



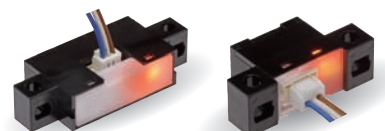
# Light Convergent Reflective Sensor **B5W-LB**



Reliable Detection of Shiny, Black or Transparent Objects

## Light Convergent Reflective Sensor

Robustness of the distance / Robustness of color / Line up





# 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



**B5W-LB2** □

Sensing distance: 10 to 55 mm

Super miniature type



**B5W-LB1** □

Sensing distance: 2 to 10 mm



*Equipment*

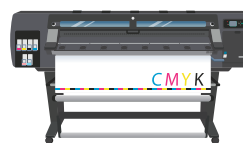
## Applications

### Container detection



Analysis equipment

### Printed paper detection

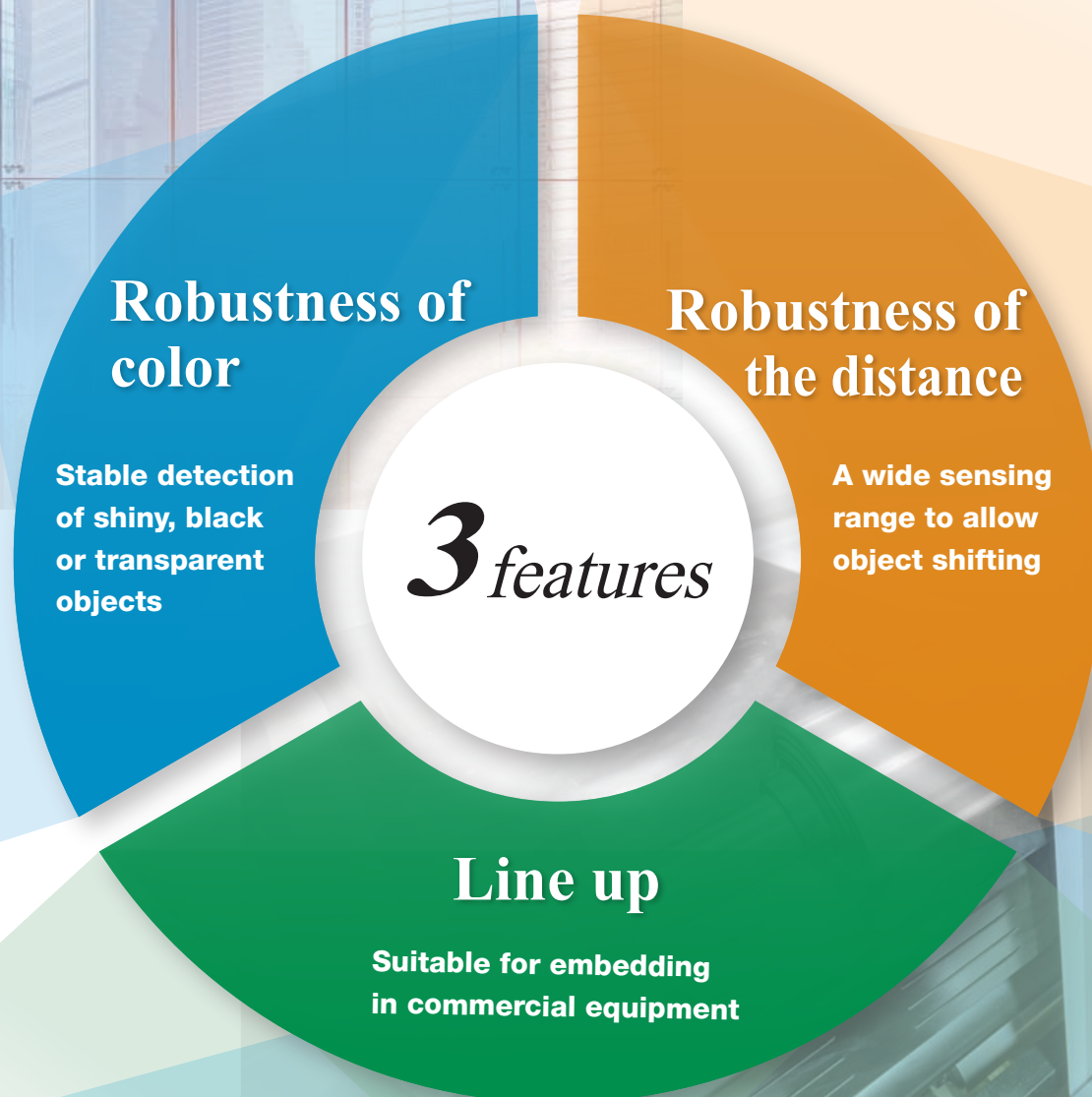


Printing equipment

### Tablet package detection



Tablet packagers



#### Cup detection



Coffee makers

#### Article detection inside boxes



Delivery boxes

#### Hand detection



Sanitation equipment



# Robustness of color

Stable detection for of 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!

