

# LINEAR HALL EFFECT FINGER JOYSTICK

**HTL**  
HALL EFFECT  
JOYSTICK

## 2 & 4-WAY LINEAR HALL EFFECT FINGER JOYSTICK



HTL4 with Castle Style Button

The HTL series provides all of the performance of a full size, dual axis joystick in a miniature package that can be mounted in control handles, armrests and panels. The Hall effect sensors are immune to electromagnetic and radio frequency interference up to 100V/M. Programmable sensors with built-in temperature compensation ensure consistent and repeatable operation. The HTL series has excellent tactile feel for improved operator control and is available with either dusttight or IP68S watertight seal. A wide variety of output configurations are available to satisfy different applications.

### Features:

- Designed for grip, armrest & panel mounting
- Proven contactless analog output Hall effect technology
- Redundant outputs available
- 1 million cycles
- Electronics watertight to IP68S
- Outstanding EMI/RFI immunity
- Variety of button styles
- RoHS/WEEE/Reach compliant

#### Standard Characteristics/Ratings:

##### MECHANICAL:

**Mechanical Life:** 1,000,000 all directions

**Travel Angle:** 23° min to 27° max

**Operating Force with Boot:** 16 oz typical to 20 oz max (at top of button) @ 25°C

**Max Allowable Vertical & Radial Force on Button:** 25.0 lbs.

**Max Allowable Torque on Button:** 7.5 lbs.

##### ELECTRICAL RATINGS:

**HTL2: Rated at Vcc = 5V @ 20°C Load = 1mA (4.7KΩ)**

Electrical	Units	Min	Typ	Max
Supply Voltage	VDC	4.5	5	5.5
Output Voltage Tolerance at Center (see graph for output values)	VDC @ 5V Vcc	-0.25	N/A	+0.25
Output Voltage Tolerance at Full Travel (see graph for output values)	VDC @ 5V Vcc	-0.25	N/A	+0.25
Supply Current per Sensor	mA	N/A	N/A	10
Output Source Current	mA	-1	N/A	1
Output Resistance (Io ≤ 2mA)	Ω	N/A	1	10

**HTL4: Rated at Vcc = 5V @ 20°C Load = 1mA (4.7KΩ)**

Electrical	Units	Min	Typ	Max
Supply Voltage	VDC	4.5	5	5.5
Output Voltage Tolerance at Center (see graph for output values)	VDC @ 5V Vcc	-0.25	N/A	+0.25
Output Voltage Tolerance at Full Travel (see graph for output values)	VDC @ 5V Vcc	-0.25	N/A	+0.25
Supply Current per Sensor	mA	N/A	8	10
Output Source Current Limit	mA	-1	N/A	+1

