

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.

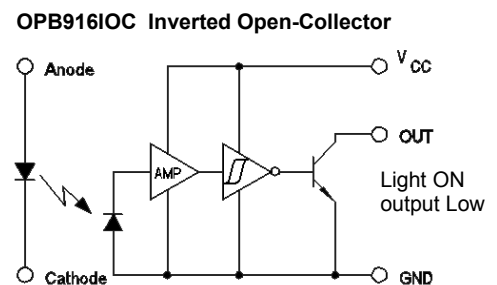
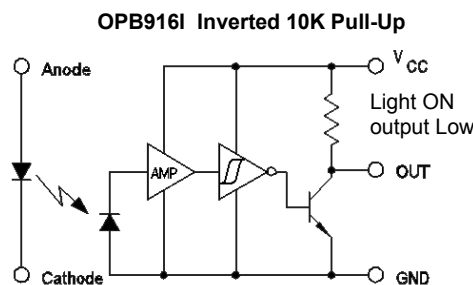
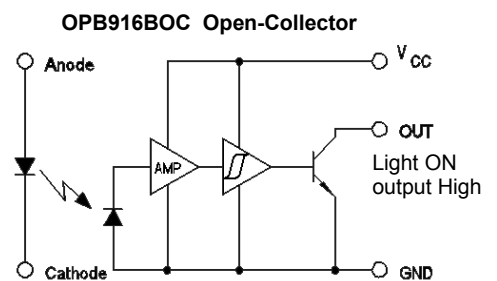
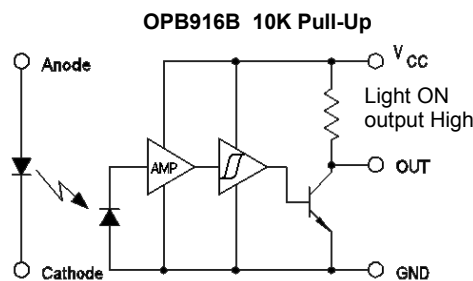
Custom electrical, wire or cabling are available. Contact your local representative or OPTEK for more information.

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 | | | |

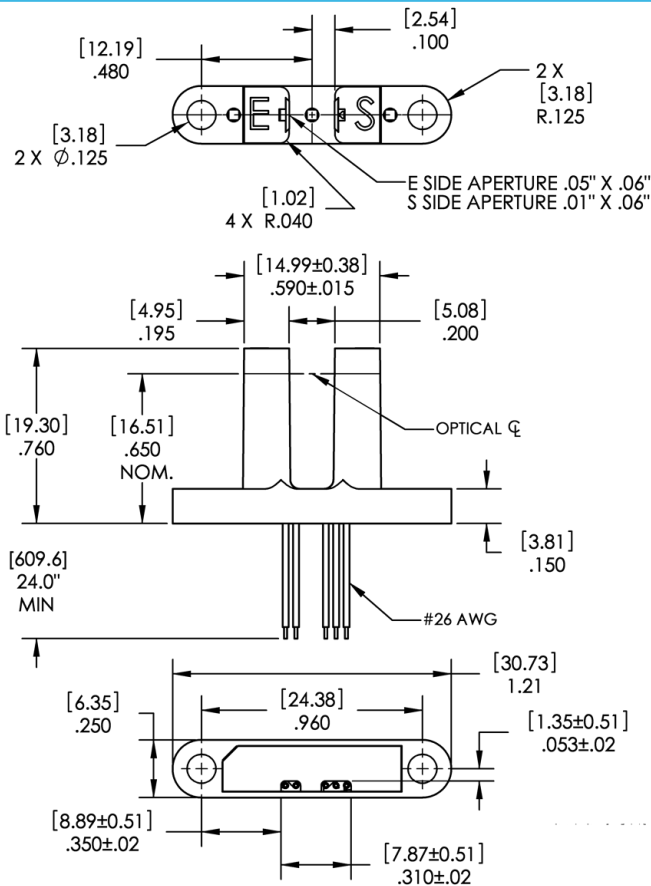
| Color | Description |
|-------|-------------|
| Red | Anode |
| Black | Cathode |
| White | Vcc |
| Blue | Output |
| Green | Ground |



General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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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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| 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 , |
| t_{PLH}, t_{PHL} | Propagation Delay | - | 3 | - | μs | $R_L = 300 \Omega$ to 5 V , $C_L = 50 \text{ pF}$ |

Notes:

