COOLING SYSTEM

San Ace

Products Information

2006
ver.2

SANYO DENKI

CONTENTS

TECHNICAL MATERIAL

Overview and characteristics of fan

Overview

Fan motor is widely used to extend life of your system by cooling off heat of the system that many electrical components are mounted in a very high density and dissipating heat. Since we Sanyo Denki developed “San Ace” which is the first AC fan in Japan in 1965, we have increased fan motor lineup until now meeting customer’s needs rapidly based on our tremendous career. We Sanyo Denki will continue to develop new fans with lower noise, downsizing, low profile and higher efficiency.

Characteristics

We can roughly devide fan into two types which are AC and DC.

AC fans

Sanyo Denki succeeded in the mass-production of AC fans in 1965. Sanyo Denki was the first Japanese manufacturer to have succeeded at this.

- ●High performance
- ●High reliability
- ●Safety

DC fans

Sanyo Denki succeeded in the mass-production of DC fans in 1982.

- ●High performance
- ●Low power consumption
- ●Low vibration
- ●Low leakage of flux
- ●High reliability

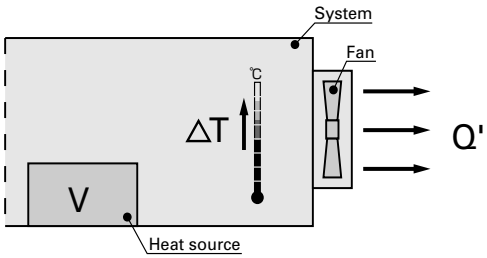
Sanyo Denki currently has a wider variety of products like Long Life Fan, CPU cooler, Splash Proof Fan, and Oil Proof Fan etc to meet all customer needs.

Guideline in selecting a fan

How to select an appropriate fan

The following example is a guideline regarding how to select an appropriate fan for cooling your system

1. Determining of your system specifications and conditions



Determine the temperature rise inside your system and obtain the total heating value inside your system on the basis of its inputs and outputs.

Example

V : Total heating value of your system（W）=100（W）

△T : Inside temperature rise（K）=15（K）

2. Calculating the Required Air flow for Cooling

After the equipment specifications and conditions of your system have been determined, calculate required air flow to meet the conditions.

(Note that the formula shown below only applies when the heat radiation is performed only by cooling air from the fan.)

Example

Q': Motion air flow (m^3/min.)

$$Q' = \frac{V}{20\triangle T} = \frac{100\ (W)}{20\times 15\ (K)} \fallingdotseq 0.33\ (m^3/min)$$

3. Selecting the Fan

After the motion air flow has been calculated, select an appropriate fan motor based on the value.

The motion air flow when the fan motor is actually mounted in your system can be obtained using the air flow-static pressure characteristics curve and system impedance.

However, the system impedance cannot be measured without a measuring equipment, so fan with 1.5 to 2 times higher air flow than the actual Max air flow should be selected (operating air flow is one-third to two-thirds of maximum air flow).

Example

Q: Maximum air flow（m^3/min.）

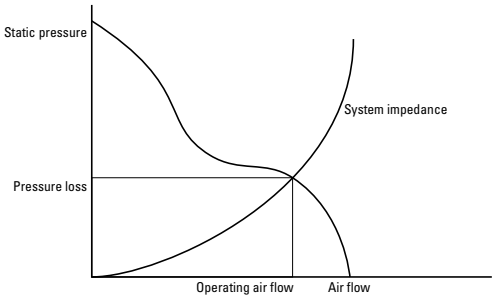
$Q' = Q \times 2/3$

$Q = Q' \times 3/2 = 0.33 \times 3/2 \fallingdotseq 0.5$（$m^3$/min）

Next, In case that you select a fan having an air flow of 0.5 (m^3/min.) or more and a appropriate size for the space inside your system.

For example, If you need a fan of 60mm square, 25mm thickness and 12V, you should select is 109R0612H402 (maximum air flow = 0.53m^3/min.).

Characteristics of air flow versus static pressure and those of pressure losses of equipment



4. Confirming the Selected Fan

Calculate the temperature rise inside your sysetem when your sysetem having 100 (W) of total heating value is forcefully cooled down by a 109R0612H402 fan.

Example

$Q' = Q \times 2/3 = 0.53 \times 2/3 \fallingdotseq 0.353$（$m^3$/min）

$\triangle T = V/20Q' = 100$（W）$/20 \times 0.353$（$m^3$/min）$\fallingdotseq 14.2$（K）

From the above, the temperature rise inside your system is calculated as 14.2(K).

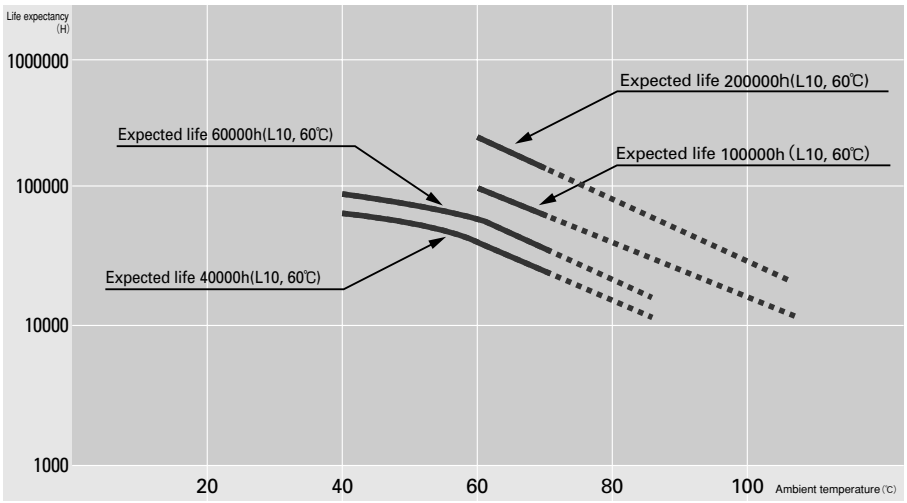
Since the value obtained from the above equation is only a rough target, final fan selection should be based on your actual installation test.

Characteristics calculation method and description

Reliability and life

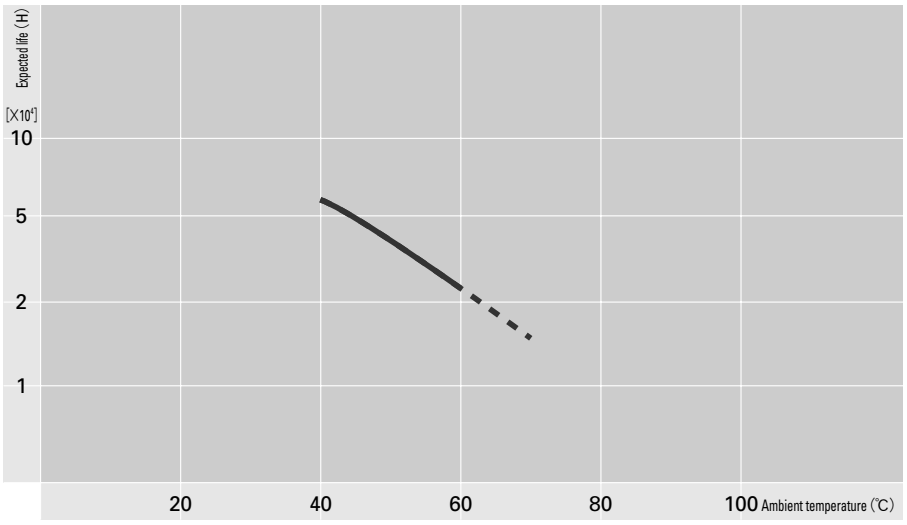
A fan motor generally cools itself as well. The temperature rise of the motor is relatively low and the temperature rise of the grease in the bearings is also low, so expected life is longer than general some either motors. Since the service life of bearings is a theoretical value that applies when they are ideally lubricated, the life of lubricant can be regarded as expected life of the fan. The expected life of an AC fan used at an ambient temperature 60℃ is 25,000 hours. The BLDC fan consumes less power and its temperature rise of bearing is very low, thus its expected life is 40,000 hours at an ambient temperature of 60℃. Sanyo Denki also has a line-up of Long Life Fans that has 200,000 hours life and 100,000 hours life at an ambient temperature 60℃ with an even more enhanced structure and material. The table below indicates the relationship between ambient temperature and expected life estimated on the basis of our life tests and same other tests conducted by Sanyo Denki. (The survival rate is 90%.) An accelerated life test is conducted on the basis of the concept that the expected life halves as the ambient temperature rises by about 15℃ (within the operating temperature range of lubricant.)

Expected life of DC fans



Rated voltage, continuous operation, free air, survival rate of 90%

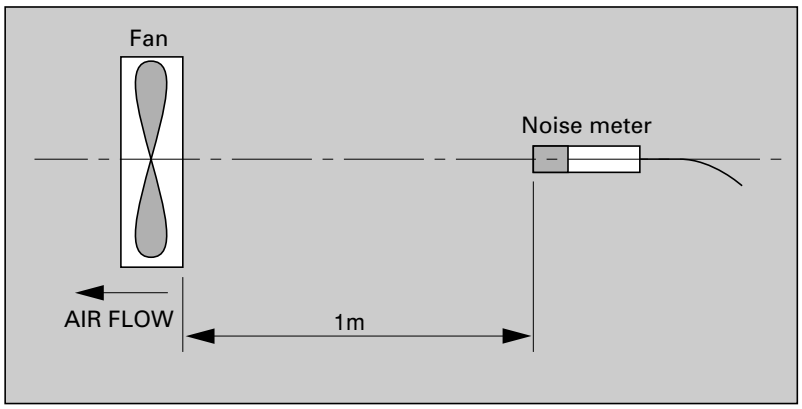
Expected life of AC fans



Rated voltage, continuous running, free air, survival rate of 90%

Noise characteristics

Noise is average value that measured at I meter away from air intake side of fan that is suspended on special frame in anechoic chamber (as per JIS B 8330).



General specifications

Insulation resistance

10MΩ or more at 500 VDC megger (between the lead conductor and frame).

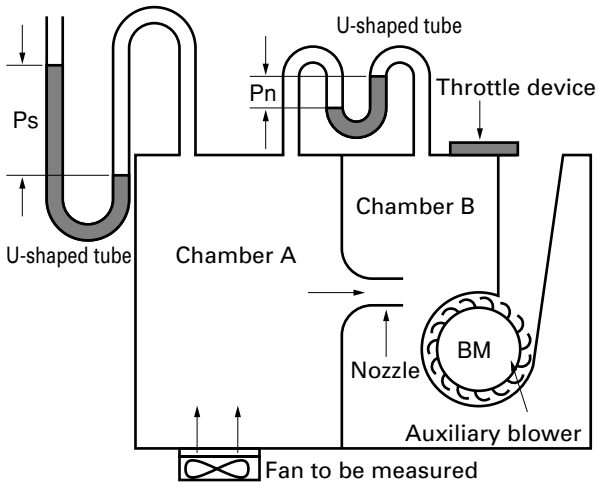
Storage temperature range

-30℃ to +70℃ (Non-condensing).

Characteristics calculation procedure and description

Measuring air flow and static pressure

It is very difficult to measure air flow and static pressure. In fact, the performance curve may vary greatly according to the type of measuring equiment.
The commonly-used type of measuring equipment is a wind tunnel using a Pitot tube. Sanyo Denki uses a very precise method using double chamber equipped with many nozzles.



Double chamber measuring equipment

$Q=60A\bar{v}$ (A)
where
Q = air flow (m^3/min)
A = cross sectional area of nozzle $=\frac{\pi}{4}D^2$ (m^2)
D = nozzle diameter
$\bar{v}$ = average air flow velocity of nozzle $=\sqrt{2g\frac{Pn}{\gamma}}$ (m/sec)
γ : Air specific gravity (kg/m^3)
(γ = 1.2kg/m^3 at 20℃, 1 atmospheric pressure)
g = acceleration of gravity = 9.8 (m/sec^2)
Pn = differential pressure (mm H_2O)
Ps = static pressure (mm H_2O)

The measuring equipment using double chanber is method to be calculated from air flow goes through nozzle and differential pressure between pressure of inside of chamber (Ps) and atomospheric pressure by measuring differetial pressure between air intake and exhaust of nozzle (Ph).

Conversion Table

Static pressure

1mm H_2O = 0.0394inch H_2O
1mm H_2O = 9.8Pa (Pascal)
1inch H_2O = 25.4mm H_2O
1Pa = 0.102mm H_2O
1inch H_2O = 249Pa

Air flow

1m^3/min = 35.31ft^3/min (CFM)
1CFM = 0.0283m^3/min
1m^3/min = 16.67ℓ/sec
1CFM = 0.472ℓ/sec
1ℓ/sec = 0.06m^3/min

Operating precautions

Operating precautions

Storage temperature

There is no performance problem when the system is used at between -30℃ and +70℃. There is a possibility that same problem of lubricant and insulation inside motor might occur by condensing due to rapid surrounding temperature change. Therefore, please take care of non-condensing using desiccant or something during fan is in storage.

Tightening Torque

This shows the recommended values for the tightening torque when installing the fans. If the tightening torque is higher than the recommended values, the fan can be deformed or damaged.
Use care when tightening. Also, be sure to always use a fan with a ribbed structure when using screws to pass through and secure the fan.

Recommended screw torques

AC fans : 0.44N・m (4.5kgf・cm) or less (with M3 screws)

AC fans : 0.78N・m (8kgf・cm) or less (with M4 screws)
(160mm×160mm、φ172mm)

DC fans : 0.44N・m (4.5kgf・cm) or less (with M3 screws)
(Applies to fan motors of 52mm×52mm or smaller)

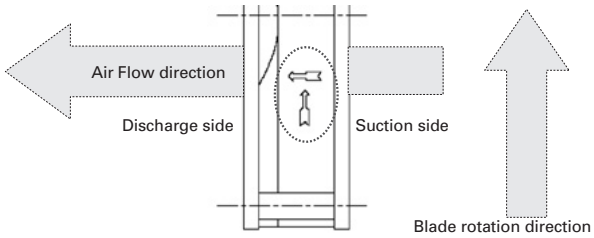
DC fans : 0.78N・m (8kgf・cm) or less (with M4 screws)
(Applies to fan motors of 60mm×60mm or bigger)

DC fans : 0.98N・m (10kgf・cm) or less (with M4 screws)
(φ200mm)

DC fans : 0.75N・m (7.35kgf・cm) or less (with M4 screws)
(φ220mm)

Installation

There are no limitations on the installation direction of AC fans, DC fans, or blowers. AC/DC fans have symbols on the fan motor indicating the airflow direction and blade rotation direction. When installing, use these symbols to check the airflow direction.



Symbols indicating the fan airflow direction and blade rotation direction

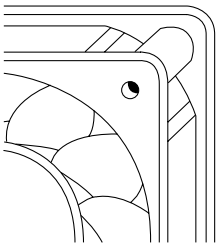
Comparison of ribbed and ribless structures (in the case of plastic frame BLDC fan)

Regarding plastic frame, we have a option ribbed and ribless about mounting. Please use preferred type up to your application. Please use ribbed fan in case that you hook fan up clamping either side fan mounting hole target. (Ribless type of some models aren't available.)

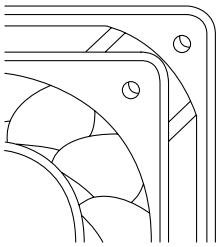
*Use a fan with a rib structure when using a screw for piercing.

*The plastic frame models of DC fans are classified into ribbed models and ribless models based on the shape of the installation section of the frame.

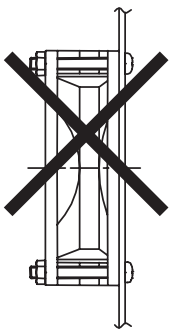
・When securing screws to ribless plastic frame models, use a flange to secure on one side.



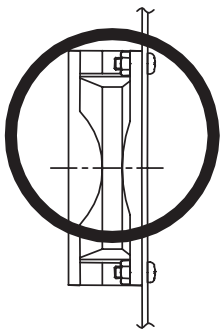
Ribbed



Ribless



Securing with flanges on both sides



Securing with a flange on one side

Handling precautions

Sanyo Denki's fans incorporate precise bearings. Therefore, please handle the motors carefully in order not to shock the bearings.

Specifications for DC fan sensors

Pulse sensor (Tach output type)

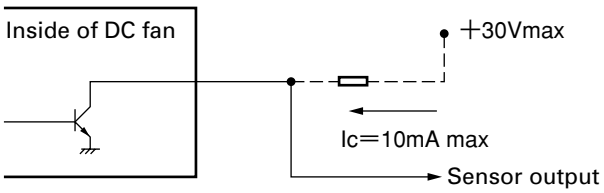
Pulse sensor outputs two pulse waves per revolution of fan, and it is good to detect fan speed. Pulse sensors can be incorporated in all kinds of BLDC fans.
* Noise from inside the fan or from external devices may effect sensor output, please contact Sanyo Denki.
(Typical standard model: 109R1212H101).

Output circuit

Open collector

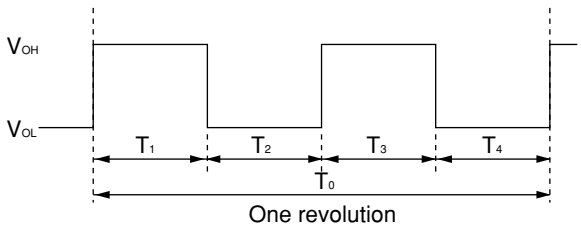
Specifications

V_{CE}=+30V max
(For a 48V-rated fan:V_{CE}=+60V max)
Ic=10mA max [V_{OL}=V_{CE} (SAT) =0.4V or less]



Output waveform (Need pull-up resistor)

In case of steady running



$T_{1\,to\,4} \fallingdotseq (1/4)\ T_0$
$T_{1\,to\,4} \fallingdotseq (1/4)\ T_0 = 60/4N$ (sec)
N=Fan speed (min^{-1})

* If you want detailed specifications that apply when the rotor is locked, please contact Sanyo Denki.

Locked rotor sensor (rotation/lock detection type)

Locked rotor sensor outputs fan status signals. It is good to check whether the fan is running or locked

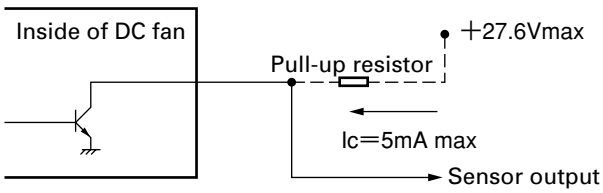
* Noise from inside the fan or from external devices may effect sensor output, please contact Sanyo Denki.
* Regarding details of the reverse logic and specifications of lock sensor output signals, please contact Sanyo Denki.
(typical standard model: 109R1212H1D01).

Output circuit

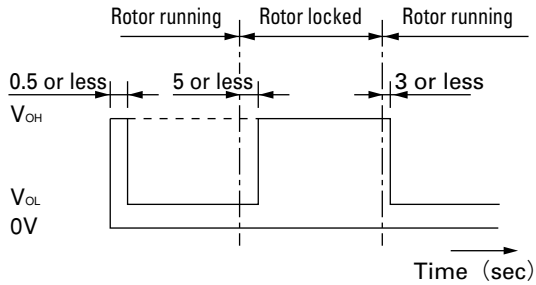
Open collector

Specifications

V_{CE}=+27.6V max
For a 48V fan VCE =+60V max.
Ic=5mA max [V_{OL}=V_{CE} (SAT) =0.6V or less]
For a 48V fan:V_{CE} (SAT) =0.4V or less



Output waveform



Note: The output is completely at V_{OL} with 0.5 seconds or less after power-up.

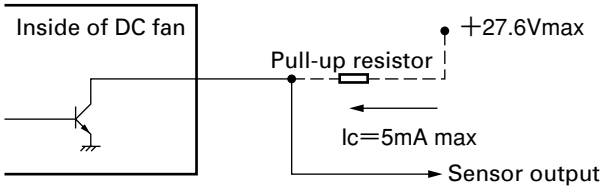
If you are using a thermal speed controlled fan or a two-speed fan, the output waveform is different from above.

Output circuit:

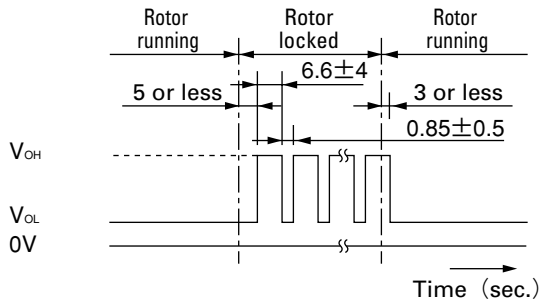
Open collector

Specifications:

V_{CE}=27.6V max
Ic=5mA max [V_{CE} (SAT) =0.5V max.]



Output waveform



Note: The output is completely at V_{OL} with 0.5 seconds or less after power-up.

Specifications for DC fan sensors

Low-speed sensor (rotating speed detection type)

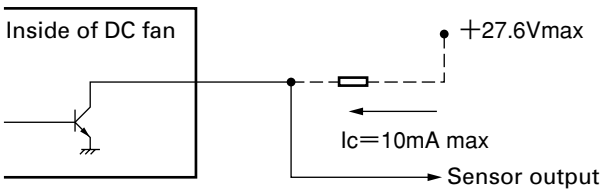
Low-speed sensor outputs a signal when fan speed goes down to trip point or less. It is good to detect cooling degradation of fan.
*Noise from inside the fan or from external devices may effect sensor output, please contact Sanyo Denki.
(typical standard model: 109R1212H1H01).

Output circuit

Open collector

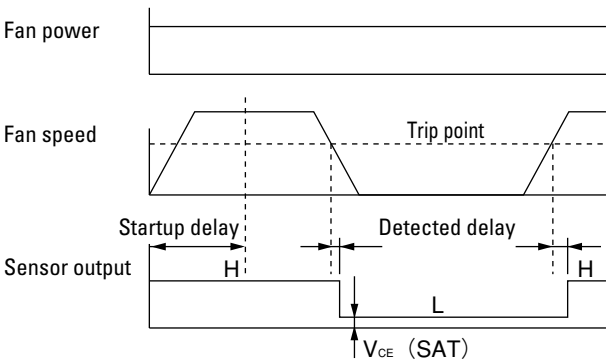
Specifications

V_{CE}=27.6V max.
Ic=10mA max. [V_{OL}=V_{CE} (SAT) =0.5V or less]

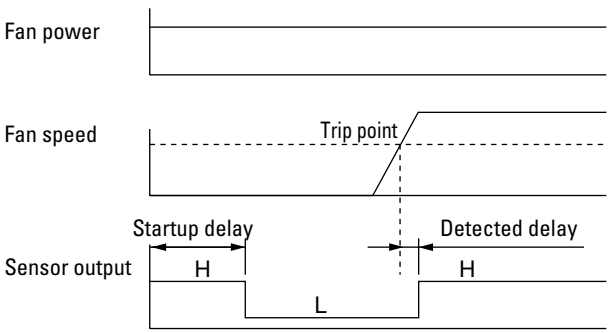


Sensor scheme

Example 1:
In case steady running



Example 2:
In case that the rotor is locked when the fan motor is turned on and released after the start-up delay time.



* If you want detailed specification and reverse signal output,please contact Sanyo Denki.

Specifications for AC fan sensor

Specifications of sensor circuit

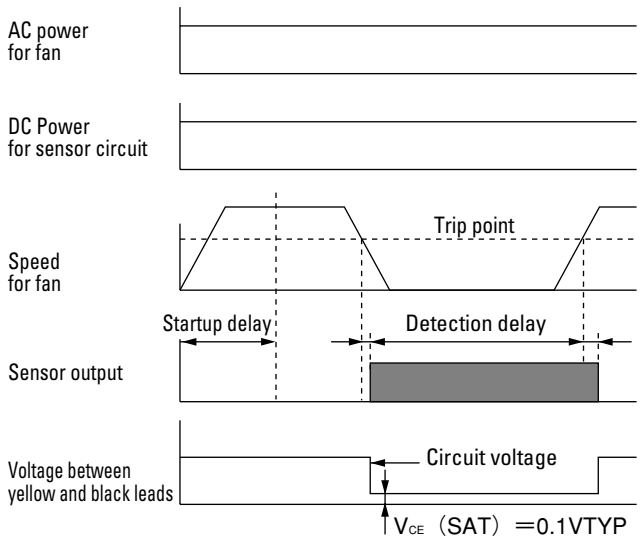
System	Speed detection, auto-restart.		
Power supply	4 to 14 VDC (At 2mA, 5V / At 5mA, 12V) See Note 2.		
Sensor circuit Output performance	I=100mAmax Vc=27.6Vmax	PT=200mWmax (at 25℃)	
		Standard speed	Low speed
Trip point		Within 1,700min^{-1} ±10%	Within 850min^{-1} ±10%
Response speed	Startup delay	18sec	36sec
	Detection delay	1sec	2sec
Insulation resistance	10 MΩ or more at a 500 VDC megger		
Dielectric strength	50/60 Hz, 1,000 VAC, 1 minute; see Note 1		
Ambient conditions	Temperature: -10 to +60℃, humidity: 90%RH or less (at 40℃)		

Note 1: Between one end that all sensor leads consisting of brown, yellow and black are tied together and the G terminal or power terminal of the fan.

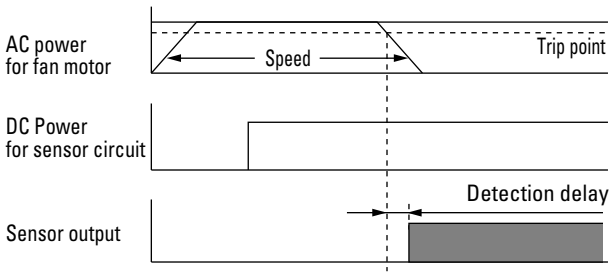
Note 2: Keep the power fluctuations within ±20% of applied power.

Sensor scheme

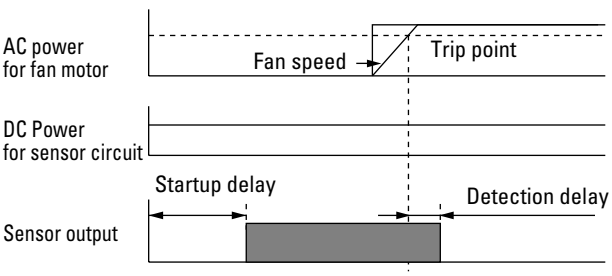
Example 1: When the AC power for the fan and the DC power for the sensor are turned on at the same time



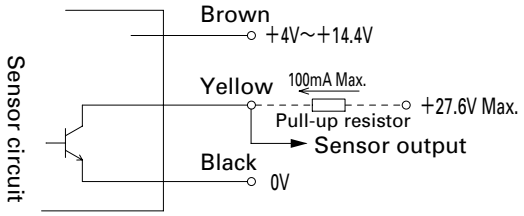
Example 2: When the AC power for the fan is turned on first, then the DC power for sensor is powered on



Example 3: When the DC power for sensor is first powered on, then the AC power for the fan is turned on



Sensor Output Circuit



Common Specifications

Overheating protection function

Protection Functions:

If the fan blades are restricted, an overcurrent occurs and leads to a rise in the fan coil temperature. This can result in reduced performance, damage, or a fire. To prevent this from occurring, Sony Denki's fans incorporate an overheating protection function. Refer to the catalog for the types of protection functions.

1) AC fan overheating protection functions

●Impedance protection

This system is used for shading coil-type fans. When the blades are restricted, the current is reduced by the impedance of the coil itself to prevent a temperature rise in the coil. However, if the applied voltage exceeds the specification range, an overcurrent can occur and result in overheating, and so care needs to be taken.

●Thermal protection

This system is used for condenser phase-type fans. A temperature sensor is incorporated in the coil so that if the temperature exceeds the specification temperature, the current is cut off to prevent overheating of the coil.

2) DC and blower overheating protection function

●Current cutoff system

If the fan blades are restricted, the coil current is cut off at regular cycles to prevent overheating of the coil. When the hindrance is removed, the fan restarts automatically. (For the San Ace 200 E Type, however, the power needs to be turned off and on again to restart.).

Eco Products

ECO PRODUCTS

Sanyo Denki's ECO PRODUCTS are designed with the concept of lessening impact on the environment in the process from product development to waste.The product units and packaging materials are designed for reduced environmental impact.We have established our own assessment criteria on the environmental impacts applicable to all processes,ranging from design to manufacture.Those products that satisfy the criteria are accredited as ECO PRODUCTS.

Safety standards

■ Description of safety standards

1. UL ratings
(USA)

Underwriters Laboratories Inc. was established by the American Union of Fire Insurance Underwriters. The purpose of UL is to ensure safety of machines, equipment, and materials and protect human lives and property from fire and other accidents. To that end, UL has conducted numerous tests and extensive research and, as a result, set up UL ratings. Any seller of products in any of the majority of the states of the USA must produce their products according to the UL ratings, have them pass UL-specified safety inspections, and have them listed in UL's registration book. Therefore, to export and sell any product in the United States, one must in most cases apply for UL-listing.

Additionally, UL is accredited by The Standards Council of Canada (SCC) as both a Certification Organization (CO) and a Testing Organization (TO) and is officially recognized in all provinces and territories throughout Canada. Accordingly, our products can be tested by UL for compliance with Canadian safety standards. Certified products are entitled to display the C-UL Mark, which authorizes their use and sale in Canada. If products are deemed to be compliant with both U.S. and Canadian standards, then both the UL Mark and C-UL Mark can be displayed or a combination U.S. and Canadian mark (bottom left).

Our products are certified as satisfying all UL507 requirements.

2. CSA standards
(Canada)

The Canadian Standards Association (CSA) was set up in response to the advice of the Canadian government. In Canada, the law prohibits the use and sale of any product other than those approved under CSA in terms of safety. CSA has set up CSA standards as inspection procedures and other requirements to ensure product safety.

Our products are certified as satisfying the CSA standard C22.2 No. 113.

3. EN standards
(EU members)

In the EU territory, the harmonization of industrial standards and safety standards of different countries is under way. The unified standards are called Harmonized Standards. Each of these standards is marked EN above the standard number. EN standards offer the grounds in design and manufacture when one exports a product to the EU territory. In order for a product to receive a safety marking, the product must be found to conform to TÜV, VDE, or other relevant standard.

Our products are certified as satisfying all TÜV Rheinland EN60950 requirements.

4. Electrical Appliance and Material Safety Law

As of April 1, 2001, the Electrical Appliance and Material Control Law has been revised and reenacted as the Electrical Appliance and Material Safety Law.
AC fans are classified as 'Blowers' under 'Electric motor-operated appliances'. They are categorized as electrical products other than specific electrical appliances (with the exception of some models) and are required to be labeled to indicate PSE certification.

■ CE marking

To distribute their equipment in the EU territory, manufacturers are obligated to give a CE marking as proof that the equipment conforms to related EU directives. Manufacturers use EN standards as criteria of judgment as to whether the equipment satisfies the requirements of specific directives or, in the absence of applicable EN standards, they use IEC standards. Manufacturers then prepare a self-declaration to indicate that the equipment conforms to related directives and apply a CE marking. (Depending on the degree of risk of the equipment, some kinds of equipment are required to receive type tests conducted by certified authorities and, after a type test certificate is obtained, manu-facturers make a self-declaration.)
Scope of application and compulsory timing of major EC directives

Machine directives (89/392/EEC, 91/368/EEC, and 93/44/EEC)
These directives apply to equipment that has a moving part that may injure humans. The directives generally apply to a wide range of machine tools and other industrial machines (became compulsory on January 1, 1995).

EMC directives (89/326/EEC and 92/31/EEC)
They apply to equipment which may be affected by electromagnetic interference (EMI) or has ele-ctromagnetic susceptibility (EMS) (became co-mpulsory on January 1, 1996).

Low-voltage directive (73/23/EEC)
This directive applies to equipment that is used in an AC range between 50 and 1,000V and in a DC range between 75 and 1,500V (became compulsory on January 1, 1997).

CE

CE marking

JIS: Japanese Industrial Standards
Japan's national standards related to mining and manufacturing industries

IEC : International Electrotechnical Commission
This is an international commission on electrical standardization. This commission promotes the unification and cooperation of international standards related to electric and electronics engineering and issues IEC standards in order eventually to allow different countries to conform to the international standards.

DIN : Deutsches Indstitut fur Normung e.V.
This is a German standards institute. The institute uses a wide-range set of standards covering many industrial sectors. The set of standards includes basic standards.

VDE : Verband Deutscher Elektrotechniker e.V.
It is a German association of electric engineers. VDE establishes safety standards related to electrical engineering and issues them as DIN-VDE standards.

Safety standard list

■AC Fan

✓…UL・CSA・and TÜV acquired

Flame size	Thickness	Model.No	Rated voltage	UL	CSA	TÜV	CE
60×60mm	28mm	**109-180**	100	✓		✓	✓
		109-183	115	✓		✓	✓
	38mm	**109-130**	100	✓		✓	✓
		109-133	115	✓		✓	✓
80×80mm	20mm	**109-210**	100	✓	✓	✓	✓
		109-213	115	✓	✓	✓	✓
	25mm	**109S050**	100	✓	✓	✓	✓
		109S053	115	✓	✓	✓	✓
		109S051	200	✓	✓	✓	✓
		109S054	230	✓	✓	✓	✓
		109S030	100	✓	✓	✓	✓
		109S033	115	✓	✓	✓	✓
		109S031	200	✓	✓	✓	✓
		109S034	230	✓	✓	✓	✓
	38mm	**109-150**	100	✓	✓	✓	✓
		109-153	115	✓	✓	✓	✓
		109-151	200	✓	✓	✓	✓
		109-154	230	✓	✓	✓	✓
	42mm	**109-040UL**	100	✓	✓	✓	✓
		109-043UL	115	✓	✓	✓	✓
		109-041UL	200	✓	✓	✓	✓
		109-044UL	230	✓	✓	✓	✓
		109-047UL	100	✓	✓	✓	✓
		109-033UL	115	✓	✓	✓	✓
92×92mm	25mm	**109S091**	100	✓	✓	✓	✓
		109S093	115	✓	✓	✓	✓
		109S092	200	✓	✓	✓	✓
		109S094	230	✓	✓	✓	✓
		109S095	100	✓	✓	✓	✓
		109S096	100	✓	✓	✓	✓
		109S193	115	✓	✓	✓	✓
		109S192	200	✓	✓	✓	✓
		109S194	230	✓	✓	✓	✓
120×120mm	25mm	**109S085**	100	✓	✓	✓	✓
		109S084	115	✓	✓	✓	✓
		109S088	200	✓	✓	✓	✓
		109S087	230	✓	✓	✓	✓
		109S081	100	✓	✓	✓	✓
		109S083	115	✓	✓	✓	✓
		109S082	200	✓	✓	✓	✓
		109S089	230	✓	✓	✓	✓
		109S086	100	✓	✓	✓	✓
	38mm	**109S075UL**	100	✓	✓	✓	✓
		109S074UL	115	✓	✓	✓	✓
		109S078UL	200	✓	✓	✓	✓
		109S072UL	230	✓	✓	✓	✓
		109S029UL	100	✓	✓	✓	✓
		109S013	100				
		109S013UL	100	✓	✓	✓	✓
		109S006	100				
		109S006UL	100/115	✓	✓	✓	✓
		109S010	200				
		109S010UL	200/240	✓	✓	✓	✓
		109S005	100				

Flame size	Thickness	Model.No	Rated voltage	UL	CSA	TÜV	CE
120×120mm	38mm	**109S005UL**	100	✓	✓	✓	✓
		109S024	120				
		109S024UL	115	✓	✓	✓	✓
		109S008	200				
		109S008UL	200	✓	✓	✓	✓
		109S025	230				
		109S025UL	230	✓	✓	✓	✓
160×160mm	51mm	**109-601**	100	✓	✓	✓	✓
		109-604	115	✓	✓	✓	✓
		109-602	200	✓	✓	✓	✓
		109-603	230	✓	✓	✓	✓
φ172mm×150mm Sidecut type	51mm	**109S301**	100	✓	✓	✓	✓
		109S304	115	✓	✓	✓	✓
		109S302	200	✓	✓	✓	✓
		109S303	230	✓	✓	✓	✓
φ172mm Round type	51mm	**109-311**	100	✓	✓	✓	✓
		109-314	115	✓	✓	✓	✓
		109-312	200	✓	✓	✓	✓
		109-313	230	✓	✓	✓	✓

■AC Fan with Sensor

✓…UL・CSA・and TÜV acquired

Flame size	Thickness	Model.No	Rated voltage	UL	CSA	TÜV	CE
92×92mm	25mm	**109S491**	100	✓		✓	✓
		109S493	115	✓		✓	✓
		109S492	200	✓		✓	✓
		109S494	230	✓		✓	✓
		109S495	100	✓		✓	✓
		109S496	100	✓		✓	✓
120×120mm	25mm	**109S485**	100	✓		✓	✓
		109S484	115	✓		✓	✓
		109S488	200	✓		✓	✓
		109S487	230	✓		✓	✓
		109S486	100	✓		✓	✓
	38mm	**109S475UL**	100	✓	✓	✓	✓
		109S474UL	115	✓	✓	✓	✓
		109S478UL	200	✓	✓	✓	✓
		109S472UL	230	✓	✓	✓	✓
		109S405UL	100	✓		✓	✓
		109S424UL	115	✓		✓	✓
		109S408UL	200	✓		✓	✓
		109S425UL	230	✓		✓	✓
		109S429UL	100	✓		✓	✓
		109S406UL	100	✓		✓	✓
160×160mm	51mm	**109-641**	100	✓		✓	✓
		109-644	115	✓		✓	✓
		109-642	200	✓		✓	✓
		109-643	230	✓		✓	✓
φ172mm	51mm	**109-371**	100	✓		✓	✓
		109-374	115	✓		✓	✓
		109-372	200	✓		✓	✓
		109-373	230	✓		✓	✓

Safety standard list

■DC Fan

All of the San Ace DC cooling fans acquires UL, CSA and TÜV standards except for the following products.

✻…UL・CSA・and TÜV Pending

Flame size	Thickness	Model.No	Rated voltage	UL	CSA	TÜV
40×40mm	28mm	9L0412J302	12	✻	✻	✻
		9L0412H302	12	✻	✻	✻
		9L0412M302	12	✻	✻	✻
40×40mm	20mm	9WF0424H602	24	✻	✻	✻
60×60mm	25mm	9WF0624H402	24	✻	✻	✻
120×120mm	38mm	9WF1224H102	24	✻	✻	✻
60×60mm	25mm	9WP0612H402	12	✻	✻	✻
		9WP0612H4021	12	✻	✻	✻
		9WP0624H402	24	✻	✻	✻
		9WP0624H4021	24	✻	✻	✻
120×120mm	38mm	9WP1212H102	12	✻	✻	✻
		9WP1212H1021	12	✻	✻	✻
		9WP1224H102	24	✻	✻	✻
		9WP1224H1021	24	✻	✻	✻
		9WP1248H102	48	✻	✻	✻
		9WP1248H1021	48	✻	✻	✻
150×150mm	50mm	9GV1512H502(5021)	12	✻	✻	✻
		9GV1512M502(5021)	12	✻	✻	✻
φ220mm	71mm	9TR48HA0	48	✻	✻	✻

※The contents of this catalog is as of March 2006.
Please ask us about new products that we released after March 2006 if you want.

Standard name	Certification number
UL	E46810
CSA	172248

※TÜV certification numbers differ by model.

■CPU Cooler

✓…UL・CSA・and TÜV acquired

Socket	Rated current	Model.No	UL	CSA	TÜV
Socket370 (FC-PGA)	12	109X6512A2016			
Socket370 (FC-PGA2)	12	109X7612H1176	✓		
Socket370 (FC-PGA2)	12	109X7412S4016	✓		
Socket423	12	109X9612S5016	✓		
Socket423	12	9H9912G5016			
Socket478	12	109X9812H0016	✓		
Socket478	12	109X9812T0H016	✓		
Socket478	12	109X9912S0016	✓		
Socket478	12	109X9912T0S016	✓		
Socket478	12	109X9912T0D516	✓		
Socket478	12	109X9412S1016			
Socket478	12	109X9412G4016	✓		
Socket478	12	9H9912G5516			
775-land LGA Package	12	109X9212PT0H016	✓		
775-land LGA Package	12	109X9112PT0H016	✓		
775-land LGA Package	12	9G0912P2E012	✓		
775-land LGA Package	12	9G0912PT2E012	✓		

■Liquid Cooling Solution System

✓…UL・CSA・and TÜV acquired

Socket	Rated current	Model.No	UL	CSA	TÜV
Socket478	12	109-LC1-001	✓		

■Plug Code

✓…UL・CSA・and TÜV acquired

Model.No	UL	CSA	TÜV	CE	Applicable model
489-008-L10					80×80×42mm
489-008-L21					80×80×42mm
489-008-L35					80×80×42mm
489-016-L10					120×120×25mm 92×92×25mm 80×80×25mm 80×80×38mm
489-016-L21					120×120×25mm 92×92×25mm 80×80×25mm 80×80×38mm
489-006-L10					120×120×38mm
489-006-L21					120×120×38mm
489-007-L10	✓	✓			120×120×38mm
489-007-L21	✓	✓			120×120×38mm
489-047-L10	✓	✓			120×120×25mm 92×92×25mm 80×80×25mm 80×80×38mm
489-047-L21	✓	✓			120×120×25mm 92×92×25mm 80×80×25mm 80×80×38mm
489-084-L10	✓	✓			φ172mm×51mm 160×160×51mm L-Shaped
489-084-L21	✓	✓			φ172mm×51mm 160×160×51mm L-Shaped
489-086-L10	✓	✓			φ172mm×51mm 160×160×51mm Straight
489-086-L21	✓	✓			φ172mm×51mm 160×160×51mm Straight

San Ace Product Guide

DC Fans
Long life, low noise axial cooling fans optimized for mostly server or communication devices.

Thermal Speed Controlled Fans
Two types: external and internal thermistor.

Splash Proof Fans
Axial cooling fans optimized for outdoor devices or devices that are used in high-humidity environment.

Oil Fans
The axial fan that can use under tough condition like oil mist.

Long Life Fans
The expected life is 100,000 hours (□120mm : 200,000 hours), optimized for maintainance-free devices required.

Blowers
High static pressure centrifugal cooling fans optimized for draft-resistant, high heat release devices.

Centrifugal Fans
The high air flow centifugal fan that is ideal for telecommunication equipments, large server and network storage system.

CPU Coolers · Liquid Cooling Solution Systems
CPU cooler with low noise, low vibration and high heat dissipation that consists of fan motor and heatsink can effectively cool PC down.

AC Fans
Long life, low noise axial cooling fans optimized for devises with high system impedance and high heat generation.

Option
Option guide optimized for various fans.

Safety Precautions

- **In order to ensure that this product is used safely, be sure that you read and understand the following precautions fully and use the product only as directed.**
- **Be sure to read these Safety Precautions carefully before installing, connecting, operating, maintaining, or inspecting this product. Follow all the precautions and directions given here.**
- **This product has been designed and manufactured for use as a device to be used in general industrial machinery, and may not be used as a standalone product.**
- **The product of our company (hereafter called the product) falls into the category of the products specified in the Attached List 1, Item 16 (Class 85, Item 01) of the Export Trade Control Ordinance. To export the product as an individual part or to export a product into which the product is assembled, the "Information Requirements" and "Objective Requirements" that the Ministry of Economy, Trade and Industry established based on the "Catchall Controls" must be studied for applicability. Based on information on applicability and specified requirements, appropriate export formalities must be performed.**

In order to prevent any possible bodily injury or damage to property or equipment, the following precautions for ensuring safety are displayed according to the following two ranks of importance:

Danger	Handling or using the product improperly and in disregard of the instructions with this mark might result in serious bodily injury or death.
Warning	Handling or using the product improperly and in disregard of the instructions with this mark might result in bodily injury or physical damage.

※ Note: Items marked 'Warning' might also result in serious bodily injury or death in some circumstances. Always follow the instructions for items marked 'Danger'.

Descriptions of the precautions to be taken to ensure safety are given below.

Danger

- If the product is used in medical appliances or other types of equipment that affect people's lives, sufficient safety-related evaluations and preparations must be made in advance, and the product or the type of equipment into which the product is assembled must be used on the user's own responsibility.
- If the product is used in types of equipment that have a strong social and public impact, sufficient prior evaluations and safety-related evaluations and preparations must be made, and the product or the type of equipment into which the product is assembled must be used on the user's own responsibility.
- If the product is used in an environment where there are vibrations, for example, in a car or aboard a ship, sufficient prior evaluations and safety-related evaluations and preparations must be made, and the product or the piece of equipment into which the product is assembled must be used on the user's own responsibility.
- Connect all wires properly and securely. Failure to do so might result in burns, fire, or exposure to electrical shock.
- If there are any grounding taps or wires, attach all grounds securely. Failure to do so might result in exposure to electrical shock.
- Never use in explosive atmosphere, as doing so might result in fires, burns, or bodily injury.
- Never operate with any live wires exposed, as doing so might result in electrical shock.
- Never allow any persons or objects to approach or come into contact with the rotor while in operation, as doing so might result in damage or personal injury.
- Turn off the power and stop using the product immediately if you notice any sparks, smoke, odd odors, sounds, or anything unusual during operation. Failure to do so might result in fire, burns, or electrical shock.
- Never allow the product to fall, topple over, or otherwise be subjected to excessive shocks when moving it, as doing so might result in product breakdown or substandard operation.
- The product should be handled only by personnel with sufficient training and knowledge and under the responsibility of the end user.
- Never attempt to disassemble, repair, or alter this product in any way, as doing so might result in fire, burns, or electrical shock.

⚠ Warning

- If the fan stops during operation, give proper consideration to the device for its protection.
- Installation, placement, connections, wiring, or relocation of the product should be performed by knowledgeable or correctly licensed personnel. Never perform such work while the product is live as this might lead to injury, electrical shock, burns, or fire.
- When fixing this product into place, be sure to take into consideration the product's weight, the vibrations generated during operation, and all other relevant factors. Failure to do so might cause the product or parts of it to fall out of position, resulting in bodily injury or malfunction of the product.
- Be sure to check the direction of installation (i.e., the fan), as failing to do so might result in bodily injury or mechanical breakdown.
- In order to ensure that the product operates properly, allow spaces for ventilation and take whatever steps necessary to prevent the entry of foreign objects. Failure to do so might result in bodily injury or mechanical breakdown.
- The product might become damaged if foreign objects or external forces are allowed to interfere with normal fan operation.
- Install a finger guard or other cover if there is any danger of fingers, hands or objects coming into contact with the rotor or blades. Failure to do so might result in bodily injury or mechanical breakdown.
- Pulling or pinching the lead wires could result in damage to the wire, and you should avoid placing excessive stresses on these wires. The device should also be installed so that the lead wires are not allowed to come into contact with the rotor or blades. Failure to do so might result in damage or exposure to electrical shock.
- Never insert or remove any plug cords or connectors while the power is turned on. When inserting or removing plugs or connections, always be sure to first check that the power has been turned off and hold the housing of the plug or connector when doing so. Failure to do so might result in damage or exposure to electrical shock.
- Never attempt to disassemble or alter this product in any way. Doing so might invalidate any warranties concerning the functions or performance of the product, and might also result in fire, burns, bodily injury, or electrical shock.
- Take proper precautions against static electricity when making electrical connections. Failure to do so might cause the breakdown of the fan or device.
- The fan may fail to operate properly if there is insufficient power capacity, because the starting current's amperage is several times larger than the rated amperage and the current will flow at the very instant the voltage is supplied to the fan. Be sure to inquire about startup current levels for individual models.
- Never remove the product identification plate or install the product so that the identification cannot be seen after installation. This could result in the product being improperly used, and subsequently result in fires.
- The product must not be used or stored in a flammable or corrosive gas atmosphere, in a place where water or oil splashes (not applicable to Splash Proof or Oil Proof Fans), in a place where there is much dust or humidity, in a place where condensation occurs, in a place where the product is exposed to radioactive rays or is in direct sunlight, in a place where a salty sea breeze blows or seawater splashes, or in an environment where the product may be contaminated by such corrosive materials as sulfurous water, sulfurous volcanic ash, organic solvents, acidic chemicals, alkali chemicals, etc., such hazardous substances as nuclear fuel materials, etc. If it is used or stored in such places or environments, there is the possibility that a fire may occur, the product may malfunction or its performance may deteriorate.
- Never use the product at voltages, temperatures, or any other settings which exceed those given in the product specifications. This might result in breakdown, fire, bodily injury, or electrical shock.
- Avoid using or storing the product in locations where it could be constantly exposed to vibrations, strong shocks, magnetic or electromagnetic noise. This might result in product breakdown or substandard operation.
- Maintenance and inspections should always be performed by personnel with sufficient training and knowledge. Failure to do so might result in fire, burns, bodily injury, or electrical shock.
- Never perform any maintenance or inspections while the product is in operation. Also note that the blades continue to rotate for some time immediately after operation ceases. You should always be sure to check to see that all rotating parts have come to a stop before beginning work.
- Never allow yourself to come into contact with the ends of wires or plugs when measuring the insulation resistance or maximum voltage. This might result in electrical shock.
- Never use gasoline, paint thinner, benzene, or any other organic solvents to clean the product as this could result in the deformation or substandard operation.
- When disposing the product, always dispose of it as industrial waste. For instructions on proper disposal methods, please contact local government authorities.

Part Numbering System

DC Fans

9G	12	12	G	1	02	1

Series name / frame material
109P／Plastics
109R／Plastics
9GV／Plastics
Aluminum
9G／Plastics
9A／Plastics
9CR／Plastics
9CRA／Plastics
9SG／Aluminum
109E／Aluminum
9EC／Aluminum

Frame dimensions
04：40×40mm
05：52×52mm
06：60×60mm
08：80×80mm
09：92×92mm
12：120×120mm
13：127×127mm
15：150×150mm
17：φ172
47：φ172×147 (side cut)
57：φ172×150 (side cut)
20：φ200

Voltage
05：5V
12：12V
24：24V
48：48V
etc

Speed code
A,B,C,D,E,F,G,H,
J,K,L,M,S,W etc
Two speed：MH,
LM,HD,HE etc

Frame thickness
0：70mm thick
1：38mm thick
2：32mm thick
3：28mm thick
4：25mm thick
5：50mm thick
51mm thick
56mm thick
6：20mm thick
7：15mm thick
9：10mm thick

Sensor specifications
01：With a pulse sensor
02：Without a sensor
D01：With a lock sensor

Frame type
Nil：Ribbed Plastics frame
Nil：Ribless aluminum frame
1：Ribless Plastics frame
3：Plastics frame
40×40×28mm for 1U applications

Splash Proof Fans

109W	12	12	H	1	02	1

Series name / frame material
109W／Aluminum
9WS／Plastics
9WG／Aluminum
9WB／Aluminum
9WP／Plastics

Frame dimensions
06：60×60mm
08：80×80mm
09：92×92mm
12：120×120mm
14：140×140mm

Voltage
12：12V
24：24V
48：48V
etc

Speed code
A,D,E,F,G,H,J,L,
M,S etc

Frame thickness
1：38mm thick
4：25mm thick
5：51mm thick

Sensor specifications
01：With a pulse sensor
02：Without a sensor
D01：With a lock sensor

Frame form
Nil：Ribbed Plastics frame
Nil：Ribless aluminum frame
1：Ribless Plastics frame

Oil Proof Fans

9WF	12	24	H	1	02	

Series name / frame material
9WF／Plastics

Frame dimensions
04：40×40mm
06：60×60mm
12：120×120mm

Voltage
24：24V

Speed code
H

Frame thickness
1：38mm thick
4：25mm thick
6：20mm thick

Sensor specifications
01：With a pulse sensor
02：Without a sensor
D01：With a lock sensor

Frame form
Nil：Ribbed Plastics frame

Long Life Fans

109L	12	12	H	1	02	

Series name / frame material
109L／Aluminum
9LB／Aluminum
9GL／Aluminum
9 L ／Aluminum

Frame dimensions
04：40×40mm
06：60×60mm
08：80×80mm
09：92×92mm
12：120×120mm
14：140×140mm
17：φ172
57：φ172×150(side cut)

Voltage
12：12V
24：24V
48：48V
etc

Speed code
E,F,G,H,J,L,M,S
etc

Frame thickness
1：38mm thick
3：28mm thick
4：25mm thick
5：51mm thick

Sensor specifications
01：With a pulse sensor
02：Without a sensor
D01：With a lock sensor

Frame form
Nil：Ribless

Thermally Speed Controlled Fans

109R | **12** | **12** | **T** | **1** | **H** | **11** | **2**

Series name / frame material
109P／Plastics
109R／Plastics

Frame dimensions
05 : 52×52mm
06 : 60×60mm
08 : 80×80mm
09 : 92×92mm
12 : 120×120mm

Voltage
12 : 12V
etc

Speed code
T : Thermal speed control

Frame thickness
1 : 38mm thick
4 : 25mm thick
6 : 20mm thick
7 : 15mm thick

Speed type
H etc

Sensor specifications
10 : With a lock sensor
11 : With a pulse sensor
12 : Without a sensor

External view code
Nil : Ribbed frame product with an external thermistor
1 : Ribless frame product with an external thermistor
2 : Ribbed frame product with a built-in thermistor
3 : Ribless frame product with a built-in thermistor

Blowers

109B | **F** | **12** | **H** | **A** | **2**

Series name / frame material
109B／Plastics
9B／Plastics

Frame dimensions
C : 52×52mm
D : 76×76mm
E : 94×94mm
M : 97×97mm
AM : 97×97mm
F : 120×120mm
J : 127×127mm
N : 150×150mm
G : 160×160mm

Voltage
12 : 12V
24 : 24V
etc

Speed code
F,G,H,M,S etc

Sensor specifications
A : Without a sensor
C : With a pulse sensor
D : With a lock sensor

Frame thickness
1 : 40mm thick
2 : 30mm thick, 32mm thick, 33mm thick
4 : 25mm thick
6 : 20mm thick
7 : 15mm thick

Centrifugal Fans

9TR | **48** | **H** | **A** | **O**

Series name / Attachment base
9TR／Aluminum

Voltage
48 : 48V

Speed code
H

Sensor specifications
A : Without a sensor
C : With a pulse sensor

Frame thickness
0 : 71mm thick

CPU Coolers

109X | **99** | **12** | **S** | **0** | **01** | **6**

Series name / frame materiall
109X／Plastics
9H／Plastics

Product dimensions
For model numbers starting with 109X
65 : 64×50.8mm
76 : 68×67.3mm
74 : 79×67.3mm
94 : 83.3×68.5mm
87.2×68.5mm
96 : 88.9×67.3mm
98 : 91.6×71.3mm
99 : 95×67.5mm
For model numbers starting with 9H
99 : 83.3×70mm
88.9×70mm

Voltage
12 : 12V
etc

Speed code
A,D,G,H,S etc

Thickness code
0,1,2,4,5 etc

Sensor specifications
01 : With a pulse sensor
02 : Without a sensor

Heat sink specification
6 : With a heat sink

CPU Coolers with Speed Control

109X | **99** | **12** | **T** | **0** | **S** | **01** | **6**

Series name / frame material
109X／Plastics
9G／Plastics

Product dimensions
For model numbers starting with 109X
92 : φ90mm
98 : 91.6×71.3mm
99 : 95×67.5mm
For model numbers starting with 9G
09 : 92×92mm

Voltage
12 : 12V
etc

Thickness code
0 etc

Speed code
A,D,G,H,S etc

External view code
2 : Duct＋Heatsink [For BTX Thermalmodule]
6 : With a heat sink

Sensor specifications
01 : With pulse sensor
02 : Without sensor

T : Thermal speed control
PT : PWM control with thermal speed control
P : PWM control

Liquid Cooling Solution Systems

109 - **LC1** - **001**

Represents a liquid cooling solution system.
LC1

*For inquiries concerning frame sizes, voltage, speed types, sensors (including lock sensors and low-speed sensors), speed control systems (including the two-speed system, the thermal speed control system, the PWM control function and the microprocessor control system) that are not covered in the catalog or on connectors, please contact us.

Cooling Fan Units

Example of application
Cooling Fan Unit

Example of application
Cooling Fan Unit for 1U Server

- We build cooling systems that are most suitable for the client's application.
  The unit includes a range of cooling fans that are optimally adjusted according to the environment and a custom-made fan unit.

- In addition, we design and develop fan tray that are optimally suited to the client's requirements.

Lineup

Our rich lineup of cooling fans includes tray that are designed for telecommunication equipment, such as servers, routers and storage devices, as well as some other equipments.

DC Cooling Fan　DC San Ace
40mm～200mm square.
10mm～70mm thickness.

DC Cooling Fan　DC San Ace
172mm square（140mm wide）
25mm thickness.

Splash-proof Fan　San Ace W/ WS
80mm～140mm square.
25mm～51mm thickness.

Blower　San Ace B
52mm～160mm square.
25mm～40mm thickness.

Long Life Fan　San Ace L
60mm～172mm square.
25mm～51mm thickness.

- In addition to the product lineup above, we can offer a programmable control fans and thermal speed control fans.

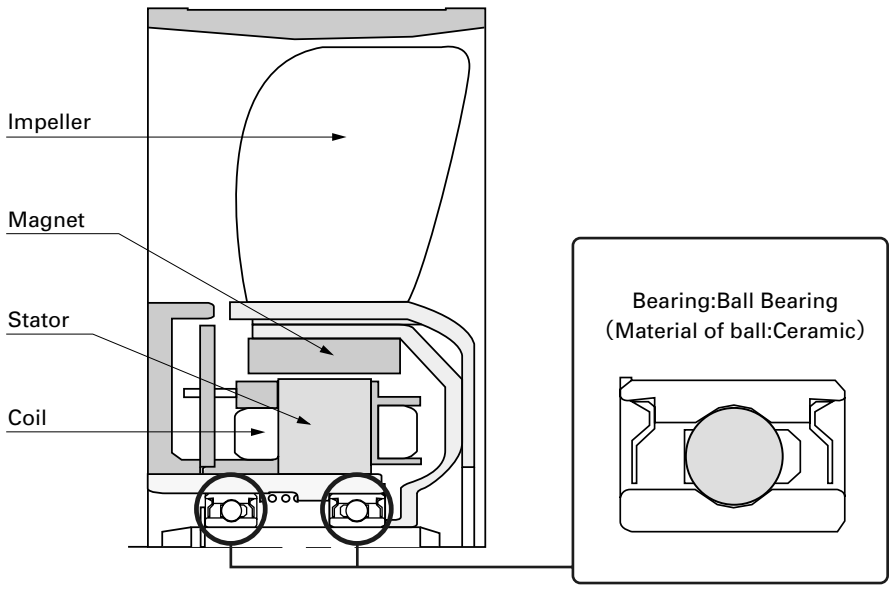
Electrolytic Corrosion Proof Fans

●This cooling fan prevents electrolytic corrosion of bearings even under conditions where electromagnetic noise is generated.

●Electrolytic corrosion of ball bearings is prevented by using ceramic balls in ball bearings.

The ceramic material is an insulating material.

■ Structure



Caution

Electrolytic Corrosion Proof Fan has been designed to prevent the electrolytic corrosion of ball bearings in the fan, but this does not guarantee that the fan will operate normally under conditions where there is strong electromagnetic noise.

Please be sure to fully evaluate the value of fan malfunction due to noise in advance.

Lineup

●Electrolytic corrosion proof specification can be applied to our entire San Ace.

DC Cooling Fan
40mm to 140mm sq. /φ172mm to φ200mm
10mm to 70mm thickness.

AC Cooling Fan
60mm to 160mm sq. /φ172mm
20mm to 42mm thickness.

Long Life Fan
40mm to 140mm sq. /φ172mm
25mm to 51mm thickness.

Splash-proof Fan
60mm to 140mm sq.
25mm to 51mm thickness.

Fans with the PWM control function

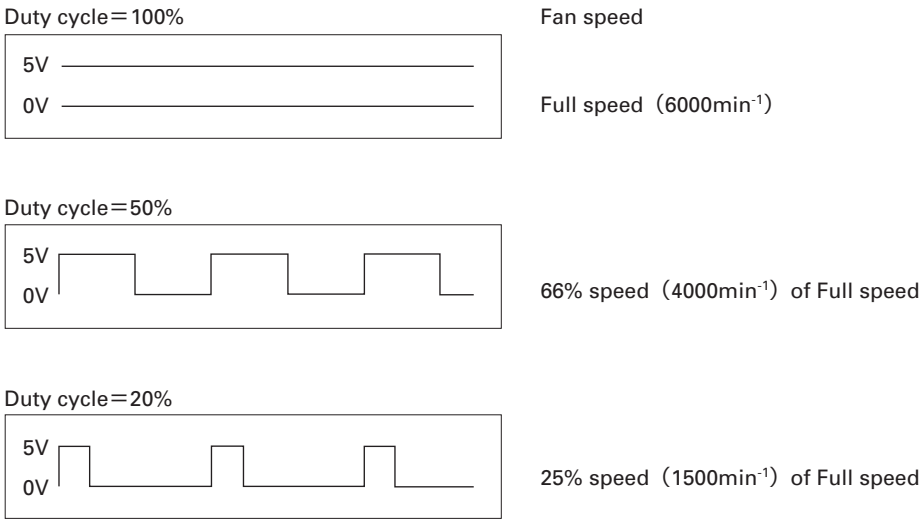
This picture shows 120×120×38mm fan.

Pulse Width Modulation Speed Control

Features

PWM speed control is the feature that fan speed is externally controlled by a constant input frequency with a varying duty cycle. It is good for efficient cooling, power saving and noise reduction for system because fan speed is appropriately adjusted when needed.

■ PWM Speed Control Scheme



Lineup

Fans with the PWM control function

■ Available size and example of characteristics

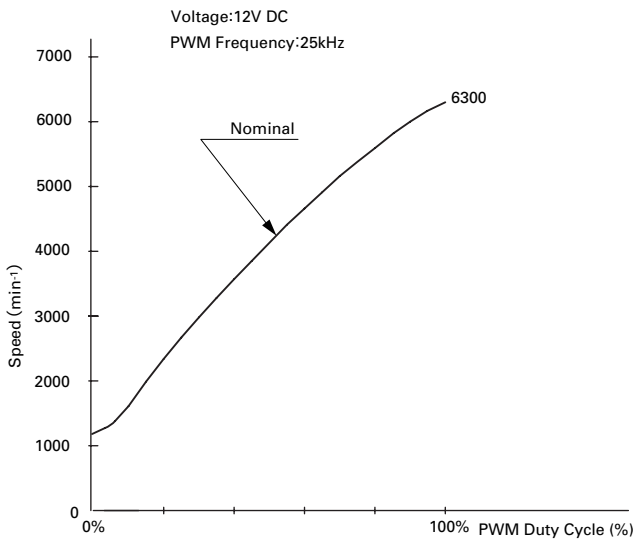
Size (mm)	Model No.	Voltage (V)	Rated Speed (min⁻¹)	Frequency (KHz)	Duty Cycle (%)	Current (A)	Airflow (m³/min)	Airflow (CFM)	Static Pressure (Pa)	Static Pressure (inchH_2O)	Noise (dB[A])
40×40×28	**9GV0412P3J****	12	14,700	25	100	0.60	0.68	24	331	1.33	55
			0～4,410②		0	—	—	—	—	—	—
60×60×38	**9G0612P1G****	12	11,800	25	100	1.54	1.84	65	436	1.75	58
			0～3,540②		0	—	—	—	—	—	—
80×80×38	**9G0812P1G****	12	6,300	25	100	1.10	2.55	90	212	0.85	51
			0～1,890②		0	—	—	—	—	—	—
92×92×32	**9G0912P2G****	12	5,000	25	100	0.88	2.83	100	147	0.59	50
			0～1,500②		0	—	—	—	—	—	—
120×120×38	**9SG1212P1G****	12	6,000	16	100	4.00	7.35	260	340	1.37	64
			0～1,800②		0	—	—	—	—	—	—
172×150×51	**109E5712P5K****	12	4,100	25	100	2.90	8.49	300	244	0.98	60
			0～1,230②		0	—	—	—	—	—	—

The numerals on *marking depend on each fan spec. Please ask us if you need those details.
Please ask us about speed at 0% duty cycle .
It should be 0 to 30% speed of rated speed as a rough target.
Tach outout is embedded for all the standard part numbers.

Fan example with the PWM control function : 9G0812P1G04

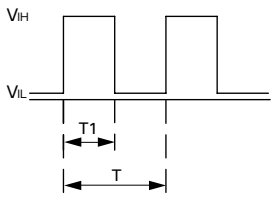
■ PWM Duty - Speed Characteristics Example

【Example】



■ PWM Input Signal Example

Input Signal Wave Form : TTL Totem-pole



V_{IH}= 4.75 V ～ 5.25 V

V_{IL}= 0 V ～ 0.4 V

PWM Duty Cycle(%)= $\frac{T1}{T} \times 100$

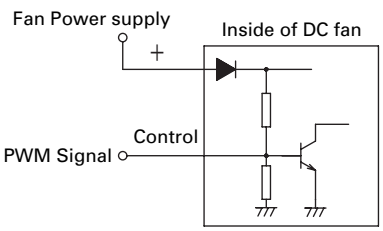
PWM Frequency 25 (kHz)= $\frac{1}{T}$

Source Current : 1mA Max. at control voltage 0V†

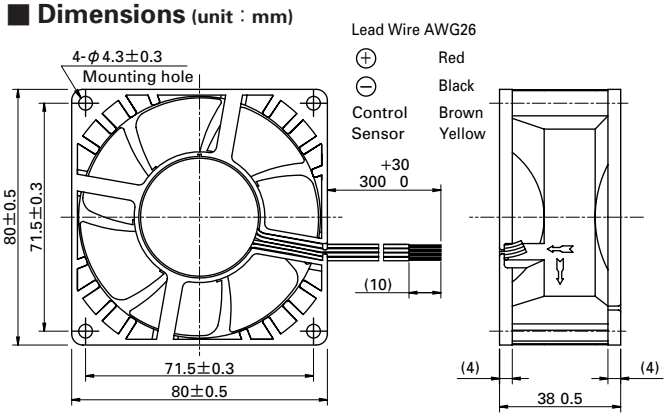
Sink Current : 1mA Max. at control voltage 5.25V†

Control Terminal Voltage : 5.25V Max. (Open Circuit)†

■ Application



■ Dimensions (unit : mm)



Endurance Fan Series

SANYO DENKI's Cooling Fans enjoy wide acceptance by many customers thanks to their high performance and reliability, proven over many years. Within the company's line of Cooling Fan products, the " Endurance Fan Series " has been developed as a product suitable for a wide range of harsh environments.

The cooling fan motors in SANYO DENKI's " Endurance Fan Series " product line have been developed to perform in various demanding environments, and these motors are durable enough to withstand oil splashes, be installed in outdoor environments exposed to water, and operate non-stop for up to 200,000 hours.

The " Endurance Fan Series" products are capable of cooling the components of a variety of equipment, such as general industrial machinery, equipment installed in outdoor locations, and equipment that is operated for long durations with little or no maintenance.

Oil Proof Fans

DC Fan
San Ace WF Series

40mm sq.×20mm thickness
60mm sq.×25mm thickness
120mm sq.×38mm thickness

Oil resistant materials protect coils and electronic parts.
Therefore, even in a severe environment with oil mist, the product maintains stable operation.
Life expectancy : 40,000 hours.
Applications : All kinds of industrial machines
Usage of this product requires an evaluation with the oil that will be used.

"IP XX" Protection Grade

■IP code is laid down in "Degrees of protection provided by enclosures (IP Code) " on JIS C 0920 and IEC 60529.

■IP code is defined as "A coding system to indicate the degree of protection provided by an enclosure against access to hazardous parts, ingress of solid foreign objects, ingress of water and to give additional information in connection with such a protection"

■Regarding IP code, the first numeral indicates the degree of protection against access to hazardous parts and ingress of solid foreign objects. The second numeral indicates the degree of protection against the ingress of water.

I P X X

4: Protected against splashing water
(Water splashed against the enclosure form any direction shall have no harmful effects)

5: Protected against water jets
(Water projected in jets against the enclosure form any direction shall have no harmful effects)

5: Dust-Protected
(Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety.)

Lineup of Endurance Fan Series

Splash Proof Fans

DC Fan
San Ace W Series

60mm sq.×25mm thickness
80mm sq.×25mm thickness
92mm sq.×25mm thickness
120mm sq.×38mm thickness
140mm sq.×38mm thickness
140mm sq.×51mm thickness

For IP55*

This cooling fan operates with dependability even in the most severe environments, and is capable of resisting direct jets of water from multiple directions.
Life expectancy : 40,000 to 100,000 hours.
Applications : Outdoor equipment, and all kinds of general manufacturing equipment.

Splash Proof Fans

DC Fan
San Ace WS Series

80mm sq.×25mm thickness
92mm sq.×25mm thickness
120mm sq.×38mm thickness

For IP54*

It also offers reliable performance in environments where it is subject to water splash or spray from multiple directions.
Life expectancy : 40,000 hours.
Applications : Communications base station,Outdoor equipment, and all kinds of general manufacturing equipment.

