

# San Ace for Food Machinery

Cooling Systems for Food Related Equipment

Highly Reliable Fans with Environmental Durability



# Our Highly Reliable Fans Make Your Machines More Reliable with Superior Environmental Durability

Our fans feature high quality and high reliability, which are enabled by high-quality components, high-precision designing, assembling, and manufacturing.

## 1 Industry Leading Reliability

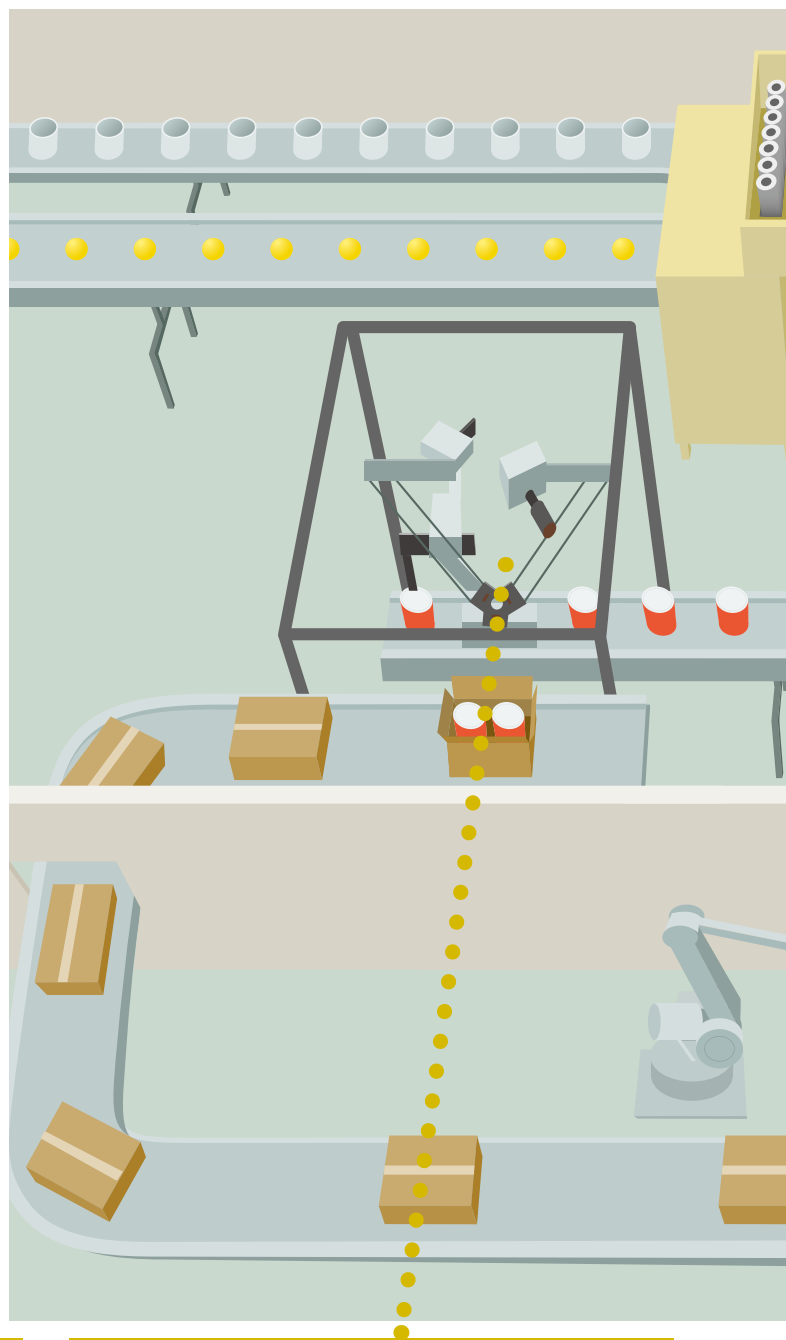
- Every fan is equipped with two bearings.
- Every fan is well balanced.
- Every fan goes through quality inspection.

## 2 Superior Environmental Durability

- A variety of fans with high environmental durability are available in our lineup such as IP68 rated splash proof fan that is usable in splash and dusty environments, and oil proof fan that endures oil mist environments.

## 3 Energy Efficient and Long Lifespan

- Replacement of AC fans with our DC or ACDC fans contributes to energy saving and longer lifespan, eliminating the hassle for maintenance.



### PWM Controller

For more information, see p. 9

Suitable usage

- Machines requiring fan speed control

(water spraying machine, glaze spraying machine, etc.)



