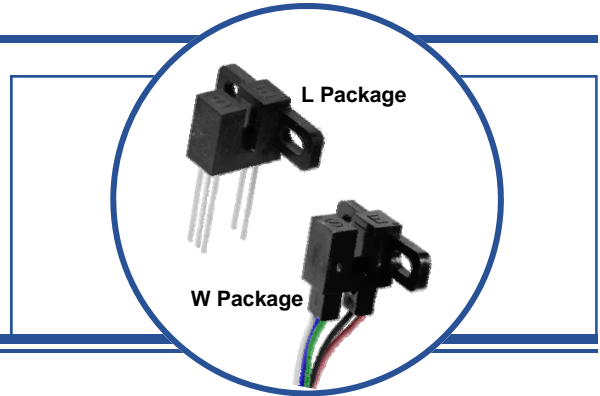


Photologic® Slotted Optical Switch OPB930 and OPB940 (L and W Series)



Features:

- Choice of aperture size
- Choice of output configurations
- Choice of opaque or IR transmissive shell
- Choice of pins (L) or wires (W)
- 0.125" (3.18 mm) slot width
- 0.320" (8.128 mm) lead spacing for PCBoard (side mounting)
- Data rates to 250 kBaud



Description:

The **OPB930** and **OPB940** series of Photologic® photo integrated circuit switches provide optimum flexibility for the design engineer. Building from a standard housing with a 0.125" (3.18 mm) wide slot, a user can specify the type and polarity of TTL output, discrete shell material, aperture width and either 0.350" (8.9 mm) long pins (**L Series**) or 24" (610 mm) AWG, UL listed wire leads (**W Series**).

All housings are made from an opaque grade of injection-molded plastic that minimizes the assembly's sensitivity to both visible and near-infrared ambient radiation. Discrete shells (exposed on the parallel faces inside the device throat) are either IR transmissive plastic (for applications where aperture contamination may occur) or opaque plastic (for maximum protection against ambient light).

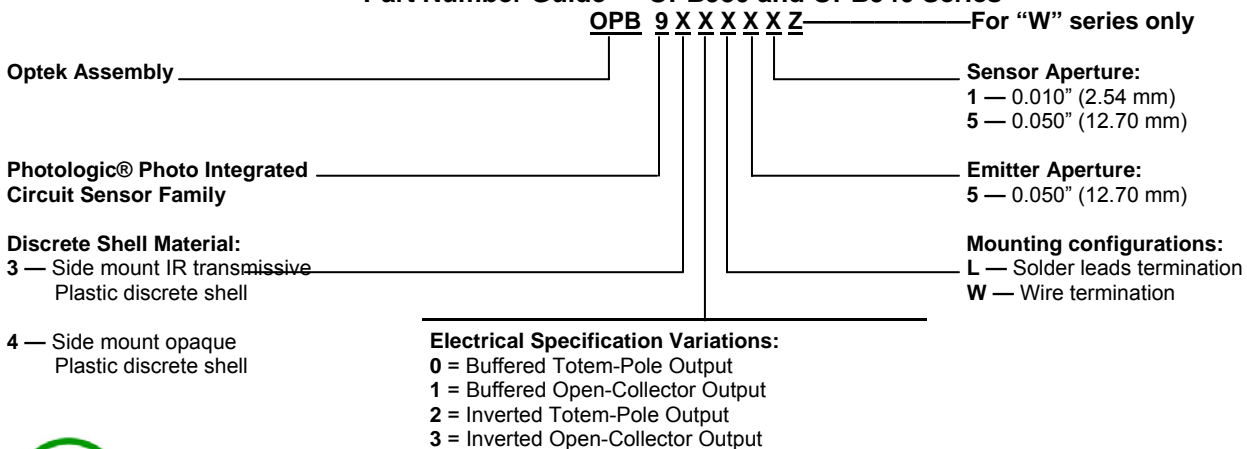
Electrical output can be specified as either TTL Totem Pole or TTL Open Collector, either of which can be supplied with buffer or inverter output polarity. All devices have the added stability of a built-in hysteresis amplifier.

