OMRON

Sensor Selection Guide

OMRON's unique sensing technology responds to evolving needs.

HOME   OFFICE   FACTORY   ENERGY

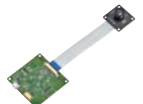Photomicro Sensor | Limited Reflective Sensor | Diffuse Reflective Sensor | Color Sensor | 3D TOF Sensor Module | MEMS Flow Sensor | MEMS Non-Contact Thermal Sensor | Seismic Sensor | Human Vision Components

OMRON's sensing technology contributes to creating a safe, secure and comfortable IoT society that serves its people.

Comfortable and Convenient

IoT Solution

Safe and Secure

Energy Saving

Efficient

Factory Automation

Energy Management

Smart Home

Smart Building

OMRON's sensing technology meets evolving needs

Algorithm Technology

● Distance ● Human Recognition Image Sensing ● Earthquake Detection

OKAO

3D TOF Sensor Module

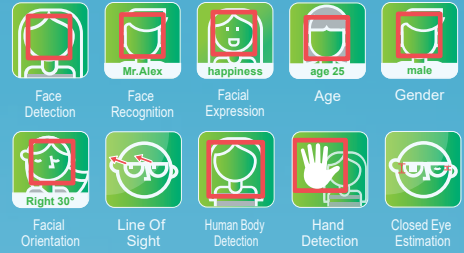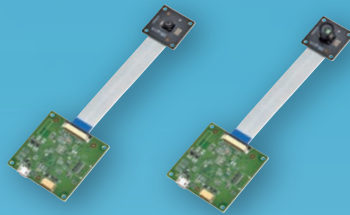Embedded Human Recognition Image Sensor (Module)

Seismic Sensor

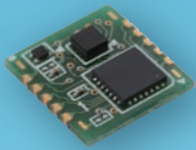*Technology*

Sensor Line-Up

3D TOF Sensor Module

Distance

Embedded Human Recognition Image Sensor

Face Detection

Face Recognition

Facial Expression

Age

Gender

Facial Orientation

Line Of Sight

Human Body Detection

Hand Detection

Closed Eye Estimation

Seismic Sensor

Earthquake

MEMS Non-Contact Thermal Sensor

People's Position

Temperature

Number of People

MEMS Flow Sensor

Air Flow

Photomicro Sensor

Presence of Objects

Limited Reflective Sensor

Presence of Objects

Hand Detection

Diffuse Reflective Sensor

Presence of Objects

Color Sensor

Presence of Objects

Color sensor

Sensor Evaluation Board

Sensor Evaluation Board

Optical Design Technology

● Presence of Objects   ● Displacement   ● Distance

Photomicro Sensor

Limited Reflective Sensor

Diffuse Reflective Sensor
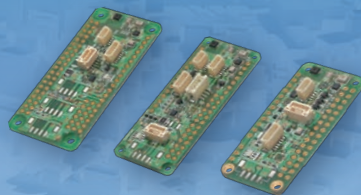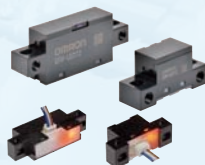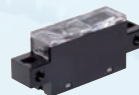
Color Sensor

MEMS Technology

● Gas Flow Rate   ● Temperature

MEMS Flow Sensor

MEMS Non-Contact Thermal Sensor

Photomicro Sensor   EE-S Series

Model *1	EE-SX1320/4320	EE-SX1321	EE-SX1330,1330-2 *4/4330	EE-SX1340/3340,4340	EE-SX1350/3350,4350	EE-SX3173/4173-P	EE-SX3162/4162-P1(-Z), P2
Sensing Type (Termination)	Transmissive (SMD)					Transmissive (Connectors)	
Mounting Type	Surface Mount	Surface Mount	Surface Mount	Surface Mount	Surface Mount	M3 Screw-mounting	M2 Screw-mounting
Sensing Distance	2mm	2mm	3mm	4mm	5mm	5mm	5mm
Output Configuration*2	PTr/P-IC	PTr	PTr/P-IC	PTr/P-IC	PTr/P-IC	P-IC	P-IC
Aperture Size	0.3mm	0.3mm	0.3mm	0.5mm	0.5mm	0.5mm	0.5mm
Dimensions (L×W×H)	5.1×4×4	5.1×4×4	6×4×5	8×4×5.5	9×4×9	13.6×14.8×14.7	13×16×14
Features	Super miniature	Output 2ch Super miniature	Super miniature	Miniature	General purpose	Connector with lock Driving voltage 5/24V	Connector with lock

