

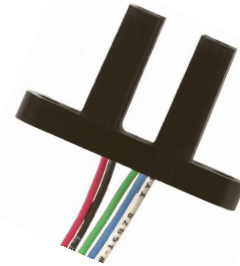
Photologic® Slotted Optical Switch



OPB916 Series

Features:

- Low power consumption
- Data rates to 250 kBaud
- Choice of two logic states and two electrical outputs
- 24" (610 mm) minimum 26 AWG UL listed wires
- Slot width 0.20" (5.08 mm)
- Slot Depth 0.635" (16.13 mm)



Description:

The **OPB916** series of Photologic® photo integrated circuit switches provide optimum flexibility. Each switch consists of an infrared Light Emitting Diode (LED) and a Photologic® photo integrated circuit, mounted in an opaque housing with clear windows for dust protection. The deep slot allows for a longer reach of the optical path from the 0.650" (16.5 mm) mounting plane. Internal apertures are 0.010" x .060" (.25 mm x 1.52 mm) for the Photologic's "S" side and 0.05" x 0.06" (1.27 mm x 1.52 mm) for the LED "E" side.

Devices in this series exhibit stable performance over supply voltages ranging from 4.5 V to 16.0 V, and may be specified as buffered or inverted with an internal 10 k Ω pull-up resistor or open collector output. Devices are TTL/LSTTL compatible and can drive up to 10 TTL loads.

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

Applications:

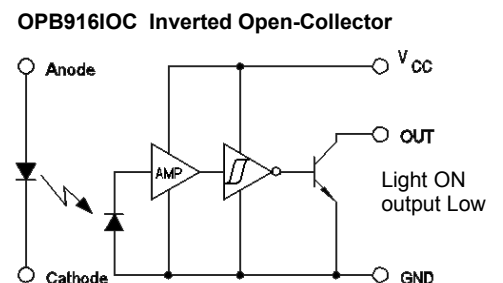
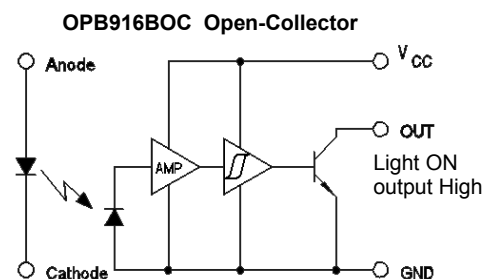
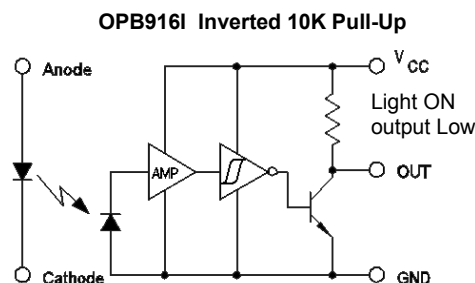
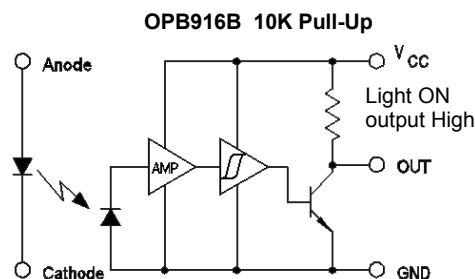
- Mechanical switch replacement
- Speed indication (tachometer)
- Mechanical limit indication
- Edge sensing

Ordering Information					
Part Number	LED Peak Wavelength	Sensor Photologic®	Slot Width / Depth	Aperture Emitter / Sensor	Lead Length / Wire
OPB916BZ	880 nm	10K Pull-Up	0.200" / 0.635"	0.05" / 0.01"	24" / 26 AWG Wire
OPB916IZ		Inv-10K Pull-Up			
OPB916BOCZ		Open-Collector			