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

Part Number Guide — OPB930 and OPB940 Series



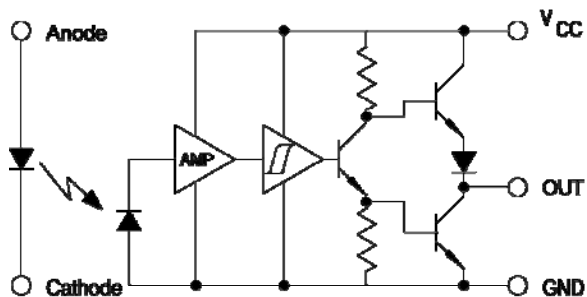
RoHS

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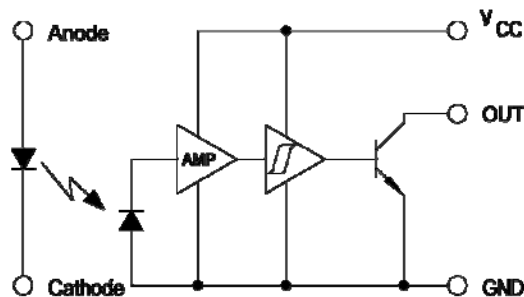
Photologic® Slotted Optical Switch OPB930 and OPB940 (L and W Series)



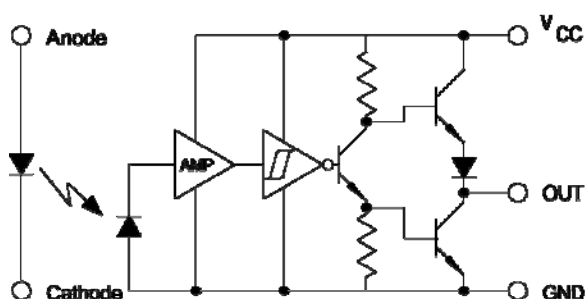
OPB930, OPB940 Buffered Totem-Pole



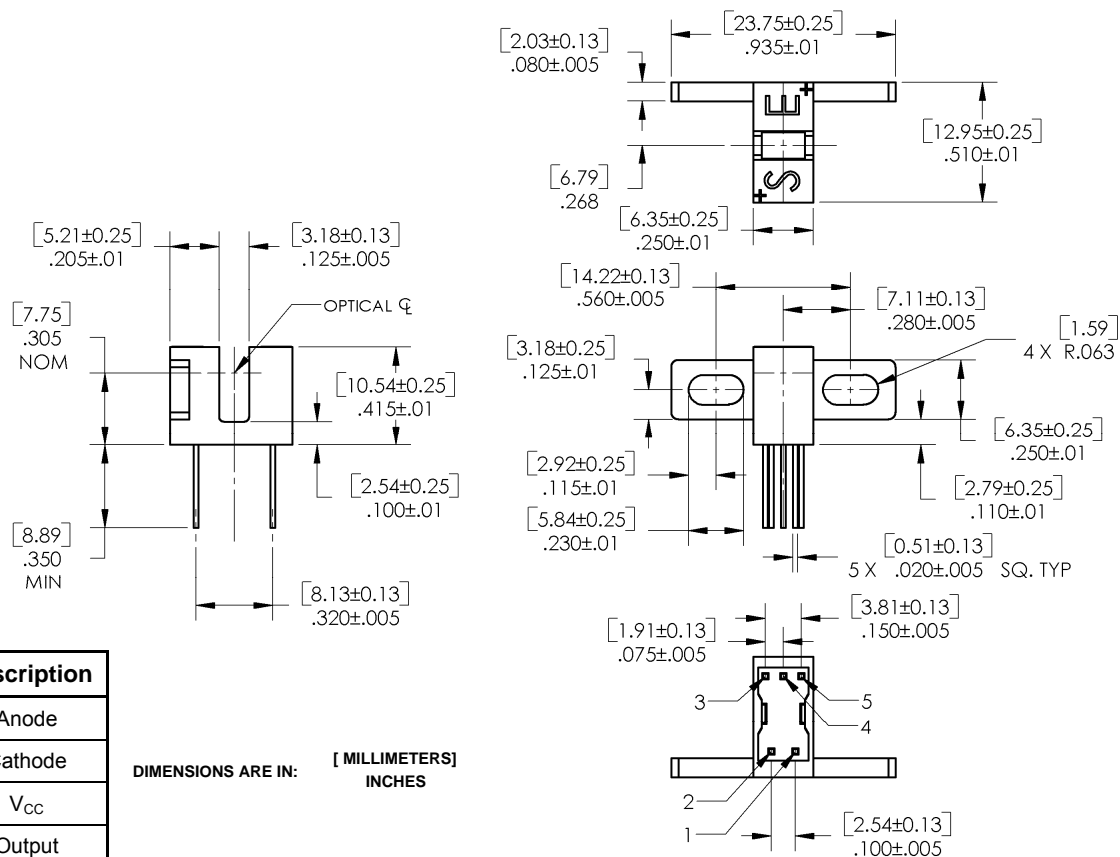
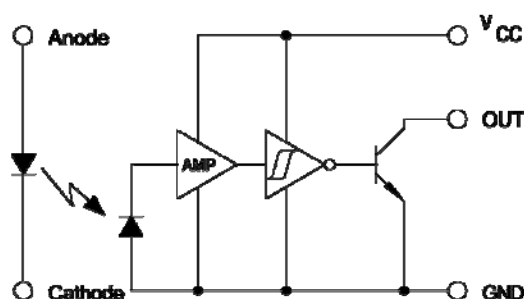
OPB931, OPB941 Buffered Open-Collector



