MINIATURE Z-AXIS HALL EFFECT JOYSTICK

COMPACT DESIGN



JHT Z-Axis



JHT Z-Axis with Pushbuttons

The JHT Z-Axis Miniature Series Hall Effect Joystick allows for a 60° rotational movement of the knob at the top of the joystick. Z-Axis options include detent, friction hold or spring return to center. Its compact design is the ideal solution where space is limited and precision control is required, while its robust construction is suited for demanding applications. The JHT joystick has been tested to five million cycles in all directions with no degradation of performance. The Z-Axis and/or pushbuttons have been tested to one million cycles. Various gating options are also available. The JHT Z-Axis electronics are sealed to IP68S and can withstand EMI/RFI per SAE J1113 specifications. The JHT Z-Axis has numerous applications and is ideal for construction equipment, unmanned vehicles, hydraulic controls, industrial vehicle controls, medical and surgery equipment and surveillance video cameras.

Features:

- **60° rotational movement of the knob**
- **Compact design**
- **Contactless analog output Hall effect technology**
- **5 million operational cycles in all directions (Joystick)**
- **Joystick electronics sealed per IP68S**
- **Optional pushbutton switches available**
- **RoHS/WEEE/Reach compliant**

Standard Characteristics/Ratings:

GENERAL:

Sensor Type:	Hall effect analog, factory programmed ground and supply line break detection; over voltage and reverse voltage protection
Design:	Contactless sensing

ELECTRICAL RATINGS: Rated at Vcc = 5V @ 20°C Load = 1ma (4.7KΩ)

Electrical - Joystick Z-Axis Return to Center

	Units	Min	Typ	Max
Supply Voltage	VDC	4.5	5	5.5
Output 1+2 Voltage, +Z, -Z 0° Deflection	VDC @ 5V Vcc	2.25	2.50	2.75
Output 1+2 at Full Travel +Z Direction	VDC @ 5V Vcc	4.25	4.50	4.55
Output 1+2 at Full Travel -Z Direction	VDC @ 5V Vcc	0.45	0.50	0.75
Supply current (per sensor) B = 0, Vcc = 5V, 1o = 0	mA	N/A	N/A	10.0
Output - Source Current Limit B = -X, Vo = 0	mA	-1.0	N/A	1.0

Electrical - Joystick Z-Axis Friction

	Units	Min	Typ	Max
Supply Voltage	VDC	4.5	5	5.5
Output 1+2 at Full Travel +Z Direction	VDC @ 5V Vcc	4.25	4.50	4.55
Output 1+2 at Full Travel -Z Direction	VDC @ 5V Vcc	0.45	0.50	0.75
Supply Current (per sensor) (B = 0, Vcc = 5V, 1o = 0)	mA	N/A	N/A	10
Output - Source Current Limit B = -X, Vo = 0	mA	-1.0	N/A	1.0

Electrical - Joystick Z-Axis 3 Detent

	Units	Min	Typ	Max
Supply Voltage	VDC	4.5	5	5.5
Output 1+2 Voltage, +Z, -Z 0° Deflection	VDC @ 5V Vcc	2.25	2.50	2.75
Output 1+2 at Full Travel +Z Direction	VDC @ 5V Vcc	4.25	4.50	4.55
Output 1+2 at Full Travel -Z Direction	VDC @ 5V Vcc	0.45	0.50	0.75
Supply current (per sensor) B = 0, Vcc = 5V, 1o = 0	mA	N/A	N/A	10.0
Output - Source Current Limit B = -X, Vo = 0	mA	-1.0	N/A	1.0

Z-Axis

Mechanical Life: 1,000,000 cycles in all directions

	Units	Min	Typ	Max
Travel Angle (Total)	Degrees	56	60	64
Operational Torque with Detent	OZ	10	20	30
Operational Torque with Friction Hold	OZ	1.0	4.0	7.0
Operational Torque Return to Center	OZ	8.0	16	24

ENVIRONMENTAL:

Operating Temp Range:	-40°C to +85°C
Seal:	Electronics without pushbutton sealed to IP68S

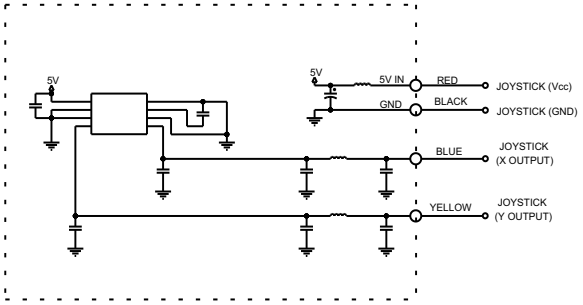
MATERIALS:

Housing:	Thermoplastic, black
Bellows:	Silicone, black. Additional materials available, contact factory.