Color	Description
Red	Anode
Black	Cathode
White	Vcc
Blue	Output
Green	Ground



RoHS



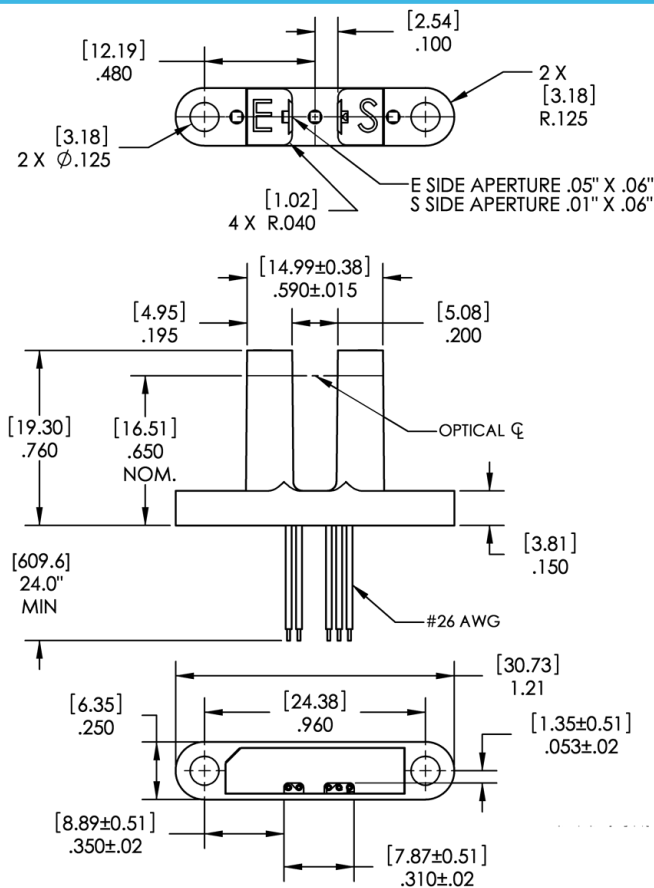
General Note

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OPTEK Technology, Inc.
1645 Wallace Drive, Carrollton, TX 75006 | Ph: +1 972 323 2200
www.optekinc.com | www.ttelectronics.com

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Color-Pin #	Description
Red	Anode
Black	Cathode
Green	Ground
Blue	Output
White	V _{CC}

Absolute Maximum Ratings (T _A = 25° C unless otherwise noted)	
Storage & Operating Temperature Range	-40°C to +80°C
Input Infrared LED	
Diode Reverse DC Voltage	2 V
Input Diode Power Dissipation ⁽²⁾	75 mW
Forward DC Current	50 mA
Output Photologic®	
Supply Voltage, V _{CC} (not to exceed 3 seconds)	18 V
Voltage at Output Lead (Open Collector Output)	30 V
Output Photologic® Power Dissipation ⁽³⁾	90 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°.
 - (3) Derate linearly 2.67 mW/°C above 25°.
 - (4) Normal application would be with light source blocked, simulated by I_F = 0 mA.
 - (5) All parameters tested using pulse technique.

Electrical Characteristics (T _A = 25° C unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V _F	Forward Voltage	-	1.3	1.8	V	I _F = 20 mA
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 ⁽¹⁾	-	-	7	mA	V _{CC} = 16 V, I _F = 0 mA, No Output Load
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7	mA	V _{CC} = 16 V, I _F = 10 mA, No Output Load
I _{CCH}	High Level Supply Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	6	mA	V _{CC} = 16 V, I _F = 10 mA, No Output Load
	Inverted with 10k pull-up: Inverted Open-Collector Output ⁽¹⁾	-	-	6	mA	V _{CC} = 16 V, I _F = 0 mA, No Output Load
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 _{OL} = 16 mA, I _F = 10 mA
V _{OH}	High Level Output Voltage: Buffered with 10k pull-up	V _{CC} - 2.0	-	-	V	V _{CC} = 4.5 V to 16 V, I _F = 10 mA, I _{OH} = 100 μA
	Inverted with 10k pull-up:	V _{CC} - 2.0	-	-	V	V _{CC} = 4.5 V to 16 V, I _F = 0 mA,
I _{OH}	High Level Output Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	1.0	10	μA	V _{CC} = 4.5 V, I _F = 10 mA, V _{OH} = 30 V
	Inverted with 10k pull-up: Inverted Open-Collector Output ⁽¹⁾	-	1.0	10	μA	V _{CC} = 4.5 V, I _F = 0 mA, V _{OH} = 30 V

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Output Photologic® Sensor						
$I_{F(+)}$	LED Positive-Going Threshold Current Buffered with 10k pull-up Inverted with 10k pull-up	-	5	10	mA	$V_{CC} = 5 \text{ V}$, No Output Load
	Buffered Open-Collector Output Inverted Open-Collector Output ⁽¹⁾	-	5	10	mA	$V_{CC} = 4.5 \text{ V}$, $I_{OL} = 16 \text{ mA}$
$I_{F(+)} / I_{F(-)}$	Hysteresis	-	1.5	-	-	$V_{CC} = 5 \text{ V}$
t_r, t_f	Rise Time, Fall Time	-	50	-	ns	$V_{CC} = 5 \text{ V}$, $I_F = 0$ or 10 mA , $R_L = 300 \Omega$ to 5 V , $C_L = 50 \text{ pF}$
t_{PLH}, t_{PHL}	Propagation Delay	-	3	-	μs	