##### ELECTRONICS

**Seal Integrity:** Electronics IP68S

##### ENVIRONMENTAL:

**Operating Temp Range:** -40°C to +85°C

**Storage Temp Range:** -40°C to +85°C

**RFI:** Withstand 100V/M, 14Hz to 1GHz

**EMI:** Withstand per MIL-STD-461D/SAE J1113-22 at 50Hz and 60Hz

##### MATERIALS:

**Boot:** Elastomer

**Button:** Thermoplastic, black

**Case:** Thermoplastic, black

**Flange:** Thermoplastic, black

**Wires:** 22 or 24 AWG

**Mounting Hardware:** Panel fastener assembly

## 2 & 4-WAY LINEAR HALL EFFECT FINGER JOYSTICK

### HTL2 PART NUMBER CODE

<b>HTL2</b>	-	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>1</b>	<b>X</b>	<b>XX</b>	<b>X</b>	<b>X</b>	
<b>Button Style</b>		<b>Case Style</b>	<b>Seal</b>	<b>Travel</b>	<b>Operating Force</b>			<b>Output 1</b> ①	<b>Output 2</b> ②	<b>Termination</b>	<b>Button Color</b>
1. Castle		1. 0.970" SQ.	1. Dusttight	1. 25°	1. 16 oz			<b>AA.</b> 2.5 +/- 2.0VDC	NONE	1. Wire Leads	2. Black
2. External Castle Boot			2. Watertight *					<b>BB.</b> 2.5 +/- 2.0VDC	2.5 +/- 2.0VDC	22 AWG,	
3. Short Double Stadium								<b>CC.</b> 2.5 +/- 2.0VDC	2.5 -/+ 2.0VDC	UL 1569	
4. Tall Concave Stadium								<b>DD.</b> 2.5 +/- 1.5VDC	NONE	2. Pins	
5. External Bat Handle Boot								<b>EE.</b> 2.5 +/- 1.5VDC	2.5 +/- 1.5VDC	3. Wire Leads	
6. External Smooth Boot								<b>FF.</b> 2.5 +/- 1.5VDC	2.5 -/+ 1.5VDC	24 AWG,	
7. Long Concave Y Axis Button								<b>GG.</b> 0.5 - 4.5VDC	0.5 - 4.5VDC	SAE AS22759	
8. Low Profile Button								<b>HH.</b> 1.0 - 4.0VDC	1.0 - 4.0VDC		

\* Watertight sealed option available with button styles 2, 5 and 6.

① Outputs are from the center to the full travel position. Options "AA," "BB," "CC," "DD," "EE," and "FF" provide increased voltage in +Y; and decreasing voltage in -Y direction from one output per axis. Options "GG" and "HH" provide increasing voltages in all directions (+Y, -Y) from 2 outputs per axis.

② 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.

### HTL4 PART NUMBER CODE

<b>HTL4</b>	-	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>XX</b>	<b>X</b>	<b>X</b>	
<b>Button Style</b>		<b>Case Style</b>	<b>Seal</b>	<b>Travel</b>	<b>Gating</b>	<b>Operating Force</b>	<b>Output 1</b> ①	<b>Output 2</b> ②	<b>Termination</b>	<b>Button Color</b>
1. Castle		1. 0.970" SQ.	1. Dusttight	1. 25°	1. Omnidirectional; Square on Axis Guided Feel**	1. 16 oz	<b>AA.</b> 2.5 +/- 2.0VDC	NONE	1. Wire Leads	2. Black
2. External Castle Boot			2. Watertight *		2. Gated; Dual Axis Return to Center		<b>BB.</b> 2.5 +/- 2.0VDC	2.5 +/- 2.0VDC	22 AWG	
3. Short Double Stadium					3. Omnidirectional; Round; Smooth Feel		<b>CC.</b> 2.5 +/- 2.0VDC	2.5 -/+ 2.0VDC	UL 1569	
4. Tall Concave Stadium							<b>DD.</b> 2.5 +/- 1.5VDC	NONE	2. Pins	
5. External Bat Handle Boot							<b>EE.</b> 2.5 +/- 1.5VDC	2.5 +/- 1.5VDC	3. Wire Leads	
6. External Smooth Boot							<b>FF.</b> 2.5 +/- 1.5VDC	2.5 -/+ 1.5VDC	24 AWG	
7. Long Concave Y Axis Button							<b>GG.</b> 0.5 - 4.5VDC	0.5 - 4.5VDC	SAE AS22759	
							<b>HH.</b> 1.0 - 4.0VDC	1.0 - 4.0VDC	4. Wire Leads	
									22 AWG, UL 1569	
									shared powers and grounds (see schematic)	
									5. Wire Leads	
									24 AWG,	
									SAE AS22759	
									shared powers and grounds (see schematic)	

\* Watertight sealed option available with button styles 2, 5 and 6.

① 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.

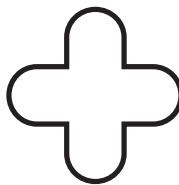
② Options "BB" and "EE" provide redundant output 2 which duplicates output 1. Options "CC" and "FF" provide redundant output 2 which is inverse of output 1.

\*\*Positive tactile feel when moved off X and Y axis positions.