Model *1	EE-SX493	EE-SX1055	EE-SX1046	EE-SX1106	EE-SX198/398,498	EE-SX1071	EE-SX1081/3081,4081
Sensing Type (Termination)	Transmissive (Terminal)						
Mounting Type	Board Mount	Board Mount	Board Mount	Board Mount	Board Mount	Board Mount	Board Mount
Sensing distance	2mm	2.8mm	3mm	3mm	3mm	3.4mm	5mm
Output Configuration*2	P-IC	PTr	PTr	PTr	PTr/P-IC	PTr/P-IC	PTr/P-IC
Aperture Size	0.2mm	0.5mm	0.5mm	0.4mm	0.5mm	0.5mm	0.5mm
Dimensions (L×W×H)	11×8×9.7	8.9×4×5.4	10×6.5×5	6.4×4.2×5.4	12.2×5×10	13.6×6.2×10.4 /15.4×6.2×10.4	13.7×5×10
Features	High resolution	Miniature	Horizontal aperture	Miniature	General purpose Without a positioning boss *3	General purpose	General purpose

Model *1	EE-SX1161-W11 /3161-W11,4161-W11	EE-SX1088-W11 /3088-W11,4088-W11	EE-SX1096-W11 /3096-W11,4096-W11	EE-SX1160-W11 /3160-W11,4160-W11	EE-SY199	EE-SY1201	EE-SY171
Sensing Type (Termination)	Transmissive (Pre-wired)			*Detachable connector	Reflective		
Mounting Type	Screw-mounting	Screw-mounting	Screw-mounting	Screw-mounting	Surface Mount	Surface Mount	Board Mount
Sensing distance	3.2mm	3.4mm	3.4mm	9.5mm	1.0mm	3.0mm	3.5mm
Output Configuration*2	PTr/P-IC	PTr/P-IC	PTr/P-IC	PTr/P-IC	PTr	PTr	PTr
Aperture Size	0.5mm	0.5mm	0.5mm	0.5mm	–	–	–
Dimensions (L×W×H)	12.95×23.7×12.7	25×6×10	25×6×10	31.75×6×15.5	3.2×1.7×1.1	4.0×3.0×2.0	14×4.2×3
Features	Dust-proof	General purpose	Horizontal aperture	Wide slot	Super miniature	Super miniature	Thin

*1 **EE-SX3~**... Dark ON, **EE-SX4~**... Light ON   *2 **PTr**... Photo-transistor, **P-IC** ... Photo-IC   *3 With a positioning boss... EE-SX199   *4 High-speed response type... EE-SX1330-2
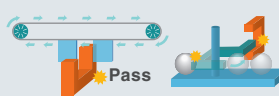
Example Applications

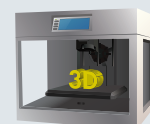### Rotation Detection

Robots

Passing Detection

Pass
Cash dispensers

Non-Contact Switch

Workpiece
Spring
PMS board
Medication dispensers

### Origin Detection

Fit
START!
3D printers

EE-SX3163 /4163-P1,P2	EE-SX3164 /4164-P1,P2	EE-SX460-P1	EE-SX461-P11	EE-SX3009-P1, 4009-P1	For connector models Accessories	EE-SX1018	EE-SX1103	EE-SX1105
Transmissive (Connectors)					Connector with cable (Order separately)	Transmissive (Terminal)		
M2 Screw-mounting	M2 Screw-mounting	Snap-in	Snap-in	Screw-mounting	EE-1005 Tyco Electronics Length: 1m	Board Mount	Board Mount	Board Mount
5mm	5mm	5mm	15mm	5mm		2mm	2mm	2mm
P-IC	P-IC	P-IC	P-IC	P-IC		PTr	PTr	PTr
0.5mm	0.5mm	0.5mm	2mm	0.5mm		0.5mm	0.4mm	0.4mm
13.6×13.3×14.7	22.6×8.3×14	30×11×23.6	32.5×12×23.6	34×11×21	EE-5002 JST Length: 1m	8×4×6	5×4.2×5.2	4.9×2.6×3.3
Connector with lock	Connector with lock	High resolution Detachable	Wide slot Detachable	High resolution		Miniature	Super miniature	Super miniature

EE-SX1041	EE-SX1042	EE-SX1035	EE-SX1070 /3070,4070	EE-SX1140	EE-SV3	EE-SX1088 /3088,4088	EE-SX1096	EE-SG3
Transmissive (Terminal)								
Board Mount	Board Mount	Board Mount	Board Mount	Board Mount	Screw-mounting	Screw-mounting	Screw-mounting	Screw-mounting
5mm	5mm	5.2mm	8mm	14mm	3.4mm	3.4mm	3.4mm	3.6mm
PTr	PTr	PTr	PTr/P-IC	PTr	PTr	PTr/P-IC	PTr	PTr
0.5mm	0.5mm	1mm	0.5mm	1.5mm	0.2/0.5/1mm	0.5mm	0.5mm	2mm
14×6×10	14×5×14.5	12.6×6.3×6.9	17.7×6×10	23×5×16.3	15.1×19×10.4	25×6×10	25×6×10	25.4×6.35×11.7
With a positioning boss	High profile Without a positioning boss *4	Small with wide slot	Wide slot With a positioning boss	Wide slot	High resolution	General purpose	Horizontal aperture	Dust-proof

EE-SY169, 169A,169B	EE-SY110 /310,410	EE-SF5, SF5-B
Reflective		
Board Mount	Board Mount	Board Mount
4mm	5mm	5mm
PTr	PTr/P-IC	PTr
–	–	–
12.5×6×8	12×4.6×4.8	13×5.7×8
Red LED, A: General purpose, B: Red LED, high output	General purpose	Dust-proof

Product images do not represent actual size ratio.