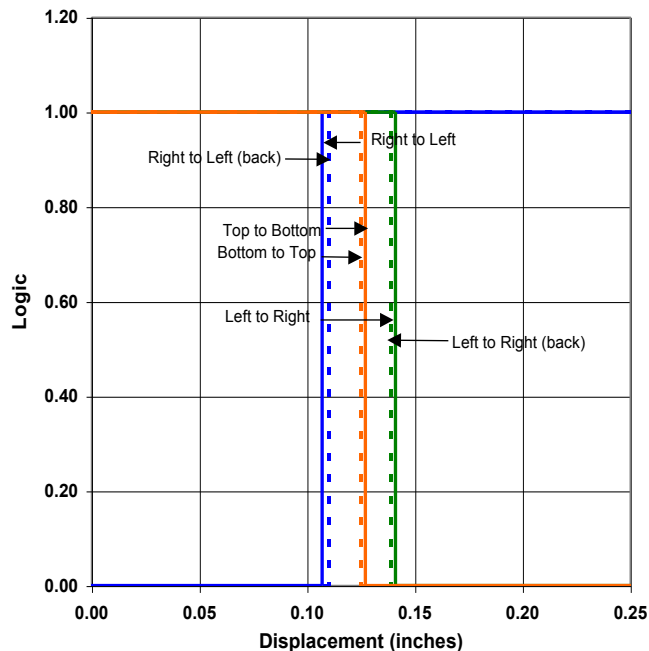
Notes:

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

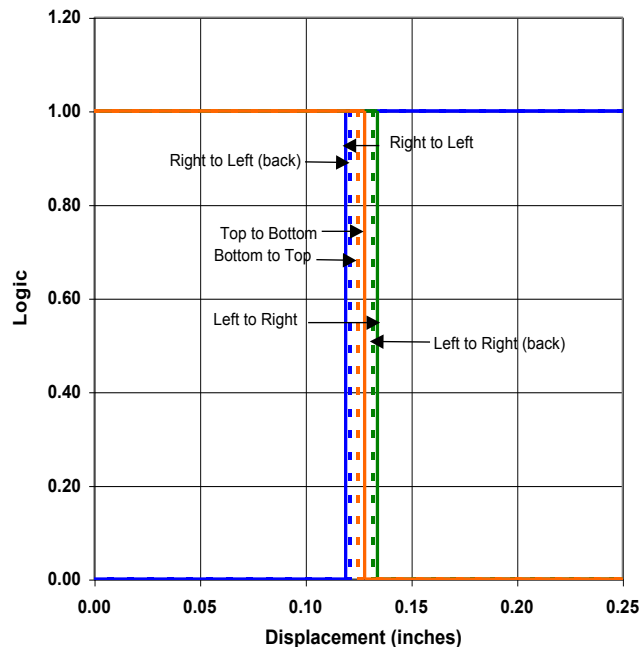
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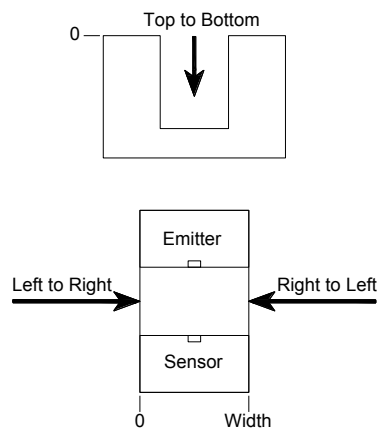
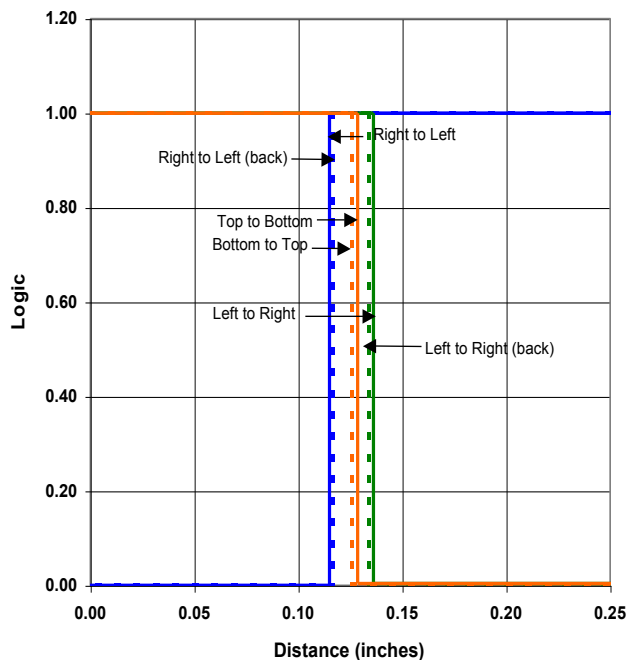
OPB916B - Flag Next to Emitter



OPB916B - Flag Next to Sensor



OPB916B - Flag in Middle of Slot



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