

# 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

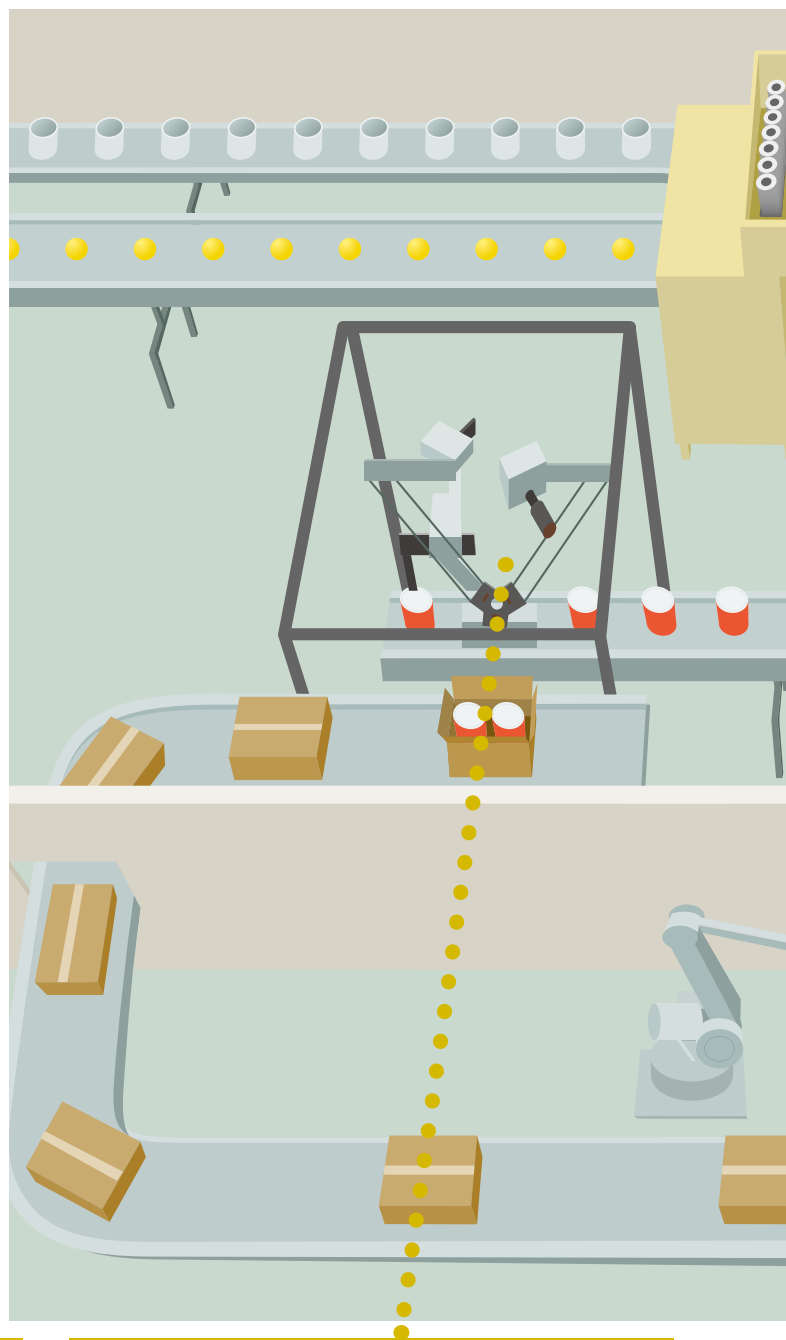
- Every fan is equipped with two bearings.
- Every fan is well balanced.
- Every fan goes through quality inspection.

