

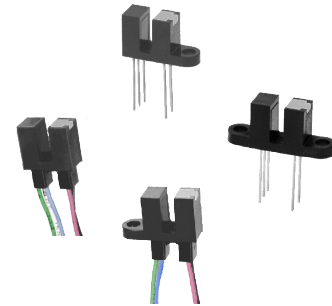
Photologic® Slotted Optical Switch

OPB460, OPB470, OPB480, OPB490 Series



Features:

- Choice of pins or wires mounting configuration
- Choice of aperture
- Choice of output configuration
- Choice of opaque or IR transmissive shell material
- Data rates to 250 kBaud
- Low power consumption



Description:

The **OPB460, OPB470, OPB480** and **OPB490** series of Photologic® photo integrated circuit switches provide optimum flexibility for the design engineer. Building from a standard housing with a 0.125" (3.180 mm) wide slot, a user can specify the type and polarity of TTL output, discrete shell material, aperture width and choice of mounting configurations. **OPB460** through **OPB473** have 0.425" (10.795 mm) PCBoard leads with 0.320" (8.1 mm) spacing. **OPB480** through **OPB493** have 24" (609 mm) 26 AWG wires (UL approved wires).

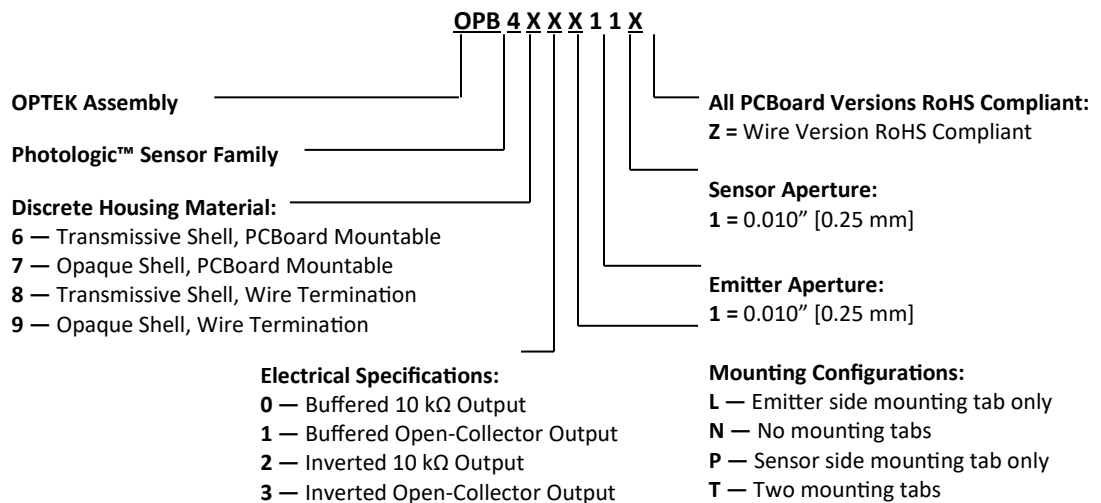
All devices in this series exhibit performance over supply voltages ranging from 4.5 V to 16.0 V, and may be specified as buffered or inverted with 10 kW Pull-up or Open Collector output. Devices are also TTI/LSTTL compatible and can drive up to 10 TTL loads.

Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

Applications:

- Mechanical switch replacement
- Speed indication (tachometer)
- Mechanical limit indication
- Edge sensing

