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COOLING FAN

San Ace



2018
Ver.2

SANYO DENKI

San Ace Recommendations

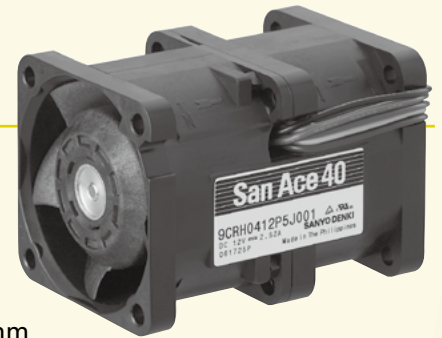
Featuring New Products

NEW

DC Counter Rotating Fan 9CRH type

The series lineup has been enriched with a new model featuring higher static pressure than our current model*. It offers ideal cooling solutions for servers, power supplies, ICT devices, and data storage systems.

* 40×40×56 mm San Ace 40 9CRV type.



40×40×56 mm
pp. 227 to 228

NEW

DC G Proof Fan 9GP type

These cooling fans can withstand high levels of G-force. These are suitable for cooling devices that are required to operate in environments with high G-force or vibration.

120×120×38 mm Ø172×150×51 mm
pp. 408 to 409 pp. 410 to 411



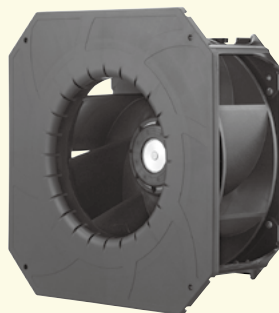
Bracket-mounted

DC Centrifugal Fan 9B1T type

The Centrifugal Fan and an inlet nozzle come integrated in one, making the installation work to your device easy.



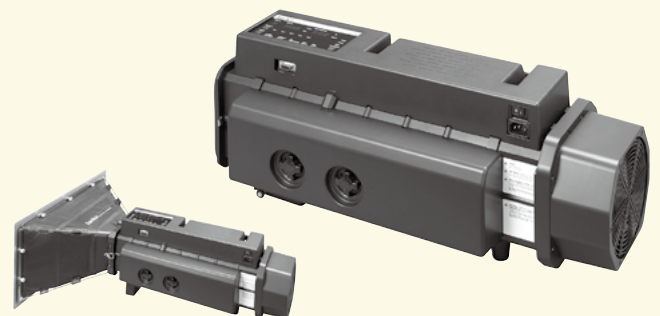
270×270×99 mm
pp. 430 to 432



270×270×119 mm
pp. 433 to 434

Airflow Tester pp. 506 to 511

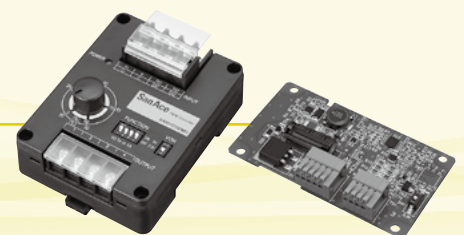
This is a portable measuring device that enables you to easily measure the system impedance and operating airflow of devices.



With connection duct mounted

PWM Controller pp. 500 to 505

This device provides external speed control of PWM control function fans. By using this product, PWM control function fans can be fully utilized without the need for preparing new circuits, contributing to reducing the system power consumption and the fan noise.



Box type

PCB type

A wide variety of products are available in various features. See the following pages to find out more.