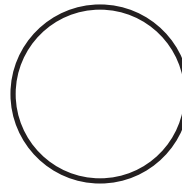
### Gating Icons



Omnidirectional Square On-Axis-Guided Feel\*\*\*



Gated Dual Axis Return to Center



Omnidirectional Round Smooth Feel



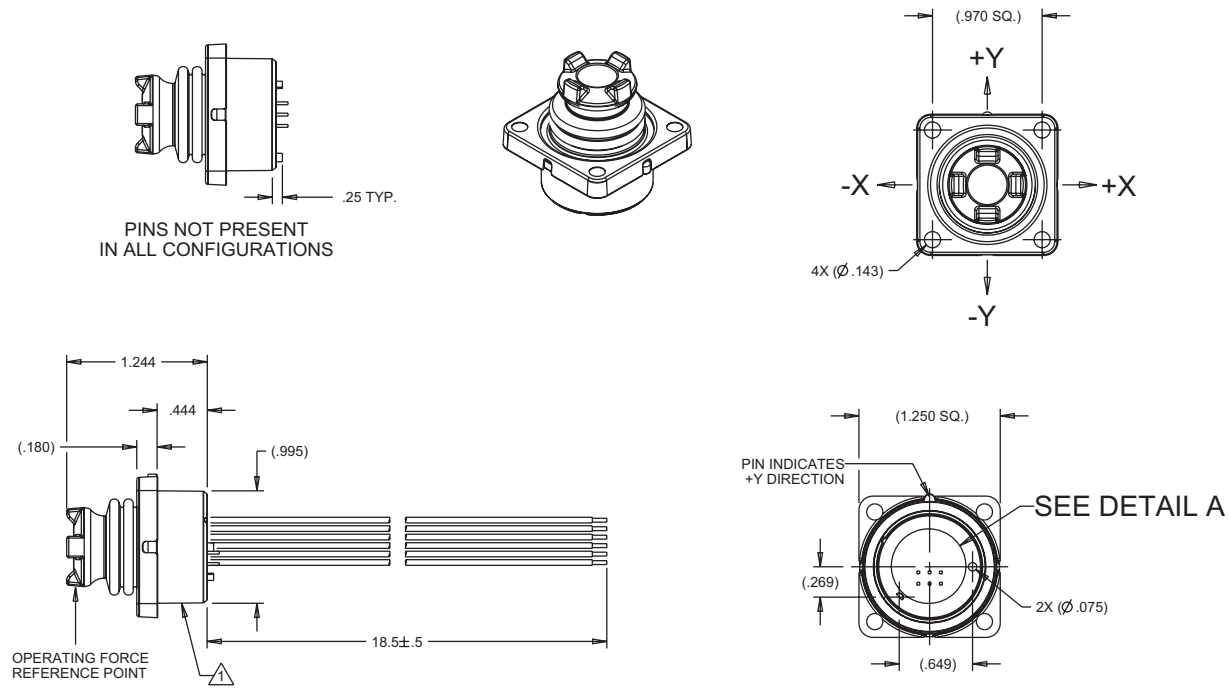
Single Axis (HTL2 version)

\*\*\*Feel defined by shading.