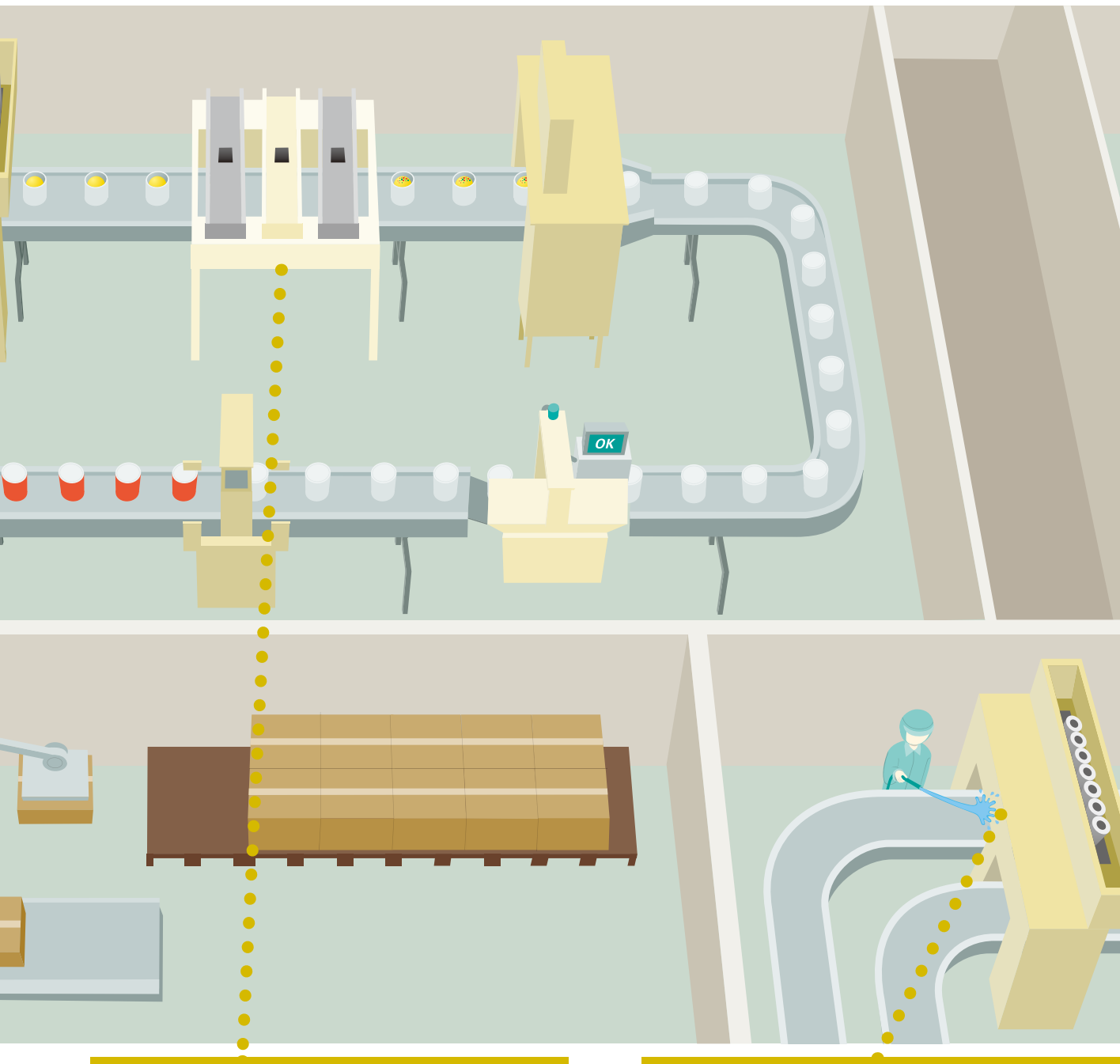
### Centrifugal Fan

For more information, see p. 8

Suitable usage

- Clean room
- Air suction





## ACDC Fan

For more information, see p. 6

Suitable usage

- Control panel
- Devices in which AC fans are used



## IP68 Rated Splash Proof Fan

For more information, see p. 4

Suitable usage

- Machines that operate in splash and dust environments



# IP68 Rated Splash Proof Fan



## ■ Features

IP68 rated fan that excels in water and dust resistance, capable of being used in harsh environments.

- Winding and motor parts are coated with plastic.
- Cation electrodeposition coating as anti-rust treatment (for aluminum frame model)

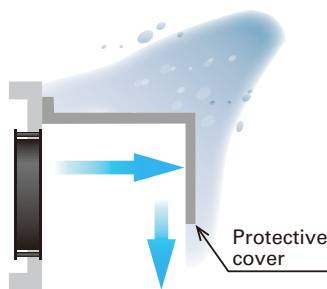
## ■ Lineup

40 × 40 × 20 mm, 40 × 40 × 28 mm, 60 × 60 × 25 mm,  
80 × 80 × 25 mm, 92 × 92 × 25 mm, 120 × 120 × 38 mm,  
140 × 140 × 38 mm,  $\phi$  172 × 51 mm

IP54 rated models are also available.

