

New Product Introduction

Color sensor B5WC-VB2322-1

Omron Corporation
Device & Module Solution Company
Application product Business Unit
1st November 2022



OMRON

New product feature

New reliable Color detection Sensor contributes efficient condition monitoring

Remote condition monitoring needs are increasing due to shortage of engineers who are qualified for maintenance service. Optical color sensor B5WC is one of new solution to automate the maintenance process and solve labor shortage social issues.

1 Detect color of target object

- Voltage output depend on object RGB ratio

2 Optical reflective sensing

- Sensing distance 40mm

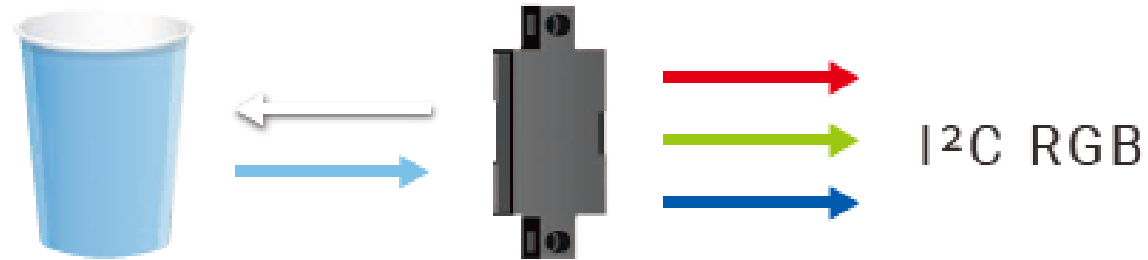
3 Compact dimension

- L 40mm x H 15.9mm W 8.4mm



Technical principle

Optical sensing technology realized color detection based on RGB ratio



B5WC Color sensor using white LED as emitting light source and receives reflected light from the target object. Identify RGB ratio (Red / Green / Blue) and output the voltage by I2C communication.

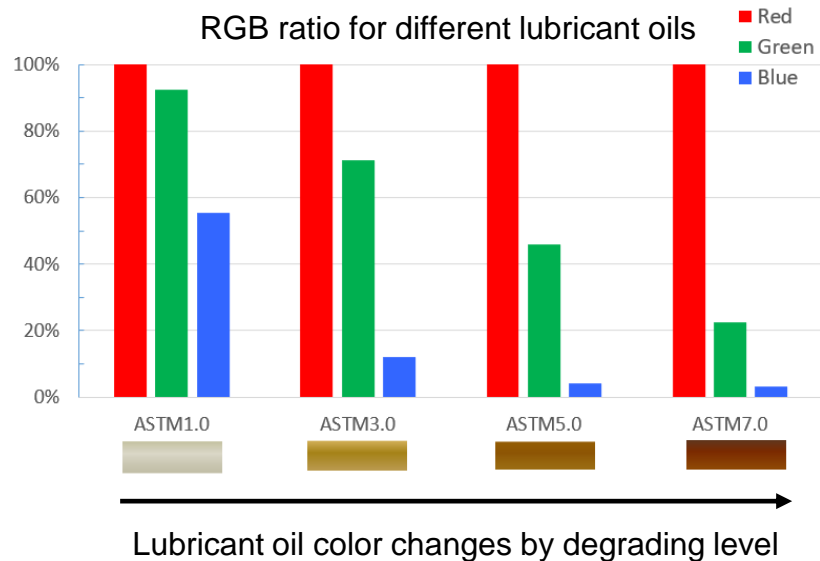
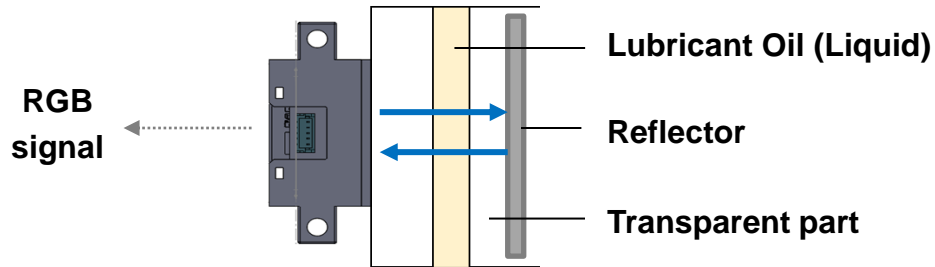
For example, Red and Yellow object has different RGB ratio since B5WC able to distinguish those different color objects.