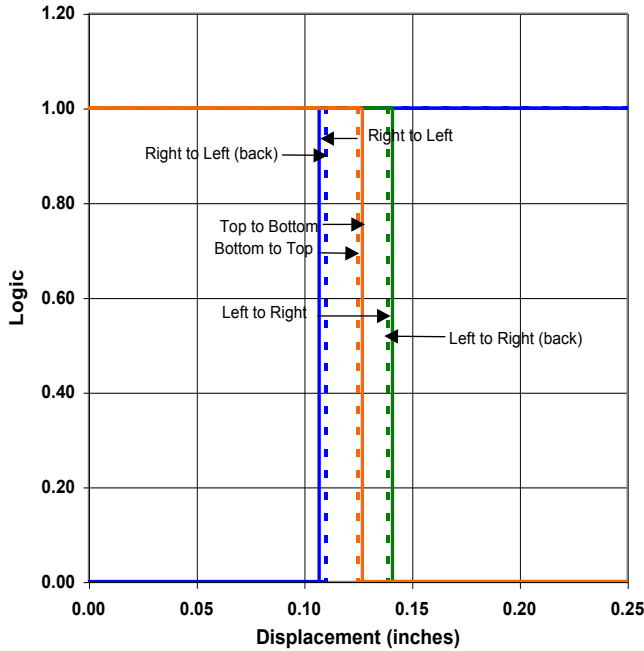
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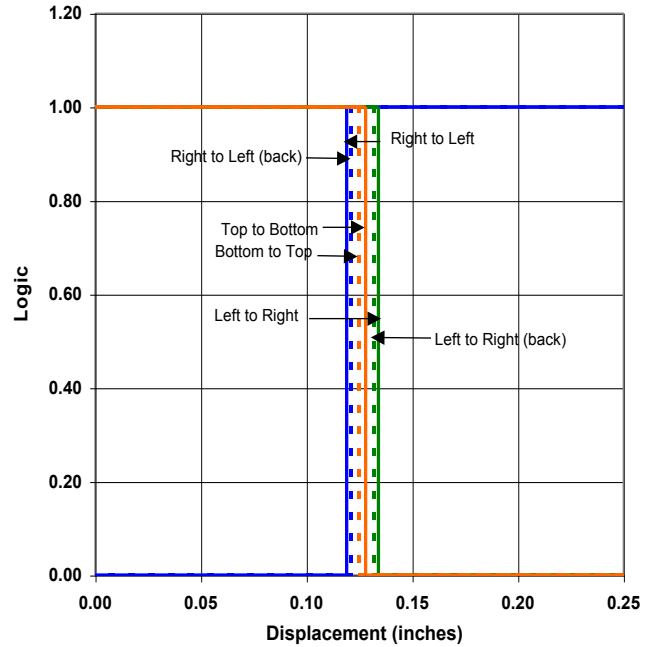
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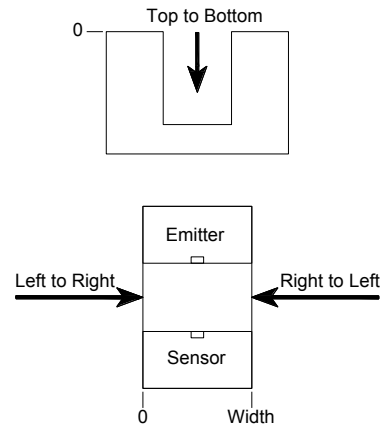
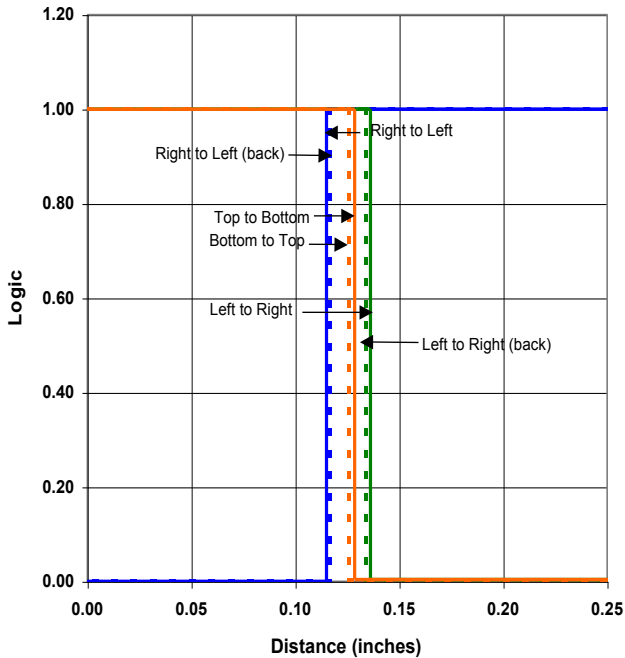
OPB916B - Flag Next to Emitter



OPB916B - Flag Next to Sensor



OPB916B - Flag in Middle of Slot



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