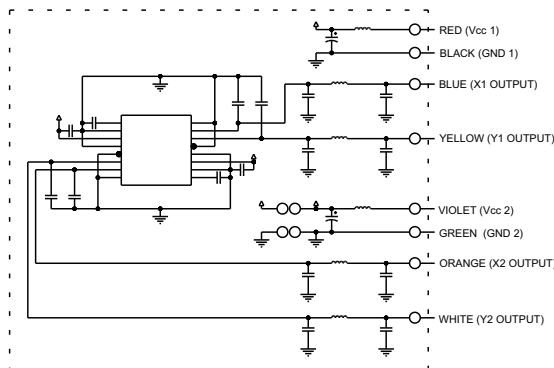
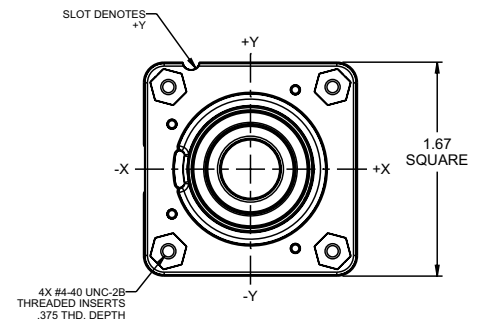
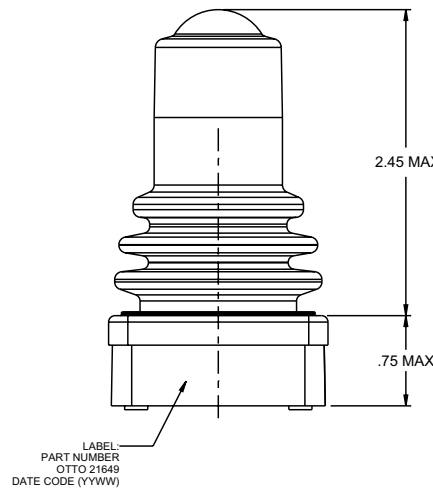
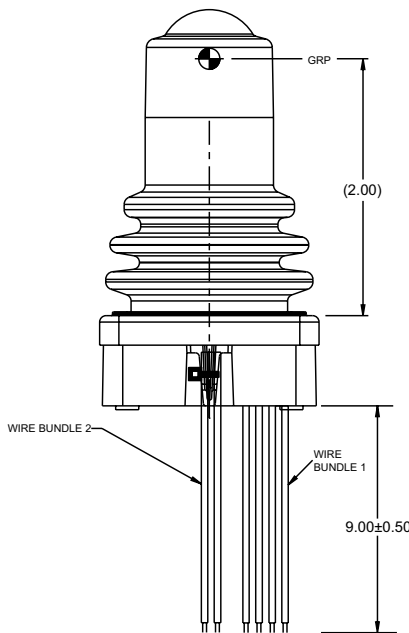
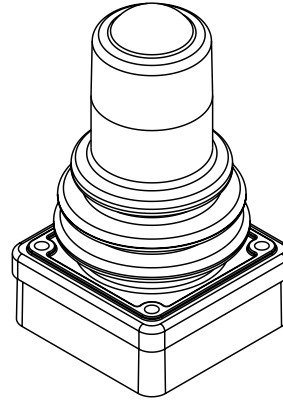
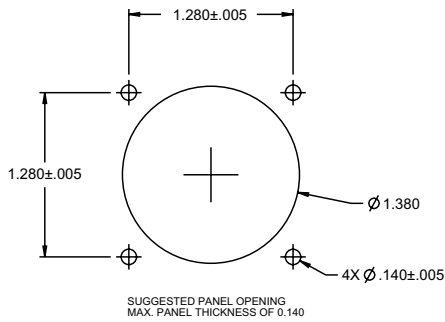
NOTES:

- Outputs are from the center to the full travel position in each direction.
- Options "AA," "BB," "CC," "DD," "EE" and "FF" provide increased voltage in +X, +Y; and decreasing voltage in -X, -Y direction from one 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.