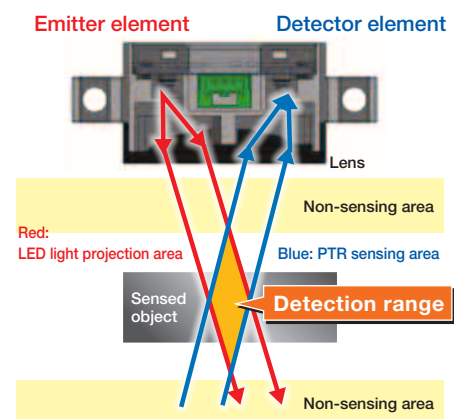
With OMRON's Light Convergent Reflective Sensors, unstable sensing of shiny, black or transparent objects is no longer a problem, meaning less man-hours! Contributing to reduction of man-hours.



## 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).



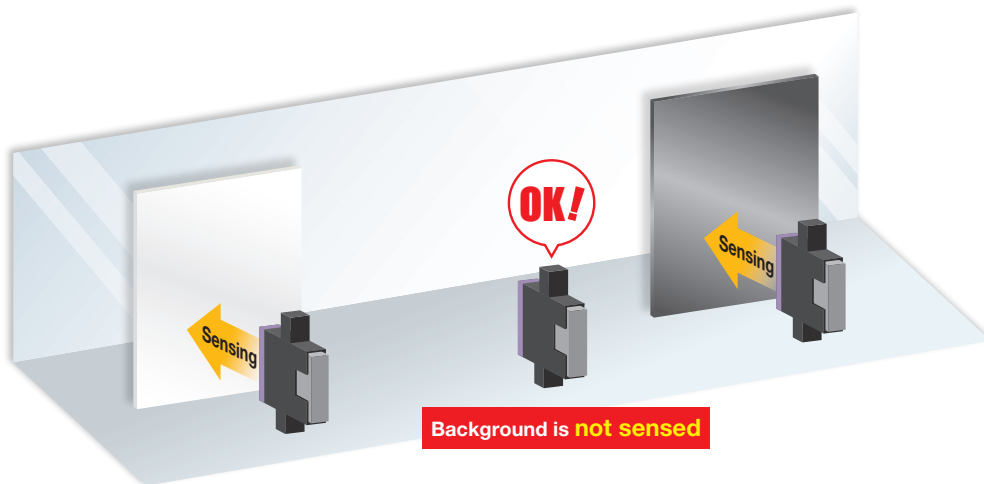


Past problem

- 
- The diagram illustrates the limitations of a single sensor in a 3D environment. A robot is shown in three positions relative to a wall. In the first position, it is too close to the wall, and a callout says "Sensed even though there's no object". In the second position, it is at the correct range, and a callout says "Sensing". In the third position, it is too far from the wall, and a callout says "ERROR" with a speech bubble. A blue box at the bottom right states "Not sensed even though there's an object".



