

Sensor Selection Guide

OMRON's unique sensing technology responds to evolving needs.



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.



OMRON's sensing technology meets evolving needs

Algorithm Technology

Distance Human Recognition Image Sensing Earthquake Detection



3D TOF Sensor Module



Embedded Human Recognition Image Sensor (Module)



Seismic Sensor

Technology

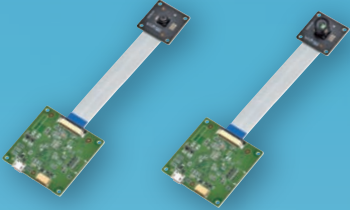
Sensor Line-Up

3D TOF Sensor Module




Distance

Embedded Human Recognition Image Sensor




Face Detection


Mr. Alex


happiness


age 25


male


Facial Orientation

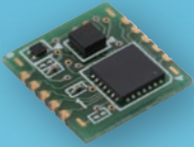

Line Of Sight


Human Body Detection


Hand Detection

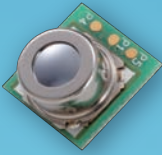

Closed Eye Estimation

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

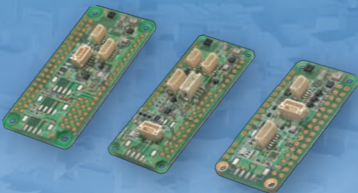



Presence of Objects


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

3

Photomicro Sensor EE-S Series

Model ^{*1}	EE-SX1320 /4320	EE-SX1321	EE-SX1330 /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} With a positioning boss... EE-SX1115

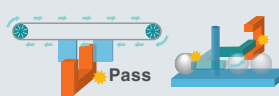
Example Applications

Rotation Detection



Robots

Passing Detection



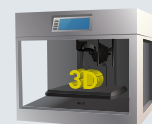
Cash dispensers

Non-Contact Switch



Medication dispensers

Origin Detection



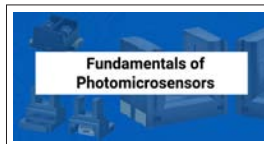
3D printers



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

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

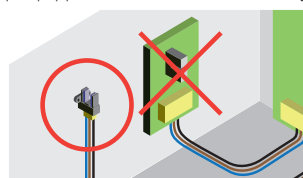
Easy, one-step installation thanks to
usability with other products for reflow
soldering.SMD type
Surface
mounting to
board

- 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

Limited Reflective Sensor B5W-LB Series

Datasheet



Type

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			
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

- Material Robustness**
Add shiny, white, black, reflective, or transparent objects to body
- Distance Robustness**
A wide sensing range to allow object shifting
- Lineup**
Suitable for embedding in commercial equipment

Product / Technology Overview

Stable detection 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!

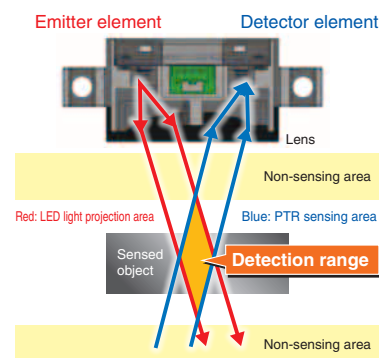
With OMRON's Light Convergent Reflective Sensors, unstable sensing of shiny, black or transparent objects is no longer a problem, meaning this product contributes to a reduction of man-hours



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).



