

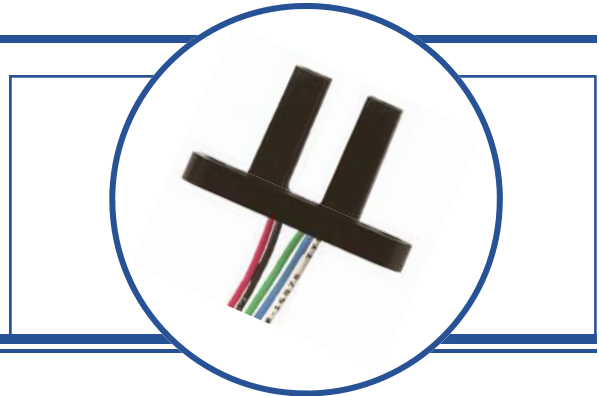
# Photologic® Slotted Optical Switch

## 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 kΩ 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.

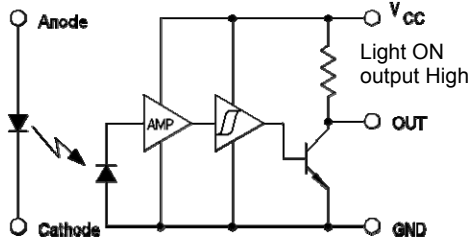
### Applications:

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

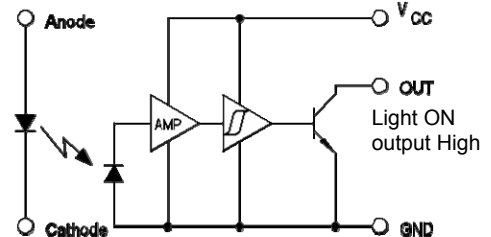
Ordering Information					
Part Number	LED Peak Wavelength	Sensor Photologic®	Slot Width / Depth	Aperture Emitter / Sensor	Lead Length / Wire
OPB916BZ	880 nm	10K Pull-Up	0.200" / 0.635"	0.05" / 0.01"	24" / 26 AWG Wire
OPB916IZ		Inv-10K Pull-Up			
OPB916BOCZ		Open-Collector			
OPB916IOCZ		Inv-Open-Collector			

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

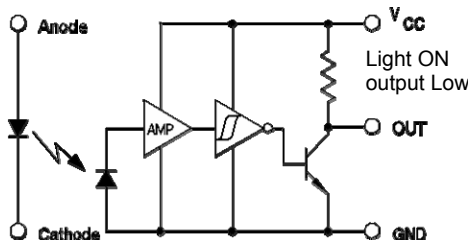
OPB916B 10K Pull-Up



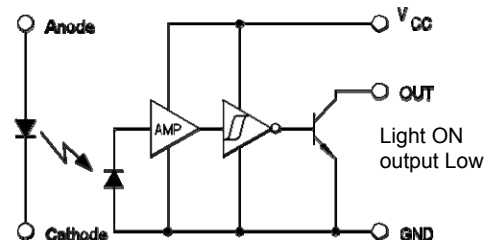
OPB916BOC Open-Collector



OPB916I Inverted 10K Pull-Up

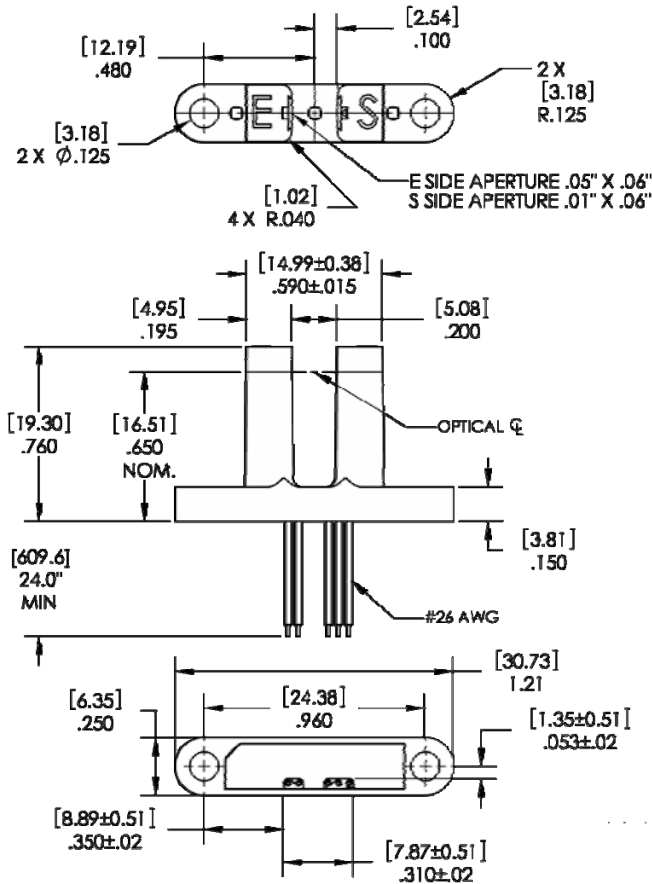


OPB916IOC Inverted Open-Collector



RoHS

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



Color-Pin #	Description
Red	Anode
Black	Cathode
Green	Ground
Blue	Output
White	V <sub>CC</sub>