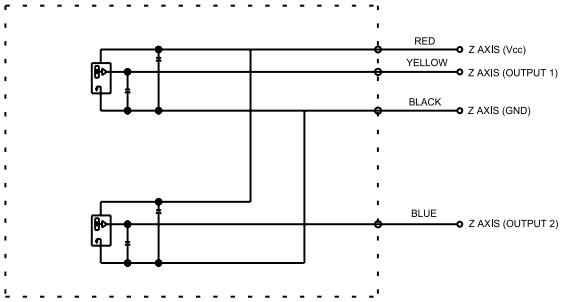
Specifications Subject To Change Without Notice

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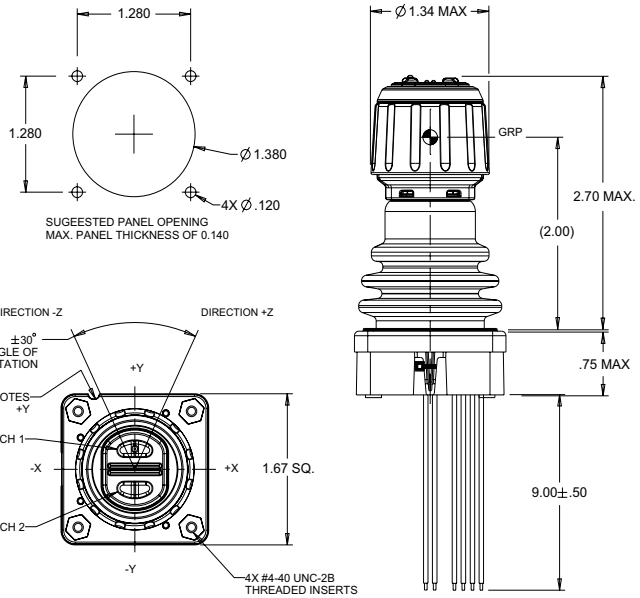
COMPACT DESIGN

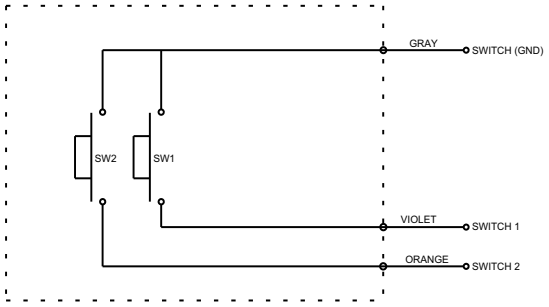


JOYSTICK SCHEMATIC



Z AXIS SCHEMATIC
(WIRE BUUNDLE 2)
ALL WIRES ARE NOT PRESENT IN ALL CONFIGURATIONS





KEYPAD SCHEMATIC

JHT Z-AXIS PART NUMBER CODE

JHT – XX X X XX X X

Switch/Boot Style (All Half Boot)

- **32.** Z-Axis with Detent, Single Output
- **42.** Z-Axis with Friction Hold, Single Output
- **52.** Z-Axis Return to Center, Single Output
- **62.** Z-Axis with Detent, Dual Output
- **72.** Z-Axis with Friction Hold, Dual Output
- **82.** Z-Axis Return to Center, Dual Output
- **92.** Z-Axis with Detent, Single Output wtih Two Pushbuttons
- **A2.** Z-Axis with Friction, Single Output with Two Pushbuttons
- **B2.** Z-Axis Return to Center, Single Output with Two Pushbuttons
- **C2.** Z-Axis with Detent, Dual Output with Two Pushbuttons
- **D2.** Z-Axis with Friction, Dual Output with Two Pushbuttons
- **E2.** Z-Axis Return to Center, Dual Output with Two Pushbuttons

Gating*

- **1.** Gated, Single axis – Return to Center
- **3.** Omni-directional; Round Smooth Feel
- **4.** Omni-directional; On-Axis and Off-Axis Guided Feel
- **5.** Omni-directional; Round On-Axis Guided Feel

Operating Force

- **1.** 1 lb

Joystick Output 1	Joystick Output 2
AA. 2.5 +/- 2.0VDC	NONE
BB. 2.5 +/- 2.0VDC	2.5 +/- 2.0VDC
CC. 2.5 +/- 2.0VDC	2.5 -/+ 2.0VDC
DD. 2.5 +/- 1.5VDC	NONE
EE. 2.5 +/- 1.5VDC	2.5 +/- 1.5VDC
FF. 2.5 +/- 1.5VDC	2.5 -/+ 1.5VDC
GG. 0.5 - 4.5VDC	0.5 - 4.5VDC
HH. 1.0 - 4.0VDC	1.0 - 4.0VDC

Termination

- **1.** 24 AWG Wire Leads

Pushbuttons

- **N.** None
- **1.** Two Pushbuttons

*Gated = Restricted movement in XY axis only. Gating Icons shown on page 69 in the JHT mini joystick section.