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

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

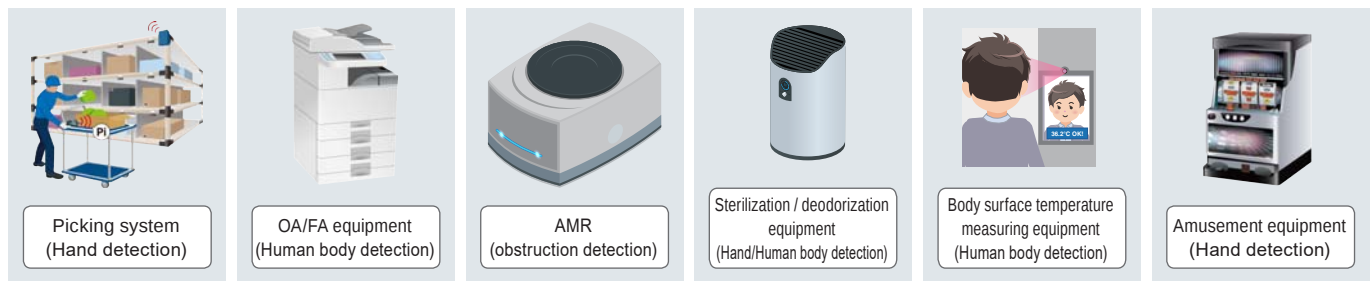
2

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



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.

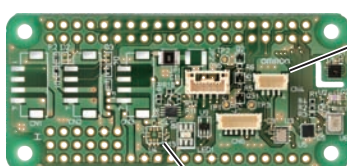
Features

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

OMRON sensor evaluation board



Platform



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".



(Raspberry Pi)

Supports three platforms

Raspberry Pi^{*1}
Arduino^{*2}
Feather^{*3}



Sample source code
Now available

<https://github.com/omron-devhub>



Color Sensor B5WC Series

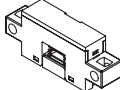
Datasheet



Video



Type

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



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

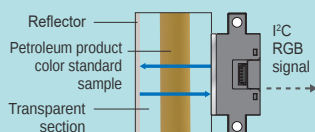
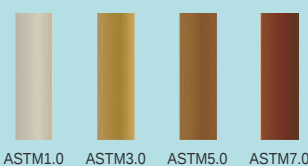
Stable operation of equipment

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.

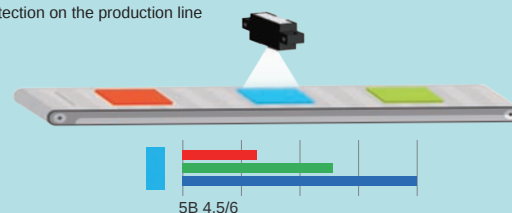
Petroleum product color standard sample



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.

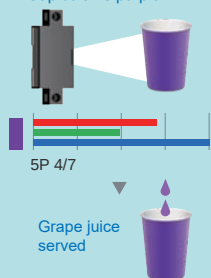
Example applications

Object detection on the production line

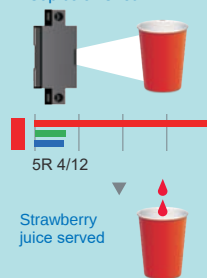


By color coding the equipment operation with signal output corresponding to the color of the color sensor, it is possible to build multi-functional equipment that meets diversifying needs.

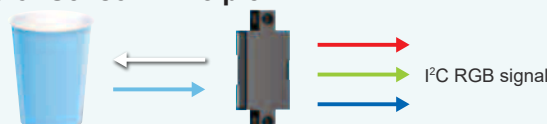
1. Cup color is purple



2. Cup color is red



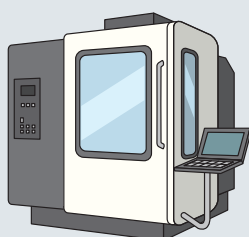
Color Sensor Principle



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.

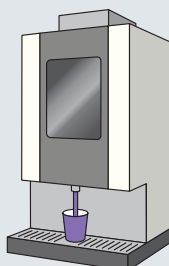
Example Applications

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		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

$\pm 2\%$ (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.

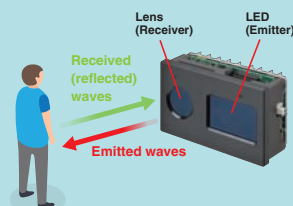
*1. According to OMRON's evaluation method (reliability acceleration test at the ambient temperature of 20°C and the humidity of 65%RH).

*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.

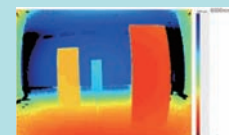


Capable of delivering stable detection performance even in direct sunlight.