## Waterproof performance

This fan can operate normally in moist environments due to its waterproof structure, eliminating the need for protective covers.



### ■ Conventionally

Protective cover was necessary to protect the fan against water.

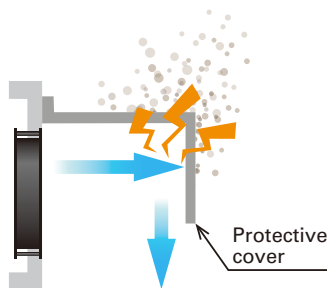


### ■ IP68 rated splash proof fan

Can be used without protective cover with its superior waterproof performance of IP68 rating.

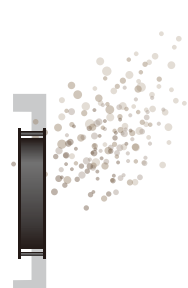
## Protected against dust

It can be used without a cover even in environments where it is exposed to dust and dirt.



### ■ Conventionally

- Device size is increased
- Exhaust air makes noise with the cover

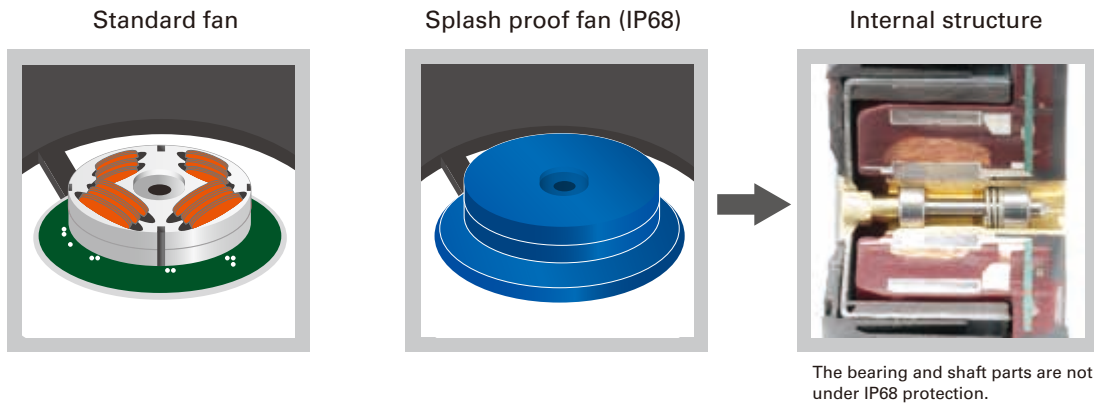


### ■ IP68 rated splash proof fan

With the cover removed, device is downsized and noise level is lowered.

## Water- and dust-resistant structure of IP68 rated fans

Plastic coating prevents water from entering the electrically active parts even on the event of water submersion.



## Ingress Protection (IP Code)

■ Definition of Ingress Protection (IP Code)

**I P X X**

Second digit: Protection against water

First digit: Protection against solid objects and access to hazardous parts

| First digit | Definition                                                                      |
|-------------|---------------------------------------------------------------------------------|
| 0           | No protection                                                                   |
| 1           | Protection against solid objects of 50 mm or larger                             |
| 2           | Protection against solid objects of 12.5 mm or larger                           |
| 3           | Protection against solid objects of 2.5 mm or larger                            |
| 4           | Protection against solid objects of 1 mm or larger                              |
| 5           | Protection against a level of dust that could hinder operation or impair safety |
| 6           | Complete protection against dust                                                |

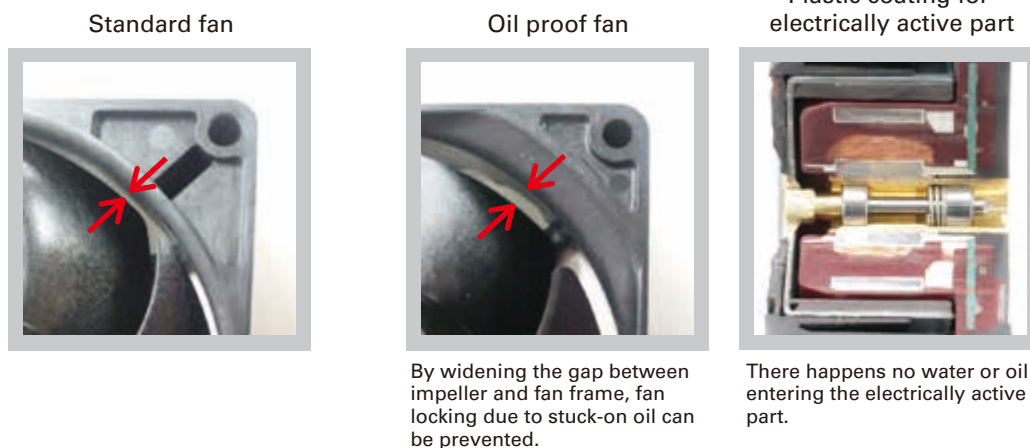
| Second digit | Definition                                                   |
|--------------|--------------------------------------------------------------|
| 0            | No protection                                                |
| 1            | Protection against vertically dripping water                 |
| 2            | Protection against dripping water up to 15° to vertical line |
| 3            | Protection against spraying water                            |
| 4            | Protection against splashing water                           |
| 5            | Protection against low pressure water jets                   |
| 6            | Protection against high pressure water jets                  |
| 7            | Protection against temporary immersion in water              |
| 8            | Protection against submersion in water                       |