Long Life Fan

DC Fan
San Ace L Series

40mm sq.×28mm thickness
60mm sq.×25mm thickness
80mm sq.×25mm thickness
92mm sq.×25mm thickness
120mm sq.×38mm thickness
140mm sq.×38mm thickness
140mm sq.×51mm thickness
φ172mm ×51mm thickness (sidecut type) (round type)

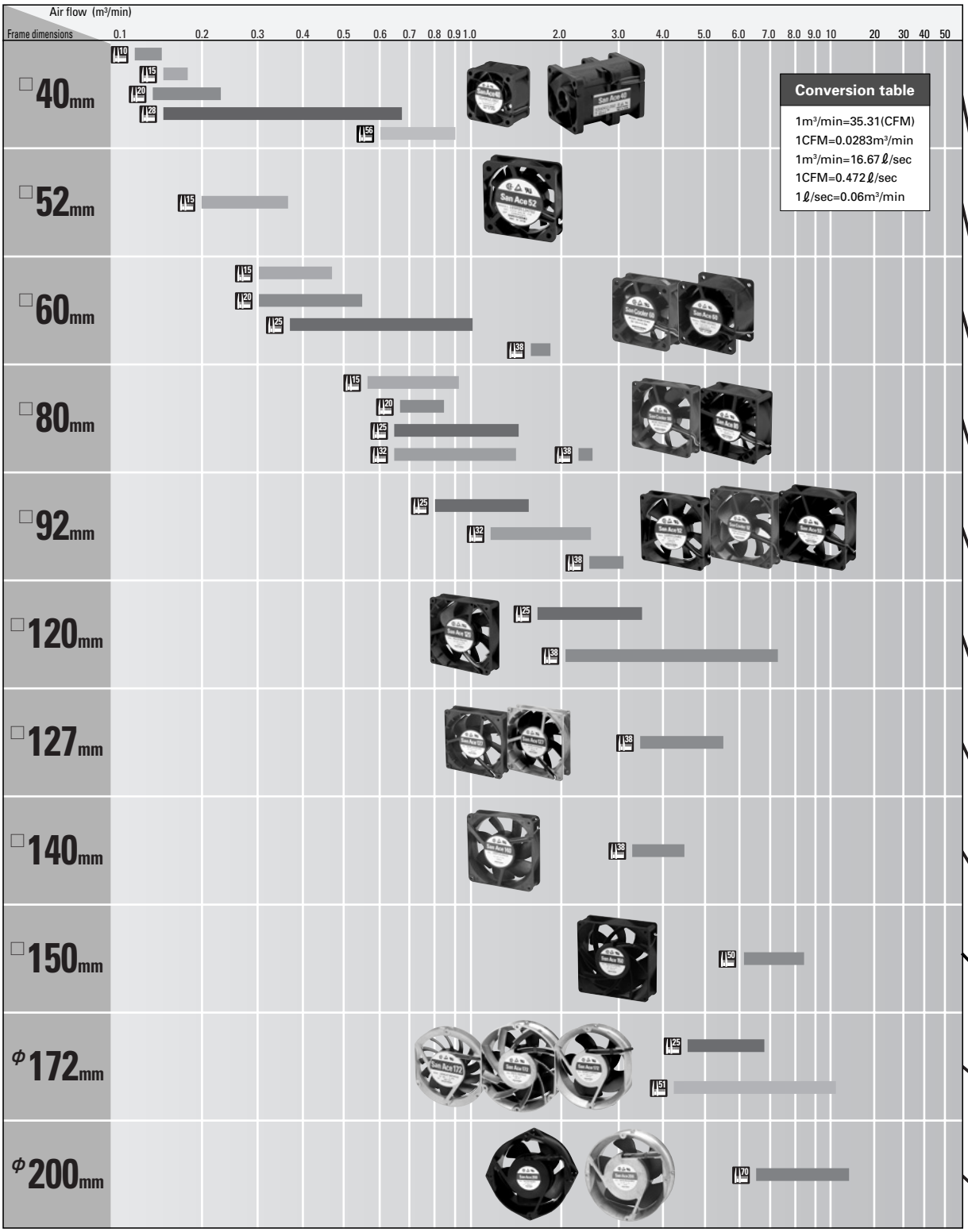
The Long-Life Fan Series for cooling equipment that must be in operation and maintence-free for long periods of time.
Life expectancy : 60,000～200,000 hours
Applications : Communications equipment etc

COOLING SYSTEMS

DC FAN

DC Fan

Domain diagram



DC Fan

□40mm

San Ace 40

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····S, H speeds ⊕red, ⊖black
M speed ⊕red, ⊖black or blue
Mass ·····19g (10mm thick) 32g (15mm thick)

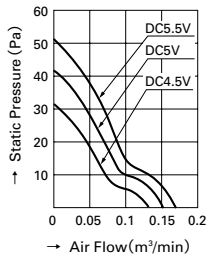
10mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0405H902	5	4.5～ 5.5	0.16	0.8	6,200	0.15	5.3	41.16	0.165	25	−10 ～+60	40,000
109P0405M902			0.11	0.55	5,000	0.12	4.2	26.95	0.108	21		
109P0412H902	12	7 ～13.8	0.07	0.84	6,200	0.15	5.3	41.16	0.165	25		
109P0412M902			0.06	0.72	5,000	0.12	4.2	26.95	0.108	21		

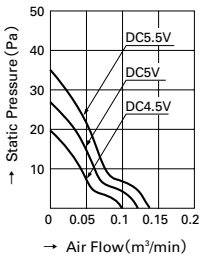
Air Flow and Static Pressure Characteristics

H speed



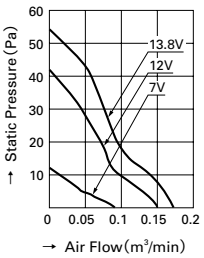
109P0405H902

M speed



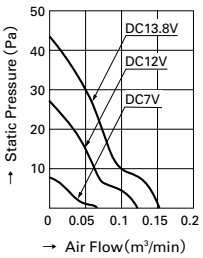
109P0405M902

H speed



109P0412H902

M speed



109P0412M902

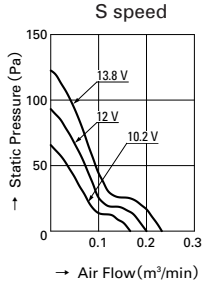
15mm thick

Specifications

Model No.	Rated Voltage (V)	Operating voltage range (V)	Rated current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static pressure (Pa)	Static pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life expectancy (h)
109P0405H702	5	4.5～ 5.5	0.28	1.4	7,700	0.18	6.4	75.5	0.303	28	−10 ～+60	60,000
109P0405M702			0.21	1.05	6,500	0.15	5.3	53	0.213	24	−10 ～+70	
109P0412S702	12	10.2～13.8	0.18	2.16	8,600	0.2	7.06	92.1	0.369	32		
109P0412H702			0.13	1.56	7,700	0.18	6.4	75.5	0.303	28		
109P0412M702			0.095	1.14	6,500	0.15	5.3	53	0.213	24		
109P0424H702	24	20.4～27.6	0.08	1.92	7,700	0.18	6.4	75.5	0.303	28		

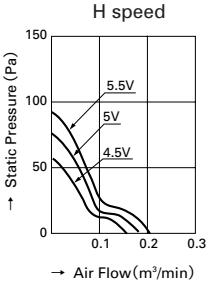
Air Flow and Static Pressure Characteristics

S speed



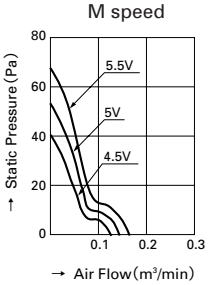
109P0412S702

H speed



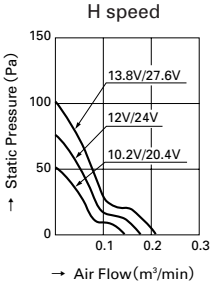
109P0405H702

M speed



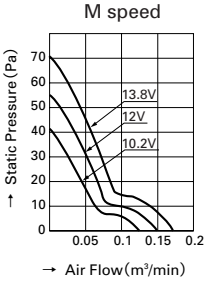
109P0405M702

H speed



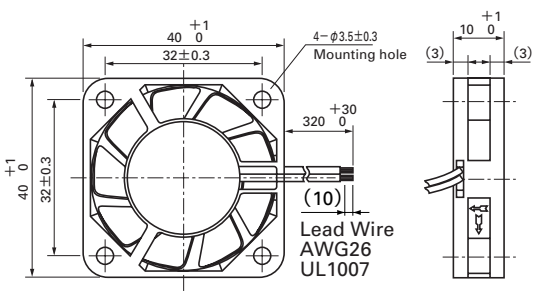
109P0412H702
109P0424H702

M speed

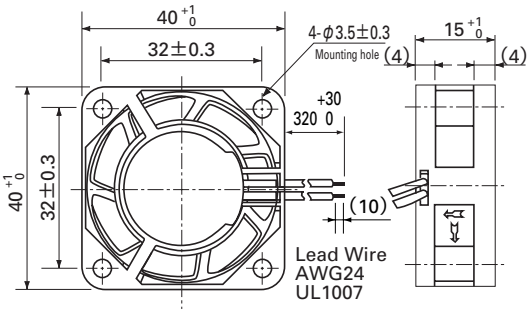


109P0412M702

Dimensions (unit : mm)



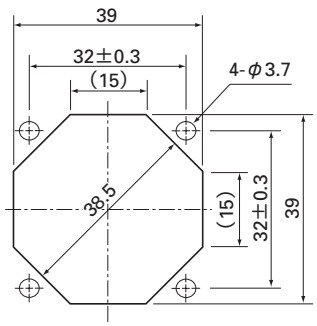
10mm thick



15mm thick

Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□40mm
San Ace 40

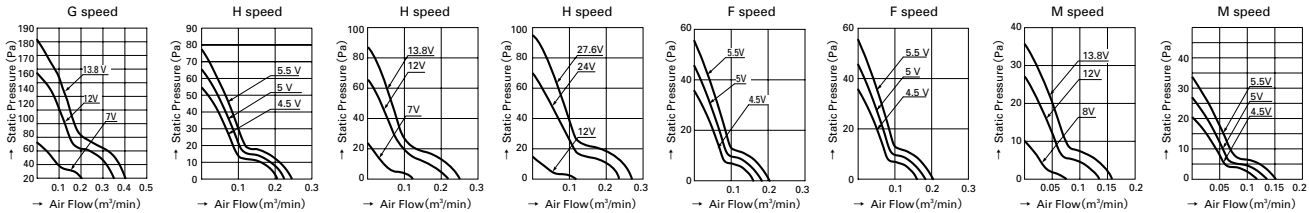
General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H, F, G, B speeds ⊕red, ⊖black
M speed ⊕red, ⊖black or blue
Mass ·····45g (20mm thick) 52g (28mm thick)

20mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂0)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0405H602	5	4.5～ 5.5	0.32	1.6	8,000	0.225	8.0	65.7	0.264	33	−10 ～+70	40,000
109P0405F602			0.25	1.25	6,500	0.183	6.5	45.1	0.181	28		60,000
109P0405M602			0.12	0.60	5,000	0.136	4.8	26.5	0.106	24		
109P0412G602	12	7 ～13.8	0.28	3.36	12,500	0.35	12.4	153.8	0.618	44	−10 ～+60	40,000
109P0412H602			0.11	1.32	8,000	0.225	8.0	65.7	0.264	33	−10 ～+70	60,000
109P0412F602			0.09	1.08	6,500	0.183	6.5	45.1	0.181	28		
109P0412M602		8 ～13.8	0.06	0.72	5,000	0.136	4.8	26.5	0.106	24		
109P0424H602	24	12 ～27.6	0.07	1.68	8,300	0.233	8.2	69.6	0.280	35		
109P0424F602		14 ～27.6	0.06	1.44	6,500	0.183	6.5	45.1	0.181	28		

Air Flow and Static Pressure Characteristics

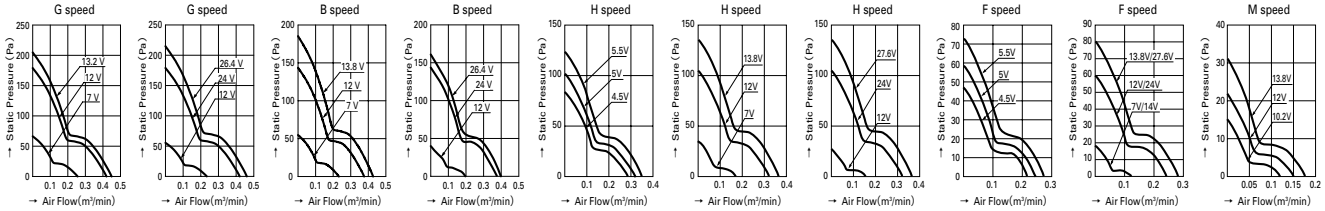


109P0412G602 | 109P0405H602 | 109P0412H602 | 109P0424H602 | 109P0405F602 | 109P0412F602 109P0424F602 | 109P0412M602 | 109P0405M602

28mm thick
Specifications

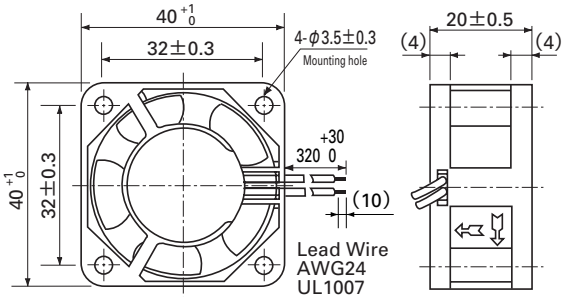
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂0)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0405H302	5	4.5～5.5	0.68	3.4	8,700	0.32	11.3	103	0.414	37	−10 ～+70	40,000
109P0405F302			0.28	1.4	6,700	0.244	8.6	58.8	0.236	30	−10 ～+70	60,000
109P0412G302	12	7～13.2	0.31	3.72	11,500	0.42	14.8	179	0.719	42	−10 ～+60	40,000
109P0412B302		7～13.8	0.28	3.36	10,300	0.38	13.4	143	0.574	40	−10 ～+60	
109P0412H302			0.195	2.34	8,700	0.32	11.3	103	0.414	37	−10 ～+70	60,000
109P0412F302			0.105	1.26	6,700	0.244	8.6	58.8	0.236	30	−10 ～+70	
109P0412M302		10.2～13.8	0.045	0.54	4,100	0.15	5.3	21.6	0.087	20	−10 ～+70	
109P0424G302	24	12～26.4	0.19	4.56	11,500	0.42	14.8	179	0.719	42	−10 ～+60	40,000
109P0424B302			0.13	3.12	10,300	0.38	13.4	143	0.574	40	−10 ～+60	
109P0424H302		12～27.6	0.095	2.28	8,700	0.32	11.3	103	0.414	37	−10 ～+70	60,000
109P0424F302		14～27.6	0.055	1.32	6,700	0.244	8.6	58.8	0.236	30	−10 ～+70	

Air Flow and Static Pressure Characteristics

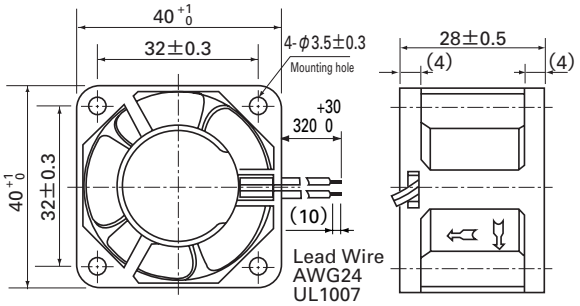


109P0412G302 | 109P0424G302 | 109P0412B302 | 109P0424B302 | 109P0405H302 | 109P0412H302 | 109P0424H302 | 109P0405F302 | 109P0412F302 109P0424F302 | 109P0412M302

Dimensions (unit : mm)



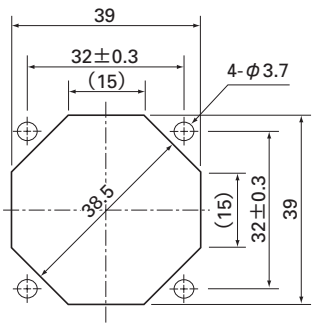
20mm thick



28mm thick

Reference dimension of mounting holes and vent opening
(unit : mm)

Air inlet side・Air outlet side



DC Fan

□40mm

San Ace 40

"San Ace 40" GV type

ECO PRODUCTS

General specifications

Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····50g

28mm thick

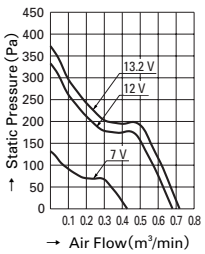
Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9GV0412J302(3021)	12	7～13.2	0.60	7.20	14,700	0.68	24.0	330	1.325	55	−10 ～+60	40,000
9GV0412G302(3021)			0.47	5.64	13,000	0.60	21.1	260	1.044	52		

The numbers in ( ) represent ribless models.

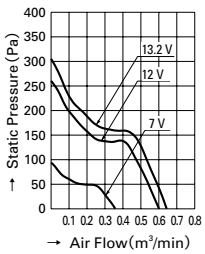
Air Flow and Static Pressure Characteristics

J speed



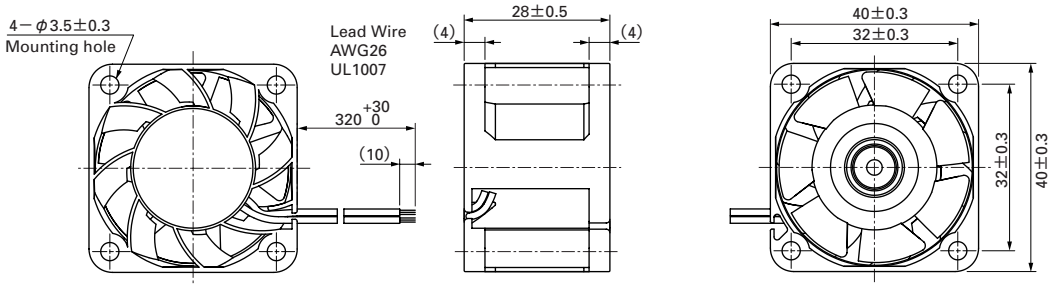
9GV0412J302(3021)

G speed



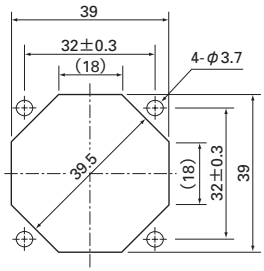
9GV0412G302(3021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□40mm
San Ace 40

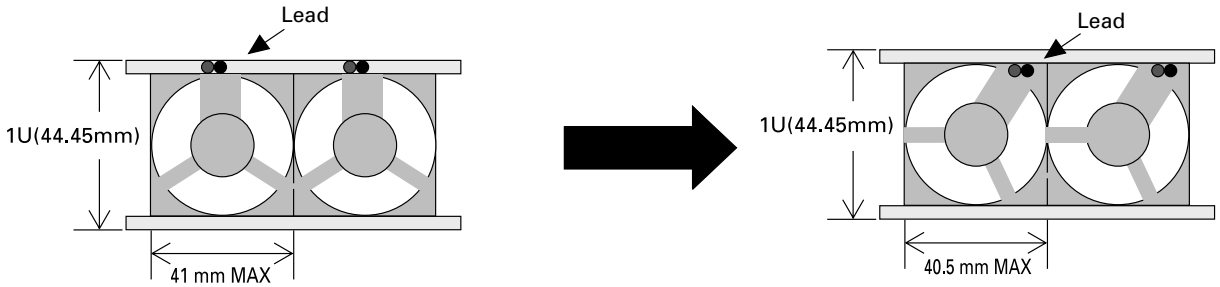
General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····K, J, H, F, B, G speeds ⊕red, ⊖black
M speed ⊕red, ⊖black or blue
Mass ·····52g

Features

Able to be installed into the 1U (44.5mm) case by modifying the fan lead wire outlet.

Example of the installation: 1U case of the thickness 1.7mm for 19-inch rack



Conventional product

SAN ACE 40 for 1U server

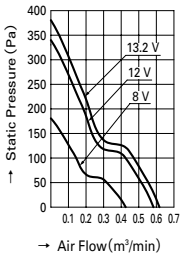
40mm

28mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0405H3023	5	4.5～ 5.5	0.68	3.4	8,700	0.32	11.3	103	0.414	37	−10 ～+70	40,000
109P0405F3023			0.28	1.4	6,700	0.244	8.6	58.8	0.236	30		60,000
109P0412K3023	12	8 ～13.2	0.55	6.6	15,500	0.59	21.0	340	1.365	50		40,000
109P0412J3023		7 ～13.2	0.35	4.2	12,500	0.46	16.3	210	0.843	44	−10 ～+60	
109P0412G3023			0.31	3.72	11,500	0.42	14.8	179	0.719	42		
109P0412B3023		7 ～13.8	0.28	3.36	10,300	0.38	13.4	143	0.574	40		
109P0412H3023			0.195	2.34	8,700	0.32	11.3	103	0.414	37	−10 ～+70	60,000
109P0412F3023			0.105	1.26	6,700	0.244	8.6	58.8	0.236	30		
109P0412M3023		10.2～13.8	0.045	0.54	4,100	0.15	5.3	21.6	0.087	20		
109P0424J3023	24	12 ～26.4	0.18	4.32	12,500	0.46	16.3	210	0.843	44	−10 ～+60	40,000
109P0424G3023			0.19	4.56	11,500	0.42	14.8	179	0.719	42		
109P0424B3023			0.13	3.12	10,300	0.38	13.4	143	0.574	40		
109P0424H3023		12 ～27.6	0.095	2.28	8,700	0.32	11.3	103	0.414	37	−10 ～+70	60,000
109P0424F3023		14 ～27.6	0.055	1.32	6,700	0.244	8.6	58.8	0.236	30		

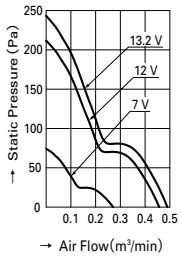
Air Flow and Static Pressure Characteristics

K speed



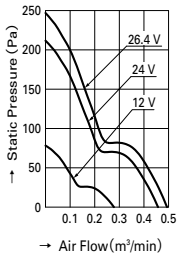
109P0412K3023

J speed



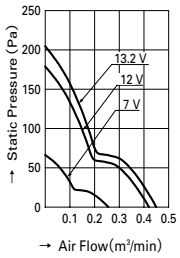
109P0412J3023

J speed



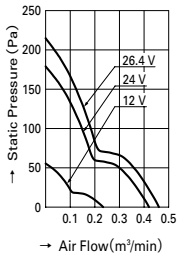
109P0424J3023

G speed



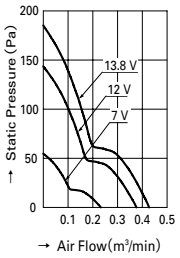
109P0412G3023

G speed



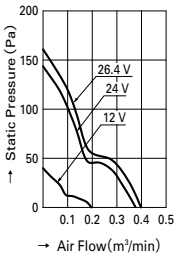
109P0424G3023

B speed



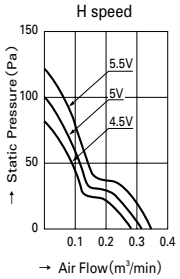
109P0412B3023

B speed



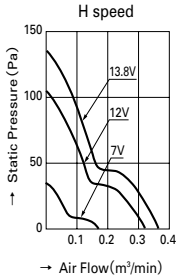
109P0424B3023

H speed



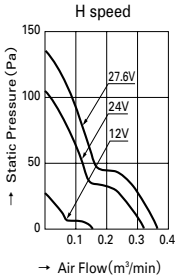
109P0405H3023

H speed



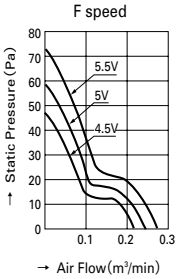
109P0412H3023

H speed



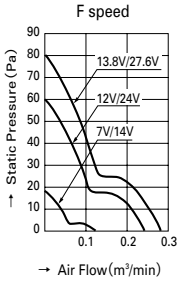
109P0424H3023

F speed



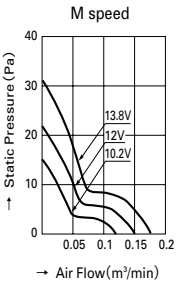
109P0405F3023

F speed



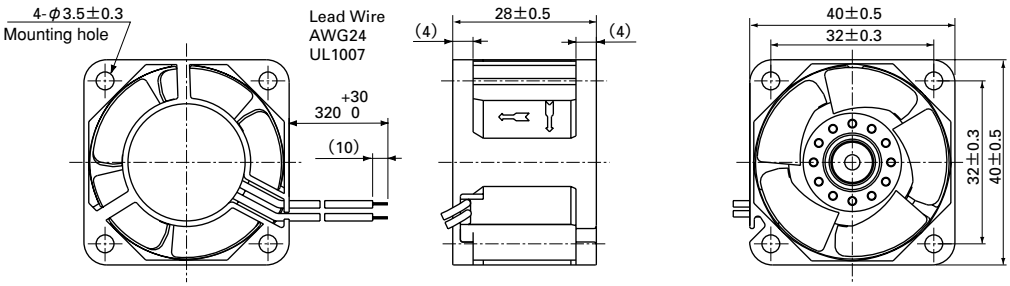
109P0412F3023
109P0424F3023

M speed



109P0412M3023

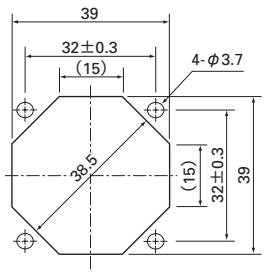
Dimensions (unit : mm)



40mm

Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□40mm
San Ace 40

"San Ace 40" CRA type, Counter Rotating Fan

ECO PRODUCTS

General Specifications

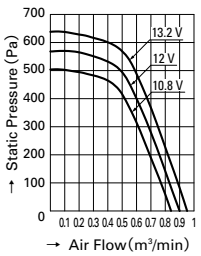
Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····Inlet ⊕red, ⊖black
·····Outlet ⊕orange, ⊖gray
Mass ·····90g

56mm thick
Specifications

Model No	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹) Inlet	Rated Speed (min⁻¹) Outlet	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9CRA0412J502	12	10.8～13.2	1.4	16.8	15,800	12,200	0.90	31.8	570	2.29	62	−10～+70	40,000
9CRA0412G502			1.0	12.0	14,000	10,400	0.77	27.2	435	1.75	59		

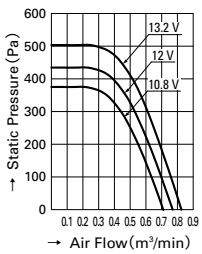
Air Flow and Static Pressure Characteristics

J Speed



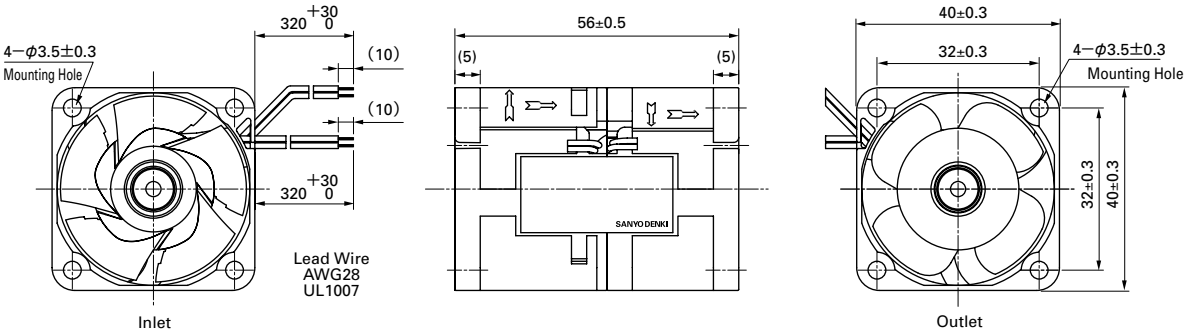
9CRA0412J502

G Speed



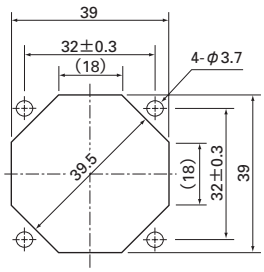
9CRA0412G502

Dimensions (unit : mm)



Reference Dimension of Mounting Holes and Vent Opening (unit : mm)

Air Inlet Side・Air Outlet Side



DC Fan

□40mm

San Ace 40

ECO PRODUCTS

Counter Rotating Fan

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····Inlet ⊕red, ⊖black
Outlet ⊕orange, ⊖gray
Mass ·····90g

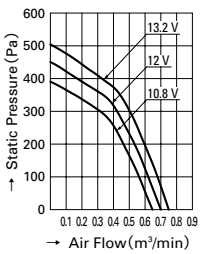
56mm thick

Specifications

Model No	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹) Inlet	Rated Speed (min⁻¹) Outlet	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9CR0412S502	12	10.8～13.2	1.1	13.2	15,800	10,600	0.7	24.7	450	1.807	57.5	−10～+60	40,000
9CR0412H502			0.72	8.64	13,300	9,300	0.59	20.8	320	1.285	54		

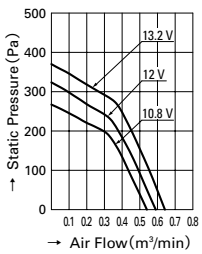
Air Flow and Static Pressure Characteristics

S speed



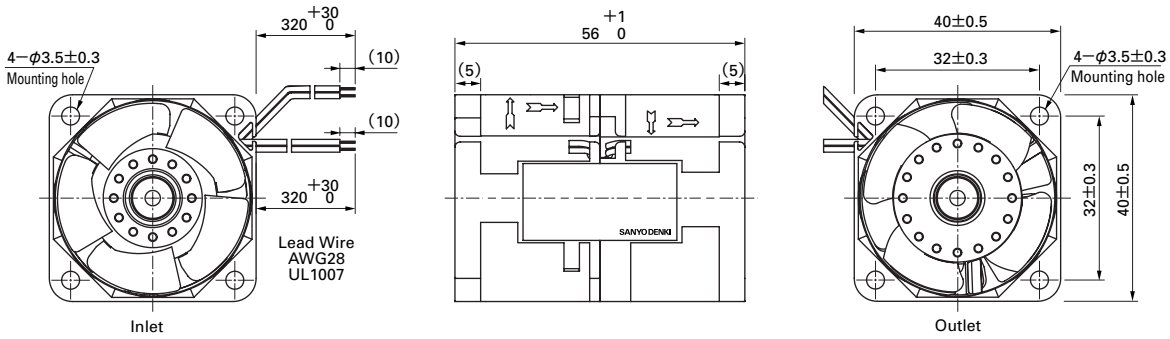
9CR0412S502

H speed



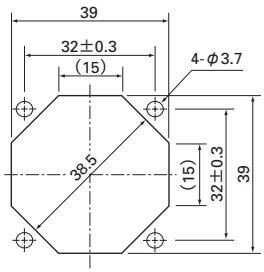
9CR0412H502

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□52mm
San Ace 52

General specifications

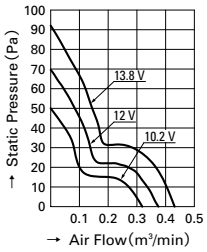
Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····A, H speeds ⊕red, ⊖black
M speed ⊕red, ⊖black or blue
Mass ·····55g

15mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0505M702	5	4.5～ 5.5	0.15	0.75	3,700	0.205	7.24	21.4	0.086	22	−10～+70	60,000
109P0512A702	12	10.2～13.8	0.21	2.52	6,800	0.375	13.25	69.7	0.280	36		40,000
109P0512H702		7 ～13.8	0.10	1.20	4,600	0.255	9.00	31.9	0.128	27		60,000
109P0512M702			0.07	0.84	3,700	0.205	7.24	21.4	0.086	22		
109P0524H702	24	14 ～27.6	0.05	1.20	4,600	0.255	9.00	31.9	0.128	27		
109P0524M702			0.04	0.96	3,700	0.205	7.24	21.4	0.086	22		

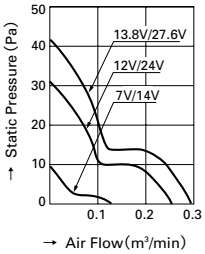
Air Flow and Static Pressure Characteristics

A speed



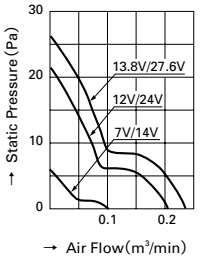
109P0512A702

H speed



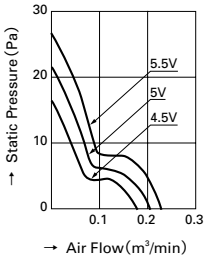
109P0512H702
109P0524H702

M speed



109P0512M702
109P0524M702

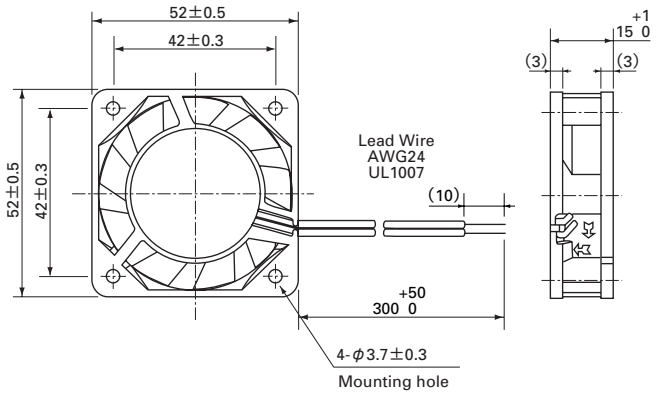
M speed



109P0505M702

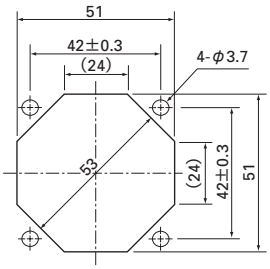
52mm

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□60mm

San Ace 60

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····J, G, D, S, H, F, W speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····60g (15mm thick) 90g (20mm thick・25mm thick)

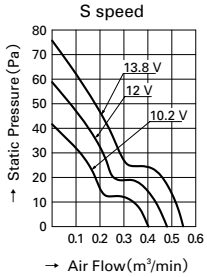
15mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0605H702	5	4.5～ 5.5	0.26	1.30	4,100	0.40	14.1	38.2	0.153	32	−10 ～+70	60,000
109P0605M702			0.15	0.75	3,100	0.30	10.6	22.6	0.091	25		
109P0612S702	12	10.2～13.8	0.15	1.80	5,000	0.48	17.0	58.8	0.236	36		40,000
109P0612H702		7 ～13.8	0.09	1.08	4,100	0.40	14.1	38.2	0.153	32		60,000
109P0612M702		10.2～13.8	0.07	0.84	3,100	0.3	10.6	22.6	0.091	25		
109P0624H702	24	14 ～27.6	0.06	1.44	4,100	0.4	14.1	38.2	0.153	32		
109P0624M702		20.4～27.6	0.04	0.96	3,100	0.3	10.6	22.6	0.091	25		

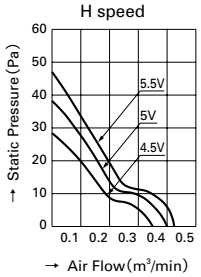
Air Flow and Static Pressure Characteristics

S speed



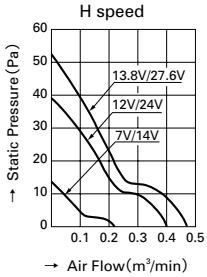
109P0612S702

H speed



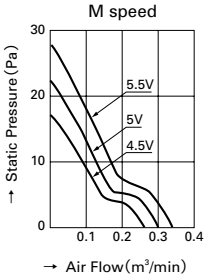
109P0605H702

H speed



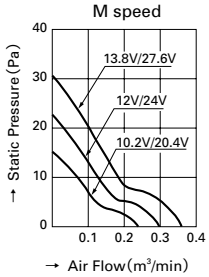
109P0612H702
109P0624H702

M speed



109P0605M702

M speed



109P0612M702
109P0624M702

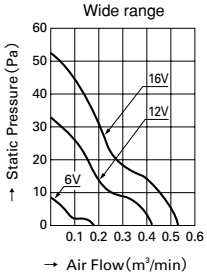
20mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0612W602	12	6 ～16	0.13	1.56	4,200	0.42	14.8	31.9	0.128	31	−10 ～+70	60,000
109P0612H602		10.2～13.8	0.13	1.56	4,200	0.42	14.8	31.9	0.128	31		
109P0612M602			0.09	1.08	3,200	0.30	10.6	18.8	0.076	25		
109P0624W602	24	12 ～30	0.07	1.68	4,200	0.42	14.8	31.9	0.128	31		
109P0624H602		20.4～27.6	0.07	1.68	4,200	0.42	14.8	31.9	0.128	31		
109P0624M602			0.05	1.20	3,200	0.30	10.6	18.8	0.076	25		
109P0648H602	48	43 ～53	0.07	3.36	5,600	0.55	19.4	52.9	0.212	41		40,000

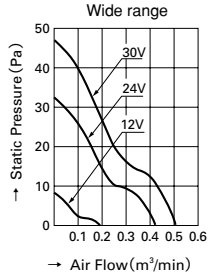
Air Flow and Static Pressure Characteristics

Wide range



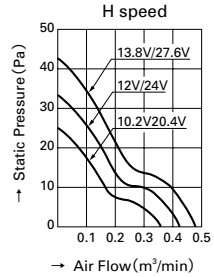
109P0612W602

Wide range



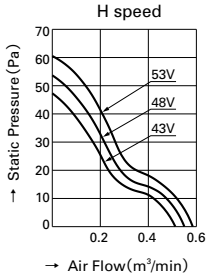
109P0624W602

H speed



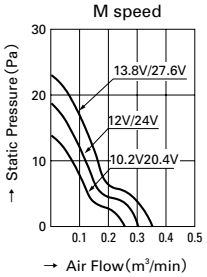
109P0612H602
109P0624H602

H speed



109P0648H602

M speed



109P0612M602
109P0624M602

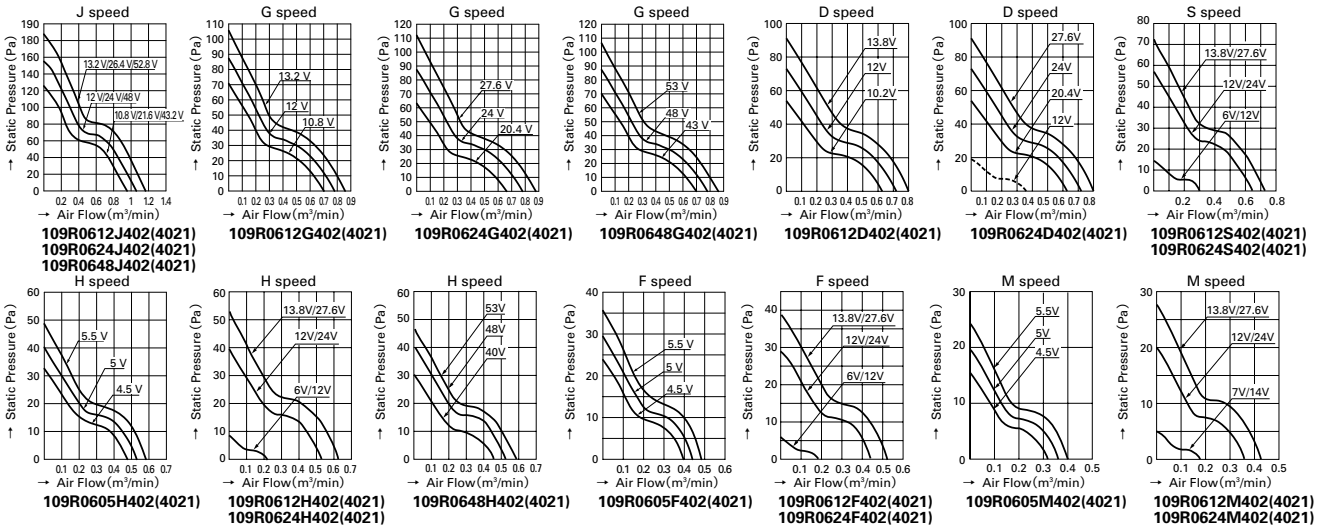
25mm thick

Specifications

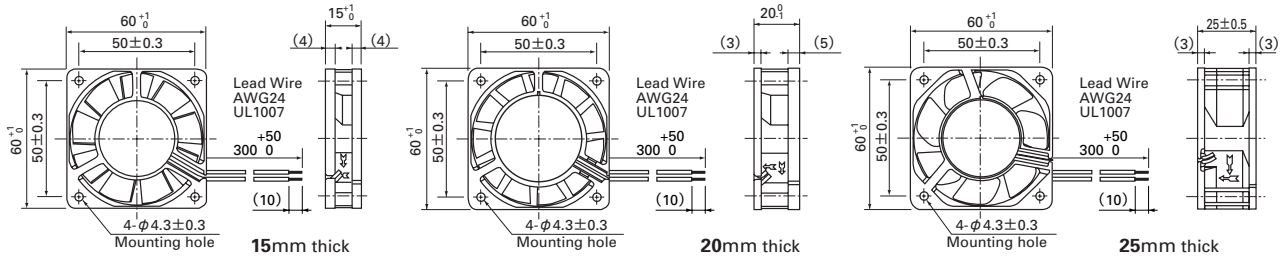
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109R0605H402(4021)	5	4.5～ 5.5	0.34	1.70	3,800	0.53	20.5	40.2	0.161	28	−10 ～+70	60,000
109R0605F402(4021)			0.20	1.00	3,200	0.44	15.5	29.4	0.118	24	−10 ～+60	
109R0605M402(4021)			0.13	0.65	2,600	0.36	12.7	19.6	0.079	20	−10 ～+70	
109R0612J402(4021)	12	10.8～13.2	0.47	5.64	7,600	1.05	37.1	155.0	0.622	44	−10 ～+60	40,000
109R0612G402(4021)			0.24	2.88	5,600	0.78	27.5	88.0	0.353	39	−10 ～+70	60,000
109R0612D402(4021)		10.2～13.8	0.21	2.52	5,150	0.72	25.4	73.5	0.295	37		
109R0612S402(4021)		6 ～13.8	0.17	2.04	4,600	0.65	23.0	56.8	0.228	33		
109R0612H402(4021)			0.11	1.32	3,800	0.53	18.7	40.2	0.161	28		
109R0612F402(4021)			0.09	1.08	3,200	0.44	15.5	29.4	0.118	24		
109R0612M402(4021)		7 ～13.8	0.06	0.72	2,600	0.36	12.7	19.6	0.079	20		
109R0624J402(4021)	24	21.6～26.4	0.24	5.76	7,600	1.05	37.1	155.0	0.622	44	−10 ～+60	40,000
109R0624G402(4021)		20.4～27.6	0.13	3.12	5,600	0.78	27.5	88.0	0.353	39	−10 ～+70	60,000
109R0624D402(4021)		12 ～27.6	0.12	2.88	5,150	0.72	25.4	73.5	0.295	37		
109R0624S402(4021)			0.08	1.92	4,600	0.65	23.0	56.8	0.228	33		
109R0624H402(4021)			0.06	1.44	3,800	0.53	18.7	40.2	0.161	28		
109R0624F402(4021)			0.05	1.20	3,200	0.44	15.5	29.4	0.118	24		
109R0624M402(4021)		14 ～27.6	0.04	0.96	2,600	0.36	12.7	19.6	0.079	20		
109R0648J402(4021)	48	43.2～52.8	0.12	5.76	7,600	1.05	37.1	155.0	0.622	44	−10 ～+60	40,000
109R0648G402(4021)		43 ～53	0.07	3.36	5,600	0.78	27.5	88.0	0.353	39		
109R0648H402(4021)		40 ～53	0.04	1.92	3,800	0.53	18.7	40.2	0.161	28	−10 ～+70	60,000

The numbers in ( ) represent ribless models.

Air Flow and Static Pressure Characteristics

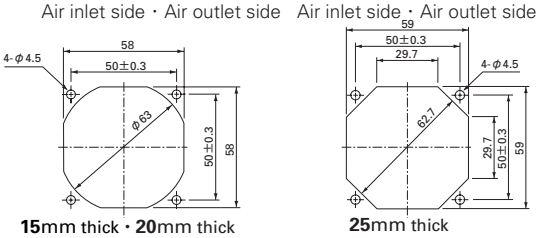


Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side　Air inlet side・Air outlet side



DC Fan

□60mm

San Ace 60

ECO PRODUCTS

General specifications

Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····110g

38mm thick

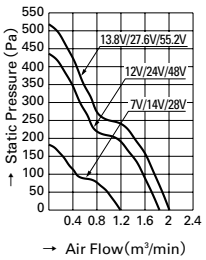
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9G0612G102(1021)	12	7.0～13.8	1.54	18.5	11,800	1.84	65	435	1.747	58	−10 ～+70	40,000
9G0612S102(1021)			1.36	16.3	10,800	1.70	60	370	1.486	56		
9G0624G102(1021)	24	14.0～27.6	0.85	20.4	11,800	1.84	65	435	1.747	58		
9G0624S102(1021)			0.70	16.8	10,800	1.70	60	370	1.486	56		
9G0648G102(1021)	48	28 ～55.2	0.35	16.8	11,800	1.84	65	435	1.747	58		
9G0648S102(1021)			0.29	13.9	10,800	1.70	60	370	1.486	56		

The numbers in ( ) represent ribless models.

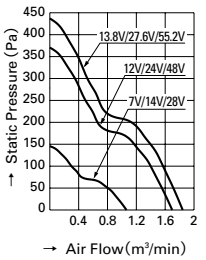
Air Flow and Static Pressure Characteristics

G speed



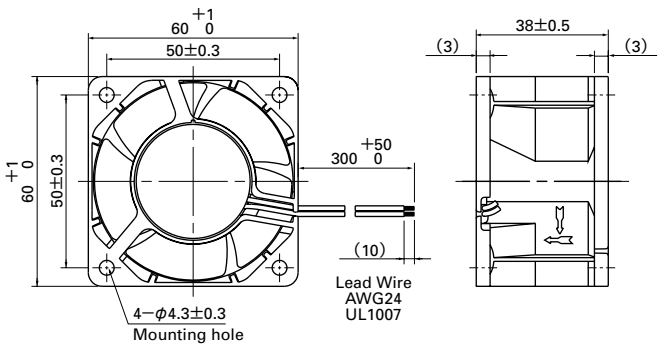
9G0612G102(1021)
9G0624G102(1021)
9G0648G102(1021)

S speed



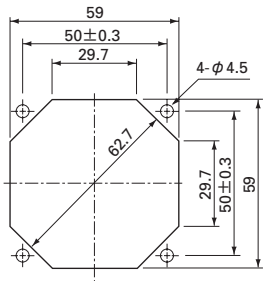
9G0612S102(1021)
9G0624S102(1021)
9G0648S102(1021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□80mm

San Ace 80

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····K, G, A, S, H, F ,W speeds ⊕red,⊖black
M, L speeds ⊕red,⊖black or blue
Mass ·····68g (15mm thick) 100g (20mm thick)
110g (25mm thick) 150g (32mm thick)

15mm thick

Specifications

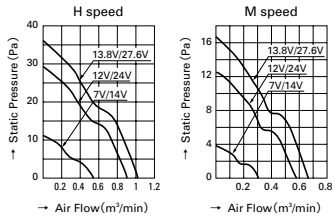
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0812H702	12	7～13.8	0.2	2.4	3,100	0.91	32.1	29.4	0.118	31	−10 ～+70	40,000
109P0812M702			0.09	1.08	2,000	0.57	20.1	12.6	0.051	21		60,000
109P0824H702	24	14～27.6	0.1	2.4	3,100	0.91	32.1	29.4	0.118	31		40,000
109P0824M702			0.05	1.2	2,000	0.57	20.1	12.6	0.051	21		60,000

20mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0812H602	12	10.2～13.8	0.21	2.52	2,900	0.84	29.7	29.4	0.118	31	−10 ～+70	60,000
109P0812M602			0.13	1.56	2,300	0.67	23.7	18.6	0.075	25		
109P0824H602	24	20.4～27.6	0.12	2.88	2,900	0.84	29.7	29.4	0.118	31		
109P0824M602			0.07	1.68	2,300	0.67	23.7	18.6	0.075	25		

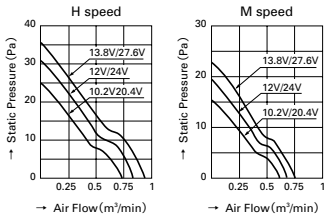
Air Flow and Static Pressure Characteristics (15mm thick)



109P0812H702
109P0824H702

109P0812M702
109P0824M702

Air Flow and Static Pressure Characteristics (20mm thick)



109P0812H602
109P0824H602

109P0812M602
109P0824M602

25mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109R0805F402(4021)	5	4.5～ 5.5	0.25	1.25	2,600	0.92	32.5	28.4	0.114	26	−10 ～+70	60,000
109R0805M402(4021)			0.17	0.85	2,350	0.83	29.3	22.5	0.090	23		
109R0812G402(4021)	12	10.8～13.2	0.37	4.44	4,500	1.50	53.0	80.4	0.323	40	−10 ～+60	40,000
109R0812S402(4021)		6 ～13.8	0.18	2.16	3,400	1.20	42.4	48.0	0.193	34	−10 ～+70	60,000
109R0812H402(4021)			0.13	1.56	2,900	1.03	36.4	35.3	0.142	29		
109R0812F402(4021)			0.11	1.32	2,600	0.92	32.5	28.4	0.114	26		
109R0812M402(4021)			0.09	1.08	2,350	0.83	29.3	22.5	0.090	23		
109R0812L402(4021)		7 ～13.8	0.06	0.72	1,850	0.65	23.0	14.7	0.059	20		
109R0824G402(4021)	24	20.4～26.4	0.20	4.80	4,500	1.50	53.0	80.4	0.323	40	−10 ～+60	40,000
109R0824S402(4021)		12 ～27.6	0.10	2.40	3,400	1.20	42.4	48.0	0.193	34	−10 ～+70	60,000
109R0824H402(4021)			0.07	1.68	2,900	1.03	36.4	35.3	0.142	29		
109R0824F402(4021)			0.06	1.44	2,600	0.92	32.5	28.4	0.114	26		
109R0824M402(4021)			0.05	1.20	2,350	0.83	29.3	22.5	0.090	23		
109R0824L402(4021)		14 ～27.6	0.04	0.96	1,850	0.65	23.0	14.7	0.059	20		
109R0848K402(4021)	48	40.8～55.2	0.10	4.80	4,600	1.56	55.1	88.4	0.355	41	−10 ～+60	40,000
109R0848S402(4021)			0.06	2.88	3,400	1.20	42.4	48.0	0.193	34		

The numbers in ( ) represent ribless models.

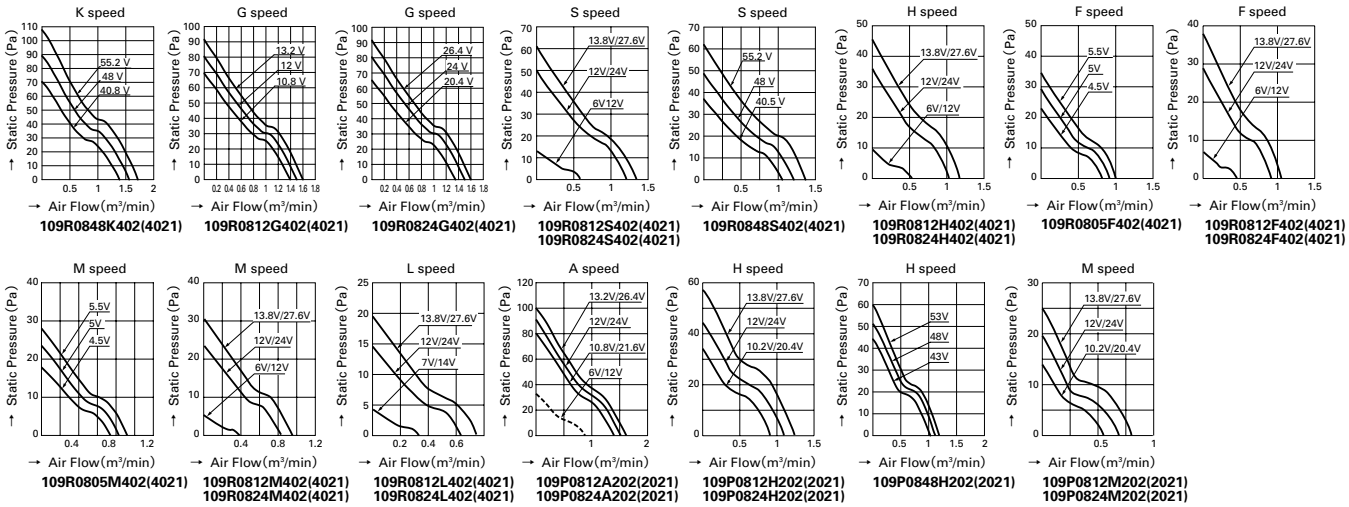
32mm thick

Specifications

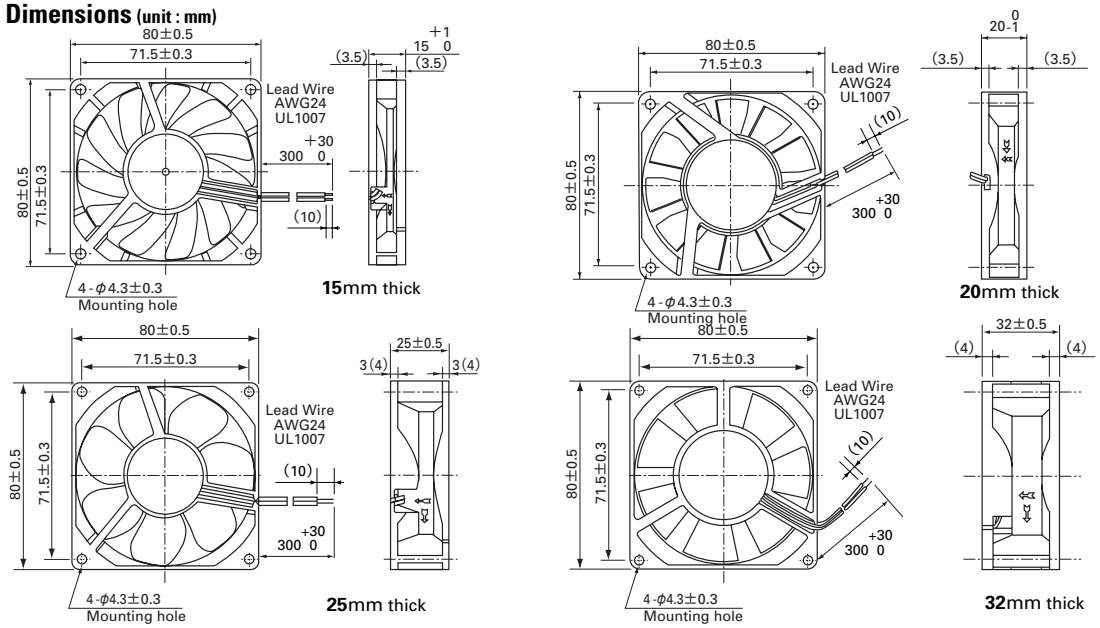
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0812A202(2021)	12	6 ～13.2	0.56	6.72	4,600	1.52	53.7	91.1	0.366	45	−10 ～+55	40,000(+55℃)
109P0812H202(2021)		10.2～13.8	0.16	1.92	3,150	1.05	37.1	43.1	0.173	33	−10 ～+70	40,000
109P0812M202(2021)			0.07	0.84	2,000	0.65	23.0	18.5	0.074	21		60,000
109P0824A202(2021)	24	12 ～26.4	0.29	6.96	4,600	1.52	53.7	91.1	0.366	45	−10 ～+60	40,000
109P0824H202(2021)		20.4～27.6	0.09	2.16	3,150	1.05	37.1	43.1	0.173	33		
109P0824M202(2021)			0.04	0.96	2,000	0.65	23.0	18.6	0.075	21	−10 ～+70	60,000
109P0848H202(2021)	48	43 ～53	0.06	2.88	3,350	1.10	38.9	50.9	0.204	35		40,000

The numbers in ( ) represent ribless models.

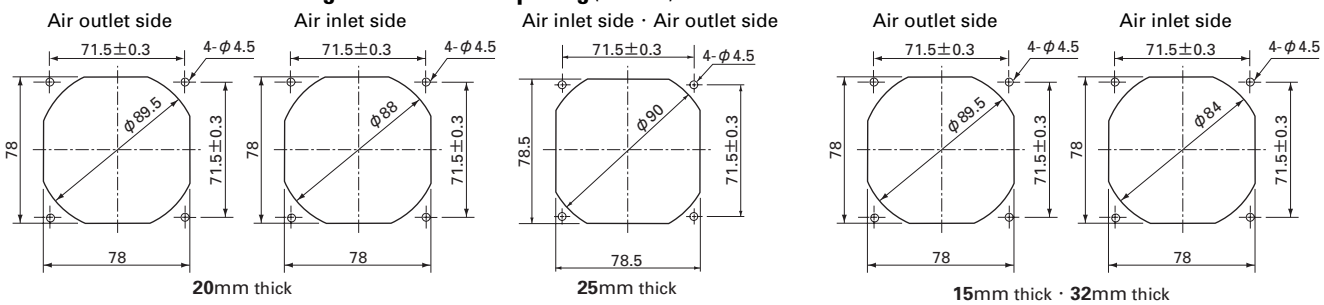
Air Flow and Static Pressure Characteristics（25mm thick・32mm thick）



Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)



DC Fan

□80mm
San Ace 80

"San Ace 80" G Type

ECO PRODUCTS

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red, ⊖black
Mass ·····170g

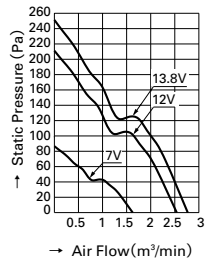
38mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9G0812G102(1021)	12	7 ～ 13.8	1.1	13.2	6,300	2.55	90	211	0.847	51	−10 ～+70	40,000
9G0812H102(1021)			0.9	10.8	5,700	2.28	80	171	0.687	49		
9G0824G102(1021)	24	20.4～27.6	0.56	13.4	6,300	2.55	90	211	0.847	51		
9G0824H102(1021)			0.42	10.1	5,700	2.28	80	171	0.687	49		
9G0848G102(1021)	48	40.8～55.2	0.27	13.0	6,300	2.55	90	211	0.847	51		
9G0848H102(1021)			0.20	9.6	5,700	2.28	80	171	0.687	49		

The numbers in ( ) represent ribless models.

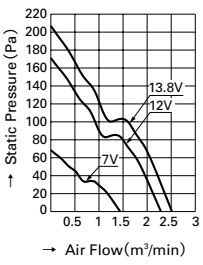
Air Flow and Static Pressure Characteristics

G speed



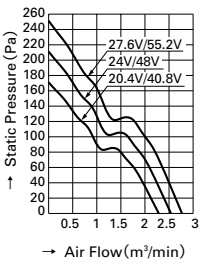
9G0812G102(1021)

H speed



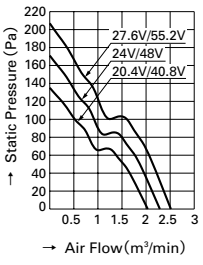
9G0812H102(1021)

G speed



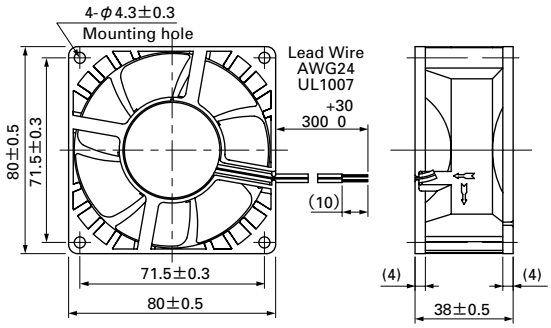
9G0824G102(1021)
9G0848G102(1021)

H speed



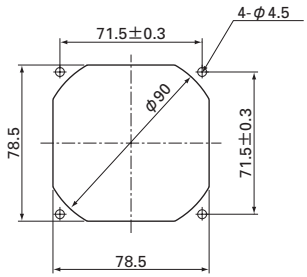
9G0824H102(1021)
9G0848H102(1021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□92mm

San Ace 92

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····PTC protection system (25mm thick)
Current cut system (32mm thick)
(with reverse-connection protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····A, S, H, F, W speeds ⊕red,⊖black
M, L speeds ⊕red,⊖black or blue
Mass ·····150g (25mm thick) 170g (32mm thick)

25mm thick

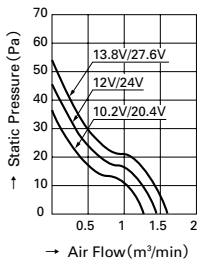
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0912H402(4021)	12	10.2～13.8	0.21	2.52	2,850	1.45	51.2	45.1	0.181	33	−10 ～+70	40,000
109P0912F402(4021)			0.14	1.68	2,450	1.24	43.8	32.3	0.130	30		
109P0912M402(4021)			0.1	1.2	2,100	1.04	36.7	23.5	0.094	27		
109P0912L402(4021)			0.07	0.84	1,700	0.8	28.3	16.7	0.067	23		
109P0912W402(4021)		6 ～16	0.21	2.52	2,850	1.45	51.2	45.1	0.181	33		
109P0924H402(4021)	24	20.4～27.6	0.12	2.88	2,850	1.45	51.2	45.1	0.181	33		
109P0924F402(4021)			0.08	1.92	2,450	1.24	43.8	32.3	0.130	30		
109P0924M402(4021)			0.06	1.44	2,100	1.04	36.7	23.5	0.094	27		
109P0924L402(4021)			0.05	1.2	1,700	0.8	28.3	16.7	0.067	23		
109P0924W402(4021)		12 ～30	0.12	2.88	2,850	1.45	51.2	45.1	0.181	33		
109P0948H402(4021)	48	43 ～53	0.06	2.88	2,850	1.45	51.2	45.1	0.181	33		

The numbers in ( ) represent ribless models. W represents wide range.

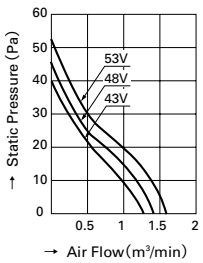
Air Flow and Static Pressure Characteristics

H speed



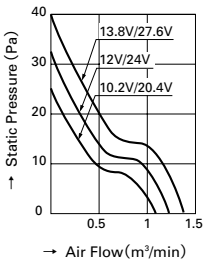
109P0912H402(4021)
109P0924H402(4021)

H speed



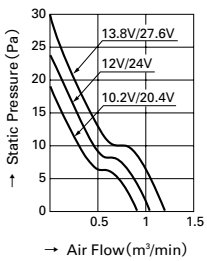
109P0948H402(4021)

F speed



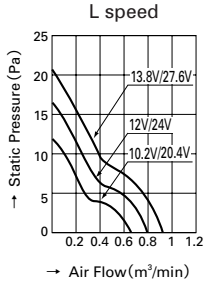
109P0912F402(4021)
109P0924F402(4021)

M speed



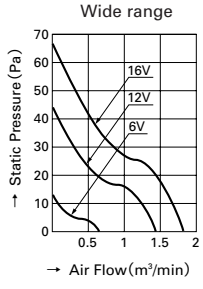
109P0912M402(4021)
109P0924M402(4021)

L speed



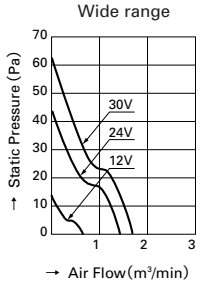
109P0912L402(4021)
109P0924L402(4021)

Wide range



109P0912W402(4021)

Wide range



109P0924W402(4021)

32mm thick

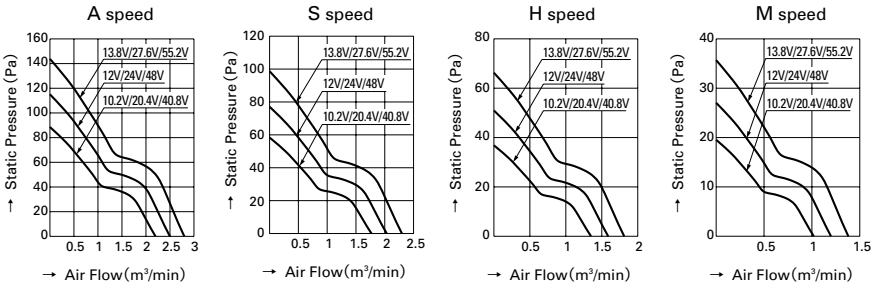
ECO PRODUCTS

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9G0912A202(2021)	12	10.2～13.8	0.58	6.96	4,300	2.50	88.3	115	0.462	44	−10 ～+70	40,000
9G0912S202(2021)			0.38	4.56	3,500	2.00	70.7	77	0.309	38		
9G0912H202(2021)			0.23	2.76	2,850	1.59	56.2	51	0.205	32		
9G0912M202(2021)			0.13	1.56	2,100	1.20	42.4	27	0.108	25		
9G0924A202(2021)	24	20.4～27.6	0.30	7.20	4,300	2.50	88.3	115	0.462	44	−10 ～+60	
9G0924S202(2021)			0.19	4.56	3,500	2.00	70.7	77	0.309	38	−10 ～+70	
9G0924H202(2021)			0.12	2.88	2,850	1.59	56.2	51	0.205	32		
9G0924M202(2021)			0.08	1.92	2,100	1.20	42.4	27	0.108	25		
9G0948A202(2021)	48	40.8～55.2	0.16	7.68	4,300	2.50	88.3	115	0.462	44		
9G0948S202(2021)			0.11	5.28	3,500	2.00	70.7	77	0.309	38		
9G0948H202(2021)			0.08	3.84	2,850	1.59	56.2	51	0.205	32		
9G0948M202(2021)			0.05	2.40	2,100	1.20	42.4	27	0.108	25		

The numbers in ( ) represent ribless models.

Air Flow and Static Pressure Characteristics



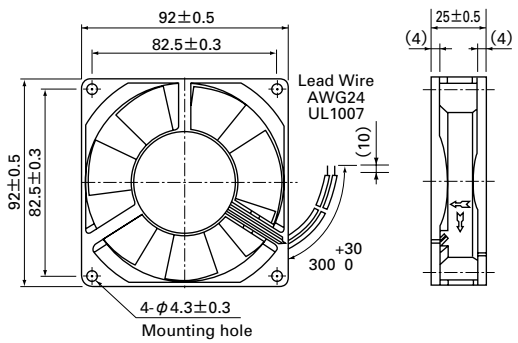
9G0912A202(2021)
9G0924A202(2021)
9G0948A202(2021)

9G0912S202(2021)
9G0924S202(2021)
9G0948S202(2021)

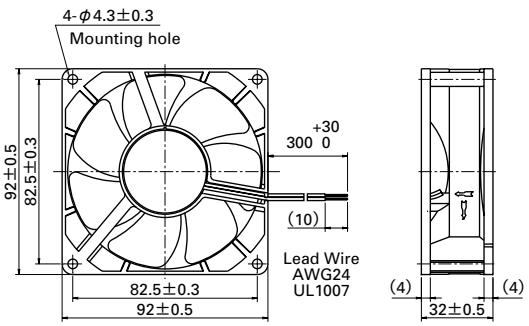
9G0912H202(2021)
9G0924H202(2021)
9G0948H202(2021)

9G0912M202(2021)
9G0924M202(2021)
9G0948M202(2021)

Dimensions (unit : mm)



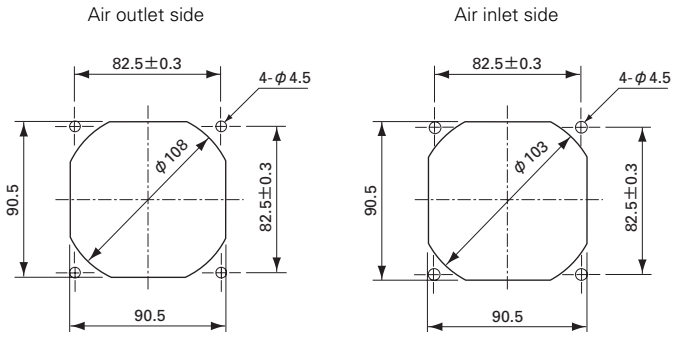
25mm thick



38mm thick

92mm

Reference dimension of mounting holes and vent opening (unit : mm)



DC Fan

□92mm
San Ace 92

"San Ace 92" G Type

ECO PRODUCTS

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····180g

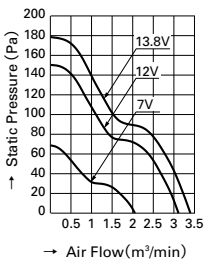
38mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9G0912G102(1021)	12	7.0～13.8	1.1	13.2	5,000	3.10	110	150	0.602	50	−10 ～+60	40,000
9G0912H102(1021)			0.58	6.96	4,000	2.54	90	100	0.402	43		
9G0924G102(1021)	24	20.4～27.6	0.55	13.2	5,000	3.10	110	150	0.602	50		
9G0924H102(1021)			0.3	7.2	4,000	2.54	90	100	0.402	43		
9G0948G102(1021)	48	40.8～55.2	0.27	12.96	5,000	3.10	110	150	0.602	50		
9G0948H102(1021)			0.16	7.68	4,000	2.54	90	100	0.402	43		

The numbers in ( ) represent ribless models.