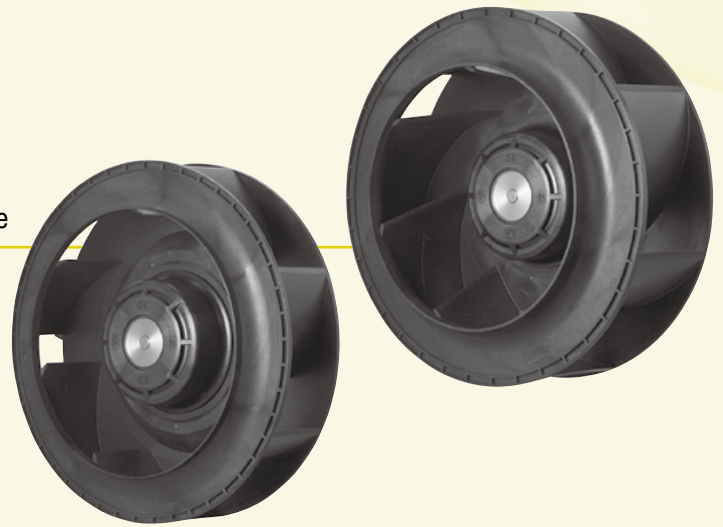
NEW

DC Splash Proof Centrifugal Fan 9W2T type

The series lineup of the Splash Proof Centrifugal Fan has been expanded.

Ø221×71 mm
pp. 328 to 329

Ø225×99 mm
pp. 330 to 331



NEW

DC Reversible Flow Fan 9RF type

The series lineup has been expanded for the Reversible Flow Fans that can blow air in two switchable directions. These are especially suitable for ventilating houses, and cooling beverage vending machines, food display cases, and LED lights.

Ø92×38 mm
pp. 260 to 261



AC ACDC Fan 9AD type

This fan operates by internally converting AC power into DC power. It provides the superior performance of a DC fan with the flexibility of AC input.



92×92×38 mm
pp. 458 to 460



120×120×38 mm
pp. 461 to 463

NEW

DC Blower 9BMC type

The series lineup has been expanded with a new model with higher airflow and higher static pressure than our current model*. It is suitable for servers, power supplies, printers, copy machines, air purifiers, house ventilation devices, and fuel cells.

* 97×33 mm San Ace B97 9BMB type.



97×33 mm
pp. 444 to 445

NEW

DC Low Power Consumption Fan 9GA type

The series lineup has been expanded with a new model featuring even lower power consumption than our current model*. It is suitable for use in medical equipment, electrical measuring instruments, PV inverters, industrial inverters, LCDs, and arcade amusement machines.

* 120×120×25 mm San Ace 120 9GV type.