Part Number Guide — OPB460, OPB470, OPB480, OPB490 Series



RoHS

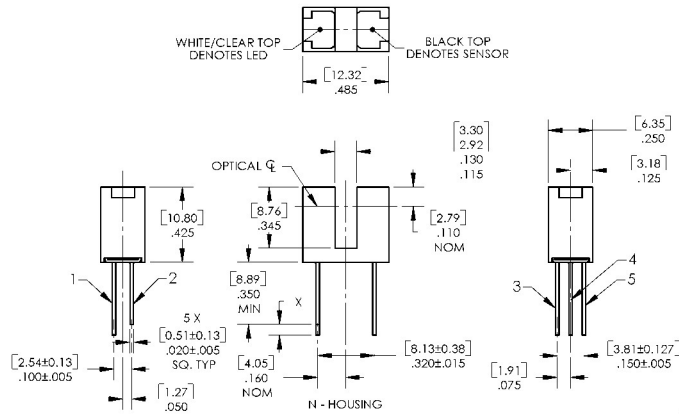
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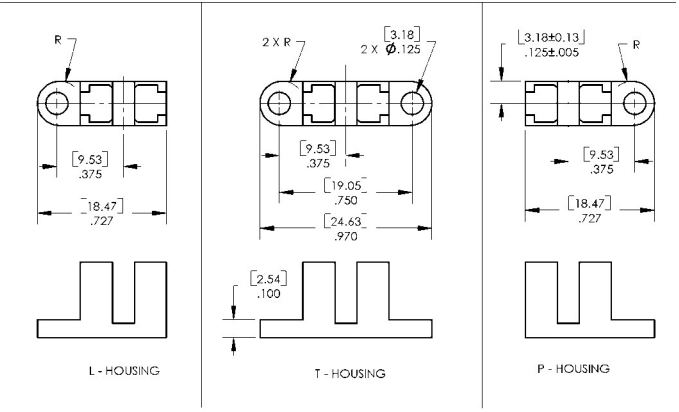
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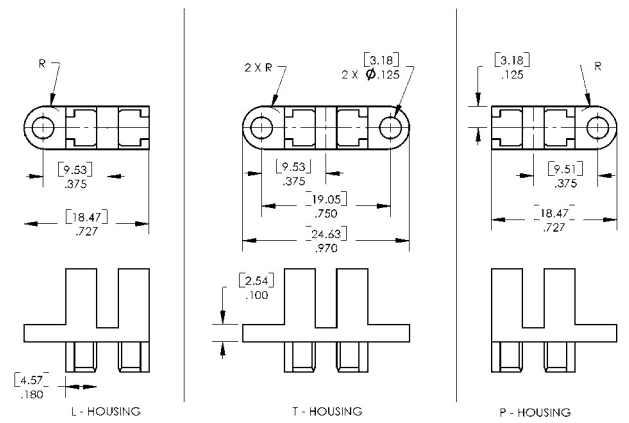
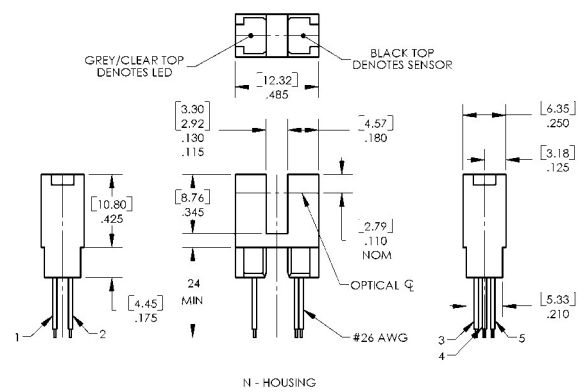
OPB460, OPB470, OPB480, OPB490 Series



Color-Pin	Description
Red-1	Anode
Black-2	Cathode
White-3	Vcc
Blue-4	Output
Green-5	Ground



TOLERANCE DIMENSIONS ARE: $\pm .25\text{mm}$ [$\pm .010$ "]



CONTAINS POLYSULFONE

To avoid stress cracking, we suggest using ND Industries' **Vibra-Tite** for thread-locking. **Vibra-Tite** evaporates fast without causing structural failure in OPTEK's molded plastics.

Applies to: OPB460, OPB470, OPB480, OPB490.

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Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage & Operating Temperature Range	-40° C to +85° C
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron] ⁽¹⁾	260°C
Input Infrared LED	
Supply Voltage, V_{CC} (not to exceed 3 seconds)	18 V
Diode Forward DC Current	40 mA
Diode Reverse DC Voltage	2 V
Input Diode Power Dissipation ⁽²⁾	75 mW
Output Photologic®	
Voltage at Output Lead (Open Collector Output)	25 V
Output Photologic® Power Dissipation ⁽³⁾	200 mW
Total Device Power Dissipation⁽⁴⁾	
	275 mW

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 1.67 mW/°C above 25° C (OPB460, OPB470) or derate linearly 1.82 mW/°C above 25° C (OPB480, OPB490).
- (3) Derate linearly 1.50 mW/°C above 25° C (OPB460, OPB470) or derate linearly 1.64 mW/°C above 25° C (OPB480, OPB490).
- (4) Derate linearly 3.17 mW/°C above 25° C (OPB460, OPB470) or derate linearly 3.45 mW/°C above 25° C (OPB480, OPB490).
- (5) The OPB460/OPB470 series are terminated with 0.020" square leads designed for printed circuit board mounting.
- (6) The OPB480/OPB490 series of switches are terminated with 24" (609.600 mm) of 7-strand 26 AWG, UL rated insulated wire on each terminal. Insulation colors and functions are: red (anode), black (cathode), white (V_{CC}), blue (output) and green (ground). Other wire lengths and/or colors in addition to customer selected connectors are available. Contact your local representative or call the factory.