## 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 hustle for maintenance.



### PWM Controller

For more information, see p. 9

Suitable usage

- Machines requiring fan speed control

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

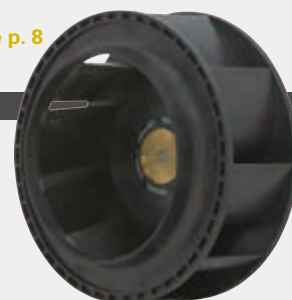


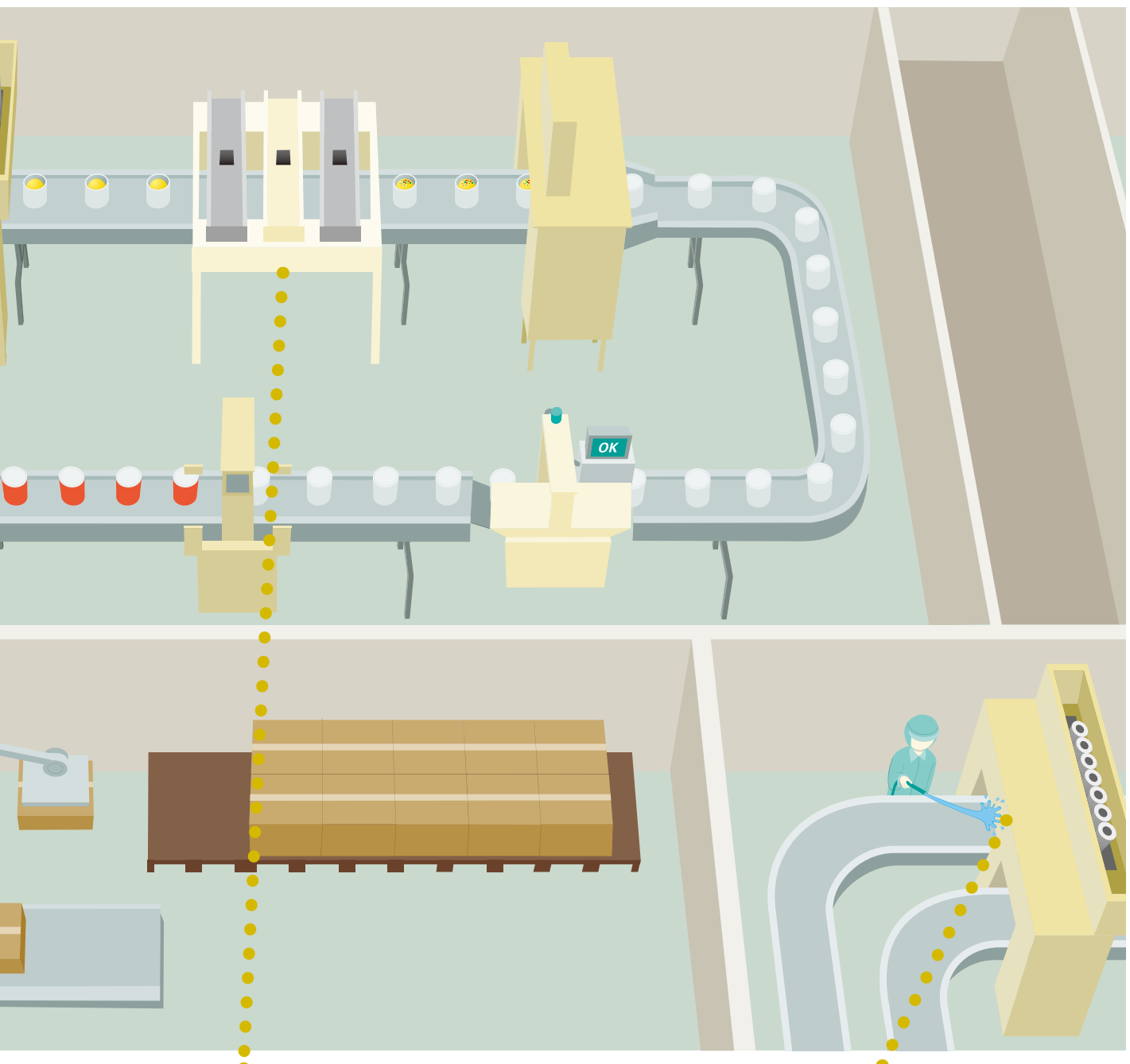
### Centrifugal Fan

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)

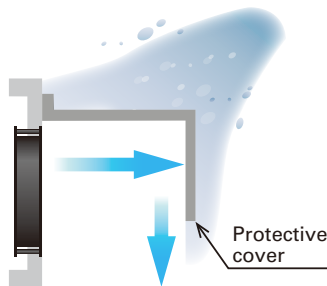
## ■ Lineup

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, φ 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.