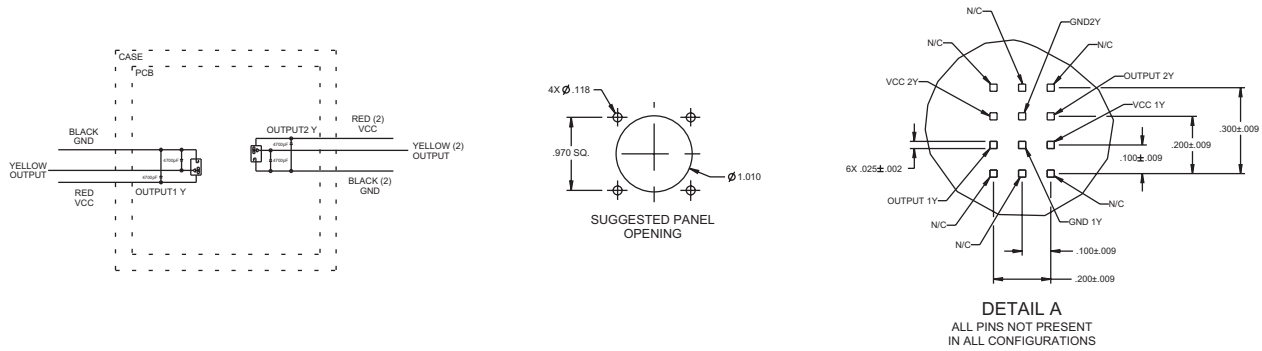
# LINEAR HALL EFFECT FINGER JOYSTICK

**HTL**  
HALL EFFECT  
JOYSTICK

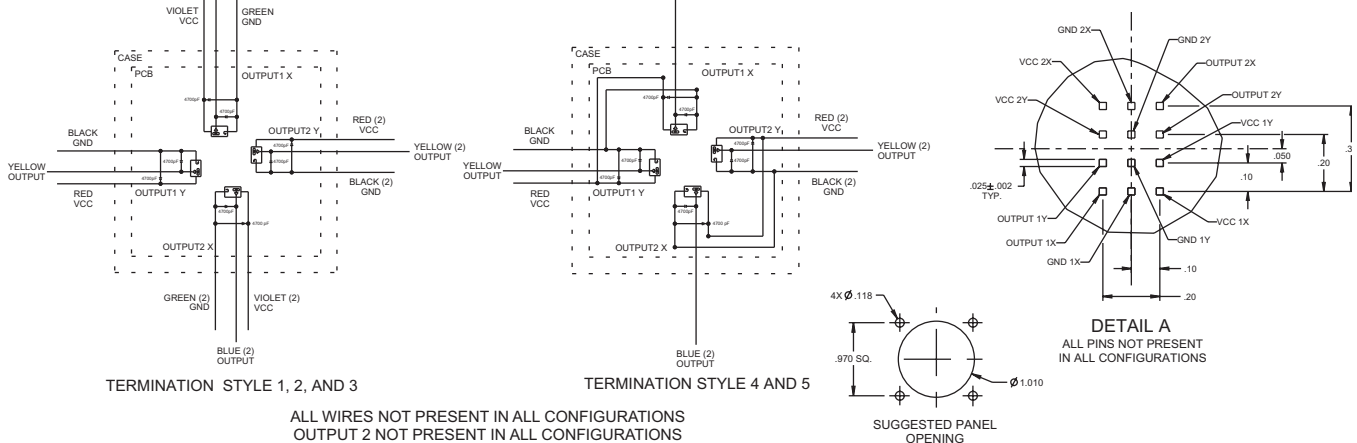
## 2 & 4-WAY LINEAR HALL EFFECT TOGGLE



### HTL2 FOOTPRINT



### HTL4 FOOTPRINT



HALL EFFECT

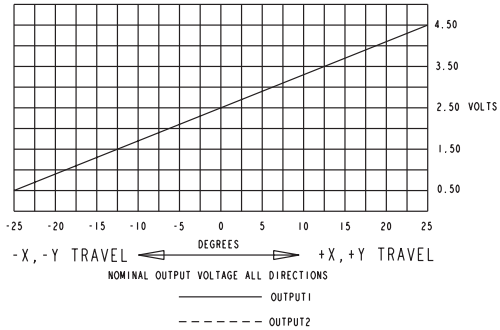
# LINEAR HALL EFFECT FINGER JOYSTICK

**HTL**  
HALL EFFECT  
JOYSTICK

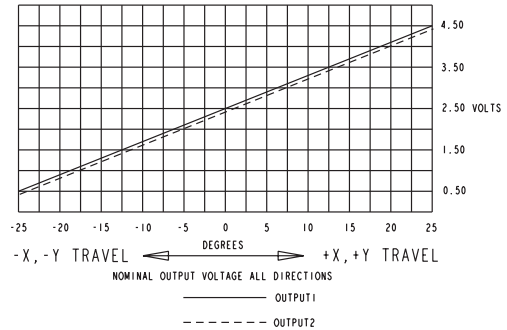
## 2 & 4-WAY LINEAR HALL EFFECT TOGGLE

### HTL4 OUTPUTS

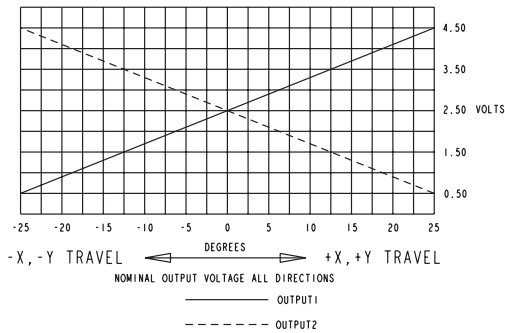
OPTION AA



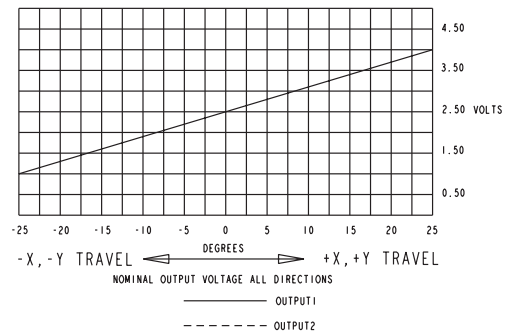
OPTION BB



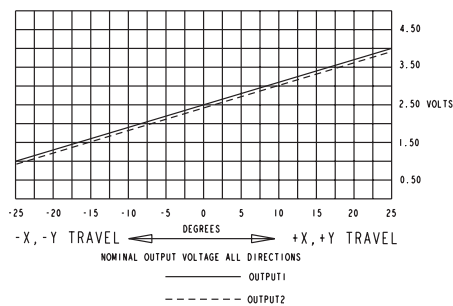
OPTION CC



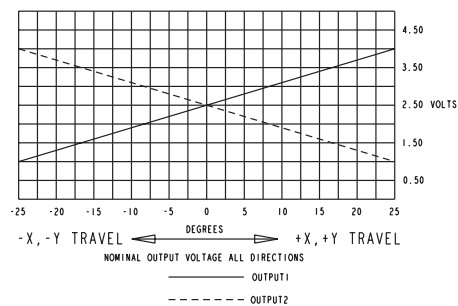
OPTION DD



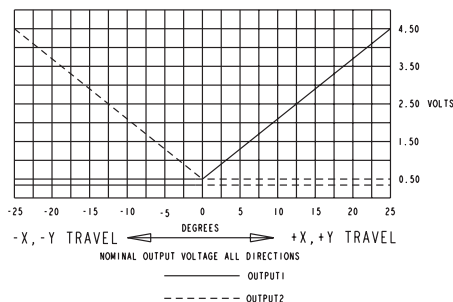
OPTION EE



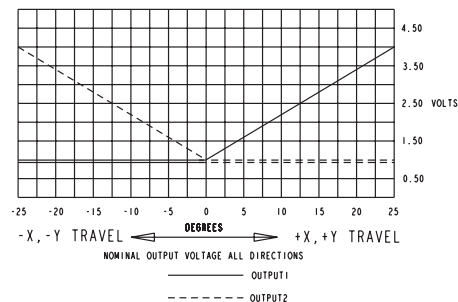
OPTION FF