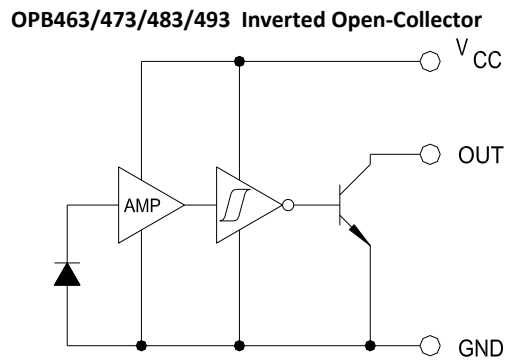
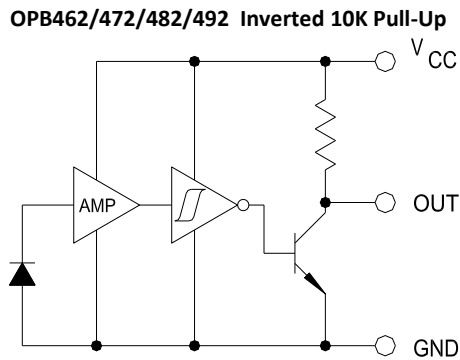
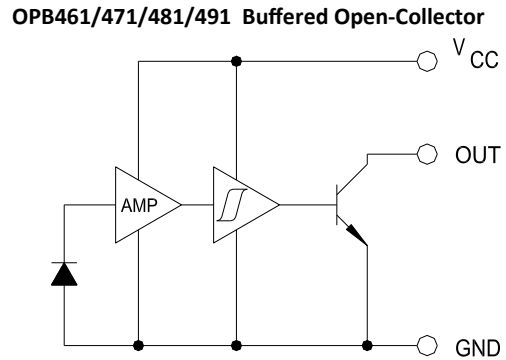
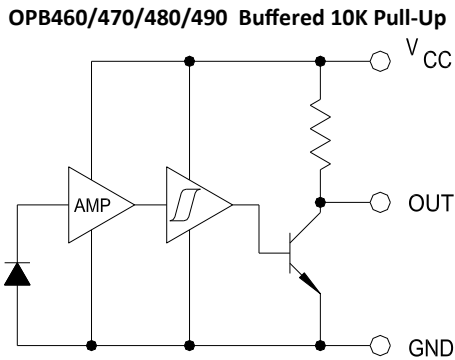
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Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V _F	Forward Voltage	-	-	1.7	V	I _F = 20 mA, T _A = 25° C
I _R	Reverse Current	-	-	100	μA	V _R = 2 V, T _A = 25° C
Output Photologic® Sensor						
V _{CC}	Operating DC Supply Voltage	4.5	-	16	V	
I _{CCL}	Low Level Supply Current: Buffered with 10k pull-up ⁽¹⁾ Buffered Open-Collector Output	-	-	7.5	mA	V _{CC} = 16 V, I _F = 0 mA ⁽¹⁾
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7.5	mA	V _{CC} = 16 V, I _F = 12 mA
I _{CCH}	High Level Supply Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	7.5	mA	V _{CC} = 16 V, I _F = 12 mA
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7.5	mA	V _{CC} = 16 V, I _F = 0 mA ⁽¹⁾
V _{OL}	Low Level Output Voltage: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	0.4	V	V _{CC} = 4.5 V, I _{OL} = 16 mA, I _F = 0 mA
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	0.4	V	V _{CC} = 4.5 V, I _F = 12 mA ⁽¹⁾
V _{OH}	High Level Output Voltage: Buffered with 10k pull-up	V _{CC} -1.5	-	-	V	V _{CC} = 4.5 V to 16 V, No Load, I _F = 12 mA
	Inverted with 10k pull-up: Inverted Open-Collector Output ⁽¹⁾	V _{CC} -1.5	-	-	V	V _{CC} = 4.5 V to 16 V, No Load, I _F = 0 mA
I _{OH}	High Level Output Current: Buffered Open-Collector Output	-	-	14	μA	V _{CC} = 16 V, I _F = 12 mA, V _{OH} = 25 V, T _A = 25° C
	Inverted with 10k pull-up: Inverted Open-Collector Output ⁽¹⁾	-	-	14	μA	V _{CC} = 16 V, I _F = 0 mA, V _{OH} = 25 V, T _A = 25° C
I _{F(+)}	LED Positive-Going Threshold Current	-	-	10	mA	V _{CC} = 5 V, T _A = 25° C
I _{F(+)} /I _{F(-)}	Hysteresis	-	1.4	-	-	V _{CC} = 5 V
t _r , t _f	Rise Time, Fall Time	-	50	-	ns	V _{CC} = 5 V, T _A = 25° C, I _F = 0 or 12 mA
t _{PLH} , t _{PHL}	Propagation Delay	-	3	-	μs	R _L = 300 Ω to 5 V, C _L = 50 pF