Related information

Fundamentals of Photomicrosensors
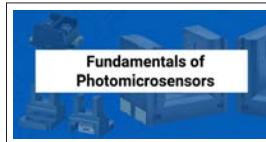
Fundamentals of Photomicrosensors
Useful information for designers

Photomicrosensor Application Guide
Specific examples of applications, etc.

Recommended Sensors

SMD — Reduce assembly work and save space

Surface mount models

One-step installation

Easy, one-step installation thanks to usability with other products for reflow soldering.

SMD type Surface mounting to board

○ Suitable for Small-Size Applications

○ 2 to 5 mm slot widths available

○ Photo-IC output models available for use in high-speed applications

○ 2-channel models available for encoder functionality

Connector — No mounting required reducing workload!

Connector models

The all-in-one design includes the sensor, circuit board, and connector. This helps keep equipment sizes down thanks to no additional mounting required.
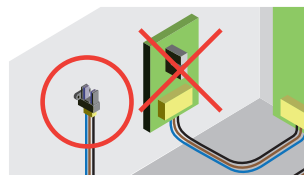
○ All-in-one design for improved miniaturization

○ Screw-based mounting for a more reliable installation

○ M3 screw-mounting model is added

○ Connector with cable (order separately) is available

5

Limited Reflective Sensor   B5W-LB Series

Type

Output type	Analog output type	Digital output type		
Exterior		Miniature type		Super miniature type
Exterior				
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

Features

1 Material Robustness
Add shiny, white, black, reflective, or transparent objects to body

2 Distance Robustness
A wide sensing range to allow object shifting

3 Lineup
Suitable for embedding in commercial equipment

Product / Technology Overview

Stable detection of shiny, black or transparent objects

Here's why

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 this product contributes to a reduction of man-hours

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).
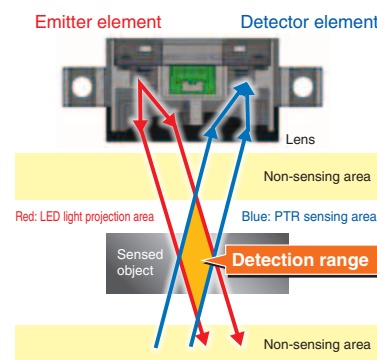
Example Applications

Cup detection

Coffee makers

Hand detection

Sanitation equipment

Tablet package detection

Tablet Packaging

Container detection

Analysis equipment

Human body detection

Sterilization / deodorization equipment

6

Diffuse Reflective Sensor
B5W-DB Series

Datasheet B5W-DB

Datasheet B5W-DB 11A1-A

Type

Sensing method	Appearance	Size	Connecting method	Output type	Distance variable	Sensing distance	Operation mode	Model	Minimum number of deliverable units (Unit: pieces)
Diffuse reflective		Super miniature	Connector	NPN open collector	-	550 mm	Light-ON[*1]	B5W-DB1452-1	1
								B5W-DB1452-2	1,500
					Variable sensing distance: 150 to 550 mm	250 mm[*2]	Light-ON[*1]	B5W-DB11A1-A-1	1
								B5W-DB11A1-A	1,500

*1. In case of light-ON, control output is turned ON when a sensing object is detected.
*2. Vcc = 12 V, limiting resistor = 680 Ω, white paper
    Vcc = 15 V, limiting resistor = 910 Ω, white paper
    The sensing distance varies depending on the color, material, and other conditions of the object to be detected. Before using the product, please confirm that the product functions properly.

Features

1 **Super miniature long-distance diffuse reflective sensor that can be installed anywhere**

2 **Sensing distance can be varied according to the limiting resistance value external to the sensor**
(DB11A1-A-□ only)

3 **Designed to be immune to ambient light**

Example Applications

Picking system
(Hand detection)

OA/FA equipment
(Human body detection)

AMR
(obstruction detection)

Sterilization / deodorization equipment
(Hand/Human body detection)

Body surface temperature measuring equipment
(Human body detection)

Amusement equipment
(Hand detection)

Sensor Evaluation Board   2JCIE-EV Series

Datasheet

Type

Model	2JCIE-EV01-RP1	2JCIE-EV01-AR1	2JCIE-EV01-FT1
Type	RP type	AR type	FT type
Appearance			
Supported platform [*4]	Raspberry Pi [*1]	Arduino [*2]	Feather [*3]
Table of Models	3 A/1 B+/2 B/3 B/3 B+/Zero/Zero W [*5]	MKR Vidor 4000/MKR WiFi 1010/MKR ZERO [*5]	HUZZAH32 [*5]

*1. Raspberry Pi is a registered trademark of the Raspberry Pi Foundation.
*2. Arduino is a registered trademark of Arduino LLC and Arduino SRL.
*3. Feather is a registered trademark of Adafruit Industries LLC.

