

Light Convergent Reflective Sensor Application Examples

Reliable Detection of Shiny, Black or Transparent objects

Light Convergent Reflective sensor for embedding in 24 VDC equipment



B5W-LB2

Sensing distance
10 to 55 mm



B5W-LB1

Sensing distance
2 to 10 mm



Analytical instruments-I

Application

Detection of a test tube in transparent or various colors for an analytical instrument

Problems

<features>

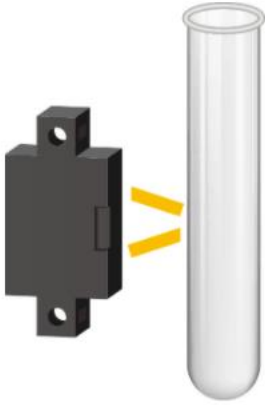
General reflective sensors have a small sensing range between white, black and transparent objects.

<problems>

- 1) The general reflective sensors have a small sensing range to detect all the test tubes with transparent, orange or brown color. Further, there are variations in test tube position, and then the sensors do not detect all of the test tubes.
- 2) It happens that when the user adds new test tubes, the sensors do not detect any of them.



Solutions



<features>

B5W-LB series has a wide sensing range between white, black and transparent objects.

<solutions>

B5W-LB series detects presence of various test tubes like transparent, orange or brown, which customers prepare in each instrument.

<Plus benefits>

B5W-LB series detects various positions of a test tube using the feature that has the wide sensing range to detect both white and black objects.

Analytical instruments-II

Application

Detection of origin position to simple rotation control on an analytical instrument

Problems



<features>

General reflective sensors have a small sensing range between white, black and transparent objects.

<problems>

- 1) The reflective sensors do not detect a cutout on a rotating plate when reflective ratio of the rotating plate has the variation.
- 2) When a customer puts the sensor near a rotating plate, there are variations in the rotating plate position and then the plate crushes the sensor. It causes the breakdown of a machine.

Solutions



<features>

- 1) B5W-LB series has a wide sensing range between white, black and transparent objects.
- 2) B5W-LB series has the wide sensing range to detect both white and black objects.

<solutions>

- 1) B5W-LB series detects the cutout which has various reflective rates.
- 2) B5W-LB series detects the rotating plates with position variation.

Coffee machines

Application

Cup detection for a coffee machine

Problems



<features>

General reflective sensors have a small sensing range between white, black and transparent objects.

<problems>

- 1) The general reflective sensors have the small sensing range to detect all cups like white, matte black or transparent color. Further, there are variations in cup position, and then the sensors do not detect all the cups.
- 2) It happens that when the user adds new cups, the sensors do not detect any of them.

Solutions



<features>

B5W-LB series has a wide sensing range between white, black and transparent objects.

<solutions>

B5W-LB series detects various colors of cups like white, matte black or transparent.

<Plus benefits>

B5W-LB series detects various positions of a test tube using the feature that it has the wide sensing range to detect both white and black objects.

Vending machines

Application

Touchless sensors on a vending machine

Problems

<problems>

Before a person buys juice by pushing buttons, many people have touched them on a vending machine. He might feel he does not want to touch buttons from the view of sanitation. As a result, he may not buy the juice. If a person sees dirt, like fingerprints, on the buttons, he might not buy juice.

Solutions



<features>

B5W-LB series has a wide sensing range between white, black and transparent objects.

<solutions>

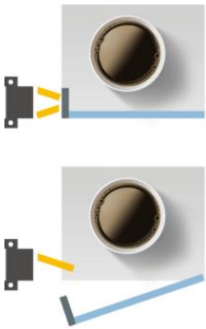
The B5W-LB series can detect hands even if a purchaser has gloves or bare hands. The purchaser can buy products without touching the buttons, which allows to take in a hygienic experience.

Application

Problems



Solutions



Door open/close detection on a vending machine

1. Door open/close detection by general reflective sensors

<features>

General reflective sensors have a small sensing range between white, black and transparent objects.

<problems>

- 1) The general reflective sensor has the small sensing range to detect various door colors. Further, there are variations in door position to be assembled, and then the sensors do not detect all the doors.
- 2) When the user adds new door colors, the sensors do not detect any of the doors.