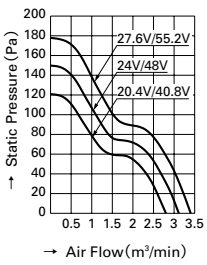
Air Flow and Static Pressure Characteristics

G speed



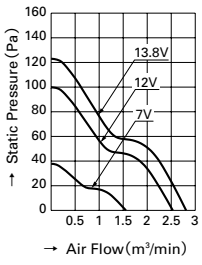
9G0912G102(1021)

G speed



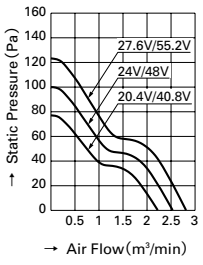
9G0924G102(1021)
9G0948G102(1021)

H speed



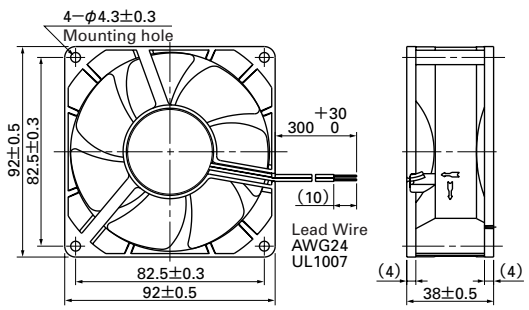
9G0912H102(1021)

H speed

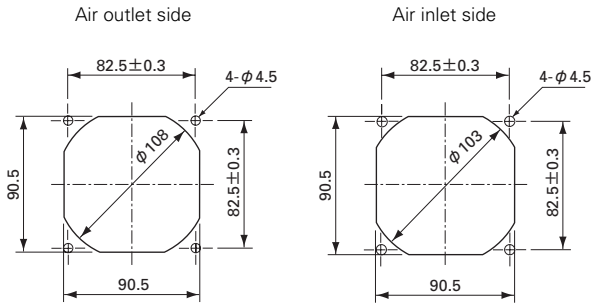


9G0924H102(1021)
9G0948H102(1021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)



DC Fan □120mm

San Ace 120

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H, F, MH speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Control lead , brown
Mass ·····210g (25mm thick) 260g (38mm thick)

25mm thick

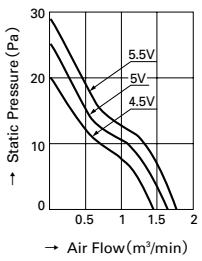
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P1205M402(4021)	5	4.5～ 5.5	0.42	2.1	1,850	1.66	58.6	25.5	0.102	29	−10～+70	40,000
109P1212H402(4021)	12	10.2～13.8	0.45	5.4	2,800	2.5	88.2	53.9	0.216	40	−10～+60	
109P1212F402(4021)			0.25	3	2,300	1.98	70	36.3	0.146	35	−10～+70	
109P1212M402(4021)			0.14	1.68	1,850	1.66	58.6	25.5	0.102	29	−10～+70	
109P1224H402(4021)	24	20.4～27.6	0.24	5.76	2,800	2.5	88.2	53.9	0.216	40	−10～+60	
109P1224F402(4021)			0.12	2.88	2,300	1.98	70	36.3	0.146	35	−10～+70	
109P1224M402(4021)			0.09	2.16	1,850	1.66	58.6	25.5	0.102	29	−10～+70	

The numbers in ( ) represent ribless models.

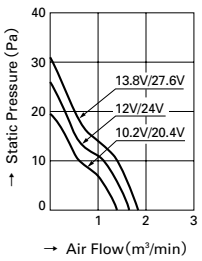
Air Flow and Static Pressure Characteristics

M speed



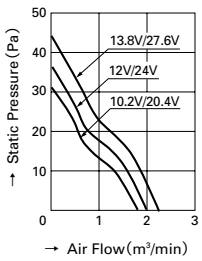
109P1205M402(4021)

M speed



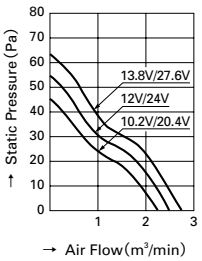
109P1212M402(4021)
109P1224M402(4021)

F speed



109P1212F402(4021)
109P1224F402(4021)

H speed



109P1212H402(4021)
109P1224H402(4021)

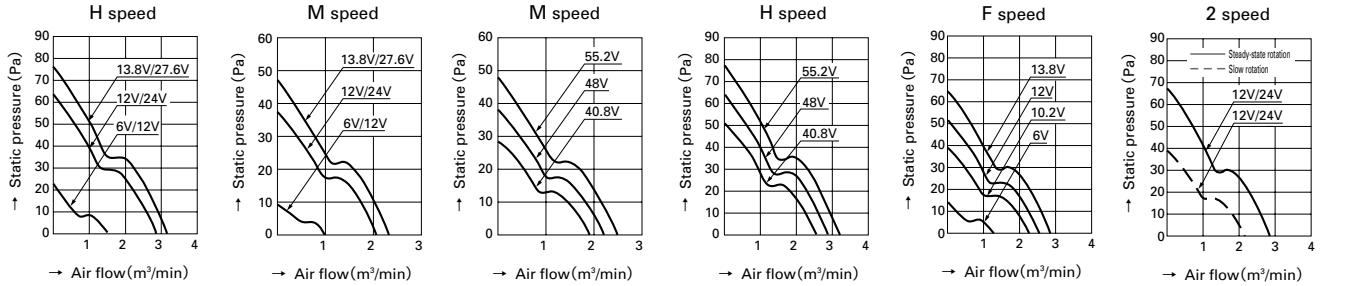
38mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109R1212H102(1021)	12	6 ～13.8	0.52	6.24	2,600	2.9	102.3	64.7	0.260	39	−10～+60	40,000
109R1212F102(1021)			0.32	3.84	2,280	2.56	90.4	51.0	0.205	37	−10～+70	
109R1212M102(1021)			0.24	2.88	1,950	2.2	77.6	38.2	0.153	32		
109R1212MH102(1021)		Slow:10.2～13.8	0.32	3.84	1,950	2.2	77.6	38.2	0.153	32		
		Fast:10.2～13.8	0.48	5.76	2,600	2.9	102.3	64.7	0.260	39	−10～+60	
109R1224H102(1021)	24	12 ～27.6	0.25	6.0	2,600	2.9	102.3	64.7	0.260	39		
109R1224M102(1021)			0.12	2.88	1,950	2.2	77.6	38.2	0.153	32	−10～+70	
109R1224MH102(1021)		Slow:20.4～27.6	0.20	4.8	1,950	2.2	77.6	38.2	0.153	32		
		Fast:20.4～27.6	0.28	6.72	2,600	2.9	102.3	64.7	0.260	39	−10～+60	
109R1248H102(1021)	48	40.8～55.2	0.15	7.2	2,600	2.9	102.3	64.7	0.260	39		
109R1248M102(1021)			0.08	3.84	1,950	2.2	77.6	38.2	0.153	32	−10～+70	

The numbers in ( ) represent ribless models.MH represent two-speed.

Air Flow and Static Pressure Characteristics



109R1212H102(1021)
109R1224H102(1021)

109R1212M102(1021)
109R1224M102(1021)

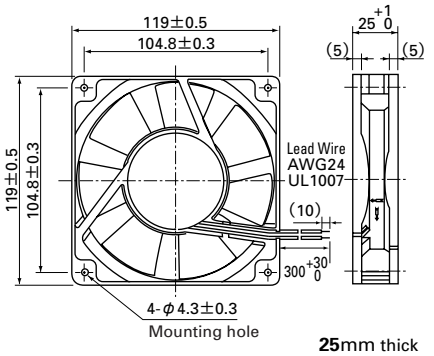
109R1248M102(1021)

109R1248H102(1021)

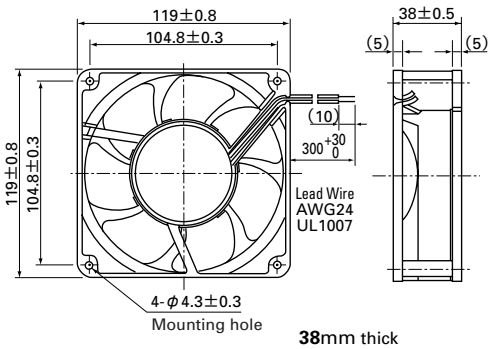
109R1212F102(1021)

109R1212MH102(1021)
109R1224MH102(1021)

Dimensions (unit : mm)

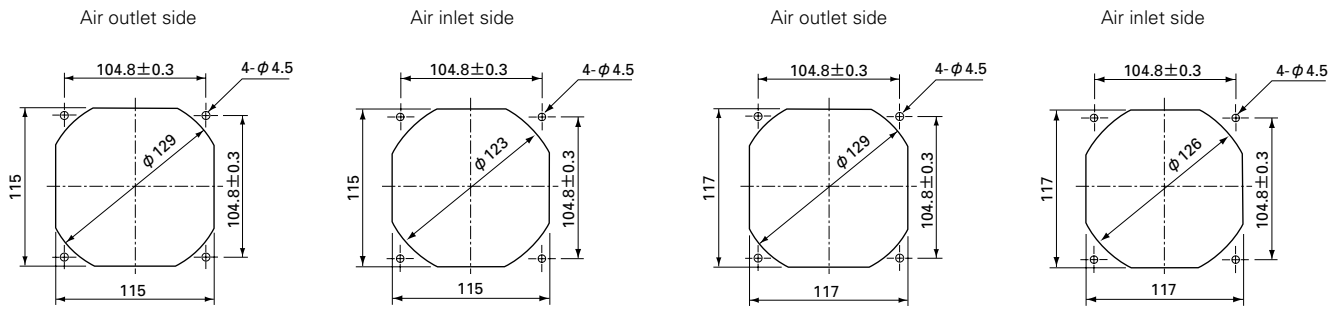


25mm thick



38mm thick

Reference dimension of mounting holes and vent opening (unit : mm)



25mm thick

38mm thick

DC Fan

□120mm
San Ace 120

"San Ace 120" G type

ECO PRODUCTS

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····G, E, A, H, F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····240g

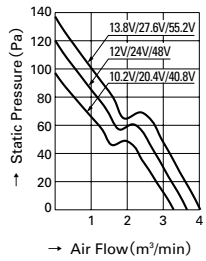
25mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9G1212G402(4021)	12	10.2～13.8	0.90	10.8	4,100	3.68	130	120	0.482	51	−10 ～+70	40,000
9G1212E402(4021)			0.58	6.96	3,650	3.25	115	98	0.394	48		
9G1212A402(4021)			0.40	4.80	3,150	2.83	100	77	0.309	44		
9G1212H402(4021)		6 ～13.8	0.31	3.72	2,850	2.50	88	64	0.257	40		
9G1212F402(4021)		7 ～13.8	0.19	2.28	2,250	1.98	70	42	0.169	35		
9G1212M402(4021)			0.14	1.68	1,950	1.66	58	31	0.124	29		
9G1224G402(4021)	24	20.4～27.6	0.47	11.28	4,100	3.68	130	120	0.482	51		
9G1224E402(4021)			0.37	8.88	3,650	3.25	115	98	0.394	48		
9G1224A402(4021)			0.21	5.04	3,150	2.83	100	77	0.309	44		
9G1224H402(4021)		12 ～27.6	0.17	4.08	2,850	2.50	88	64	0.257	40		
9G1224F402(4021)		20.4～27.6	0.10	2.40	2,250	1.98	70	42	0.169	35		
9G1224M402(4021)			0.08	1.92	1,950	1.66	58	31	0.124	29		
9G1248G402(4021)	48	40.8～55.2	0.23	11.04	4,100	3.68	130	120	0.482	51		
9G1248E402(4021)			0.16	7.68	3,650	3.25	115	98	0.394	48		
9G1248A402(4021)			0.13	6.24	3,150	2.83	100	77	0.309	44		
9G1248H402(4021)			0.10	4.80	2,850	2.50	88	64	0.257	40		
9G1248F402(4021)			0.06	2.88	2,250	1.98	70	42	0.169	35		
9G1248M402(4021)			0.05	2.40	1,950	1.66	58	31	0.124	29		

The numbers in ( ) represent ribless models.

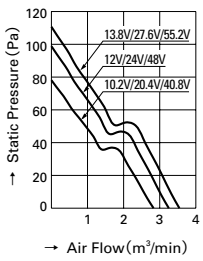
Air Flow and Static Pressure Characteristics

G speed



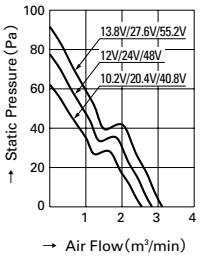
9G1212G402(4021)
9G1224G402(4021)
9G1248G402(4021)

E speed



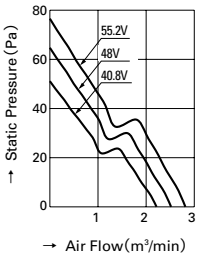
9G1212E402(4021)
9G1224E402(4021)
9G1248E402(4021)

A speed



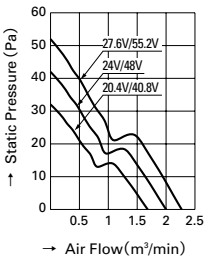
9G1212A402(4021)
9G1224A402(4021)
9G1248A402(4021)

H speed



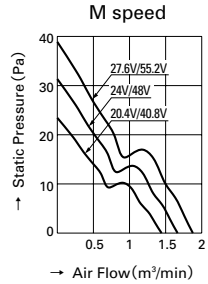
9G1248H402(4021)

F speed



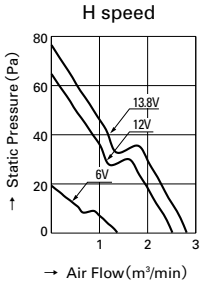
9G1224F402(4021)
9G1248F402(4021)

M speed



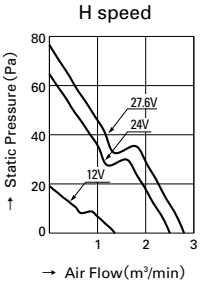
9G1224M402(4021)
9G1248M402(4021)

H speed



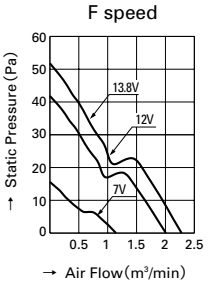
9G1212H402(4021)

H speed



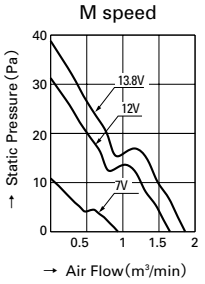
9G1224H402(4021)

F speed



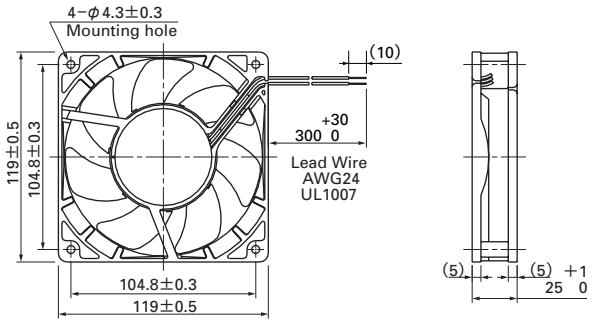
9G1212F402(4021)

M speed



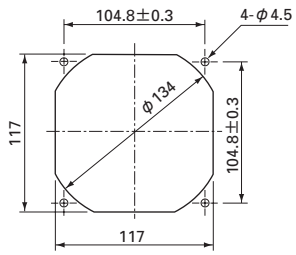
9G1212M402(4021)

Dimensions (unit : mm)

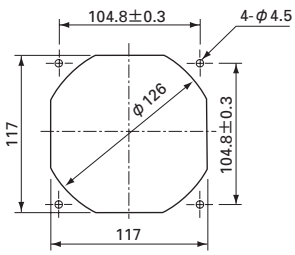


Reference dimension of mounting holes and vent opening (unit : mm)

Air outlet side



Air inlet side



DC Fan

□120mm

San Ace 120

"San Ace 120" G type

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····G, E, H, F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····330g

38mm thick

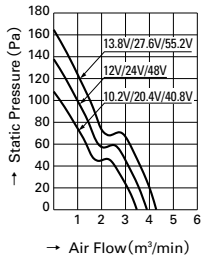
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH_2O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9G1212G102(1021)	12	10.2～13.8	0.98	11.76	3,600	3.88	137	135	0.542	49	−10～+70	40,000
9G1212E102(1021)			0.61	7.32	3,100	3.34	118	100	0.402	46		
9G1212H102(1021)		7 ～13.8	0.38	4.56	2,600	2.80	99	70.4	0.283	39		
9G1212F102(1021)			0.28	3.36	2,280	2.45	87	54.2	0.218	36		
9G1212M102(1021)			0.21	2.52	1,950	2.10	74	39.6	0.159	32		
9G1224G102(1021)	24	20.4～27.6	0.50	12	3,600	3.88	137	135	0.542	49		
9G1224E102(1021)			0.34	8.16	3,100	3.34	118	100	0.402	46		
9G1224H102(1021)		14 ～27.6	0.22	5.28	2,600	2.80	99	70.4	0.283	39		
9G1224F102(1021)			0.16	3.84	2,280	2.45	87	54.2	0.218	36		
9G1224M102(1021)			0.11	2.64	1,950	2.10	74	39.6	0.159	32		
9G1248G102(1021)	48	40.8～55.2	0.25	12	3,600	3.88	137	135	0.542	49		
9G1248E102(1021)			0.17	8.16	3,100	3.34	118	100	0.402	46		
9G1248H102(1021)			0.11	5.28	2,600	2.80	99	70.4	0.283	39		
9G1248F102(1021)			0.09	4.32	2,280	2.45	87	54.2	0.218	36		
9G1248M102(1021)			0.07	3.36	1,950	2.10	74	39.6	0.159	32		

The numbers in ( ) represent ribless models.

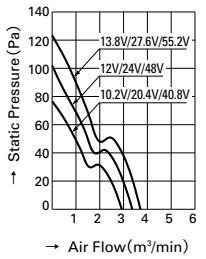
Air Flow and Static Pressure Characteristics

G speed



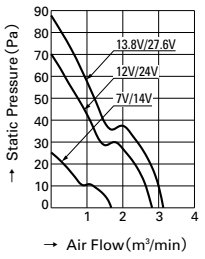
9G1212G102(1021)
9G1224G102(1021)
9G1248G102(1021)

E speed



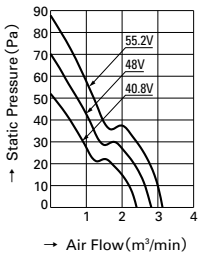
9G1212E102(1021)
9G1224E102(1021)
9G1248E102(1021)

H speed



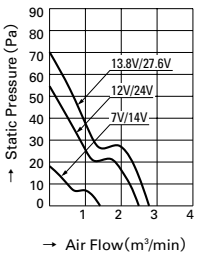
9G1212H102(1021)
9G1224H102(1021)

H speed



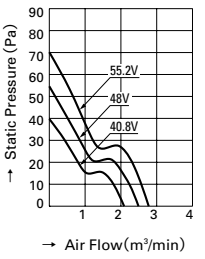
9G1248H102(1021)

F speed



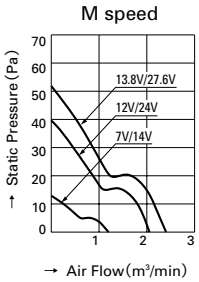
9G1212F102(1021)
9G1224F102(1021)

F speed



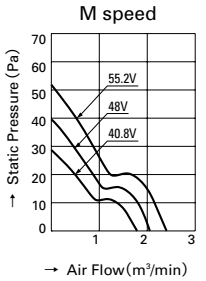
9G1248F102(1021)

M speed



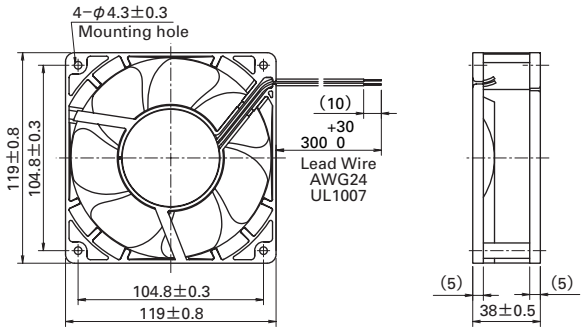
9G1212M102(1021)
9G1224M102(1021)

M speed



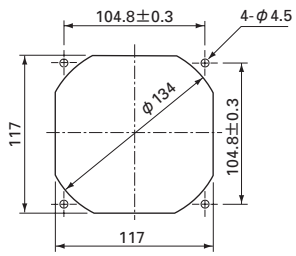
9G1248M102(1021)

Dimensions (unit : mm)

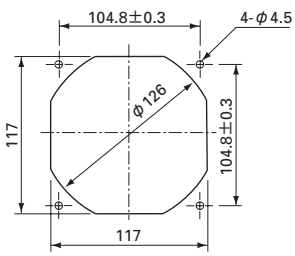


Reference dimension of mounting holes and vent opening (unit : mm)

Air outlet side



Air inlet side



DC Fan

□120mm
San Ace 120

"San Ace 120" SG type

ECO PRODUCTS

General specifications

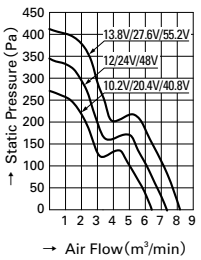
Material ·····Frame : Aluminum, Impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····400g

38mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH_2O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9SG1212G102	12	10.2～13.8	4.0	48.0	6,000	7.35	260	340	1.37	64	−10 ～+70	40,000
9SG1224G102	24	20.4～27.6	2.0	48.0	6,000	7.35	260	340	1.37	64		
9SG1248G102	48	40.8～55.2	1.0	48.0	6,000	7.35	260	340	1.37	64		

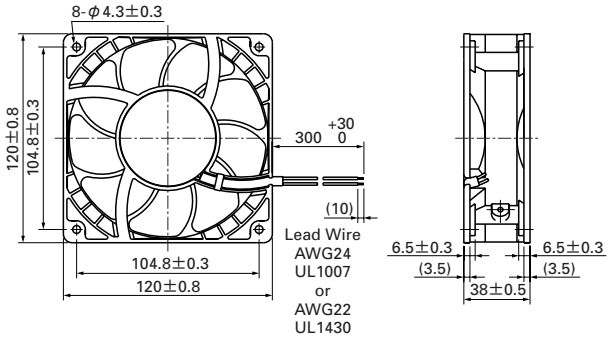
Air Flow and Static Pressure Characteristics

G speed

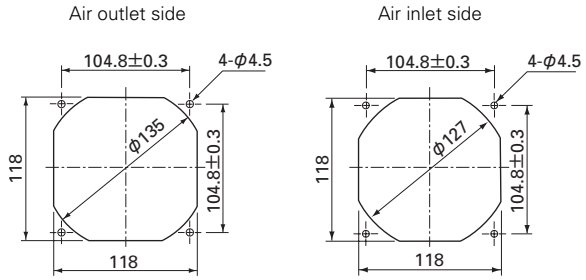


9SG1212G102
9SG1224G102
9SG1248G102

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)



DC Fan

□127mm

San Ace 127

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····350g

38mm thick

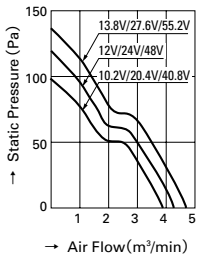
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P1312S102(1021)	12	10.2～13.8	1.3	15.6	3,300	4.2	148	117.6	0.472	47	−10 ～+60	40,000
109P1312H102(1021)			0.82	9.84	2,950	3.8	134	98	0.394	45		
109P1324S102(1021)	24	20.4～27.6	0.55	13.2	3,300	4.2	148	117.6	0.472	47		
109P1324H102(1021)			0.41	9.84	2,950	3.8	134	98	0.394	45		
109P1348S102(1021)	48	40.8～55.2	0.3	14.4	3,300	4.2	148	117.6	0.472	47		
109P1348H102(1021)			0.2	9.6	2,950	3.8	134	98	0.394	45		

The numbers in ( ) represent ribless models.

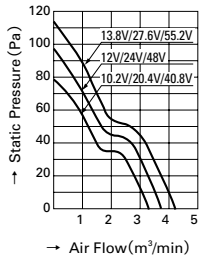
Air Flow and Static Pressure Characteristics

S speed



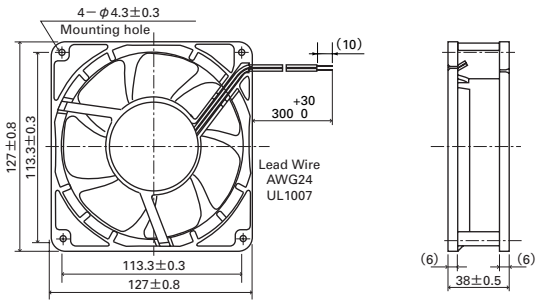
109P1312S102 (1021)
109P1324S102 (1021)
109P1348S102 (1021)

H speed



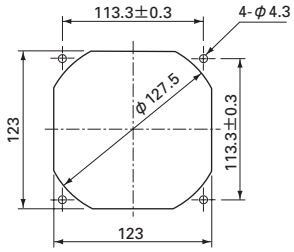
109P1312H102 (1021)
109P1324H102 (1021)
109P1348H102 (1021)

Dimensions (unit : mm)

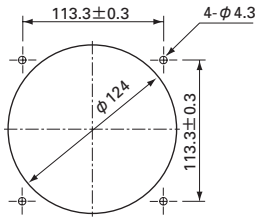


Reference dimension of mounting holes and vent opening (unit : mm)

Air outlet side



Air inlet side



DC Fan

□127mm

San Ace 127

General specifications

Material ·····Frame, Aluminum, impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····400g

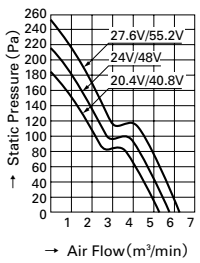
38mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109E1312A102	12	10.2～13.8	1.4	16.8	3,850	4.81	170	155	0.622	52	−10～+70	40,000
109E1312S102			1.2	14.4	3,450	4.37	154	125	0.502	49		
109E1324G102	24	20.4～27.6	1.1	25.1	4,550	5.66	200	216	0.867	57	−10～+60	
109E1324A102			0.7	16.8	3,850	4.81	170	155	0.622	52	−10～+70	
109E1324S102			0.53	12.7	3,450	4.37	154	125	0.502	49		
109E1348G102	48	40.8～55.2	0.54	25.9	4,550	5.66	200	216	0.867	57	−10～+60	
109E1348A102			0.36	17.3	3,850	4.81	170	155	0.622	52	−10～+70	
109E1348S102			0.28	13.4	3,450	4.37	154	125	0.502	49		

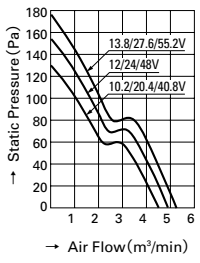
Air Flow and Static Pressure Characteristics

G speed



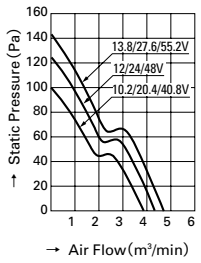
109E1324G102
109E1348G102

A speed



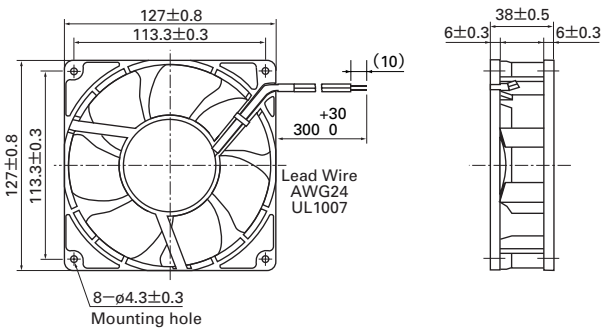
109E1312A102
109E1324A102
109E1348A102

S speed

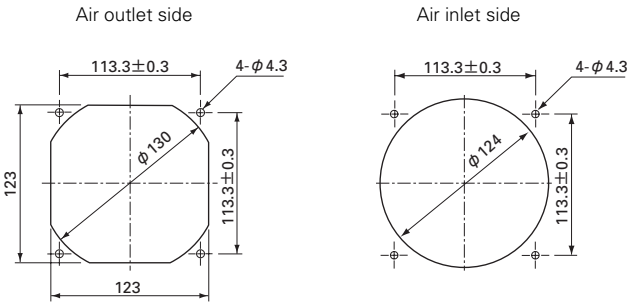


109E1312S102
109E1324S102
109E1348S102

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)



DC Fan

□140mm

San Ace 140

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H speed ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····450g

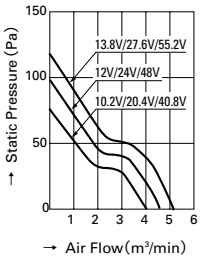
38mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P1412H102	12	10.2～13.8	0.73	8.76	2,600	4.5	159	94	0.378	46	−10～+70	40,000
109P1412M102			0.33	3.96	1,900	3.3	117	52	0.209	38		
109P1424H102	24	20.4～27.6	0.37	8.88	2,600	4.5	159	94	0.378	46		
109P1424M102			0.16	3.84	1,900	3.3	117	52	0.209	38		
109P1448H102	48	40.8～55.2	0.2	9.6	2,600	4.5	159	94	0.378	46		
109P1448M102			0.09	4.32	1,900	3.3	117	52	0.209	38		

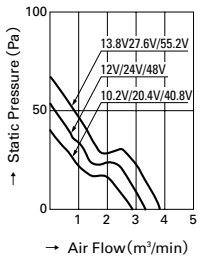
Air Flow and Static Pressure Characteristics

H speed



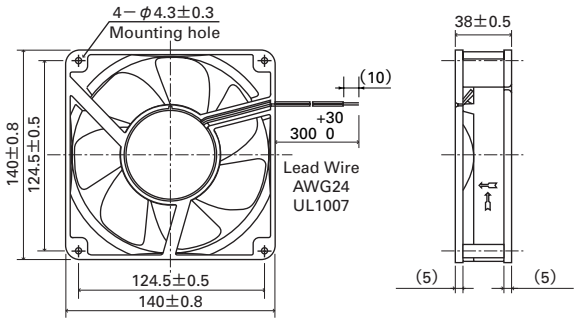
109P1412H102
109P1424H102
109P1448H102

M speed



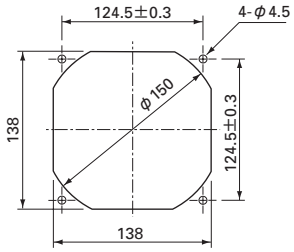
109P1412M102
109P1424M102
109P1448M102

Dimensions (unit : mm)

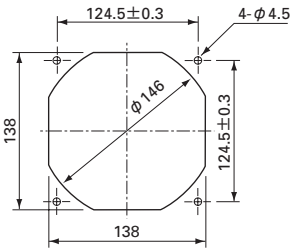


Reference dimension of mounting holes and vent opening (unit : mm)

Air outlet side



Air inlet side



DC Fan

□150mm
San Ace 150

"San Ace 150" GV Type

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ····· ⊕red,⊖black
Mass ·····450g

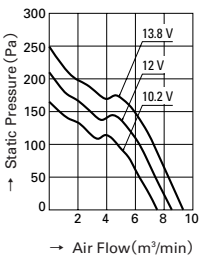
50mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9GV1512H502(5021)	12	10.2～13.8	2.9	34.8	3,900	8.54	300	210	0.84	61	−10～+70	40,000
9GV1512M502(5021)			1.2	14.4	3,000	6.35	224	132	0.53	53		

The numbers in ( ) represent ribless models.

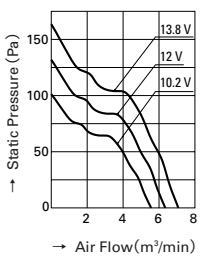
Air Flow and Static Pressure Characteristics

H speed



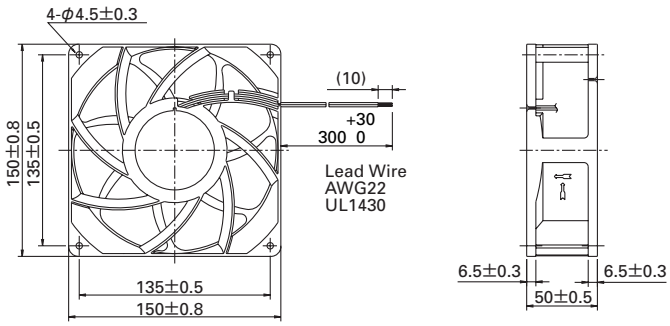
9GV1512H502(5021)

M speed



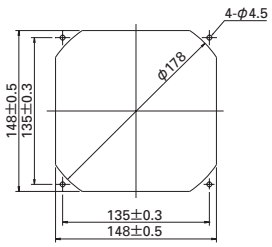
9GV1512M502(5021)

Dimensions (unit : mm)

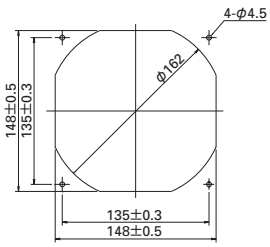


Reference dimension of mounting holes and vent opening (unit : mm)

Air outlet side



Air inlet side



150mm

DC Fan

ø172mm

San Ace 172

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····S, H, F speeds ⊕red,⊖black
M, L speeds ⊕red,⊖black or blue
Mass ·····500g

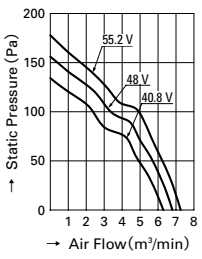
25mm thick (Sidecut type)

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109E4712M402	12	10.2～13.8	1.3	15.6	2,800	5.2	183	92	0.369	51	−10 ～+60	40,000
109E4712L402			1.0	12.0	2,500	4.6	162	73	0.293	48		
109E4724H402	24	20.4～27.6	1.0	24.0	3,400	6.4	226	135	0.542	57		
109E4724F402			0.79	19.0	3,100	5.8	204	112	0.450	54		
109E4724M402			0.58	13.9	2,800	5.2	183	92	0.369	51		
109E4724L402			0.44	10.6	2,500	4.6	162	73	0.293	48		
109E4748S402	48	40.8～55.2	0.62	29.8	3,650	6.8	240	156	0.627	58		
109E4748H402			0.52	25.0	3,400	6.4	226	135	0.542	57		
109E4748F402			0.40	19.2	3,100	5.8	204	112	0.450	54		
109E4748M402			0.32	15.4	2,800	5.2	183	92	0.369	51		
109E4748L402			0.25	12.0	2,500	4.6	162	73	0.293	48		

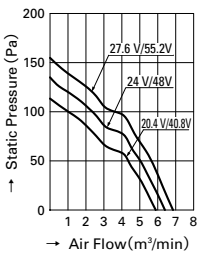
Air Flow and Static Pressure Characteristics

S speed



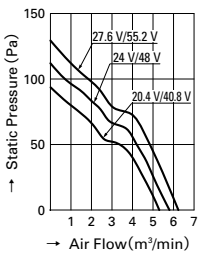
109E4748S402

H speed



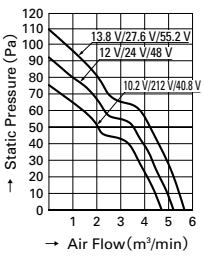
109E4724H402
109E4748H402

F speed



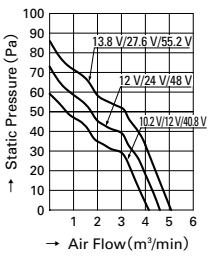
109E4724F402
109E4748F402

M speed



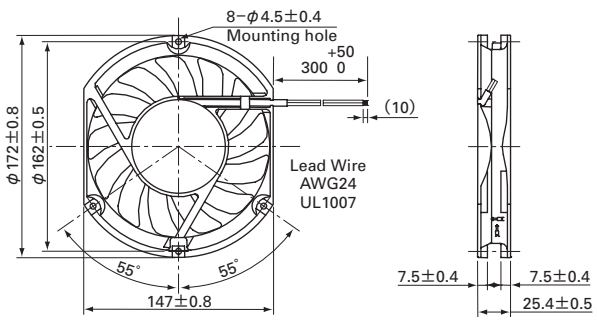
109E4712M402
109E4724M402
109E4748M402

L speed



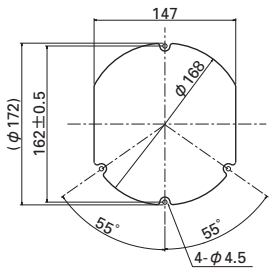
109E4712L402
109E4724L402
109E4748L402

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

ø172mm

San Ace 172

ECO PRODUCTS

"San Ace 172" GV type

General specifications

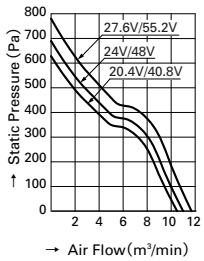
Material ·····Frame : Aluminum , Impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····800g

51mm thick (Sidecut type)

Specifications

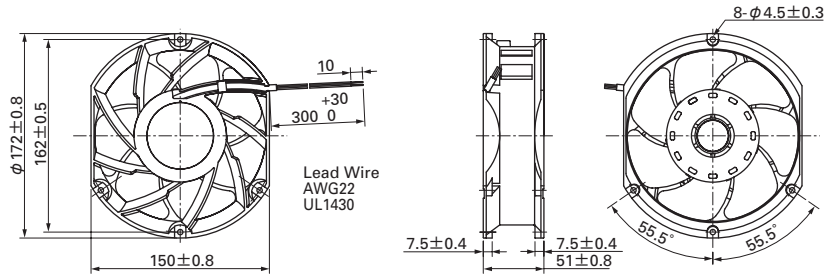
Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9GV5724H502	24	20.4～27.6	4.0	96	6,300	11.32	400	690	2.530	74	−10 ～+70	40,000
9GV5748H502	48	40.8～55.2	2.0	96								

Air Flow and Static Pressure Characteristics



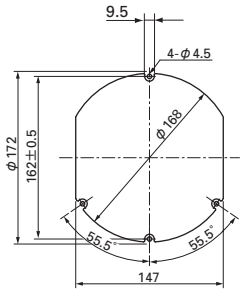
9GV5724H502
9GV5748H502

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

ø172mm

San Ace 172

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····C, K, H speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····760g

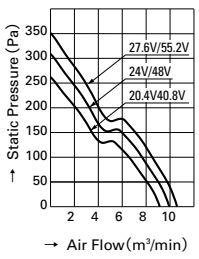
51mm thick (Sidecut type)

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109E5712K502	12	10.2～13.8	2.9	34.8	4,100	8.5	300	243.0	0.976	60	−10～+60	40,000
109E5712H502			1.2	14.4	3,050	6.4	226	137.2	0.551	52	−10～+70	
109E5712M502			0.48	5.76	2,000	4.2	148	67.6	0.271	41		
109E5724C502	24	20.4～27.6	2.3	55.2	4,800	9.9	350	308.0	1.237	66		
109E5724K502			1.3	31.2	4,100	8.5	300	243.0	0.976	60		
109E5724H502			0.58	13.92	3,050	6.4	226	137.2	0.551	52		
109E5724M502			0.2	4.8	2,000	4.2	148	67.6	0.271	41		
109E5748C502	48	40.8～55.2	1.2	57.6	4,800	9.9	350	308.0	1.237	66		
109E5748K502			0.7	33.6	4,100	8.5	300	243.0	0.976	60	−10～+60	
109E5748H502			0.28	13.44	3,050	6.4	226	137.2	0.551	52	−10～+70	
109E5748M502			0.11	5.28	2,000	4.2	148	67.6	0.271	41		

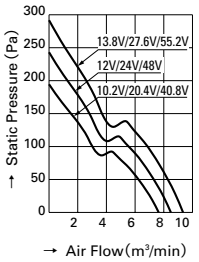
Air Flow and Static Pressure Characteristics

C speed



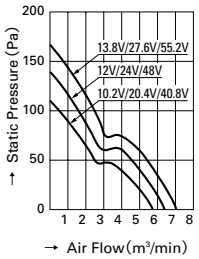
109E5724C502
109E5748C502

K speed



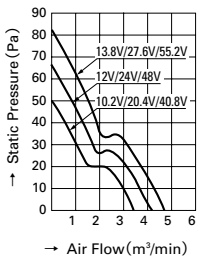
109E5712K502
109E5724K502
109E5748K502

H speed



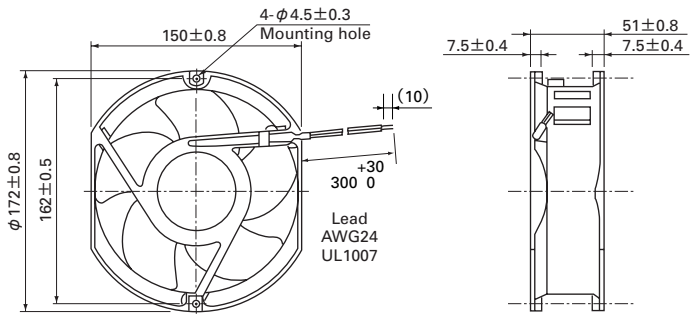
109E5712H502
109E5724H502
109E5748H502

M speed



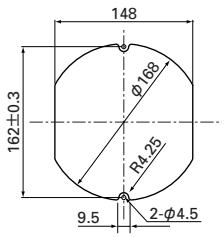
109E5712M502
109E5724M502
109E5748M502

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

ø172mm

San Ace 172

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····C, K, H speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····780g

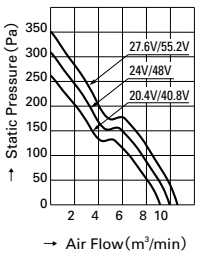
51mm thick (Round type)

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109E1712K502	12	10.2～13.8	2.9	34.8	4,100	8.5	300	243.0	0.976	55	−10～+60	40,000
109E1712H502			1.2	14.4	3,050	6.4	226	137.2	0.551	47	−10～+70	
109E1712M502			0.48	5.76	2,000	4.2	148	67.6	0.271	36		
109E1724C502	24	20.4～27.6	2.3	55.2	4,800	9.9	350	308.0	1.237	60		
109E1724K502			1.3	31.2	4,100	8.5	300	243.0	0.976	55		
109E1724H502			0.58	13.92	3,050	6.4	226	137.2	0.551	47		
109E1724M502			0.2	4.8	2,000	4.2	148	67.6	0.271	36		
109E1748C502	48	40.8～55.2	1.2	57.6	4,800	9.9	350	308.0	1.237	60		
109E1748K502			0.7	33.6	4,100	8.5	300	243.0	0.976	55	−10～+60	
109E1748H502			0.28	13.44	3,050	6.4	226	137.2	0.551	47	−10～+70	
109E1748M502			0.11	5.28	2,000	4.2	148	67.6	0.271	36		

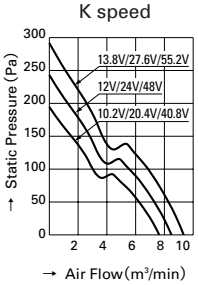
Air Flow and Static Pressure Characteristics

C speed



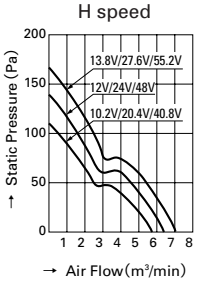
109E1724C502
109E1748C502

K speed



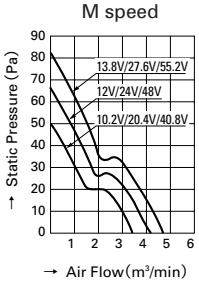
109E1712K502
109E1724K502
109E1748K502

H speed



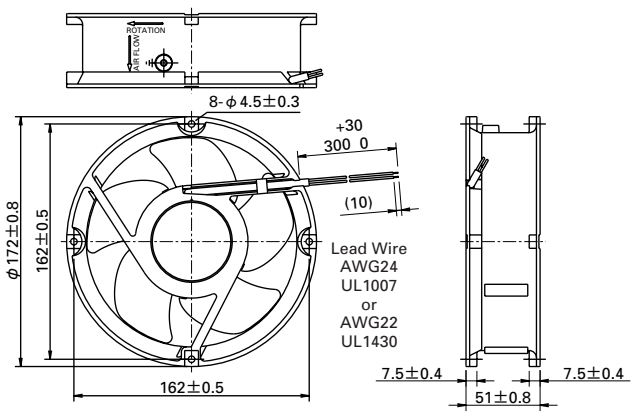
109E1712H502
109E1724H502
109E1748H502

M speed



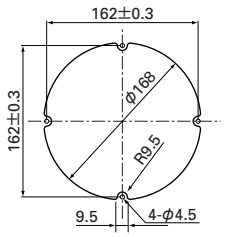
109E1712M502
109E1724M502
109E1748M502

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

ø200mm

San Ace 200

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black, (Control) brown
Mass ·····1800g

70mm thick

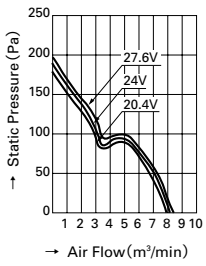
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109E2024H002	24	20.4～27.6	1.0	24	2,600	8.2	289.5	192	0.771	51	−10 ～+70	40,000
109E2024S002		21.6～26.4	1.9	45.6	3,200	10.45	369	287.1	1.153	57		
109E2024MH002		20.4～27.6	1.0	24	2,600	8.2	289.5	192	0.771	51		
			0.63	15.12	2,100	6.7	236.6	115.4	0.463	45		
109E2024AS002		21.6～26.4	1.9	45.6	3,200	10.45	369	287.1	1.153	57		
			1.4	33.6	2,800	9	317.8	217.5	0.873	54		

The MH speed and AS speed are two speeds.

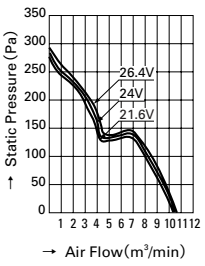
Air Flow and Static Pressure Characteristics

H speed



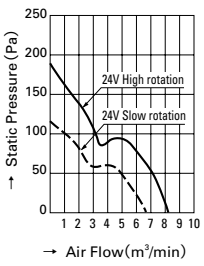
109E2024H002

S speed



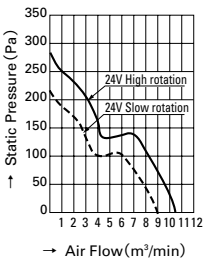
109E2024S002

MH Two-speed



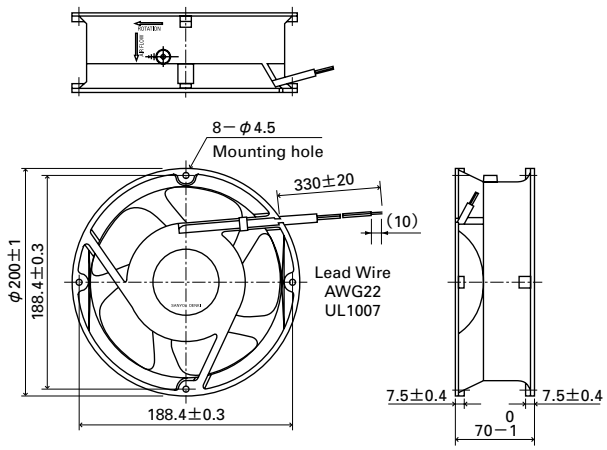
109E2024MH002

AS Two-speed



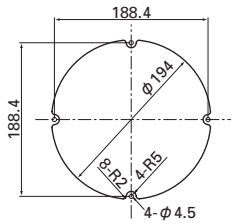
109E2024AS002

Dimensions (unit : mm)

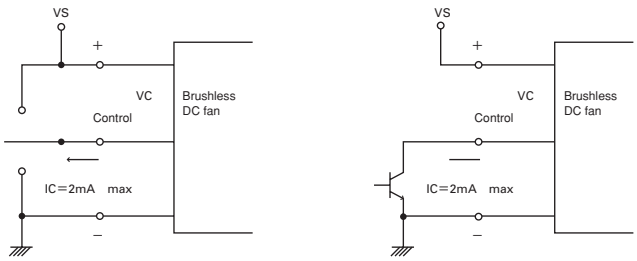


Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Signal connection type



DC Fan

ø200mm

San Ace 200

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····1800g

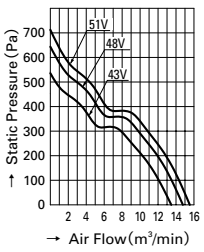
70mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9EC2024H002	24	20.4～26.4	2.0	48.0	3,600	11.0	388	360	1.446	60	−10 ～+60	40,000
9EC2048A002	48	43 ～51	2.2	105.6	4,800	14.7	519	640	2.570	68		
9EC2048H002		40.8～52.8	1.2	57.6	3,600	11.0	388	360	1.446	60		

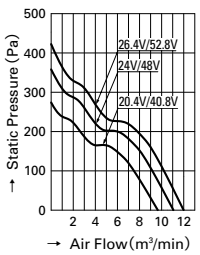
Air Flow and Static Pressure Characteristics

A speed



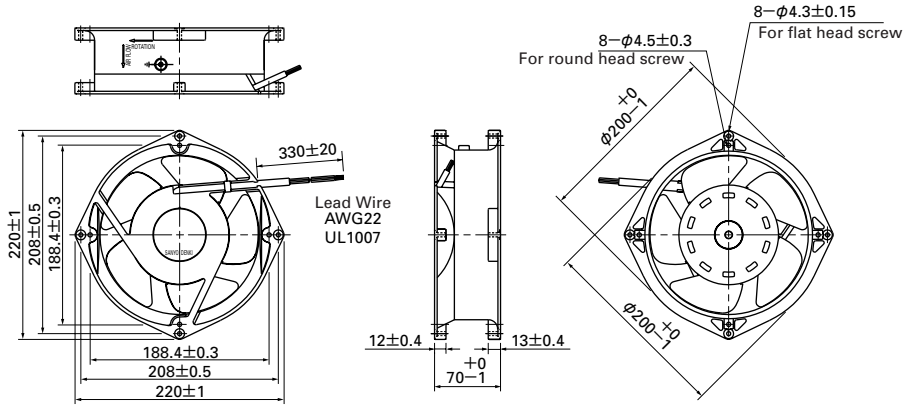
9EC2048A002

H speed



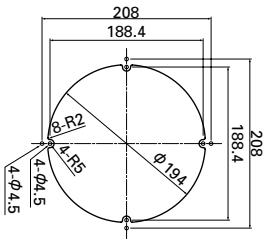
9EC2024H002
9EC2048H002

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□60mm
San Cooler 60

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ····Varies for each model (Non-condensing)
Lead Wire ·····G,S,H,F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····80g

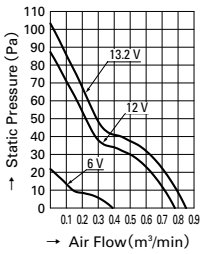
25mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9A0612G402(4021)	12	6～13.2	0.24	2.88	5,600	0.78	27.6	87.3	0.351	39	−10～+60	30,000
9A0612S402(4021)		6～13.8	0.17	2.04	4,600	0.65	23.0	56.8	0.228	33	−10～+70	40,000
9A0612H402(4021)			0.11	1.32	3,800	0.53	18.7	40.2	0.161	28		
9A0612F402(4021)			0.09	1.08	3,200	0.44	15.5	29.4	0.118	24		
9A0612M402(4021)		7～13.8	0.06	0.72	2,600	0.36	12.7	19.6	0.079	20		
9A0624G402(4021)	24	12～27.6	0.13	3.12	5,600	0.78	27.6	87.3	0.351	39	−10～+60	30,000
9A0624S402(4021)		12～27.6	0.08	1.92	4,600	0.65	23.0	56.8	0.228	33	−10～+70	40,000
9A0624H402(4021)			0.06	1.44	3,800	0.53	18.7	40.2	0.161	28		
9A0624F402(4021)			0.05	1.2	3,200	0.44	15.5	29.4	0.118	24		
9A0624M402(4021)		14～27.6	0.04	0.96	2,600	0.36	12.7	19.6	0.079	20		

The numbers in ( ) represent ribless models.

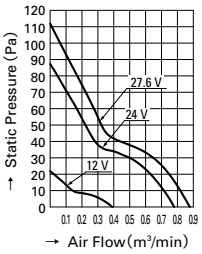
Air Flow and Static Pressure Characteristics

G speed



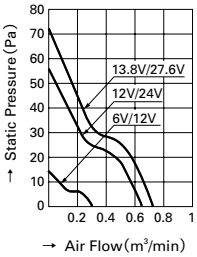
9A0612G402(4021)

G speed



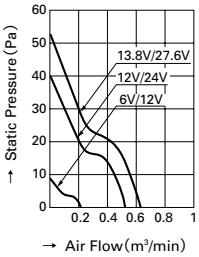
9A0624G402(4021)

S speed



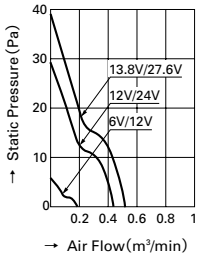
9A0612S402(4021)
9A0624S402(4021)

H speed



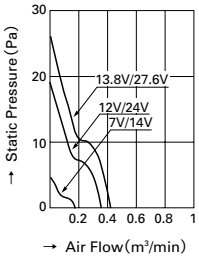
9A0612H402(4021)
9A0624H402(4021)

F speed



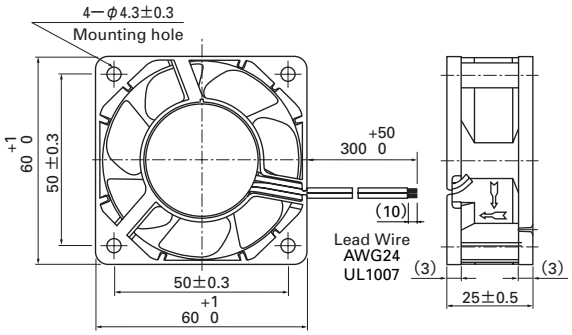
9A0612F402(4021)
9A0624F402(4021)

M speed



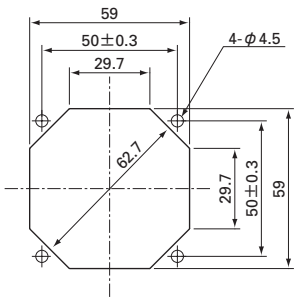
9A0612M402(4021)
9A0624M402(4021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□80mm
San Cooler 80

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ····Varies for each model (Non-condensing)
Lead Wire ·····G,S,H,F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····90g

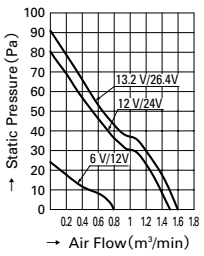
25mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9A0812G402(4021)	12	6～13.2	0.38	4.56	4,500	1.5	53.0	80.3	0.323	40	−10～+60	30,000
9A0812S402(4021)		6～13.8	0.18	2.16	3,400	1.2	42.4	48	0.193	34	−10～+70	40,000
9A0812H402(4021)			0.13	1.56	2,900	1.03	36.4	35.3	0.142	29		
9A0812F402(4021)			0.11	1.32	2,600	0.92	32.5	28.4	0.114	26		
9A0812M402(4021)			0.09	1.08	2,350	0.83	29.3	22.5	0.090	23		
9A0812L402(4021)		7～13.8	0.06	0.72	1,850	0.65	23.0	14.7	0.059	20		
9A0824G402(4021)	24	12～26.4	0.21	5.04	4,500	1.5	53.0	80.3	0.323	40	−10～+60	30,000
9A0824S402(4021)		12～27.6	0.1	2.4	3,400	1.2	42.4	48	0.193	34	−10～+70	40,000
9A0824H402(4021)			0.07	1.68	2,900	1.03	36.4	35.3	0.142	29		
9A0824F402(4021)			0.06	1.44	2,600	0.92	32.5	28.4	0.114	26		
9A0824M402(4021)			0.05	1.2	2,350	0.83	29.3	22.5	0.090	23		
9A0824L402(4021)		14～27.6	0.04	0.96	1,850	0.65	23.0	14.7	0.059	20		

The numbers in ( ) represent ribless models.

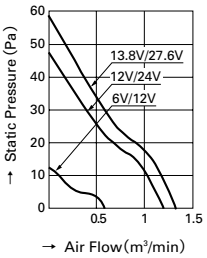
Air Flow and Static Pressure Characteristics

G speed



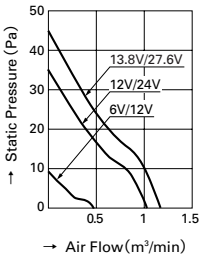
9A0812G402(4021)
9A0824G402(4021)

S speed



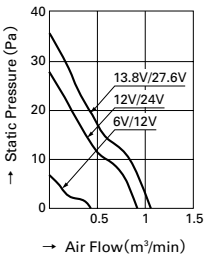
9A0812S402(4021)
9A0824S402(4021)

H speed



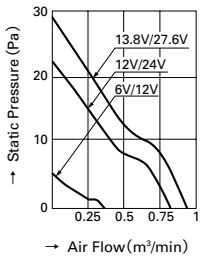
9A0812H402(4021)
9A0824H402(4021)

F speed



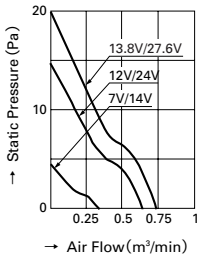
9A0812F402(4021)
9A0824F402(4021)

M speed



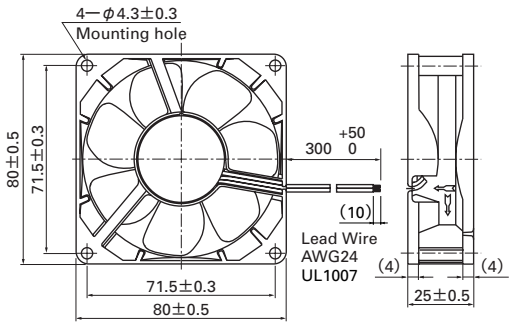
9A0812M402(4021)
9A0824M402(4021)

L speed



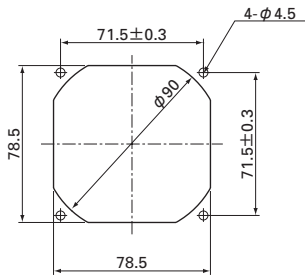
9A0812L402(4021)
9A0824L402(4021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC Fan

□92mm
San Cooler 92

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ····Varies for each model (Non-condensing)
Lead Wire ·····G,S,H,F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····100g

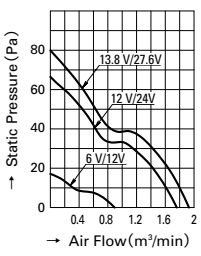
25mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9A0912G402(4021)	12	6～13.8	0.39	4.68	3,900	1.76	62.1	66.5	0.267	43	−10～+60	30,000
9A0912S402(4021)			0.27	3.24	3,550	1.66	58.6	56.1	0.225	39		40,000
9A0912H402(4021)			0.21	2.52	3,150	1.45	51.2	44	0.177	33	−10～+70	
9A0912F402(4021)			0.14	1.68	2,650	1.24	43.8	32.2	0.129	30		
9A0912M402(4021)			0.12	1.44	2,250	1.04	36.7	22.6	0.091	27		
9A0912L402(4021)		7～13.8	0.07	0.84	1,750	0.8	28.2	13.4	0.054	23		
9A0924G402(4021)	24	12～27.6	0.19	4.56	3,900	1.76	62.1	66.5	0.267	43	−10～+60	30,000
9A0924S402(4021)			0.15	3.6	3,550	1.66	58.6	56.1	0.225	39		40,000
9A0924H402(4021)			0.1	2.4	3,150	1.45	51.2	44	0.177	33	−10～+70	
9A0924F402(4021)			0.08	1.92	2,650	1.24	43.8	32.2	0.129	30		
9A0924M402(4021)			0.05	1.2	2,250	1.04	36.7	22.6	0.091	27		
9A0924L402(4021)		14～27.6	0.04	0.96	1,750	0.8	28.2	13.4	0.054	23		

The numbers in ( ) represent ribless models.

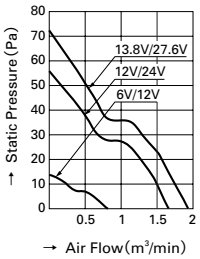
Air Flow and Static Pressure Characteristics

G speed



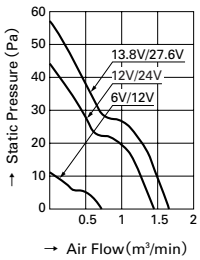
9A0912G402(4021)
9A0924G402(4021)

S speed



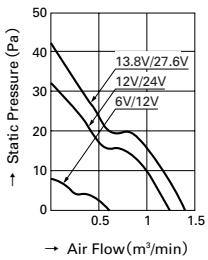
9A0912S402(4021)
9A0924S402(4021)

H speed



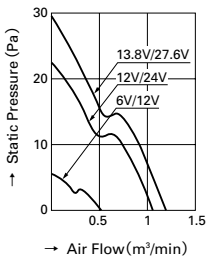
9A0912H402(4021)
9A0924H402(4021)

F speed



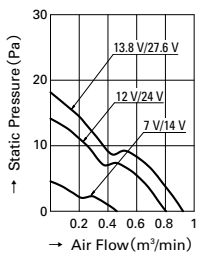
9A0912F402(4021)
9A0924F402(4021)

M speed



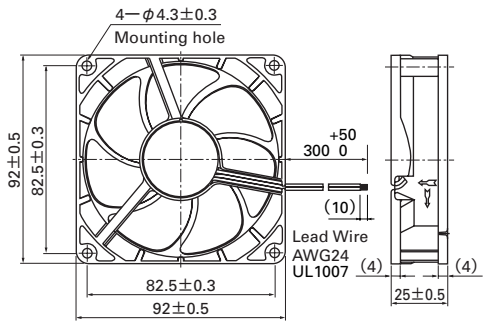
9A0912M402(4021)
9A0924M402(4021)

L speed



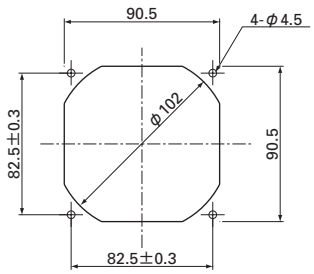
9A0912L402
9A0924L402

Dimensions (unit : mm)

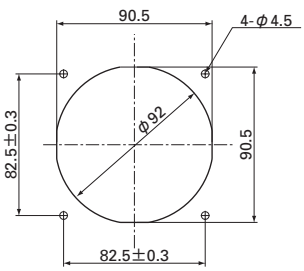


Reference dimension of mounting holes and vent opening (unit : mm)

Air outlet side



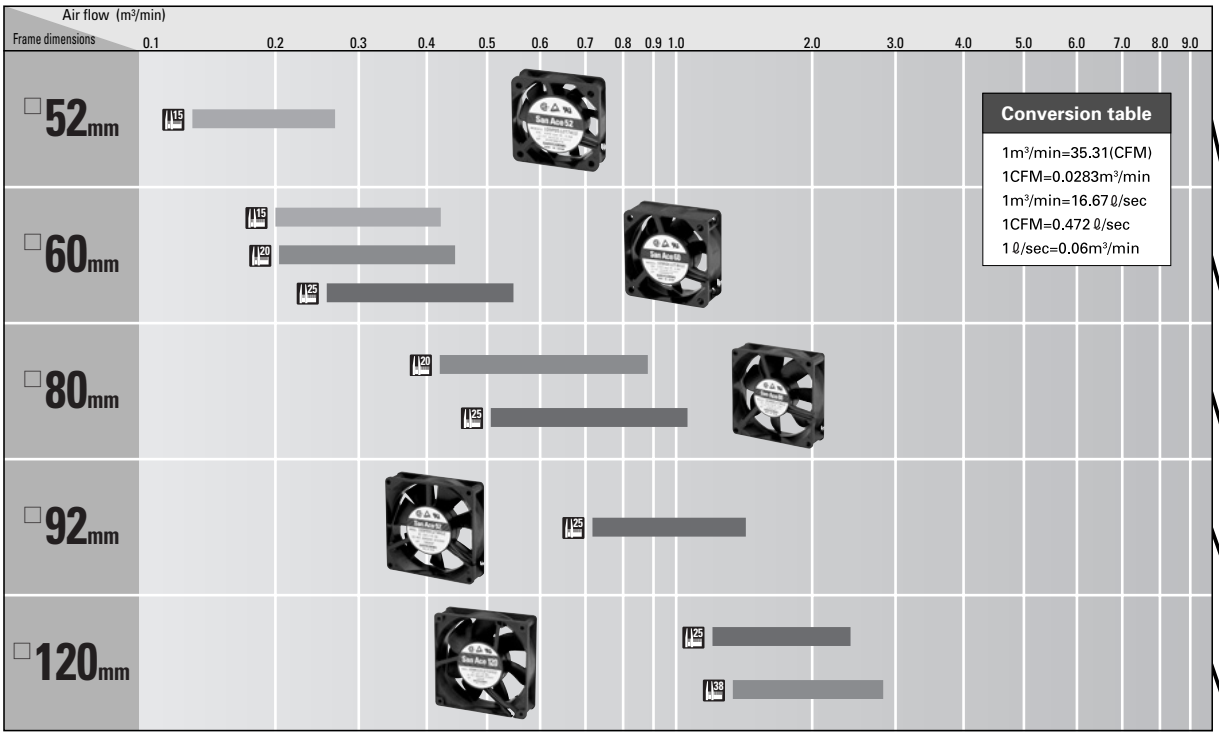
Air inlet side



DC FAN

Thermal Speed Controlled Fans

Domain diagram



52mm

60mm

80mm

92mm

120mm

Thermal speed controlled fans with an external or built-in thermistor

External thermistor type

1. Overview

For thermal speed controlled fans with an external thermistor, just connect a specified thermistor (or a specified thermistor and a resistor) between the control wire and the negative wire indicated in Fig. 1, it will enable the fan speed to change automatically according to a predetermined temperature speed specification and according to temperature changes in an environment where the thermistor is equipped .(Please refe to Fig. 2)

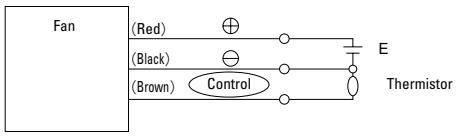


Fig. 1

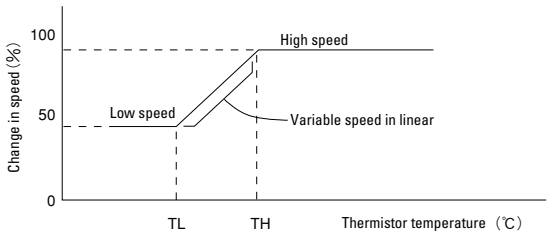


Fig. 2

A thermistor can therefore be installed at an appropriate position inside your equipment to monitor the internal temperature changes due to changes in ambient temperature and heatup status (load status) of the equipment. Automatic monitoring can then specify low speed when the thermistor detects a temperature below TL, high speed when it detects a temperature above TH, and a speed according to the temperature when it detects a temperature between TL and TH.
Thus, the fan motor detects its own operational status and determines the operating conditions.
As a result, the thermal speed controlled fan with an external thermistor is designed that temperature changes according to the ambient temperature and operational status of the equipment are detected by the thermistor to control the fan's air flow (speed), and is near-ideal particularly in designing silent equipment. The fan motor thus meets the three requirements: silence, energy-saving, and long life.

2. Setting temperatures (TL and TH) in low and high speed

The standard products listed in this catalog are designed to run at a low speed at 28℃ or below and run at a high speed at 35℃ or more when a recommended thermistor is connected between the control wire and the negative wire.
These temperatures (TL and TH) can be changed (as indicated in Table 1) by inserting a resistor in series with the thermistor.

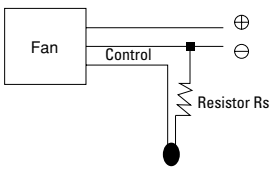


Fig. 3 Recommended thermistor

Table 1

Resistance Rs (Ω)	Temperature setting (℃)	
	TL	TH
0	28	35
0.8K	31.5	40
1.5K	35	45
2.0K	38	50
2.4K	40.5	55
2.75K	43	60

* For the resistor Rs, use a resistor rated at no less than 1/8W.
* For the thermistor, use a 159-682-86** which are manufactured

3. If you wish to obtain low or high speed in a process of testing by using a larger equipment regardless of the thermistor temperature:

Low speed : Instead of the thermistor, connect a 10 KΩ resistor between the control wire and the negative wire.
High speed : Connect the control wire directly to the negative wire.

4. Connecting the fan to the thermistor

Sanyo Denki recommends to use connectors, including the power lead of the fan.
Example of Typical connections :place a thermistor on the printed circuit board and connect the fan's power lead and control lead to the circuit pattern by means of connectors.

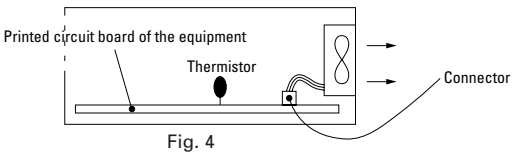


Fig. 4

Recommended connectors	
Manufacturer	Model (3-pole)
Japan Solderless Terminals	XHP-3,SMR-3V-N
Japan Aviation Electronics Industry	IL-G-3S-S3C2-SA
Japan AMP	171822-3
Molex Japan	5102-3

5. Typical applications of thermal speed controlled fans with an external thermistor

Here are typical applications of a thermal speed controlled fan with a power supply where two 109P1212H402 fans are used (Fig. 5).
(1) The fan selected was a 109P1212T4H12 thermal speed controlled fan having a performance equal to that of conventional fans at high speed.
(2) The relationship between the temperatures of important components and those of the cooling fin can be measured with varied loads on the equipment and varied air flows of the fan. Since a correlation was determined, the thermistor can then be placed on the cooling fin, one of the important components.
(3) Next, in view of the thermal design conditions of the equipment, the fan is set to high speed at an ambient temperature of 30℃ and an equipment load of 100%.