OPB932, OPB942 Inverted Totem-Pole



OPB933 & OPB943 Inverted Open-Collector



Color- Pin #	Description
Red—1	Anode
Black—2	Cathode
White—3	V _{CC}
Blue—4	Output
Green—5	Ground

DIMENSIONS ARE IN: [MILLIMETERS] INCHES

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Photologic® Slotted Optical Switch OPB930 and OPB940 (L and W Series)



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

Supply Voltage, V_{CC} (not to exceed 3 seconds)	10 V
Operating Temperature Range	-40°C to $+70^\circ\text{C}$
Storage Temperature Range	-40°C to $+85^\circ\text{C}$
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron] ⁽¹⁾	260°C

Input Infrared LED

Input Diode Power Dissipation ⁽²⁾	100 mW
Output Photologic® Power Dissipation ⁽³⁾	200 mW
Total Device Power Dissipation ⁽⁴⁾	300 mW

Output Photologic®

Voltage at Output Lead (Open Collector Output)	35 V
Diode Forward DC Current	40 mA
Diode Reverse DC Voltage	2 V

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 2.22 mW/ $^\circ\text{C}$ above 25° .
- (3) Derate linearly 4.44 mW/ $^\circ\text{C}$ above 25° .
- (4) Derate linearly 6.66 mW/ $^\circ\text{C}$ above 25° .
- (5) OPB930L/OPB940L series devices are terminated with 0.020" square leads designed for PCBoard mounting.
- (6) OPB930W/OPB940W series devices are terminated with 7 strands of 24" 26 AWG UL1429 insulated wire on each terminal. Insulation functions and colors are: anode (red), IRED cathode (black), V_{CC} (white), output (blue), ground (green). For other wire lengths and/or colors or customer-selected connectors, please contact your local representative or call the factory.
- (7) Methanol and isopropanol are recommended as cleaning agents. Plastic housing is soluble in chlorinated hydrocarbons and ketones.
- (8) All parameters tested using pulse technique.