Standard Camera Image (Indoor)



3D TOF Sensor Module

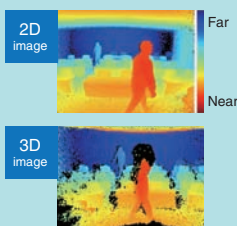


Differences from a conventional camera sensor

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



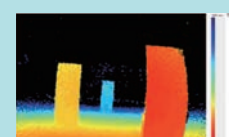
Watch a demonstration video here



Standard Camera Image (Outdoor)

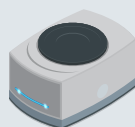


3D TOF Sensor Module



Example Applications

AMR/service robots

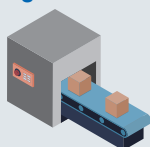


Drop detection / Environment recognition



Periphery recognition / Human recognition

Logistics and conveyance



Volume and shape measurement



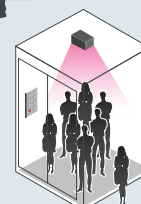
Empty space detection

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)	5			
	4			
	3			
	2			
	1	0 to 0.1L/min	0 to 1L/min	0 to 2L/min
	0			
				

➤ 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)	5			0 to 5L/min
	4			
	3			
	2			
	1	0 to 0.1L/min	0 to 2L/min	
	0			
				

➤ Air ➤ Medium to high flow ➤ Analog ➤ Digital ㉞ are the only digital types.

Applicable fluid		Air				
Item	Model	D6F-10A5-000 D6F-10A6-000 D6F-10A7-000 D6F-10A7D-000 ㉞	D6F-20A5-000 D6F-20A6-000 D6F-20A7D-000 ㉞	D6F-30A7-000 D6F-30AB71-000	D6F-50A5-000 D6F-50A6-000 D6F-50A7D-000 ㉞	D6F-70AB71-000 D6F-70AB71D-000 ㉞
Appearance						
Flow range (L/min)	70					0 to 70L/min
	60					
	50					
	40					
	30			0 to 30L/min	0 to 50L/min	
	20	0 to 10L/min	0 to 20L/min			
	0					
						

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)	12				0 to 10m/s
	10				
	8				
	6				
	4	0 to 1m/s	0 to 3m/s	0 to 4m/s	
	2				
	0				
					

MEMS Differential Pressure Sensor

➤ Air ➤ Differential pressure ➤ Digital ㉞ Digital

Applicable fluid		Air		
Item	Model	D6F-PH0505 AD□/AMD□ ㉞	D6F-PH0025 AD□/AMD□ ㉞	D6F-PH5050 AD□/AMD□ ㉞
Appearance				
Differential pressure range (Pa)	500			-500 to 500Pa
	250		0 to 250Pa	
	50	-50 to 50Pa		
	0			
	-50			
	-250			
	-500			
				



Features

1 High Precision

$\pm 3\%$ 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?

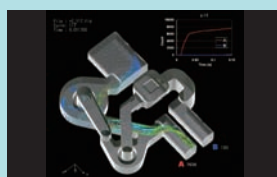
Realizing a highly accurate flow measurement, sensing even a single flap of a butterfly's wings.

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.

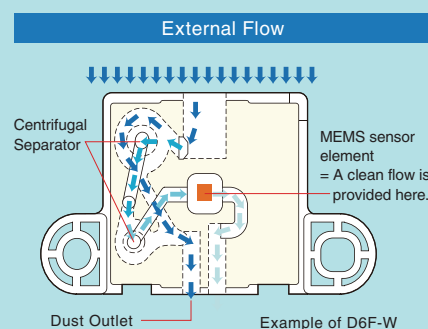
Resistant to dust - Equipped with a dust segregation system (cyclonic) - D6F-W/-V/-P

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.