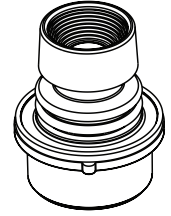
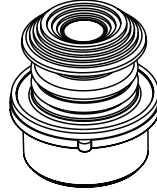
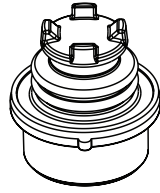
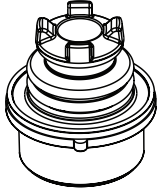
OPTION GG



OPTION HH



## BUTTON STYLES

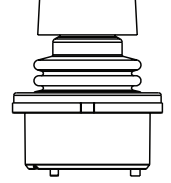
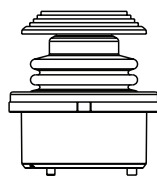
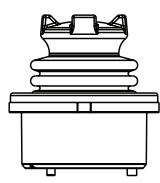
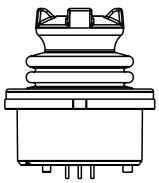


BUTTON STYLE 1  
(CASTLE)

BUTTON STYLE 2  
(EXTERNAL CASTLE BOOT)

BUTTON STYLE 3  
(SHORT DOUBLE STADIUM)

BUTTON STYLE 4  
(TALL CONCAVE STADIUM)



BUTTON STYLE 5  
(EXTERNAL BAT  
HANDLE BOOT)

BUTTON STYLE 6  
(EXTERNAL SMOOTH BOOT)

BUTTON STYLE 7  
(LONG CONCAVE Y AXIS BUTTON)

BUTTON STYLE 8  
(LOW PROFILE BUTTON)  
(AVAILABLE FOR HTL2 ONLY)

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А