We are planning next model which our original algorithm is implemented to judge registered RGB data.

Target application & Benefits

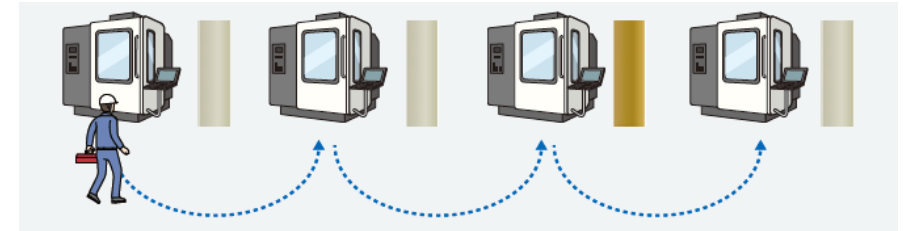
Liquid condition monitoring for efficient condition-based machine maintenance

Monitor lubricant oil color condition by Color sensor to decide appropriate maintenance timing



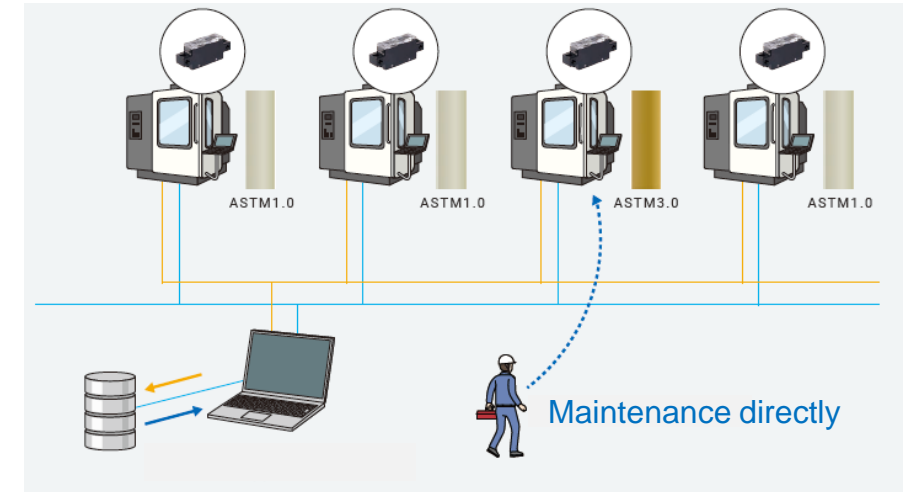
FROM

Time Based Maintenance (TBM)



TO

Condition Based Maintenance (CBM)

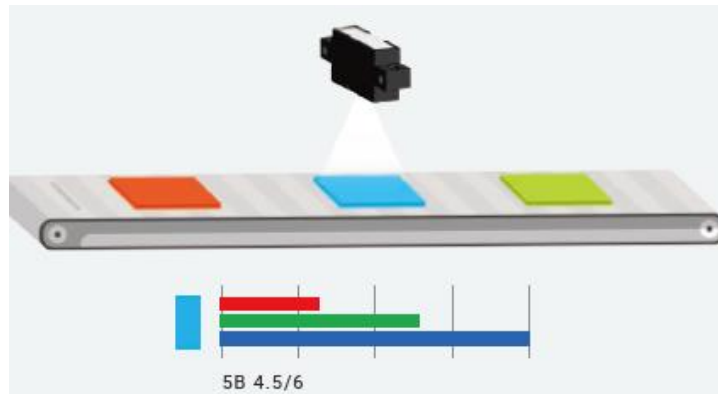


Target application & Benefits

Color sensor is also applicable for reliable & multifunctional automatic applications