*4. Boards for supported platforms are not included.
*5. Do not use a model other than those listed in each table of platform supporting models.

Features   Compatible with 3 major platforms. Allow various sensing functions to be easily evaluated.

OMRON sensor evaluation board
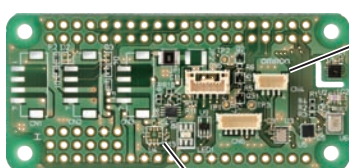
Can be connected to OMRON sensors*

Six types of sensing functions

Temperature, humidity, light, barometric pressure, noise, acceleration
https://components.omron.com/sensor/evaluation-board/2jcie

* For compatible models, see the list of "External Expansion Sensors".

+

Platform

Supports three platforms

Raspberry Pi [*1]
Arduino [*2]
Feather [*3]

(Raspberry Pi)

GitHub

Sample source code
Now available

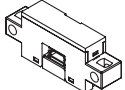https://github.com/omron-devhub

Color Sensor   B5WC Series

Type

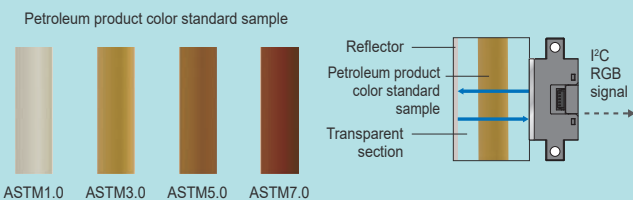| Sensing method	Appearance	Size	Connecting method	Output type	Sensing distance	Model	Minimum number of deliverable units (Unit: pieces)
Reflective		Miniature	Connector	I²C	40 mm	B5WC-VB2322-1	1

Features

1 **Liquid condition monitoring**

A color sensor monitors changes in the color of the liquid and contributes to more efficient equipment maintenance.

2 **Multi-functionalization of equipment**

The operation according to the color information of the detected object can contribute to multi-functionalization of the equipment and automation of business operations.

3 **Stable operation of equipment**

Detecting objects by color, rather than differences in the amount of reflected light as with conventional optical sensors, can contribute to stable operation of the equipment.

Product / Technology Overview

By monitoring the color of the lubricating oil with a color sensor, the deterioration of the oil for each equipment can be quantitatively monitored by color, and the oil can be replaced at the optimum time without depending on personal criteria.

Petroleum product color standard sample

Reflector
Petroleum product color standard sample
Transparent section

I²C RGB signal

ASTM1.0   ASTM3.0   ASTM5.0   ASTM7.0

By color coding the equipment operation with signal output corresponding to the color of the color sensor, it is possible to build multi-functional equipment that meets diversifying needs.

1. Cup color is purple
5P 4/7
Grape juice served

2. Cup color is red
5R 4/12
Strawberry juice served

The presence or absence of an object to detect may be confirmed by using a signal output from a color sensor for each color of the detected object.

Example applications
Object detection on the production line

5B 4.5/6
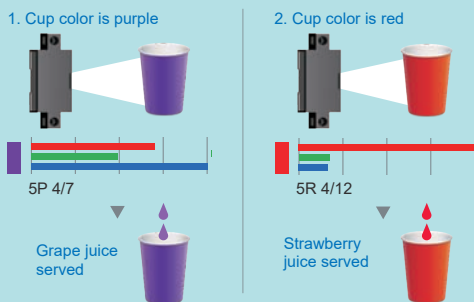
Color Sensor Principle

I²C RGB signal

A color sensor uses a white LED as its light source to emit light and receive reflected light (the ratio of red, green, and blue is unique to each color) determined by the color of the detected object. The color sensor separates the reflected light received into red, green, and blue, and outputs the red, green, and blue data (RGB data) as voltage values using the I2C communication method. For example, in the case of red and yellow detected objects, the red, green, and blue output values from the color sensor are different for red and yellow reflected light by the white LED, allowing differentiation of red and yellow.
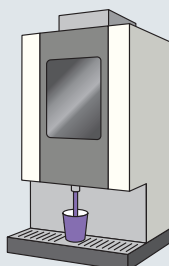
Example Applications

Machine tool
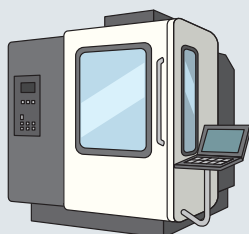
Remote monitoring of lubricant color

Drink dispenser

Automatic supply of beverages according to the cup color

Object detection on the production line

3D TOF Sensor Module   B5L Series

Data-sheet

Video

Type

Sensing type	Detection range (white paper)	NIR transmission filter	Model	Minimum number of deliverable units
TOF	0.5m ← → 4m	Available (Built-in)	B5L-A2S-U01-010	1 piece

Features

1 **Ambient light immunity**

Ambient light immunity equivalent to 100,000 lx !