Example Applications

Clogging Detection

▶ Flow rate ▶ Velocity ▶ Differential pressure



Projector



PC



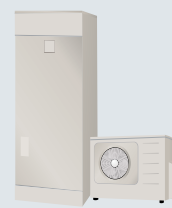
Server

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

Seismic Sensor D7S Series

Datasheet



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



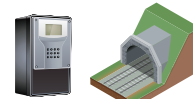
Semiconductors/FPDs, machine tools, control panels, combustion furnaces, printers

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

Data-sheet
D7A



Data-sheet
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

Datasheet



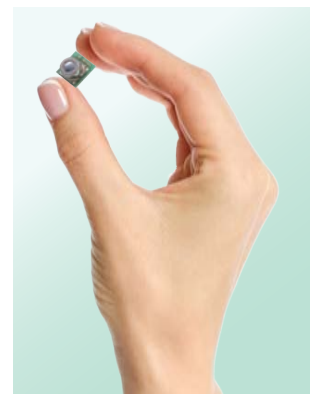
Type

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

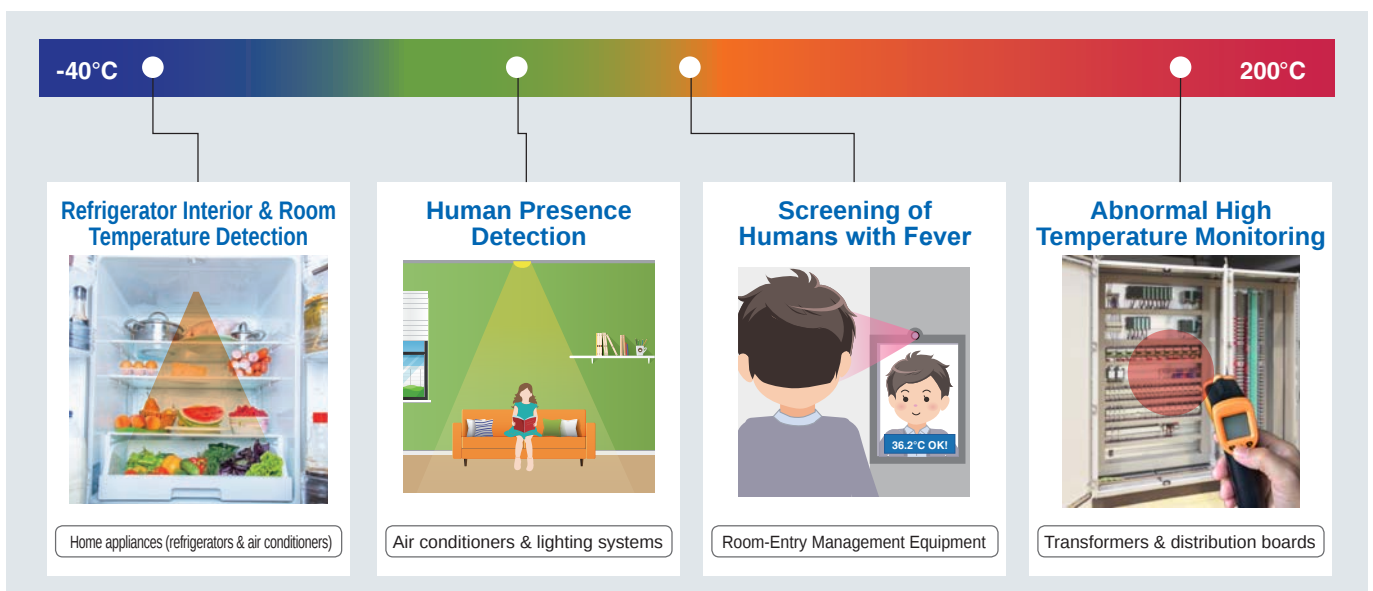
Features

- 1 High Precision**
World's highest-class* stable temperature output
- 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)

*According to OMRON's research as of February 2021, except for D6T-32L-01A



Example Applications

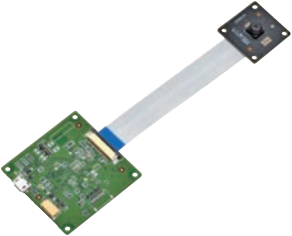
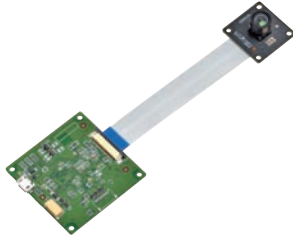


