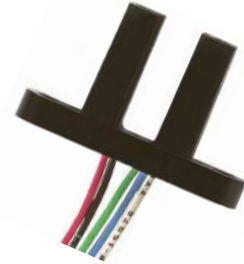


Photologic® Slotted Optical Switch

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 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.

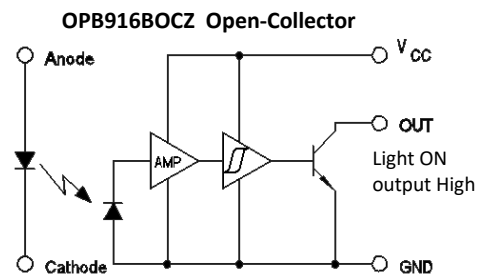
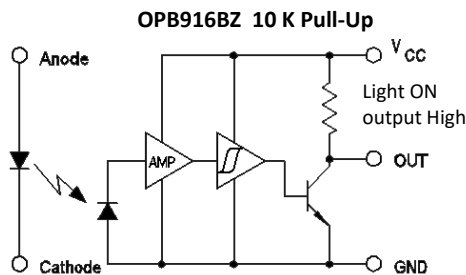
Custom electrical, wire or cabling are available. Contact your local representative or OPTEK for more information.

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 | 10 K Pull-Up | 0.200" / 0.635" | 0.05" / 0.01" | 24" / 26 AWG Wire |
| OPB916IZ Obsolete | | Inv-10 K Pull-Up | | | |
| OPB916BOCZ | | Open-Collector | | | |

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

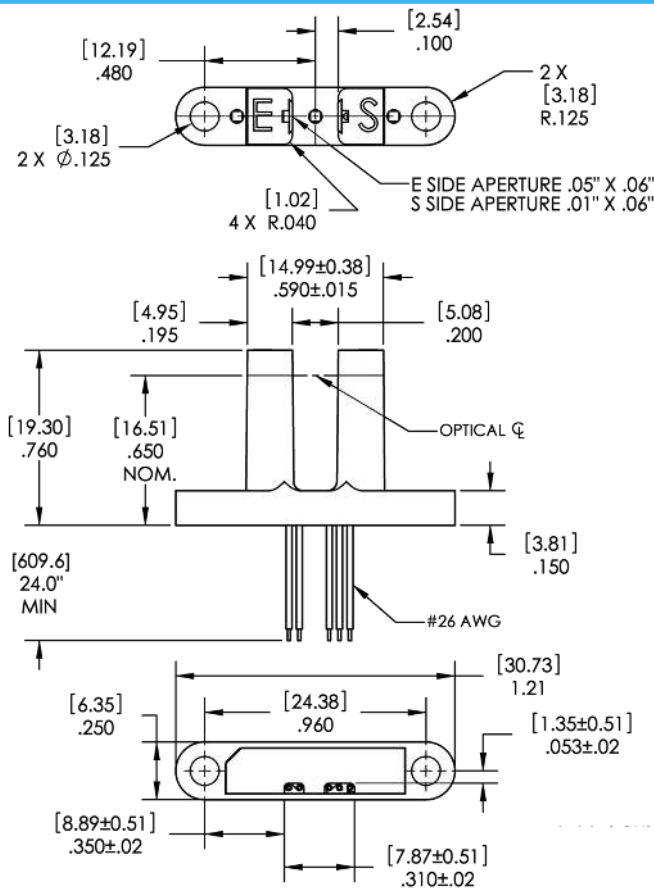


General Note
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Photologic® Slotted Optical Switch

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

Tolerance ±0.010 [0.254]

DIMENSIONS ARE IN: [MILLIMETERS]
INCHES

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.