# MINIATURE HALL EFFECT JOYSTICK

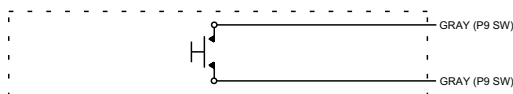
COMPACT DESIGN

## Full Boot Version Shown



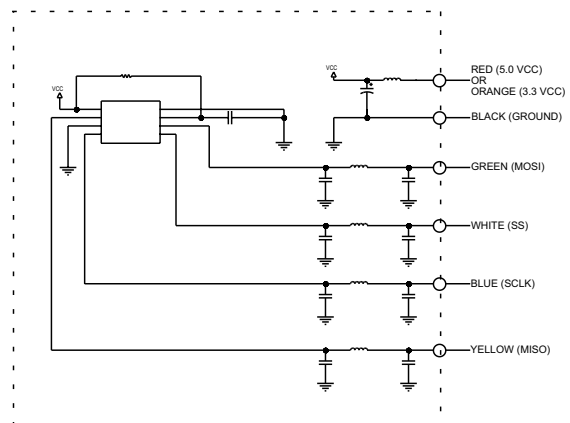
### GENERAL SCHEMATIC

(WIRE BUNDLE 1)  
ALL OUTPUTS ARE NOT PRESENT IN ALL CONFIGURATIONS



### PUSHBUTTON SCHEMATIC

(WIRE BUNDLE 2)  
ALL WIRES ARE NOT PRESENT IN ALL CONFIGURATIONS

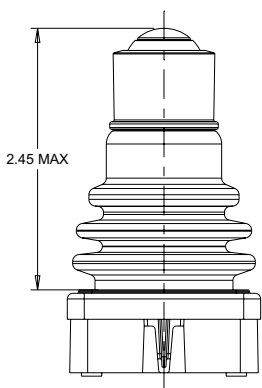
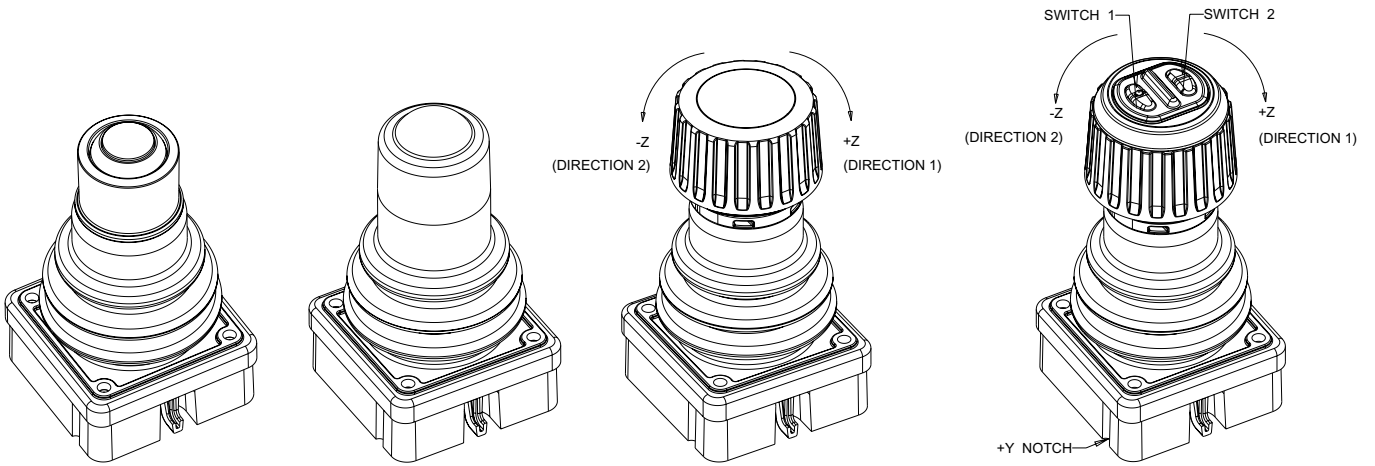