Ingress Protection (IP Code) is defined as above in a standard IEC (International Electrotechnical Commission) 60529\* "Degrees of protection provided by enclosures (IP Code)". \*IEC 60529:2010

## For use in oil mist environments

For detailed specifications, please read p.10.

### Oil Proof Fan 9WF type



# ACDC Fan



## ■ Features

ACDC fan has an internal AC-DC converting circuit. Advantages of DC fans—energy saving and long service life—can be obtained with AC power.

- Compared with conventional AC fans,  
Max. 72% reduction in power consumption  
Max. 2.4 times longer lifespan (expected lifespan of 60,000 hours at 60 °C)  
Approx. 1/2 weight
- Wide input range (operating voltage range from 90 to 264 VAC)
- No need for grounding

## ■ Lineup

92 × 92 × 38 mm, 120 × 120 × 38 mm

## Energy efficiency, Long life

Suitable for AC-powered devices such as control panels.

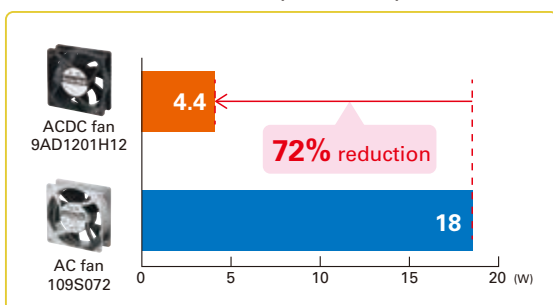
### ■ Conventionally

Although DC fans have longer lifespan and better energy efficiency than AC fans, you have kept using AC fans because the replacement would require AC-DC converters.

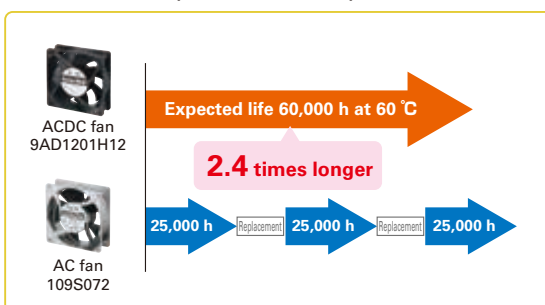
### ■ ACDC fan

Achieves energy-saving and maintenance-free operation—the advantages of DC fans—without using an AC-DC converter.

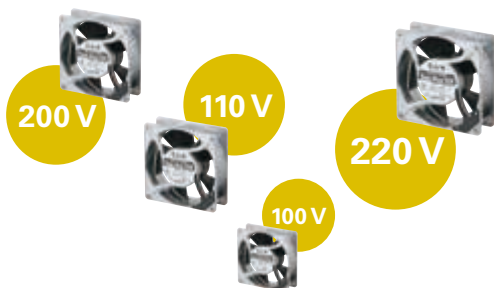
Power consumption comparison



Expected life comparison



## Wide input range



### ■ Conventionally

- Fans with appropriate operating range had to be prepared depending on the location of use.
- Cooling performance varied with different regional frequencies.

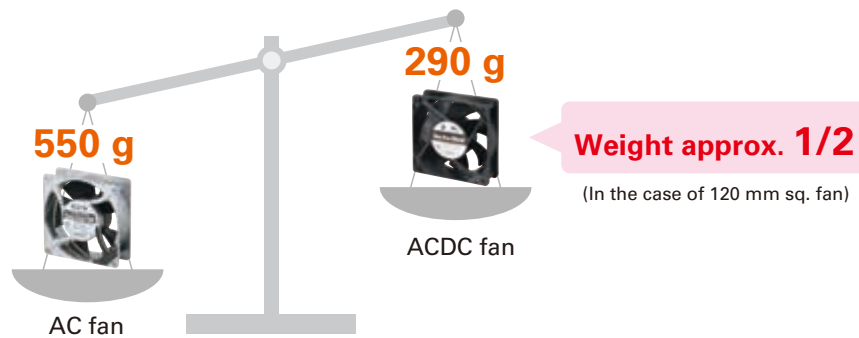
### ■ ACDC fan

- Can be used around the world with its wide operating range
- The same and stable cooling performance anywhere, regardless of frequency differences