(4) At an ambient temperature of 30℃ and an equipment load of 100%, the temperature of the cooling fin was 48℃ and the surface temperature of the thermistor placed on the cooling fin was 45℃ when the fan was running at high speed. It was therefore decided to add a 1.5 KΩ resistor in series with the thermistor according to Table 1. In this case, the thermistor temperature is 35℃ and the fan runs at low (see Table 1 and Fig. 6).

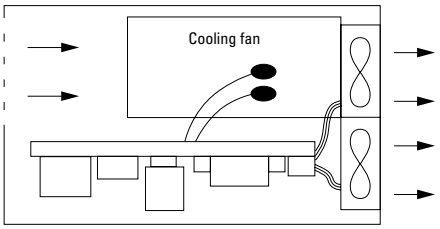


Fig. 5

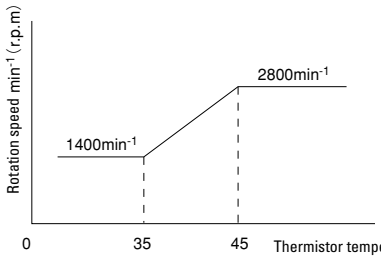


図6

(5) Test results as installed on equipment: The thermal speed controlled fan displayed its full effect, thus being greatly advantageous in noise reduction. The ambient temperature during the test was 29℃.

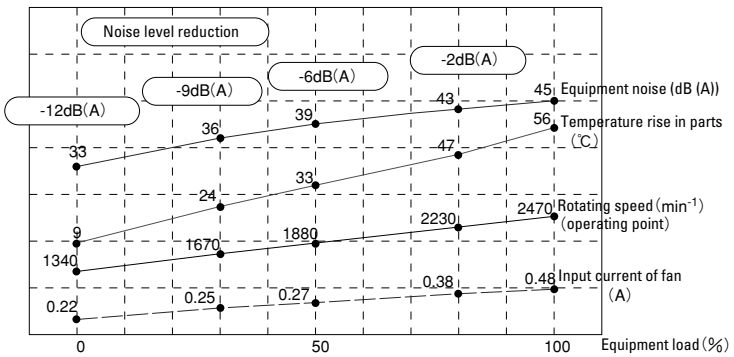


Fig. 7

* An ideal drop in the fan noise level was achieved according to the equipment load. When the equipment load was 0, the noise was 12dB (A) lower than in the case of conventional models.
* The current consumption of the fan was 54% lower than in the case of conventional models when the equipment load was 0.
* The noise level is expected to decline further at lower ambient temperatures.

built-in thermistor type

1. Overview

Thermal speed controlled fans with a built-in thermistor are designed that the fan it self contains a thermistor as indicated in Fig. 8. As illustrated in Fig. 9, the temperature of the air flowing through the fan motor is detected and the fan's speed changes automatically according to changes in that temperature.

Fig. 8

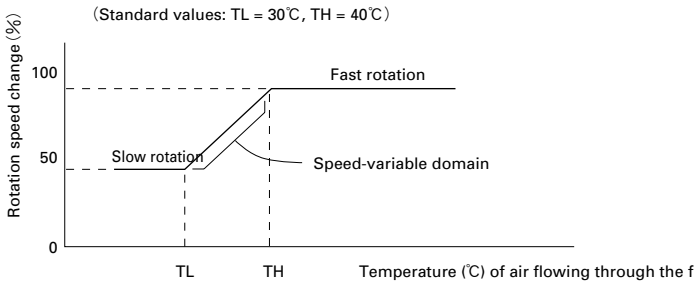
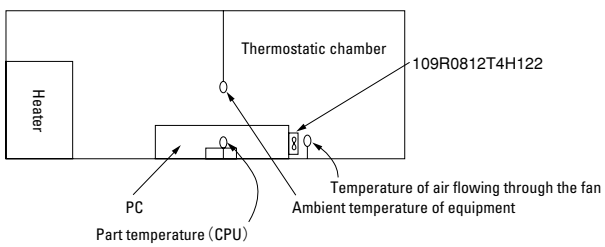
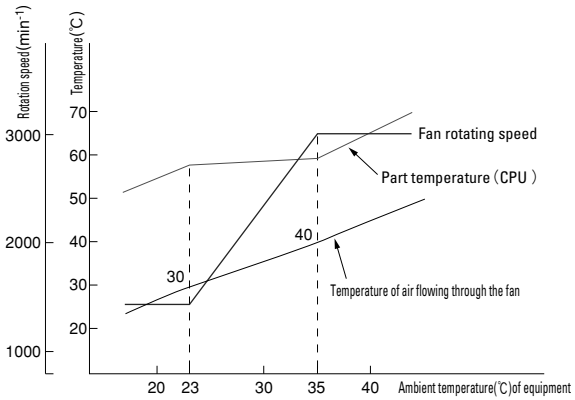


Fig. 9

2. Typical applications of thermal speed controlled fans with a built-in thermistor

Fig. 11 indicates measurements taken when a 109R0812T4H122 fan is mounted on equipment (a PC) is tested in the state as illustrated in Fig. 10.





Thermal Speed Controlled Fan

□52mm

San Ace 52

Photo: externally-mounted thermistor

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black, Control brown (Only for external thermistor type)
Fail-safe ·····The motor becomes high speed when the thermistor is unable to detect the temperature in cases of open circuit or short-circuit.
Mass ·····55g

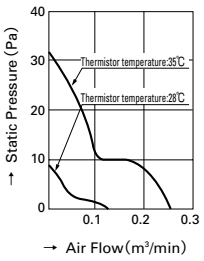
15mm thick with an external thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0512T7H12	12	10.2～13.8	0.13	1.56	4,600	0.255	9.0	31.9	0.128	27	−10 ～+70	60,000
			0.09	1.08	2,300	0.13	4.6	8.8	0.035	17		

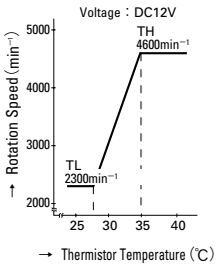
Notes:The top row gives characteristics shown when the thermistor temperature is 35℃, while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

Air Flow and Static Pressure Characteristics

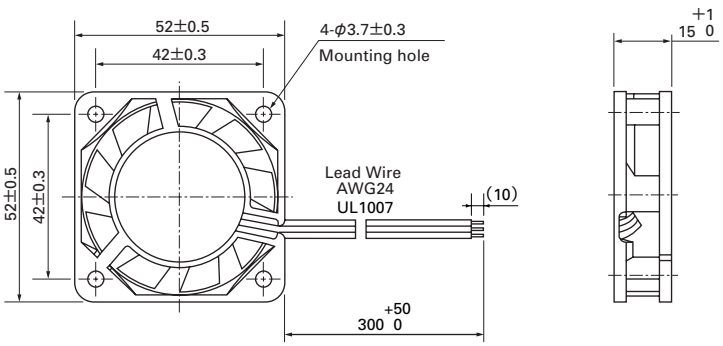


109P0512T7H12

Characteristics of Thermistor-detected Temperature vs Speed



Dimensions (unit : mm)



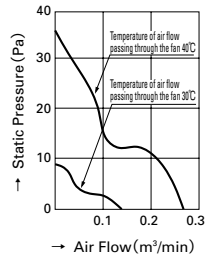
15mm thick with an external thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0512T7H122	12	10.2～13.8	0.13	1.56	4,900	0.27	9.5	36.2	0.145	28	−10 ～+70	60,000
			0.09	1.08	2,400	0.14	4.9	9.6	0.039	17		

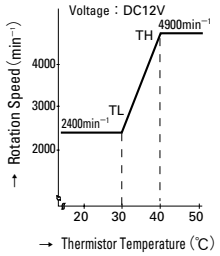
Notes:The top row gives characteristics shown when the thermistor temperature is 35℃,
while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

Air Flow and Static Pressure Characteristics

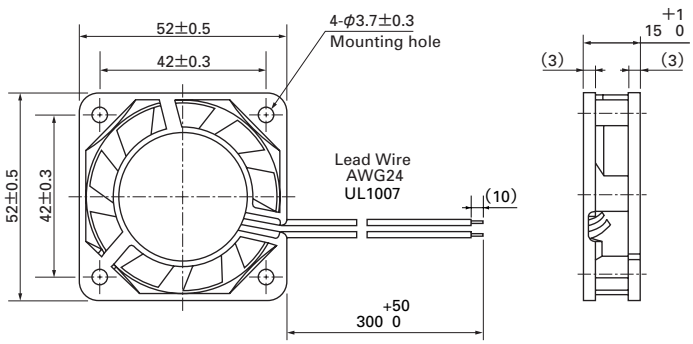


109P0512T7H122

Typical characteristics of temperature of air flowing through the fan versus rotation speed

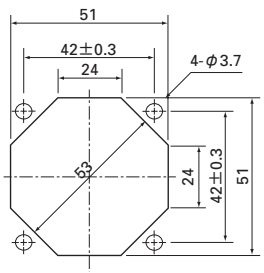


Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side · Air outlet side



Thermal Speed Controlled Fan

□60mm

San Ace 60

Photo: externally-mounted thermistor

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black, Control brown (Only for external thermistor type)
Fail-safe ·····The motor becomes high speed when the thermistor is unable to detect the temperature in cases of open or short circuit etc.
Mass ·····60g(15mm thick) 90g(20mm thick・25mm thick)

15mm thick with an external thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0612T7H12	12	10.2～13.8	0.12	1.44	4,100	0.4	14.1	38.2	0.153	32	−10 ～+70	60,000
			0.08	0.96	2,050	0.2	7.1	9.3	0.037	18		

Notes:The top row gives characteristics shown when the thermistor temperature is 35℃, while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

20mm thick with an external thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0612T6H12	12	10.2～13.8	0.15	1.8	4,200	0.42	14.8	31.9	0.128	31	−10 ～+70	60,000
			0.1	1.2	2,100	0.21	7.4	8.8	0.035	21		

Notes:The top row gives characteristics shown when the thermistor temperature is 35℃, while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

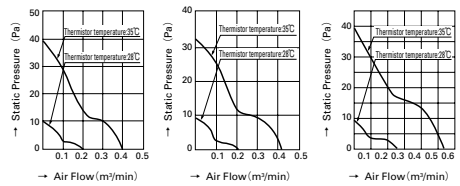
25mm thick with an external thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109R0612T4H12(121)	12	10.2～13.8	0.13	1.56	3,800	0.53	18.7	40.2	0.161	28	−10 ～+60	60,000
			0.1	1.2	1,900	0.26	9.2	9.8	0.039	15		

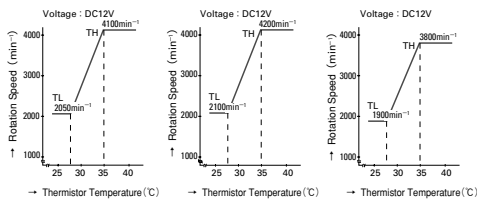
The numbers in ( ) represent ribless models.
Notes:The top row gives characteristics shown when the thermistor temperature is 35℃, while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

Air Flow and Static Pressure Characteristics



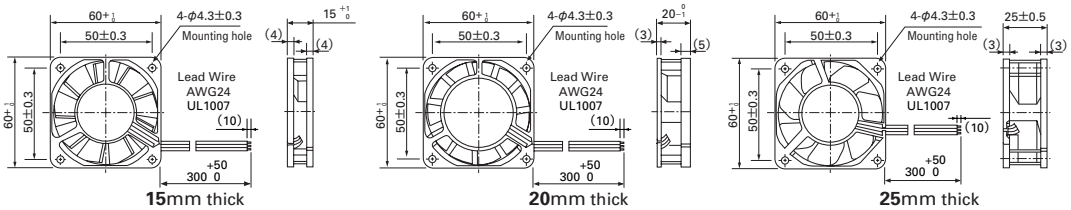
109P0612T7H12 **109P0612T6H12** **109R0612T4H12(121)**

Characteristics of Thermistor-detected Temperature vs Speed



109P0612T7H12 **109P0612T6H12** **109R0612T4H12(121)**

Dimensions (unit : mm)



15mm thick with a built-in thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0612T7H122	12	10.2～13.8	0.12	1.44	4,300	0.42	14.8	42.0	0.169	32	−10 ～+70	60,000
			0.08	0.96	2,100	0.2	7.0	9.7	0.039	18		

Note 1: The top row gives characteristics shown when the emperature is 40℃, while the bottom row gives characteristics shown when the temperature is 30℃.
Note 2: The noise levels are calculated by converting measurements taken at 30cm to those measured at 1m.

20mm thick with a built-in thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0612T6H122	12	10.2～13.8	0.15	1.8	4,400	0.44	15.5	35.0	0.141	33	−10 ～+70	60,000
			0.1	1.2	2,150	0.22	7.8	9.2	0.037	21		

Note 1: The top row gives characteristics shown when the emperature is 40℃, while the bottom row gives characteristics shown when the temperature is 30℃.
Note 2: The noise levels are calculated by converting measurements taken at 30cm to those measured at 1m.

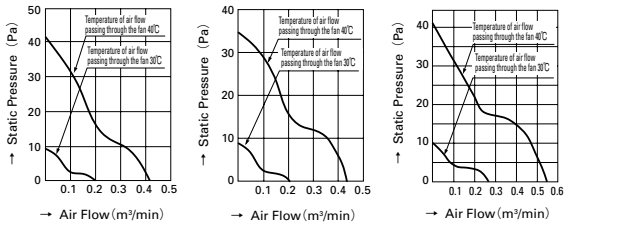
25mm thick with a built-in thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109R0612T4H122(123)	12	10.2～13.8	0.13	1.56	3,950	0.55	19.4	41.8	0.168	28	−10 ～+60	60,000
			0.1	1.2	1,950	0.27	9.5	10.3	0.041	15		

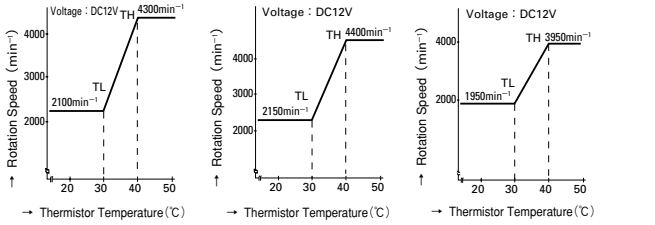
The numbers in ( ) represent ribless models.
Note 1: The top row gives characteristics shown when the emperature is 40℃, while the bottom row gives characteristics shown when the temperature is 30℃.
Note 2: The noise levels are calculated by converting measurements taken at 30cm to those measured at 1m.

Air Flow and Static Pressure Characteristics



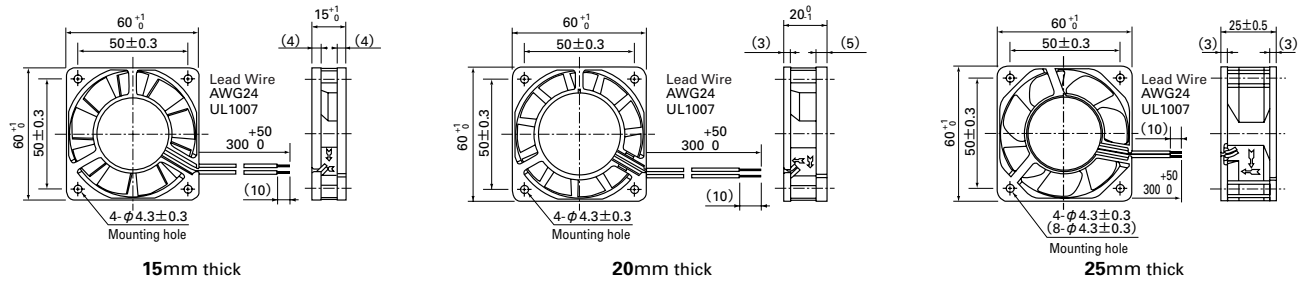
109P0612T7H122 **109P0612T6H122** **109R0612T4H122(123)**

Typical characteristics of temperature of air flowing through the fan versus rotation speed



109P0612T7H122 **109P0612T6H122** **109R0612T4H122(123)**

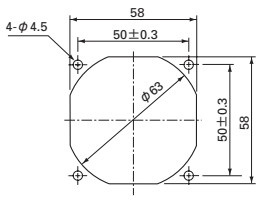
Dimensions (unit : mm)



15mm thick **20**mm thick **25**mm thick

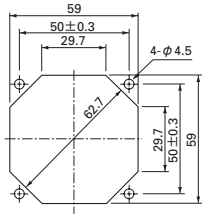
Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



15mm thick
20mm thick

Air inlet side・Air outlet side



25mm thick

Thermal Speed Controlled Fan

□80mm

San Ace 80

Photo: externally-mounted thermistor

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black, (Control) brown (Only for external thermistor type)
Fail-safe ·····The motor becomes high speed when the thermistor is unable to detect the temperature in cases of open or short circuit etc.
Mass ·····100g(20mm thick) 110g(25mm thick)

20mm thick with an external thermistor Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0812T6H12	12	10.2～13.8	0.18	2.16	2,900	0.84	29.7	29.4	0.118	31	−10 ～+60	60,000
			0.1	1.2	1,450	0.42	14.8	7.4	0.030	18		

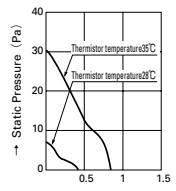
Notes: The top row gives characteristics shown when the thermistor temperature is 35℃, while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

25mm thick with an external thermistor Specifications

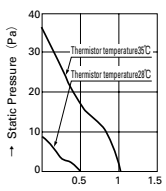
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109R0812T4H12(121)	12	10.2～13.8	0.14	1.68	2,900	1.03	36.4	35.3	0.142	29	−10 ～+60	60,000
			0.09	1.08	1,450	0.51	18.0	8.8	0.035	14		

The numbers in ( ) represent ribless models.
Notes: The top row gives characteristics shown when the thermistor temperature is 35℃, while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

Air Flow and Static Pressure Characteristics

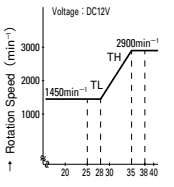


109P0812T6H12

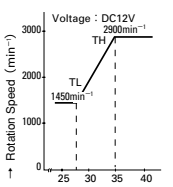


109R0812T4H12(121)

Characteristics of Thermistor-detected Temperature vs Speed

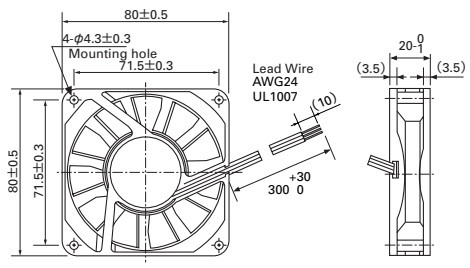


109P0812T6H12

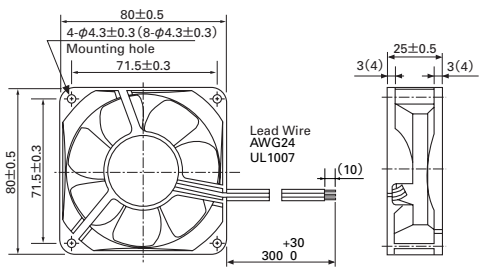


109R0812T4H12(121)

Dimensions (unit : mm)



20mm thick



25mm thick

20mm thick with a built-in thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0812T6H122	12	10.2～13.8	0.18	2.16	3,050	0.88	31.0	32.5	0.131	32	−10 ～+60	60,000
			0.1	1.2	1,450	0.42	14.8	7.4	0.030	20		

Note 1: The top row gives characteristics shown when the emperature is 40℃, while the bottom row gives characteristics shown when the temperature is 30℃.
Note 2: The noise levels are calculated by converting measurements taken at 30cm to those measured at 1m.

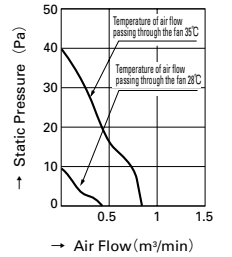
25mm thick with a built-in thermistor

Specifications

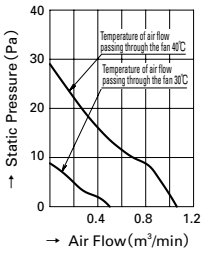
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109R0812T4H122(123)	12	10.2～13.8	0.14	1.68	3,000	1.07	37.8	37.7	0.151	29	−10 ～+60	60,000
			0.09	1.08	1,450	0.51	18.0	8.8	0.035	14		

The numbers in ( ) represent ribless models.
Note 1: The top row gives characteristics shown when the emperature is 40℃, while the bottom row gives characteristics shown when the temperature is 30℃.
Note 2: The noise levels are calculated by converting measurements taken at 30cm to those measured at 1m.

Air Flow and Static Pressure Characteristics

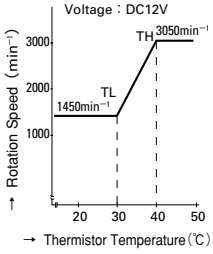


109P0812T6H122(123)

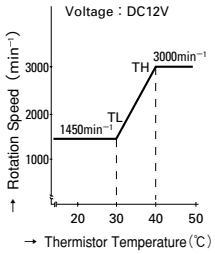


109R0812T4H122(123)

Typical characteristics of temperature of air flowing through the fan versus rotation speed

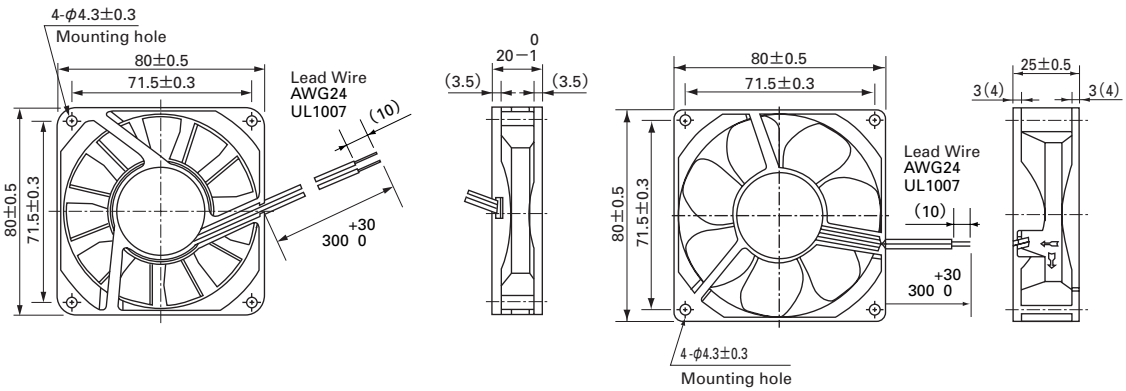


109P0812T6H122(123)



109R0812T4H122(123)

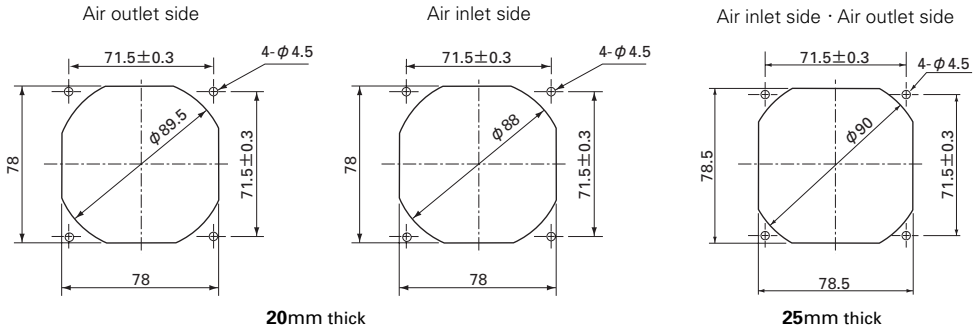
Dimensions (unit : mm)



20mm thick

25mm thick

Reference dimension of mounting holes and vent opening (unit : mm)



20mm thick

25mm thick

80mm

Thermal Speed Controlled Fan

□92mm

San Ace 92

Photo: externally-mounted thermistor

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black, (Control) brown (Only for external thermistor type)
Fail-safe ·····The motor becomes high speed when the thermistor is unable to detect the temperature in cases of open or short circuit etc.
Mass ·····150g

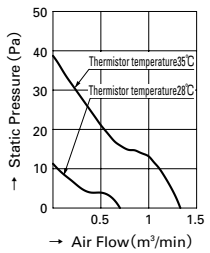
25mm thick with an external thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0912T4H12(121)	12	10.2～13.8	0.2	2.4	2,850	1.45	51.2	45.1	0.181	33	−10 ～+60	40,000
			0.1	1.2	1,400	0.71	25.0	11.3	0.045	18		

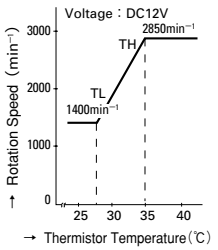
The numbers in ( ) represent ribless models.
Notes: The top row gives characteristics shown when the thermistor temperature is 35℃, while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

Air Flow and Static Pressure Characteristics



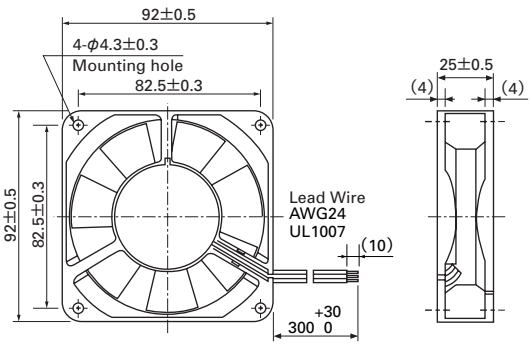
109P0912T4H12(121)

Characteristics of Thermistor-detected Temperature vs Speed



109P0912T4H12(121)

Dimensions (unit : mm)



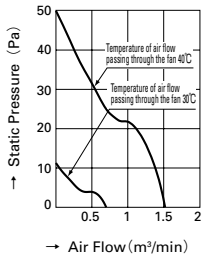
25mm thick with a built-in thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P0912T4H122(123)	12	10.2～13.8	0.2	2.4	3,000	1.52	53.7	50.0	0.201	35	−10 ～+60	40,000
			0.1	1.2	1,400	0.71	25.0	11.3	0.045	18		

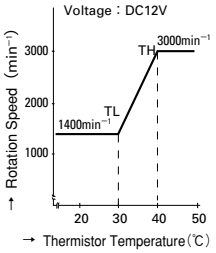
The numbers in ( ) represent ribless models.
Note 1: The top row gives characteristics shown when the emperature is 40℃, while the bottom row gives characteristics shown when the temperature is 30℃.
Note 2: The noise levels are calculated by converting measurements taken at 30cm to those measured at 1m.

Air Flow and Static Pressure Characteristics



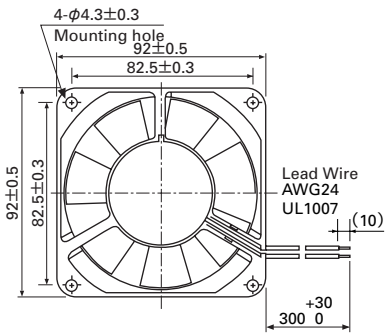
109P0912T4H122(123)

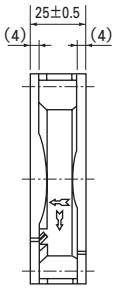
Typical characteristics of temperature of air flowing through the fan versus rotation speed



109P0912T4H122(123)

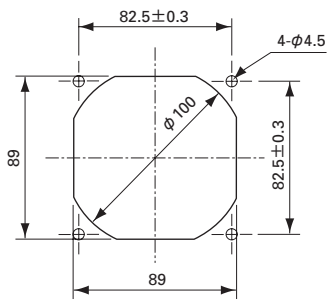
Dimensions (unit : mm)



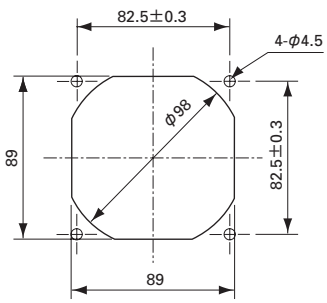


Reference dimension of mounting holes and vent opening (unit : mm)

Air outlet side



Air inlet side



Thermal Speed Controlled Fan □120mm

San Ace 120

Photo: externally-mounted thermistor

General specifications

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ····· ⊕red,⊖black, (Control) brown (Only for external thermistor type)
Fail-safe ·····The motor becomes high speed when the thermistor is unable to detect the temperature in cases of open or short circuit etc.
Mass ·····210g(25mm thick) 260g(38mm thick)

25mm thick with an external thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P1212T4H12(121)	12	10.2～13.8	0.55	6.6	2,800	2.5	88.3	53.9	0.216	40	−10 ～+60	40,000
			0.22	2.64	1,400	1.25	44.1	13.7	0.055	25		

The numbers in ( ) represent ribless models.
Notes: The top row gives characteristics shown when the thermistor temperature is 35℃, while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

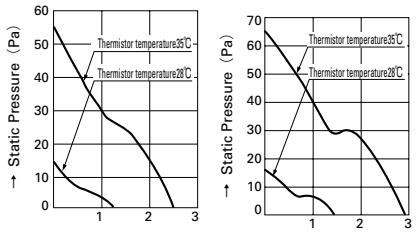
38mm thick with an external thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109R1212T1H12(121)	12	10.2～13.8	0.48	5.75	2,600	2.9	102.4	64.7	0.260	39	−10 ～+60	40,000
			0.23	2.76	1,300	1.4	49.4	16.2	0.065	24		

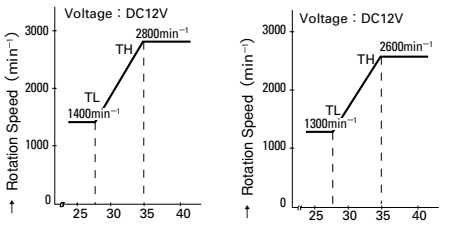
The numbers in ( ) represent ribless models.
Notes: The top row gives characteristics shown when the thermistor temperature is 35℃, while the bottom row gives characteristics shown when the thermistor temperature is 28℃.

Air Flow and Static Pressure Characteristics



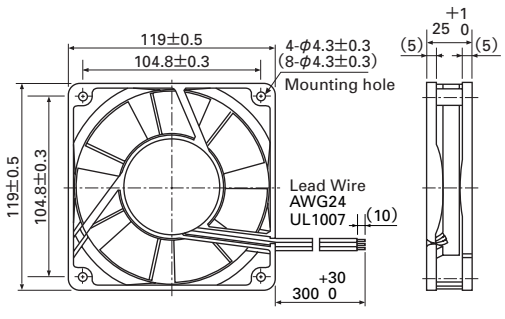
109P1212T4H12(121) **109R1212T1H12(121)**

Characteristics of Thermistor-detected Temperature vs Speed

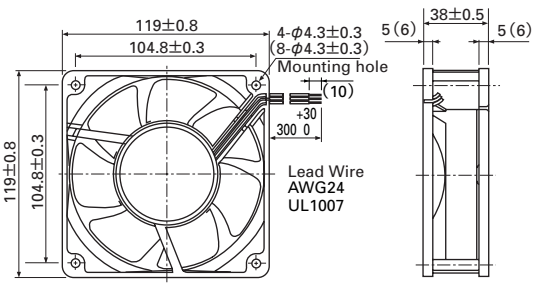


109P1212T4H12(121) **109R1212T1H12(121)**

Dimensions (unit : mm)



25mm thick



38mm thick

25mm thick with a built-in thermistor

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109P1212T4H122(123)	12	10.2～13.8	0.55	6.6	2,800	2.5	88.3	53.9	0.216	40	−10 ～+60	40,000
			0.22	2.64	1,400	1.25	44.1	13.7	0.055	25		

The numbers in ( ) represent ribless models.
Note 1: The top row gives characteristics shown when the emperature is 40℃, while the bottom row gives characteristics shown when the temperature is 30℃.
Note 2: The noise levels are calculated by converting measurements taken at 30cm to those measured at 1m.

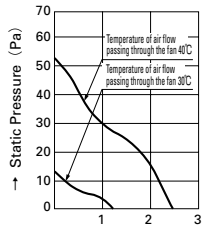
38mm thick with a built-in thermistor

Specifications

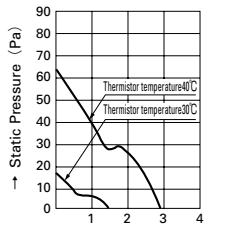
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109R1212T1H122(123)	12	10.2～13.8	0.48	5.75	2,600	2.9	102.4	64.7	0.260	39	−10 ～+60	40,000
			0.23	2.76	1,300	1.4	49.4	16.2	0.065	24		

The numbers in ( ) represent ribless models.
Note 1: The top row gives characteristics shown when the emperature is 40℃, while the bottom row gives characteristics shown when the temperature is 30℃.
Note 2: The noise levels are calculated by converting measurements taken at 30cm to those measured at 1m.

Air Flow and Static Pressure Characteristics

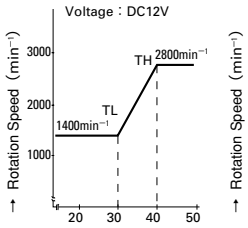


109R1212T1H12(123)

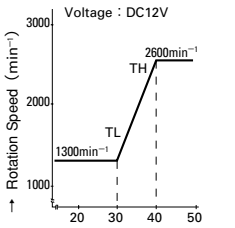


109R1212T1H12(123)

Typical characteristics of temperature of air flowing through the fan versus rotation speed

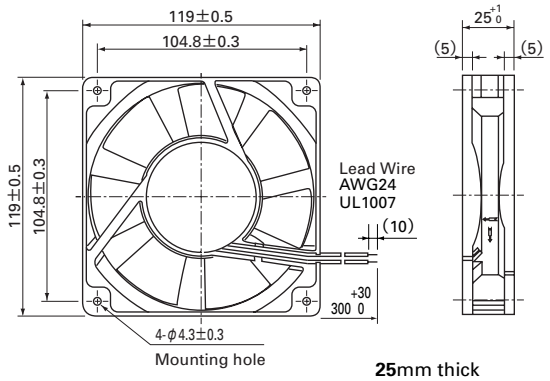


109R1212T1H12(123)

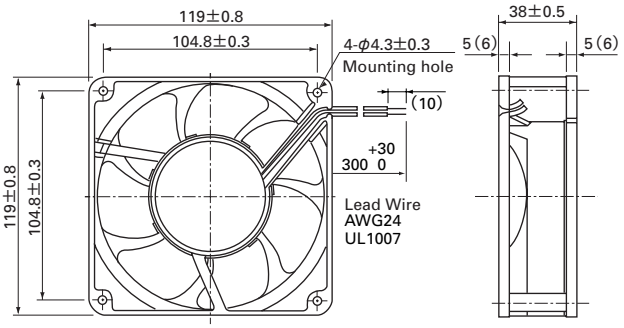


109R1212T1H12(123)

Dimensions (unit : mm)

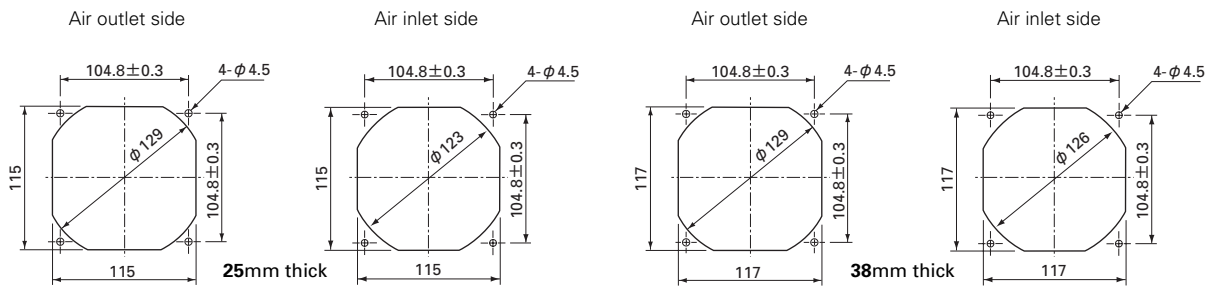


25mm thick



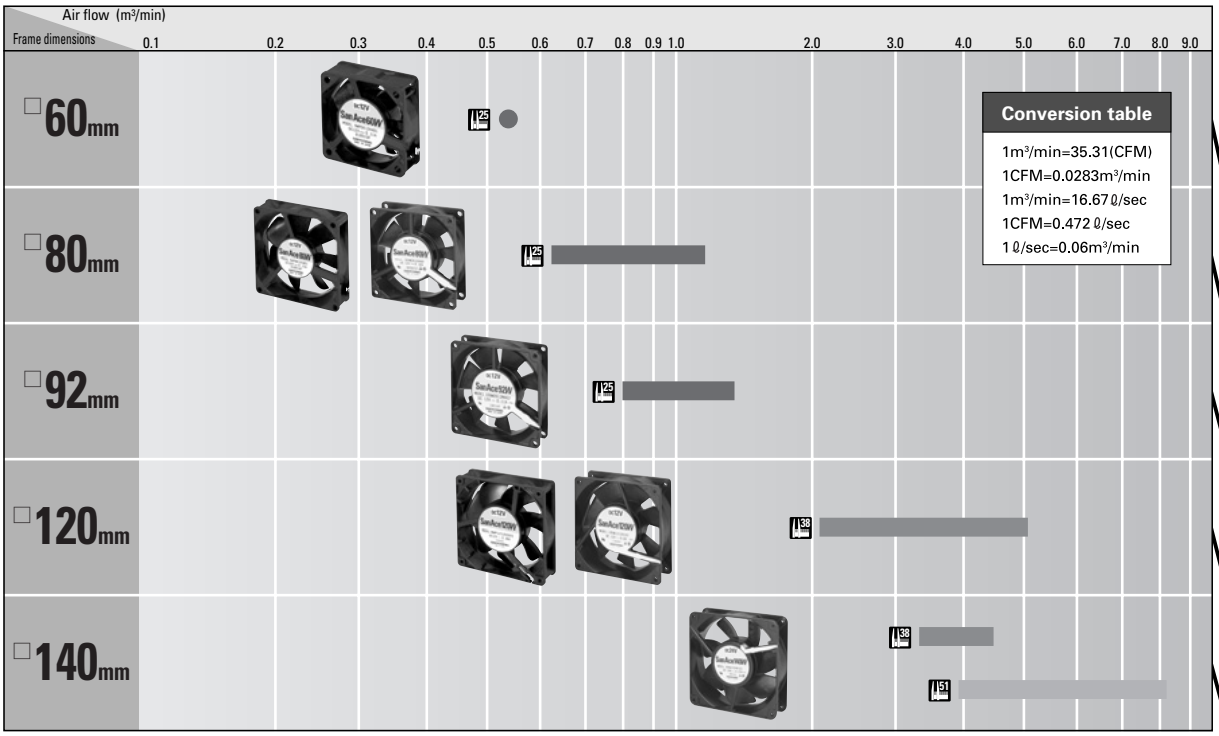
38mm thick

Reference dimension of mounting holes and vent opening (unit : mm)



DC FAN Splash Proof Fans

Domain diagram



60mm
80mm
92mm
120mm
140mm

"IP XX" Protection Grade

■ IP code is laid down in "Degrees of protection provided by enclosures (IP Code) " on JIS C 0920 and IEC 60529.

■IP code is defined as "A coding system to indicate the degree of protection provided by an enclosure against access to hazardous parts, ingress of solid foreign objects, ingress of water and to give additional information in connection with such a protection"

■Regarding IP code, the first numeral indicates the degree of protection against access to hazardous parts and ingress of solid foreign objects. The second numeral indicates the degree of protection against the ingress of water.

IP X X

4:Protected against splashing water
(Water splashed against the enclosure form any direction shall have no harmful effects)

5:Protected against water jets
(Water projected in jets against the enclosure form any direction shall have no harmful effects)

5:Dust-Protected
(Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety.)

First characteristics

Degree	Type	Description
0	No protected device	Rotating device without special protection.
1	Semi-protected device	Rotating device with protection against solid objects of 50mm or larger
2	Protected device	Rotating device with protection against solid objects of 12mm or larger
3	Shielded device	Rotating device with protection against solid objects of 2.5mm or larger
4	Totally shielded device	Rotating device with protection against solid objects of 1mm or larger
5	Dust resistant device	Rotating device with protection against harmful dust ingress (dust protected)
6	Dust-proof device	Rotating device with totally protection against any dust ingress (dust tight)

Second characteristics

Degree	Type	Description
0	No protected device	Rotating device without special protection.
1	Drip-proof device (Grade I)	Rotating device with protection against falling water from the vertical
2	Drip-proof device (Grade II)	Rotating device with protection against falling water to a maximum of 15° from the vertical
3	Rain-proof device	Rotating device with protection against rain to a maximum of 60° from the vertical
4	Splash-proof device	Rotating device with protection against water sprays from any direction.
5	Jet-proof device	Rotating device with protection against water jets from any direction.
6	Water resistant device	Rotating device with protection against powerful water jets from any direction and no water ingress inside of the device.
7	Water immersion-proof device	Rotating device with protection against the effects of temporary immersion in water under specific test condition.
8	Submergence-proof device	Rotating device with protection against the effects of permanent immersion in water of specific water pressure.

Splash Proof Fan □60mm

San Ace 60W

"San Ace 60W" WP type

General specifications IP55 (Dust resistant device with protection against water jets)

Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····110g

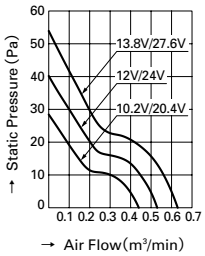
25mm thick

Specifications

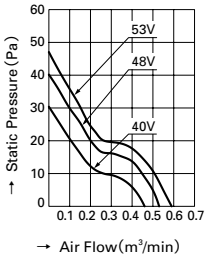
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WP0612H402(4021)	12	10.2～13.8	0.11	1.32	3,800	0.53	18.7	40.2	0.161	28	−10 ～+70	60,000
9WP0624H402(4021)	24	20.4～27.6	0.06	1.44	3,800	0.53	18.7	40.2	0.161	28		
9WP0648H402(4021)	48	40 ～53	0.04	1.92	3,800	0.53	18.7	40.2	0.161	28		

The numbers in ( ) represent ribless models.

Air Flow and Static Pressure Characteristics

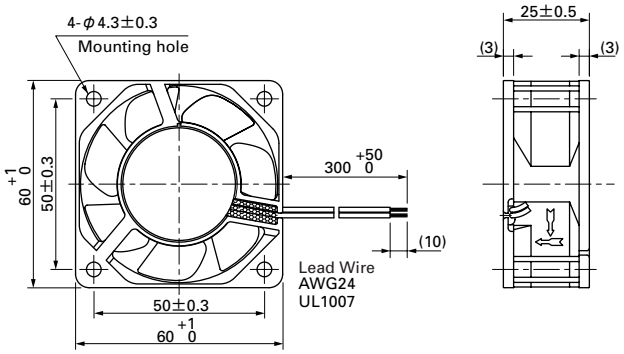


9WP0612H402(4021)
9WP0624H402(4021)



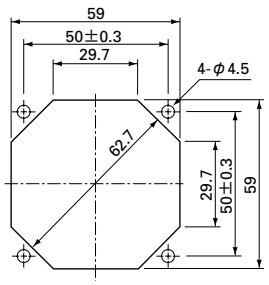
9WP0648H402(4021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Splash Proof Fan □80mm

San Ace 80W

"San Ace 80W" W type

General specifications
IP55 (Dust resistant device with protection against water jets)

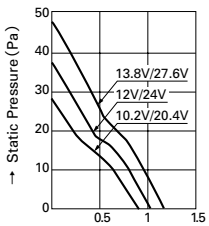
Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H, F speeds ⊕red,⊖black
M, L speeds ⊕red,⊖black or blue
Mass ·····170g

25mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109W0812H402-U	12	10.2～13.8	0.18	2.16	3,000	1.06	37.4	39.2	0.157	32	−10 ～+70	100,000
109W0812F402-U			0.14	1.68	2,700	0.93	32.8	32.3	0.130	29		
109W0812M402-U			0.10	1.20	2,400	0.83	29.3	26.5	0.106	26		
109W0812L402-U			0.08	0.96	1,900	0.63	22.2	16.7	0.067	22		
109W0824H402-U	24	20.4～27.6	0.09	2.16	3,000	1.06	37.4	39.2	0.157	32		
109W0824F402-U			0.08	1.92	2,700	0.93	32.8	32.3	0.130	29		
109W0824M402-U			0.07	1.68	2,400	0.83	29.3	26.5	0.106	26		
109W0824L402-U			0.05	1.20	1,900	0.63	22.2	16.7	0.067	22		
109W0848H402-U	48	40.8～55.2	0.06	2.88	3,150	1.1	38.8	43.1	0.173	34		

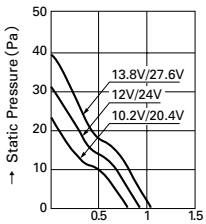
Air Flow and Static Pressure Characteristics

H speed



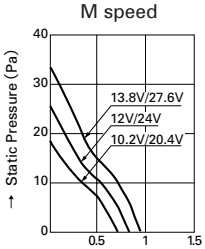
109W0812H402-U
109W0824H402-U

F speed



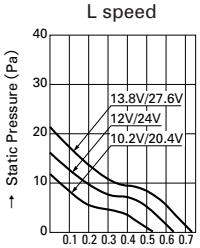
109W0812F402-U
109W0824F402-U

M speed



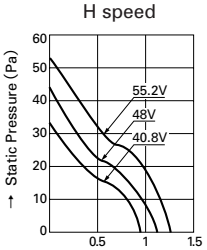
109W0812M402-U
109W0824M402-U

L speed



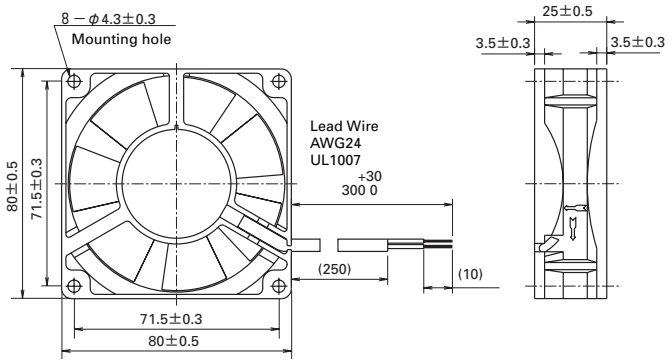
109W0812L402-U
109W0824L402-U

H speed



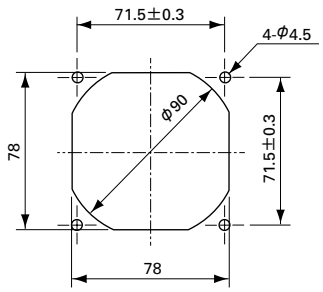
109W0848H402-U

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Splash Proof Fan □80mm

San Ace 80W

"San Ace 80W" WP type

General specifications IP55 (Dust resistant device with protection against water jets)

Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····130g

25mm thick

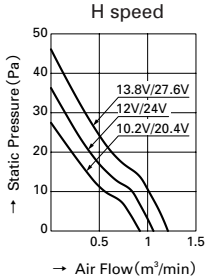
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WP0812H402 (4021)	12	10.2～13.8	0.13	1.56	2,900	1.03	36.4	35.3	0.142	29	−10 ～+70	60,000
9WP0824H402 (4021)	24	20.4～27.6	0.07	1.68	2,900	1.03	36.4	35.3	0.142	29		
9WP0848S402 (4021)	48	40.8～55.2	0.06	2.88	3,400	1.20	42.4	48.0	0.193	34		40,000

The numbers in ( ) represent ribless models.

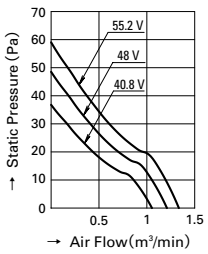
Air Flow and Static Pressure Characteristics

H speed



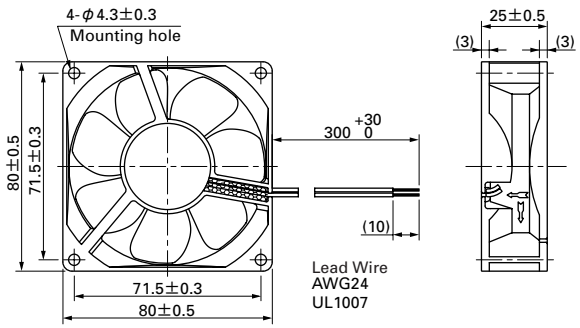
9WP0812H402(4021)
9WP0824H402(4021)

S speed



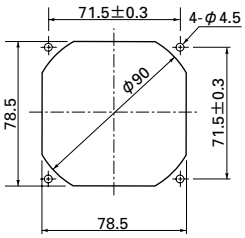
9WP0848S402(4021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Splash Proof Fan □80mm

San Ace 80WS

General specifications
IP54 (Dust resistant device with protection against water spray)

Material ·····Frame, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H, F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····120g

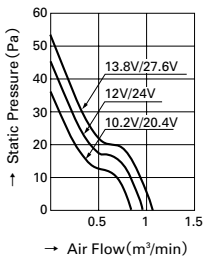
25mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WS0812H402(4021)	12	10.2～13.8	0.16	1.92	3,100	0.94	33.2	45.1	0.181	32	−10 ～+70	40,000
9WS0812F402(4021)			0.13	1.56	2,700	0.83	29.3	34.3	0.138	28		
9WS0812M402(4021)			0.1	1.2	2,200	0.65	23.0	23.5	0.094	23		
9WS0824H402(4021)	24	20.4～27.6	0.09	2.16	3,100	0.94	33.2	45.1	0.181	32		
9WS0824F402(4021)			0.07	1.68	2,700	0.83	29.3	34.3	0.138	28		
9WS0824M402(4021)			0.05	1.2	2,200	0.65	23.0	23.5	0.094	23		

The numbers in ( ) represent ribless models.

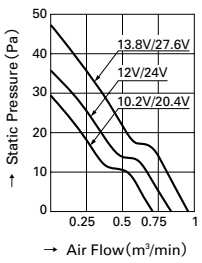
Air Flow and Static Pressure Characteristics

H speed



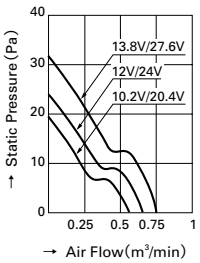
9WS0812H402(4021)
9WS0824H402(4021)

F speed



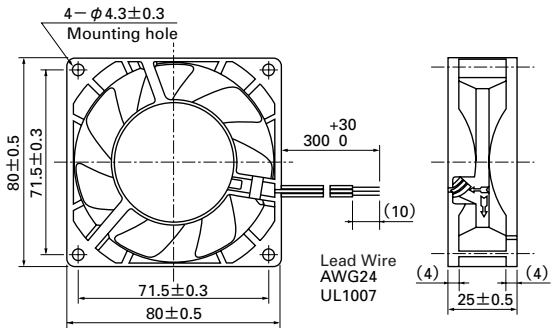
9WS0812F402(4021)
9WS0824F402(4021)

M speed



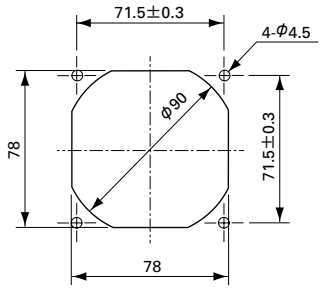
9WS0812M402(4021)
9WS0824M402(4021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Splash Proof Fan □92mm

San Ace 92W

"San Ace 92W" W type

General specifications
IP55 (Dust resistant device with protection against water jets)

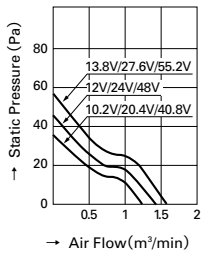
Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H, F speeds ⊕red,⊖black
M, L speeds ⊕red,⊖black or blue
Mass ·····190g

25mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109W0912H402-U	12	10.2～13.8	0.21	2.52	2,850	1.38	48.7	45.1	0.181	33	−10 ～+70	100,000
109W0912F402-U			0.14	1.68	2,450	1.18	41.7	32.3	0.130	30		
109W0912M402-U			0.11	1.32	2,100	1.01	35.7	23.5	0.094	27		
109W0912L402-U			0.08	0.96	1,700	0.80	28.2	16.7	0.067	23		
109W0924H402-U	24	20.4～27.6	0.12	2.88	2,850	1.38	48.7	45.1	0.181	33		
109W0924F402-U			0.08	1.92	2,450	1.18	41.7	32.3	0.130	30		
109W0924M402-U			0.06	1.44	2,100	1.01	35.7	23.5	0.094	27		
109W0924L402-U			0.05	1.2	1,700	0.80	28.2	16.7	0.067	23		
109W0948H402-U	48	40.8～55.2	0.06	2.88	2,850	1.38	48.7	45.1	0.181	33		

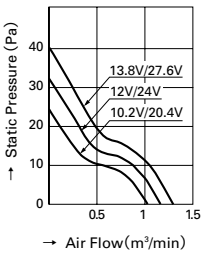
Air Flow and Static Pressure Characteristics

H speed



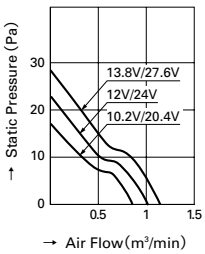
109W0912H402-U
109W0924H402-U
109W0948H402-U

F speed



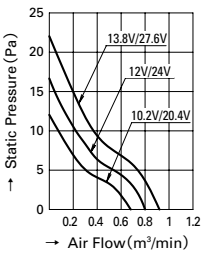
109W0912F402-U
109W0924F402-U

M speed



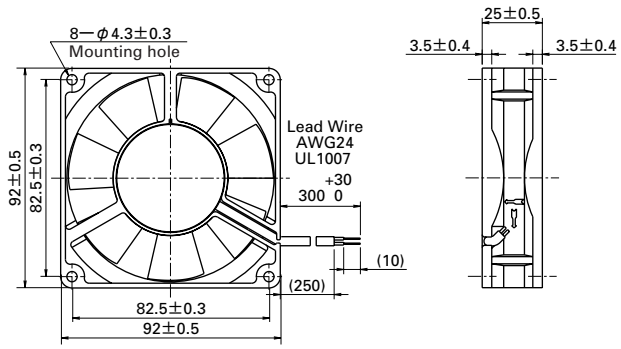
109W0912M402-U
109W0924M402-U

L speed

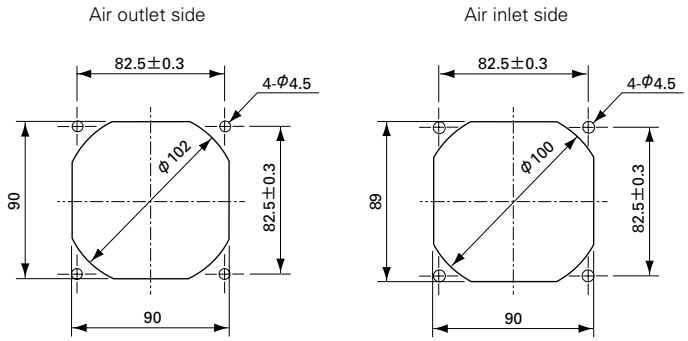


109W0912L402-U
109W0924L402-U

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)



Splash Proof Fan □92mm

San Ace 92WS

General specifications
IP54 (Dust resistant device with protection against water spray)

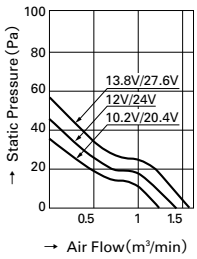
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H, F speeds ⊕red,⊖black
M, L speeds ⊕red,⊖black or blue
Mass ·····150g

25mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WS0912H402	12	10.2～13.8	0.17	2.04	2,850	1.38	48.7	45.1	0.181	33	−10 ～+70	40,000
9WS0912F402			0.13	1.56	2,450	1.18	41.7	32.3	0.130	30		
9WS0912M402			0.1	1.2	2,100	1.01	35.7	23.5	0.094	27		
9WS0912L402			0.06	0.72	1,700	0.8	28.2	16.7	0.067	23		
9WS0924H402	24	20.4～27.6	0.1	2.4	2,850	1.38	48.7	45.1	0.181	33		
9WS0924F402			0.07	1.68	2,450	1.18	41.7	32.3	0.130	30		
9WS0924M402			0.06	1.44	2,100	1.01	35.7	23.5	0.094	27		
9WS0924L402			0.05	1.2	1,700	0.8	28.2	16.7	0.067	23		

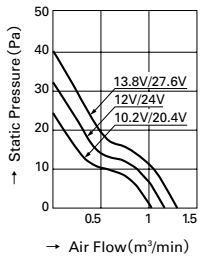
Air Flow and Static Pressure Characteristics

H speed



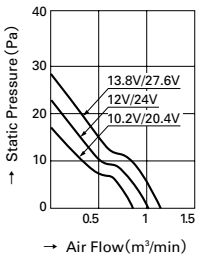
9WS0912H402
9WS0924H402

F speed



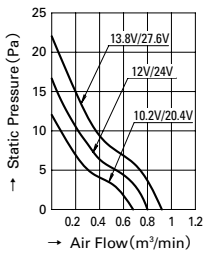
9WS0912F402
9WS0924F402

M speed



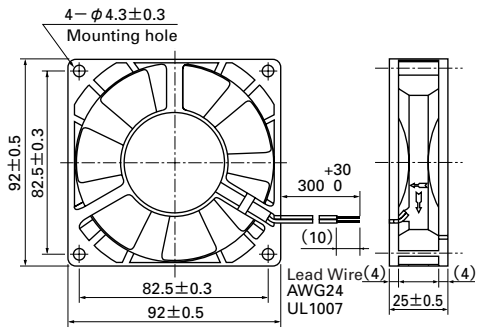
9WS0912M402
9WS0924M402

L speed



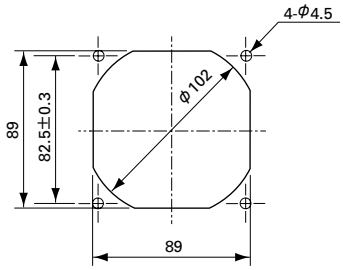
9WS0912L402
9WS0924L402

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Splash Proof Fan □120mm

San Ace 120W

"San Ace 120W" W type

General specifications
IP55 (Dust resistant device with protection against water jets)

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H speed ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····420g

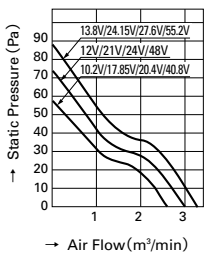
38mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109W1212H102-U	12	10.2～13.8	0.4	4.8	2,850	3.0	106.0	70.5	0.283	41	−10 ～+60	100,000
109W1212M102-U			0.22	2.64	2,150	2.25	79.4	41.1	0.165	34		
109W1221H102-U	21	17.8～24.2	0.24	5.04	2,850	3.0	106.0	70.5	0.283	41		
109W1224H102-U	24	20.4～27.6	0.21	5.04	2,850	3.0	106.0	70.5	0.283	41		
109W1224M102-U			0.1	2.4	2,150	2.25	79.4	41.1	0.165	34		
109W1248H102-U	48	40.8～55.2	0.12	5.76	2,850	3.0	106.0	70.5	0.283	41		
109W1248M102-U			0.06	2.88	2,150	2.25	79.4	41.1	0.165	34		

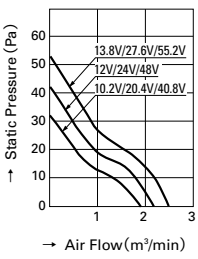
Air Flow and Static Pressure Characteristics

H speed



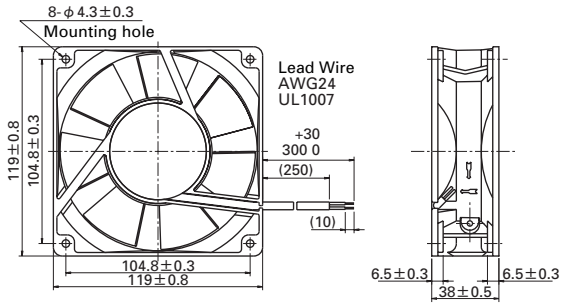
109W1212H102-U
109W1221H102-U
109W1224H102-U
109W1248H102-U

M speed



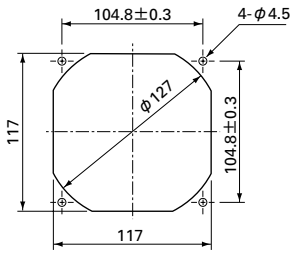
109W1212M102-U
109W1224M102-U
109W1248M102-U

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side · Air outlet side



Splash Proof Fan □120mm

San Ace 120W

"San Ace 120W" WP type

General specifications IP55 (Dust resistant device with protection against water jets)

Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····360g

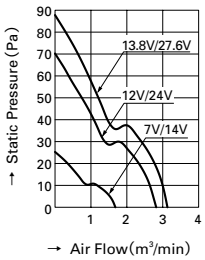
38mm thick

Specifications

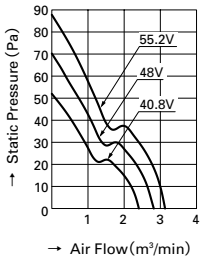
Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WP1212H102 (1021)	12	7 ～13.8	0.38	4.56	2,600	2.80	99	70.4	0.283	39	−10 ～+70	40,000
9WP1224H102 (1021)	24	14 ～27.6	0.22	5.28	2,600	2.80	99	70.4	0.283	39		
9WP1248H102 (1021)	48	40.8～55.2	0.11	5.28	2,600	2.80	99	70.4	0.283	39		

The numbers in ( ) represent ribless models.

Air Flow and Static Pressure Characteristics

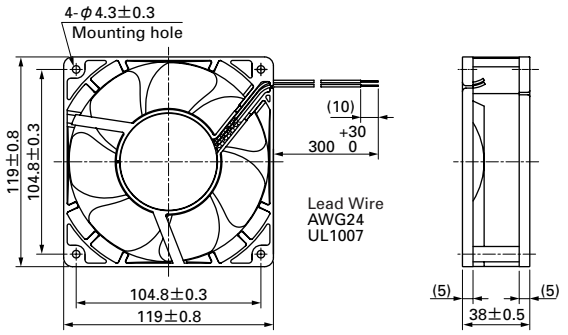


9WP1212H102(1021)
9WP1224H102(1021)

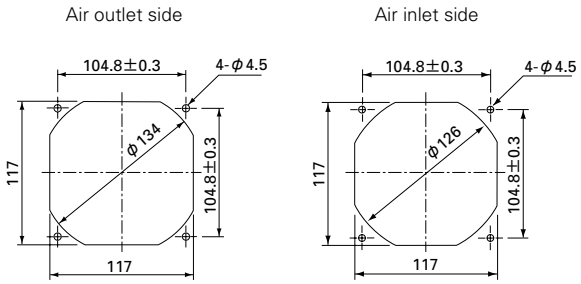


9WP1248H102(1021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)



Splash Proof Fan □120mm

San Ace 120W

"San Ace 120W" G type

General specifications
IP55 (Dust resistant device with protection against water jets)

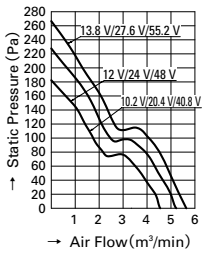
Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····J, G, E, H, F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····410g

38mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WG1212J102	12	10.2～13.8	1.90	22.8	4,800	5.10	180	230	0.924	57	−10～+70	60,000
9WG1212G102			0.98	11.76	3,600	3.88	137	135	0.542	49		80,000
9WG1212E102			0.61	7.32	3,100	3.34	118	100	0.402	46		
9WG1212H102		7 ～13.8	0.38	4.56	2,600	2.80	99	70.4	0.283	39		100,000
9WG1212F102			0.28	3.36	2,280	2.45	87	54.2	0.218	36		
9WG1212M102			0.21	2.52	1,950	2.10	74	39.6	0.159	32		
9WG1224J102	24	20.4～27.6	1.00	24	4,800	5.10	180	230	0.942	57		60,000
9WG1224G102			0.50	12	3,600	3.88	137	135	0.542	49		80,000
9WG1224E102			0.34	8.16	3,100	3.34	118	100	0.402	46		
9WG1224H102		14 ～27.6	0.22	5.28	2,600	2.80	99	70.4	0.283	39		100,000
9WG1224F102			0.16	3.84	2,280	2.45	87	54.2	0.218	36		
9WG1224M102			0.11	2.64	1,950	2.10	74	39.6	0.159	32		
9WG1248J102	48	40.8～55.2	0.51	24.48	4,800	5.10	180	230	0.924	57		60,000
9WG1248G102			0.25	12	3,600	3.88	137	135	0.542	49		80,000
9WG1248E102			0.17	8.16	3,100	3.34	118	100	0.402	46		
9WG1248H102			0.11	5.28	2,600	2.80	99	70.4	0.283	39		100,000
9WG1248F102			0.09	4.32	2,280	2.45	87	54.2	0.218	36		
9WG1248M102			0.07	3.36	1,950	2.10	74	39.6	0.159	32		

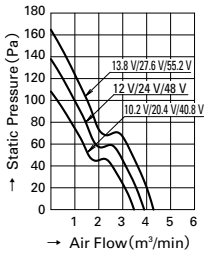
Air Flow and Static Pressure Characteristics

J speed



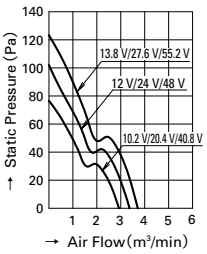
9WG1212J102
9WG1224J102
9WG1248J102

G speed



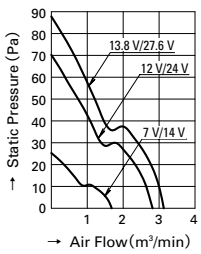
9WG1212G102
9WG1224G102
9WG1248G102

E speed



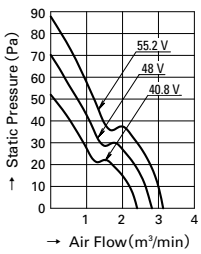
9WG1212E102
9WG1224E102
9WG1248E102

H speed



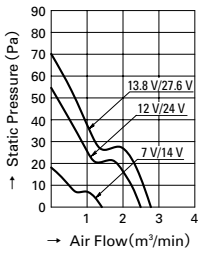
9WG1212H102
9WG1224H102

H speed



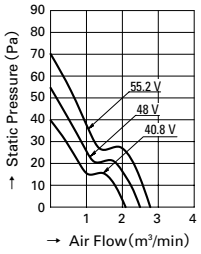
9WG1248H102

F speed



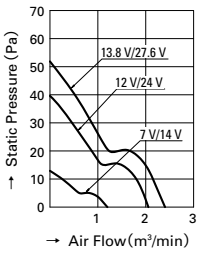
9WG1212F102
9WG1224F102

F speed



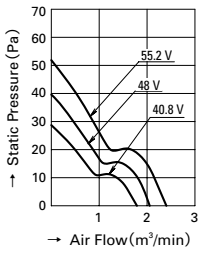
9WG1248F102

M speed



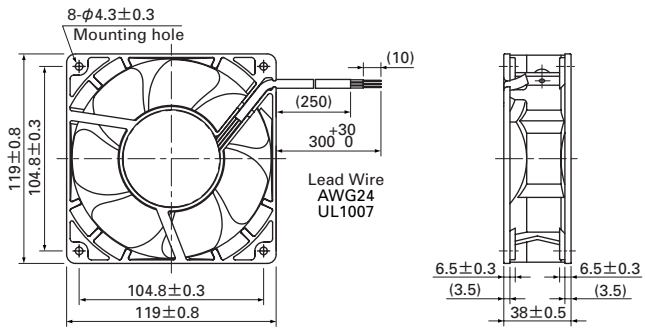
9WG1212M102
9WG1224M102

M speed



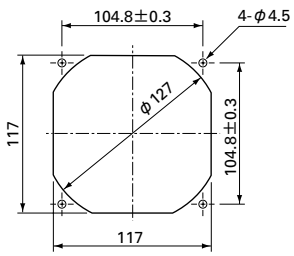
9WG1248M102

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Splash Proof Fan □120mm

San Ace 120WS

General specifications

IP54 (Dust resistant device with protection against water spray)

Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H speed ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····260g

38mm thick

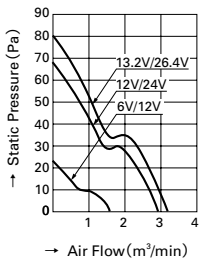
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WS1212H102(1021)	12	6 ～13.2	0.47	5.64	2,600	2.9	102.4	67.62	0.272	39	−10 ～+60	40,000
9WS1212M102(1021)		6 ～13.8	0.23	2.76	1,950	2.2	77.7	42.14	0.169	32	−10 ～+70	
9WS1224H102(1021)	24	12 ～26.4	0.23	5.52	2,600	2.9	102.4	67.62	0.272	39	−10 ～+60	
9WS1224M102(1021)		12 ～27.6	0.13	3.12	1,950	2.2	77.7	42.14	0.169	32	−10 ～+70	
9WS1248H102(1021)	48	40.8～52.8	0.13	6.24	2,600	2.9	102.4	67.62	0.272	39	−10 ～+60	
9WS1248M102(1021)		40.8～55.2	0.07	3.36	1,950	2.2	77.7	42.14	0.169	32	−10 ～+70	

The numbers in ( ) represent ribless models.