Notes:

- (1) Normal application would be with light source blocked, simulated by I_F = 0 mA.
- (2) All parameters tested using pulse technique.

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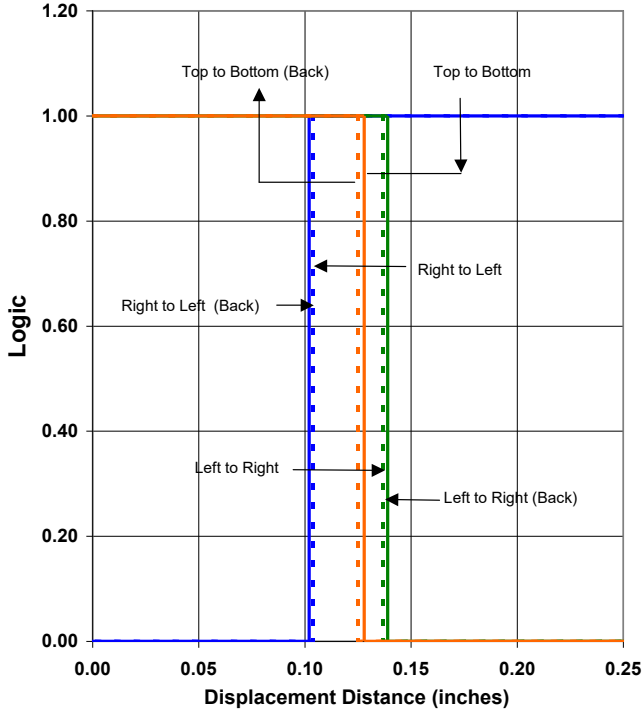
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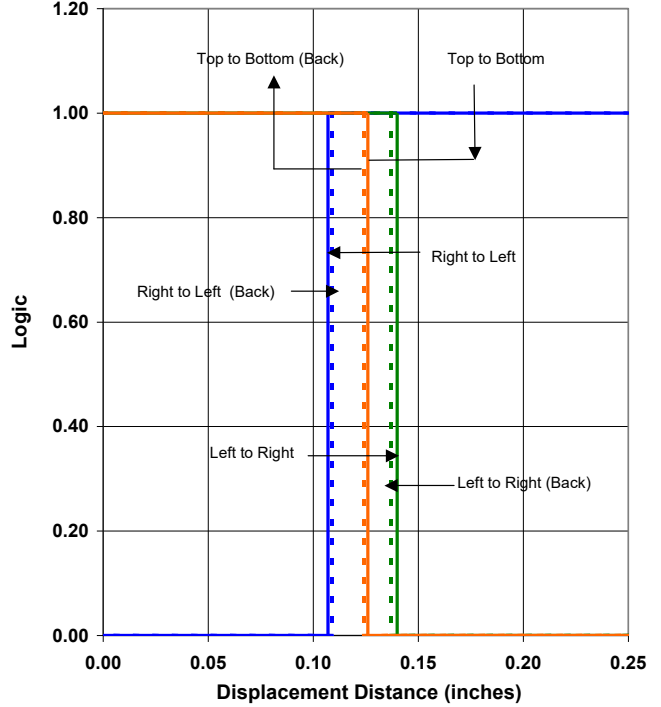
OPB460, OPB470, OPB480, OPB490 Series