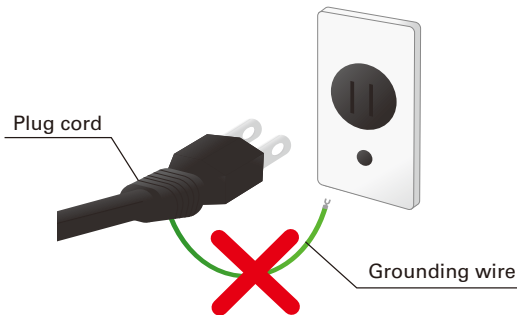
## Lighter

Plastic ACDC fans weigh less than a half compared with aluminum AC fans.



## No need for grounding

ACDC fans' double insulation structure eliminate the need for grounding.



## Set models

For detailed specifications, please read p.10.

Set models are available with ACDC fans.

| Order No.      | Fan Model  | Sensor Specifications | Plug Cord Model | Finger Guard Model | Mounting Screws                 |
|----------------|------------|-----------------------|-----------------|--------------------|---------------------------------|
| ST1-9AD1201H12 | 9AD1201H12 | Without sensor        | 489-1635-L10    | 109-019ETJ         | M4 screws (55 mm) x 4, Nuts x 4 |
| ST1-9AD0901H12 | 9AD0901H12 | Without sensor        | 489-1635-L10    | 109-099ETJ         | M4 screws (55 mm) x 4, Nuts x 4 |

**Set configuration items**

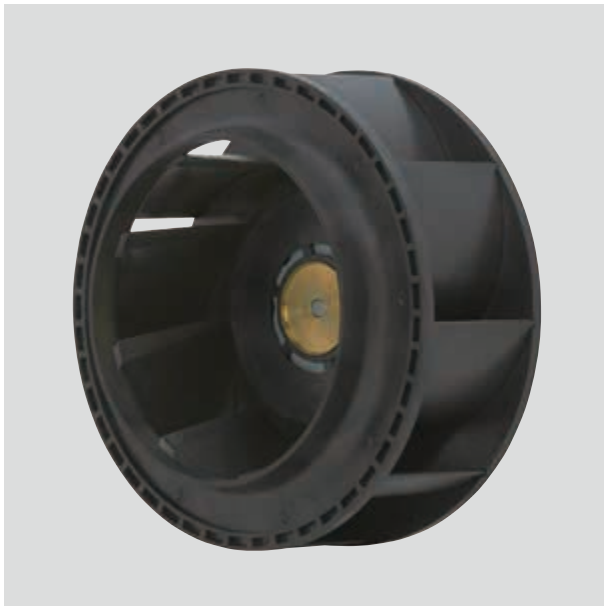
- Fan
- +
- Finger guards
- +
- Plug cord
- +
- Screws  
(with flat washer and spring washer)
- +
- Hex nuts
- +
- Instruction manual

One order includes everything needed for operation.

➔

\*Package image

# Centrifugal Fan



## ■ Features

Centrifugal fans excel over axial fans in airflow and static pressure, and are capable of blowing air over 360° directions.

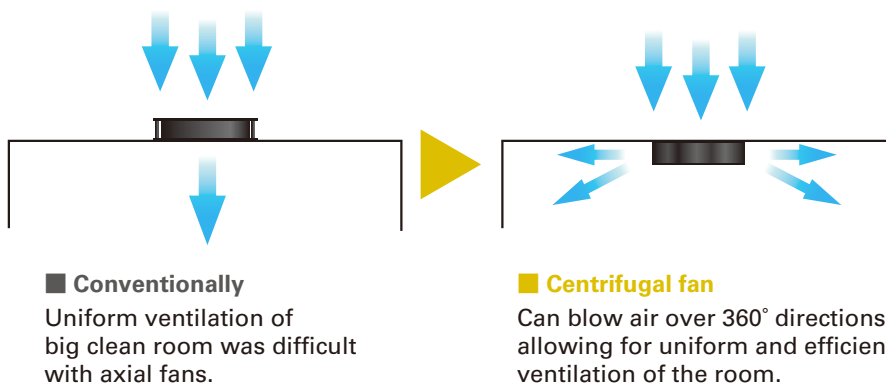
## ■ Lineup

φ 100 × 25 mm, φ 133 × 91 mm, φ 150 × 35 mm,  
φ 175 × 69 mm, φ 221 × 71 mm, φ 225 × 99 mm