### SPI SCHEMATIC

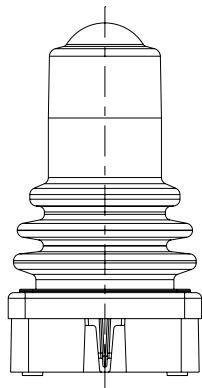
(WIRE BUNDLE 1)  
ONLY ONE SUPPLY WIRE IS PRESENT WITH EACH CONFIGURATION

COMPACT DESIGN

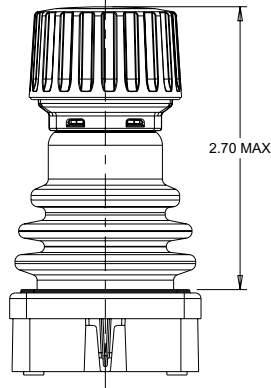
## JHT Switch/Style Boot Configuration



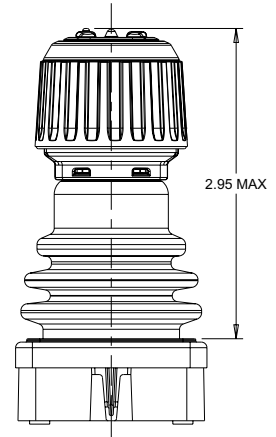
**HALF BOOT**



**FULL BOOT**



**Z AXIS**

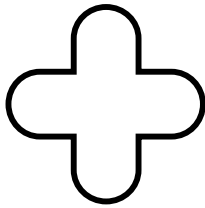


**Z AXIS WITH  
PUSHBUTTONS**

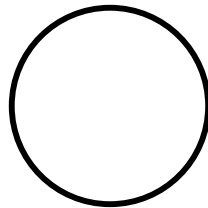
## JHT and JHT Z-Axis Icons Demonstrating Feel\*



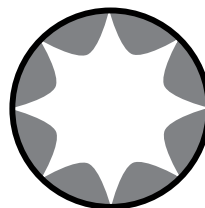
Gated;  
Single Axis -  
Return to Center



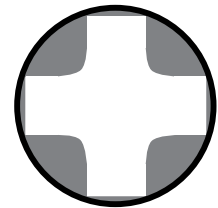
Gated;  
Two Axis -  
Return to Center



Omnidirectional;  
Round Smooth Feel



Omnidirectional;  
Round On-Axis and  
Off-Axis Guided Feel\*\*



Omnidirectional;  
Round On-Axis  
Guided Feel

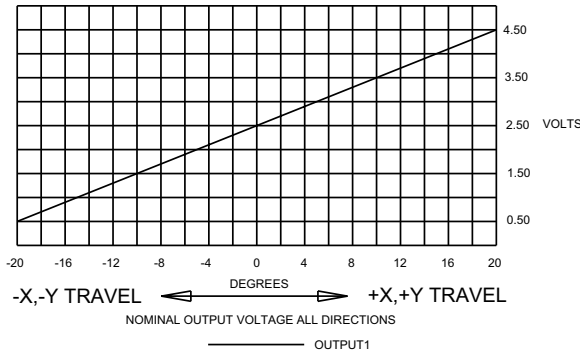
\*Feel defined by shading.

\*\*Full output available in all directions. Contact factory for details.