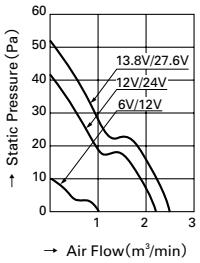
Air Flow and Static Pressure Characteristics

H speed



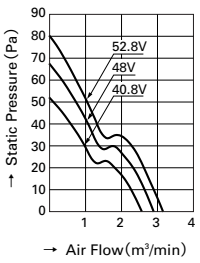
9WS1212H102(1021)
9WS1224H102(1021)

M speed



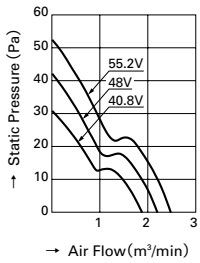
9WS1212M102(1021)
9WS1224M102(1021)

H speed



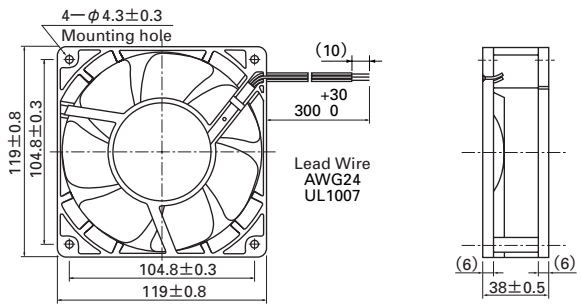
9WS1248H102(1021)

M speed



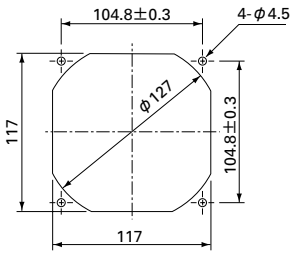
9WS1248M102(1021)

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Splash Proof Fan □140mm

San Ace 140W

"San Ace 140W" W type

General specifications
IP55 (Dust resistant device with protection against water jets)

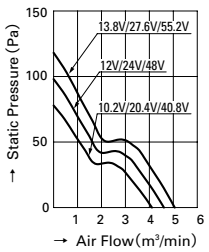
Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H, S speeds ⊕red,⊖black
·····M speed ⊕red,⊖black or blue
Mass ·····650g (38mm thick) 700g (51mm thick)

38mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109W1412H102-U	12	10.2～13.8	0.73	8.76	2,600	4.5	159	98	0.394	46	−10 ～+60	100,000
109W1412M102-U			0.3	3.6	1,900	3.3	117	52	0.209	38		
109W1424H102-U	24	20.4～27.6	0.37	8.88	2,600	4.5	159	98	0.394	46		
109W1424M102-U			0.16	3.84	1,900	3.3	117	52	0.209	38		
109W1448H102-U	48	40.8～55.2	0.2	9.6	2,600	4.5	159	98	0.394	46		
109W1448M102-U			0.09	4.32	1,900	3.3	117	52	0.209	38		

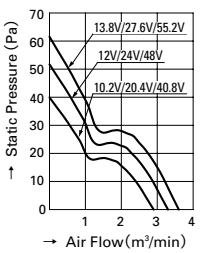
Air Flow and Static Pressure Characteristics

H speed



109W1412H102-U
109W1424H102-U
109W1448H102-U

M speed



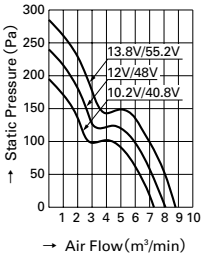
109W1412M102-U
109W1424M102-U
109W1448M102-U

51mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WB1412S502	12	10.2～13.8	2.7	32.4	4,200	8.1	286	240	0.964	57	−10 ～+70	60,000
9WB1412H502			1.25	15	3,100	5.9	208	130	0.522	49		100,000
9WB1412M502			0.46	5.52	2,050	3.9	138	63	0.253	39		
9WB1424H502	24	20.4～27.6	0.6	14.4	3,100	5.9	208	130	0.522	49		
9WB1424M502			0.22	5.28	2,050	3.9	138	63	0.253	39		
9WB1448S502	48	40.8～55.2	0.71	34.08	4,200	8.1	286	240	0.964	57		60,000
9WB1448H502			0.27	12.96	3,100	5.9	208	130	0.522	49		100,000

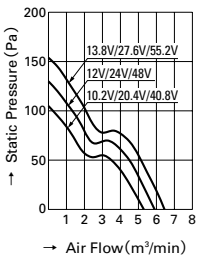
Air Flow and Static Pressure Characteristics

S speed



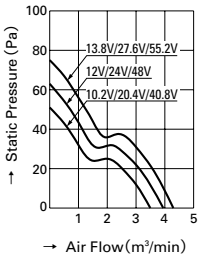
9WB1412S502
9WB1448S502

H speed



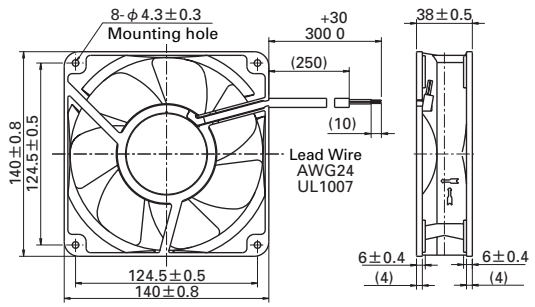
9WB1412H502
9WB1424H502
9WB1448H502

M speed

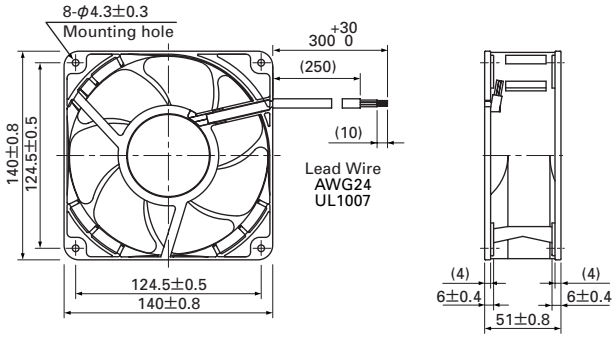


9WB1412M502
9WB1424M502

Dimensions (unit : mm)

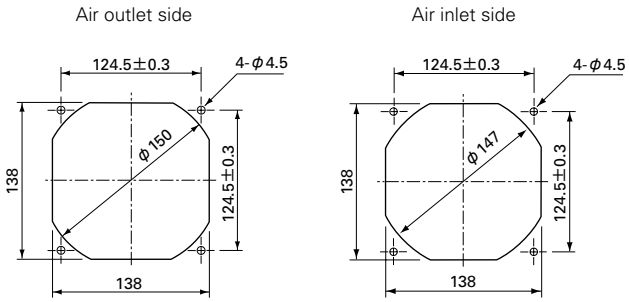


38mm thick



51mm thick

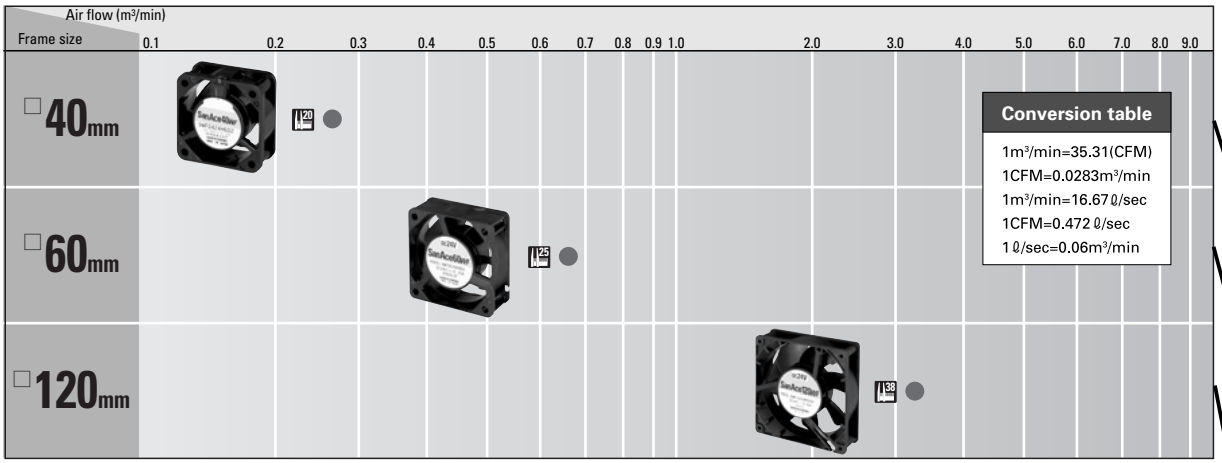
Reference dimension of mounting holes and vent opening (unit : mm)



DC FAN

Oil Proof Fans

Domain diagram



40mm

60mm

120mm

Oil Proof Fan

□40mm

San Ace 40WF

General specifications The product can be used in an oil mist environment*

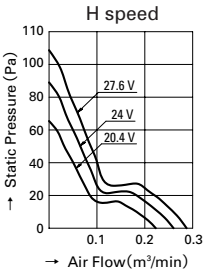
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····50g

20mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WF0424H602	24	20.4～27.6	0.11	2.64	13,100	0.26	9.2	90	0.361	42	−10 ～+70	40,000

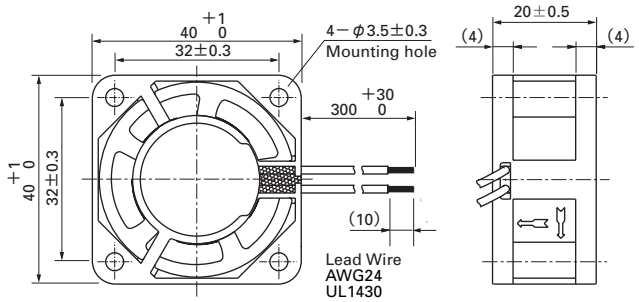
Air Flow and Static Pressure Characteristics



9WF0424H602

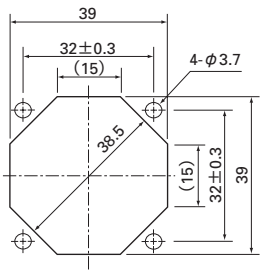
*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Oil Proof Fan □60mm

San Ace 60WF

General specifications The product can be used in an oil mist environment*

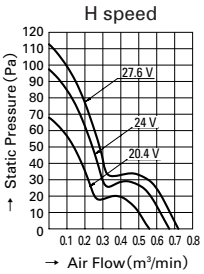
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····110g

25mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WF0624H402	24	20.4～27.6	15	3.6	6,500	0.67	23.6	97	0.390	41	−10 ～+70	40,000

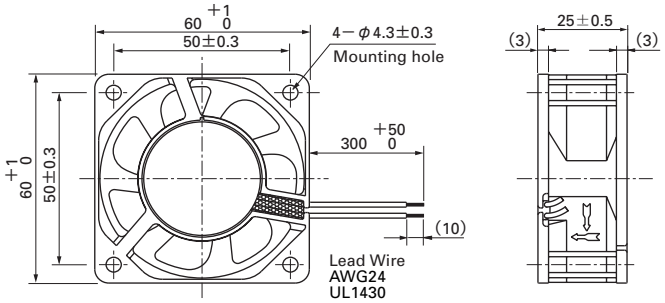
Air Flow and Static Pressure Characteristics



9WF0624H402

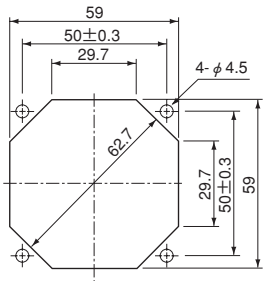
*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Oil Proof Fan □120mm

San Ace 120WF

General specifications　The product can be used in an oil mist environment*

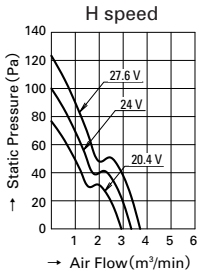
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····355g

38mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9WF1224H102	24	20.4～27.6	0.32	7.68	3,100	3.34	118	100	0.402	46	−10 ～+70	40,000

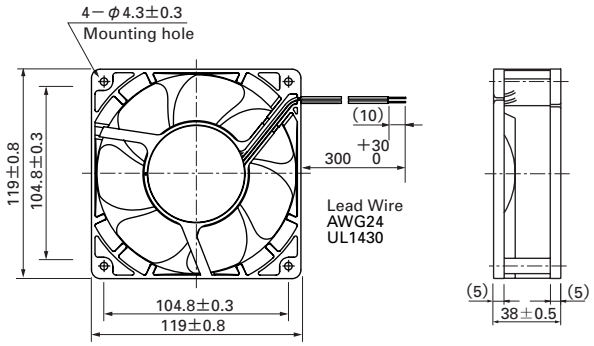
Air Flow and Static Pressure Characteristics



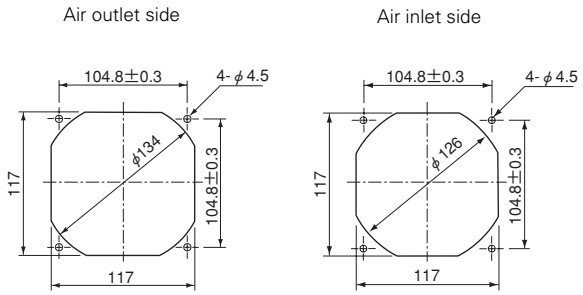
9WF1224H102

*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

Dimensions (unit : mm)

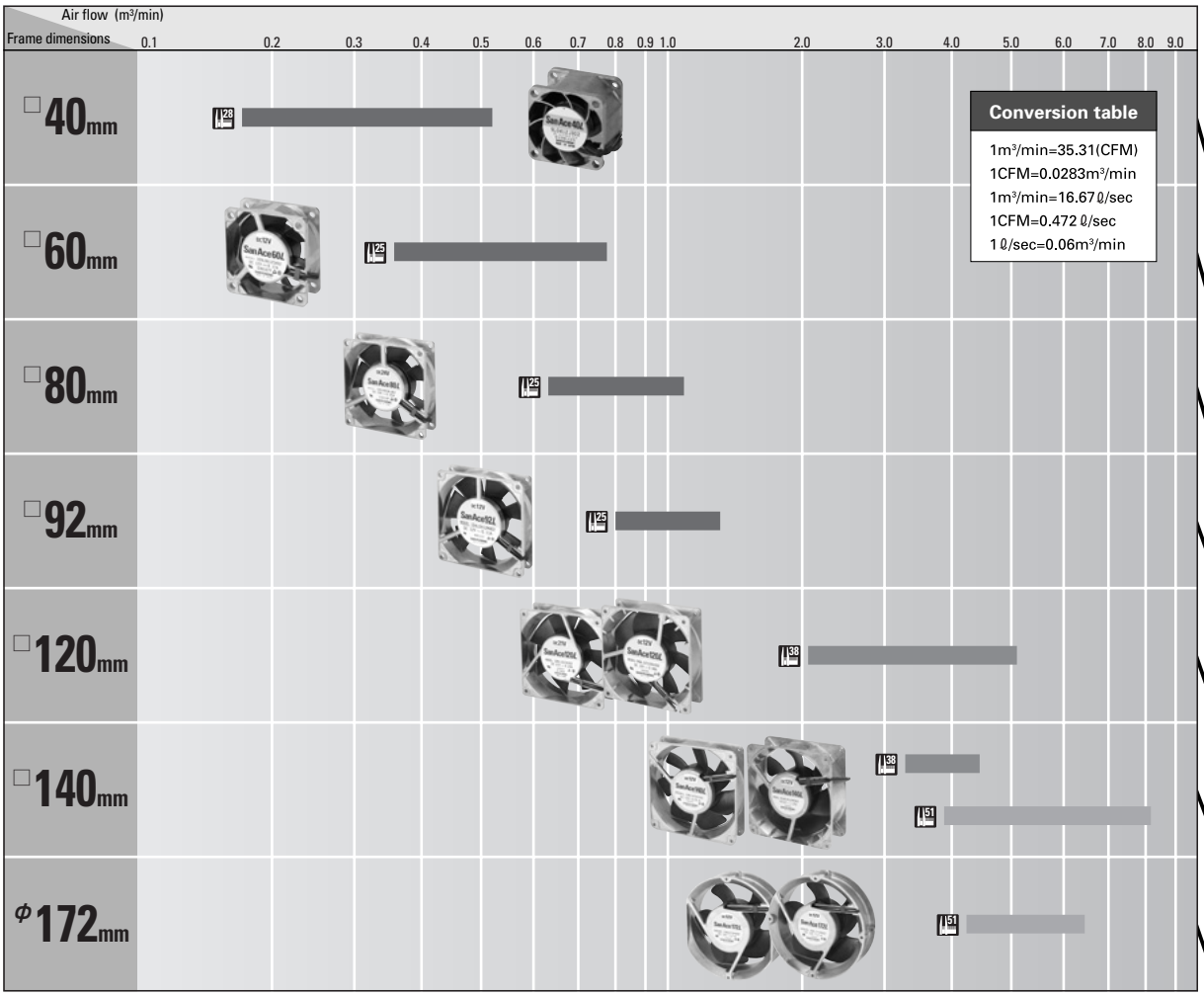


Reference dimension of mounting holes and vent opening (unit : mm)



DC FAN Long Life Fans

Domain diagram



Long Life Fan □40mm

San Ace 40L

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····55g

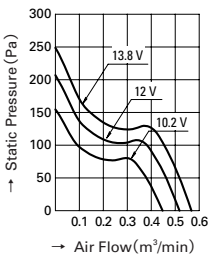
28mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9L0412J302	12	10.2～13.8	0.31	3.72	11,700	0.52	18.4	206	0.827	48	−10 ～+70	100,000
9L0412H302			0.15	1.80	8,400	0.37	13.1	106	0.426	40		
9L0412M302			0.045	0.54	4,000	0.16	5.65	24	0.096	19		

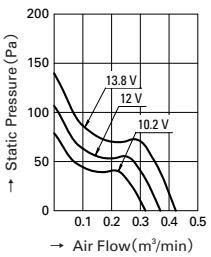
Air Flow and Static Pressure Characteristics

J speed



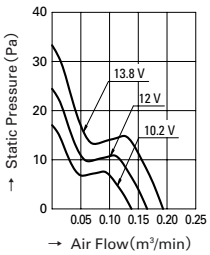
9L0412J302

H speed



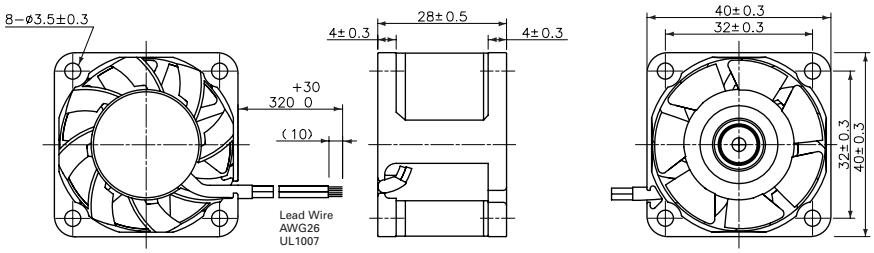
9L0412H302

M speed



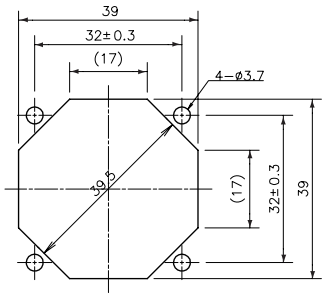
9L0412M302

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Long Life Fan □60mm

San Ace 60L

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····G, S, H, F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····100g

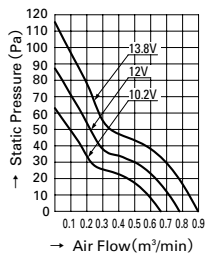
25mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109L0612G402	12	10.2～13.8	0.24	2.88	5,600	0.78	27.5	87.3	0.351	39	−10 ～+70	100,000
109L0612S402			0.17	2.04	4,600	0.65	23.0	57.3	0.230	33		
109L0612H402			0.11	1.32	3,800	0.53	18.7	40.2	0.161	28		
109L0612F402			0.09	1.08	3,200	0.44	15.5	29.4	0.118	24		
109L0612M402			0.06	0.72	2,600	0.36	12.7	19.6	0.079	20		
109L0624S402	24	20.4～27.6	0.08	1.92	4,600	0.65	23.0	57.3	0.230	33		
109L0624H402			0.06	1.44	3,800	0.53	18.7	40.2	0.161	28		
109L0624F402			0.05	1.20	3,200	0.44	15.5	29.4	0.118	24		
109L0624M402			0.04	0.96	2,600	0.36	12.7	19.6	0.079	20		
109L0648G401	48	40.8～55.2	0.07	3.36	5,600	0.78	27.6	87.2	0.350	39		
109L0648H402		40 ～53	0.04	1.92	3,800	0.53	18.7	40.2	0.161	28		

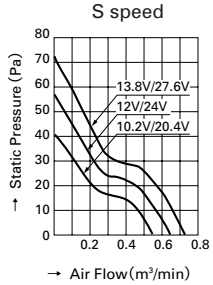
Air Flow and Static Pressure Characteristics

G speed



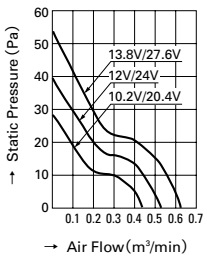
109L0612G402

S speed



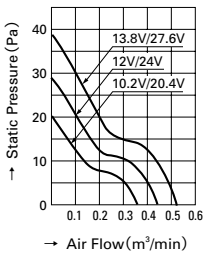
109L0612S402
109L0624S402

H speed



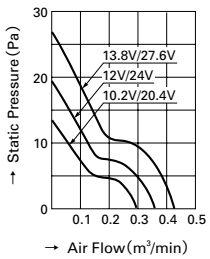
109L0612H402
109L0624H402

F speed



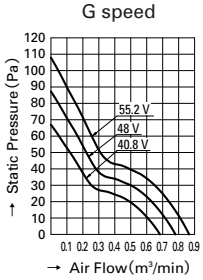
109L0612F402
109L0624F402

M speed



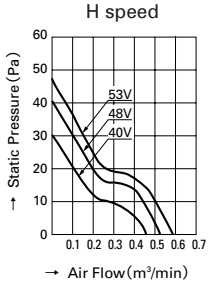
109L0612M402
109L0624M402

G speed



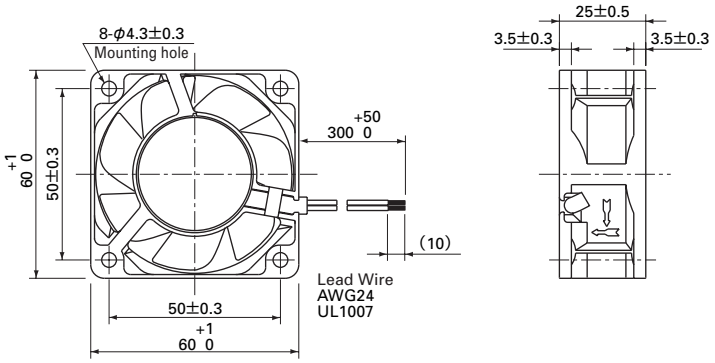
109L0648G401

H speed



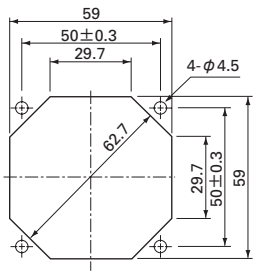
109L0648H402

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Long Life Fan □80mm

San Ace 80L

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····S, H, F speeds ⊕red,⊖black
M, L speeds ⊕red,⊖black or blue
Mass ·····150g

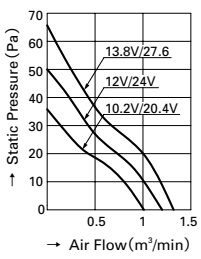
25mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109L0812S402	12	10.2～13.8	0.26	3.12	3,400	1.2	42.4	50	0.2	37	−10～+70	100,000
109L0812H402			0.18	2.16	3,000	1.06	37.4	39.2	0.157	32		
109L0812F402			0.14	1.68	2,700	0.93	32.8	32.3	0.130	29		
109L0812M402			0.1	1.2	2,400	0.83	29.3	26.5	0.106	26		
109L0812L402			0.08	0.96	1,900	0.63	22.2	16.7	0.067	22		
109L0824S402	24	20.4～27.6	0.11	2.64	3,400	1.2	42.4	50	0.2	37		
109L0824H402			0.09	2.16	3,000	1.06	37.4	39.2	0.157	32		
109L0824F402			0.08	1.92	2,700	0.93	32.8	32.3	0.130	29		
109L0824M402			0.07	1.68	2,400	0.83	29.3	26.5	0.106	26		
109L0824L402			0.05	1.2	1,900	0.63	22.2	16.7	0.067	22		
109L0848H402	48	40.8～55.2	0.06	2.88	3,150	1.1	38.8	43.1	0.173	34		

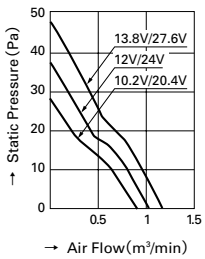
Air Flow and Static Pressure Characteristics

S speed



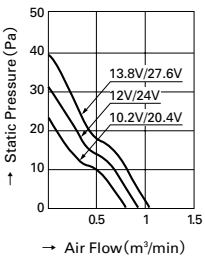
109L0812S402
109L0824S402

H speed



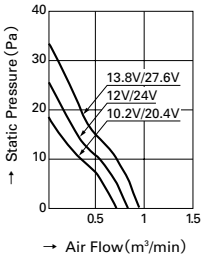
109L0812H402
109L0824H402

F speed



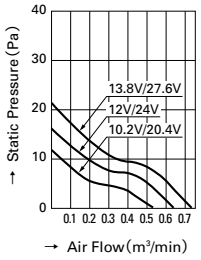
109L0812F402
109L0824F402

M speed



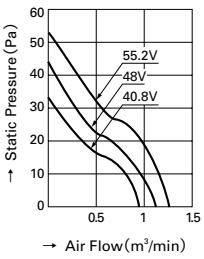
109L0812M402
109L0824M402

L speed



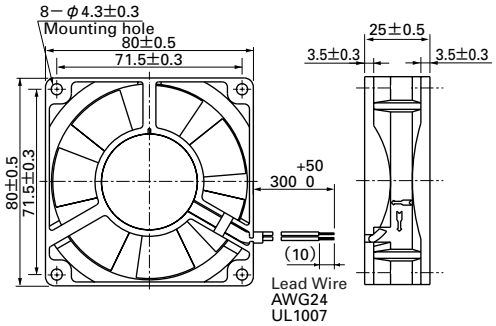
109L0812L402
109L0824L402

H speed

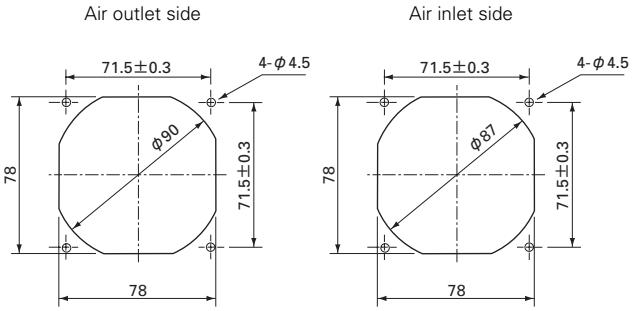


109L0848H402

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)



Long Life Fan □92mm

San Ace 92L

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····S, C, H, F speeds ⊕red,⊖black
M, L speeds ⊕red,⊖black or blue
Mass ·····170g

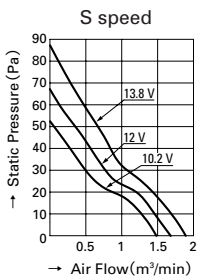
25mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109L0912S402	12	10.2～13.8	0.32	3.84	3,500	1.69	59.7	66.6	0.267	39	−10～+70	100,000
109L0912H402			0.21	2.52	2,850	1.38	48.7	45.1	0.181	33		
109L0912F402			0.14	1.68	2,450	1.18	41.7	32.3	0.130	30		
109L0912M402			0.11	1.32	2,100	1.01	35.7	23.5	0.094	27		
109L0912L402			0.08	0.96	1,700	0.80	28.2	16.7	0.067	23		
109L0924H402	24	20.4～27.6	0.12	2.88	2,850	1.38	48.7	45.1	0.181	33		
109L0924F402			0.08	1.92	2,450	1.18	41.7	32.3	0.130	30		
109L0924M402			0.06	1.44	2,100	1.01	35.7	23.5	0.094	27		
109L0924L402			0.05	1.2	1,700	0.80	28.2	16.7	0.067	23		
109L0948C402	48	43 ～53	0.1	4.8	3,400	1.65	58.3	64.2	0.258	38		80,000
109L0948H402		40.8～55.2	0.06	2.88	2,850	1.38	48.7	45.1	0.181	33		100,000

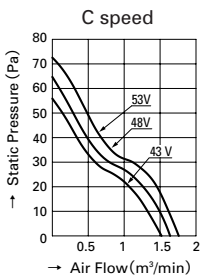
Air Flow and Static Pressure Characteristics

S speed



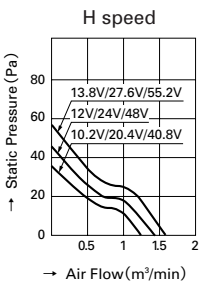
109L0912S402

C speed



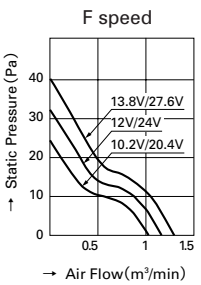
109L0948C402

H speed



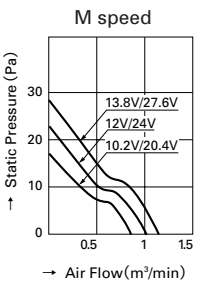
109L0912H402
109L0924H402
109L0948H402

F speed



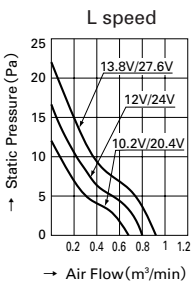
109L0912F402
109L0924F402

M speed



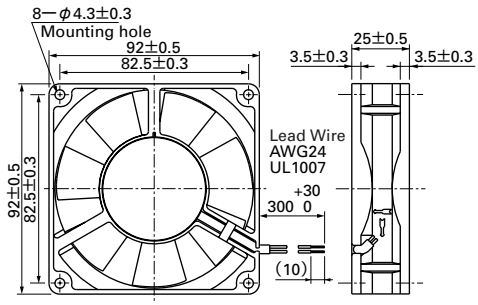
109L0912M402
109L0924M402

L speed



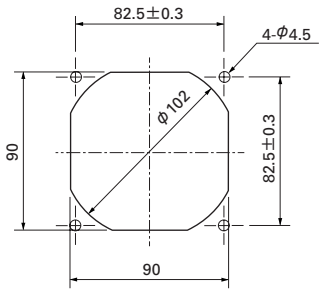
109L0912L402
109L0924L402

Dimensions (unit : mm)

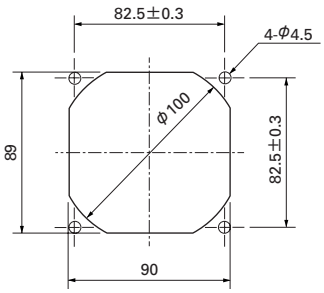


Reference dimension of mounting holes and vent opening (unit : mm)

Air outlet side



Air inlet side



Long Life Fan □120mm

San Ace 120L

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H speed ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····320g (Standard type), 370g (Low noise type)

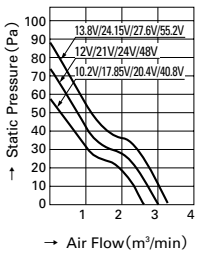
38mm thick (Standard type)

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109L1212H102	12	10.2～13.8	0.4	4.8	2,850	3.0	106.0	70.5	0.283	41	−10 ～+70	200,000
109L1212M102			0.22	2.64	2,150	2.25	79.4	41.1	0.165	34		
109L1221H102	21	17.8～24.2	0.24	5.04	2,850	3.0	106.0	70.5	0.283	41		
109L1224H102	24	20.4～27.6	0.21	5.04	2,850	3.0	106.0	70.5	0.283	41		
109L1224M102			0.1	2.4	2,150	2.25	79.4	41.1	0.165	34		
109L1248H102	48	40.8～55.2	0.12	5.76	2,850	3.0	106.0	70.5	0.283	41		
109L1248M102			0.06	2.88	2,150	2.25	79.4	41.1	0.165	34		

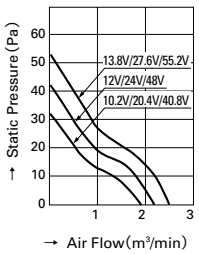
Air Flow and Static Pressure Characteristics

H speed



109L1212H102
109L1221H102
109L1224H102
109L1248H102

M speed



109L1212M102
109L1224M102
109L1248M102

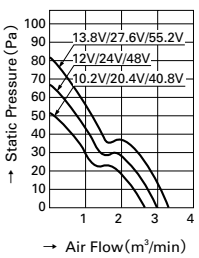
38mm thick (Low noise type)

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9LB1212H102	12	10.2～13.8	0.39	4.68	2,600	2.9	102.4	67.62	0.272	39	−10 ～+70	200,000
9LB1212M102			0.22	2.64	2,000	2.2	77.7	42.14	0.169	32		
9LB1224H102	24	20.4～27.6	0.19	4.56	2,600	2.9	102.4	67.62	0.272	39		
9LB1224M102			0.11	2.64	2,000	2.2	77.7	42.14	0.169	32		
9LB1248H102	48	40.8～55.2	0.11	5.28	2,600	2.9	102.4	67.62	0.272	39		
9LB1248M102			0.06	2.88	2,000	2.2	77.7	42.14	0.169	32		

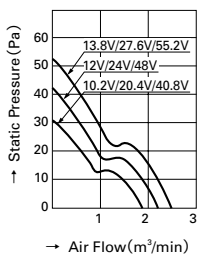
Air Flow and Static Pressure Characteristics

H speed



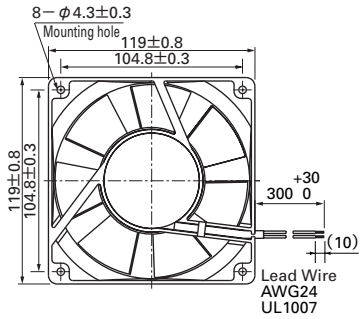
9LB1212H102
9LB1224H102
9LB1248H102

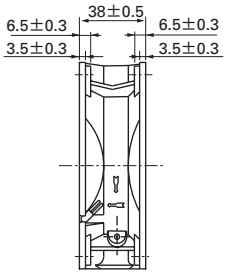
M speed



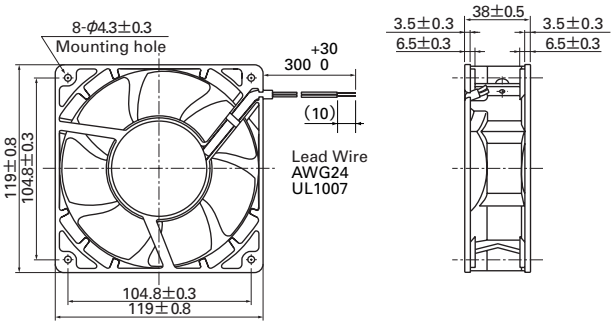
9LB1212M102
9LB1224M102
9LB1248M102

Dimensions (unit : mm)





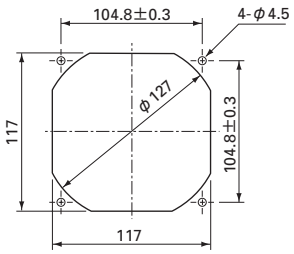
Standard type



Low noise type

Reference dimension of mounting holes and vent opening (unit : mm)

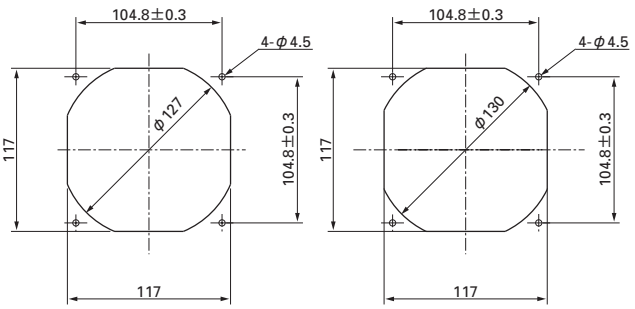
Air inlet side · Air outlet side



Standard type

Air inlet side

Air outlet side



Low noise type

Long Life Fan □120mm

San Ace 120L

"San Ace 120L" G Type

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····J, G, E, H, F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····370g

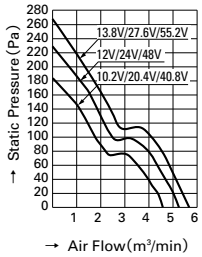
38mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9GL1212J102	12	10.2～13.8	1.9	22.8	4,800	5.10	180	230	0.924	57	−10～+70	60,000
9GL1212G102			0.98	11.8	3,600	3.88	137	135	0.542	49		80,000
9GL1212E102			0.61	7.32	3,100	3.34	118	100	0.402	46		
9GL1212H102		7 ～13.8	0.38	4.56	2,600	2.80	99	70.4	0.283	39		100,000
9GL1212F102			0.28	3.36	2,280	2.45	87	54.2	0.218	36		
9GL1212M102			0.21	2.52	1,950	2.10	74	39.6	0.159	32		
9GL1224J102	24	20.4～27.6	1.0	24.0	4,800	5.10	180	230	0.924	57		60,000
9GL1224G102			0.50	12.0	3,600	3.88	137	135	0.542	49		80,000
9GL1224E102			0.34	8.16	3,100	3.34	118	100	0.402	46		
9GL1224H102		14 ～27.6	0.22	5.28	2,600	2.80	99	70.4	0.283	39		100,000
9GL1224F102			0.16	3.84	2,280	2.45	87	54.2	0.218	36		
9GL1224M102			0.11	2.64	1,950	2.10	74	39.6	0.159	32		
9GL1248J102	48	40.8～55.2	0.51	24.5	4,800	5.10	180	230	0.924	57		60,000
9GL1248G102			0.25	12.0	3,600	3.88	137	135	0.542	49		80,000
9GL1248E102			0.17	8.16	3,100	3.34	118	100	0.402	46		
9GL1248H102			0.11	5.28	2,600	2.80	99	70.4	0.283	39		100,000
9GL1248F102			0.09	4.32	2,280	2.45	87	54.2	0.218	36		
9GL1248M102			0.07	3.36	1,950	2.10	74	39.6	0.159	32		

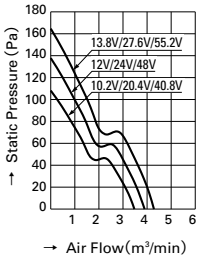
Air Flow and Static Pressure Characteristics

J speed



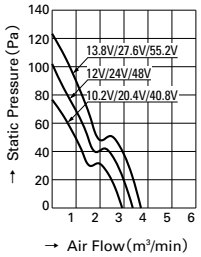
9GL1212J102
9GL1224J102
9GL1248J102

G speed



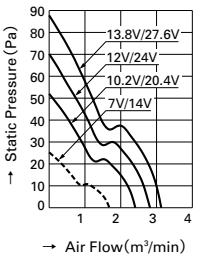
9GL1212G102
9GL1224G102
9GL1248G102

E speed



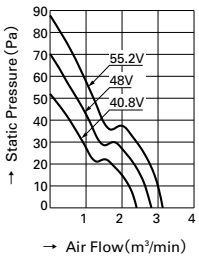
9GL1212E102
9GL1224E102
9GL1248E102

H speed



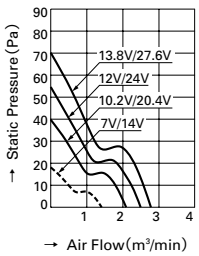
9GL1212H102
9GL1224H102

H speed



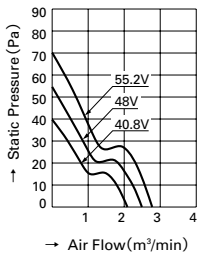
9GL1248H102

F speed



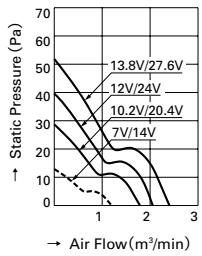
9GL1212F102
9GL1224F102

F speed



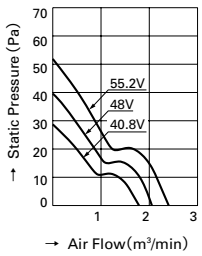
9GL1248F102

M speed



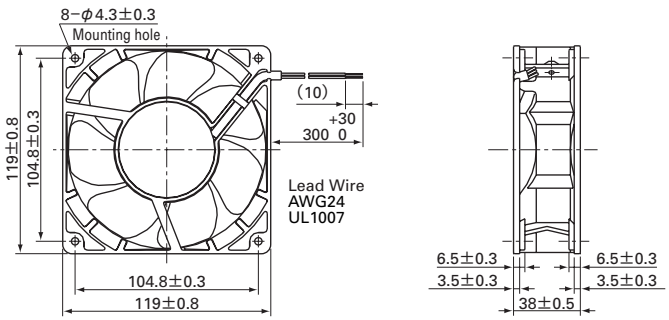
9GL1212M102
9GL1224M102

M speed



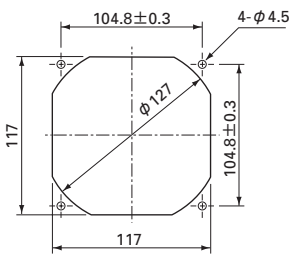
9GL1248M102

Dimensions (unit : mm)

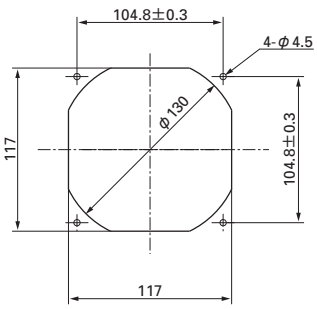


Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side



Air outlet side



Long Life Fan □140mm

San Ace 140L

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····S, H speeds ⊕red,⊖black
·····M speed ⊕red,⊖black or blue
Mass ·····600g(38mm thick) ,610g(51mm thick)

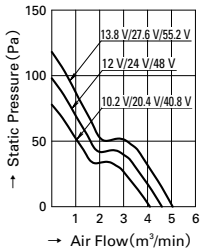
38mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109L1412H102	12	10.2～13.8	0.73	8.76	2,600	4.5	159	98	0.394	46	−10 ～+70	100,000
109L1412M102			0.3	3.6	1,900	3.3	117	52	0.209	38		
109L1424H102	24	20.4～27.6	0.37	8.88	2,600	4.5	159	98	0.394	46		
109L1424M102			0.16	3.84	1,900	3.3	117	52	0.209	38		
109L1448H102	48	40.8～55.2	0.2	9.6	2,600	4.5	159	98	0.394	46		
109L1448M102			0.09	4.32	1,900	3.3	117	52	0.209	38		

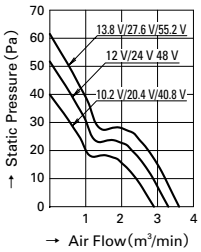
Air Flow and Static Pressure Characteristics

H speed



109L1412H102
109L1424H102
109L1448H102

M speed



109L1412M102
109L1424M102
109L1448M102

51mm thick

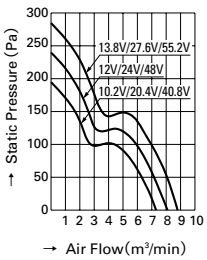
ECO PRODUCTS

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9LB1412S502	12	10.2～13.8	2.7	32.4	4,200	8.1	286	240	0.964	57	−10 ～+70	60,000
9LB1412H502			1.25	15.0	3,100	5.9	208	130	0.522	49		100,000
9LB1412M502			0.46	5.5	2,050	3.9	138	63	0.253	39		
9LB1424S502	24	20.4～27.6	1.38	33.1	4,200	8.1	286	240	0.964	57		60,000
9LB1424H502			0.60	14.4	3,100	5.9	208	130	0.522	49		100,000
9LB1424M502			0.22	5.3	2,050	3.9	138	63	0.253	39		
9LB1448S502	48	40.8～55.2	0.71	34.1	4,200	8.1	286	240	0.964	57		60,000
9LB1448H502			0.27	13.0	3,100	5.9	208	130	0.522	49		100,000
9LB1448M502			0.12	5.8	2,050	3.9	138	63	0.253	39		

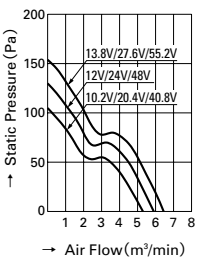
Air Flow and Static Pressure Characteristics

S speed



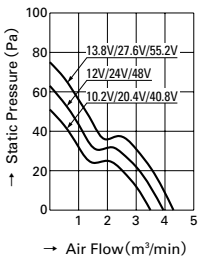
9LB1412S502
9LB1424S502
9LB1448S502

H speed



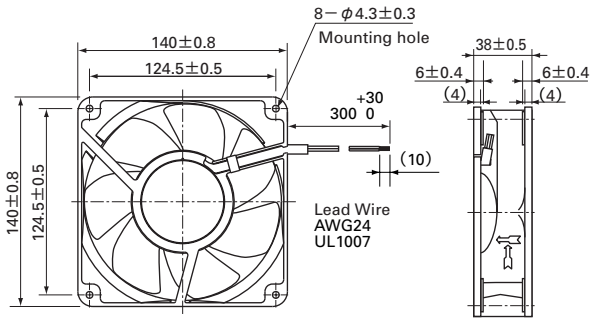
9LB1412H502
9LB1424H502
9LB1448H502

M speed

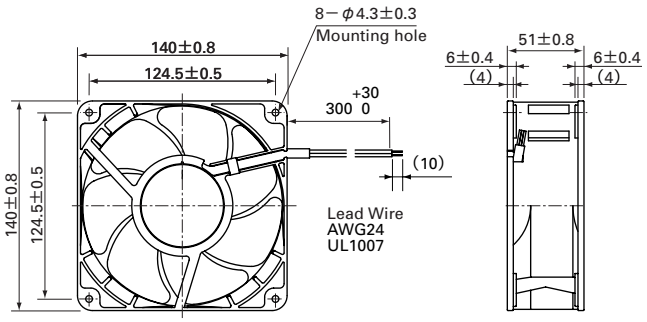


9LB1412M502
9LB1424M502
9LB1448M502

Dimensions (unit : mm)

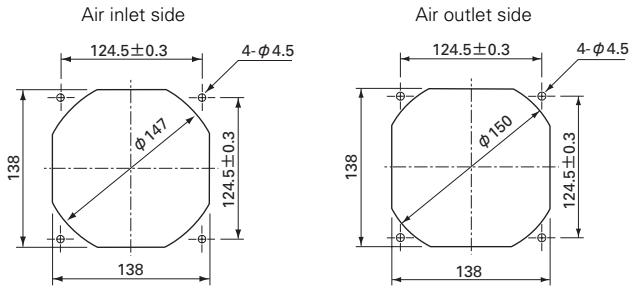


38mm thick

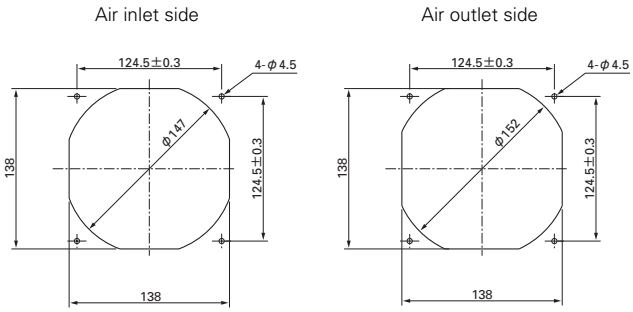


51mm thick

Reference dimension of mounting holes and vent opening (unit : mm)



38mm thick



51mm thick

Long Life Fan ø172mm

San Ace 172L

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H speed ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····760g

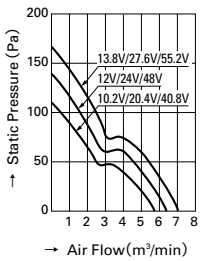
51mm thick (Sidecut type)

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109L5712H502	12	10.2～13.8	1.2	14.4	3,050	6.4	226	137.2	0.551	52	−10 ～+70	100,000
109L5712M502			0.48	5.76	2,000	4.2	148	67.6	0.271	41		
109L5724H502	24	20.4～27.6	0.58	13.92	3,050	6.4	226	137.2	0.551	52		
109L5724M502			0.2	4.80	2,000	4.2	148	67.6	0.271	41		
109L5748H502	48	40.8～55.2	0.28	13.44	3,050	6.4	226	137.2	0.551	52		
109L5748M502			0.11	5.28	2,000	4.2	148	67.6	0.271	41		

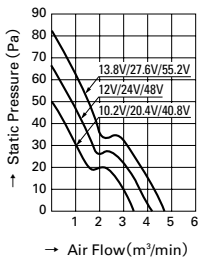
Air Flow and Static Pressure Characteristics

H speed



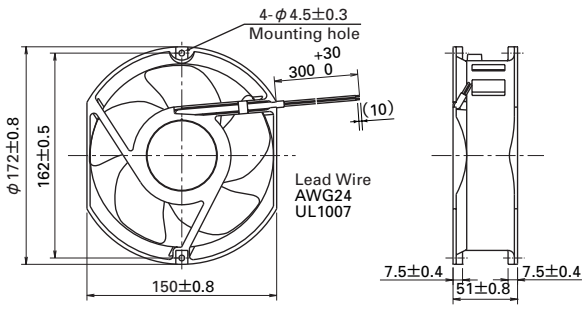
109L5712H502
109L5724H502
109L5748H502

M speed



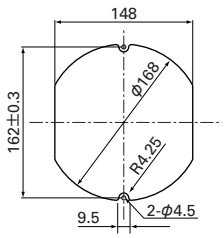
109L5712M502
109L5724M502
109L5748M502

Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side · Air outlet side



Long Life Fan ø172mm

San Ace 172L

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H speed ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····780g

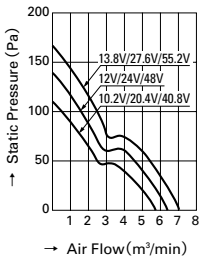
51mm thick (Round type)

Specifications

Model No.	Rated Voltage (V)	Operating Voltage range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109L1712H502	12	10.2～13.8	1.2	14.4	3,050	6.4	226	137.2	0.551	47	−10 ～+70	100,000
109L1712M502			0.48	5.76	2,000	4.2	148	67.6	0.271	36		
109L1724H502	24	20.4～27.6	0.58	13.92	3,050	6.4	226	137.2	0.551	47		
109L1724M502			0.2	4.80	2,000	4.2	148	67.6	0.271	36		
109L1748H502	48	40.8～55.2	0.28	13.44	3,050	6.4	226	137.2	0.551	47		
109L1748M502			0.11	5.28	2,000	4.2	148	67.6	0.271	36		

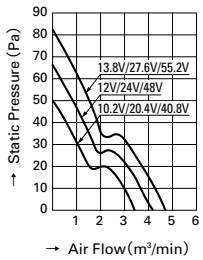
Air Flow and Static Pressure Characteristics

H speed



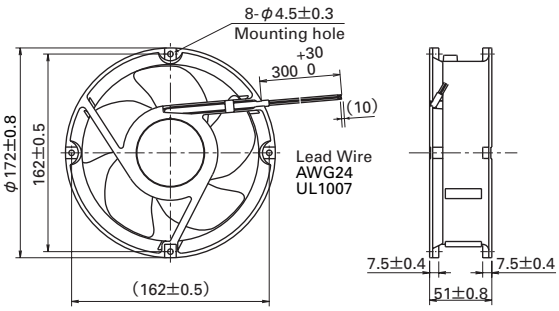
109L1712H502
109L1724H502
109L1748H502

M speed



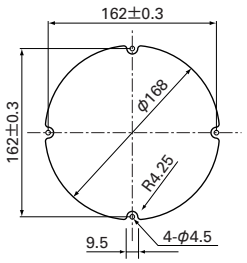
109L1712M502
109L1724M502
109L1748M502

Dimensions (unit : mm)



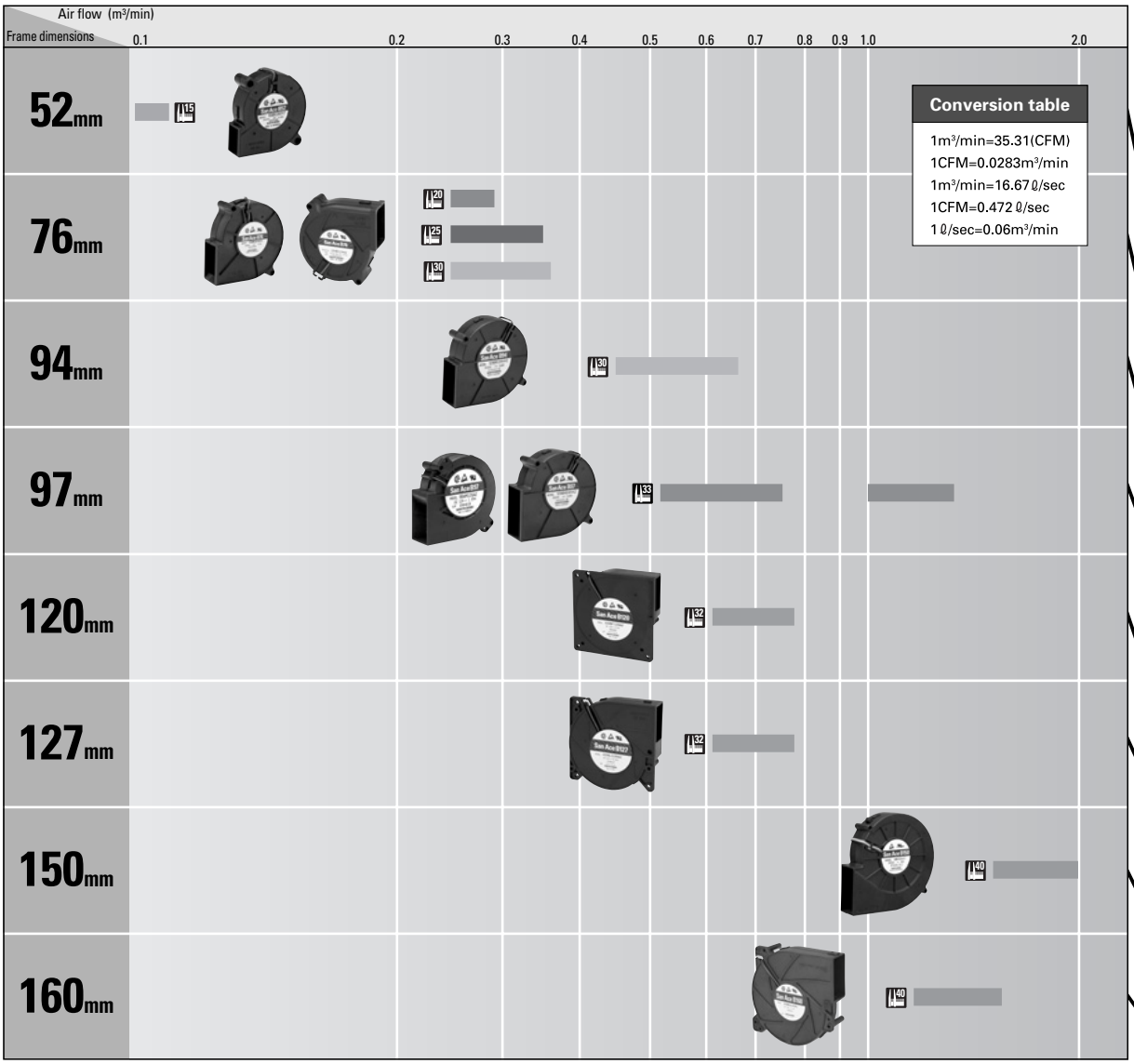
Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



DC FAN Blowers

Domain diagram



Blower

52mm
San Ace B52

General specifications

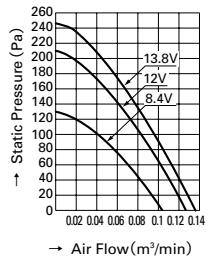
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····30g

15mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109BC12GA7	12	8.4～13.8	0.19	2.3	6,100	0.125	4.4	205	0.823	43	−20 ～+60	30,000
109BC12HA7			0.15	1.8	5,500	0.117	4.1	160	0.643	40		
109BC12FA7		9.6～13.8	0.12	1.5	5,000	0.106	3.7	119	0.478	38		
109BC12MA7			0.09	1.1	4,500	0.096	3.4	96	0.386	35		
109BC24GA7	24	12.0～27.6	0.1	2.4	6,100	0.125	4.4	205	0.823	43		
109BC24HA7		15.6～27.6	0.09	2.2	5,500	0.117	4.1	160	0.643	40		
109BC24FA7		19.2～27.6	0.06	1.5	5,000	0.106	3.7	119	0.478	38		

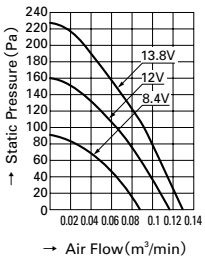
Air Flow and Static Pressure Characteristics

G speed



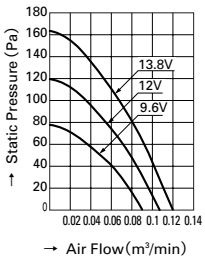
109BC12GA7

H speed



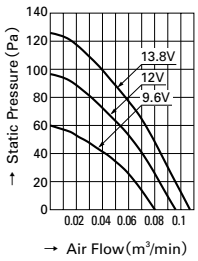
109BC12HA7

F speed



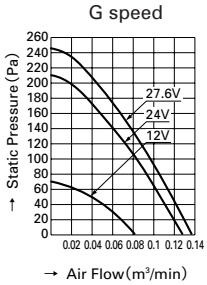
109BC12FA7

M speed



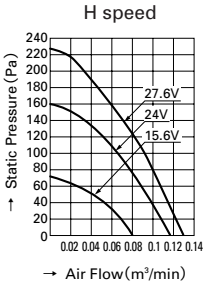
109BC12MA7

G speed



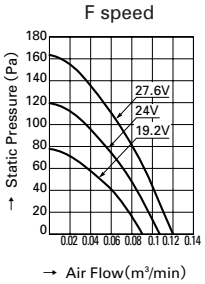
109BC24GA7

H speed



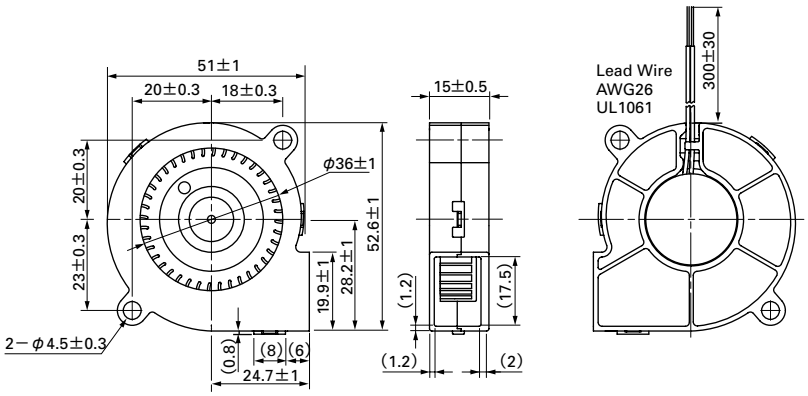
109BC24HA7

F speed



109BC24FA7

Dimensions (unit : mm)



Blower

76mm
San Ace B76

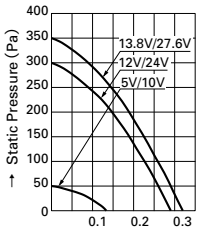
General specifications

Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····50g (20mm thick)　95g (25mm thick)

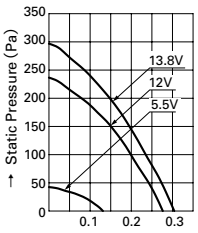
20mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9BD12SA6	12	5.0～13.8	0.30	3.6	4,750	0.29	10.2	300	1.205	44	−20 ～+70	30,000
9BD12HA6		5.5～13.8	0.24	2.9	4,400	0.27	9.5	230	0.924	42		40,000
9BD12FA6			0.20	2.4	4,050	0.25	8.8	200	0.803	40		
9BD24SA6	24	10.0～27.6	0.14	3.4	4,750	0.29	10.2	300	1.205	44		30,000
9BD24HA6			0.12	2.9	4,400	0.27	9.5	230	0.924	42		40,000
9BD24FA6			0.10	2.4	4,050	0.25	8.8	200	0.803	40		

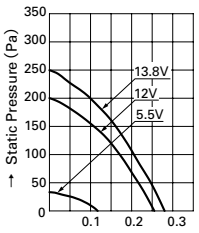
Air Flow and Static Pressure Characteristics



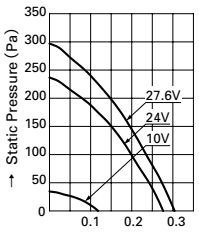
9BD12SA6
9BD24SA6



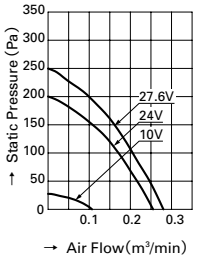
9BD12HA6



9BD12FA6



9BD24HA6

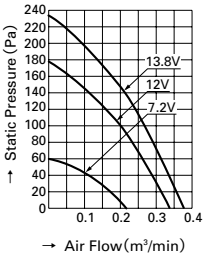


9BD24FA6

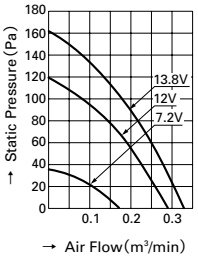
25mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109BD12GA4	12	7.2 ～ 13.8	0.33	4.0	4,500	0.34	12.0	178	0.715	48	−20 ～+60	40,000
109BD12HA4			0.23	2.8	3,800	0.29	10.2	119	0.478	43		
109BD12MA4			0.18	2.2	3,400	0.25	8.8	85	0.341	39		
109BD24GA4	24	12 ～ 27.6	0.19	4.6	4,500	0.34	12.0	178	0.715	48		
109BD24HA4			0.12	2.9	3,800	0.29	10.2	119	0.478	43		
109BD24MA4			0.09	2.2	3,400	0.25	8.8	85	0.341	39		

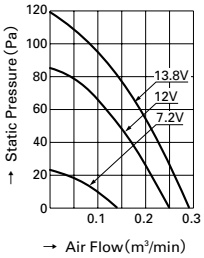
Air Flow and Static Pressure Characteristics



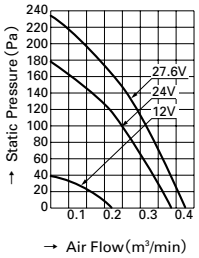
109BD12GA4



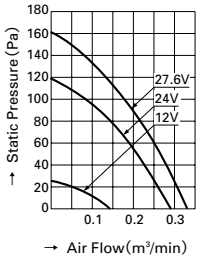
109BD12HA4



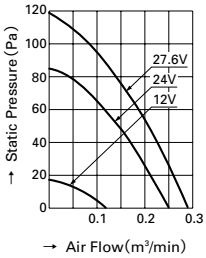
109BD12MA4



109BD24GA4



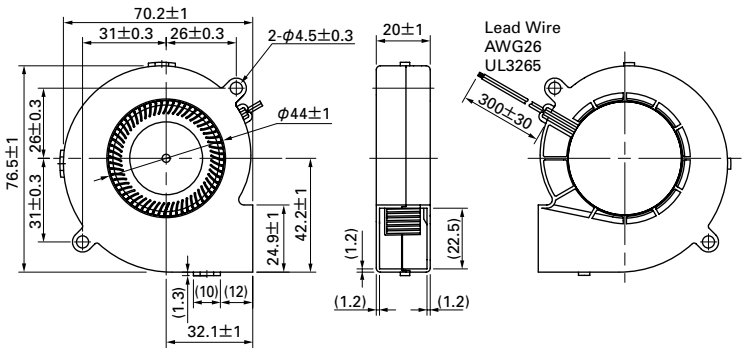
109BD24HA4



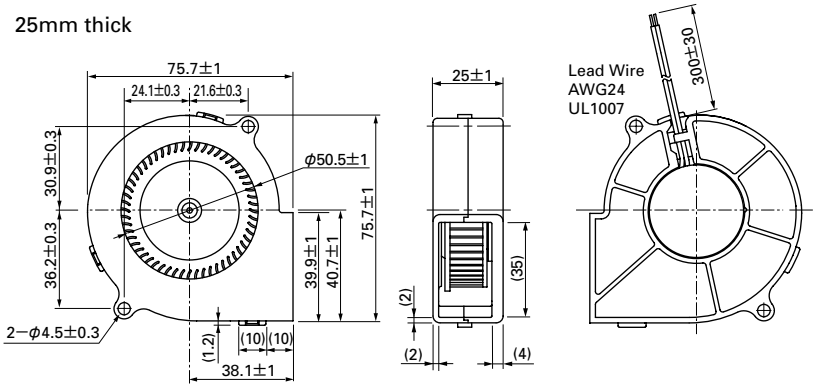
109BD24MA4

Dimensions (unit : mm)

20mm thick



25mm thick



Blower

76mm
San Ace B76

General specifications

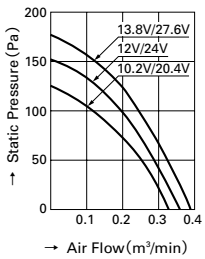
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H, F speeds ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····100g

30mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109BD12HA2	12	10.2～13.8	0.37	4.44	3,000	0.36	12.7	151.9	0.610	41.5	−10～+60	40,000
109BD12FA2			0.27	3.24	2,600	0.31	10.9	98	0.394	37	−10～+70	
109BD12MA2			0.14	1.68	2,100	0.25	8.8	58.8	0.236	32.5		
109BD24HA2	24	20.4～27.6	0.17	4.08	3,000	0.36	12.7	151.9	0.610	41.5	−10～+60	
109BD24FA2			0.14	3.36	2,600	0.31	10.9	98	0.394	37	−10～+70	
109BD24MA2			0.10	2.40	2,100	0.25	8.8	58.8	0.236	32.5		

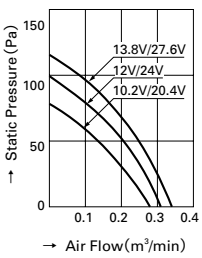
Air Flow and Static Pressure Characteristics

H speed



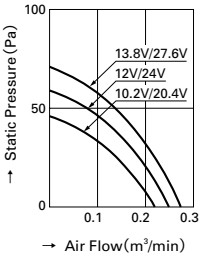
109BD12HA2
109BD24HA2

F speed



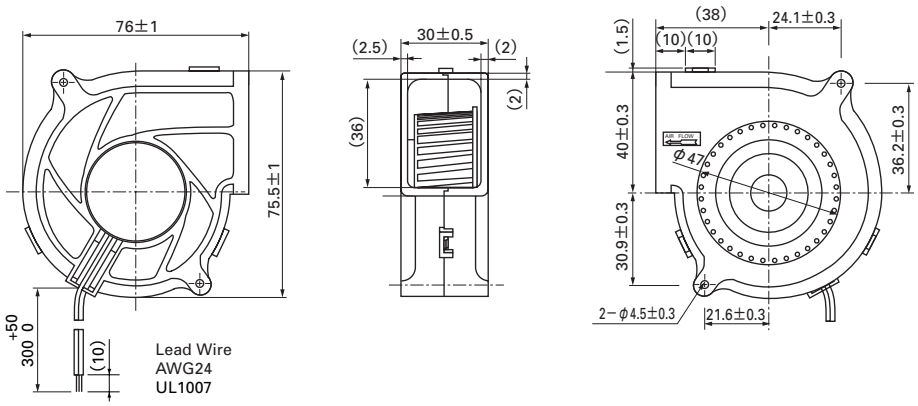
109BD12FA2
109BD24FA2

M speed



109BD12MA2
109BD24MA2

Dimensions (unit : mm)



Blower

94mm
San Ace B94

General specifications

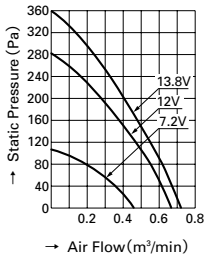
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····135g

30mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109BE12GA2	12	7.2～13.8	0.65	7.8	3,900	0.67	23.7	282	1.133	54	−20 ～+60	40,000
109BE12HA2			0.42	5.1	3,300	0.57	20.1	194	0.779	49		
109BE12MA2			0.29	3.5	2,700	0.45	15.9	125	0.502	44		
109BE24GA2	24	12 ～ 27.6	0.33	8.0	3,900	0.67	23.7	282	1.133	54		
109BE24HA2			0.26	6.3	3,300	0.57	20.1	194	0.779	49		
109BE24MA2			0.15	3.6	2,700	0.45	15.9	125	0.502	44		

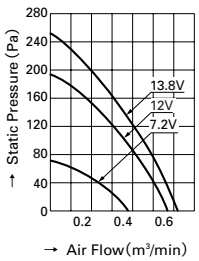
Air Flow and Static Pressure Characteristics