Tolerance ±0.010 [0.254]

DIMENSIONS ARE IN: [ MILLIMETERS ]  
 INCHES

**Absolute Maximum Ratings** (T<sub>A</sub>=25°C unless otherwise noted)

Storage & Operating Temperature Range	-40°C to +80°C
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**Input Infrared LED**

Diode Reverse DC Voltage	2 V
Input Diode Power Dissipation <sup>(2)</sup>	75 mW
Forward DC Current	50 mA

**Output Photologic®**

Supply Voltage, V <sub>CC</sub> (not to exceed 3 seconds)	18 V
Voltage at Output Lead (Open Collector Output)	30 V
Output Photologic® Power Dissipation <sup>(3)</sup>	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<sub>F</sub> = 0 mA.
- (5) All parameters tested using pulse technique.

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

SYM-BOL	PARAMETER	MIN	TYP	MAX	UNIT S	TEST CONDITIONS
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**Input Diode**

$V_F$	Forward Voltage	-	1.3	1.8	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2\text{ V}, T_A = 25^\circ\text{ C}$

**Output Photologic® Sensor**

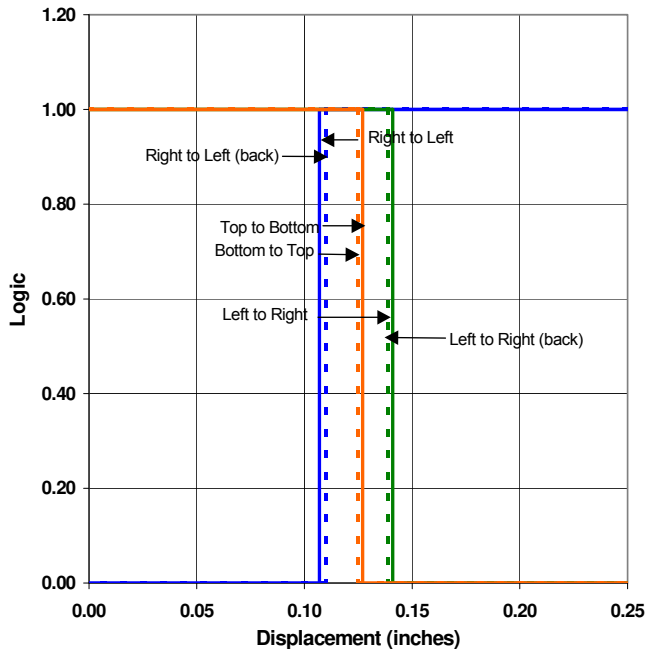
$V_{CC}$	Operating DC Supply Voltage	4.5	-	16	V	-
$I_{CCL}$	Low Level Supply Current: Buffered with 10k pull-up <sup>(1)</sup> Buffered Open-Collector Output <sup>(1)</sup>	-	-	7	mA	$V_{CC} = 16\text{ V}, I_F = 0\text{ mA}, \text{ No Output Load}$
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7	mA	$V_{CC} = 16\text{ V}, I_F = 10\text{ mA}, \text{ No Output Load}$
$I_{CCH}$	High Level Supply Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	6	mA	$V_{CC} = 16\text{ V}, I_F = 10\text{ mA}, \text{ No Output Load}$
	Inverted with 10k pull-up: Inverted Open-Collector Output <sup>(1)</sup>	-	-	6	mA	$V_{CC} = 16\text{ V}, I_F = 0\text{ mA}, \text{ No Output Load}$
$V_{OL}$	Low Level Output Voltage: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	0.4	V	$V_{CC} = 4.5\text{ V}, I_{OL} = 16\text{ mA}, I_F = 0\text{ mA}$
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	0.4	V	$V_{CC} = 4.5\text{ V}, I_{OL} = 16\text{ mA}, I_F = 10\text{ mA}$
$V_{OH}$	High Level Output Voltage: Buffered with 10k pull-up	$V_{CC}-2.0$	-	-	V	$V_{CC} = 4.5\text{ V to } 16\text{ V}, I_F = 10\text{ mA}, I_{OH} = 100\ \mu\text{A}$
	Inverted with 10k pull-up:	$V_{CC}-2.0$	-	-	V	$V_{CC} = 4.5\text{ V to } 16\text{ V}, I_F = 0\text{ mA},$
$I_{OH}$	High Level Output Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	1.0	10	$\mu\text{A}$	$V_{CC} = 4.5\text{ V}, I_F = 10\text{ mA}, V_{OH} = 30\text{ V}$
	Inverted with 10k pull-up: Inverted Open-Collector Output <sup>(1)</sup>	-	1.0	10	$\mu\text{A}$	$V_{CC} = 4.5\text{ V}, I_F = 0\text{ mA}, V_{OH} = 30\text{ V}$
$I_{F(+)}$	LED Positive-Going Threshold Current Buffered with 10k pull-up Inverted with 10k pull-up	-	5	10	mA	$V_{CC} = 5\text{ V}, \text{ No Output Load}$
	Buffered Open-Collector Output Inverted Open-Collector Output <sup>(1)</sup>	-	5	10	mA	$V_{CC} = 4.5\text{ V}, I_{OL} = 16\text{ mA}$
$I_{F(+)} / I_{F(-)}$	Hysteresis	-	1.5	-	-	$V_{CC} = 5\text{ V}$
$t_{r/f}$	Rise Time, Fall Time	-	50	-	ns	$V_{CC} = 5\text{ V}, I_F = 0\text{ or } 10\text{ mA}, R_L = 300\ \Omega \text{ to } 5\text{ V}, C_L = 50\text{ pF}$
$t_{PLH} / t_{PHL}$	Propagation Delay	-	3	-	$\mu\text{s}$	