2. Door open/close detection by slot type sensors

<problems>

When using slot type sensors, customers might not be able to produce cheaper machines in adding parts or assembling cost. Further, the expense of design or mold tools is needed.

1. Door open/close detection with various colors

<features>

B5W-LB series has a wide sensing range between white, black and transparent objects.

<solutions>

B5W-LB series can detect door open/ close with various colors.

<Plus benefits>

B5W-LB series detects door position variations using B5W's feature of wide-sensing range to detect both white and black objects.

2. No mechanical mechanism

<solutions>

It is possible to detect the door without a mechanical mechanism, and it may be possible to produce at low total cost. In addition, no mechanical parts are required, and a highly reliable structure is possible.

Food manufacturing equipment

Application

Automation of food manufacturing equipment

Problems

<background>

Due to the lack of labor, the demand for more efficient stores is increasing, but the store staff cannot do other work in parallel during the cooking time of the food manufacturing equipment, and the waiting time without doing occur.

<features>

General reflective sensors have a small sensing range between white, black and transparent objects.

<problems>

The general reflective sensors have the small sensing range to detect various cups. Further, there are variations in cup position, and then the sensors do not detect all of the cups. Customers might not be able to make the machines automated.

Solutions

<direction for solution>

If automation of food manufacturing equipment progresses, such as automatically pouring juice into a cup, other work can be performed in parallel, which makes the store more efficient.

<features>

- 1) B5W-LB series has the small difference of sensing distance between white, black and transparent objects.
- 2) B5W-LB series has the wide sensing range to detect both white and black objects.

<solutions>

- 1) B5W-LB series detects the cups with various colors.
- 2) B5W-LB series detects the cup position variations.



Sanitation equipment

Application

Hand detection for sanitation equipment

Problems

<problems>

- 1) When many people push a button, they can touch viruses and it is not sanitary.
- 2) Viruses go into clearance gap of movable parts, like a switch button. It might not be easy to clean the button.



Solutions



<solutions>

- 1) By using the B5W-LB series as a touchless sensor, you can switch on by hand detection without touching the equipment, and you can use it without worrying about viruses.
- 2) By attaching a thin cover to the lens surface of the sensor, the detection part can have a flat structure, which allows easy drip-proof structure and cleaning.

Dental equipment

Application

Touchless sensor for dental equipment

Problems

<problems>

After repairing, a doctor's hand becomes dirty. When he touches a mechanical button to turn off a light, the button gets dirty by his hands and it is not hygienic.

Solutions



<features>

By using the B5W-LB series as a touchless sensor, you can switch on by hand detection without touching the equipment, and you can use them hygienically.

<solutions>

By attaching a thin cover to the lens surface of the sensor, the detection part can have a flat structure, which allows easy drip-proof structure and cleaning.

Packaging machines in medical

Application

Various film detection like transperance on a packing machine in medical

Problems

<features>

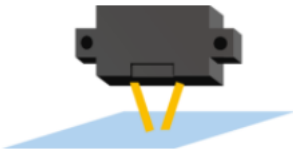
General reflective sensors have a small sensing range between white, black and transparent objects.

<problems>

- 1) If customers adjust the sensing distance on milky or silver film, the sensors do not detect a transparent film. If customers adjust it on transparent film, they might detect the background. Therefore, the sensor settings are not the same for milky/silver and transparent film.
- 2) It happens that when the user adds new films, the sensors do not detect any of them.



Solutions



<features>

- 1) B5W-LB series has a wide sensing range between white, black and transparent objects.
- 2) B5W-LB series has the limited sensing range to detect objects.

<solutions>

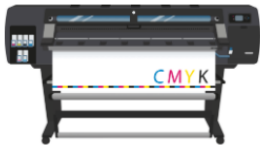
- 1) B5W-LB series detects the film with various colors like milky or transparent.
- 2) B5W-LB series detects the film with various colors like milky or transparent without detecting background.