G speed



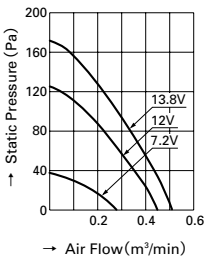
109BE12GA2

H speed



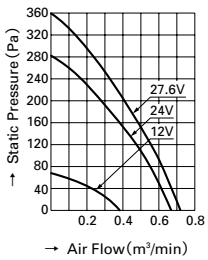
109BE12HA2

M speed



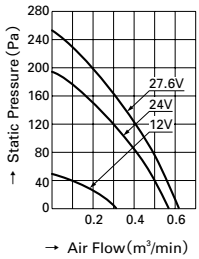
109BE12MA2

G speed



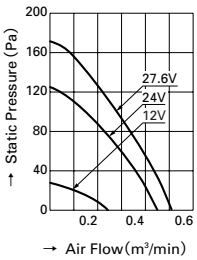
109BE24GA2

H speed



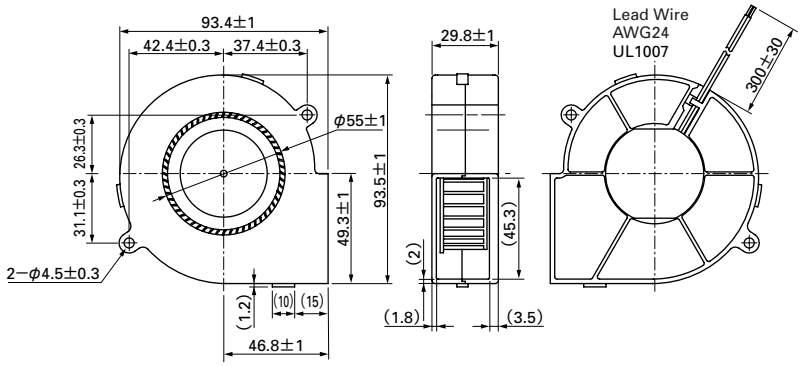
109BE24HA2

M speed



109BE24MA2

Dimensions (unit : mm)



Blower

97mm
San Ace B97

ECO PRODUCTS

"San Ace" B97 High Air Flow Type

General specifications

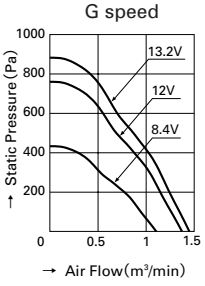
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····170g

33mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9BAM12GA2	12	8.4～13.2	1.85	22.2	5,800	1.37	48.4	760	3.052	62	−20 ～+60	40,000
9BAM12SA2			1.45	17.4	5,300	1.25	44.2	610	2.450	60		
9BAM12HA2			1.20	14.4	4,700	1.10	38.9	490	1.968	58		
9BAM12FA2			0.98	11.8	4,300	1.00	35.3	410	1.647	56		
9BAM24GA2	24	12.0～26.4	0.90	21.6	5,800	1.37	48.4	760	3.052	62		
9BAM24SA2			0.71	17.0	5,300	1.25	44.2	610	2.450	60		
9BAM24HA2		14.4～26.4	0.60	14.4	4,700	1.10	38.9	490	1.968	58		
9BAM24FA2			0.49	11.8	4,300	1.00	35.3	410	1.647	56		

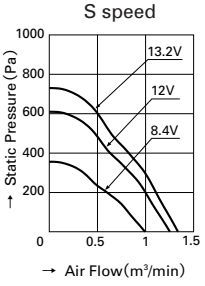
Air Flow and Static Pressure Characteristics

G speed



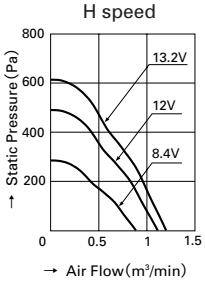
9BAM12GA2

S speed



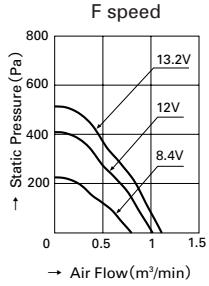
9BAM12SA2

H speed



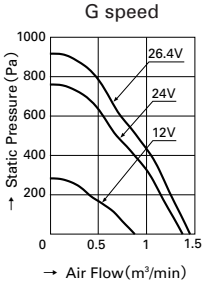
9BAM12HA2

F speed



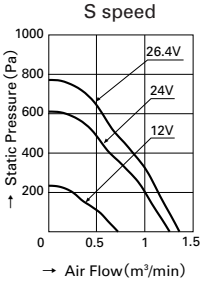
9BAM12FA2

G speed



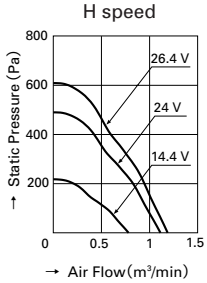
9BAM24GA2

S speed



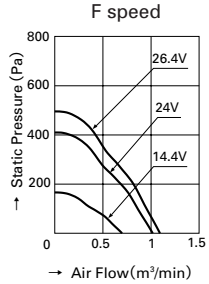
9BAM24SA2

H speed



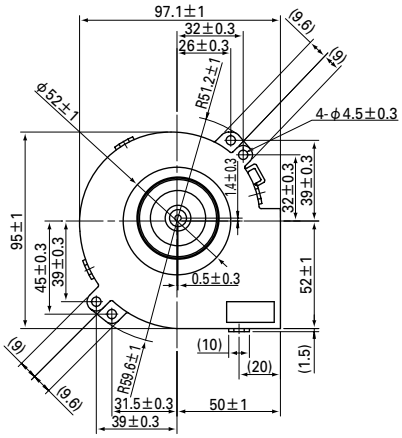
9BAM24HA2

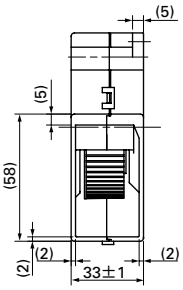
F speed

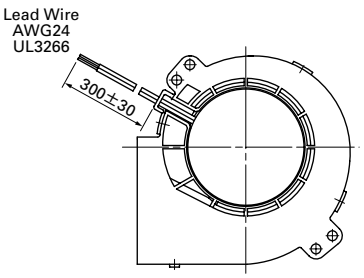


9BAM24FA2

Dimensions (unit : mm)







Blower

97mm
San Ace B97

General specifications

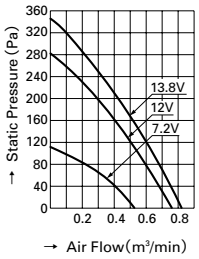
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····160g

33mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109BM12GA2	12	7.2～13.8	0.68	8.2	3700	0.76	26.9	281	1.129	52	−20 ～+60	40,000
109BM12HA2			0.42	5.1	3200	0.67	23.7	204	0.819	49		
109BM12MA2			0.30	3.6	2600	0.51	18.0	119	0.478	44		
109BM24GA2	24	12 ～27.6	0.34	8.2	3700	0.76	26.9	281	1.129	52		
109BM24HA2			0.26	6.3	3200	0.67	23.7	204	0.819	49		
109BM24MA2			0.15	3.6	2600	0.51	18.0	119	0.478	44		

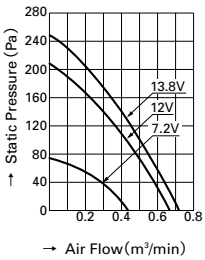
Air Flow and Static Pressure Characteristics

G speed



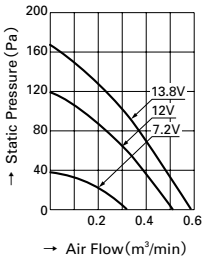
109BM12GA2

H speed



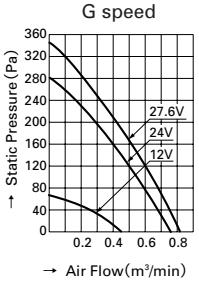
109BM12HA2

M speed



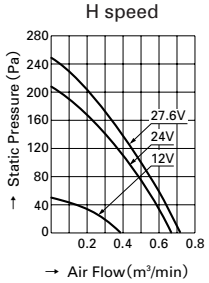
109BM12MA2

G speed



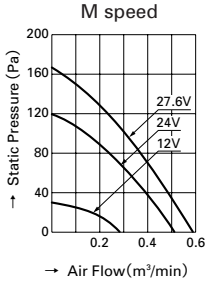
109BM24GA2

H speed



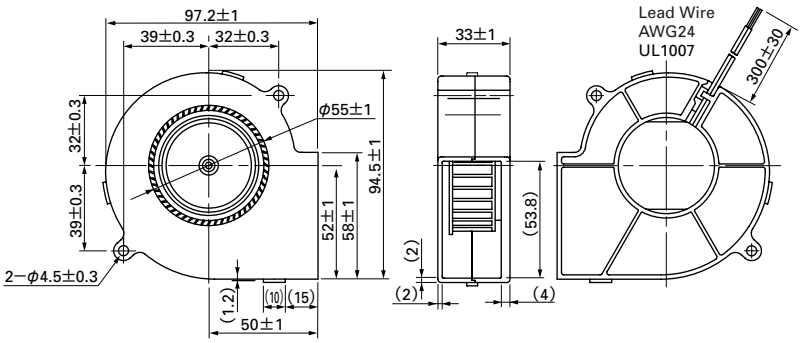
109BM24HA2

M speed



109BM24MA2

Dimensions (unit : mm)



Blower

120mm
San Ace B120

General specifications

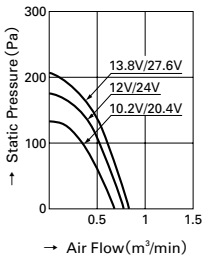
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H speed ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····270g

32mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109BF12HA2	12	10.2～13.8	0.6	7.2	2,400	0.78	27.5	175.4	0.704	52	−10 ～+60	40,000
109BF12MA2			0.32	3.84	1,900	0.61	21.5	109.8	0.441	44		
109BF24HA2	24	20.4～27.6	0.3	7.2	2,400	0.78	27.5	175.4	0.704	52		
109BF24MA2			0.16	3.84	1,900	0.61	21.5	109.8	0.441	44		

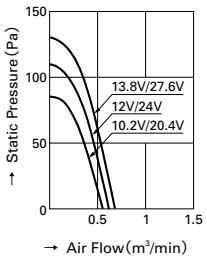
Air Flow and Static Pressure Characteristics

H speed



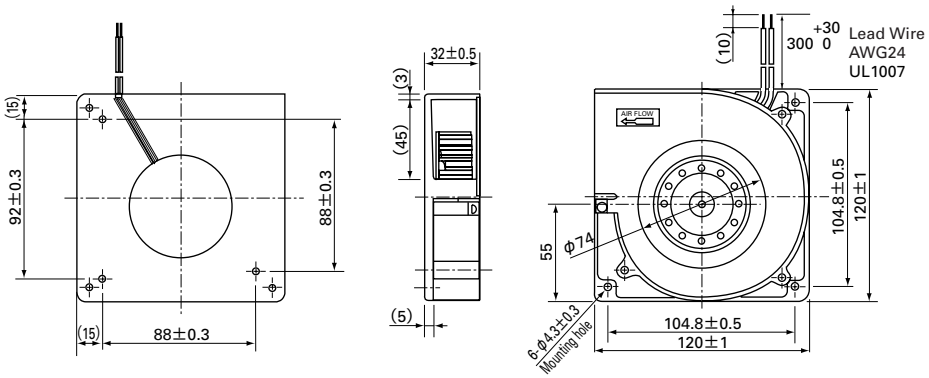
109BF12HA2
109BF24HA2

M speed



109BF12MA2
109BF24MA2

Dimensions (unit : mm)



Blower

127mm
San Ace B127

General specifications

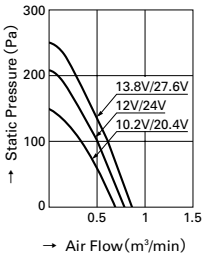
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H speed ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····290g

32mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109BJ12HA2	12	10.2～13.8	0.52	6.24	2,400	0.78	27.5	205.8	0.826	46	−10 ～+70	40,000
109BJ12MA2			0.29	3.48	1,900	0.61	21.5	109.8	0.441	40		
109BJ24HA2	24	20.4～27.6	0.26	6.24	2,400	0.78	27.5	205.8	0.826	46	−10 ～+60	
109BJ24MA2			0.15	3.6	1,900	0.61	21.5	109.8	0.441	40		

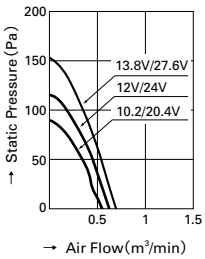
Air Flow and Static Pressure Characteristics

H speed



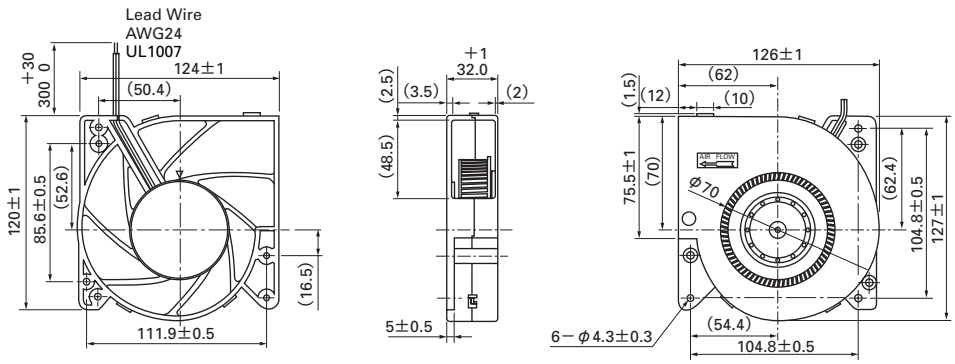
109BJ12HA2
109BJ24HA2

M speed



109BJ12MA2
109BJ24MA2

Dimensions (unit : mm)



127mm

Blower

150mm
San Ace B150

General specifications

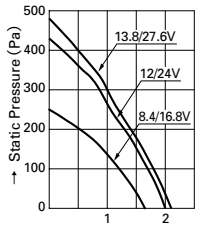
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····⊕red,⊖black
Mass ·····380g

40mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9BN12HA1	12	8.4～13.8	1.6	19.2	2,700	2.0	70.7	430	1.727	56	−20 ～+70	40,000
9BN12FA1			1.1	13.2	2,200	1.65	58.3	270	1.084	51		
9BN24HA1	24	16.8～27.6	0.74	17.8	2,700	2.0	70.7	430	1.727	56		
9BN24FA1		12 ～27.6	0.54	13.0	2,200	1.65	58.3	270	1.084	51		

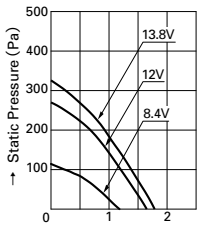
Air Flow and Static Pressure Characteristics

H speed



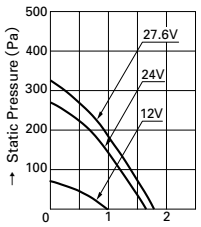
9BN12HA1
9BN24HA1

F speed



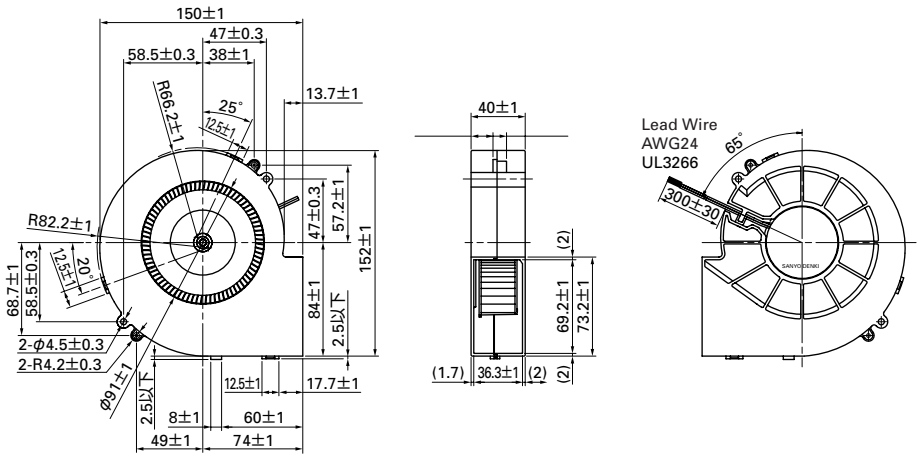
9BN12FA1

F speed



9BN24FA1

Dimensions (unit : mm)



150mm

Blower

160mm
San Ace B160

General specifications

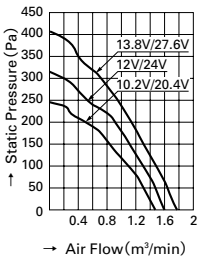
Material ·····Frame, impeller : Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Lead Wire ·····H speed ⊕red,⊖black
M speed ⊕red,⊖black or blue
Mass ·····580g

40mm thick
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109BG12HA1	12	10.2～13.8	1.3	15.6	2,300	1.62	57.2	313.6	1.259	55	−10 ～+60	40,000
109BG12MA1			0.64	7.68	1,800	1.26	44.5	156.8	0.629	50		
109BG24HA1	24	20.4～27.6	0.62	14.88	2,300	1.62	57.2	313.6	1.259	55		
109BG24MA1			0.31	7.44	1,800	1.26	44.5	156.8	0.629	50		

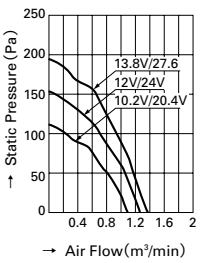
Air Flow and Static Pressure Characteristics

H speed



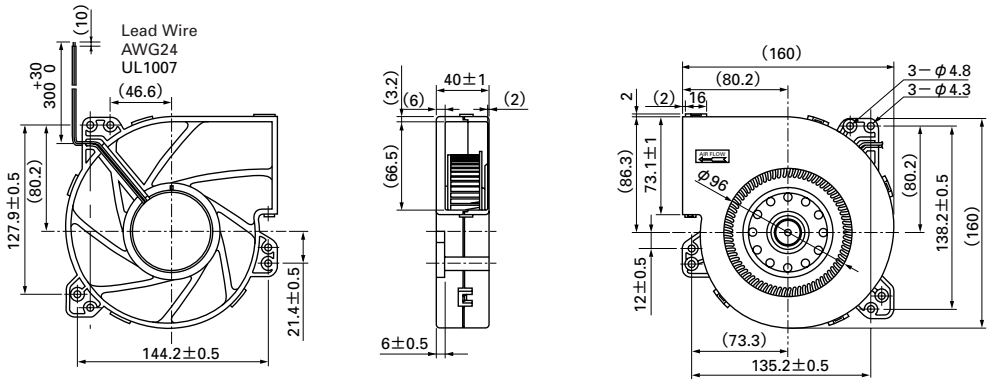
109BG12HA1
109BG24HA1

M speed



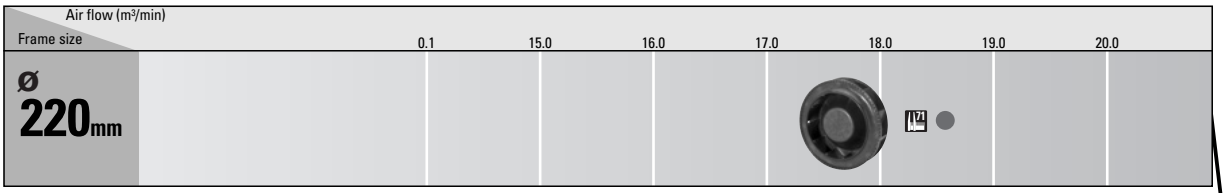
109BG12MA1
109BG24MA1

Dimensions (unit : mm)



DC FAN Centrifugal Fans

Domain diagram



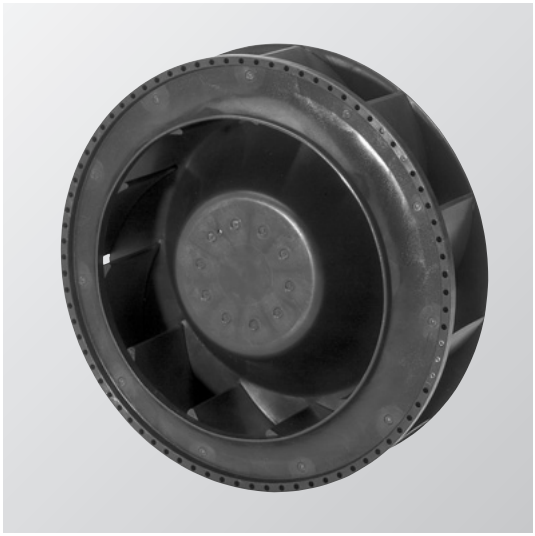
Conversion table

1m³/min=35.31(CFM)
1CFM=0.0283m³/min
1m³/min=16.67ℓ/sec
1CFM=0.472ℓ/sec
1ℓ/sec=0.06m³/min

200mm

Centrifugal Fan ø220mm

San Ace C220



General specifications

Material ·····Impeller : Plastic
Attachment base:Aluminum
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current cut function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between Lead conductor and Attachment base)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕red, ⊖black
Mass ·····1,300g

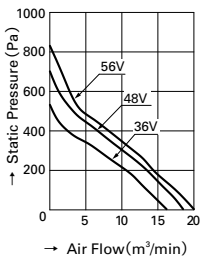
71mm thick

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Input (W)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9TR48HA0	48	36～56	2.10	100.8	3,200	18.5	653.7	700	2.81	71	−20 ～+60	40,000

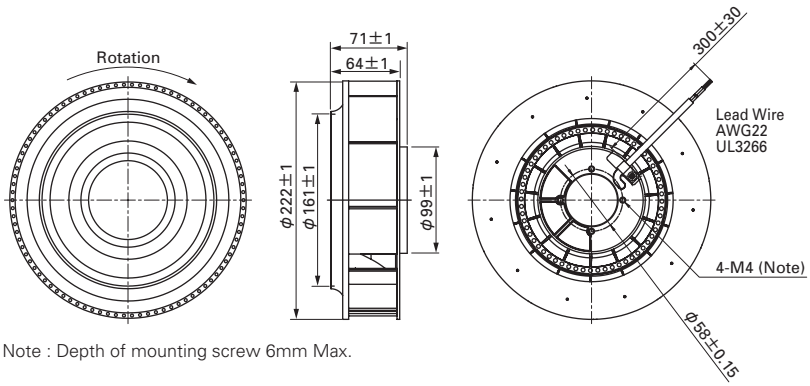
Note) Air Flow-Static Pressure Characteristics and Sound Pressure Level were measured with Inlet Ring (See following figure).

Air Flow and Static Pressure Characteristics



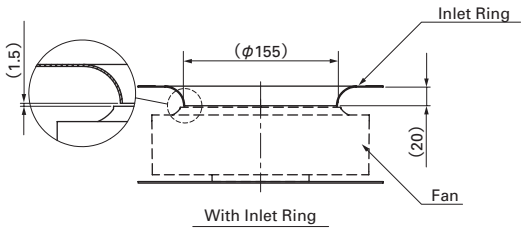
9TR48HA0

Dimensions (unit : mm)



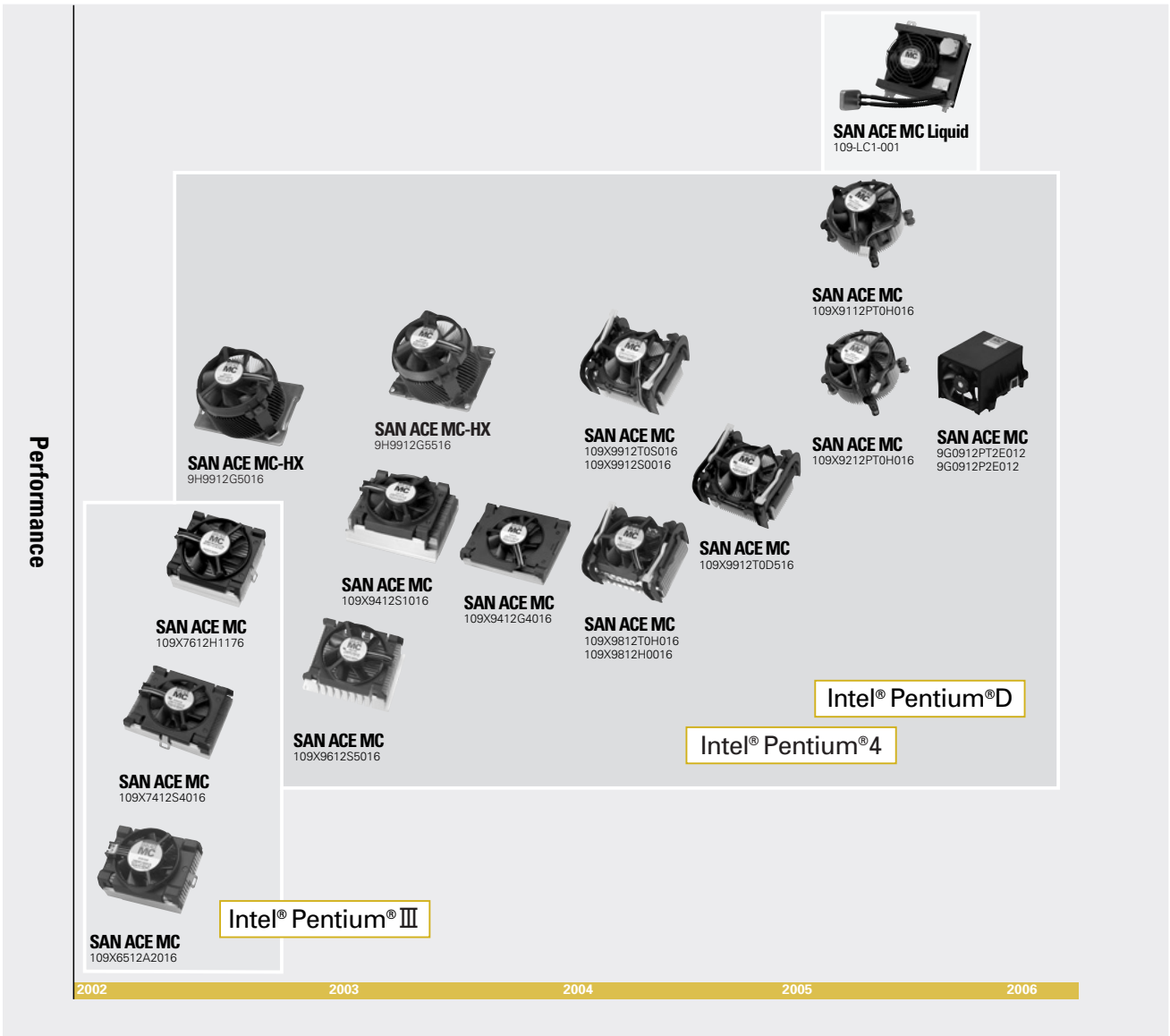
Note : Depth of mounting screw 6mm Max.

Reference Dimension of Inlet Ring (unit : mm)



Note : Please contact us if you need further information.

CPU Coolers
Liquid Cooling Solution Systems



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CPU Cooler

For Intel® 775 land-LGA Package CPU Cooler " SAN ACE MC" Thermal Module (Type I) for BTX

General specifications

Material ·····Frame,Impeller,Duct:Plastics Duct sael:Rubber sponge
Heatsink:Aluminum (Core:Copper)
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕Yellow (Connector:Pin2)
⊖Black (Connector:Pin1)
Sensor Green (Connector:Pin3)
Control Blue (Connector :Pin4)
Connector ·····Molex P/N 47054-1000 or Wieson 2510C888-001
Contact ·····Molex P/N 5159PBT or Equivalent or Wieson 2511-T1
Mass ·····970g

Specifications

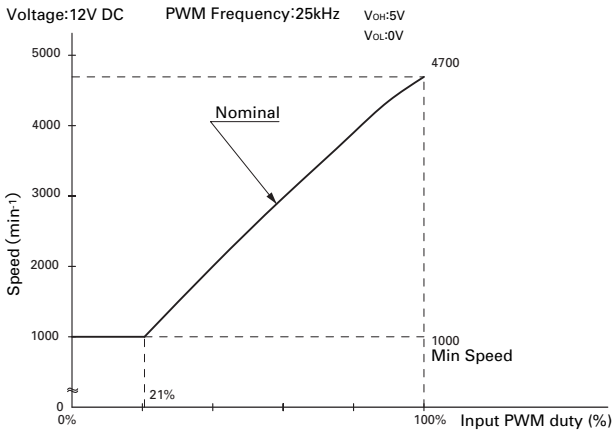
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min⁻¹)	Ψc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
9G0912P2E012*	12	10.8～13.2	0.90	4,700	0.260	52	0 ～+70	40,000
9G0912PT2E012**				4,700	0.260	52		
				2,500	0.300	34		

* PWM Control Function
** PWM Control Function and Thermally Speed Control

Control input PWM duty - Fan speed characteristics

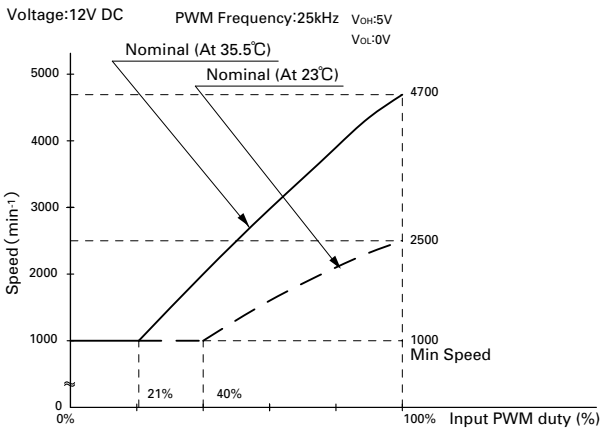
9G0912P2E012 [PWM Control Function]

【Example】

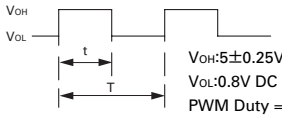


9G0912PT2E012 [PWM Control Function and Thermally Speed Control]

【Example】



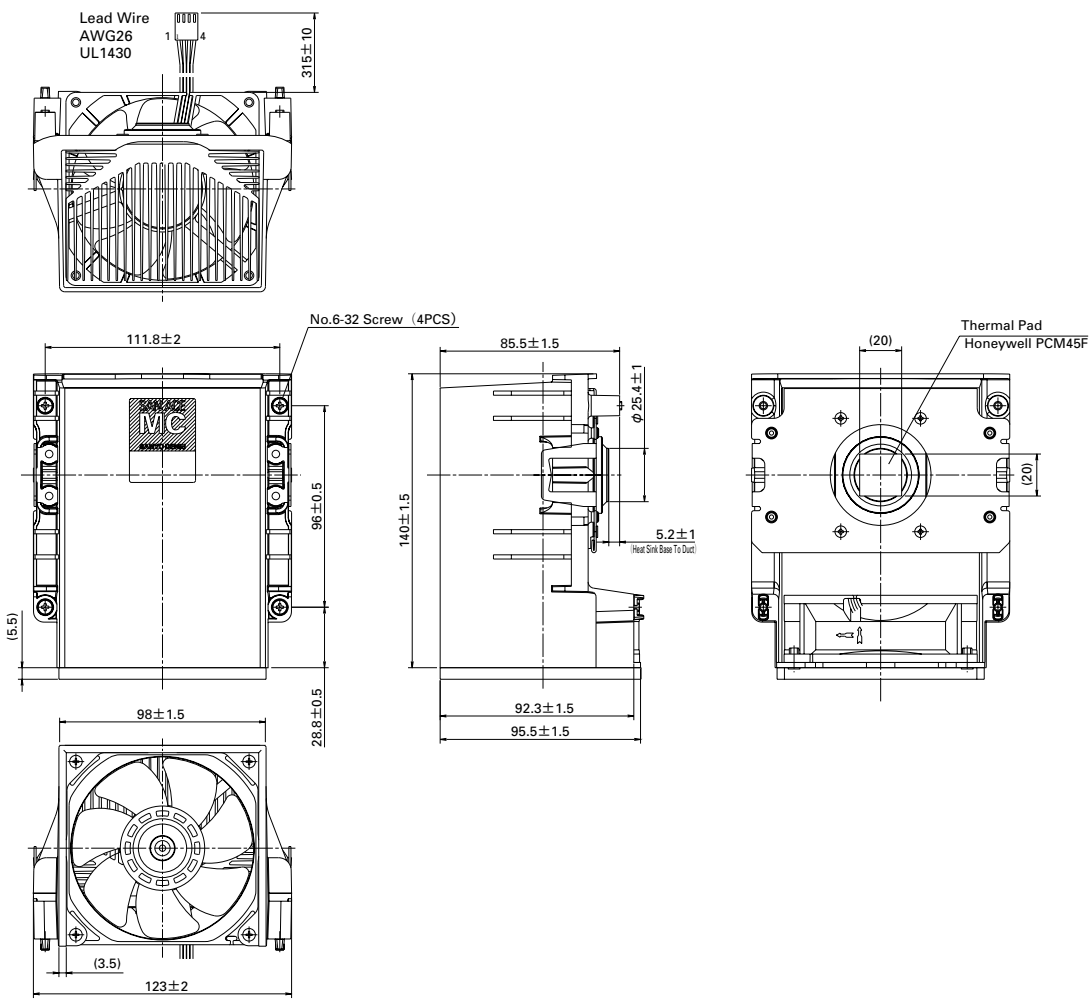
Waveform of control input
PWM Signal input : Between blue lead and black lead



VOH:5±0.25V DC
VOL:0.8V DC or Less
PWM Duty = t / T×100
PWM Frequency = 1 / T = 21～28 kHz

Control Current
I Source max.:5 mA (AT 0V Control Voltage)
I Sink max.:5 mA (AT 5V Control Voltage)

Dimensions (unit : mm)



CPU Cooler

For Intel® 775-land LGA Package CPU Cooler " SAN ACE MC"

PWM Control Function and Thermally Speed Control

General specifications

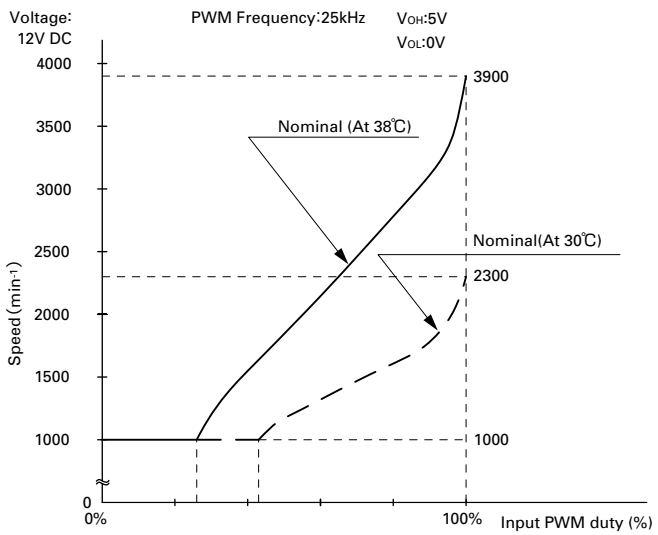
Material ·····Frame,impeller:Plastics
Heatsink:aluminum (Core:copper)
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
Sensor green (connector No.3)
Control blue (connector No.4)
Connector ·····Molex P/N 47054-1000 or Wieson 2510C888-001
Contact ·····Molex P/N 5159PBT or Equivalent or Wieson 2511-T1
Mass ·····575g

Specifications

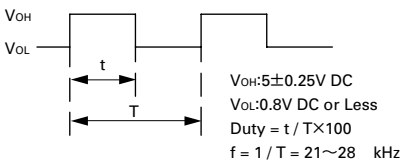
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109X9112PT0H016	12	10.8～13.2	0.31	3,900	0.266	42	0 ～＋70	40,000
				2,300	0.320	27		

Control input PWM duty - Fan speed characteristics

【Example】



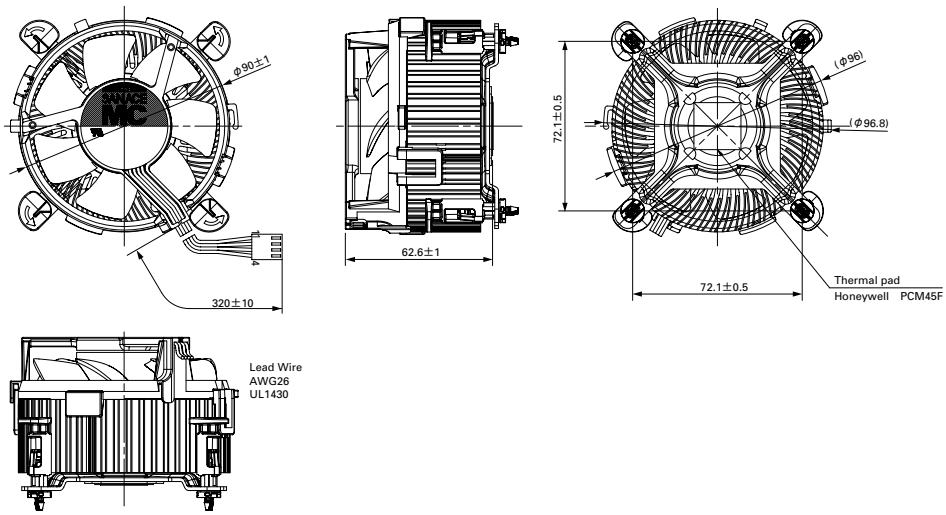
PWM Waveform of control input
PWM Signal input ; Between blue lead and black lead



VOH:5±0.25V DC
VOL:0.8V DC or Less
Duty = t / T×100
f = 1 / T = 21～28 kHz

Control input Current
I Source max.:5 mA (AT 0V Control Voltage)
I Sink max.:5 mA (AT 5V Control Voltage)

Dimensions (unit : mm)



CPU Cooler

For Intel® Pentium® 4 Processor (775-land LGA Package) CPU Cooler " SAN ACE MC"

ECO PRODUCTS

PWM Control Function and Thermally Speed Control

General specifications

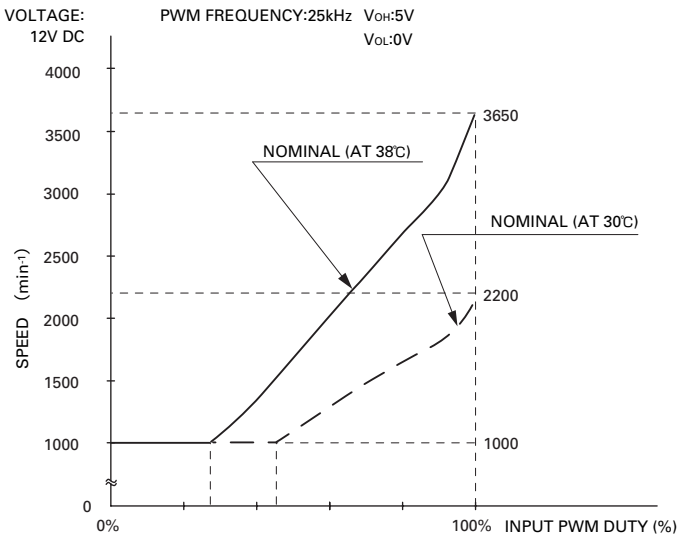
Material ·····Frame,impeller:Plastics
Heatsink:aluminum (Core:copper)
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
Sensor green (connector No.3 side)
Contorl blue (connector No.4 side)
Connector ·····Molex P/N 47054-1000 or Wieson 2510C888-001
Contact ·····Molex P/N 5159PBT or Equivalent or Wieson 2511-T1
Mass ·····490g

Specifications

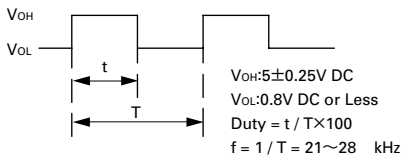
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min⁻¹)	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109X9212PT0H016	12	10.8～13.2	0.28	3,650	0.276	42	0 ～+70	40,000
				2,200	0.340	28		

Control input PWM duty - Fan speed characteristics

【EXAMPLE】



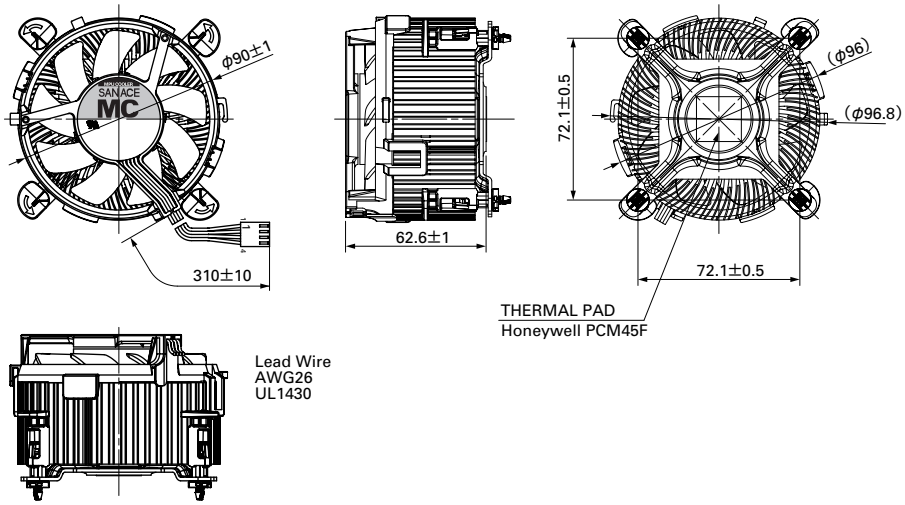
PWM WAVEFORM OF CONTROL INPUT
PWM SIGNAL INPUT:BETWEEN BLUE LEAD AND BLACK LEAD



VOH:5±0.25V DC
VOL:0.8V DC or Less
Duty = t / T×100
f = 1 / T = 21～28 kHz

CONTROL INPUT CURRENT
I SOURCE MAX.:5 mA (AT 0V CONTROL VOLTAGE)
I SINK MAX.:5 mA (AT 5V CONTROL VOLTAGE)

Dimensions (unit : mm)



Lead Wire
AWG26
UL1430

CPU Cooler

For Intel® Pentium® 4 Processor (Socket 478)
CPU Cooler " SAN ACE MC"

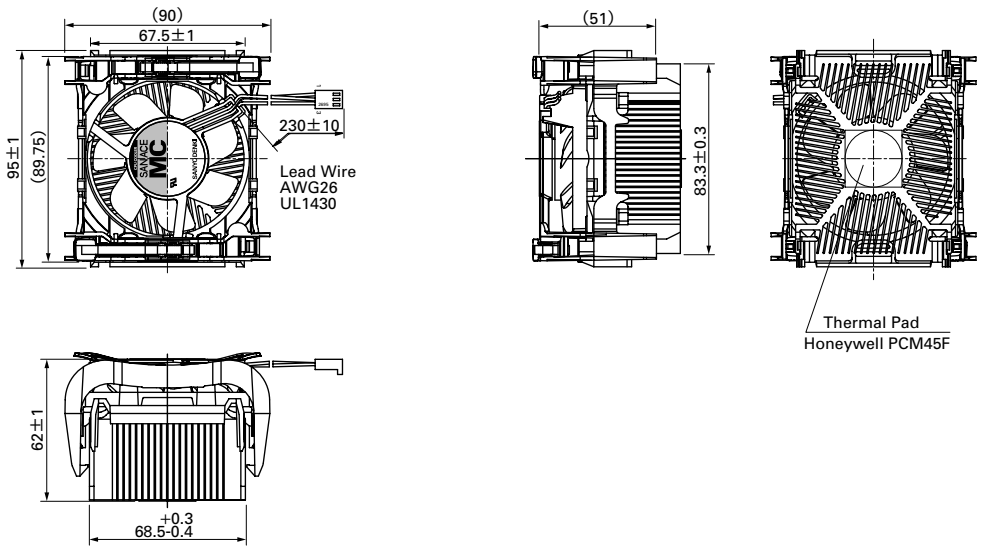
General specifications

Material ·····Frame,impeller:resin mold Heatsink:aluminum (Core:copper)
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
sensor green (connector No.3 side)
Connector ·····Molex 22-01-3037 : P/N2695-03RP
Contact ·····Molex P/N5159PBT or 2759T-equivalent
Mass ·····450g

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Rotating Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109X9912T0D516	12	9～13.8	0.44	5,200	0.28	44	0 ～+70	40,000
				2,570	0.385	26		

Dimensions (unit : mm)



CPU Cooler

For Intel® Pentium®4 Processor3.06GHz (Socket 478)

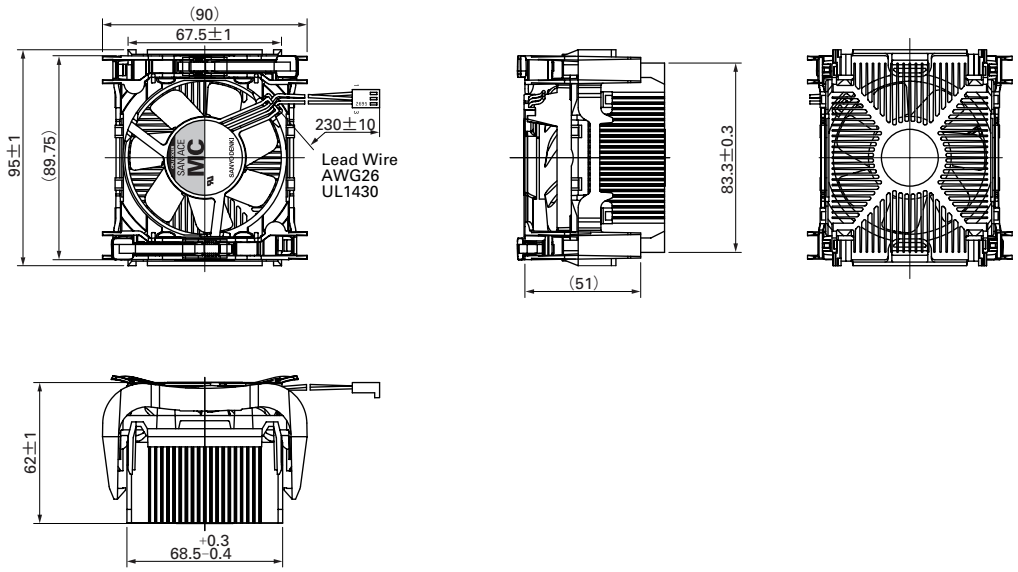
General specifications

Material ·····Frame,impeller:Plastics
Heatsink:aluminum (Core:copper)
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
(sensor) green (connector No.3 side)
Connector ·····Molex 22-01-3037 : P/N2695-03RP
Contact ·····Molex P/N5159PBT or equilvalent
Mass ·····450g

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Rotating Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109X9912T0S016	12	9～13.8	0.48	5,400	0.295	45	0 ～+70	40,000
				2,610	0.42	28		
109X9912S0016				5,400	0.295	45		

Dimensions (unit : mm)



CPU Cooler

For Intel® Pentium® 4 Processor (Socket 478)
CPU Cooler " SAN ACE MC"

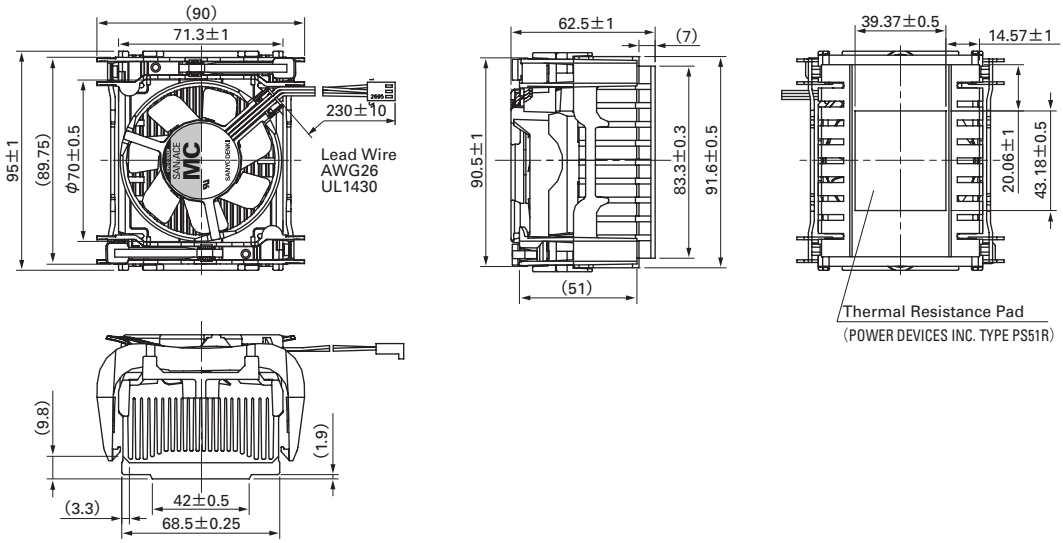
General specifications

Material ·····Frame, impeller : Plastics Heat sink : aluminum
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
sensor green (connector No.3 side)
Connector ·····Molex 22-01-3037 : P/N2695-03RP
Contact ·····Molex P/N5159PBT or 2759T-equivalent
Mass ·····390g

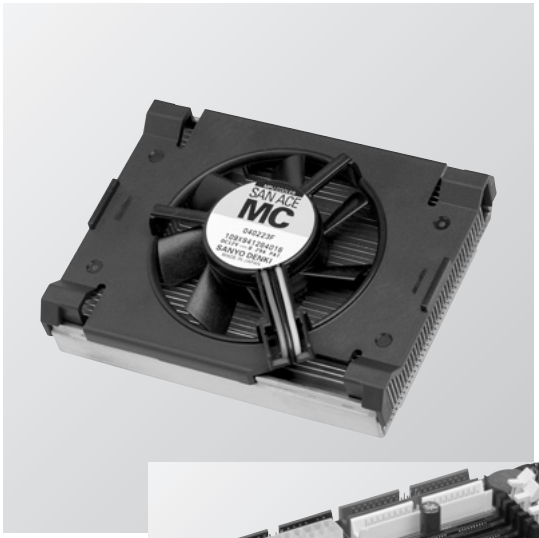
Specifications

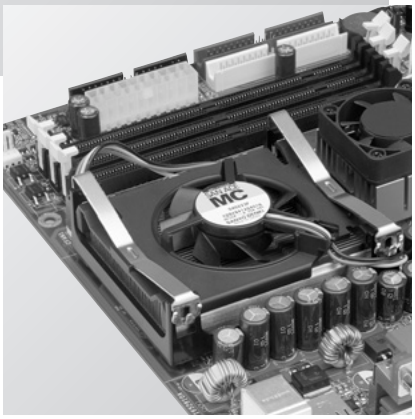
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Rotating Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109X9812T0H016	12	9～13.8	0.21	3,900	0.42	39	0 ～+60	40,000
				2,600	0.49	26		
109X9812H0016		7～13.8	0.21	3,900	0.42	39		

Dimensions (unit : mm)



CPU Cooler





For Intel® Pentium® 4 Processor 2.0GHz (Socket 478) CPU Cooler " SAN ACE MC" for 1U server

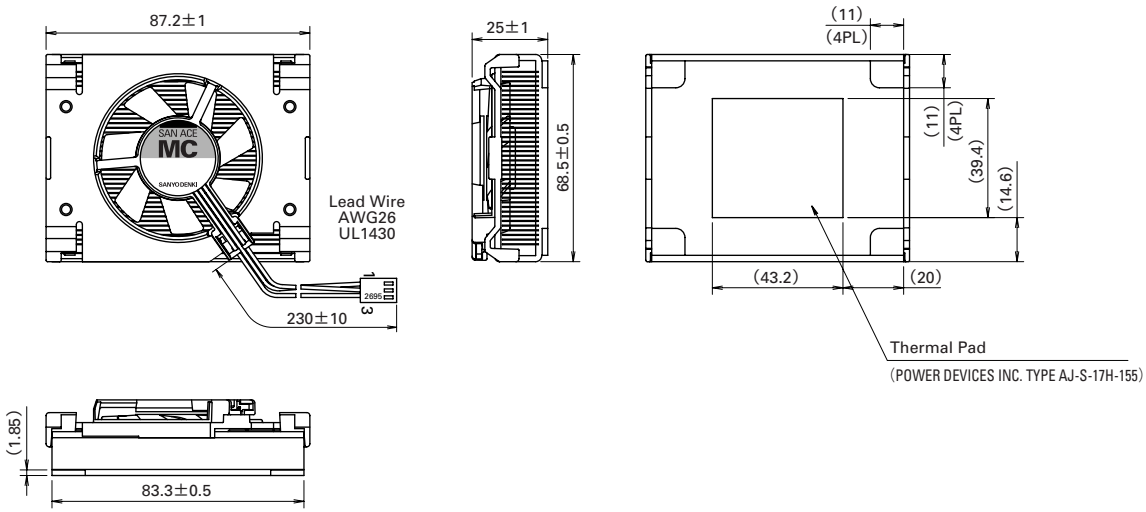
General specifications

Material ·····Frame, impeller : Plastics Heat sink : copper
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
sensor green (connector No.3 side)
Connector ·····Molex 22-01-3037 : P/N2695-03RP
Contact ·····Molex P/N5159PBT or 2759T-equivalent
Mounting method·····Use Mounting Clip 109-1011 2pcs.
Option(separate order)·····Model No.109-1011
Mass ·····340g

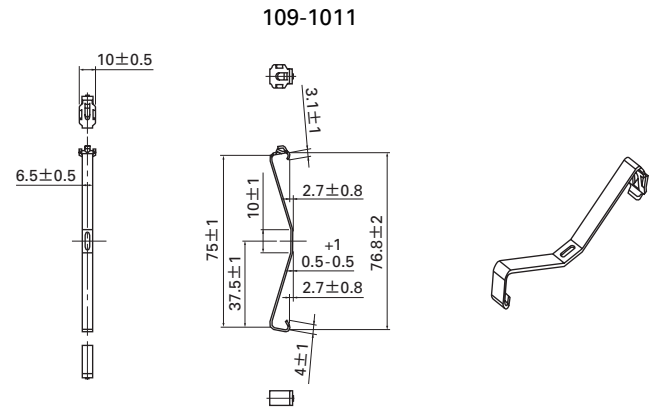
Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Lange (℃)	Life Expectancy (h)
109X9412G4016	12	7～13.8	0.07	7,600	0.435	52	0～＋70	40,000

Dimensions (unit : mm)



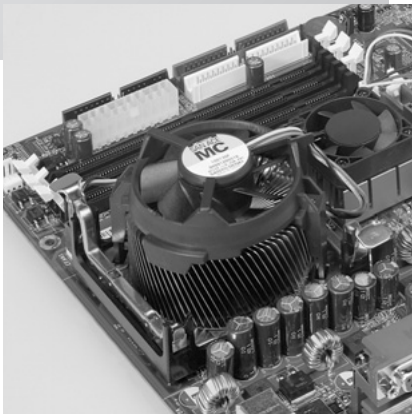
Mounting Clip



Material : Stainless steel

CPU Cooler

For Intel® Pentium® 4 Processor 2.8GHz (Socket 478)
CPU Cooler " SAN ACE MC-HX"



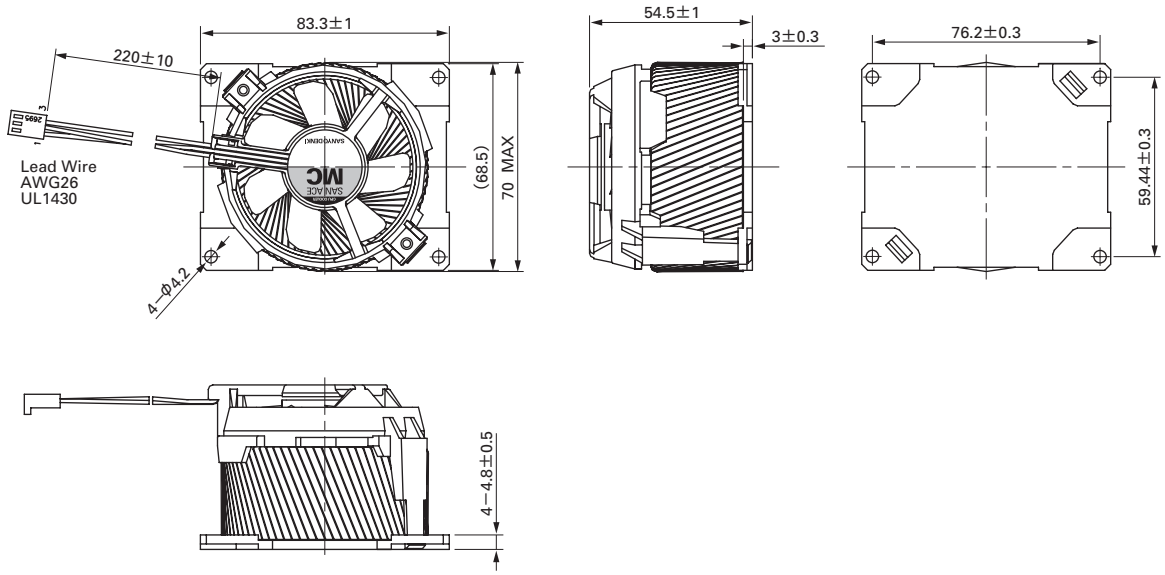
General specifications

Material ·····Frame, impeller : Plastics Heat sink : copper
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
sensor green (connector No.3 side)
Contact ·····Molex P/N5159PBT or 2759T-equivalent
Option(separate order)·····Mounting method : Mount using 109-1007 specialized
metalfittings(2pcs.)
Mass ·····410g

Specifications

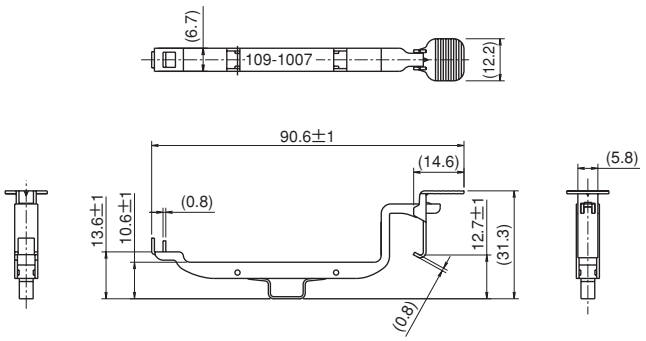
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Lange (℃)	Life Expectancy (h)
9H9912G5516	12	7～13.8	0.23	5,200	0.37	39	0 ～+70	40,000

Dimensions (unit : mm)



Mounting Clip

109-1007



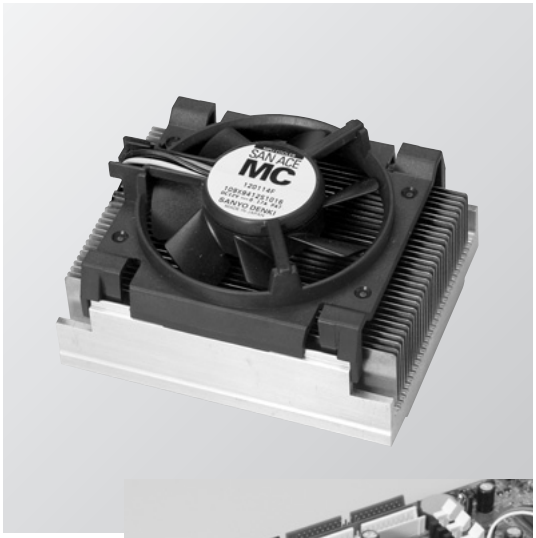
Material : Stainless steel

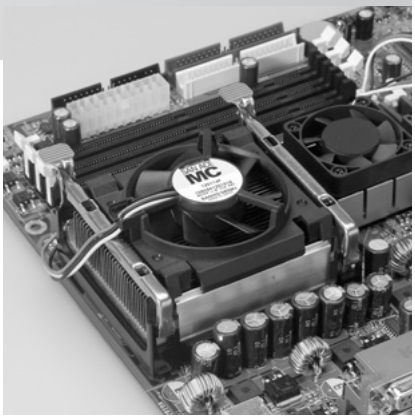
CPU Cooler

For Intel® Pentium® 4 Processor 2.0GHz (Socket 478)

General specifications

Material ·····Frame, impeller : Plastics
Heat sink : aluminum base + copper fin
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
(sensor) green (connector No.3 side)
Connector ·····Molex 22-01-3037 : P/N2695-03RP
Contact ·····Molex P/N5159PBT or 2759T-equivalent
Mass ·····360g
Option (Separate order) ····Mount using 109-1008 specialized metal fittings (2pcs)

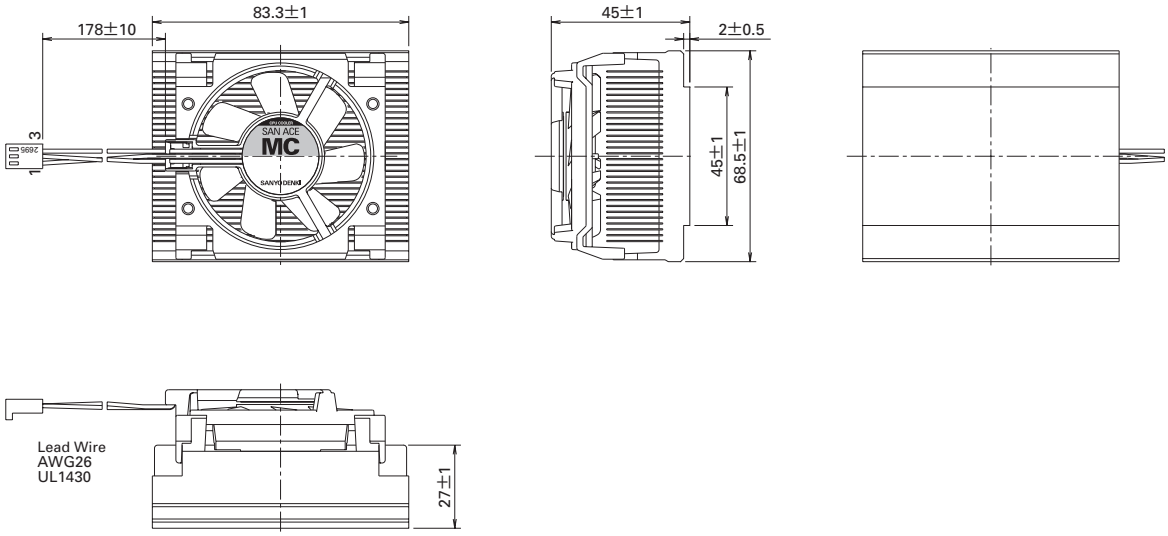




Specifications

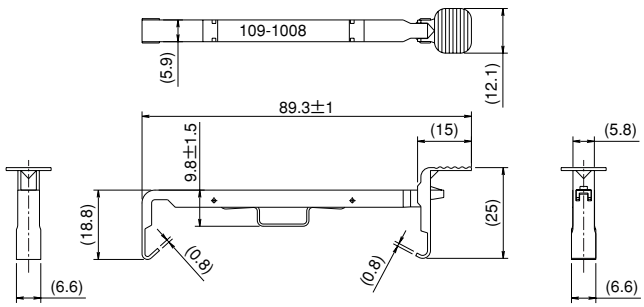
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Lange (℃)	Life Expectancy (h)
109X9412S1016	12	7～13.8	0.17	4,800	0.445	39	0 ～+70	40,000

Dimensions (unit : mm)



Installation metal fittings (unit : mm)

109-1008



Material : Stainless steel

CPU Cooler

For Intel® Pentium® 4 Processor (Socket 423)
CPU Cooler " SAN ACE MC-HX"

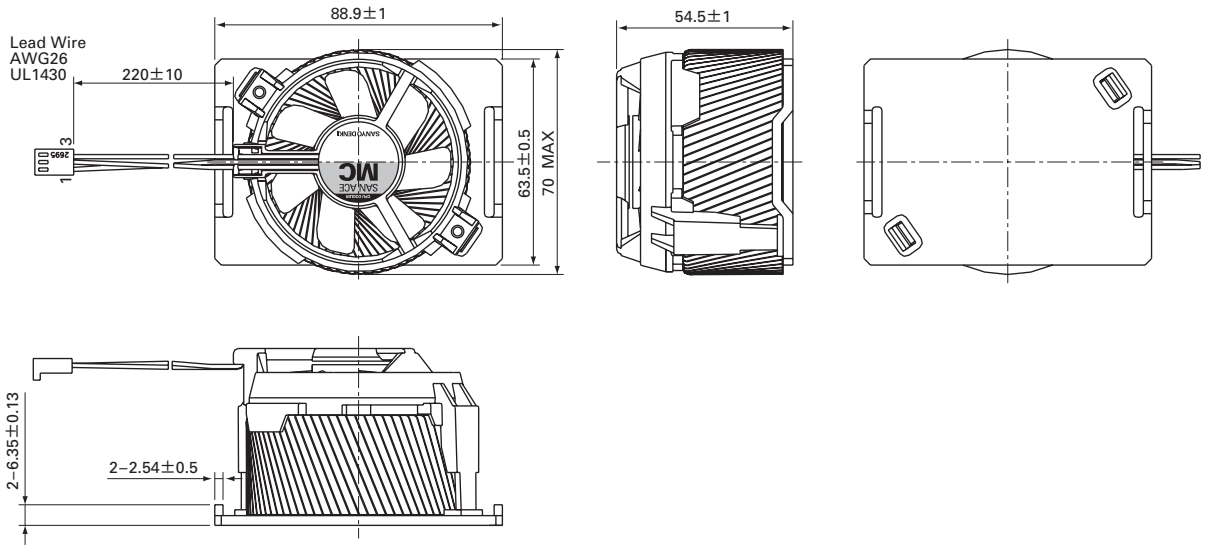
General specifications

Material ·····Frame, impeller : resin mold Heat sink : copper
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
sensor green (connector No.3 side)
Connector ·····(Molex)22-01-3037 : P/N2695-03RP
Contact ·····Molex P/N5159PBT or 2759T-equivalent
Mass ·····410g

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Lange (℃)	Life Expectancy (h)
9H9912G5016	12	7～13.8	0.07	4,800	1.15	35	0 ～+70	40,000

Dimensions (unit : mm)



CPU Cooler

For Intel® Pentium® 4 Processor 2.0GHz (Socket 423)

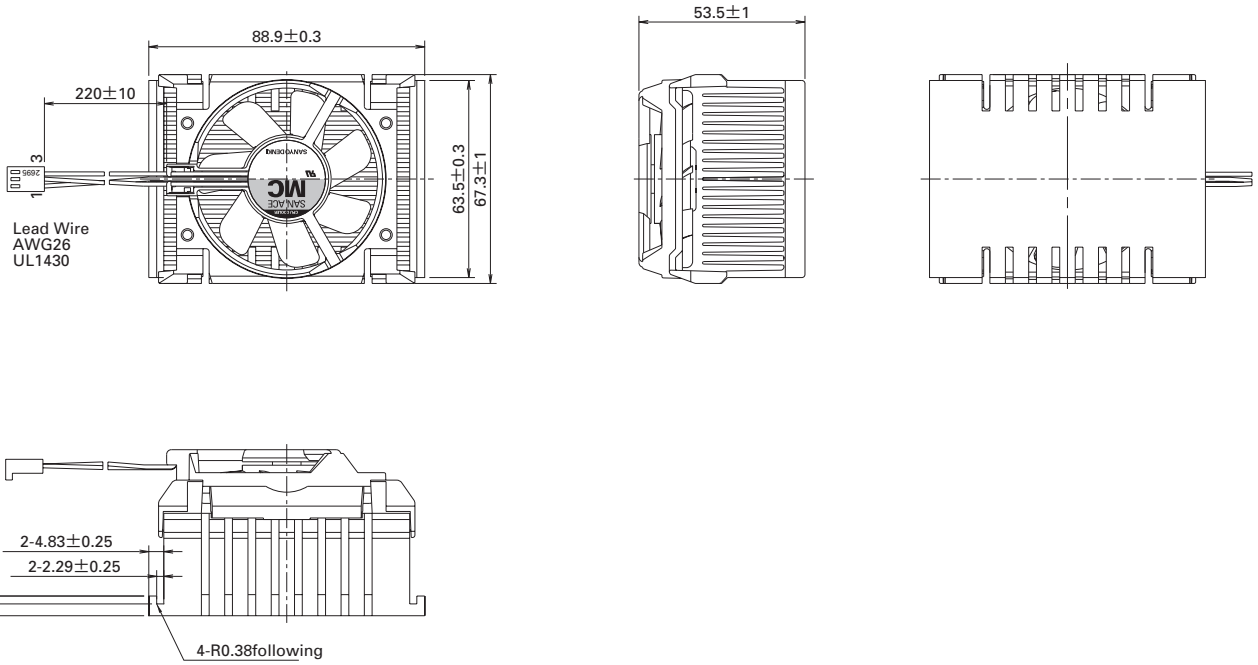
General specifications

Material ·····Frame, impeller : resin mold
Heat sink : aluminum
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
(sensor) green (connector No.3 side)
Connector ·····Molex 22-01-3037 : P/N2695-03RP
Contact ·····Molex P/N5159PBT or 2759T-equivalent
Mass ·····265g

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Lange (℃)	Life Expectancy (h)
109X9612S5016	12	9～13.8	0.23	5,000	0.44	40	0 ～+70	40,000

Dimensions (unit : mm)



CPU Cooler

For Intel® Pentium® Ⅲ Processor 1.4GHz (FC-PGA2)

