Description:
The OPB720A and OPB720B Series reflective switches detect objects as far away as 12” (305 mm) using standard 90% reflective material, and can detect objects as small as 0.08” (2 mm). The OPB720 series consist of three standard reflective switching distances -06Z for typically 6” (152 mm), -12Z for typically 12” (305 mm) and -30VZ for typically 30” (762 mm). The power supply voltage range of the OPB720A series is 10 to 30 volts while the power supply voltage range for the OPB720B is 4 to 7 volts.

The OPA720A and OPB720B sensors are NOT affected by ambient light in most conditions. Ambient light conditions are compensated by using a synchronous driver detection scheme.

This sensor has a logical output that switches from a high level with reflective target to a low level with no reflective target. With the addition of hysteresis, the OPB720 series minimizes output switching oscillations. The type of material used for the target is very dependent on the distance that can be achieved for the sensor. Taking this into consideration, the OPB720 series can be used in either a reflective or interruptive mode. As an example, the OPB720A-12Z can easily be used in a reflective mode for distances around 12” (305 mm) while when reflecting off a retro-reflective target similar to 3M 3870 or Nippon Crystallite at distances around 85” (216 mm) the device works well in the interruptive mode. See the included charts for typical distances with different reflective material for other versions of the OPB720 series devices.

The OPB720 series has an open collector output transistor and power requirements are compatible with most PLCs and TTL gates.

Applications:
• Conveyor belt package recognition
• Personnel movement recognition
• Near-focus security systems
• Hand wash and soap dispensing stations
• Toilet and urinal sensors
• Product dispensing systems

Features:
• 0.04” to 12” (1 mm to 305 mm) with 90% reflective material.
  (Typical Maximum detection distance to be set at factory)
• Recognizes objects as small as 0.08” (2 mm)
• Ambient light rejection < 100K Lux
• Open collector output
• Cable length 39” (990 mm) lead length 28 AWG wire

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPB720A-06Z</td>
<td>Maximum detection of 0.04” to 6” (1.0 mm to 152 mm)</td>
</tr>
<tr>
<td>OPB720B-06Z</td>
<td>39” (991 mm) lead length with 28 AWG wire, using white 90% reflective paper</td>
</tr>
<tr>
<td>OPB720A-12Z</td>
<td>Maximum detection of 0.04” to 12” (1.0 mm to 305 mm)</td>
</tr>
<tr>
<td>OPB720B-12Z</td>
<td>39” (991 mm) lead length with 28 AWG wire, using white 90% reflective paper</td>
</tr>
<tr>
<td>OPB720A-30VZ</td>
<td>Maximum detection of 0.04” to 30” (1.0 mm to 762 mm)</td>
</tr>
<tr>
<td>OPB720B-30VZ</td>
<td>39” (991 mm) lead length with 28 AWG wire, using white 90% reflective paper</td>
</tr>
</tbody>
</table>

OPB720A-30VZ & OPB720B-30VZ ONLY
Additional laser safety information can be found on the Optek website. See application #221. Classification is not marked on the device due to space limitations. See package outline for centerline of optical radiance. Operating devices beyond maximum rating may cause devices to exceed rated classification.
Long Distance Reflective Switch
OPB720A and OPB720B Series

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNITS</th>
<th>TEST CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCC</td>
<td>Low Level Output Voltage</td>
<td>-</td>
<td>-</td>
<td>0.8</td>
<td>V</td>
<td>VCC = 10 Volts, Note 4</td>
</tr>
<tr>
<td></td>
<td>OPB720A Series</td>
<td>-</td>
<td>-</td>
<td>0.8</td>
<td>V</td>
<td>VCC = 4 Volts, Note 4</td>
</tr>
<tr>
<td></td>
<td>OPB720B Series</td>
<td>-</td>
<td>-</td>
<td>0.8</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>VOH</td>
<td>High Level Output Voltage</td>
<td>5.0</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td>VCC = 10 Volts, Note 5</td>
</tr>
<tr>
<td></td>
<td>OPB720A Series</td>
<td>3.5</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td>VCC = 4 Volts, Note 5</td>
</tr>
<tr>
<td></td>
<td>OPB720B Series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
(1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(2) Distance for OPB720A-06Z=6" (152 mm), Distance for OPB720A-12Z=12" (305mm), Distance for OPB720A-30VZ=30" (762 mm)
(3) OPB720A-30VZ & OPB720B-30VZ are class 1M laser safety device. Do Not look at the device closer than 4" (100 mm) with a magnifying device.
(4) R = 10 K, VCE = VCC Distance = See Note 2 & 3, (No Target)
(5) R = 10 K, VCE = VCC (90% Reflective Surface, Kodak—EK E152-7798)

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.
Long Distance Reflective Switch
OPB720A and OPB720B Series

Voltage Response vs Displacement
OPB720A-12Z or OPB720B-12Z

Typical Displacement (inches)

Typical Response Voltage

Kodak 90% toward
Kodak 90% away
Copy Paper toward
Copy Paper away
Avery 5160 toward
Avery 5160 away
Nippon Crystallite toward
Nippon Crystallite away
3M 3870 toward
3M 3870 away

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.
Voltage Response vs Displacement
OPB720A-30VZ or OPB720B-30VZ

Typical Switching Distance (inches)

0 2 4 6 8 10 12
Normalized Output Level

25" 30" 35" 40" 45" 50"

Typical Switching Distance (inches)

0 2 4 6 8 10 12
Normalized Output Level

0 2 4 6 8 10 12

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