Notes:

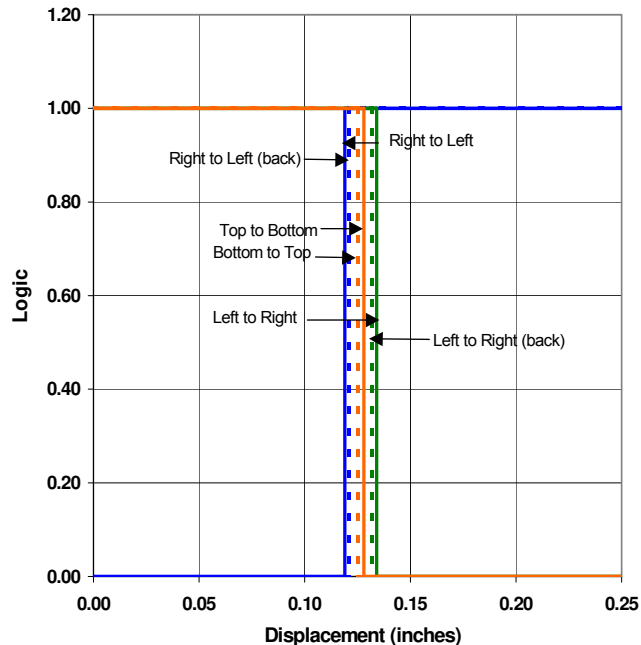
- (1) Normal application would be with light source blocked, simulated by  $I_F = 0\text{ mA}$ .
- (2) All parameters tested using pulse technique.

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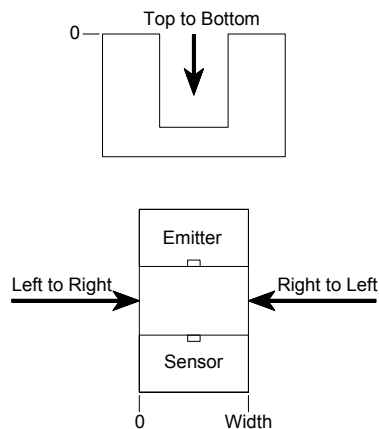
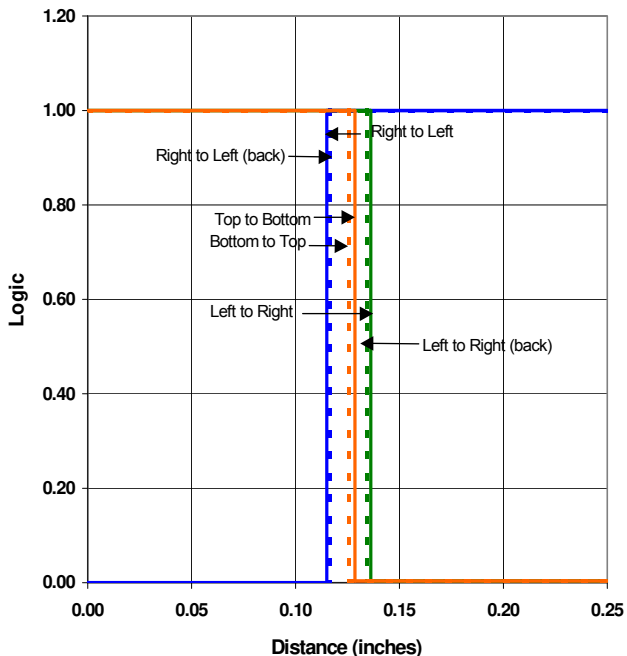
**OPB916B - Flag Next to Emitter**



**OPB916B - Flag Next to Sensor**



**OPB916B - Flag in Middle of Slot**



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