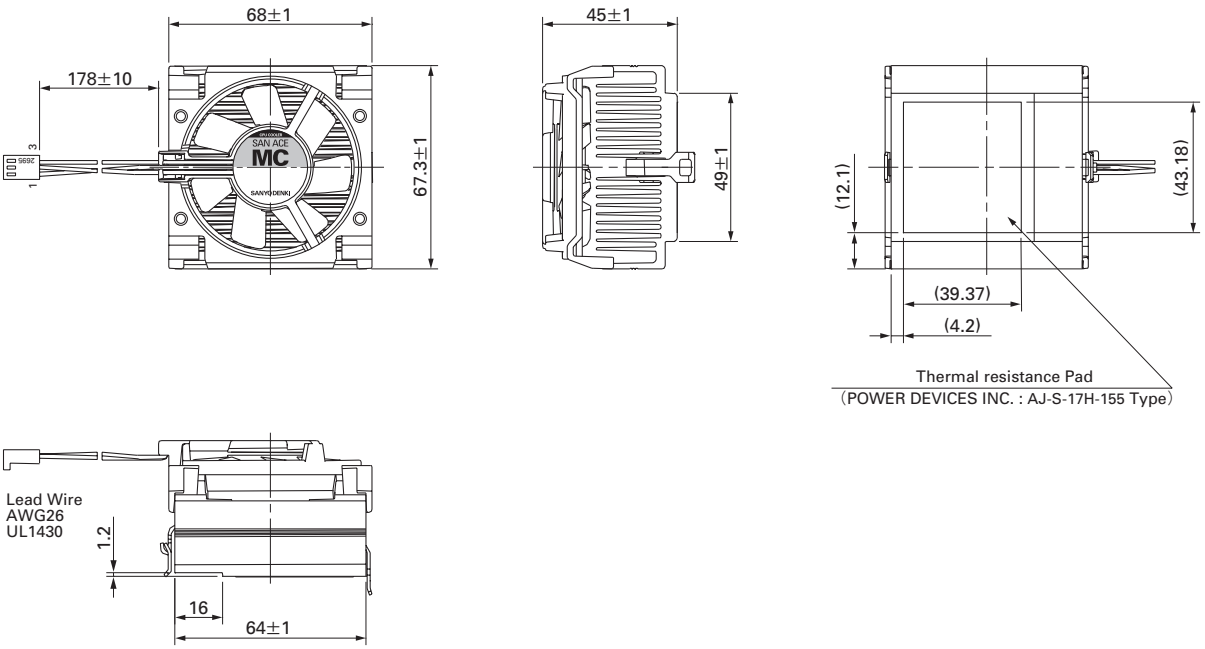
General specifications

Material ·····Frame, impeller : resin mold
Heat sink : aluminum
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
(sensor) green (connector No.3 side)
Connector ·····Molex 22-01-3037 : P/N2695-03RP
Contact ·····Molex P/N5159PBT-equivalent
Mass ·····180g

Specifications

Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Lange (℃)	Life Expectancy (h)
109X7612H1176	12	7～13.8	0.1	3,900	0.59	31	0 ～+70	40,000

Dimensions (unit : mm)



CPU Cooler

For Intel® Pentium® Ⅲ Processor 1.4GHz (FC-PGA2)

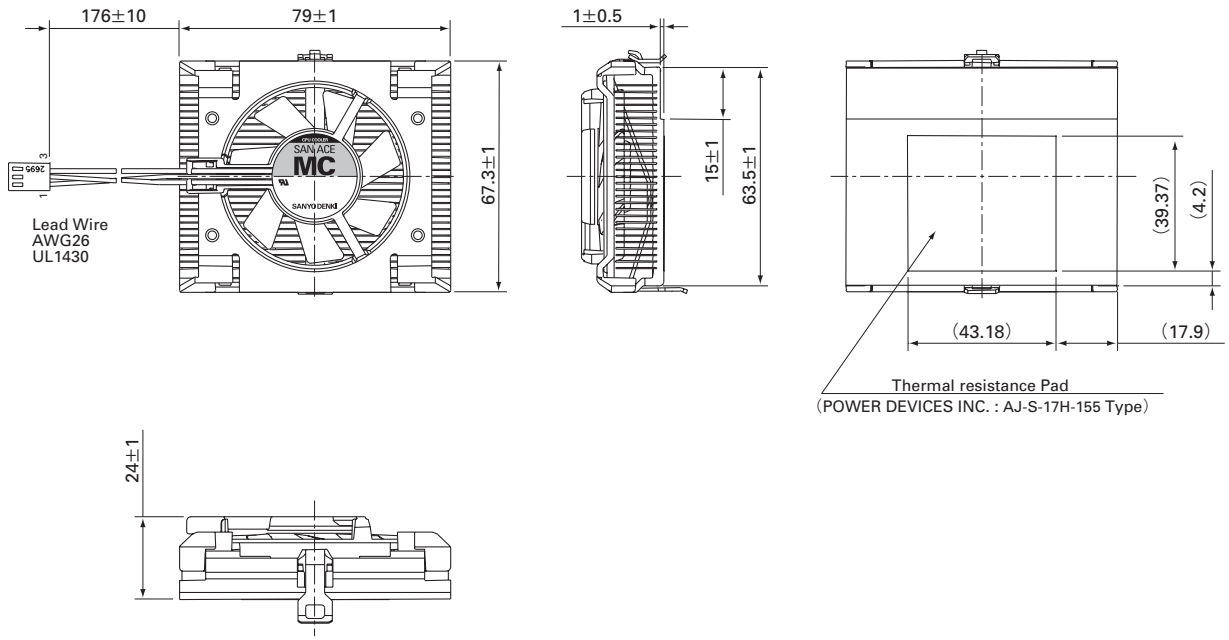
General specifications

Material ·····Frame, impeller : resin mold
Heat sink : aluminum base + copper fin
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Lead Wire ·····⊕yellow (connector No.2 side)
⊖black (connector No.1 side)
(sensor) green (connector No.3 side)
Connector ·····Molex 22-01-3037 : P/N2695-03RP
Contact ·····Molex P/N5159PBT or 2759T-equivalent
Mass ·····145g

Specifications

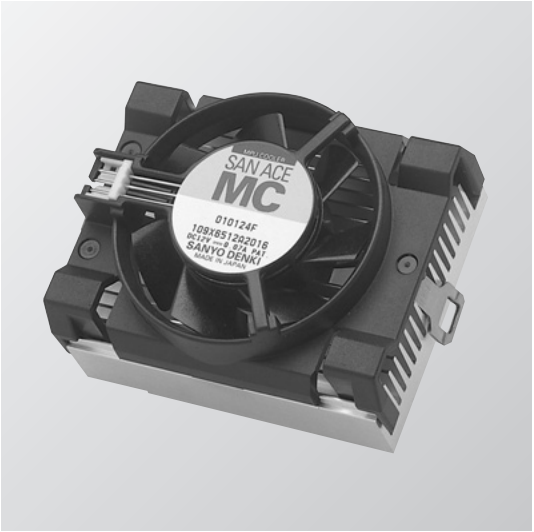
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Lange (℃)	Life Expectancy (h)
109X7412S4016	12	7～13.8	0.22	6,000	0.625	42	0 ～+70	40,000

Dimensions (unit : mm)



CPU Cooler

For Intel® Pentium® Ⅲ Processor 800MHz (FC-PGA)



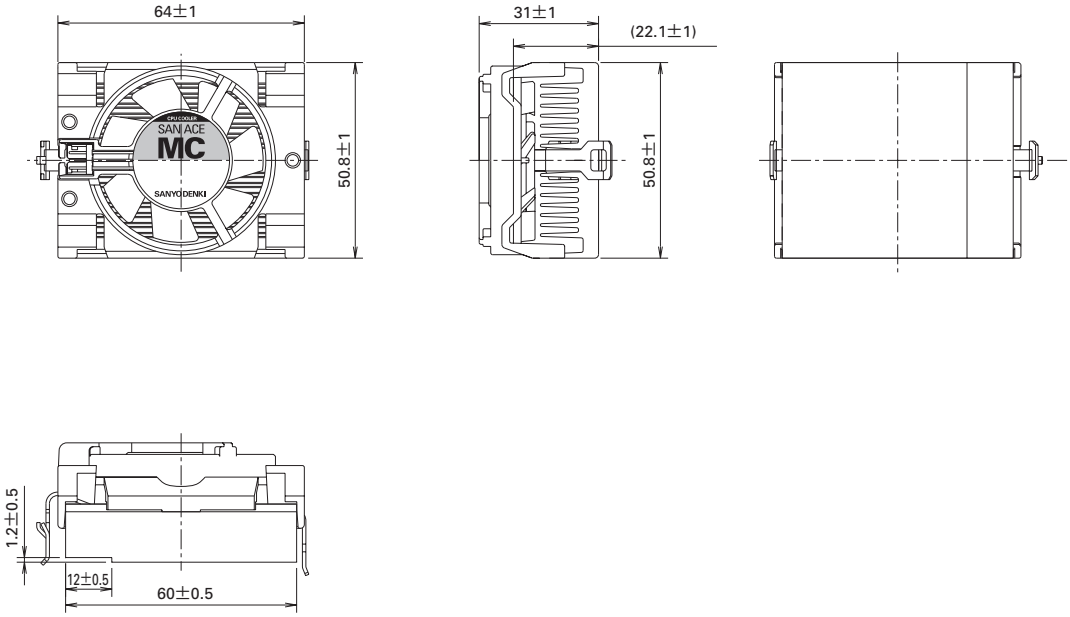
General specifications

Material ·····Frame, impeller : resin mold
Heat sink : aluminum
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temperature Range ··Varies for each model (Non-condensing)
Post Header ·····AMP P/N 173981-3 or equivalent
Kyocera Elco
P/N 00-8283-0312-00-000 or compatible
⊕No.3Pin
⊖No.2Pin
(sensor) No.1Pin
Mass ·····110g

Specifications

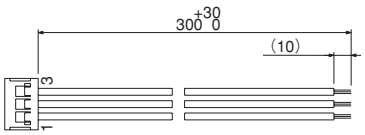
Model No.	Rated Voltage (V)	Operating Voltage Range (V)	Rated Current (A)	Rated Speed (min^{-1})	θc-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Lange (℃)	Life Expectancy (h)
109X6512A2016	12	7～13.8	0.07	4,800	1.15	35	0 ～+70	40,000

Dimensions (unit : mm)



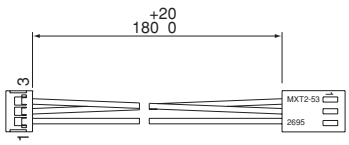
Relay harness

489-702



Connector : AMP 179228-3
Contact : AMP 179518-1
or 179227-1
Read Wire : AWG24 UL1007

489-1115



Connector : Molex P/N 2695-03RP
Contact : Molex P/N 5159PBT
or equivalent
Read Wire : AWG24 UL1007

Liquid Cooling Solution System

" SAN ACE MC-Liquid"
Preeminent cooling performance

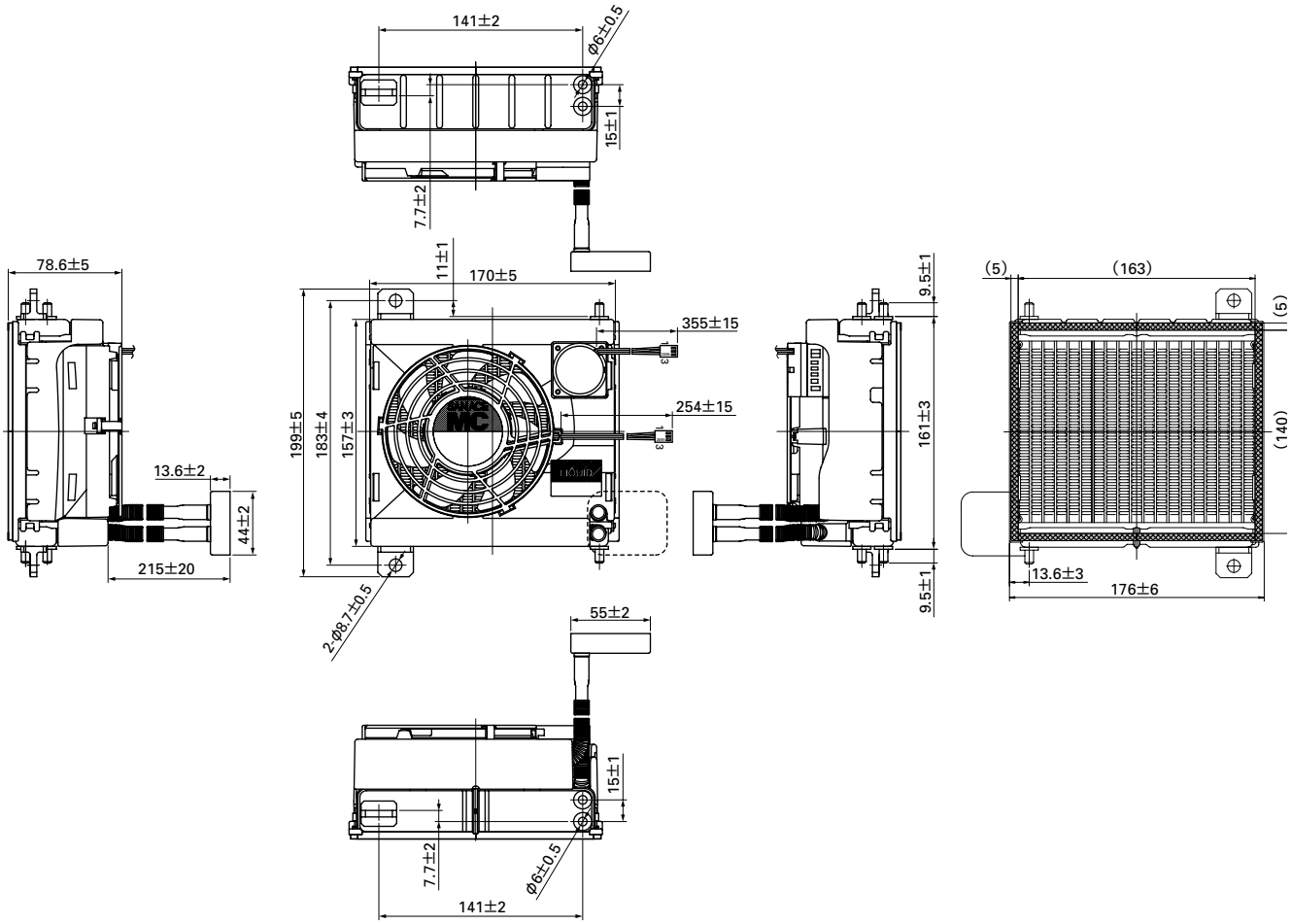
General specifications

Material ·····Plasics:Fan frame, Fan impeller, Fan Grad. Pump casing
Pump impeller, Tube, Gasket stand
Aluminum:pump motor casing, Radiator
Rubber Sponge：Gasket
Copper:Cold plate
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃,
rated voltage,and continuously run in a free air state)
Motor Protection System ····Current blocking function (with reverse polarity protection)
Dielectric Strength ·····50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet Side on Fan
Operating Temperature Range ··Varies for each model (Non-condensing)
Fan ·····Thermal Speed Controll
Mass ·····1,150g

Specifications

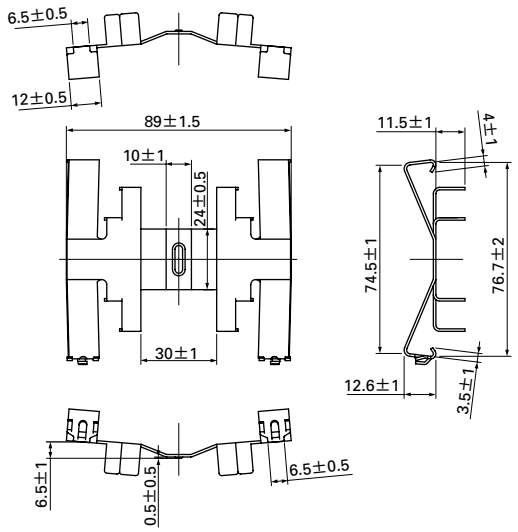
Model No.	Rated Voltage (V)	Operating Voltage Range (V)		Rated Current (A)		Rated Speed (min^{-1})		θ c-a Thermal Resistance (K/W)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
		Fan	Pump	Fan	Pump	Fan	Pump				
109-LC1-001	12	7～12.6	7～12.6	0.25	0.12	2,400	2,000	0.22	42	0 ～+60	40,000
						1,300	2,000	0.255	28		

Dimensions (unit : mm)



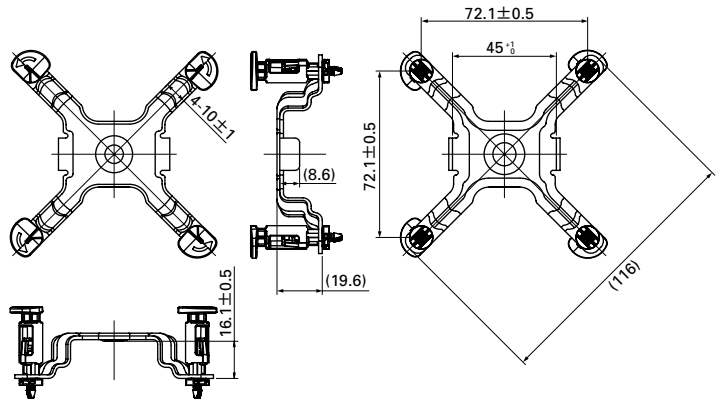
Mounting Clip (unit : mm)

For Socket478
Model No：109-1017



Material : Stainless steel

For 775-land LGA Package
Model No：109-1026

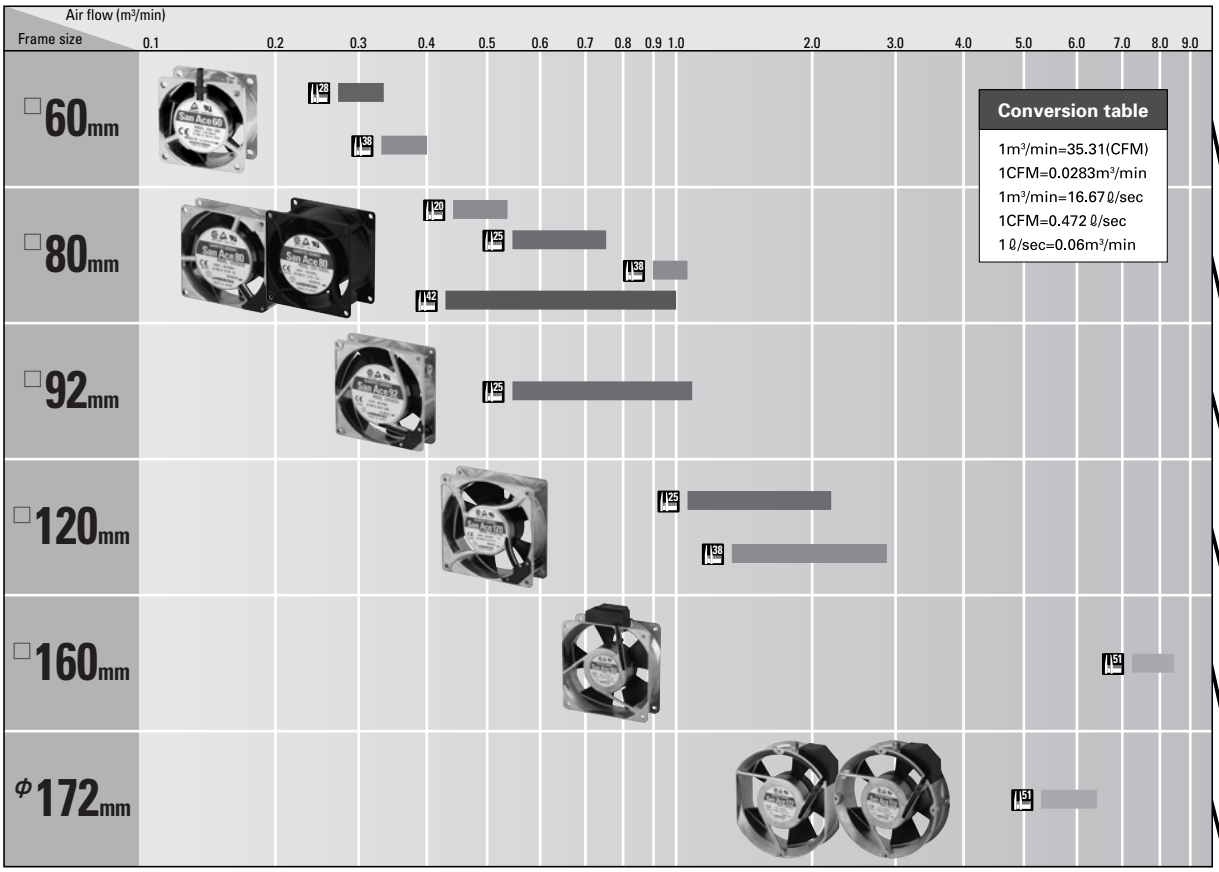


Material : Plastic, Steal

AC FAN

AC Fans

Domain diagram



AC Fan

□60mm
San Ace 60

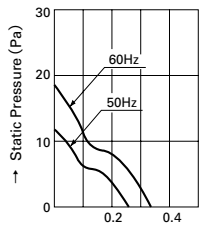
General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Shaded coil motor
Motor Protection System ····Impedance protection
Dielectric Strength ·····50/60 Hz, 1500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Lead Wire ·····black, 2pcs
Mass ·····120g (28mm thick)　170g (38mm thick)

28mm thick
Specifications

Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min) (CFM)	Static Pressure (Pa) (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109-180	100	50/60	5/4	0.06/0.05	0.07/0.06	2250/2700	0.27/0.33 9.5/11.7	11.8/18.6 0.047/0.075	24/26	−30 ～+70	25,000
109-183	115				0.06/0.05						

Air Flow and Static Pressure Characteristics

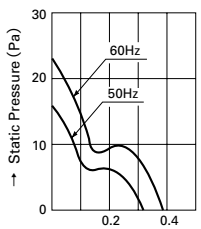


109-180
109-183

38mm thick
Specifications

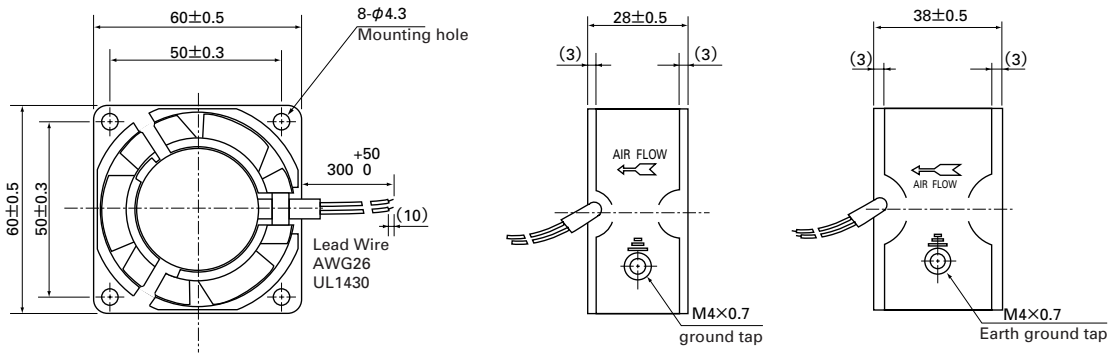
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min) (CFM)	Static Pressure (Pa) (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109-130	100	50/60	6/5	0.08/0.07	0.08/0.07	2600/3150	0.33/0.4 11.7/14.1	16.3/23.3 0.065/0.094	28/30	−30 ～+60	25,000
109-133	115			0.07/0.06	0.07/0.06						

Air Flow and Static Pressure Characteristics



109-130
109-133

Dimensions (unit : mm)

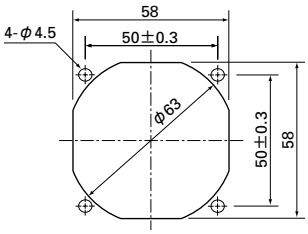


28mm thick

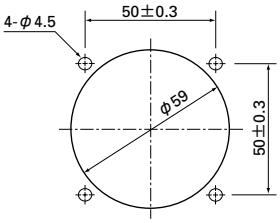
38mm thick

Reference dimension of mounting holes and vent opening (unit : mm)

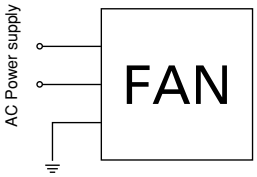
Air outet side



Air inlet side



Wiring diagram



AC Fan

□80mm

San Ace 80

Compact and silent

General specifications

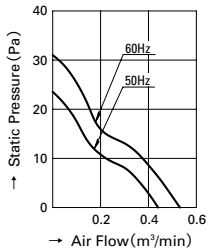
Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Shaded coil motor
Motor Protection System ····Impedance protection
Dielectric Strength ·····50/60 Hz, 1500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
PLug cord ·····For general 489-016(L10,L21)
For UL/CSA 489-147(L10,L21)
Lead Wire ·····black, 2pcs (20mm thick)
Mass ·····180g (20mm thick) 270g (25mm thick) 400g (38mm thick)

20mm thick

Specifications

Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109-210	100	50/60	6/5	0.07/0.06	0.07/0.06	2500/3000	0.44/0.53	15.5/18.7	23.5/31.4	0.094/0.126	26/31	−30 ～+60	25,000
109-213	115			0.06/0.05	0.06/0.05								

Air Flow and Static Pressure Characteristics



109-210
109-213

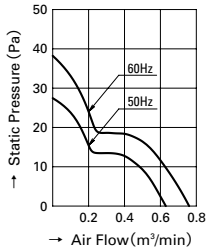
25mm thick

Specifications

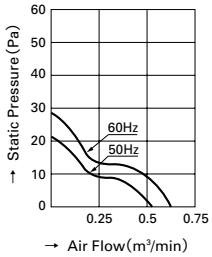
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S050	100	50/60	9/7	0.12/0.1	0.13/0.11	2650/3100	0.63/0.76	22.3/26.9	27.5/38.3	0.110/0.154	30/33	−30 ～+60	25,000
109S053	115			0.1 /0.08	0.11/0.09								
109S051	200			0.06/0.05	0.06/0.05								
109S054	230			0.05/0.04	0.05/0.04								
☆**109S030**	100			0.12/0.1	0.13/0.11	2350/2700	0.55/0.63	19.4/22.3	21.6/28.4	0.087/0.114	28/30		
☆**109S033**	115			0.1 /0.08	0.11/0.09								
☆**109S031**	200			0.06/0.05	0.06/0.05								
☆**109S034**	230			0.05/0.04	0.05/0.04								

Note: ☆represents half-speed.

Air Flow and Static Pressure Characteristics



109S050
109S053
109S051
109S054



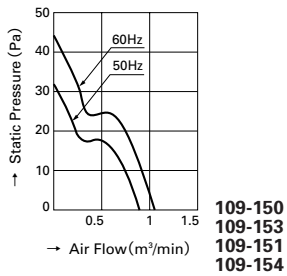
109S030
109S033
109S031
109S034

38mm thick

Specifications

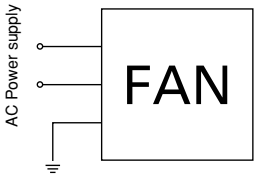
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109-150	100	50/60	9/8	0.13/0.11	0.17/0.15	2700/3150	0.9/1.05	31.8/37.1	31.4/44.1	0.126/0.177	35/39	−30 ～+60	25,000
109-153	115			0.11/0.1	0.14/0.12								
109-151	200			0.07/0.06	0.09/0.08								
109-154	230			0.06/0.05	0.08/0.07								

Air Flow and Static Pressure Characteristics

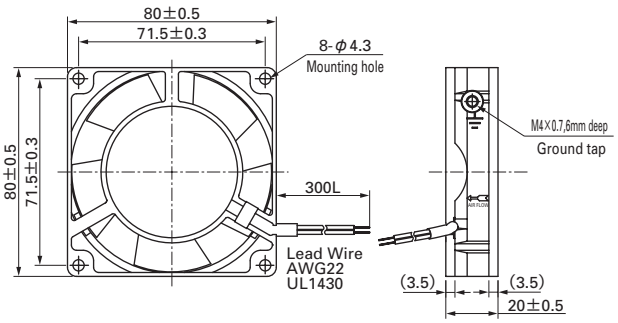


109-150
109-153
109-151
109-154

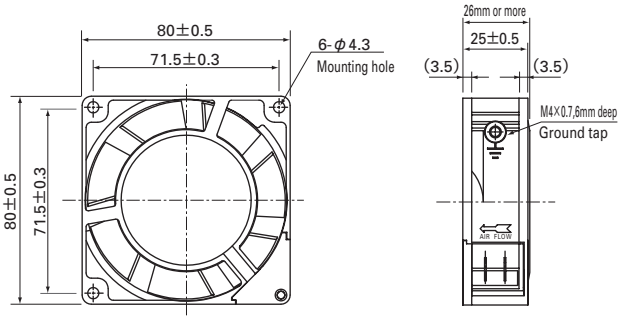
Wiring diagram



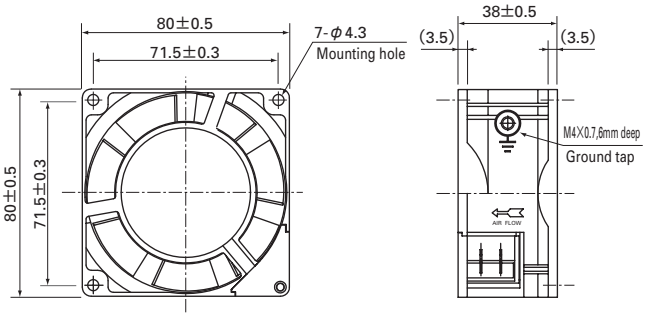
Dimensions (unit : mm)



20mm thick

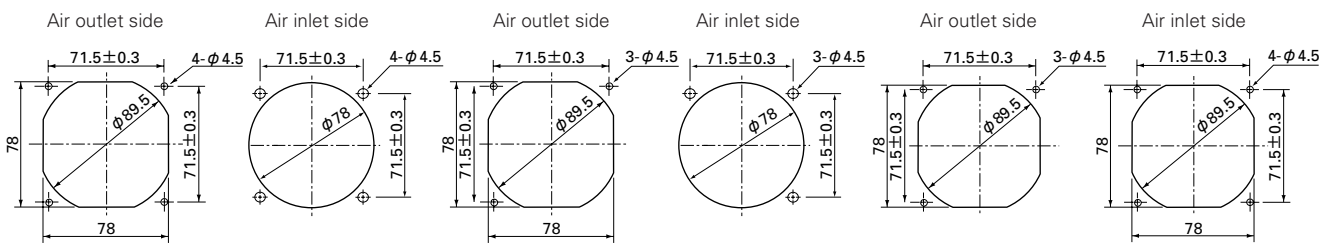


25mm thick



38mm thick

Reference dimension of mounting holes and vent opening (unit : mm)



20mm thick　25mm thick　38mm thick

AC Fan

□80mm

San Ace 80

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Shaded coil motor
Motor Protection System ····Impedance protection
Dielectric Strength ·····50/60 Hz, 1500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Plug cord ·····For general 489-008(L10,L21,L35)
Mass ·····410g

42mm thick

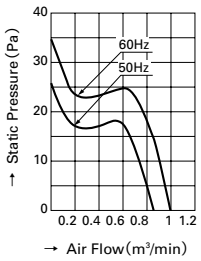
Specifications

Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109-040UL	100	50/60	10/9	0.13/0.11	0.16/0.14	2650/3100	0.85/1.0	30.0/35.3	24.5/35.3	0.098/0.142	40/44	−30 ～+60	25,000
109-043UL	115			0.11/0.1	0.14/0.12								
109-041UL	200			0.07/0.06	0.08/0.07								
109-044UL	230			0.06/0.05	0.07/0.06								
※109-047UL	100		4/3.5	0.05/0.05	0.05/0.05	1500/1500	0.43/0.43	15.2/15.2	8.8/ 8.8	0.035/0.035	24/24		
※109-033UL	115			0.04/0.04	0.04/0.04								

※represents low-speed.

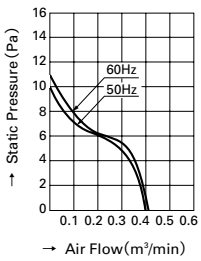
Air Flow and Static Pressure Characteristics

Standard-speed



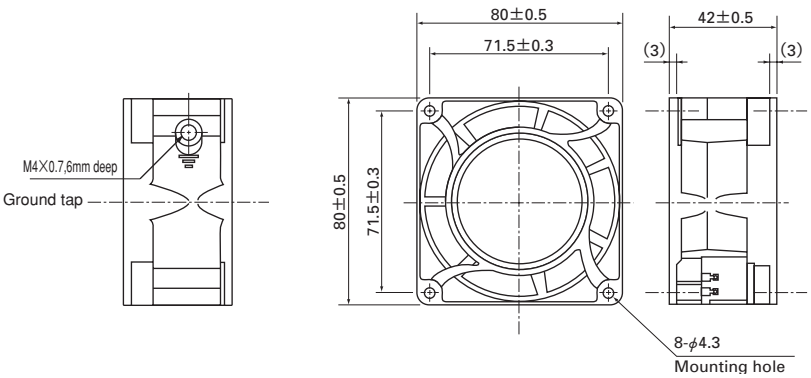
109-040UL
109-043UL
109-041UL
109-044UL

Low-speed

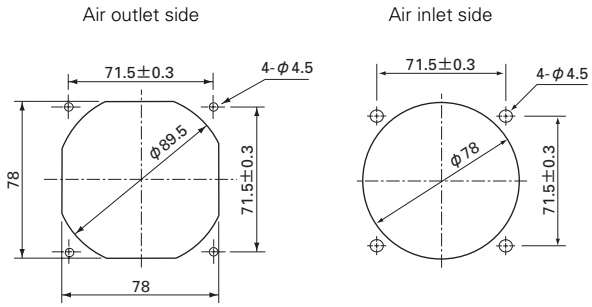


109-047UL
109-033UL

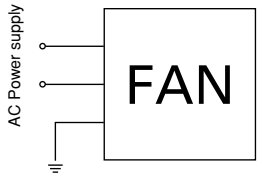
Dimensions (unit : mm)



Reference dimension of mounting holes and vent opening (unit : mm)



Wiring diagram



AC Fan

□92mm
San Ace 92

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Shaded coil motor
Motor Protection System ····Impedance protection
Dielectric Strength ·····50/60 Hz, 1500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Plug cord·····For general 489-016 (L10, L21)
For UL/CSA 489-047 (L10,L21)
Mass ·····290g

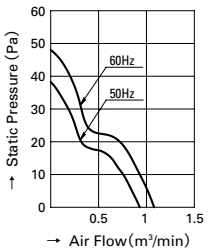
25mm thick
Specifications

Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min) (CFM)	Static Pressure (Pa) (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S091	100	50/60	8/7	0.1 /0.09	0.13/0.12	2700/3100	0.95/1.1 33.6/38.9	39.2/49.0 0.157/0.197	35/38	−30 ～+60	25,000
109S093	115			0.09/0.08	0.11/0.1						
109S092	200		11/10	0.07/0.06	0.08/0.08						
109S094	230		10/9	0.06/0.05	0.07/0.07						
☆109S095	100		8/7	0.1 /0.09	0.11/0.1	2400/2800	0.84/0.98 29.7/34.6	31.4/40.2 0.126/0.161	32/35		
※109S096	100		7/6	0.09/0.08	0.09/0.08	1500/1700	0.55/0.65 19.4/23	12.5/16.3 0.050/0.065	24/27		
※109S193	115			0.08/0.07	0.08/0.07						
※109S192	200		8/7	0.06/0.05	0.06/0.05						
※109S194	230			0.05/0.04	0.05/0.04						

☆ represents half-speed. ※ represents low-spee

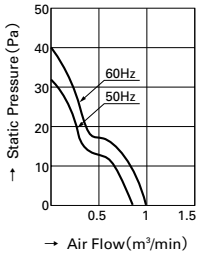
Air Flow and Static Pressure Characteristics

Standard-speed



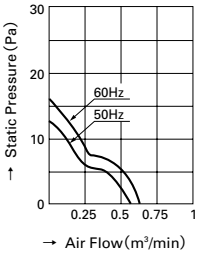
109S091
109S093
109S092
109S094

Half-speed



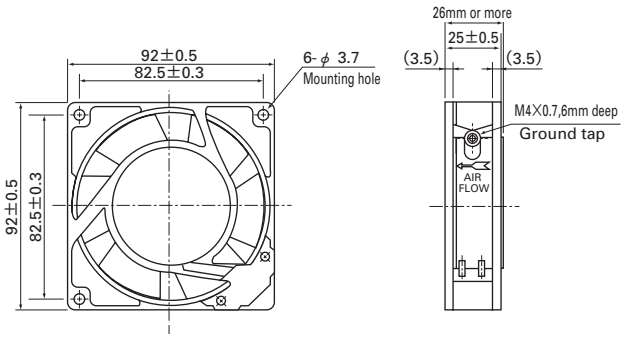
109S095

Low-speed



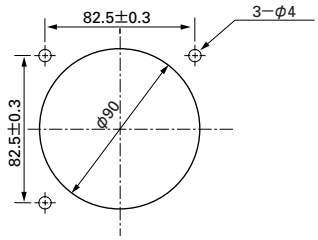
109S096
109S193
109S192
109S194

Dimensions (unit : mm)

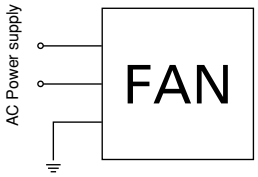


Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side · Air outlet side



Wiring diagram



AC Fan □120mm

San Ace 120

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Shaded coil motor
Motor Protection System ····Impedance protection
Dielectric Strength ·····50/60 Hz, 1500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Plug cord·····489-006 (L10,L21) / 489-016(L10,L21)
38mm thick For UL/CSA 489-007 (L10,L21) 25mm thick For UL/CSA 489-047 (L10,L21)
※Be sure to use a UL/CSA plug cord with any products with a 'UL' at the end of their model numbers.
Mass ·····370g (25mm thick) 550g (38mm thick)

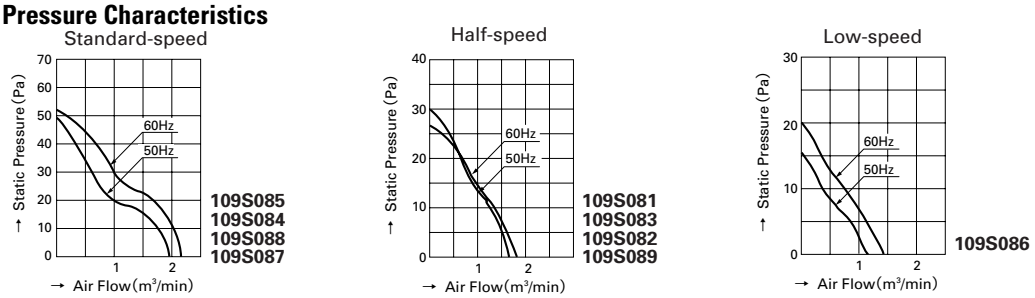
25mm thick

Specifications

Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S085	100	50/60	13.5/12	0.16/0.14	0.19/0.17	2500/2900	1.92/2.22	67.8/78.4	49/53.9	0.197/0.216	38/41	−30 ～+60	25,000
109S084	115			0.14/0.12	0.16/0.15								
109S088	200			0.08/0.07	0.1 /0.09								
109S087	230			0.07/0.06	0.08/0.07								
☆**109S081**	100		9.5/8.5	0.11	0.11/0.1	2200/2350	1.63/1.78	57.6/62.9	29.4/26.3	0.118/0.106	34/35		
☆**109S083**	115			0.1	0.1 /0.09								
☆**109S082**	200			0.07	0.07/0.06								
☆**109S089**	230			0.06	0.06/0.05								
※**109S086**	100		12/10	0.14/0.12	0.15/0.13	1400/1600	1.11/1.35	39.2/47.7	15.7/19.6	0.063/0.079	24/27		

☆ represents half-speed. ※ represents low-spee

Air Flow and Static Pressure Characteristics

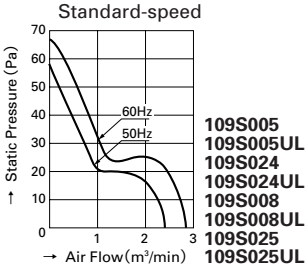


38mm thick

Specifications

Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S005	100	50/60	14/12	0.18/0.16	0.25/0.22	2700/3100	2.35/2.7	83/95.4	55.9/65.7	0.224/0.264	40/43	−30 ～+60	25,000
109S005UL													
109S024	120			0.16/0.14	0.21/0.18								
109S024UL	115												
109S008	200			0.09/0.08	0.13/0.11								
109S008UL													
109S025	230			0.08/0.07	0.11/0.09								
109S025UL													

Air Flow and Static Pressure Characteristics

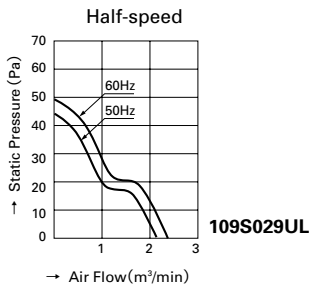


38mm thick
Specifications

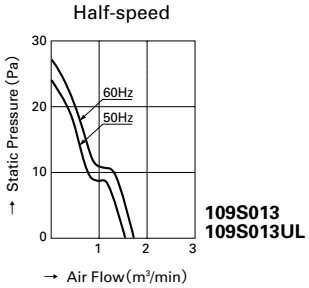
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
☆109S029UL	100	50/60	14/12	0.18/0.16	0.23/0.21	2450/2700	2.15/2.35	76 /83	44.1/49.0	0.177/0.197	38/40	−30 ～+60	25,000
☆109S013			13/11	0.16/0.14	0.16/0.15	1800/2000	1.54/1.72	54.4/60.8	24 /27	0.096/0.108	30/32		
☆109S013UL													
※109S006			7/ 7	0.1 /0.09	0.1 /0.09	1650/1700	1.45/1.5	51.2/53	17.6/17.6	0.071/0.071	28/28		
※109S006UL			7/ 7	0.1 /0.09	0.1 /0.09	1650/1700	1.45/1.5	51.2/53	17.6/17.6	0.071/0.071	28/28		
	115		10/10	0.13/0.11	0.13/0.11	1800/1900	1.56/1.64	55 /57.9	20 /20.6	0.080/0.083	30/31		
※109S010	200		7/ 7	0.05/0.04	0.05/0.04	1650/1700	1.45/1.5	51.2/53	17.6/17.6	0.071/0.071	28/28		
※109S010UL	200		7/ 7	0.05/0.04	0.05/0.04	1650/1700	1.45/1.5	51.2/53	17.6/17.6	0.071/0.071	28/28		
	240		11/11	0.06/0.05	0.06/0.05	1800/1950	1.58/1.68	55.8/59.3	20.6/21.6	0.083/0.087	30/32		

☆ represents half-speed. ※ represents low-spee

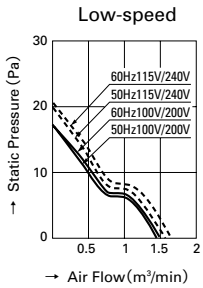
Air Flow and Static Pressure Characteristics



109S029UL



109S013
109S013UL

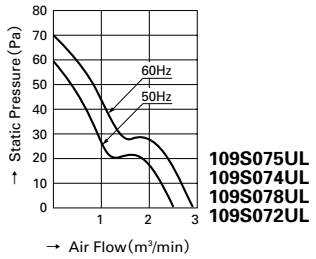


109S006
109S006UL
109S010
109S010UL

38mm thick
Specifications

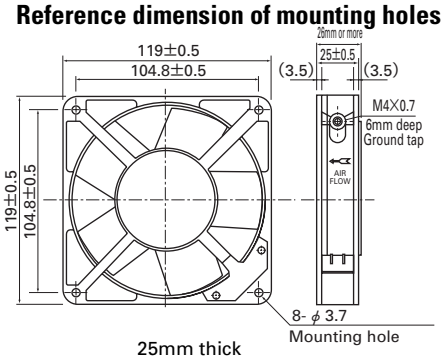
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	(CFM)	Static Pressure (Pa)	(inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S075UL	100	50/60	18/16	0.24/0.21	0.32/0.28	2700/3100	2.5/2.9	88.3/102.5	57.9/68.7	0.233/0.276	42/45	−30 ～+60	25,000
109S074UL	115			0.21/0.18	0.27/0.24								
109S078UL	200			0.12/0.1	0.16/0.14								
109S072UL	230			0.11/0.09	0.14/0.13								

Air Flow and Static Pressure Characteristics

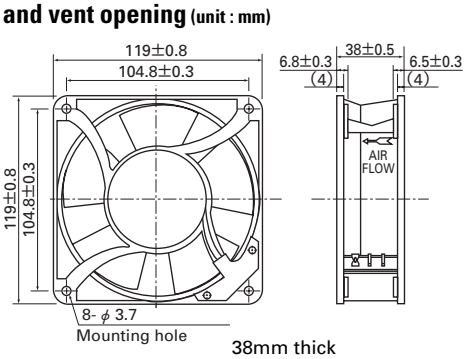


109S075UL
109S074UL
109S078UL
109S072UL

Reference dimension of mounting holes and vent opening (unit : mm)

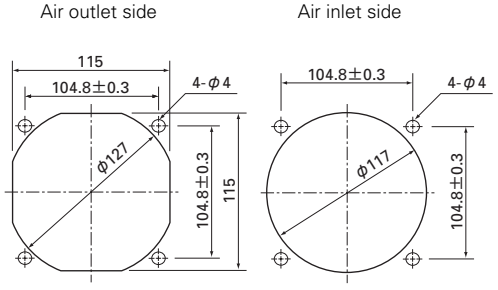


25mm thick

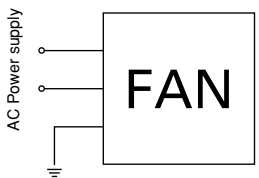


38mm thick

Reference dimension of mounting holes and vent opening (unit : mm)



Wiring diagram



AC Fan

□160mm
San Ace 160

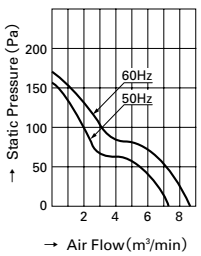
General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Capacitor motor
Motor Protection System ····Thermal protection
Dielectric Strength ·····50/60 Hz, 1500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Plug cord·····For UL/CSA 489-084 (L10,L21)
For UL/CSA 489-086 (L10,L21)
Mass ·····1,100g

51mm thick
Specifications

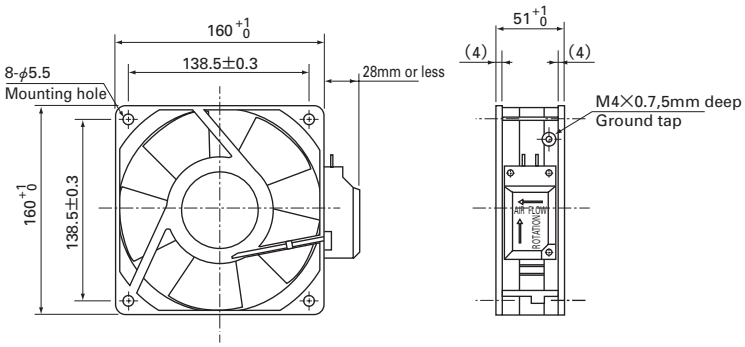
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min^{-1})	Air Flow (m^3/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure ($inchH_2O$)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109-601	100	50/60	37.5/33	0.43/0.35	0.72/0.70	2850/3350	7.2/8.5	254.4/300.4	156.8/166.6	0.630/0.669	56/60	−30 ～+60	25,000
109-604	115			0.39/0.31	0.62/0.61								
109-602	200			0.23/0.18	0.36/0.35								
109-603	230			0.21/0.16	0.32/0.31								

Air Flow and Static Pressure Characteristics



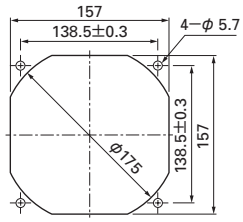
109-601
109-604
109-602
109-603

Dimensions (unit : mm)

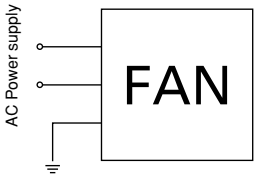


Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



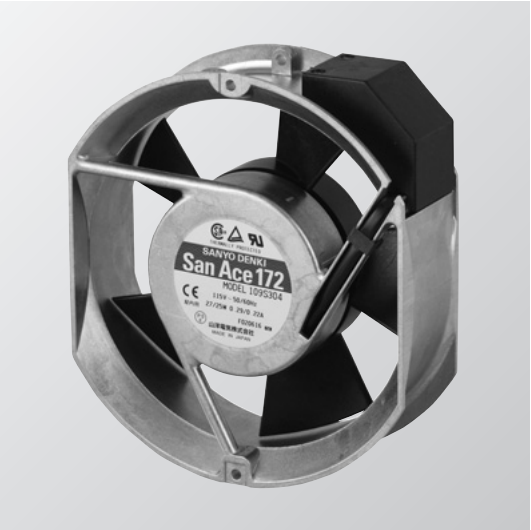
Wiring diagram



AC Fan

ø172mm

San Ace 172



General specifications

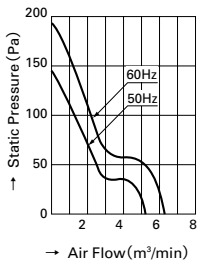
Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Capacitor motor
Motor Protection System ····Thermal protection
Dielectric Strength ·····50/60 Hz, 1500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Plug cord·····For UL/CSA 489-084 (L10,L21)
For UL/CSA 489-086 (L10,L21)
Mass ·····900g

51mm thick (Sidecut type)

Specifications

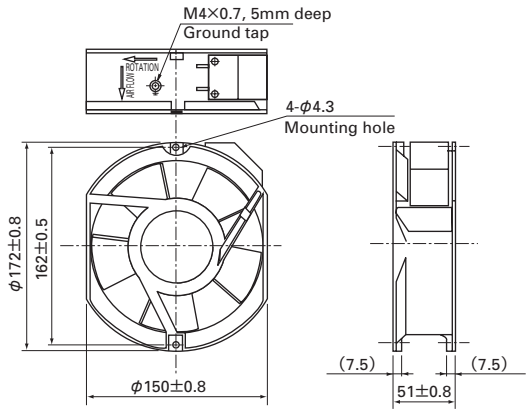
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S301	100	50/60	27/25	0.33/0.25	0.65/0.64	2900/3500	5.3/6.4	187.3/226.1	147/196	0.590/0.787	51/56	−30 ～+60	25,000
109S304	115			0.29/0.22	0.55/0.54								
109S302	200			0.16/0.13	0.33/0.32								
109S303	230			0.14/0.11	0.28/0.27								

Air Flow and Static Pressure Characteristics



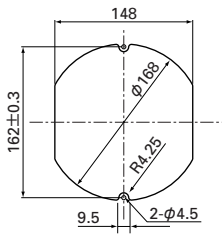
109S301
109S304
109S302
109S303

Dimensions (unit : mm)

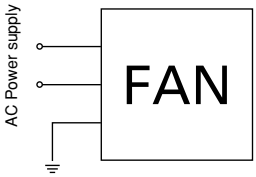


Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Wiring diagram



AC Fan

ø172mm

San Ace 172

General specifications

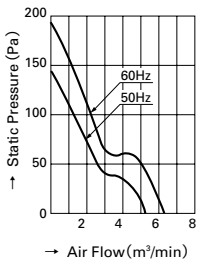
Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Capacitor motor
Motor Protection System ····Thermal protection
Dielectric Strength ·····50/60 Hz, 1500VAC, 1 minute (between lead conductor and frame)
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Plug cord·····For UL/CSA 489-084 (L10,L21)
For UL/CSA 489-086 (L10,L21)
Mass ·····960g

51mm thick (Round type)

Specifications

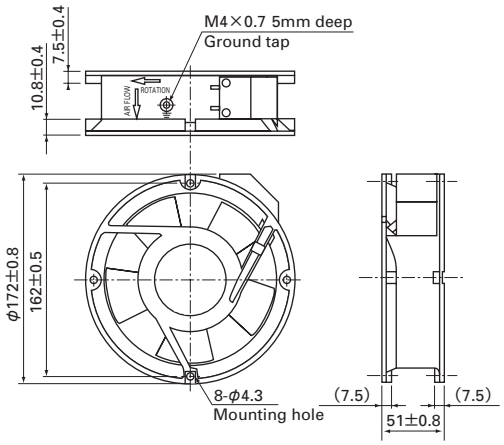
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109-311	100	50/60	27/25	0.33/0.25	0.65/0.64	2900/3500	5.3/6.4	187.3/226.1	147/196	0.590/0.787	47/51	−30 ～+60	25,000
109-314	115			0.29/0.22	0.55/0.54								
109-312	200			0.16/0.13	0.33/0.32								
109-313	230			0.14/0.11	0.28/0.27								

Air Flow and Static Pressure Characteristics



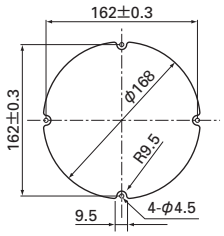
109-311
109-314
109-312
109-313

Dimensions (unit : mm)

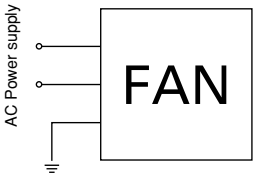


Reference dimension of mounting holes and vent opening (unit : mm)

Air inlet side・Air outlet side



Wiring diagram



AC Fan
With Sensor

□92mm
San Ace 92

General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Shaded coil motor
Motor Protection System ····Impedance protection
Dielectric Strength ·····between AC input and DC input (Sensor output) : 50/60 Hz, 1000 VAC,1 minute
between AC input and G:50/60 Hz, 1500 VAC, 1 minute
between G and DC input (Sensor output) : 50/60 Hz, 1000 VAC, 1 minute
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Sensor-Purpose Lead Wire ··⊕brown,⊖black,(Sensor)yellow
Plug cord·····For general 489-016 (L10, L21)
For UL/CSA 489-047 (L10,L21)
Mass ·····310g

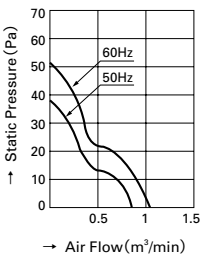
25mm thick
Specifications

Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S491	100	50/60	8/ 7	0.1 /0.09	0.13/0.12	2700/3100	0.95/1.1	33.6/38.9	39.2/49.0	0.157/0.197	35/38	−10～+60	25,000
109S493	115			0.09/0.08	0.11/0.1								
109S492	200		11/10	0.07/0.06	0.08/0.08								
109S494	230		10/ 9	0.06/0.05	0.07/0.07								
☆**109S495**	100		8/ 7	0.1 /0.09	0.11/0.1	2400/2800	0.84/0.98	29.7/34.6	31.4/40.2	0.126/0.161	32/35		
※**109S496**			7/ 6	0.09/0.08	0.09/0.08	1500/1700	0.55/0.65	19.4/23	12.5/16.3	0.050/0.065	24/27		

☆ represents half-speed. ※ represents low-speed

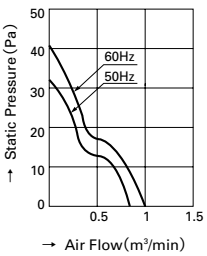
Air Flow and Static Pressure Characteristics

Standard-speed



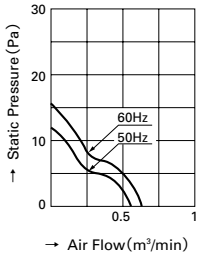
109S491
109S493
109S492
109S494

Half-speed



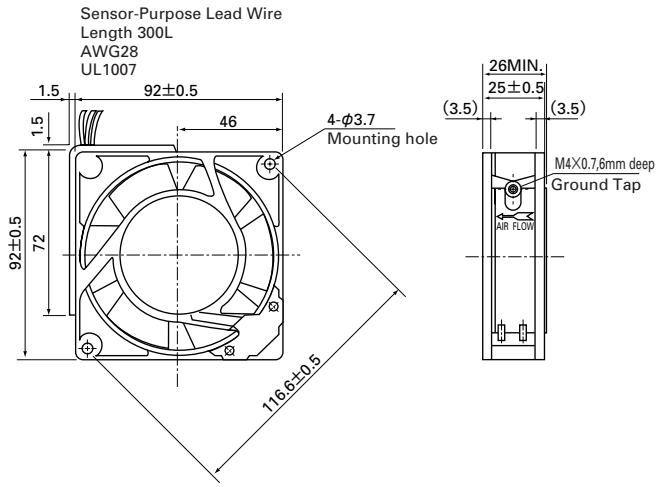
109S495

Low-speed

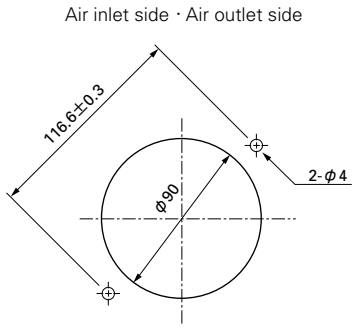


109S496

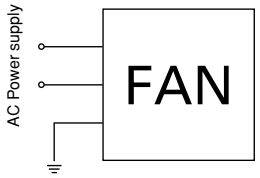
Dimensions (unit : mm)



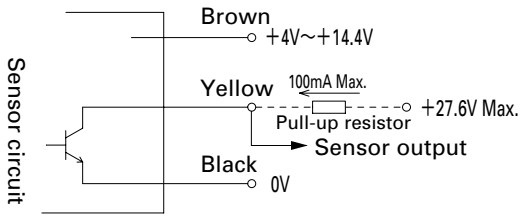
Reference dimension of mounting holes and vent opening (unit : mm)



Wiring diagram (For fan power supply)



Wiring diagram (Sensor Output Circuit)



AC Fan
With Sensor

□120mm
San Ace 120

General specifications

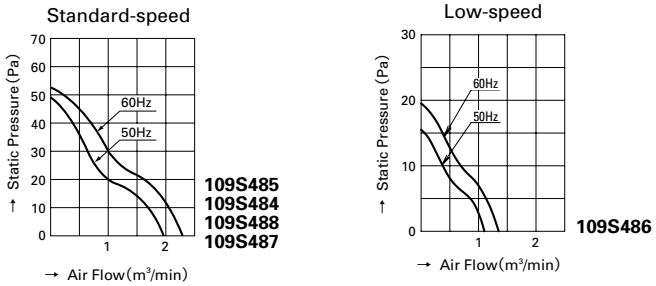
Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Shaded coil motor
Motor Protection System ····Impedance protection
Dielectric Strength ·····between AC input and DC input (Sensor output) : 50/60 Hz, 1000 VAC, 1 minute
between AC input and G:50/60 Hz, 1500 VAC, 1 minute
between G and DC input (Sensor output) : 50/60 Hz, 1000 VAC, 1 minute
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Sensor-Purpose Lead Wire ··⊕brown,⊖black,(Sensor)yellow
Plug cord·····25mm thick For 489-016 (L10, L21)
38mm thick For UL/CSA 489-007 (L10, L21)
25mm thick For UL/CSA 489-047 (L10, L21)
※Be sure to use a UL/CSA plug cord with any products with a 'UL' at the end of their model numbers.
Mass ·····390g(25mm thick) 580g(38mm thick)

25mm thick
Specifications

Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min) (CFM)	Static Pressure (Pa) (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S485	100	50/60	13.5/12	0.16/0.14	0.19/0.17	2500/2900	1.92/2.22 67.8/78.4	48 /52 0.193/0.209	38/41	−10 ～+60	25,000
109S484	115			0.14/0.12	0.16/0.15						
109S488	200			0.08/0.07	0.1 /0.09						
109S487	230			0.07/0.06	0.08/0.07						
※109S486	100		12 /10	0.14/0.12	0.15/0.13	1400/1600	1.11/1.35 39.2/47.7	15.7/19.6 0.059/0.075	24/27		

※ represents low-speed

Air Flow and Static Pressure Characteristics

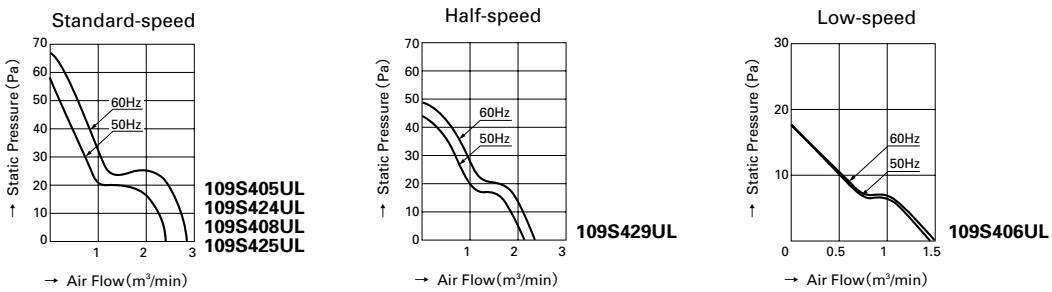


38mm thick
Specifications

Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min) (CFM)	Static Pressure (Pa) (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S405UL	100	50/60	14/12	0.18/0.16	0.25/0.22	2700/3100	2.35/2.7 83/95.4	55.9/65.7 0.224/0.264	40/43	−10 ～+60	25,000
109S424UL	115			0.16/0.14	0.21/0.18						
109S408UL	200			0.09/0.08	0.13/0.11						
109S425UL	230			0.08/0.07	0.11/0.09						
☆109S429UL	100			0.18/0.16	0.23/0.21	2450/2700	2.15/2.35 76/83	44.1/49.0 0.177/0.197	38/40		
※109S406UL			7/6	0.09/0.08	0.1 /0.09	1650/1700	1.45/1.5 51/53	17.7/17.7 0.071/0.071	28/28		

☆ represents half-speed. ※ represents low-speed

Air Flow and Static Pressure Characteristics

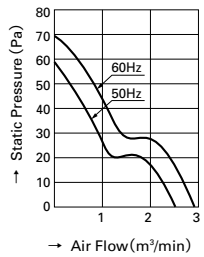


38mm thick

Specifications

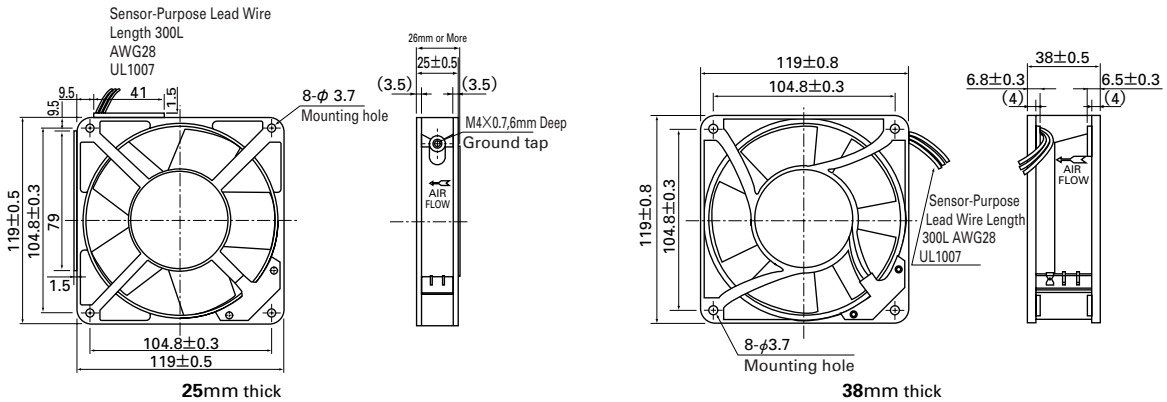
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109S475UL	100	50/60	18/16	0.24/0.21	0.32/0.28	2700/3100	2.5/2.9	88.3/102.4	57.9/68.7	0.233/0.276	42/45	−10 ～+60	25,000
109S474UL	115			0.21/0.18	0.27/0.24								
109S478UL	200			0.12/0.1	0.16/0.14								
109S472UL	230			0.11/0.09	0.14/0.13								

Air Flow and Static Pressure Characteristics

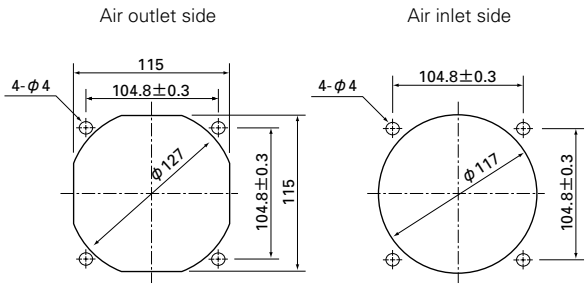


109S475UL
109S474UL
109S478UL
109S472UL

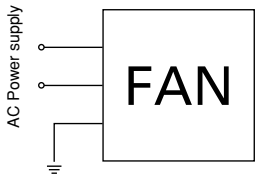
Dimensions (unit : mm)



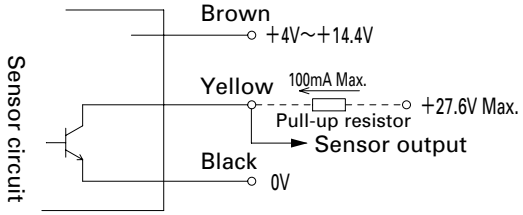
Reference dimension of mounting holes and vent opening (unit : mm)



Wiring diagram (For fan power supply)



Wiring diagram (Sensor Output Circuit)



AC Fan
With Sensor

□160mm
San Ace 160

General specifications

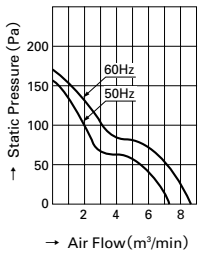
Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Capacitor motor
Motor Protection System ····Thermal protection
Dielectric Strength ·····between AC input and DC input (Sensor output) : 50/60 Hz, 1000 VAC, 1 minute
between AC input and G:50/60 Hz, 1500 VAC, 1 minute
between G and DC input (Sensor output) : 50/60 Hz, 1000 VAC, 1 minute
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Sensor-Purpose Lead Wire ··⊕brown,⊖black,(Sensor)yellow
Plug cord·····For UL/CSA 489-084 (L10, L21)
489-086 (L10, L21)
Mass ·····1,100g

51mm thick

Specifications

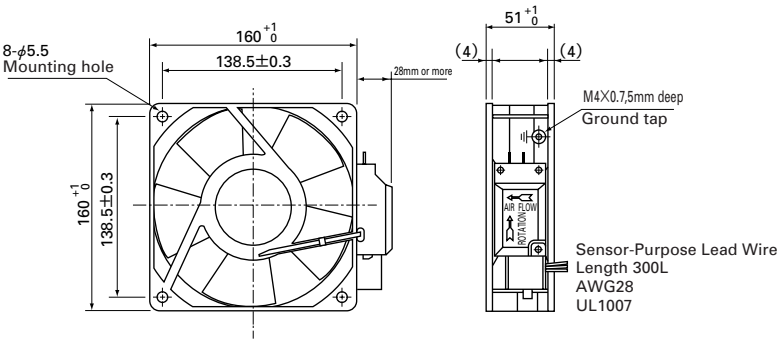
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109-641	100	50/60	37.5/33	0.43/0.35	0.72/0.70	2850/3350	7.2/8.5	254.4/300.4	156.8/166.6	0.630/0.669	56/60	−10 ～+60	25,000
109-644	115			0.39/0.31	0.62/0.61								
109-642	200			0.23/0.18	0.36/0.35								
109-643	230			0.21/0.16	0.32/0.31								

Air Flow and Static Pressure Characteristics



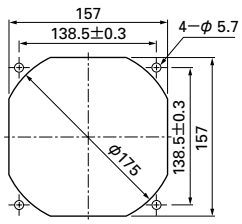
109-641
109-644
109-642
109-643

Dimensions (unit : mm)

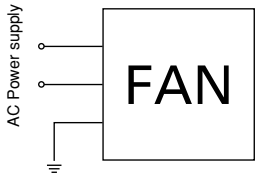


Reference dimension of mounting holes and vent opening (unit : mm)

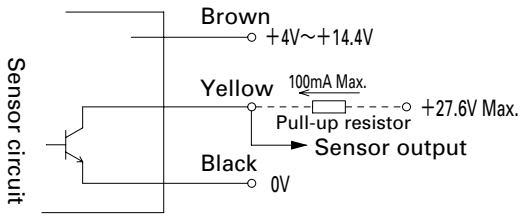
Air inlet side・Air outlet side



Wiring diagram (For fan power supply)



Wiring diagram (Sensor Output Circuit)



AC Fan
With Sensor

ø172mm
San Ace 172

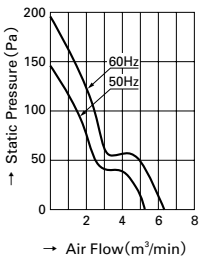
General specifications

Material ·····Frame:Aluminum, Impeller:Plastics
Life Expectancy ·····Varies for each model (Survival rate: 90% at 60℃, rated voltage,and continuously run in a free air state)
Motor Construction·····Capacitor motor
Motor Protection System ····Thermal protection
Dielectric Strength ·····between AC input and DC input (Sensor output) : 50/60 Hz, 1000 VAC, 1 minute
between AC input and G:50/60 Hz, 1500 VAC, 1 minute
between G and DC input (Sensor output) : 50/60 Hz, 1000 VAC, 1 minute
Noise Measurement Method ··Measured at 1m from the air inlet
Operating Temprature Range ····Varies for each model (Non-condensing)
Operating Voltage Range ····±10%
Sensor-Purpose Lead Wire ··⊕brown,⊖black,(Sensor)yellow
Plug Cord ·····For UL/CSA 489-084 (L10, L21)
489-086 (L10, L21)
Mass ·····980g