120×120×25 mm
pp. 165 to 168

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DC

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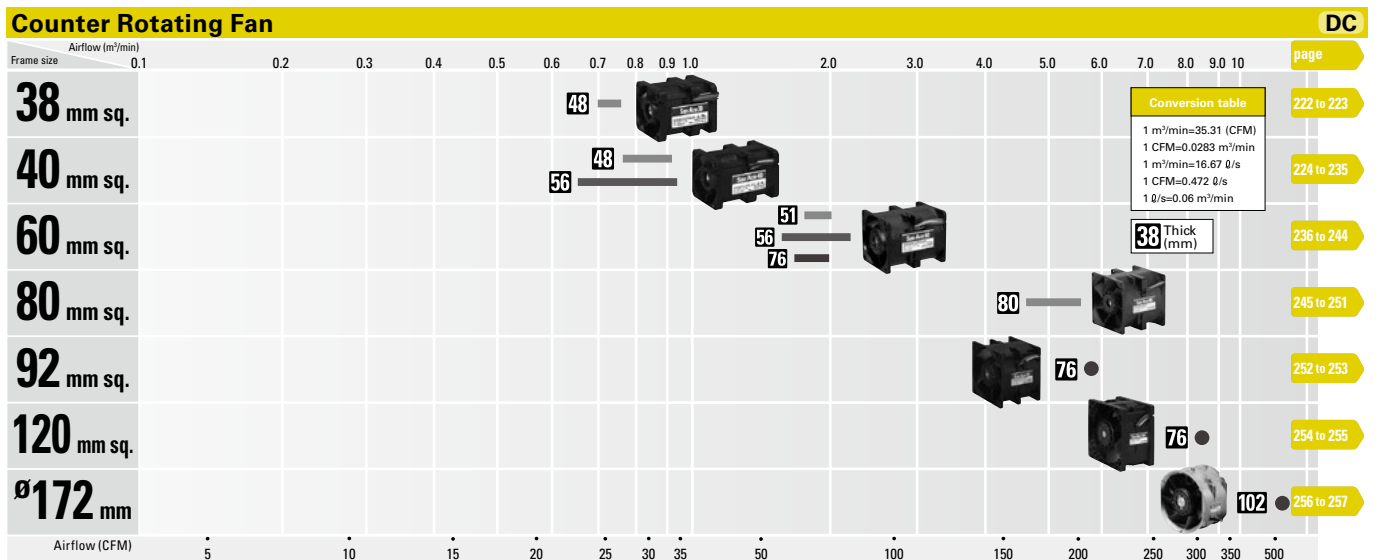
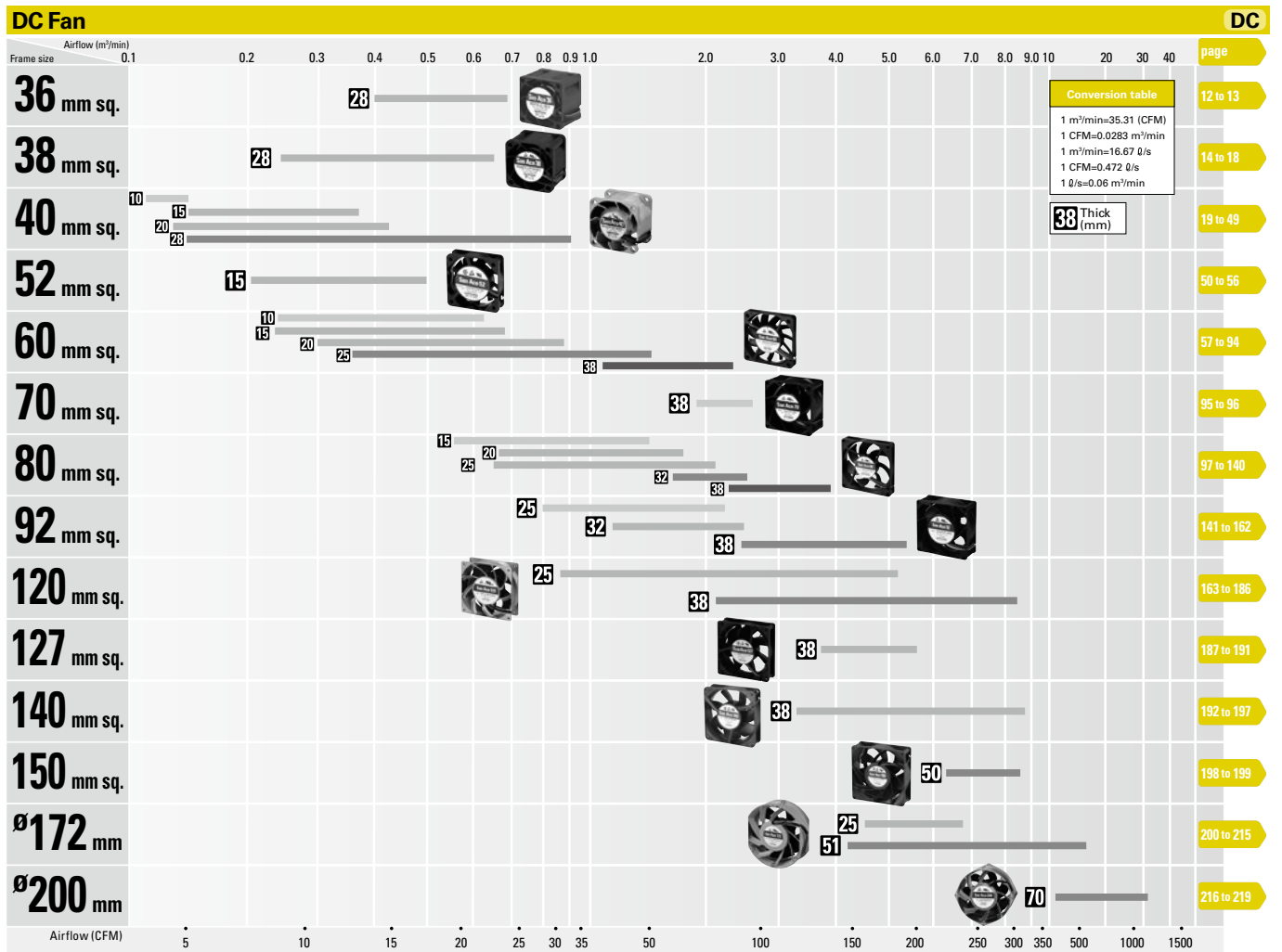