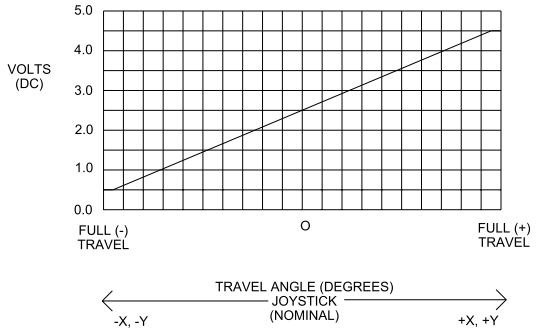
NOTES (Applies to Joystick Ouput Only):
- Outputs are from the center to the full travel position in each direction.
- Options "AA," "BB," "CC," "DD," "EE" and "FF" provide increased voltage in +X, +Y; and decreasing voltage in -X, -Y direction from one output per axis.
- Options "GG" and "HH" provide 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.

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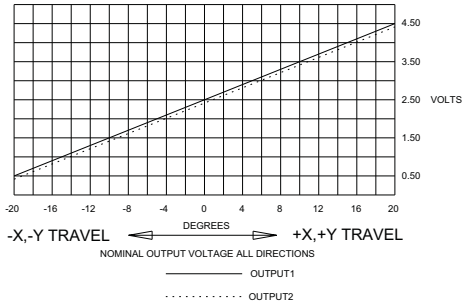
COMPACT DESIGN

JOYSTICK OUTPUT CONFIGURATION

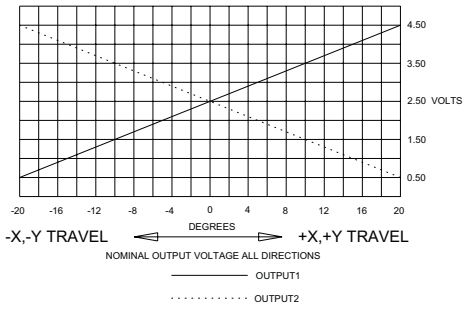
OPTION AA



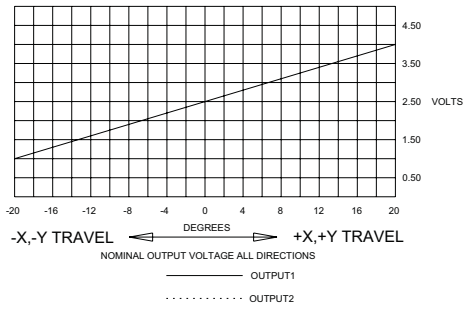
OPTION BB



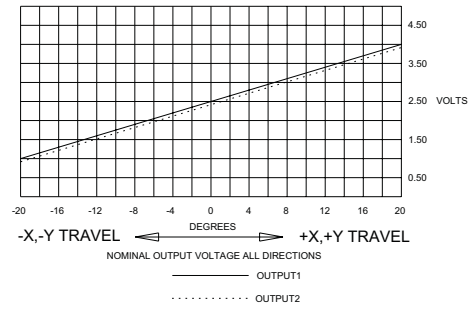
OPTION CC



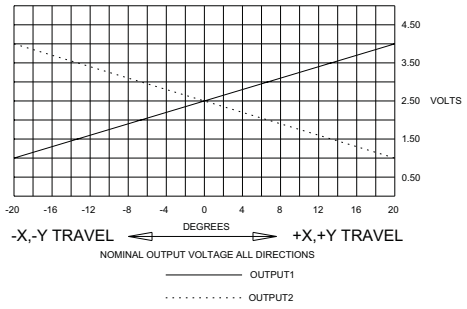
OPTION DD



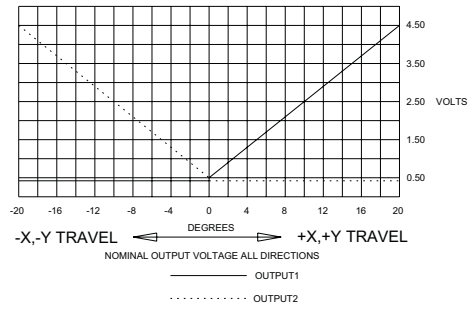
OPTION EE



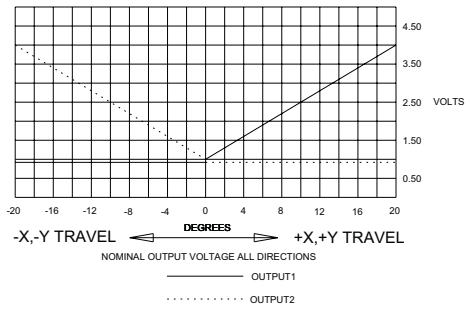
OPTION FF



OPTION GG



OPTION HH



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