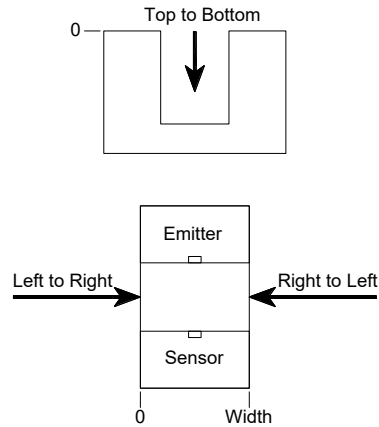
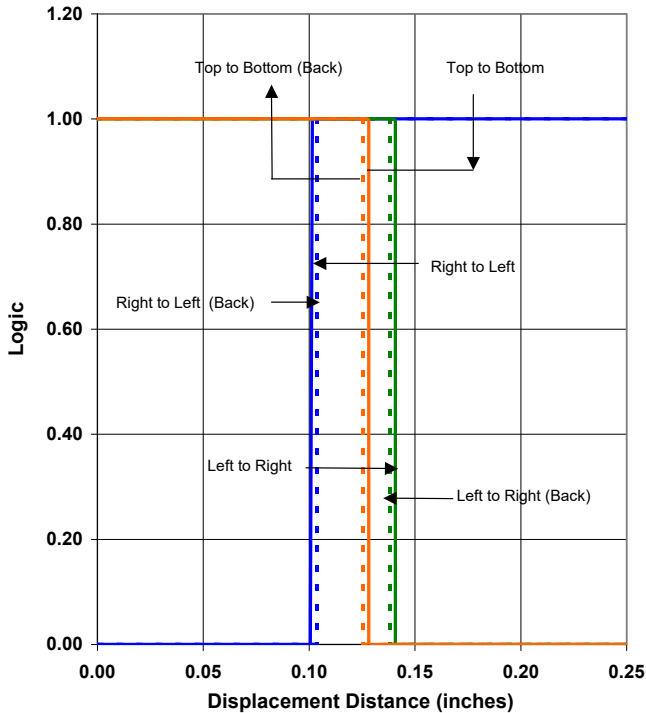
OPB480T55 - Flag Next to Emitter