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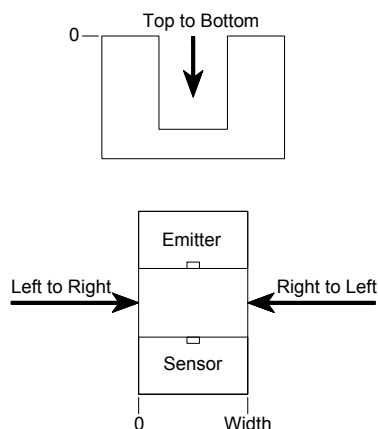
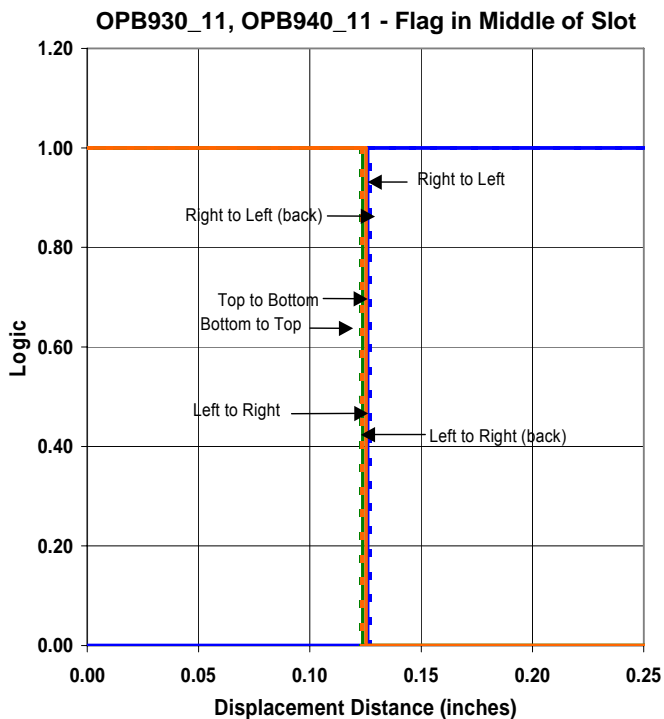
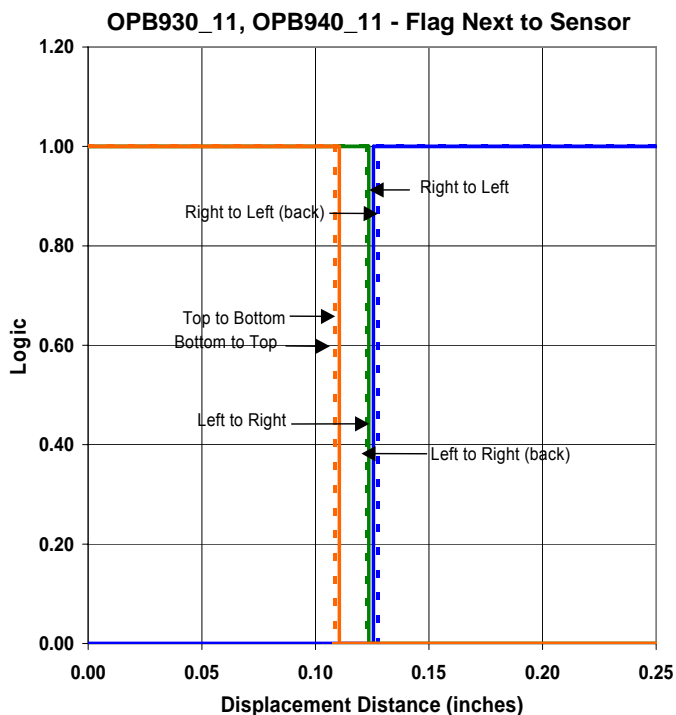
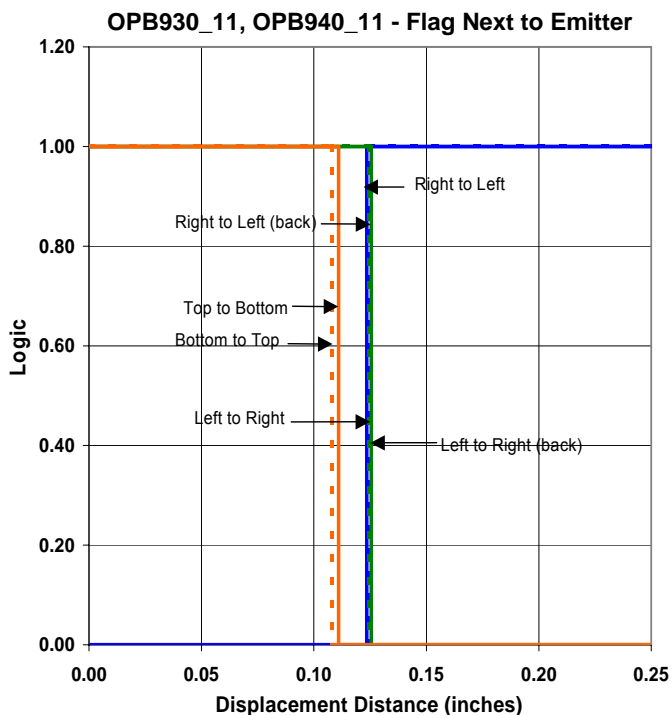
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage	-	-	1.7	V	$I_F = 20\text{ mA}$, $T_A = 25^\circ\text{C}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2.0\text{ V}$, $T_A = 25^\circ\text{C}$
Output Photologic® Sensor						
V_{CC}	Operating D.C. Supply Voltage	4.75	-	5.25	V	-
I_{CCL}	Low Level Supply Current: Buffered Totem-Pole Output	-	-	15	mA	$V_{CC} = 5.25$, $I_F = 0\text{ mA}^{(5)}$
	Inverted Open-Collector Output	-	-	15	mA	$V_{CC} = 5.25$, $I_F = 15\text{ mA}$
I_{CCH}	High Level Output Current: Buffered Open-Collector Output	-	-	15	mA	$V_{CC} = 5.25$, $I_F = 15\text{ mA}$
	Inverted Open-Collector Output	-	-	15	mA	$V_{CC} = 5.25$, $I_F = 0\text{ mA}^{(5)}$
V_{OL}	High Level Output Current: Buffered Open-Collector Output	-	-	0.4	V	$V_{CC} = 4.75$, $I_{OL} = 12.8\text{ mA}$, $I_F = 0\text{ mA}$
	Inverted Open-Collector Output	-	-	0.4	V	$V_{CC} = 4.75$, $I_{OL} = 12.8\text{ mA}$, $I_F = 15\text{ mA}$