Splash proof centrifugal types are also available for φ 100 to 175 mm models

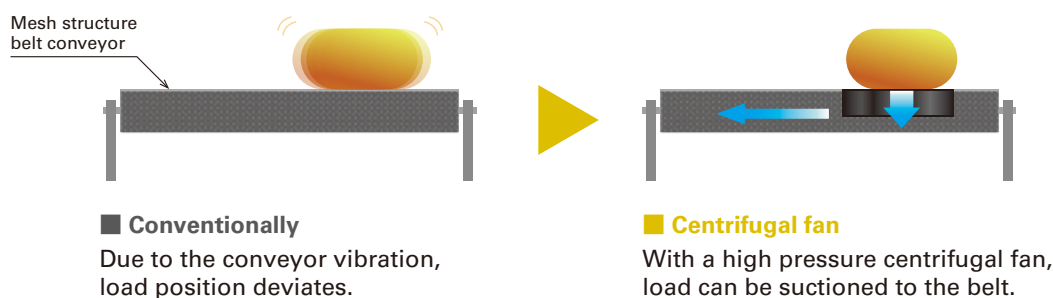
## Blows air over 360° directions

Being capable of blowing air to different directions than axial fans, it provides greater design flexibility.



## High airflow, High static pressure

Powerful suction pressure keeps loads on the conveyor stable.



# PWM Controller



## ■ Features

Fan rotational speed can be controlled easily and externally.

Fan optimally operates depending on the device's internal temperature, contributing to saving energy and reduced noise.

## ■ Lineup

### BOX Type,

### PCB Type (3 models with different control functions)

Voltage control function model

External adjustment control function model

Thermistor control function model

For detailed specifications, please read p.11.

## BOX Type

4 Controlling modes can be easily switched with control function selector switches.

### ■ Voltage control function

Fan speed can be adjusted by varying input voltage from 0 to 5 VDC.

### ■ Internal adjustment control function

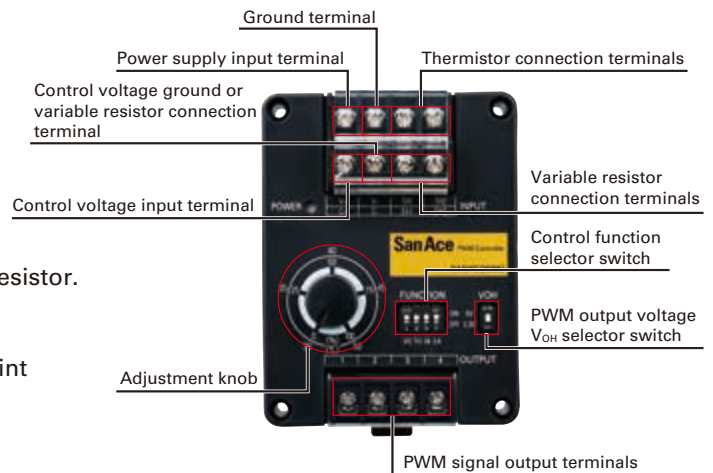
Fan speed can be varied with the adjustment knob.

### ■ External adjustment control function

Fan speed can be adjusted with the connected variable resistor.

### ■ Thermistor control function

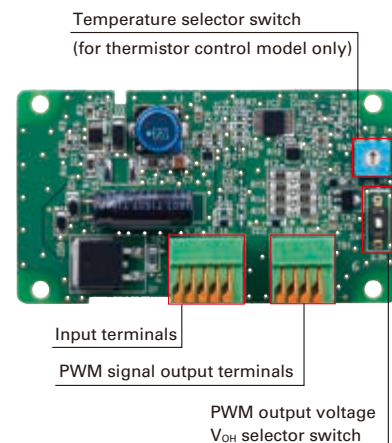
Fan speed changes automatically for temperature set point adjusted with adjustment knob.



## PCB Type

PCB type has three function variations: voltage control function, variable resistor control function, and thermistor control function.

Note that functions cannot be switched with one PCB.