Its powerful ambient light immunity ensures stable detection performance free from saturation even in bright places

2 **High Precision**

±2% (2 m)

Achieves high output accuracy for compensated signals

3 **Long life**

Long life equivalent to 5 years under continuous driving.

According to OMRON's research in March, 2020 [1]
Long life thanks to OMRON's unique circuit design and heat emission design

4 **Interference prevention**

With interference prevention function (up to 17 units [Industry's top class])

According to OMRON's research in March, 2020 [2]
Ideal for applications that require the use of multiple devices such as robots at the same time

Note: Functionality and performance may decrease under certain operating conditions. Refer to User's Manual (manual number: E596-E1) for details.
*1. According to OMRON's evaluation method (reliability acceleration test at the ambient temperature of 20°C and the humidity of 65%RH).
*2. However, product specifications are not guaranteed.

Product / Technology Overview

What is a TOF Sensor?

A TOF (Time of Flight) sensor uses the flight time of light to measure distances to objects. As well as being able to turn captured images into 3D images, it can also measure at a speed of 20 frames per second, allowing it to track the movement of objects three-dimensionally.

Lens (Receiver)   LED (Emitter)

Received (reflected) waves

Emitted waves

Differences from a conventional camera sensor

The use of extensive distance information enables the sensor to identify its peripheral environment

Watch a demonstration video here

2D image — Far / Near

3D image

Capable of delivering stable detection performance even in direct sunlight.

Standard Camera Image (Indoor)   3D TOF Sensor Module

Standard Camera Image (Outdoor)   3D TOF Sensor Module

Example Applications

AMR/service robots
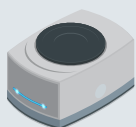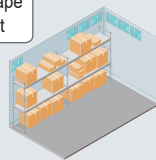
Drop detection / Environment recognition

Periphery recognition / Human recognition

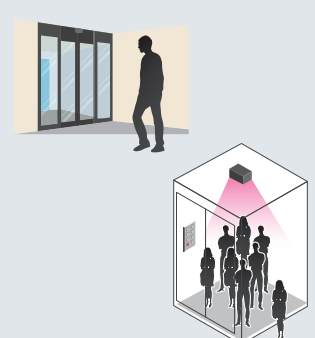**Logistics and conveyance**
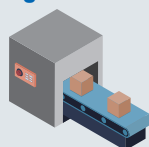
Volume and shape measurement

Empty space detection

Observation

Behavioral understanding and observation of patients under long-term care

Automatic doors/elevators

Counting people and tracking traffic flows

MEMS Flow Sensor　D6F Series

Type

■ MEMS Flow Sensor (Flow Rate Type)

> Air　> Low flow　> Analog

Applicable fluid	Air		
Item　Model	D6F-P0001A1	D6F-01A1-110 D6F-P0010A□ D6F-P0010AM2	D6F-02A1-110
Appearance			
Flow range (L/min)	0 to 0.1L/min	0 to 1L/min	0 to 2L/min

> Gas　> Low to medium flow　> Analog

Applicable fluid	Urban gas (13A)	LP gas	Urban gas (13A)
Item　Model	D6F-01N2-000	D6F-02L2-000 D6F-02L7-000	D6F-05N2-000 D6F-05N7-000
Appearance			
Flow range (L/min)	0 to 0.1L/min	0 to 2L/min	0 to 5L/min

> Air　> Medium to high flow　> Analog　> Digital 🄳 are the only digital types.

Applicable fluid	Air				
Item　Model	D6F-10A5-000 D6F-10A6-000 D6F-10A7-000 D6F-10A7D-000 🄳	D6F-20A5-000 D6F-20A6-000 D6F-20A7D-000 🄳	D6F-30A7-000 D6F-30AB71-000	D6F-50A5-000 D6F-50A6-000 D6F-50A7D-000 🄳	D6F-70AB71-000 D6F-70AB71D-000 🄳
Appearance					
Flow range (L/min)	0 to 10L/min	0 to 20L/min	0 to 30L/min	0 to 50L/min	0 to 70L/min

■ MEMS Air Flow Sensor (Velocity Type)

> Air　> Velocity　> Analog

Applicable fluid	Air			
Item　Model	D6F-W01A1	D6F-V03A1	D6F-W04A1	D6F-W10A1
Appearance				
Flow speed range (m/s)	0 to 1m/s	0 to 3m/s	0 to 4m/s	0 to 10m/s

■ MEMS Differential Pressure Sensor

> Air　> Differential pressure　> Digital 🄳 Digital

Applicable fluid	Air		
Item　Model	D6F-PH0505 AD□/AMD□ 🄳	D6F-PH0025 AD□/AMD□ 🄳	D6F-PH5050 AD□/AMD□ 🄳
Appearance			
Differential pressure range (Pa)	-50 to 50Pa	0 to 250Pa	-500 to 500Pa

10

Features

① High Precision

±3%RD (25-100%F.S.) is realized by linear temperature correction using ASIC technology

Ambient temperature = 25°C (Model: D6F-20A7D-000-0).