V_{OH}	High Level Output Current: Buffered Open-Collector Output	2.4	-	-	V	$V_{CC} = 4.75$, $I_{OH} = -800\text{ }\mu\text{A}$, $I_F = 15\text{ mA}$
	Inverted Open-Collector Output	2.4	-	-	V	$V_{CC} = 4.75$, $I_{OH} = -800\text{ }\mu\text{A}$, $I_F = 0\text{ mA}^{(5)}$
I_{OH}	High Level Output Current: Buffered Open-Collector Output	-	-	100	μA	$V_{CC} = 4.75$, $V_{OH} = 30\text{ V}$, $I_F = 15\text{ mA}$, $T_A = 25^\circ\text{C}$
	Inverted Open-Collector Output	-	-	100	μA	$V_{CC} = 4.75$, $V_{OH} = 30\text{ V}$, $I_F = 0\text{ mA}$, $T_A = 25^\circ\text{C}$
$I_F(+)$	LED Positive-Going Threshold Current	-	-	15	mA	$V_{CC} = 5.0\text{ V}$, $T_A = 25^\circ\text{C}$
$I_F(+)$, $I_F(-)$	Hysteresis	-	2.0	-	V	$V_{CC} = 5.0\text{ V}$
I_{OS}	Short Circuit Output Current: Buffered Totem-Pole Output	-15	-	-60	mA	$V_{CC} = 5.25\text{ V}$, $I_F = 15\text{ mA}$, Output = GND
	Inverted Totem-Pole Output	-15	-	-60	mA	$V_{CC} = 5.25\text{ V}$, $I_F = 0\text{ mA}$, Output = GND
t_r, t_f	Output Rise Time, Output Fall Time	-	70	-	ns	$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$, $I_F = 0$ or 15 mA
T_{PLH}	Propagation Delay Low-High	-	5.0	-	μs	$R_L = 8\text{ TTL loads (Totem Pole)}$
T_{PHL}	Propagation Delay High-Low	-	5.0	-	μs	$R_L = 360\text{ }\Omega$ (Open-Collector)