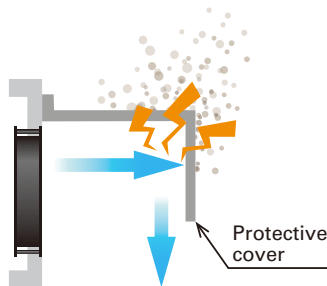


### ■ IP68 rated splash proof fan

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

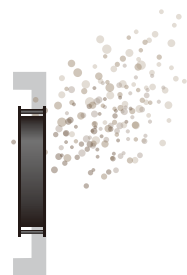
## Protected against dust

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

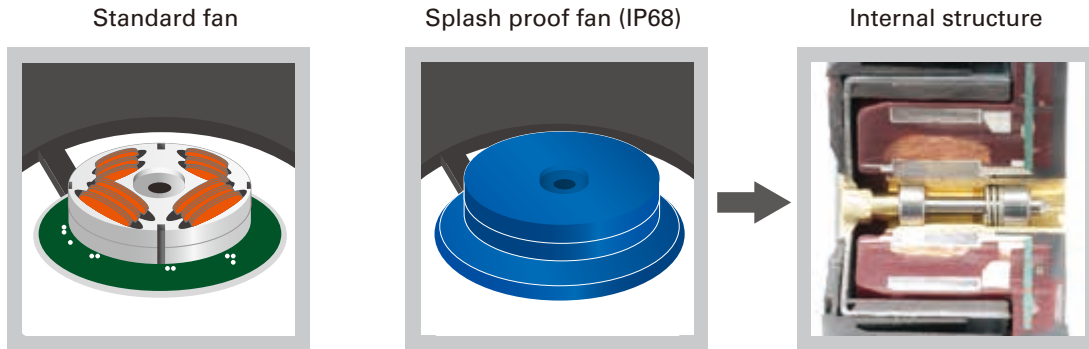


### ■ IP68 rated splash proof fan

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.



The bearing and shaft parts are not under IP68 protection.

## Ingress Protection (IP Code)

■ Definition of Ingress Protection (IP Code)

# IPXX

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



### Oil proof fan



By widening the gap between impeller and fan frame, fan locking due to stuck-on oil can be prevented.

### Plastic coating for electrically active part



There happens no water or oil entering the electrically active part.

# 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 x 92 x 38 mm, 120 x 120 x 38 mm

## Energy efficiency, Long life

Suitable for AC-powered devices such as control panels.

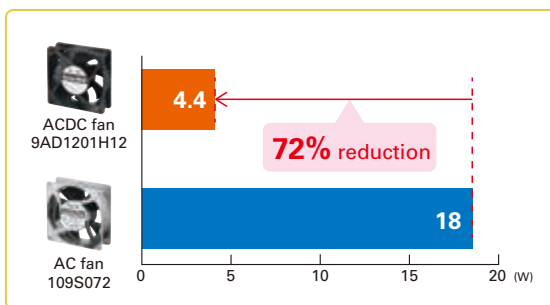
### ■ Conventionally

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.