# Model Numbers List

## Splash Proof Fan

| Size                | Model no.      | Rated voltage<br>[V] | Rated current<br>[A] | Max. airflow<br>[m <sup>3</sup> /min] | Max. static pressure<br>[Pa] | SPL<br>[db(A)] | Expected life<br>[h] | PWM<br>functions |
|---------------------|----------------|----------------------|----------------------|---------------------------------------|------------------------------|----------------|----------------------|------------------|
| 40 x 40 x 20 mm     | 9WP0412H6001   | 12                   | 0.1                  | 0.225                                 | 65.7                         | 33             | 40,000               | No               |
| 40 x 40 x 28 mm     | 9WL0424P3J001  | 24                   | 0.26                 | 0.63                                  | 400                          | 51             | 150,000              | Yes              |
| 60 x 60 x 25 mm     | 9WL0624P4S001  | 24                   | 0.34                 | 1.40                                  | 300                          | 53             | 180,000              | Yes              |
| 80 x 80 x 25 mm     | 9WL0824P4J001  | 24                   | 0.28                 | 2.07                                  | 177                          | 49             | 180,000              | Yes              |
| 80 x 80 x 38 mm     | 9WV0812P1M001  | 12                   | 0.75                 | 2.29                                  | 169                          | 51             | 40,000               | Yes              |
| 92 x 92 x 25 mm     | 9WL0924P4J001  | 24                   | 0.21                 | 2.2                                   | 105                          | 44             | 180,000              | Yes              |
| 92 x 92 x 38 mm     | 9WV0948P1H001  | 48                   | 0.82                 | 5.05                                  | 385                          | 64             | 30,000               | Yes              |
| 120 x 120 x 38 mm   | 9WV1224P1J601  | 24                   | 1.5                  | 6.35                                  | 360                          | 64             | 60,000               | Yes              |
| 140 x 140 x 38 mm   | 109W1424H101-U | 24                   | 0.37                 | 4.5                                   | 98                           | 46             | 100,000              | No               |
| 140 x 140 x 51 mm   | 9WB1424H501    | 24                   | 0.6                  | 5.9                                   | 130                          | 49             | 100,000              | No               |
| ° 172 x 150 x 51 mm | 9WG5748P5G001  | 48                   | 2.91                 | 15.46                                 | 1,000                        | 78             | 40,000               | Yes              |

Expected life (L10: Survival rate: 90% at 60 °C , rated voltage, and continuously run in a free air state)

## Oil Proof Fan

| Size              | Model no.   | Rated voltage<br>[V] | Rated current<br>[A] | Max. airflow<br>[m <sup>3</sup> /min] | Max. static pressure<br>[Pa] | SPL<br>[db(A)] | Expected life<br>[h] | PWM<br>functions |
|-------------------|-------------|----------------------|----------------------|---------------------------------------|------------------------------|----------------|----------------------|------------------|
| 40 x 40 x 15 mm   | 9WF0424H701 | 24                   | 0.085                | 0.195                                 | 80                           | 38             | 40,000               | No               |
| 40 x 40 x 20 mm   | 9WF0424H601 | 24                   | 0.11                 | 0.26                                  | 90                           | 42             | 40,000               | No               |
| 60 x 60 x 15 mm   | 9WF0624H701 | 24                   | 0.12                 | 0.52                                  | 95                           | 44             | 40,000               | No               |
| 60 x 60 x 20 mm   | 9WF0624H601 | 24                   | 0.15                 | 0.69                                  | 114                          | 42             | 40,000               | No               |
| 60 x 60 x 25 mm   | 9WF0624H401 | 24                   | 0.15                 | 0.67                                  | 97                           | 41             | 40,000               | No               |
| 80 x 80 x 25 mm   | 9WF0824S401 | 24                   | 0.16                 | 1.2                                   | 58                           | 38             | 40,000               | No               |
| 92 x 92 x 25 mm   | 9WF0924H401 | 24                   | 0.13                 | 1.45                                  | 66                           | 42.5           | 40,000               | No               |
| 92 x 92 x 32 mm   | 9WF0924S201 | 24                   | 0.5                  | 2.8                                   | 255                          | 58             | 40,000               | No               |
| 120 x 120 x 38 mm | 9WF1224H101 | 24                   | 0.32                 | 3.34                                  | 100                          | 46             | 40,000               | No               |

Expected life (L10: Survival rate: 90% at 60 °C , rated voltage, and continuously run in a free air state)

## ACDC Fan

| Size              | Model no.  | Rated voltage<br>[V] | Rated current<br>[A] | Max. airflow<br>[m <sup>3</sup> /min] | Max. static pressure<br>[Pa] | SPL<br>[db(A)] | Expected life<br>[h] |
|-------------------|------------|----------------------|----------------------|---------------------------------------|------------------------------|----------------|----------------------|
| 92 x 92 x 38 mm   | 9AD0901H12 | 100 to 240           | 0.08                 | 1.50                                  | 90                           | 40             | 60,000               |
| 120 x 120 x 38 mm | 9AD1201H12 | 100 to 240           | 0.08                 | 3.0                                   | 84                           | 42             | 60,000               |

Expected life (L10: Survival rate: 90% at 60 °C , rated voltage, and continuously run in a free air state)