Notes:

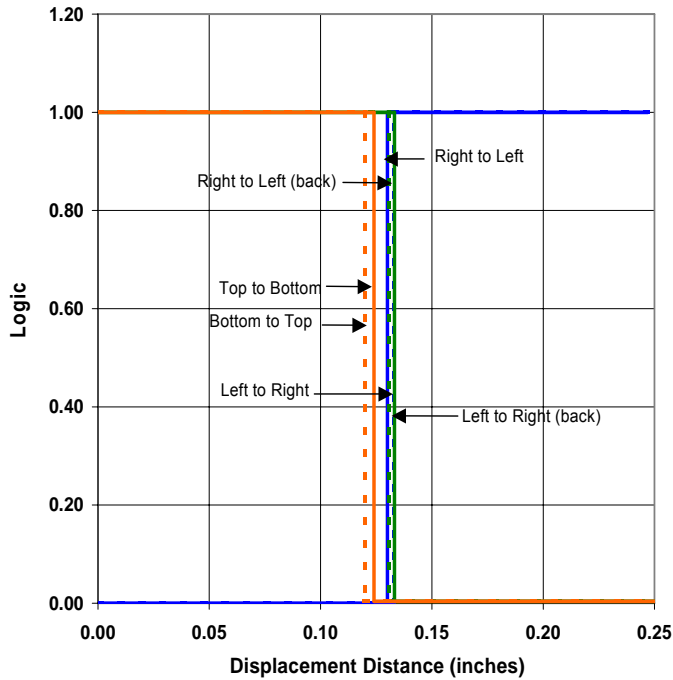
- Terminated with 24" (609.600 mm) of 7-strand 26 AWG, UL 1429 insulated wire on each terminal. Insulation colors and functions are: Anode (red), cathode (black), V_{CC} (white), output (blue), and ground (green). Custom wire lengths and/or colors are available. Contact your local representative or OPTEK for details.
- Normal application would be with light source blocked, simulated by $I_F = 0\text{ mA}$.
- All parameters are tested using pulse techniques.