② High Sensitivity

Omron's unique MEMS technology allows detection of very low air velocities

Example of D6F-01A1-110:
Output corresponding to flow rate change below 1/1000 of full scale.

③ Miniature

The product size is reduced by using the world-smallest class size MEMS sensor element

Dimension of D6F-V model: 24x8x14mm.

## Product / Technology Overview

What is MEMS flow sensor?   Realizing a highly accurate flow measurement, sensing even a single flap of a butterfly's wings.

A sensor that measures how much gas (how many liters) is flowing per minute.
The basic principle is the heat ray method where the temperature sensor captures the heat transfer generated by the movement of the air flow.
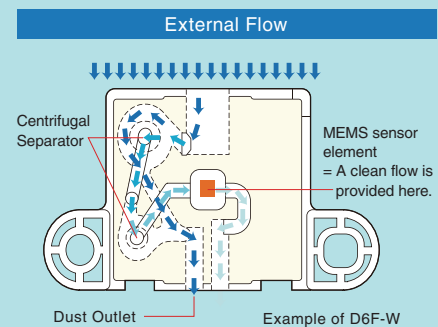
Resistant to dust - Equipped with a dust segregation system (cyclonic) - D6F-W/-V/-P

Patented   No. 4534526
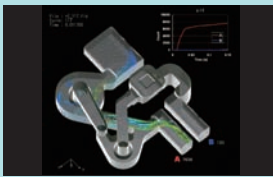
- The sensor can be placed anywhere thanks to its dust-resistant structure.

Omron's unique design of 3D flow path provides a high level of reliability by separating dust particles to reduce its effect on the sensor chip. Additionally, Omron succeeded in reducing the sensor size, allowing it to be used in wider range of applications.

External Flow

Centrifugal Separator
MEMS sensor element = A clean flow is provided here.
Dust Outlet
Example of D6F-W

Example Applications

Clogging Detection
◉ Flow rate ◉ Velocity ◉ Differential pressure
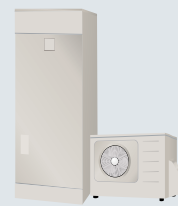
Projector | PC | Server

Combustion Control
◉ Flow rate ◉ Differential pressure

Fuel cell | Water heater | Boiler

Flow Measurement
◉ Flow rate ◉ Differential pressure

Welder | Container manufacturing machine | Environmental analyzer | Mounting machine

Air Volume Detection
◉ Velocity ◉ Differential pressure

Air flow measurement (environment) | Duct | Air conditioner
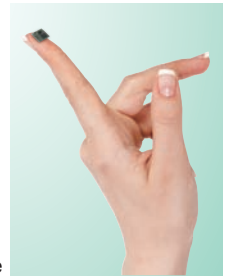
11

Seismic Sensor   D7S Series

Type

Model	D7S-A0001
Acceleration Detection Range	-2,000-+2.000gal
Shutoff Output	Output at seismic intensity level 5 or higher

Features

1 **Super miniature**
Ideal for embedded applications

2 **High Reliability**
Prevent false detection and non-detection

3 **IoT Link**
Allow secondary use of earthquake information

Example Applications

The world's smallest-class seismic sensor can be used in wider range of applications. Also ideal for embedded applications.
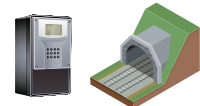
Industrial
Semiconductors/FPDs, machine tools, control panels, combustion furnaces, printers

Residential
Distribution boards, disaster prevention systems, home appliances (heaters, gas stoves)

Commercial
Electrical/gas meters, chemical plants, highways, bridges, tunnels, railroads

---

Automatic Horizontal Vibration Sensor / Sealed Vibration Sensor / Fall Sensor   D7A/D7E

Type

	Model	D7A-1	D7A-2	D7A-3-1	D7E-1	D7E-2	D7E-5	D7E-3
	Type	For horizontal boards	For vertical boards	Screw tightening	Vibration sensor			Fall sensor
	Appearance							
Operating characteristics	Acceleration setting	90 to 170 gal			130 to 200 gal	100 to 170 gal	120 to 195 gal	–
	Operation angle	–		–	–	–	–	50 to 80°
Output configuration	Structure setting	1a			1b			