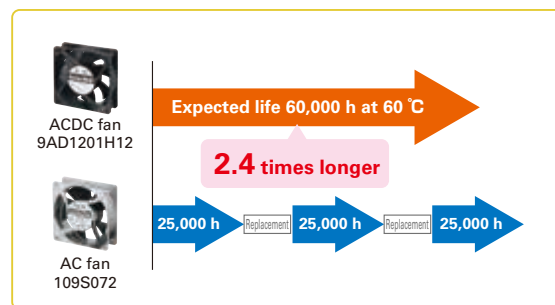
### ■ ACDC fan

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

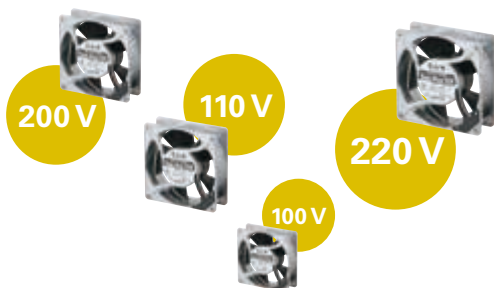
Power consumption comparison



Expected life comparison



## Wide input range



### ■ Conventionally

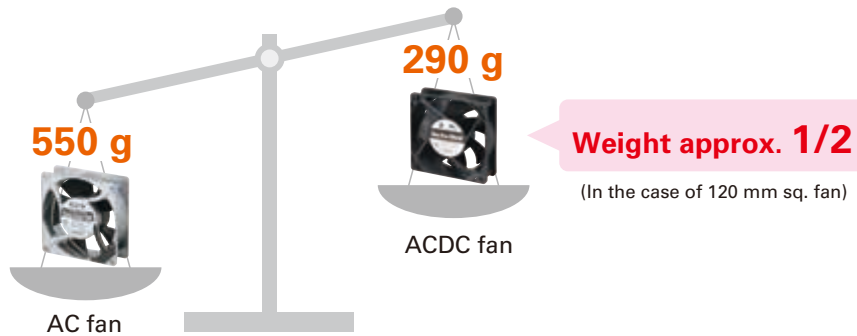
- Fans with appropriate operating range had to be prepared depending on the location of use.
- Cooling performance varied with different regional frequencies.

### ■ ACDC fan

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

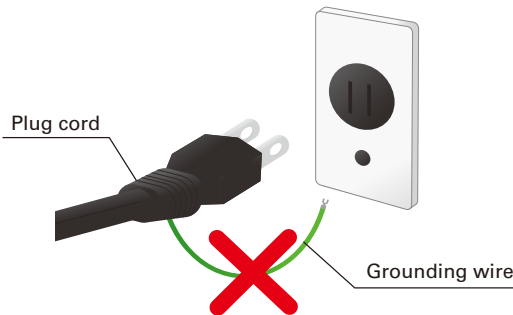
## Lighter

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



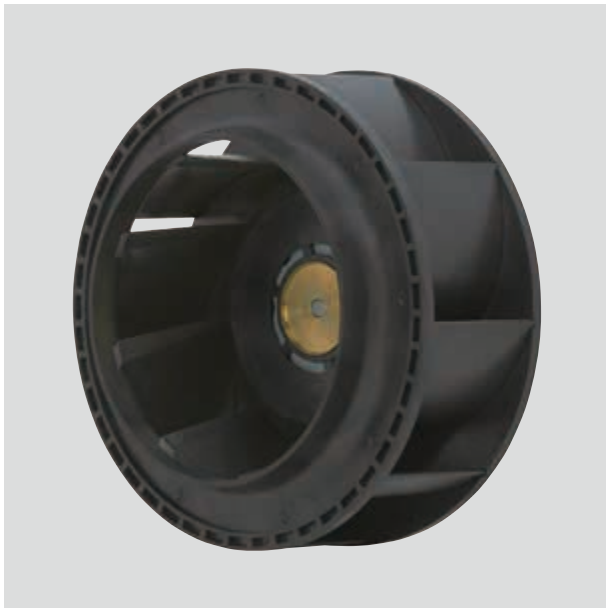


One order includes everything needed for operation.




\*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.

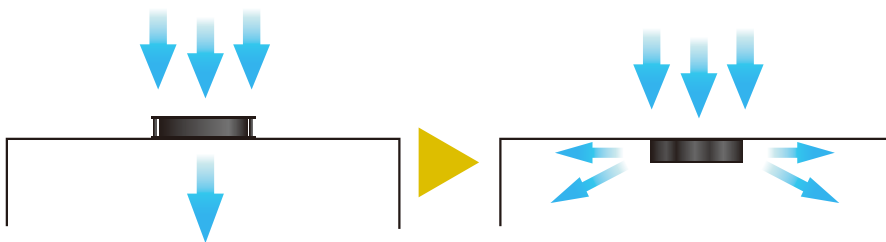
## ■ Lineup

φ 100 x 25 mm, φ 133 x 91 mm, φ 150 x 35 mm,  
φ 175 x 69 mm, φ 221 x 71 mm, φ 225 x 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.