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

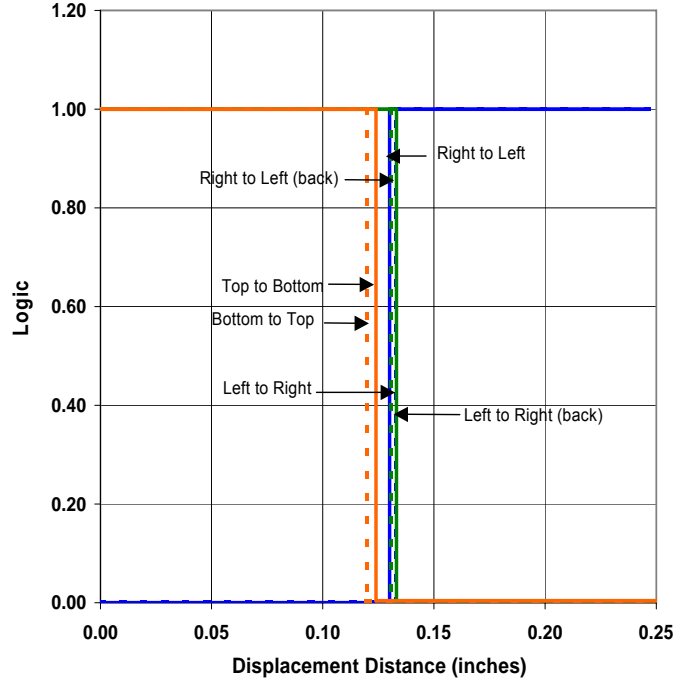


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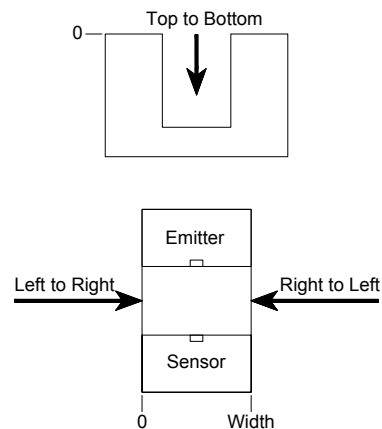
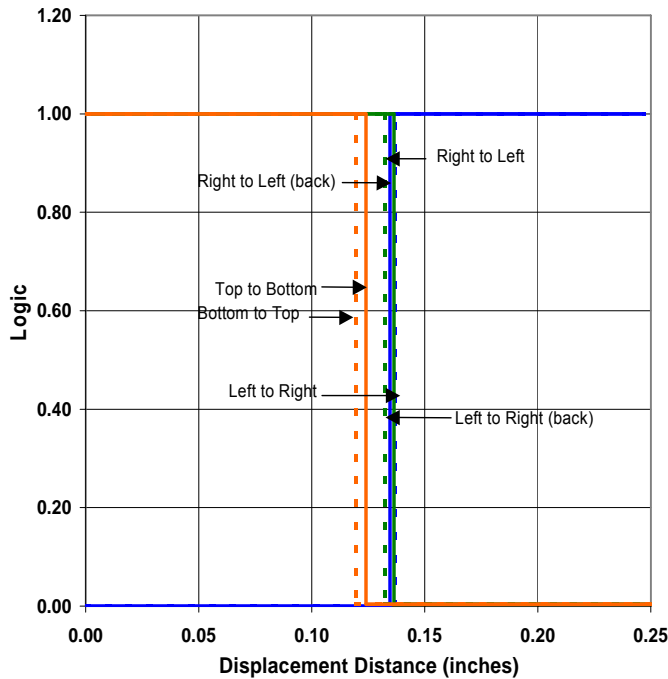
OPB930_51, OPB940_51 - Flag Next to Emitter



