Light Convergent Reflective Sensor
B5W-LB

Reliable Detection of Shiny, Black or Transparent Objects
Reliable Detection of Shiny, Black or Transparent Objects

Light Convergent Reflective sensor for embedding in 24 VDC equipment

A series of types with indicator lamps showing the sensor's operating statuses have also been added.

Lighting status of indicator lamp types

- **Miniature type**
- **Super miniature type**

**B5W-LB2**
Sensing distance: 10 to 55 mm

**B5W-LB1**
Sensing distance: 2 to 10 mm

### Applications

<table>
<thead>
<tr>
<th>Container detection</th>
<th>Printed paper detection</th>
<th>Tablet package detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis equipment</td>
<td>Printing equipment</td>
<td>Tablet packagers</td>
</tr>
</tbody>
</table>
Reliable Detection of Shiny, Black or Transparent Objects

Light Convergent Reflective sensor for embedding in 24 VDC equipment

A series of types with indicator lamps showing the sensor’s operating statuses have also been added

Cup detection
Article detection inside boxes
Hand detection

Analysis equipment
Printing equipment
Tablet packagers
Delivery boxes
Sanitation equipment

3 features

Robustness of color
Stable detection of shiny, black or transparent objects

Robustness of the distance
A wide sensing range to allow object shifting

Line up
Suitable for embedding in commercial equipment

Building

Cup detection
Article detection inside boxes
Hand detection

Coffee makers
Delivery boxes
Sanitation equipment
Robustness of color

Stable detection for shiny, black or transparent objects

Past problem
Sensing of shiny, black or transparent objects was unstable, requiring more man-hours for development and production processes.

Solution!
With OMRON's Light Convergent Reflective Sensors, unstable sensing of shiny, black or transparent objects is no longer a problem, meaning less man-hours! Contributing to reduction of man-hours.

Here's why
Light Convergent Reflective Sensor Principles
The presence of an object is detected by the received light reflected off a sensed object. The sensor's optical system has a limited projection beam and light sensing area, so the system is capable of sensing objects only within a specific distance from the sensor (the range in which the projection beam and the light sensing area overlap).
Stable detection for shiny, black or transparent objects

Unaffected by backgrounds, meaning only the intended object is sensed accurately.

Past problem
(1) At a sensing distance for white objects, a black object is not sensed.
(2) At a sensing distance for black objects, a white background is sensed.

Solution!
Objects can be sensed accurately, regardless of object color.

Background is not sensed

Sensed even though there’s no object

Not sensed even though there’s an object
OMRON's unique structure uses four types of toroidal lenses to enable stable sensing, even at minimal light levels.

The low levels of light reflected off shiny, black or transparent objects made detection unstable.

A wider sensing range has been realized through the use of four types of toroidal lenses. Sensing is even possible in the case of object shifting.

Optical simulations were used in the design of these lenses to provide robustness in terms of both color and distance. Lens design using optical simulation.

Sensing was not possible due to object shifting.

Here's why

The low levels of light reflected off shiny, black or transparent objects made detection unstable.

OMRON's unique structure uses four types of toroidal lenses to enable stable sensing, even at minimal light levels.
Line up

Suitable for embedding in commercial equipment

<table>
<thead>
<tr>
<th>Output type</th>
<th>Analog output type</th>
<th>Digital output type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior</td>
<td>Miniature type</td>
<td>Super miniature type</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>5 VDC ±10%</td>
<td>24 VDC ±10%</td>
</tr>
<tr>
<td>Operation indicator lamp</td>
<td>Analog (phototransistor output)</td>
<td>ON/OFF (NPN open collector output)</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>-</td>
<td>IP50 (IEC60529 standard, category 2) (not including terminals)</td>
</tr>
<tr>
<td>Sensing distance (Target object: white paper)</td>
<td>10 to 55 mm</td>
<td>2 to 10 mm</td>
</tr>
<tr>
<td>Model</td>
<td>B5W-LB2101-1</td>
<td>B5W-LB2112-1</td>
</tr>
<tr>
<td></td>
<td>B5W-LB2122-1</td>
<td>B5W-LB2114-1</td>
</tr>
<tr>
<td></td>
<td>B5W-LB1112-1</td>
<td>B5W-LB1114-1</td>
</tr>
<tr>
<td></td>
<td>B5W-LB1122-1</td>
<td>B5W-LB1114-1</td>
</tr>
</tbody>
</table>

We also have a lineup of noise-resistant 24V models ideal for commercial equipment and models with indicator lamp.

An ON/OFF output that enables direct connections to control equipment such as PLCs.

IP50 for use in a wide range of applications, including heavy dust.

Note: Only digital output type

Performance comparison with conventional sensors

Capable of sensing workpieces of various colors over a wide sensing range
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B5W-LB

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