Printing equipment

Application

Transparent printed papers on a printing machine

Problems



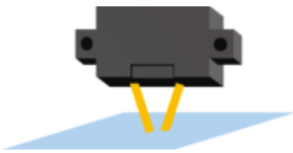
<features>

General reflective sensors have a small sensing range between white, black and transparent objects.

<problems>

If customers adjust the sensing distance on white printing paper, the sensors do not detect a transparent printing paper. If customers adjust it on transparent printing paper, they might detect the background. Therefore, the sensor settings are not the same for white and transparent printing paper.

Solutions



<features>

- 1) B5W-LB series has the small difference of sensing distance between white, black and transparent objects.
- 2) B5W-LB series has the limited sensing range to detect objects.

<solutions>

- 1) B5W-LB series detects both white and transparent printing papers.
- 2) B5W-LB series detects both white and transparent printing papers without detecting background.

Robot material handling equipment

Application

Various colors of wafer cassette detection for robot material handling equipment

Problems



1. Wafer cassette detection by general reflective sensors

<features>

General reflective sensors have a small sensing range between white, black and transparent objects.

<problems>

If customers adjust the sensing distance on a white wafer cassette, the sensors do not detect a transparent wafer cassette. If customers adjust it on transparent wafer cassette, they might detect the background. So, the sensor settings are not the same for white and transparent wafer cassette.

2. Wafer cassette detection by displacement sensors

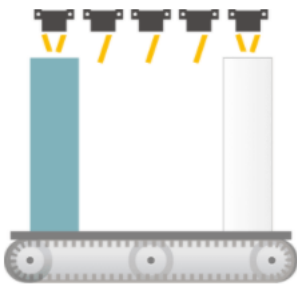
<features>

Displacement sensors have the big difference of sensing distance between white and transparent objects.

<problems>

Customers need to adjust the sensing distance to each color of a wafer cassette as well.

Solutions



<features>

- 1) B5W-LB series has a wide sensing range between white, black and transparent objects.
- 2) B5W-LB series has the limited sensing range to detect objects.

<solutions>

- 1) B5W-LB series detects various colors of wafer cassette to be prepared by every customer.
- 2) B5W-LB series detects both white and transparent wafer cassettes without detecting background.

Automated test equipment (ATE)

Application

Presence detection of a black tray or a transparent tape on ATE

Problems



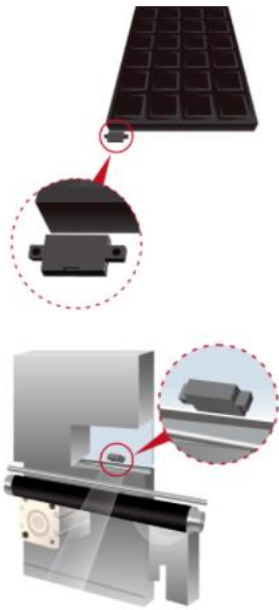
<features>

General reflective sensors have a small sensing range between white, black and transparent objects.

<problems>

- 1) If customers adjust the sensing distance on a white tray, the sensors do not detect a transparent tray. If customers adjust it on a transparent tray, they might detect the background. So, the sensor settings are not the same for white and transparent trays.
- 2) It happens that when the user adds new trays, the sensors do not detect any of them.

Solutions



<features>

B5W-LB series has a wide sensing range between white, black and transparent objects.

<solutions>

B5W-LB series detects various colors of trays or tapes to be prepared by every customer.

<Plus benefits>

B5W-LB series detects black trays and transparent tapes without backgrounds, using the limited sensing range.

Picking purpose

Application

Confirmation to take out correct parts on a picking system

Problems



<problems>

- 1) When picking out the specified parts from a picking system, an operator will not notice if they forget to take them and an assembly error will occur.
- 2) If you add the work of pushing the switch to prevent forgetting to remove the parts, the additional work will take longer and productivity will be reduced.

Solutions



<features>

B5W-LB series has a wide sensing range between white, black and transparent objects.

<solutions>

The B5W-LB series detects hands even if the purchaser has gloves or bare hands.

When picking up a part, you can prevent the part from being forgotten by checking the matching of the picking system instructions and hand detection by the sensor.

- Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
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