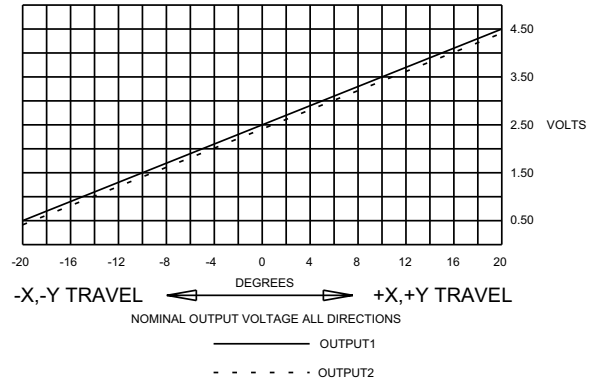
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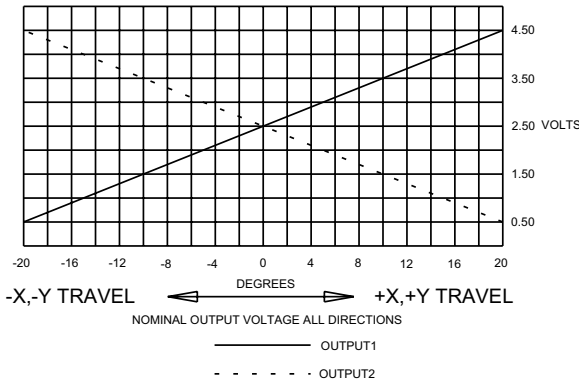
### OPTION AA



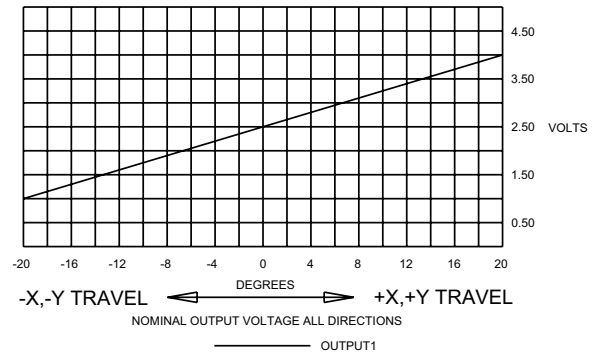
### OPTION BB



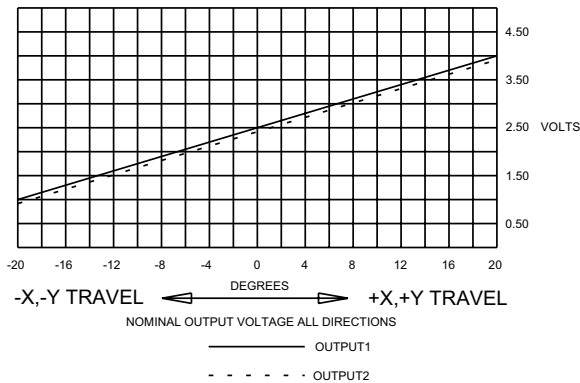
### OPTION CC



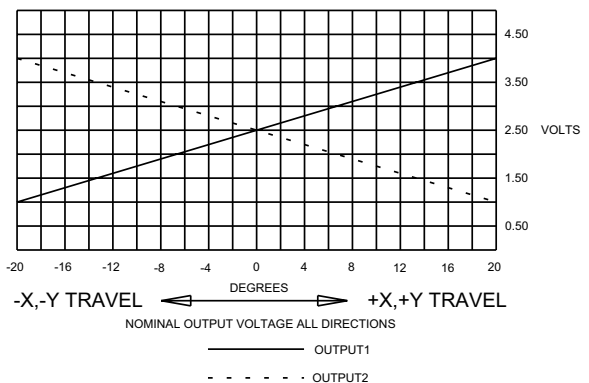
### OPTION DD



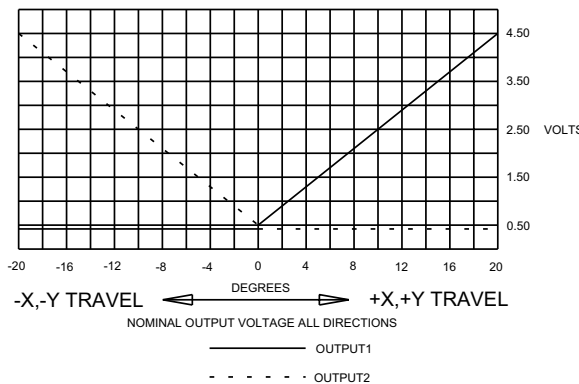
### OPTION EE



### OPTION FF



### OPTION GG



### OPTION HH