Example Applications

Fan heater

IH / gas stove

Gas meter

MEMS Non-Contact Thermal Sensor   D6T Series

Type

Model	D6T-1A-01	D6T-1A-02	D6T-8L-09	D6T-8L-09H	D6T-44L-06	D6T-44L-06H	D6T-32L-01A
Number of elements	1(1x1)		8(1x8)		16(4x4)		1024(32x32)
Appearance							
Viewing angle X-direction Y-direction	X = 58.0° Y = 58.0°	X = 26.5° Y = 26.5°	X = 54.5° Y = 5.5°		X = 44.2° Y = 45.7°		X = 90.0° Y = 90.0°
Object temperature detection range	5 to 50°C	-40 to 80°C	5 to 50°C	5 to 200°C	5 to 50°C	5 to 200°C	0 to 200°C

Features

1

High Precision
Market performance of over 6 million units[1] with a stable temperature output[2]

2

Easy connection
Direct temperature value output allows easy software design

3

Number of elements x temperature lineup
Variation of the number of elements (1 to 1024) x temperature range (-40 to 200°C)
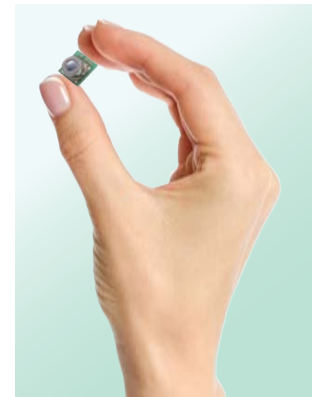
[1]. According to OMRON's research as of March 2022.
[2]. Refer to the Noise Equivalent Temperature Difference (NETD) on page 12 of the data sheet.

Example Applications

-40°C			200°C

Refrigerator Interior & Room Temperature Detection

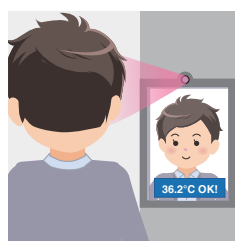Home appliances (refrigerators & air conditioners)

Human Presence Detection

Air conditioners & lighting systems

Screening of Humans with Fever
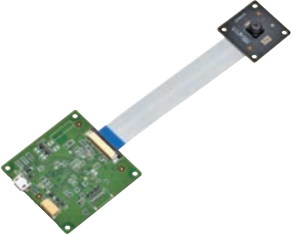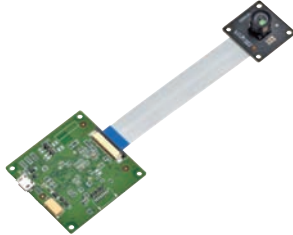
36.2°C OK!

Room-Entry Management Equipment

Abnormal High Temperature Monitoring

Transformers & distribution boards

Human Vision Components (HVC)　B5T Series

Type

Item	Long-distance detection type B5T-007001-010	Wide-angle detection type B5T-007001-020
Appearance		
Horizontal detection range (angle of view)	Approx. 54°	Approx. 94°
Vertical detection range (angle of view)	Approx. 41°	Approx. 76°
Input resolution	1600x1200 pixels	
Output resolution	Selectable (no image output, 160x120 pixels, 320x240 pixels)	
Shooting in the dark	200lx max.	
Power supply voltage	DC 5V±0.5V	
Current consumption	0.4A max.	
Power consumption	2W max.	
Operating temperature	0°C to +50°C (with no condensation or icing)	
Communication method	① UART 3.3V ② USB CDC-class devices	

Features

1 Choice of wide-angle type and long-distance type depending on detection distance or range needs

2 Can be used for apps that analyze customer base from attribute information (age, gender, etc.) and utilize the data for marketing

3 Evaluation software and development tool can be downloaded for free from the website

• Development tool　[Japanese]　https://components.omron.com/jp-ja/products/sensors/B5T

Click here to download　[English]　https://components.omron.com/us-en/products/sensors/B5T

Operation manual / software

Data type	File name
User's Manual	Human Vision Components (HVC-P2)B5T-007001Command Specifications
User's Manual	Human Vision Components (HVC-P2)B5T-007001-010 modelB5T-007001-020 modelInstruction Sheet
Promotion Video	Human Vision Components(HVC-P2) B5T-007001 [English Ver]
Manual Video	[OMRON] HVC-P2 Connection Manual	B5T-007001 Human Vision Components
Software	Software License Agreement for B5T-007001
Software	Sample codes download from GitHub.

Development tool download page
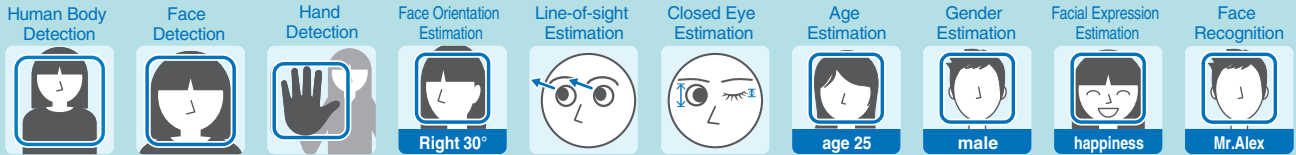
ID verification