OPB480T55 - Flag Next to Sensor



OPB480T55 - Flag in Middle of Slot



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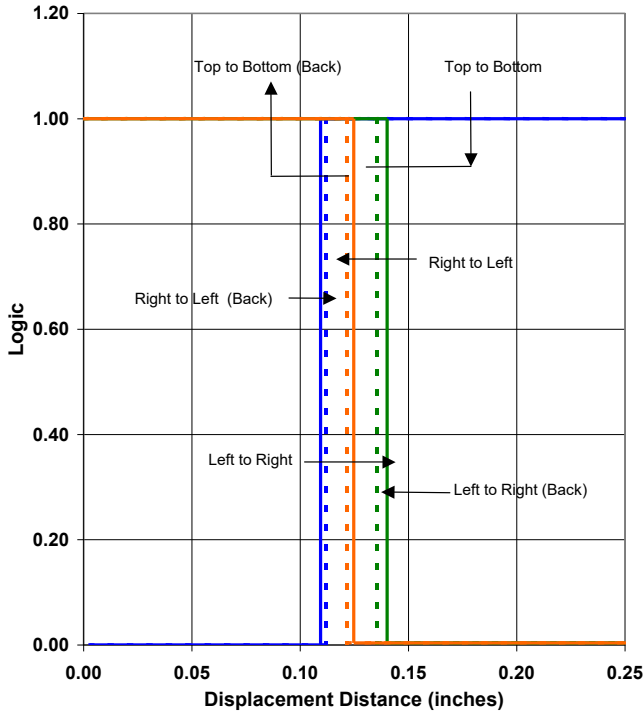
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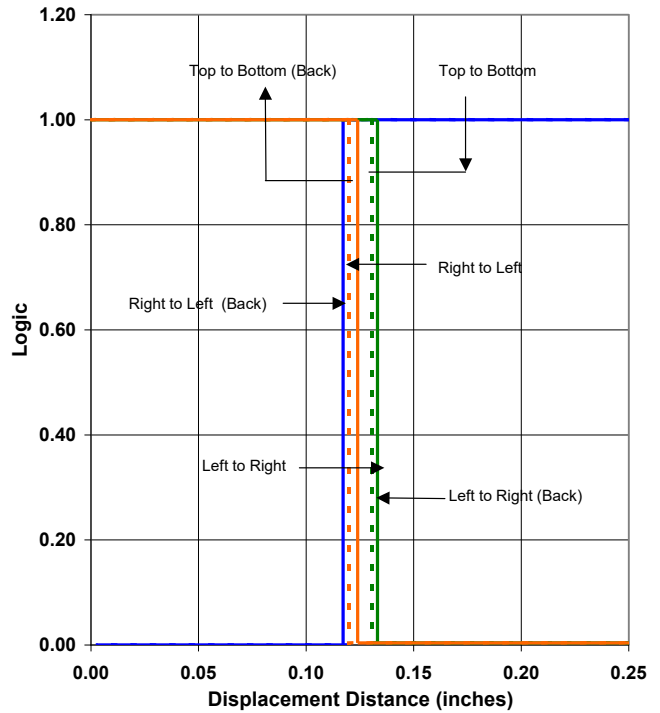
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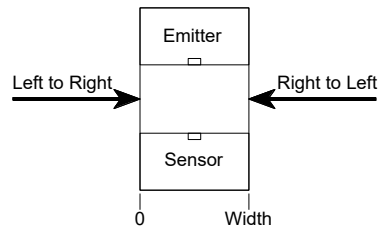
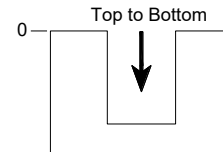
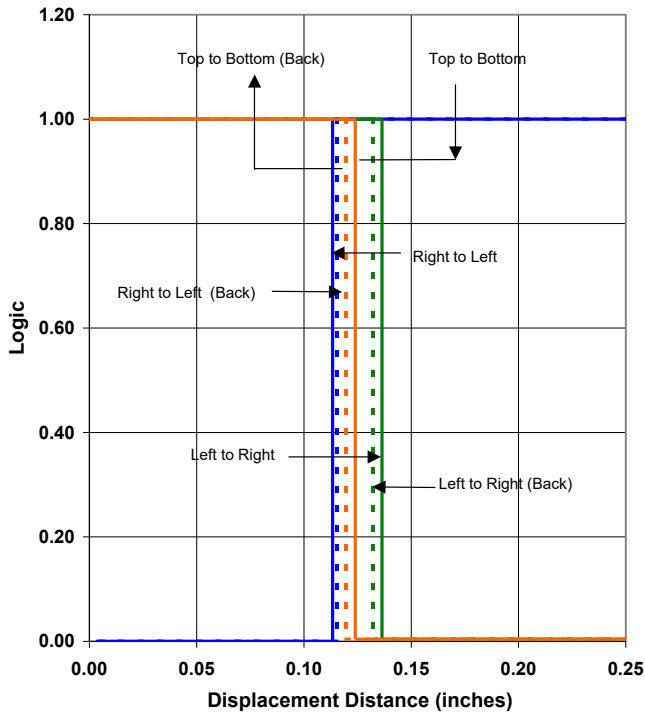
OPB481N51 - Flag Next to Emitter