OPB930_51, OPB940_51 - Flag Next to Sensor

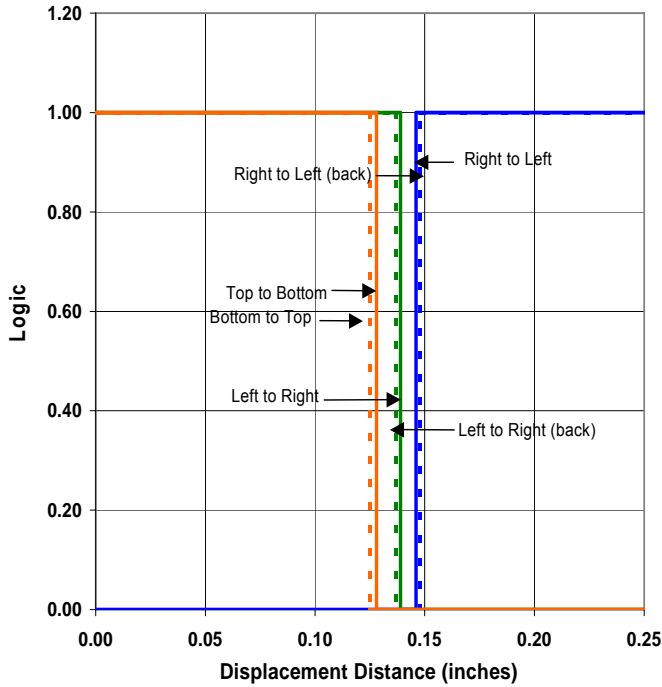


OPB930_51, OPB940_51 - Flag in Middle of Slot

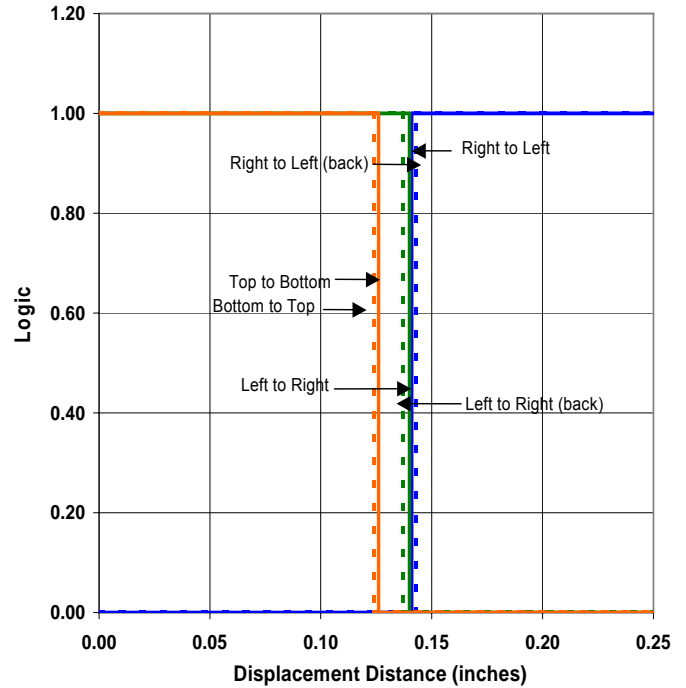


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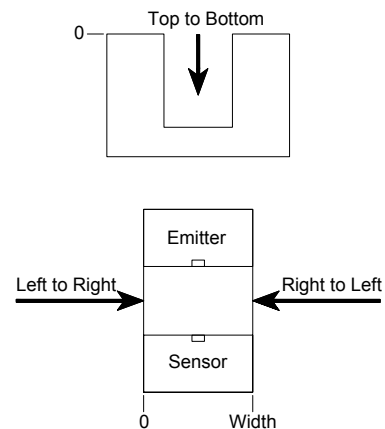
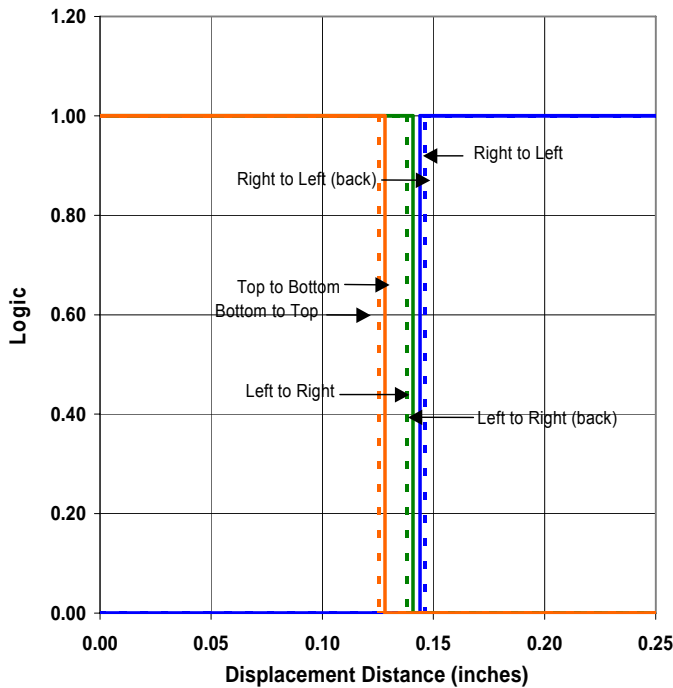
OPB930_55, OPB940_55 - Flag Next to Emitter



OPB930_55, OPB940_55 - Flag Next to Sensor



OPB930_55, OPB940_55 - Flag in Middle of Slot



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