Age estimation
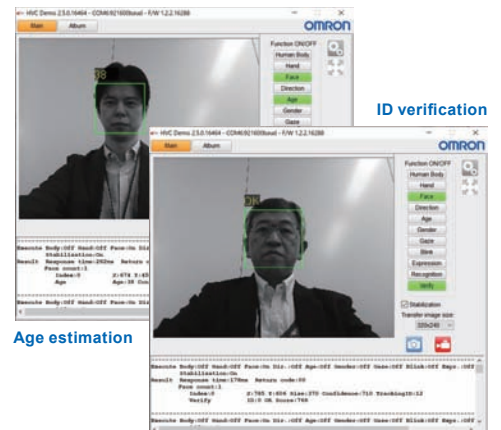
Evaluation software (image)

14

Product / Technology Overview

■ Equipped with human recognition image sensing technology (cumulative shipments* of over 1.5 billion licenses) supported by face information of more than 1 million people.

OKAO   OKAO   Vision

* Total number of purchased licenses since 2009 (As of April 2019).

Human Body Detection	Face Detection	Hand Detection	Face Orientation Estimation	Line-of-sight Estimation	Closed Eye Estimation	Age Estimation	Gender Estimation	Facial Expression Estimation	Face Recognition
			Right 30°			age 25	male	happiness	Mr.Alex

* "OKAO" and "OKAO Vision" are trademarks or registered trademarks of OMRON Corporation in Japan and other countries.

■ The human recognition image sensing technology has been modularized by utilizing the algorithm's strengths of small size and high speed.

▶▶▶ **It can be easily installed in customer's equipment that lacks a camera.**   *A system needs to be built after output is received from the product.

Customer's equipment that lacked a camera

Digital signage	KIOSK terminal	Vending machine	POS / store marketing

Example Applications

Example Applications

Beverage vending machines, ticket vending machines, POS, signage

• It can be used for marketing upon analyzing the customer base from attribute information (age, gender, facial expression) and accumulating data
• Enable effective advertising by switching and displaying advertisements according to attribute information

Usage function example:
Face detection, age / gender estimation, facial expression estimation, etc.

Age 29, Female

Industrial equipment

• Identifies the operator, permits use by a specific person, and records the operator along with the operation details.
• Identifies the operator and optimizes service content (such as display previous operation records)

Usage function example:
Face detection, face recognition, etc.

Modules tailored to specific applications

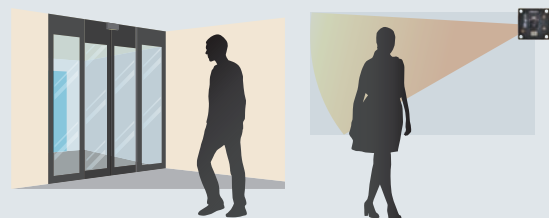**Wide-angle detection type**   **B5T-007001-020**

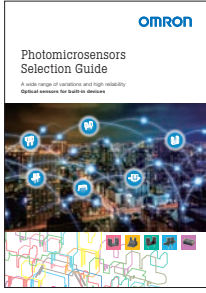Suitable for detecting objects with a wide angle of view at a relatively short distance

Long-distance detection type   **B5T-007001-010**

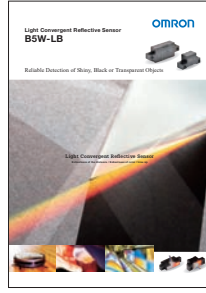Suitable for detecting objects at a relatively long distance

Information of Related Products

Photomicrosensors Selection Guide

Catalog No. Y211-E1

Light Convergent Reflective Sensor
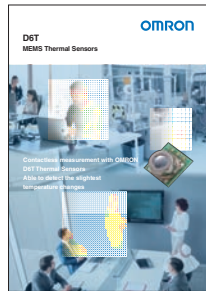
Catalog No. E589-E1

3D TOF Sensor Module

Catalog No. E598-E1
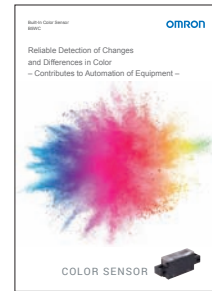
MEMS flow sensor

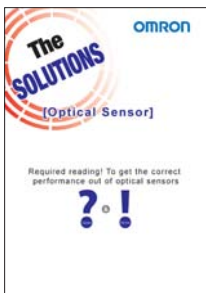Catalog No. X211-E1

MEMS Thermal Sensors

Catalog No. A274-E1

Built-In Color Sensor

Catalog No. E611-E1

The SOLUTIONS: Optical Sensor

Catalog No. E614-E1

Please check each region's Terms & Conditions by region website.

OMRON Corporation
Device & Module Solutions Company

Regional Contact

Americas
https://components.omron.com/us

Europe
https://components.omron.com/eu

Asia-Pacific
https://components.omron.com/ap

China
https://components.omron.com.cn

Korea
https://components.omron.com/kr

Japan
https://components.omron.com/jp