51mm thick
Specifications

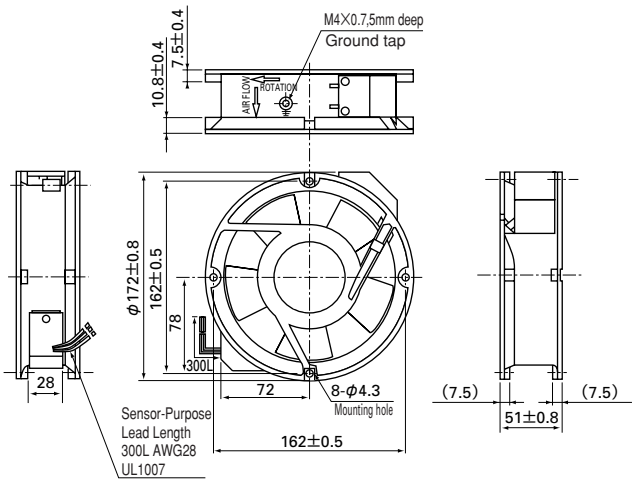
Model No.	Voltage (V)	Frequency (Hz)	Input (W)	Current (A)	Locked Rotor Current (A)	Rated Speed (min⁻¹)	Air Flow (m³/min)	Air Flow (CFM)	Static Pressure (Pa)	Static Pressure (inchH₂O)	Noise (dB [A])	Operating Temperature Range (℃)	Life Expectancy (h)
109-371	100	50/60	27/25	0.33/0.25	0.65/0.64	2900/3500	5.3/6.4	187.3/226.1	147/196	0.590/0.787	47/51	−10 ～+60	25,000
109-374	115			0.29/0.22	0.55/0.54								
109-372	200			0.16/0.13	0.33/0.32								
109-373	230			0.14/0.11	0.28/0.27								

Air Flow and Static Pressure Characteristics



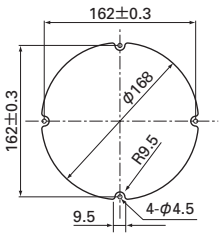
109-371
109-374
109-372
109-373

Dimensions (unit : mm)

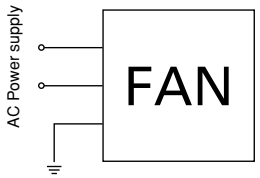


Reference dimension of mounting holes and vent opening (unit : mm)

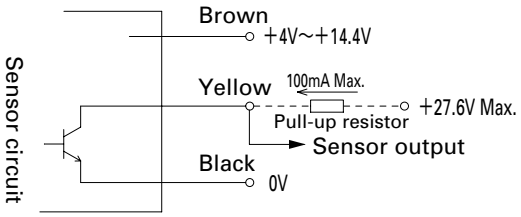
Air inlet side · Air outlet side



Wiring diagram (For fan power supply)

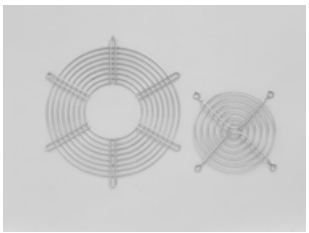


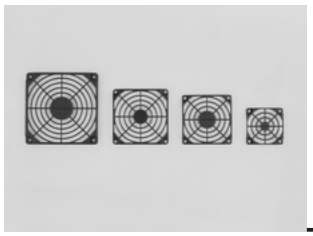
Wiring diagram (Sensor Output Circuit)



OPTIONS

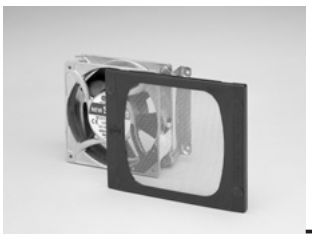
Finger guards • Resin finger guard





Filter kits • Resin filter kits

Screen kits



Plug cord

Connector · Thermistor · Alarm IC

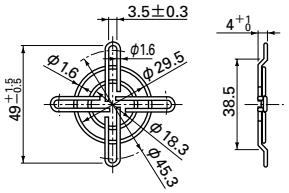
Finger guards

Surface treatment	color
Nickel-chrome plating	silver
Cation electropainting	black

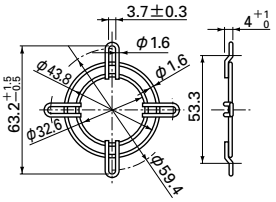
*	Either outlet and inlet
**	Outlet side
***	Inlet side

Dimensions (unit : mm)

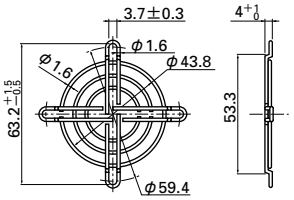
●40×40mm type*
Model : 109-059 Surface treatment : Nickel-chrome plating



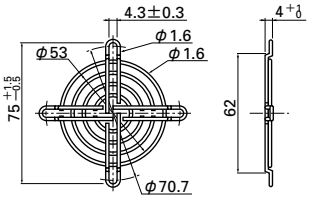
●52×52mm type**
Model : 109-149 Surface treatment : Nickel-chrome plating



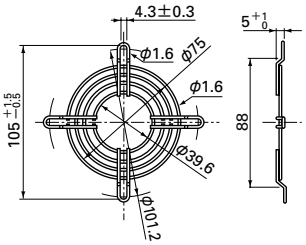
●52×52mm type*
Model : 109-149E Surface treatment : Nickel-chrome plating



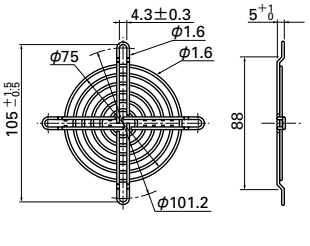
●60×60mm type*
Model : 109-139E Surface treatment :Nickel-chrome plating
Model : 19-139H Surface treatment :Cation electropainting



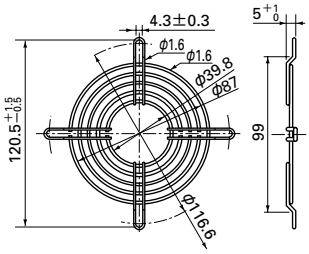
●80×80mm type**
Model : 109-049C Surface treatment : Nickel-chrome plating



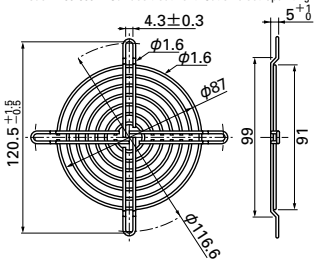
●80×80mm type*
Model : 109-049E Surface treatment : Nickel-chrome plating
Model : 109-049H Surface treatment :Cation electropainting



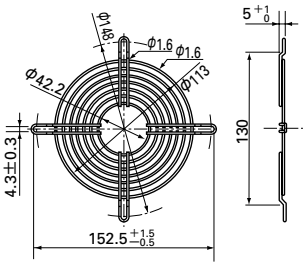
●92×92mm type**
Model : 109-099C Surface treatment : Nickel-chrome plating



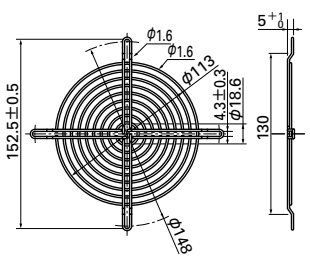
●92×92mm type*
Model : 109-099E Surface treatment :Nickel-chrome plating
Model : 109-099H Surface treatment :Cation electropainting



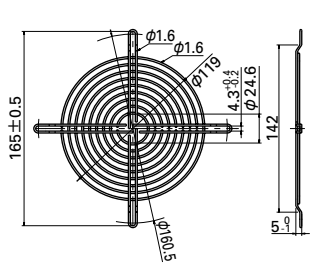
●120×120mm type**
Model : 109-019C Surface treatment : Nickel-chrome plating
Model : 109-019H Surface treatment :Cation electropainting



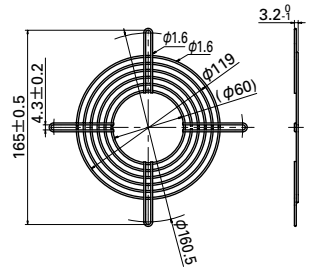
●120×120mm type*
Model : 109-019E Surface treatment : Nickel-chrome plating
Model : 109-019K Surface treatment :Cation electropainting



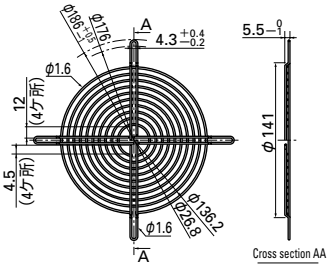
●127×127mm type*
Model : 109-722 Surface treatment :Nickel-chrome plating



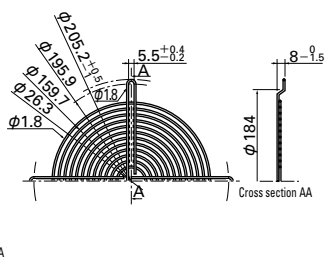
●127×127mm type**
Model : 109-723 Surface treatment :Nickel-chrome plating



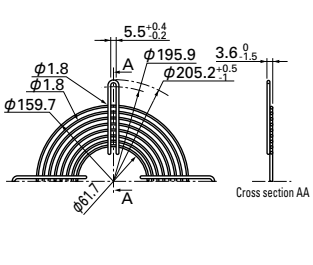
●140×140mm type*
Model : 109-719 Surface treatment : Nickel-chrome plating
Model : 109-719H Surface treatment :Cation electropainting



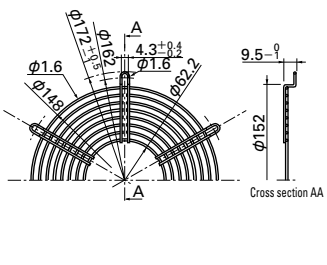
●160×160mm type*
Model : 109-619E Surface treatment : Nickel-chrome plating



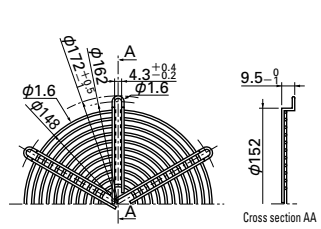
●160×160mm type**
Model : 109-620 Surface treatment :Nickel-chrome plating



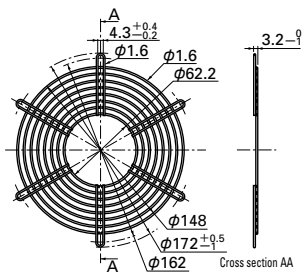
●φ172mm type***
Model : 109-319 Surface treatment :Nickel-chrome plating



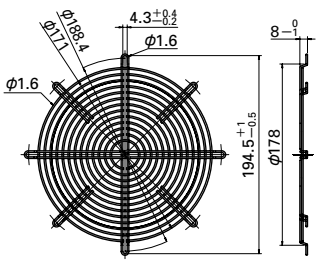
●φ172mm type*
Model : 109-319E Surface treatment : Nickel-chrome plating
Model :109-319H Surface treatment :Cation electropainting



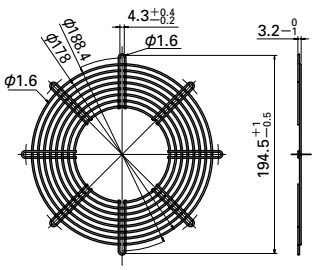
●φ172mm type**
Model : 109-320 Surface treatment : Nickel-chrome plating



●φ200mm type*
Model : 109-720 Surface treatment : Nickel-chrome plating
Model : 109-720H Surface treatment :Cation electropainting



●φ200mm type**
Model : 109-721 Surface treatment : Nickel-chrome plating
Model : 109-721H Surface treatment :Cation electropainting

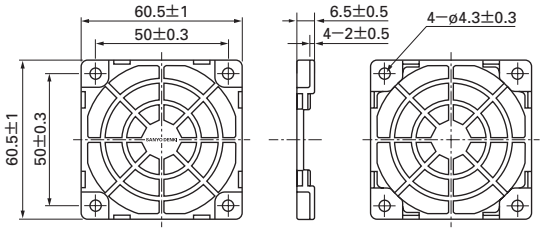


Resin finger guards

Dimensions (unit : mm)

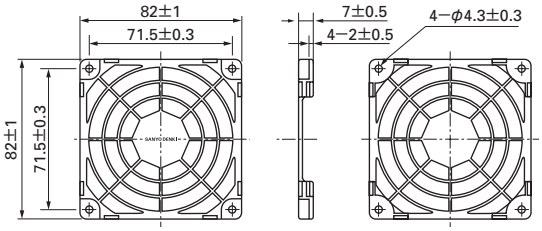
□60mm type

Model	109-1003G



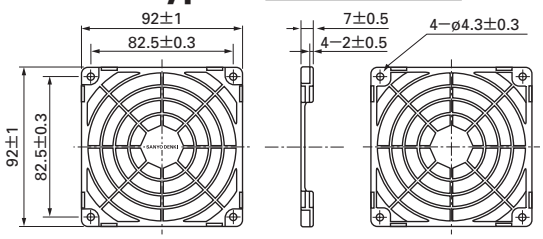
□80mm type

Model	109-1002G



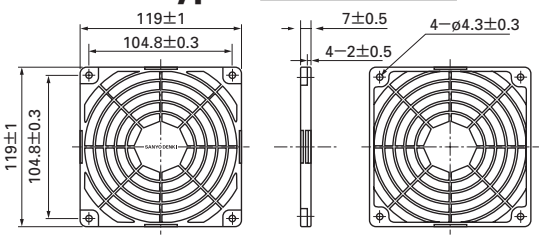
□92mm type

Model	109-1001G



□120mm type

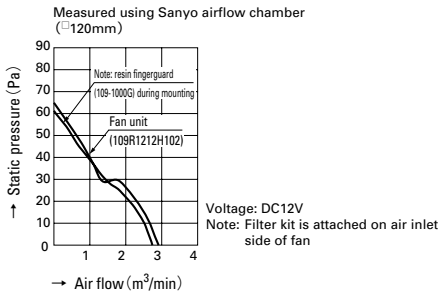
Model	109-1000G



Material

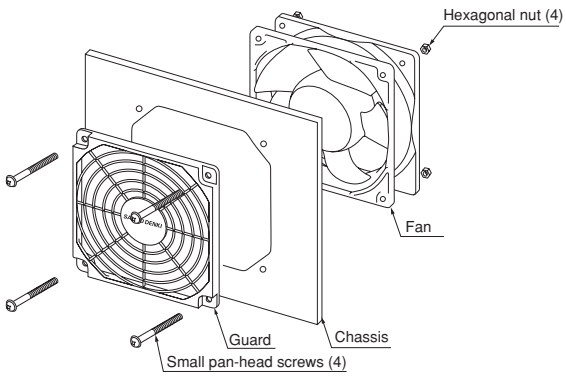
Frame : (SPS+PS alloy) Resin
UL File No.E48268 94V−0

Air Flow and Static Pressure Characteristics



Voltage: DC12V
Note: Filter kit is attached on air inlet side of fan

Mounting example



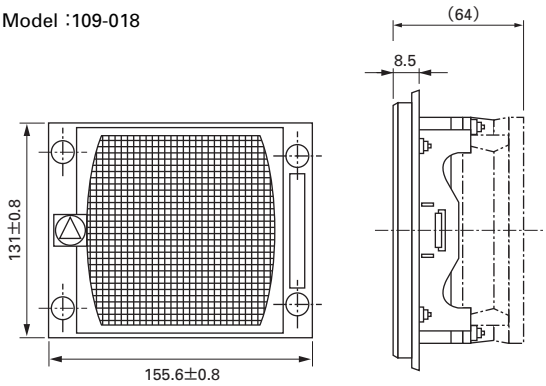
Plastic finger guards are placed on both the intake and exhaust sides of the fan.
No nuts or screws for use in attachment included.

Filter kits

Applicable models : AC Fan 120×120mm type

Dimensions (unit : mm)

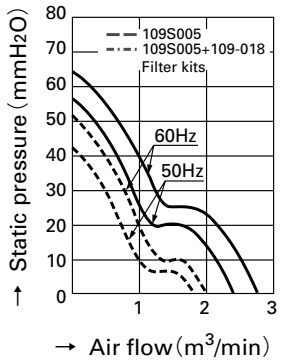
Model :109-018



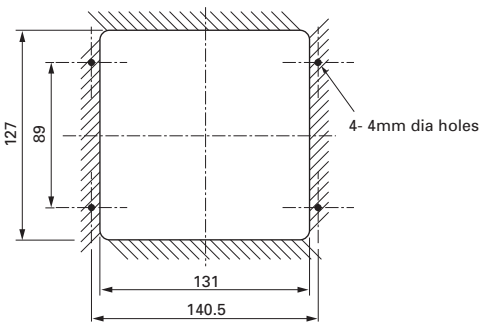
Material

Steel Wire Mesh	: Stainless 16-mesh nets in 3 layers
Cover	: Resin
Metal fittings	: Steel (chromate-plated)

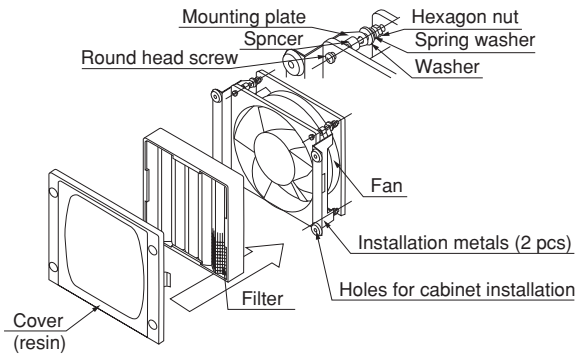
Air Flow and Static Pressure characteristics (by SANYO airflow chamber)



Reference Dimensions Of Mounting Holes (in : mm)



Reference Diagram For Mounting



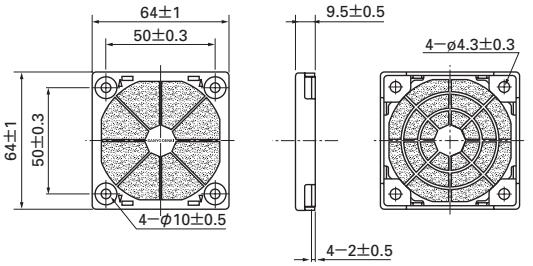
The parts shown in the installation diagram (nuts, washers, and screws) are included.

Resin filter kits

Applicable models : AC Fan, DC Fan

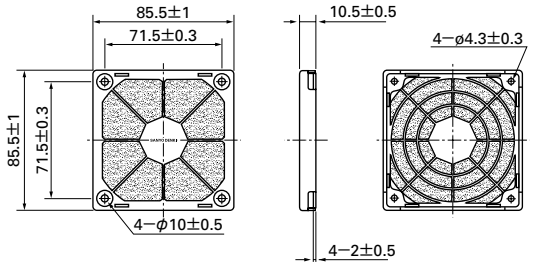
Dimensions (unit : mm)

□60mm type



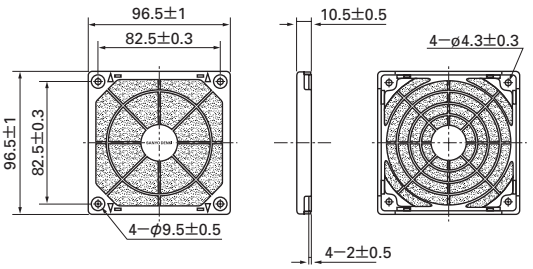
Model		
	109-1003F13	13PPI*
	109-1003F20	20PPI*
	109-1003F30	30PPI*
	109-1003F40	40PPI*

□80mm type



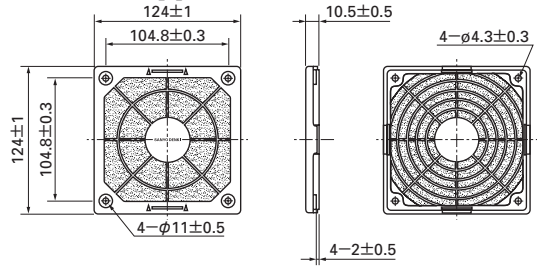
Model		
	109-1002F13	13PPI*
	109-1002F20	20PPI*
	109-1002F30	30PPI*
	109-1002F40	40PPI*

□92mm type



Model		
	109-1001F13	13PPI*
	109-1001F20	20PPI*
	109-1001F30	30PPI*
	109-1001F40	40PPI*

□120mm type



Model		
	109-1000F13	13PPI*
	109-1000F20	20PPI*
	109-1000F30	30PPI*
	109-1000F40	40PPI*

Material

Guard,cover :	(SPS+PS alloy) Resin UL File No.E48268 94V−0
Filter :	Polyurethane foam UL File No.E74916(S) 94HF−1

PPI

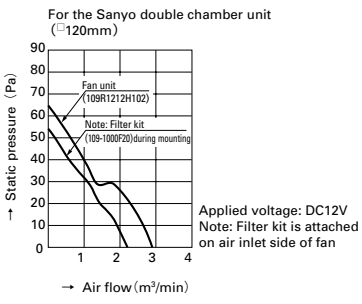
Particles Per Inch : Indicates the number of holes per inch.
Note that the higher the number, the finer the grain of the sponge.

Replacement filter (5 sheets each)

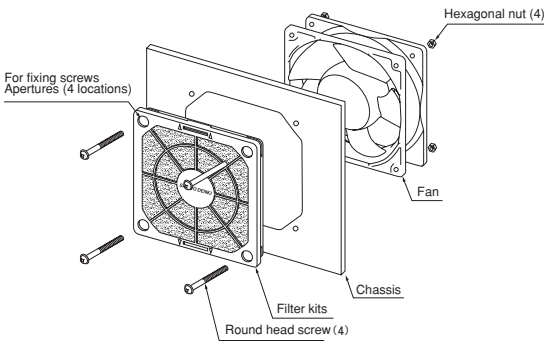
□60mm	109-1003M13	13PPI
	109-1003M20	20PPI
	109-1003M30	30PPI
	109-1003M40	40PPI
□92mm	109-1001M13	13PPI
	109-1001M20	20PPI
	109-1001M30	30PPI
	109-1001M40	40PPI

□80mm	109-1002M13	13PPI
	109-1002M20	20PPI
	109-1002M30	30PPI
	109-1002M40	40PPI
□120mm	109-1000M13	13PPI
	109-1000M20	20PPI
	109-1000M30	30PPI
	109-1000M40	40PPI

Performance comparison of air flow vs static pressure



Reference Diagram For Mounting



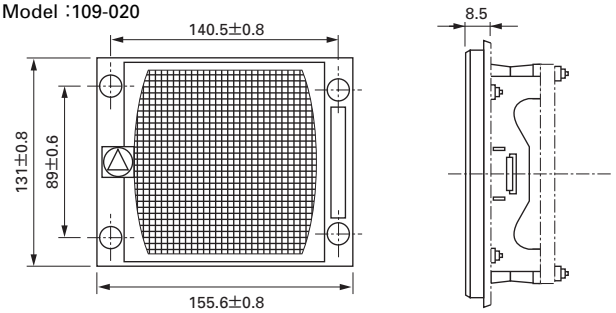
Although the filter kit is composed of 3 components, including a guard, a filter and a cover, it is delivered as a finished product at delivery, saving assembly time when mounting.
The filter and cover can be easily removed from the guard with one touch, removing the need for fan removal when undertaking maintenance, such as for cleaning or replacements.
As cooling ability decreases with filter contamination due to clogging, regular replacements are recommended.
No nuts or screws for use in attachment included.

Screen kits

Applicable models : AC Fan 120×120mm type

Dimensions (unit : mm)

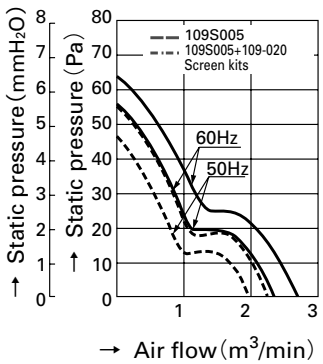
Model :109-020



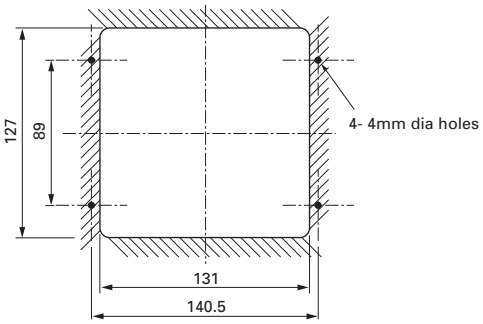
Material

Steel Wire Mesh	: Stainless 16-mesh nets in 3 layers
Cover	: Resin
Metal fittings	: Steel (chromate-plated)

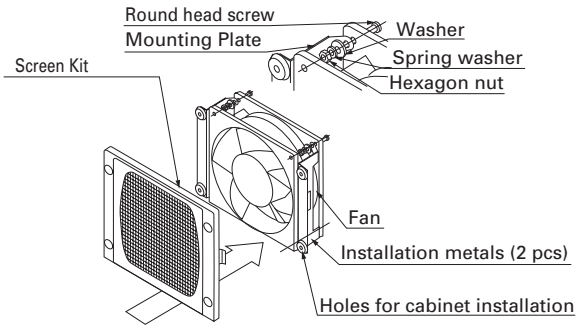
Air Flow and Static Pressure characteristics (by SANYO airflow chamber)



Reference Dimensions Of Mounting Holes (in : mm)



Reference Diagram For Mounting



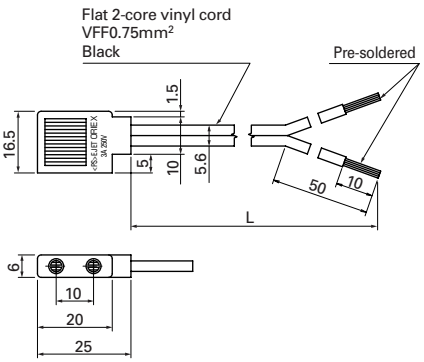
The parts shown in the installation diagram (nuts, washers, and screws) are included.

AC Fan Plug cord

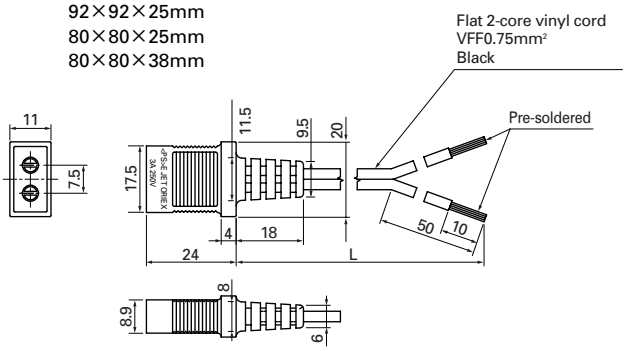
Dimensions (unit : mm)

PRODUCTS COMPLIANT WITH ELECTRICAL APPLIANCE AND MATERIAL SAFETY LAW

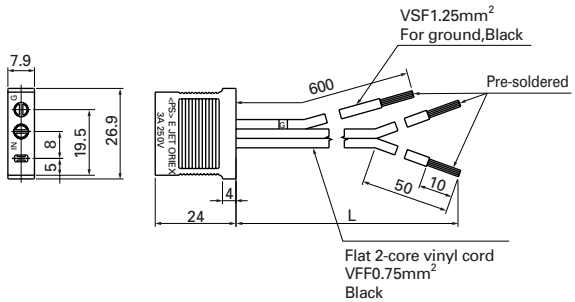
●Model No. : 489-008-L10/489-008-L21/489-008-L35
For : 80×80×42mm



●Model No. : 489-016-L10/489-016-L21
For : 120×120×25mm
92×92×25mm
80×80×25mm
80×80×38mm



●Model No. : 489-006-L10/489-006-L21
For : 120×120×38mm



POWER CORD LENGTH

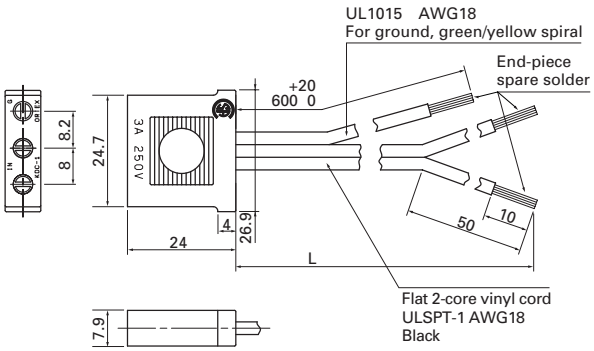
Model	Power cord length(mm)
—L10	1000
—L21	2100
—L35	3500

Dimensions (unit : mm)

UL/CSA CERTIFIED

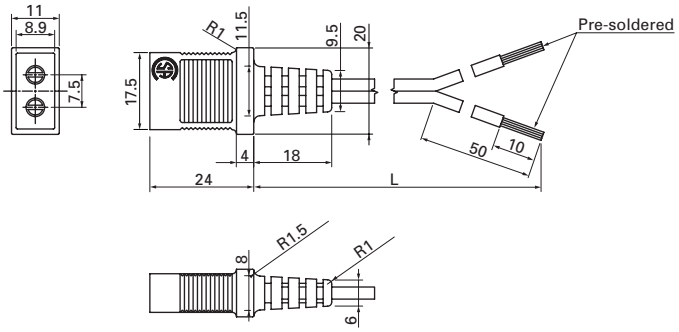
●Model No. : 489-007-L10/489-007-L21

UL FILE No.E50197 CSA FILE No.LR67048
For : 120×120×38mm



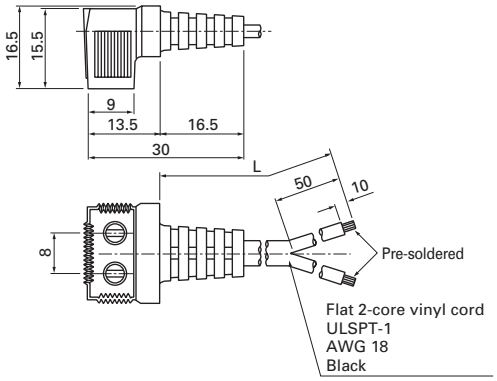
●Model No. : 489-047-L10/489-047-L21

UL FILE No.E50197 CSA FILE No.LR67048
For : 120×120×25mm
92×92×25mm
80×80×25mm
80×80×38mm



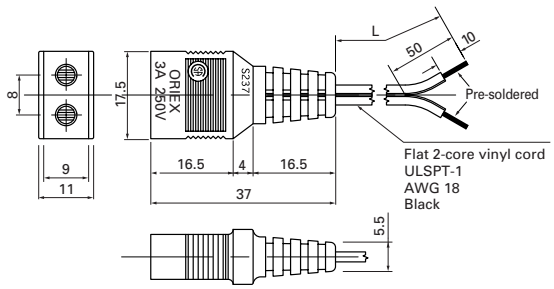
●Model No. : 489-084-L10/489-084-L21

UL FILE No.E50197 CSA FILE No.LR67048
L-shaped
For : φ172mm×51mm
160×160×51mm



●Model No. : 489-086-L10/489-086-L21

UL FILE No.E50197 CSA FILE No.LR67048
straight
For : φ172mm×51mm
160×160×51mm



POWER CORD LENGTH

Model	Power cord length(mm)
—L10	1000
—L21	2100
—L35	3500

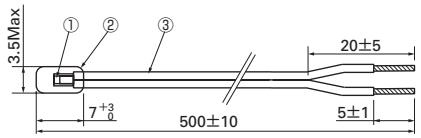
Recommended connectors for DC fans

Brand	Housing model number	Contact model number
Hirose	DF3AA－＊EP－2C	DF3－EP2428PCF
	DF1B－＊ES－2.5RC	DF1B－2428SCF
Tyco Electronics AMP.	179228－＊	179227－1
	171822－＊	170262－1
Japan Solderless Terminals	PHR－＊	SPH－002T－P0.5S
	XHP－＊	SXH－001T－P0.6
	SMR－0＊V－N	SYM－001T－0.6
	EHR－＊	SEH－001T－P0.6
	H＊P－SHF－AA	SHF－001T－0.8BS
Molex Inc. (Japan)	5051－＊	5159T
	5264－＊	5263PBT
	51030－0＊30	50084－8014
	51065－0＊00	50212－8000
	5557－0＊R	5556＊
	5559－0＊P	5558＊
Japan Aviation Electronics Industry	IL－S－＊S－S2C2－S	IL－S－C2－S－10000
	IL－G－＊S－S3C2－SA	IL－G－C2－SC－10000,
	IL－＊S－S3L－（N）	IL－C2－1－10000，IL－C2－10000

Note 1 : (＊) indicates number of poles (ex : －2 or －02 for two poles, －3 or －03 for three poles).
Note 2 : The specifications in this table are for reference purposes only. When selecting, please check catalogs of each brand.

Thermistor

Model：169-002



Namber	Name	Standards, materials, etc.
①	Thermistor	Chip
②	Insulated cord	Epoxy resin
③	Lead	UL2555 CSA TR-64 AWG#28 (blue)

Item		Spec
2-1	Resistance	R25 6.8 KΩ±3%
2-2	B constant	25／50 3950 K±2%
2-3	Maximum rated power	188mW (25℃ under still air)
2-4	Insulation resistance	100MΩor more(500 VDC megger)
2-5	Dielectric strength	No problem(1,500 VAC, 1 minute)
2-6	Operating temperature range	－30℃～＋80℃
2-7	Storage temperature range	－40℃～＋100℃

This thermistor part number is 159-682-86003
(manufactured by Hokuriku Electric Industry).
For details, contact Tokyo Office at 03-3722-1341.

IC L8730 for DC fan alarm

Characteristics

Startup delay

L8730 doesn't output signal until fan normally runs after start-up

Input type

Single input: L8730 can input digital signal of Vov and GND

Supply voltage range

＋5V±0.5V

Output current

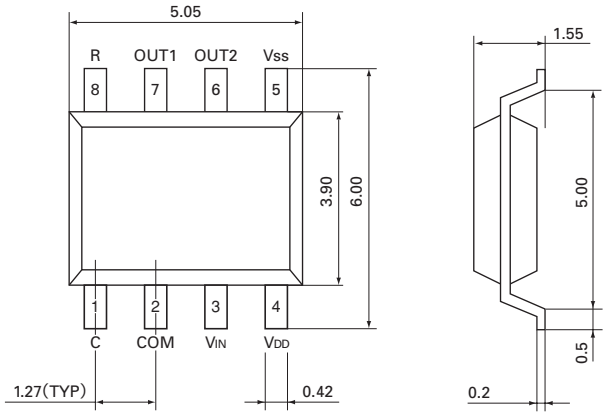
10mA max.(sink/Open drain output)

The output with latch is also availble

Noise margin

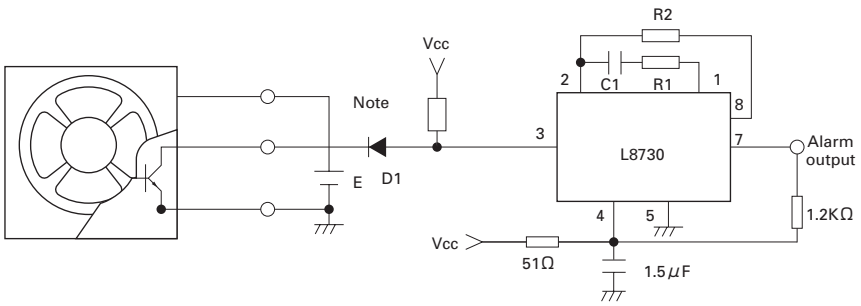
Malfunction-protective circuit in embedded

Dimensions



Application

Use it for your receiving circuit of a our DC fan (with a pulse sensor).



E: Power supply for fan drive circuit
Vcc：5V±0.5V
At normal speed [H]: Vcc
At abnormal speed [L]: 0.5V max

Note: Insert a D1 in case of E > Vcc.

Trip speed min-1	C1 PF	R1 KΩ	R2 KΩ	Startup delay
850	1,100	22	68	19.5sec
1,700	560	22	68	10sec
2,700	330	22	68	6sec

Model No. index

DC Fans

Model No.	Size	Thick	Page
109P0405H902	40×40mm	10	36
109P0405M902	40×40mm	10	36
109P0412H902	40×40mm	10	36
109P0412M902	40×40mm	10	36
109P0405H702	40×40mm	15	36
109P0405M702	40×40mm	15	36
109P0412H702	40×40mm	15	36
109P0412M702	40×40mm	15	36
109P0412S702	40×40mm	15	36
109P0424H702	40×40mm	15	36
109P0405F602	40×40mm	20	38
109P0405H602	40×40mm	20	38
109P0405M602	40×40mm	20	38
109P0412F602	40×40mm	20	38
109P0412G602	40×40mm	20	38
109P0412H602	40×40mm	20	38
109P0412M602	40×40mm	20	38
109P0424F602	40×40mm	20	38
109P0424H602	40×40mm	20	38
109P0405F302	40×40mm	28	39
109P0405F3023	40×40mm	28	42
109P0405H302	40×40mm	28	39
109P0405H3023	40×40mm	28	42
109P0412B302	40×40mm	28	39
109P0412B3023	40×40mm	28	42
109P0412F302	40×40mm	28	39
109P0412F3023	40×40mm	28	42
109P0412G302	40×40mm	28	39
109P0412G3023	40×40mm	28	42
109P0412H302	40×40mm	28	39
109P0412H3023	40×40mm	28	42
109P0412J3023	40×40mm	28	42
109P0412K3023	40×40mm	28	42
109P0412M302	40×40mm	28	39
109P0412M3023	40×40mm	28	42
109P0424B302	40×40mm	28	39
109P0424B3023	40×40mm	28	42
109P0424F302	40×40mm	28	39
109P0424F3023	40×40mm	28	42
109P0424G302	40×40mm	28	39
109P0424G3023	40×40mm	28	42
109P0424H302	40×40mm	28	39
109P0424H3023	40×40mm	28	42
109P0424J3023	40×40mm	28	42
9GV0412G302(3021)	40×40mm	28	40
9GV0412J302(3021)	40×40mm	28	40
9CR0412H502	40×40mm	56	46
9CR0412S502	40×40mm	56	46
9CRA0412G502	40×40mm	56	44
9CRA0412J502	40×40mm	56	44
109P0505M702	52×52mm	15	48
109P0512A702	52×52mm	15	48
109P0512H702	52×52mm	15	48
109P0512M702	52×52mm	15	48
109P0524H702	52×52mm	15	48
109P0524M702	52×52mm	15	48
109P0605H702	60×60mm	15	50
109P0605M702	60×60mm	15	50
109P0612H702	60×60mm	15	50
109P0612M702	60×60mm	15	50
109P0612S702	60×60mm	15	50
109P0624H702	60×60mm	15	50
109P0624M702	60×60mm	15	50
109P0612H602	60×60mm	20	50
109P0612M602	60×60mm	20	50
109P0612W602	60×60mm	20	50
109P0624H602	60×60mm	20	50
109P0624M602	60×60mm	20	50
109P0624W602	60×60mm	20	50
109P0648H602	60×60mm	20	50
109R0605F402(4021)	60×60mm	25	51
109R0605H402(4021)	60×60mm	25	51
109R0605M402(4021)	60×60mm	25	51

DC Fans

Model No.	Size	Thick	Page
109R0612D402(4021)	60×60mm	25	51
109R0612F402(4021)	60×60mm	25	51
109R0612G402(4021)	60×60mm	25	51
109R0612H402(4021)	60×60mm	25	51
109R0612J402(4021)	60×60mm	25	51
109R0612M402(4021)	60×60mm	25	51
109R0612S402(4021)	60×60mm	25	51
109R0624D402(4021)	60×60mm	25	51
109R0624F402(4021)	60×60mm	25	51
109R0624G402(4021)	60×60mm	25	51
109R0624H402(4021)	60×60mm	25	51
109R0624J402(4021)	60×60mm	25	51
109R0624M402(4021)	60×60mm	25	51
109R0624S402(4021)	60×60mm	25	51
109R0648G402(4021)	60×60mm	25	51
109R0648H402(4021)	60×60mm	25	51
109R0648J402(4021)	60×60mm	25	51
9A0612F402(4021)	60×60mm	25	90
9A0612G402(4021)	60×60mm	25	90
9A0612H402(4021)	60×60mm	25	90
9A0612M402(4021)	60×60mm	25	90
9A0612S402(4021)	60×60mm	25	90
9A0624F402(4021)	60×60mm	25	90
9A0624G402(4021)	60×60mm	25	90
9A0624H402(4021)	60×60mm	25	90
9A0624M402(4021)	60×60mm	25	90
9A0624S402(4021)	60×60mm	25	90
9G0612G102(1021)	60×60mm	38	52
9G0612S102(1021)	60×60mm	38	52
9G0624G102(1021)	60×60mm	38	52
9G0624S102(1021)	60×60mm	38	52
9G0648G102(1021)	60×60mm	38	52
9G0648S102(1021)	60×60mm	38	52
109P0812H702	80×80mm	15	54
109P0812M702	80×80mm	15	54
109P0824H702	80×80mm	15	54
109P0824M702	80×80mm	15	54
109P0812H602	80×80mm	20	54
109P0812M602	80×80mm	20	54
109P0824H602	80×80mm	20	54
109P0824M602	80×80mm	20	54
109R0805F402(4021)	80×80mm	25	54
109R0805M402(4021)	80×80mm	25	54
109R0812F402(4021)	80×80mm	25	54
109R0812G402(4021)	80×80mm	25	54
109R0812H402(4021)	80×80mm	25	54
109R0812L402(4021)	80×80mm	25	54
109R0812M402(4021)	80×80mm	25	54
109R0812S402(4021)	80×80mm	25	54
109R0824F402(4021)	80×80mm	25	54
109R0824G402(4021)	80×80mm	25	54
109R0824H402(4021)	80×80mm	25	54
109R0824L402(4021)	80×80mm	25	54
109R0824M402(4021)	80×80mm	25	54
109R0824S402(4021)	80×80mm	25	54
109R0848K402(4021)	80×80mm	25	54
109R0848S402(4021)	80×80mm	25	54
9A0812F402(4021)	80×80mm	25	92
9A0812G402(4021)	80×80mm	25	92
9A0812H402(4021)	80×80mm	25	92
9A0812L402(4021)	80×80mm	25	92
9A0812M402(4021)	80×80mm	25	92
9A0812S402(4021)	80×80mm	25	92
9A0824F402(4021)	80×80mm	25	92
9A0824G402(4021)	80×80mm	25	92
9A0824H402(4021)	80×80mm	25	92
9A0824L402(4021)	80×80mm	25	92
9A0824M402(4021)	80×80mm	25	92
9A0824S402(4021)	80×80mm	25	92
109P0812A202(2021)	80×80mm	32	55
109P0812H202(2021)	80×80mm	32	55
109P0812M202(2021)	80×80mm	32	55
109P0824A202(2021)	80×80mm	32	55

DC Fans

Model No.	Size	Thick	Page
109P0824H202(2021)	80×80mm	32	55
109P0824M202(2021)	80×80mm	32	55
109P0848H202(2021)	80×80mm	32	55
9G0812G102(1021)	80×80mm	38	56
9G0812H102(1021)	80×80mm	38	56
9G0824G102(1021)	80×80mm	38	56
9G0824H102(1021)	80×80mm	38	56
9G0848G102(1021)	80×80mm	38	56
9G0848H102(1021)	80×80mm	38	56
109P0912F402(4021)	92×92mm	25	58
109P0912H402(4021)	92×92mm	25	58
109P0912L402(4021)	92×92mm	25	58
109P0912M402(4021)	92×92mm	25	58
109P0912W402(4021)	92×92mm	25	58
109P0924F402(4021)	92×92mm	25	58
109P0924H402(4021)	92×92mm	25	58
109P0924L402(4021)	92×92mm	25	58
109P0924M402(4021)	92×92mm	25	58
109P0924W402(4021)	92×92mm	25	58
109P0948H402(4021)	92×92mm	25	58
9A0912F402(4021)	92×92mm	25	94
9A0912G402(4021)	92×92mm	25	94
9A0912H402(4021)	92×92mm	25	94
9A0912L402(4021)	92×92mm	25	94
9A0912M402(4021)	92×92mm	25	94
9A0912S402(4021)	92×92mm	25	94
9A0924F402(4021)	92×92mm	25	94
9A0924G402(4021)	92×92mm	25	94
9A0924H402(4021)	92×92mm	25	94
9A0924L402(4021)	92×92mm	25	94
9A0924M402(4021)	92×92mm	25	94
9A0924S402(4021)	92×92mm	25	94
9G0912A202(2021)	92×92mm	32	59
9G0912H202(2021)	92×92mm	32	59
9G0912M202(2021)	92×92mm	32	59
9G0912S202(2021)	92×92mm	32	59
9G0924A202(2021)	92×92mm	32	59
9G0924H202(2021)	92×92mm	32	59
9G0924M202(2021)	92×92mm	32	59
9G0924S202(2021)	92×92mm	32	59
9G0948A202(2021)	92×92mm	32	59
9G0948H202(2021)	92×92mm	32	59
9G0948M202(2021)	92×92mm	32	59
9G0948S202(2021)	92×92mm	32	59
9G0912G102(1021)	92×92mm	38	60
9G0912H102(1021)	92×92mm	38	60
9G0924G102(1021)	92×92mm	38	60
9G0924H102(1021)	92×92mm	38	60
9G0948G102(1021)	92×92mm	38	60
9G0948H102(1021)	92×92mm	38	60
109P1205M402(4021)	120×120mm	25	62
109P1212F402(4021)	120×120mm	25	62
109P1212H402(4021)	120×120mm	25	62
109P1212M402(4021)	120×120mm	25	62
109P1224F402(4021)	120×120mm	25	62
109P1224H402(4021)	120×120mm	25	62
109P1224M402(4021)	120×120mm	25	62
9G1212A402(4021)	120×120mm	25	64
9G1212E402(4021)	120×120mm	25	64
9G1212F402(4021)	120×120mm	25	64
9G1212G402(4021)	120×120mm	25	64
9G1212H402(4021)	120×120mm	25	64
9G1212M402(4021)	120×120mm	25	64
9G1224A402(4021)	120×120mm	25	64
9G1224E402(4021)	120×120mm	25	64
9G1224F402(4021)	120×120mm	25	64
9G1224G402(4021)	120×120mm	25	64
9G1224H402(4021)	120×120mm	25	64
9G1224M402(4021)	120×120mm	25	64
9G1248A402(4021)	120×120mm	25	64
9G1248E402(4021)	120×120mm	25	64
9G1248F402(4021)	120×120mm	25	64
9G1248G402(4021)	120×120mm	25	64

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9G1248H402(4021)	120×120mm	25	64
9G1248M402(4021)	120×120mm	25	64
109R1212F102(1021)	120×120mm	38	62
109R1212H102(1021)	120×120mm	38	62
109R1212M102(1021)	120×120mm	38	62
109R1212MH102(1021)	120×120mm	38	62
109R1224H102(1021)	120×120mm	38	62
109R1224M102(1021)	120×120mm	38	62
109R1224MH102(1021)	120×120mm	38	62
109R1248H102(1021)	120×120mm	38	62
109R1248M102(1021)	120×120mm	38	62
9G1212E102(1021)	120×120mm	38	66
9G1212F102(1021)	120×120mm	38	66
9G1212G102(1021)	120×120mm	38	66
9G1212H102(1021)	120×120mm	38	66
9G1212M102(1021)	120×120mm	38	66
9G1224E102(1021)	120×120mm	38	66
9G1224F102(1021)	120×120mm	38	66
9G1224G102(1021)	120×120mm	38	66
9G1224H102(1021)	120×120mm	38	66
9G1224M102(1021)	120×120mm	38	66
9G1248E102(1021)	120×120mm	38	66
9G1248F102(1021)	120×120mm	38	66
9G1248G102(1021)	120×120mm	38	66
9G1248H102(1021)	120×120mm	38	66
9G1248M102(1021)	120×120mm	38	66
9SG1212G102	120×120mm	38	68
9SG1224G102	120×120mm	38	68
9SG1248G102	120×120mm	38	68
109E1312A102	127×127mm	38	72
109E1312S102	127×127mm	38	72
109E1324A102	127×127mm	38	72
109E1324G102	127×127mm	38	72
109E1324S102	127×127mm	38	72
109E1348A102	127×127mm	38	72
109E1348G102	127×127mm	38	72
109E1348S102	127×127mm	38	72
109P1312H102(1021)	127×127mm	38	70
109P1312S102(1021)	127×127mm	38	70
109P1324H102(1021)	127×127mm	38	70
109P1324S102(1021)	127×127mm	38	70
109P1348H102(1021)	127×127mm	38	70
109P1348S102(1021)	127×127mm	38	70
109P1412H102	140×140mm	38	74
109P1412M102	140×140mm	38	74
109P1424H102	140×140mm	38	74
109P1424M102	140×140mm	38	74
109P1448H102	140×140mm	38	74
109P1448M102	140×140mm	38	74
9GV1512H502(5021)	150×150mm	50	76
9GV1512M502(5021)	150×150mm	50	76
109E4712L402	φ172	25	78
109E4712M402	φ172	25	78
109E4724F402	φ172	25	78
109E4724H402	φ172	25	78
109E4724L402	φ172	25	78
109E4724M402	φ172	25	78
109E4748F402	φ172	25	78
109E4748H402	φ172	25	78
109E4748L402	φ172	25	78
109E4748M402	φ172	25	78
109E4748S402	φ172	25	78
109E1712H502	φ172	51	84
109E1712K502	φ172	51	84
109E1712M502	φ172	51	84
109E1724C502	φ172	51	84
109E1724H502	φ172	51	84
109E1724K502	φ172	51	84
109E1724M502	φ172	51	84
109E1748C502	φ172	51	84
109E1748H502	φ172	51	84
109E1748K502	φ172	51	84
109E1748M502	φ172	51	84

DC Fans

Model No.	Size	Thick	Page
109E5712H502	φ172	51	82
109E5712K502	φ172	51	82
109E5712M502	φ172	51	82
109E5724C502	φ172	51	82
109E5724H502	φ172	51	82
109E5724K502	φ172	51	82
109E5724M502	φ172	51	82
109E5748C502	φ172	51	82
109E5748H502	φ172	51	82
109E5748K502	φ172	51	82
109E5748M502	φ172	51	82
9GV5724H502	φ172	51	80
9GV5748H502	φ172	51	80
109E2024AS002	φ200	70	86
109E2024H002	φ200	70	86
109E2024MH002	φ200	70	86
109E2024S002	φ200	70	86
9EC2024H002	φ200	70	88
9EC2048A002	φ200	70	88
9EC2048H002	φ200	70	88

The numbers in () represent ribless models

Thermal Speed Controlled Fans

Model No.	Size	Thick	Page
109P0512T7H12	52×52mm	15	100
109P0512T7H122	52×52mm	15	101
109P0612T7H12	60×60mm	15	102
109P0612T7H122	60×60mm	15	103
109P0612T6H12	60×60mm	20	102
109P0612T6H122	60×60mm	20	103
109R0612T4H12(121)	60×60mm	25	102
109R0612T4H122(123)	60×60mm	25	103
109P0812T6H12	80×80mm	20	104
109P0812T6H122	80×80mm	20	105
109R0812T4H12(121)	80×80mm	25	104
109R0812T4H122(123)	80×80mm	25	105
109P0912T4H12(121)	92×92mm	25	106
109P0912T4H122(123)	92×92mm	25	107
109P1212T4H12(121)	120×120mm	25	108
109P1212T4H122(123)	120×120mm	25	109
109R1212T1H12(121)	120×120mm	38	108
109R1212T1H122(123)	120×120mm	38	109

The numbers in () represent ribless models

Splash Proof Fans

Model No.	Size	Thick	Page
9WP0612H402(4021)	60×60mm	25	114
9WP0624H402(4021)	60×60mm	25	114
9WP0648H402(4021)	60×60mm	25	114
109W0812F402-U	80×80mm	25	116
109W0812H402-U	80×80mm	25	116
109W0812L402-U	80×80mm	25	116
109W0812M402-U	80×80mm	25	116
109W0824F402-U	80×80mm	25	116
109W0824H402-U	80×80mm	25	116
109W0824L402-U	80×80mm	25	116
109W0824M402-U	80×80mm	25	116
109W0848H402-U	80×80mm	25	116
9WS0812F402(4021)	80×80mm	25	120
9WS0812H402(4021)	80×80mm	25	120
9WS0812M402(4021)	80×80mm	25	120
9WS0824F402(4021)	80×80mm	25	120
9WS0824H402(4021)	80×80mm	25	120
9WS0824M402(4021)	80×80mm	25	120
9WP0812H402(4021)	80×80mm	38	118
9WP0824H402(4021)	80×80mm	38	118
9WP0848S402(4021)	80×80mm	38	118
109W0912F402-U	92×92mm	25	122
109W0912H402-U	92×92mm	25	122
109W0912L402-U	92×92mm	25	122
109W0912M402-U	92×92mm	25	122
109W0924F402-U	92×92mm	25	122
109W0924H402-U	92×92mm	25	122

Splash Proof Fans

Model No.	Size	Thick	Page
109W0924L402-U	92×92mm	25	122
109W0924M402-U	92×92mm	25	122
109W0948H402-U	92×92mm	25	122
9WS0912F402	92×92mm	25	124
9WS0912H402	92×92mm	25	124
9WS0912L402	92×92mm	25	124
9WS0912M402	92×92mm	25	124
9WS0924F402	92×92mm	25	124
9WS0924H402	92×92mm	25	124
9WS0924L402	92×92mm	25	124
9WS0924M402	92×92mm	25	124
109W1212H102-U	120×120mm	38	126
109W1212M102-U	120×120mm	38	126
109W1221H102-U	120×120mm	38	126
109W1224H102-U	120×120mm	38	126
109W1224M102-U	120×120mm	38	126
109W1248H102-U	120×120mm	38	126
109W1248M102-U	120×120mm	38	126
9WG1212E102	120×120mm	38	130
9WG1212F102	120×120mm	38	130
9WG1212G102	120×120mm	38	130
9WG1212H102	120×120mm	38	130
9WG1212J102	120×120mm	38	130
9WG1212M102	120×120mm	38	130
9WG1224E102	120×120mm	38	130
9WG1224F102	120×120mm	38	130
9WG1224G102	120×120mm	38	130
9WG1224H102	120×120mm	38	130
9WG1224J102	120×120mm	38	130
9WG1224M102	120×120mm	38	130
9WG1248E102	120×120mm	38	130
9WG1248F102	120×120mm	38	130
9WG1248G102	120×120mm	38	130
9WG1248H102	120×120mm	38	130
9WG1248J102	120×120mm	38	130
9WG1248M102	120×120mm	38	130
9WP1212H102(1021)	120×120mm	38	128
9WP1224H102(1021)	120×120mm	38	128
9WP1248H102(1021)	120×120mm	38	128
9WS1212H102(1021)	120×120mm	38	132
9WS1212M102(1021)	120×120mm	38	132
9WS1224H102(1021)	120×120mm	38	132
9WS1224M102(1021)	120×120mm	38	132
9WS1248H102(1021)	120×120mm	38	132
9WS1248M102(1021)	120×120mm	38	132
109W1412H102-U	140×140mm	38	134
109W1412M102-U	140×140mm	38	134
109W1424H102-U	140×140mm	38	134
109W1424M102-U	140×140mm	38	134
109W1448H102-U	140×140mm	38	134
109W1448M102-U	140×140mm	38	134
9WB1412H502	140×140mm	51	134
9WB1412M502	140×140mm	51	134
9WB1412S502	140×140mm	51	134
9WB1424H502	140×140mm	51	134
9WB1424M502	140×140mm	51	134
9WB1448H502	140×140mm	51	134
9WB1448S502	140×140mm	51	134

The numbers in () represent ribless models

Oil Proof Fans

Model No.	Size	Thick	Page
9WF0424H602	40×40mm	20	138
9WF0624H402	60×60mm	25	140
9WF1224H102	120×120mm	38	142

Long Life Fans

Model No.	Size	Thick	Page
9L0412H302	40×40mm	28	146
9L0412J302	40×40mm	28	146
9L0412M302	40×40mm	28	146
109L0612G402	60×60mm	25	148
109L0612F402	60×60mm	25	148
109L0612H402	60×60mm	25	148
109L0612M402	60×60mm	25	148
109L0612S402	60×60mm	25	148
109L0624F402	60×60mm	25	148
109L0624H402	60×60mm	25	148
109L0624M402	60×60mm	25	148
109L0624S402	60×60mm	25	148
109L0648G401	60×60mm	25	148
109L0648H402	60×60mm	25	148
109L0812F402	80×80mm	25	150
109L0812H402	80×80mm	25	150
109L0812L402	80×80mm	25	150
109L0812M402	80×80mm	25	150
109L0812S402	80×80mm	25	150
109L0824F402	80×80mm	25	150
109L0824H402	80×80mm	25	150
109L0824L402	80×80mm	25	150
109L0824M402	80×80mm	25	150
109L0824S402	80×80mm	25	150
109L0848H402	80×80mm	25	150
109L0912F402	92×92mm	25	152
109L0912H402	92×92mm	25	152
109L0912L402	92×92mm	25	152
109L0912M402	92×92mm	25	152
109L0912S402	92×92mm	25	152
109L0924F402	92×92mm	25	152
109L0924H402	92×92mm	25	152
109L0924L402	92×92mm	25	152
109L0924M402	92×92mm	25	152
109L0948C402	92×92mm	25	152
109L0948H402	92×92mm	25	152
109L1212H102	120×120mm	38	154
109L1212M102	120×120mm	38	154
109L1221H102	120×120mm	38	154
109L1224H102	120×120mm	38	154
109L1224M102	120×120mm	38	154
109L1248H102	120×120mm	38	154
109L1248M102	120×120mm	38	154
9GL1212E102	120×120mm	38	156
9GL1212F102	120×120mm	38	156
9GL1212G102	120×120mm	38	156
9GL1212H102	120×120mm	38	156
9GL1212J102	120×120mm	38	156
9GL1212M102	120×120mm	38	156
9GL1224E102	120×120mm	38	156
9GL1224F102	120×120mm	38	156
9GL1224G102	120×120mm	38	156
9GL1224H102	120×120mm	38	156
9GL1224J102	120×120mm	38	156
9GL1224M102	120×120mm	38	156
9GL1248E102	120×120mm	38	156
9GL1248F102	120×120mm	38	156
9GL1248G102	120×120mm	38	156
9GL1248H102	120×120mm	38	156
9GL1248J102	120×120mm	38	156
9GL1248M102	120×120mm	38	156
9LB1212H102	120×120mm	38	154
9LB1212M102	120×120mm	38	154
9LB1224H102	120×120mm	38	154
9LB1224M102	120×120mm	38	154
9LB1248H102	120×120mm	38	154
9LB1248M102	120×120mm	38	154
109L1412H102	140×140mm	38	158
109L1412M102	140×140mm	38	158
109L1424H102	140×140mm	38	158
109L1424M102	140×140mm	38	158
109L1448H102	140×140mm	38	158
109L1448M102	140×140mm	38	158

Long Life Fans

Model No.	Size	Thick	Page
9LB1412H502	140×140mm	51	158
9LB1412M502	140×140mm	51	158
9LB1412S502	140×140mm	51	158
9LB1424H502	140×140mm	51	158
9LB1424M502	140×140mm	51	158
9LB1424S502	140×140mm	51	158
9LB1448H502	140×140mm	51	158
9LB1448M502	140×140mm	51	158
9LB1448S502	140×140mm	51	158
109L1712H502	φ172	51	162
109L1712M502	φ172	51	162
109L1724H502	φ172	51	162
109L1724M502	φ172	51	162
109L1748H502	φ172	51	162
109L1748M502	φ172	51	162
109L5712H502	φ172	51	160
109L5712M502	φ172	51	160
109L5724H502	φ172	51	160
109L5724M502	φ172	51	160
109L5748H502	φ172	51	160
109L5748M502	φ172	51	160

Blowers

Model No.	Size	Thick	Page
109BC12FA7	52	15	166
109BC12GA7	52	15	166
109BC12HA7	52	15	166
109BC12MA7	52	15	166
109BC24FA7	52	15	166
109BC24GA7	52	15	166
109BC24HA7	52	15	166
9BD12FA6	76	20	168
9BD12HA6	76	20	168
9BD12SA6	76	20	168
9BD24FA6	76	20	168
9BD24HA6	76	20	168
9BD24SA6	76	20	168
109BD12GA4	76	25	168
109BD12HA4	76	25	168
109BD12MA4	76	25	168
109BD24GA4	76	25	168
109BD24HA4	76	25	168
109BD24MA4	76	25	168
109BD12FA2	76	30	170
109BD12HA2	76	30	170
109BD12MA2	76	30	170
109BD24FA2	76	30	170
109BD24HA2	76	30	170
109BD24MA2	76	30	170
109BE12GA2	94	30	172
109BE12HA2	94	30	172
109BE12MA2	94	30	172
109BE24GA2	94	30	172
109BE24HA2	94	30	172
109BE24MA2	94	30	172
109BM12GA2	97	33	176
109BM12HA2	97	33	176
109BM12MA2	97	33	176
109BM24GA2	97	33	176
109BM24HA2	97	33	176
109BM24MA2	97	33	176
9BAM12FA2	97	33	174
9BAM12GA2	97	33	174
9BAM12HA2	97	33	174
9BAM12SA2	97	33	174
9BAM24FA2	97	33	174
9BAM24GA2	97	33	174
9BAM24HA2	97	33	174
9BAM24SA2	97	33	174
109BF12HA2	120	32	178
109BF12MA2	120	32	178
109BF24HA2	120	32	178
109BF24MA2	120	32	178

Model No. index

Blowers

Model No.	Size	Thick	Page
109BJ12HA2	127	32	180
109BJ12MA2	127	32	180
109BJ24HA2	127	32	180
109BJ24MA2	127	32	180
9BN12FA1	150	40	182
9BN12HA1	150	40	182
9BN24FA1	150	40	182
9BN24HA1	150	40	182
109BG12HA1	160	40	184
109BG12MA1	160	40	184
109BG24HA1	160	40	184
109BG24MA1	160	40	184

Centrifugal Fans

Model No.	Size	Thick	Page
9TR48HA0	φ220	71	188

CPU Coolers

Model No.	Size	Thick	Page
9G0912P2E012			192
9G0912PT2E012			192
109X9112PT0H016	φ90	62.6	194
109X9212PT0H016	φ90	62.6	196
109X9912T0D516	95×90	51	198
109X9912T0S016	95×90	51	200
109X9912S0016	95×90	51	200
109X9812T0H016	95×90	62.5	202
109X9812H0016	95×90	62.5	202
109X9412G4016	83.3×87.2	25	204
9H9912G5516	70×83.3	54.5	206
109X9412S1016	68.5×83.3	45	208
9H9912G5016	70×88.9	54.5	210
109X9612S5016	67.3×88.9	53.5	212
109X7612H1176	67.3×68	45	214
109X7412S4016	67.3×79	24	216
109X6512A2016	50.8×64	31	218
109-LC1-001	199.5×170	78.6	220

AC Fans

Model No.	Size	Thick	Page
109-180	60×60mm	28	224
109-183	60×60mm	28	224
109-130	60×60mm	38	224
109-133	60×60mm	38	224
109-210	80×80mm	20	226
109-213	80×80mm	20	226
109S050	80×80mm	25	226
109S051	80×80mm	25	226
109S053	80×80mm	25	226
109S054	80×80mm	25	226
☆109S030	80×80mm	25	226
☆109S031	80×80mm	25	226
☆109S033	80×80mm	25	226
☆109S034	80×80mm	25	226
109-150	80×80mm	38	227
109-151	80×80mm	38	227
109-153	80×80mm	38	227
109-154	80×80mm	38	227
109-040UL	80×80mm	42	228
109-041UL	80×80mm	42	228
109-043UL	80×80mm	42	228
109-044UL	80×80mm	42	228
※109-033UL	80×80mm	42	228
※109-047UL	80×80mm	42	228
109S091	92×92mm	25	230
109S092	92×92mm	25	230
109S093	92×92mm	25	230
109S094	92×92mm	25	230
109S491	92×92mm	25	240
109S492	92×92mm	25	240
109S493	92×92mm	25	240

AC Fans

Model No.	Size	Thick	Page
109S494	92×92mm	25	240
☆109S095	92×92mm	25	230
☆109S495	92×92mm	25	240
※109S096	92×92mm	25	230
※109S192	92×92mm	25	230
※109S193	92×92mm	25	230
※109S194	92×92mm	25	230
※109S496	92×92mm	25	240
109S084	120×120mm	25	232
109S085	120×120mm	25	232
109S087	120×120mm	25	232
109S088	120×120mm	25	232
109S484	120×120mm	25	242
109S485	120×120mm	25	242
109S487	120×120mm	25	242
109S488	120×120mm	25	242
☆109S081	120×120mm	25	232
☆109S082	120×120mm	25	232
☆109S083	120×120mm	25	232
☆109S089	120×120mm	25	232
※109S086	120×120mm	25	232
※109S486	120×120mm	25	242
109S005	120×120mm	38	232
109S005UL	120×120mm	38	232
109S008	120×120mm	38	232
109S008UL	120×120mm	38	232
109S024	120×120mm	38	232
109S024UL	120×120mm	38	232
109S025	120×120mm	38	232
109S025UL	120×120mm	38	232
109S072UL	120×120mm	38	233
109S074UL	120×120mm	38	233
109S075UL	120×120mm	38	233
109S078UL	120×120mm	38	233
109S405UL	120×120mm	38	242
109S408UL	120×120mm	38	242
109S424UL	120×120mm	38	242
109S425UL	120×120mm	38	242
109S472UL	120×120mm	38	243
109S474UL	120×120mm	38	243
109S475UL	120×120mm	38	243
109S478UL	120×120mm	38	243
☆109S013	120×120mm	38	233
☆109S013UL	120×120mm	38	233
☆109S029UL	120×120mm	38	233
☆109S429UL	120×120mm	38	242
※109S006	120×120mm	38	233
※109S006UL	120×120mm	38	233
※109S010	120×120mm	38	233
※109S010UL	120×120mm	38	233
※109S406UL	120×120mm	38	242
109-601	160×160mm	51	234
109-602	160×160mm	51	234
109-603	160×160mm	51	234
109-604	160×160mm	51	234
109-641	160×160mm	51	244
109-642	160×160mm	51	244
109-643	160×160mm	51	244
109-644	160×160mm	51	244
109-311	φ172	51	238
109-312	φ172	51	238
109-313	φ172	51	238
109-314	φ172	51	238
109-371	φ172	51	246
109-372	φ172	51	246
109-373	φ172	51	246
109-374	φ172	51	246
109S301	φ172	51	236
109S302	φ172	51	236
109S303	φ172	51	236
109S304	φ172	51	236

☆ represents half-speed. ※ represents low-speed

Finger guards

Model No.	Size	Thick	Page
109-059	40×40mm type	4	250
109-149	52×52mm type	4	250
109-149E	52×52mm type	4	250
109-139E	60×60mm type	4	250
109-139H	60×60mm type	4	250
109-049C	80×80mm type	5	250
109-049E	80×80mm type	5	250
109-049H	80×80mm type	5	250
109-099C	92×92mm type	5	250
109-099E	92×92mm type	5	250
109-099H	92×92mm type	5	250
109-019C	120×120mm type	5	250
109-019H	120×120mm type	5	250
109-019E	120×120mm type	5	250
109-019K	120×120mm type	5	250
109-722	127×127mm type	5	250
109-723	127×127mm type	3.2	250
109-719	140×140mm type	5.5	250
109-719H	140×140mm type	5.5	250
109-619E	160×160mm type	8	250
109-620	160×160mm type	3.6	250
109-319	φ172mm type	9.5	250
109-319E	φ172mm type	9.5	250
109-319H	φ172mm type	9.5	250
109-320	φ172mm type	3.2	250
109-720	φ200mm type	8	250
109-720H	φ200mm type	8	250
109-721	φ200mm type	3.2	250
109-721H	φ200mm type	3.2	250

Resin finger guards

Model No.	Size	Thick	Page
109-1003F13	60mm type	9.5	253
109-1003F20	60mm type	9.5	253
109-1003F30	60mm type	9.5	253
109-1003F40	60mm type	9.5	253
109-1002F13	80mm type	10.5	253
109-1002F20	80mm type	10.5	253
109-1002F30	80mm type	10.5	253
109-1002F40	80mm type	10.5	253
109-1001F13	92mm type	10.5	253
109-1001F20	92mm type	10.5	253
109-1001F30	92mm type	10.5	253
109-1001F40	92mm type	10.5	253
109-1000F13	120mm type	10.5	253
109-1000F20	120mm type	10.5	253
109-1000F30	120mm type	10.5	253
109-1000F40	120mm type	10.5	253

Filter kits • Screen kits

Model No.	Size	Thick	Page
109-018	131×155.6	8.5	252
109-020	131×155.6	8.5	254

Resin filter kits

Model No.	Size	Thick	Page
109-1003F13	60mm type	9.5	253
109-1003F20	60mm type	9.5	253
109-1003F30	60mm type	9.5	253
109-1003F40	60mm type	9.5	253
109-1002F13	80mm type	10.5	253
109-1002F20	80mm type	10.5	253
109-1002F30	80mm type	10.5	253
109-1002F40	80mm type	10.5	253
109-1001F13	92mm type	10.5	253
109-1001F20	92mm type	10.5	253
109-1001F30	92mm type	10.5	253
109-1001F40	92mm type	10.5	253
109-1000F13	120mm type	10.5	253
109-1000F20	120mm type	10.5	253
109-1000F30	120mm type	10.5	253
109-1000F40	120mm type	10.5	253

Plug cord

Model No.	Size	Thick	Page
489-008-L10			256
489-008-L21			256
489-008-L35			256
489-016-L10			256
489-016-L21			256
489-006-L10			256
489-006-L21			256
489-007-L10			257
489-007-L21			257
489-047-L10			257
489-047-L21			257
489-084-L10			257
489-084-L21			257
489-086-L10			257
489-086-L21			257

Thermistor

Model No.	Size	Thick	Page
169-002			258

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