Factory Automation

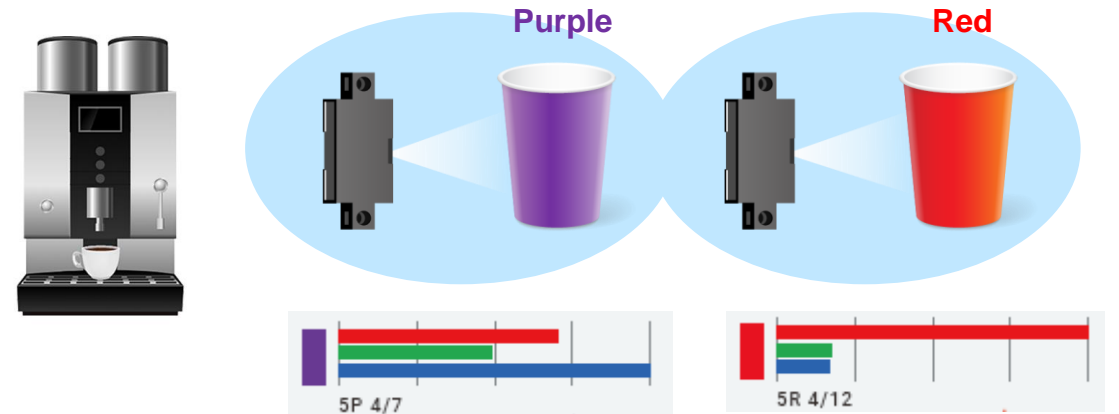
Able to realize reliable automatic operation by avoiding false detection



Identify the object color by RGB ratio

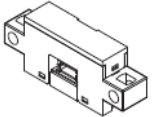
Drink Server

Able to realize multifunctional automatic operation depend on color type of the cups

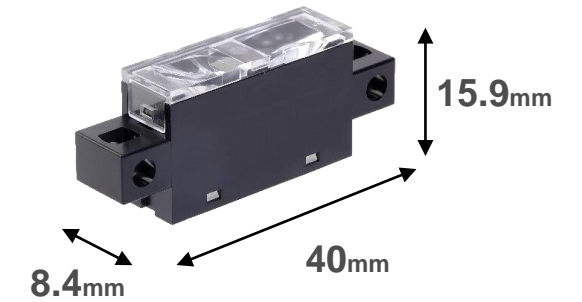


Identify the object color by RGB ratio

Specification

Sensing method	Appearance	Size	Connecting method	Output type	Sensing distance	Model	Minimum number of deliverable units (Unit: pieces)
Reflective		Miniature	Connector	I ² C	40 mm	B5WC-VB2322-1	1

Item	Model	B5WC-VB2322-1
Sensing distance		40 mm (white paper)
Light source		White LED
Power supply voltage		5 VDC ±5%
Current consumption		18 mA max. (at 5.25 VDC)
Communication method		I ² C
I ² C output		Output voltage value for each of red, green and blue: 0.45 V ±20% (when gray reference plate and detection distance of 40 mm) Output saturation voltage: Typ. 2.75 V (output voltage range: 0 to 2.75 V) SCL/SDA input H voltage: 2.54 to 5.4 V, input L voltage: 0.9 V max., SDA output L voltage 0.44 V max. (when output current of 3 mA) RGB output voltage value resolution: 3.2 mV
Sampling period		1 msec
Data update period		Sampling period (1 msec) × average number of times (1 to 50 times)
Ambient temperature range		Operating: -10 to +70°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		150 m/s ² for 3 times each in X, Y, and Z directions
Degree of protection		IEC IP50 (not including terminals)
Connecting method		Connector models (connector: SM05B-SRS made by J.S.T. Mfg. Co., Ltd.)
Weight		Approx 3.4 g
Material	Case	Polycarbonate (PC)
	Lens	Acrylic (PMMA)
	Cover	Polycarbonate (PC)





Thank You