


# B5W-LB series

Light Convergent Reflective Sensor

## Light Convergent Reflective Type for Reduced Color and Material Susceptibility Reliable Detection of Shiny, Black or Transparent objects



- <Robustness of color>
  - Stable detection of shiny, black or transparent objects
  - Unaffected by backgrounds, meaning only the intended object is sensed accurately.
- <Robustness of the distance>
  - A wide sensing range to allow object shifting
- Robust design resistant to ambient lights
- Analog voltage output and digital output models are available
- 55 mm and 10 mm sensing distances are available

 Be sure to read Safety Precautions on page 7.

### Model Number Legend

B5W-LB-     -  
           1. 2. 3. 4. 5.


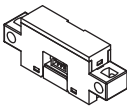
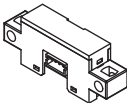
- |                    |                                   |                                       |                         |  |
|--------------------|-----------------------------------|---------------------------------------|-------------------------|--|
| 1. Size            | 2. Maximum sensing distance       | 3. Output                             | 4. Degree of protection | 5. Minimum number of deliverable units |
| 1: Super miniature | Super miniature                   | 0: Analog voltage                     | 1: Not supported        | 1: 1 piece                             |
| 2: Miniature       | 1: 10 mm<br>Miniature<br>1: 55 mm | 1: NPN / Light-ON<br>2: NPN / Dark-ON | 2: Supported            |  |

B  
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### Ordering Information

Sensors (Dimensions→P.6)

infrared

Sensing method	Appearance	Size	Connecting method	Output type	Sensing distance	Operating mode	Model	Minimum number of deliverable units (Unit: pieces)
Light Convergent Reflective		Super miniature	Connector	NPN open collector	<input type="checkbox"/> 2 to 10 mm *	Light-ON	B5W-LB1112-1	1
						Dark-ON	B5W-LB1122-1	
		Miniature				Light-ON	B5W-LB2112-1	
						Dark-ON	B5W-LB2122-1	
				Analog voltage output	<input type="checkbox"/> 10 to 55 mm *	---	B5W-LB2101-1	

\* White paper

## Ratings and Specifications

### Digital output models

Item Model	Sensing method	Light Convergent Reflective			
	NPN output	B5W-LB1112-1	B5W-LB1122-1	B5W-LB2112-1	B5W-LB2122-1
Sensing distance	White paper	2 to 10 mm		10 to 55 mm	
	Black paper	3 to 8 mm		10 to 40 mm	
Non-sensing distance (White paper)		20 mm min.		85mm min.	
Minimum detectable object (reference value)		0.05 mm dia.		0.15 mm dia.	
Differential travel		20% max.			
Light source (wavelength)		Infrared LED (850 nm)			
Power supply voltage		24 VDC $\pm$ 10%, including 10% ripple (p-p)			
Current consumption		15 mA max. (at 26.4 VDC)		20mA max. (at 26.4 VDC)	
Operating mode		Light-ON	Dark-ON	Light-ON	Dark-ON
Control output		Load power supply voltage: 26.4 VDC, load current: 50 mA max. Residual voltage; 0.8 V max. at 50 mA load current and 0.32 V at 10 mA load current, Open collector output (NPN)			
Indicator		Not supported			
Response time		Operate/reset: 1 ms max.			
Ambient illumination		Incandescent lamp: 3,000 lx max., Sunlight: 10,000 lx max.			
Ambient temperature range		Operating: -10 to +60°C, Storage: -25 to +80°C (with no icing or condensation)			
Vibration resistance		10 to 55 Hz, 1.5-mm double amplitude for 2 h each in X, Y, and Z directions			
Shock resistance		500 m/s <sup>2</sup> for 3 times each in X, Y, and Z directions			
Degree of protection		IEC IP50 (not including terminals)			
Connecting method		Connector models			
Weight (unit only)		Approx 1.6 g		Approx 3.4 g	
Material	Case	Polycarbonate (PC)			
	Lens	Acrylic (PMMA)			
	Cover	Polycarbonate (PC)			

## I/O Circuit Diagrams

### NPN output

Model	Operating mode	Timing charts	Output circuit								
B5W-LB1112-1 B5W-LB1122-1 B5W-LB2112-1 B5W-LB2122-1	Light-ON ON		<table border="1" style="float: right;"> <thead> <tr> <th>Terminal No.</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> </tr> <tr> <td>2</td> <td>Vout</td> </tr> <tr> <td>3</td> <td>Vcc</td> </tr> </tbody> </table>	Terminal No.	Name	1	GND	2	Vout	3	Vcc
	Terminal No.	Name									
1	GND										
2	Vout										
3	Vcc										
Dark-ON ON											