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OPB916 Series



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 10 k pull-up ⁽¹⁾ Buffered Open-Collector Output ⁽¹⁾ | - | - | 7 | mA | V _{CC} = 16 V, I _F = 0 mA, No Output Load |
| I _{CCH} | High Level Supply Current: Buffered with 10 k pull-up Buffered Open-Collector Output | - | - | 6 | mA | V _{CC} = 16 V, I _F = 10 mA, No Output Load |
| V _{OL} | Low Level Output Voltage: Buffered with 10 k pull-up Buffered Open-Collector Output | - | - | 0.4 | V | V _{CC} = 4.5 V, I _{OL} = 16 mA, I _F = 0 mA |
| V _{OH} | High Level Output Voltage: Buffered with 10 k pull-up | V _{CC} -2.0 | - | - | V | V _{CC} = 4.5 V to 16 V, I _F = 10 mA, I _{OH} = 100 μA |
| I _{OH} | High Level Output Current: Buffered with 10 k pull-up Buffered Open-Collector Output | - | 1.0 | 10 | μA | V _{CC} = 4.5 V, I _F = 10 mA, V _{OH} = 30 V |
| I _{F(+)} | LED Positive-Going Threshold Current Buffered with 10 k pull-up | - | 5 | 10 | mA | V _{CC} = 5 V, No Output Load |
| | Buffered Open-Collector Output | - | 5 | 10 | mA | V _{CC} = 4.5 V, I _{OL} = 16 mA |
| I _{F(+)} /I _{F(-)} | Hysteresis | - | 1.5 | - | - | V _{CC} = 5 V |
| t _r , t _f | Rise Time, Fall Time | - | 50 | - | ns | V _{CC} = 5 V, I _F = 0 or 10 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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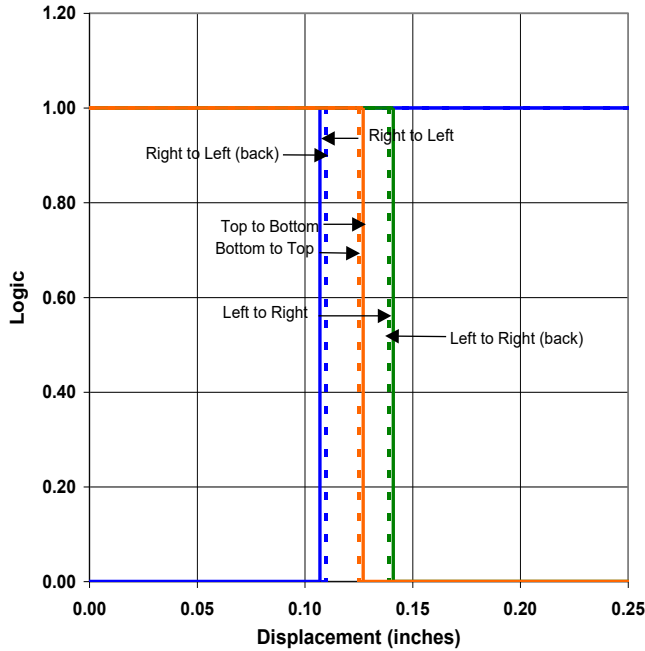
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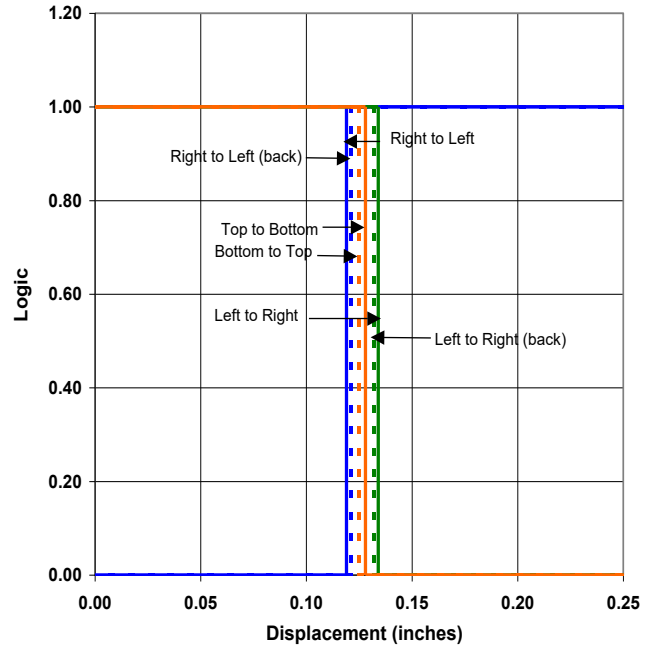
OPB916 Series



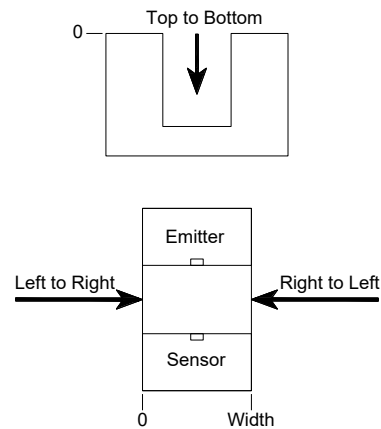
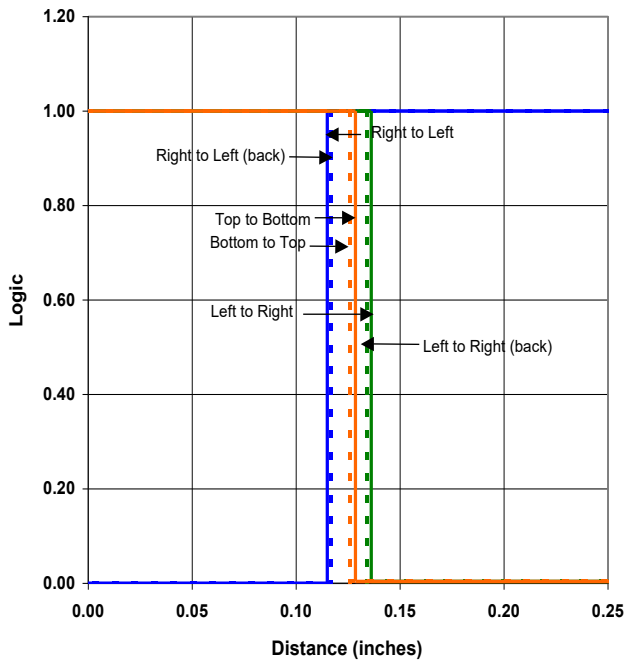
OPB916B - Flag Next to Emitter



OPB916B - Flag Next to Sensor



OPB916B - Flag in Middle of Slot



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