OPB481N51 - Flag Next to Sensor



OPB481N51 - Flag in Middle of Slot



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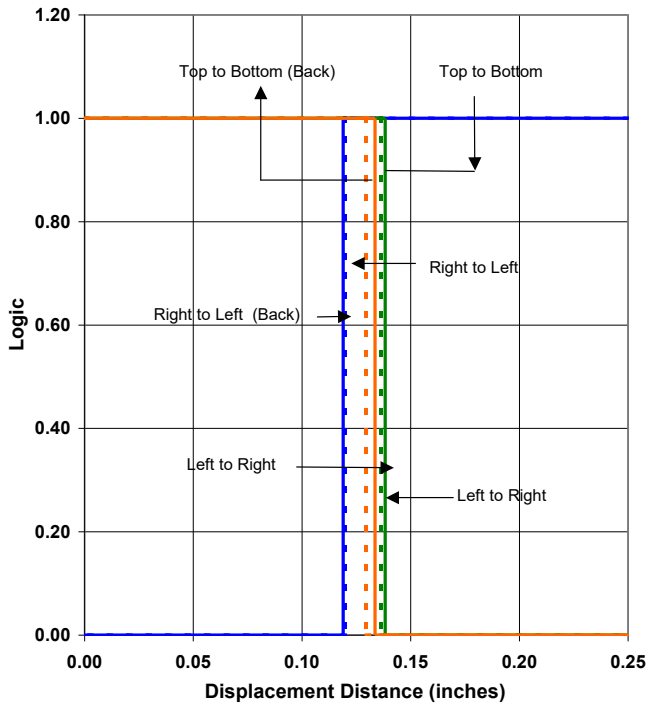
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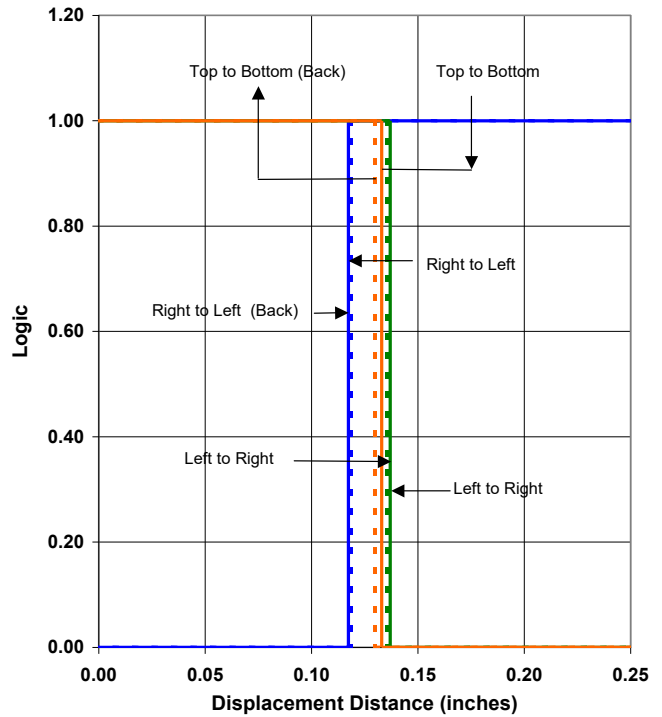
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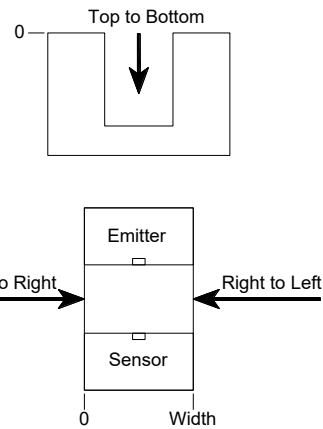
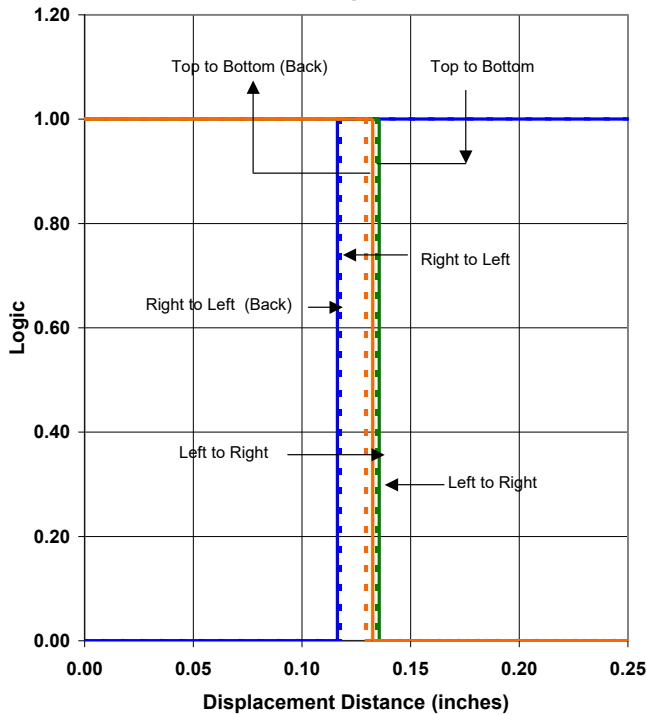
OPB460N11 - Flag Next to Emitter



OPB460N11 - Flag Next to Sensor



OPB460N11 - Flag in Middle of Slot



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