## Centrifugal Fan

| Size          | Model no.   | Rated voltage [V] | Rated current [A] | Max. airflow [m <sup>3</sup> / min] | Max. static pressure [Pa] | SPL [db(A)] | Expected life [h] | PWM functions |
|---------------|-------------|-------------------|-------------------|-------------------------------------|---------------------------|-------------|-------------------|---------------|
| φ 100 x 25 mm | 9TM48P4H01  | 48                | 0.22              | 1.77                                | 560                       | 60          | 40,000            | Yes           |
| φ 133 x 91 mm | 9TJ24P0H61  | 24                | 1.2               | 6.39                                | 395                       | 61          | 40,000            | Yes           |
| φ 150 x 35 mm | 9TN24P1H01  | 24                | 0.62              | 3.83                                | 410                       | 59          | 40,000            | Yes           |
| φ 175 x 69 mm | 9TG24P0G01  | 24                | 3.9               | 14.0                                | 885                       | 73          | 40,000            | Yes           |
| φ 221 x 71 mm | 9TP24P0H001 | 24                | 3.2               | 17.6                                | 530                       | 71          | 40,000            | Yes           |
| φ 225 x 99 mm | 9TS48P0G001 | 48                | 3.65              | 28.1                                | 861                       | 74.5        | 40,000            | Yes           |

Expected life (L10: Survival rate: 90% at 60 °C , rated voltage, and continuously run in a free air state)

## Splash Proof Centrifugal Fan

| Size          | Model no.    | Rated voltage [V] | Rated current [A] | Max. airflow [m <sup>3</sup> / min] | Max. static pressure [Pa] | SPL [db(A)] | Expected life [h] | PWM functions |
|---------------|--------------|-------------------|-------------------|-------------------------------------|---------------------------|-------------|-------------------|---------------|
| φ 100 x 25 mm | 9W1TM48P4G01 | 48                | 0.36              | 2.03                                | 708                       | 65          | 40,000            | Yes           |
| φ 133 x 91 mm | 9W1TJ24P0H61 | 24                | 1.2               | 6.39                                | 395                       | 61          | 40,000            | Yes           |
| φ 150 x 35 mm | 9W1TN48P1H01 | 48                | 0.32              | 3.83                                | 390                       | 59          | 40,000            | Yes           |
| φ 175 x 69 mm | 9W1TG48P0H61 | 48                | 0.65              | 9.0                                 | 360                       | 64          | 40,000            | Yes           |

Expected life (L10: Survival rate: 90% at 60 °C , rated voltage, and continuously run in a free air state)

## PWM Controller

|                               |                                                                                                                                                       |                          |                             |                      |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------|----------------------|
|                               | BOX Type                                                                                                                                              | PCB Type                 |                             |                      |
| Model no.                     | 9PC8666X-S001                                                                                                                                         | 9PC8045D-V001            | 9PC8045D-R001               | 9PC8045D-T001        |
| Size [mm]                     | 86 (H) x 66 (W) x 38 (D)                                                                                                                              | 80 (H) x 45 (W) x 17 (D) |                             |                      |
| Rated voltage [VDC]           | 12, 24, and 48                                                                                                                                        |                          |                             |                      |
| Power consumption [W]         | 0.2*1                                                                                                                                                 |                          |                             |                      |
| Operating voltage range [VDC] | 7 to 60                                                                                                                                               |                          |                             |                      |
| Operating temperature [°C]    | -20 to+70                                                                                                                                             |                          |                             |                      |
| Output PWM signal             | V <sub>OH</sub> (high level voltage): 3.3 or 5 VDC (selectable), Frequency: 25 kHz                                                                    |                          |                             |                      |
| No. of connectable fans       | Up to 4 fans                                                                                                                                          |                          |                             |                      |
| Control functions             | Voltage control,<br>Internal adjustment (variable resistor) control,<br>External adjustment (variable resistor) control*3,<br>Thermistor control*2, 3 | Voltage control          | Variable resistor control*3 | Thermistor control*3 |
| Mounting method               | DIN rail mounting or screw mounting                                                                                                                   | Screw mounting           |                             |                      |
| Mass [g]                      | 110                                                                                                                                                   | 27                       |                             |                      |
| Material                      | Case: Plastics                                                                                                                                        | PCB: FR-4                |                             |                      |

\*1: When output terminals are turned on    \*2: Control functions are mutually exclusive for BOX Type.

\*3: Variable resistor and thermistor are not supplied with the controller and need to be prepared separately.

For further model lineup, please visit our website. <http://www.sanyodenki.com>

## Notice

- Please read the "Safety Precautions" on our website before using the product.
- The products shown in this catalog are subject to Japanese Export Control Law. Diversion contrary to the law of exporting country is prohibited.
- For protecting fan bearings against electrolytic corrosion near strong electromagnetic noise sources, we provide effective countermeasures such as Electrolytic Corrosion Proof Fans and EMC guards. Contact us for details.

|                                                                                                                                                                     | <a href="http://www.sanyodenki.com">http://www.sanyodenki.com</a> |
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