## Objects can be sensed accurately, regardless of object color.



# Robustness of the distance

A wide sensing range to allow object shifting

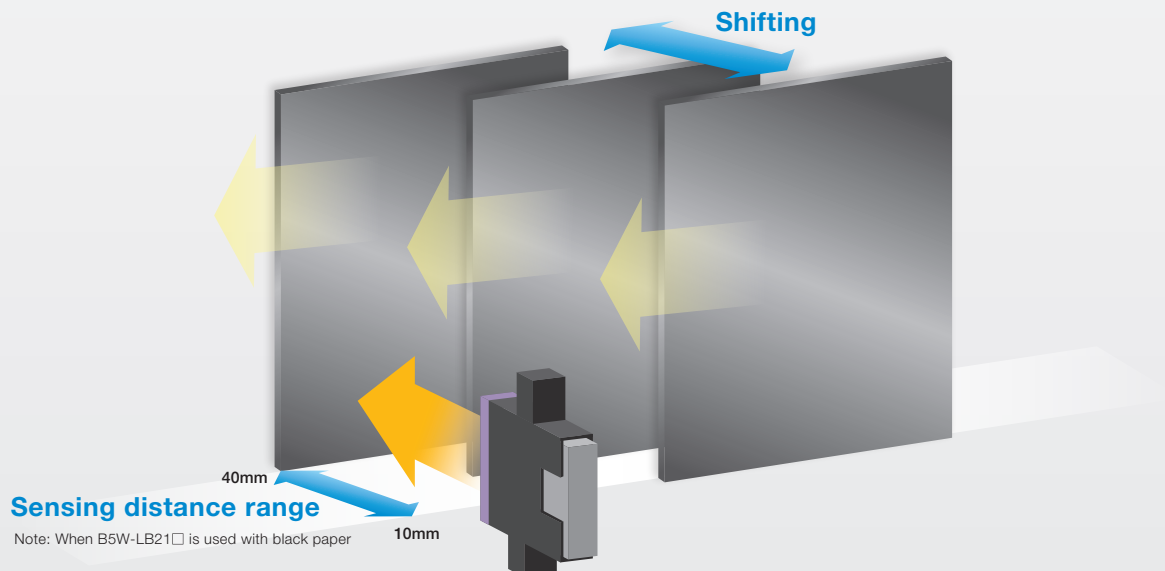


Past problem

Sensing was not possible due to object shifting.

Answer!

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.



Here's why

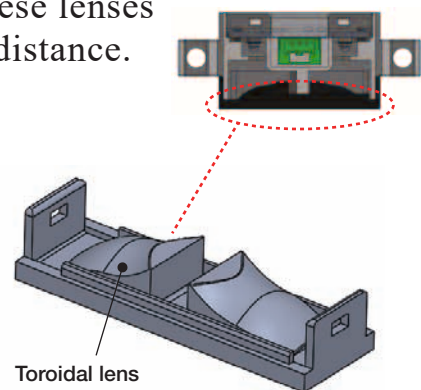
Optical simulations were used in the design of these lenses to provide robustness in terms of both color and distance. Lens design using optical simulation.

Past

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

Answer!

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





Patent pending

# Line up

Suitable for embedding in commercial equipment



Output type	Analog output type	Digital output type			
Exterior	Miniature type			Super miniature type	
					
Power supply voltage	5 VDC ±10%	24 VDC ±10%			
Output type	Analog (phototransistor output)	ON/OFF (NPN open collector output)			
Operation indicator lamp	Not available		Available (orange)	Not available	Available (orange)
Degree of protection	-	IP50 (IEC60529 standard, category 2)(not including terminals)			
Sensing distance (Target object: white paper)	10 to 55 mm Note: When using a predetermined threshold value			2 to 10 mm	
Model	B5W-LB2101-1	B5W-LB2112-1 B5W-LB2122-1	B5W-LB2114-1	B5W-LB1112-1 B5W-LB1122-1	B5W-LB1114-1

## 24 VDC

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

## Connects easily

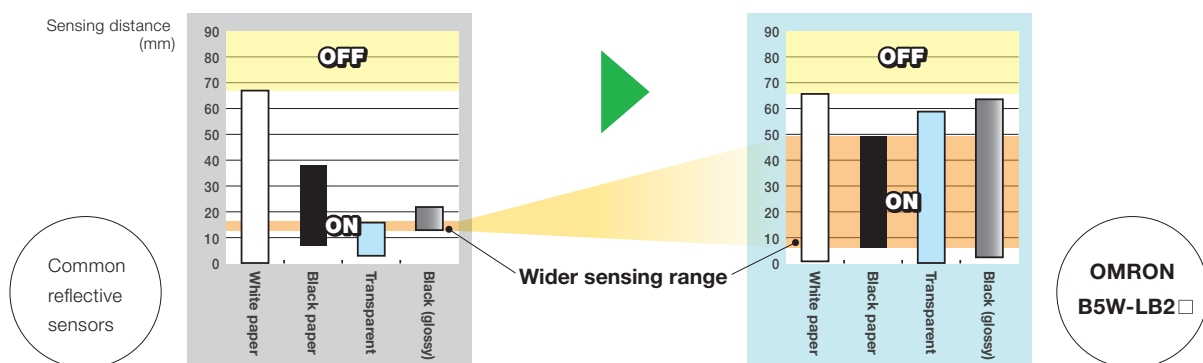
An ON/OFF output that enables direct connections to control equipment such as PLCs.

## Environmental resistance

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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Device & Module Solutions Company

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