### ■ Conventionally

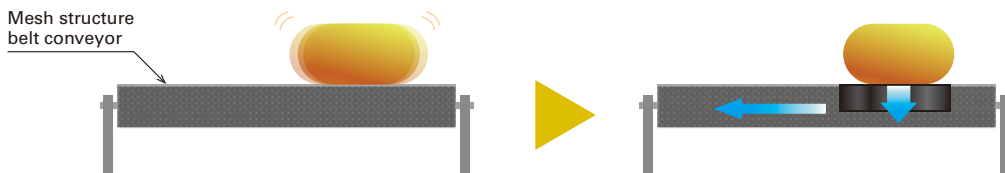
Uniform ventilation of big clean room was difficult with axial fans.

### ■ Centrifugal fan

Can blow air over 360° directions, allowing for uniform and efficient ventilation of the room.

## High airflow, High static pressure

Powerful suction pressure keeps loads on the conveyor stable.



### ■ Conventionally

Due to the conveyor vibration, load position deviates.

### ■ Centrifugal fan

With a high pressure centrifugal fan, load can be suctioned to the belt.



# 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

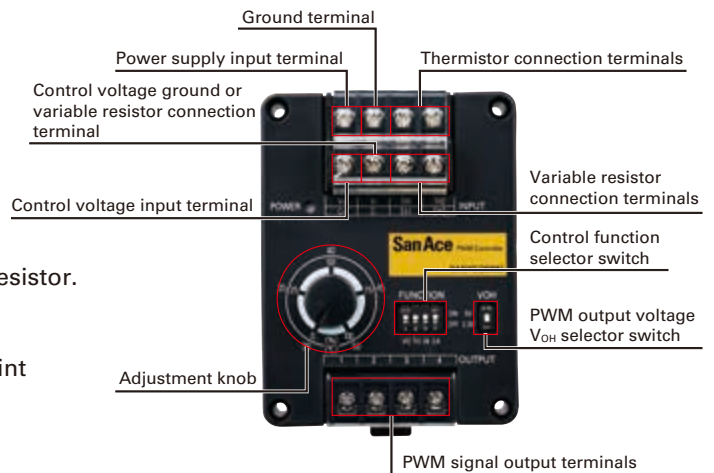
Fan speed can be varied with the adjustment knob.

### ■ External adjustment control function

Fan speed can be adjusted with the connected variable resistor.

### ■ Thermistor control function

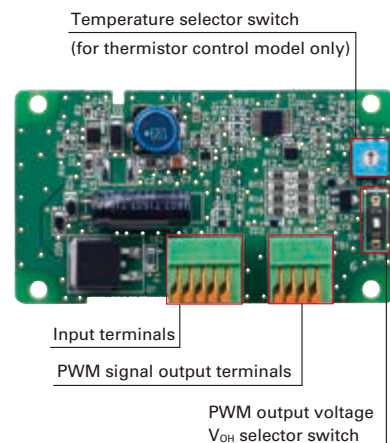
Fan speed changes automatically for temperature set point adjusted with adjustment knob.



## 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 [V]	Rated current [A]	Max. airflow [m <sup>3</sup> /min]	Max. static pressure [Pa]	SPL [db(A)]	Expected life [h]	PWM 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
<sup>φ</sup> 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 [V]	Rated current [A]	Max. airflow [m <sup>3</sup> /min]	Max. static pressure [Pa]	SPL [db(A)]	Expected life [h]	PWM 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 [V]	Rated current [A]	Max. airflow [m <sup>3</sup> /min]	Max. static pressure [Pa]	SPL [db(A)]	Expected life [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 <sup>*1</sup>			
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, Internal adjustment (variable resistor) control, External adjustment (variable resistor) control <sup>*3</sup> , Thermistor control <sup>*2,3</sup>	Voltage control	Variable resistor control <sup>*3</sup>	Thermistor control <sup>*3</sup>
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.

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