Human Vision Components (HVC) B5T Series

Datasheet



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

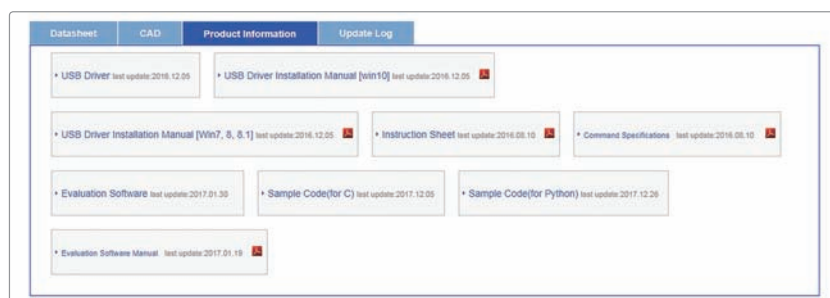
2

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

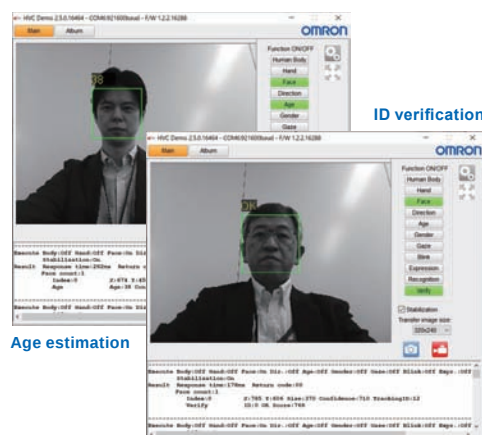
3

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

- Development tool [\[Japanese\]](https://www.omron.co.jp/ecb/) <https://www.omron.co.jp/ecb/>
Click here to download [\[English\]](https://components.omron.com/) <https://components.omron.com/>



Development tool download page



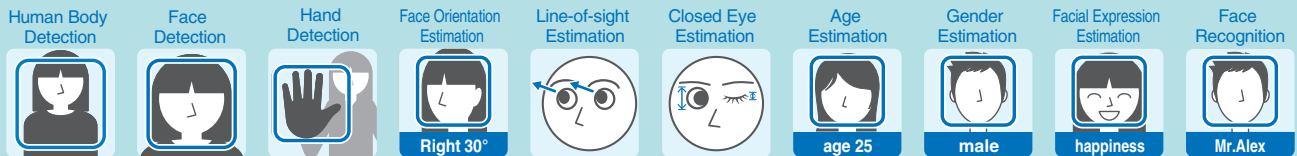
Evaluation software (image)

Product / Technology Overview

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



* Cumulative number of licenses shipped over the past 10 years, as of April 2018, according to our in-house research



* "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



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.



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



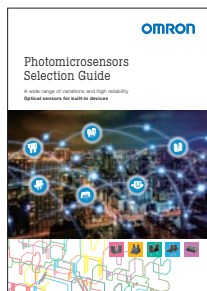
Long-distance detection type

B5T-007001-010

Suitable for detecting objects at a relatively long distance



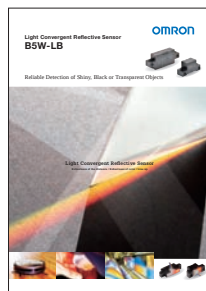
Information of Related Products



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



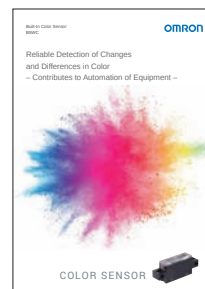
Catalog No.
X211-E1



MEMS Thermal Sensors



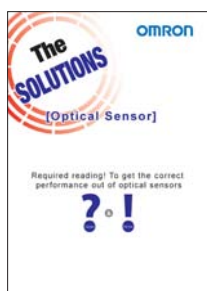
Catalog No.
A274-E1



Built-In Color Sensor



Catalog No.
E611-E1



The SOLUTIONS: Optical Sensor



Catalog No.
E614-E1

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