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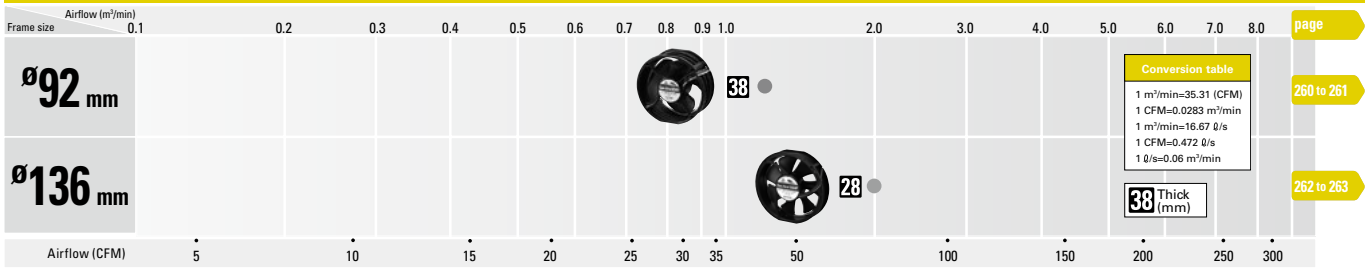
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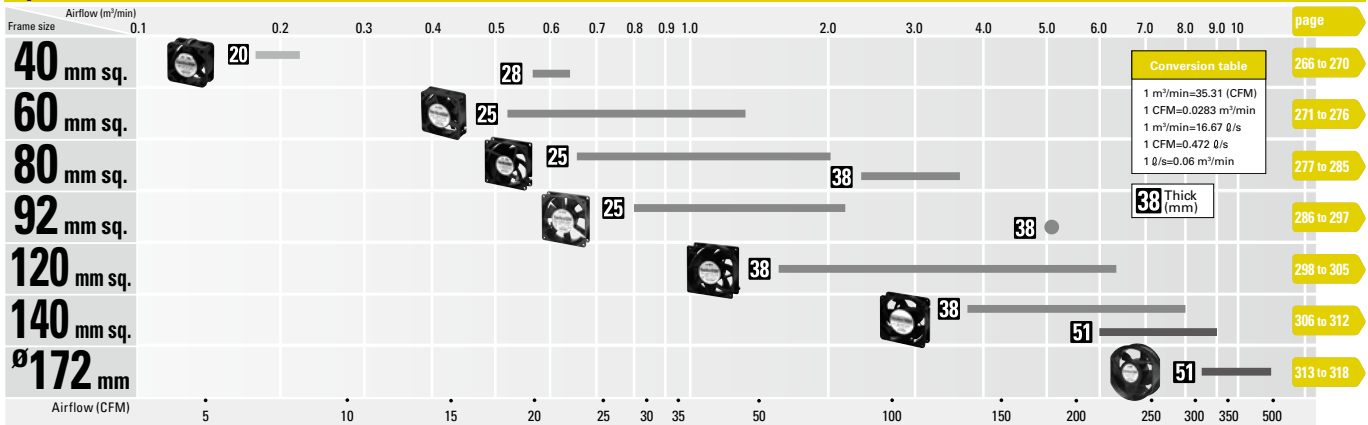
Reversible Flow Fan

DC



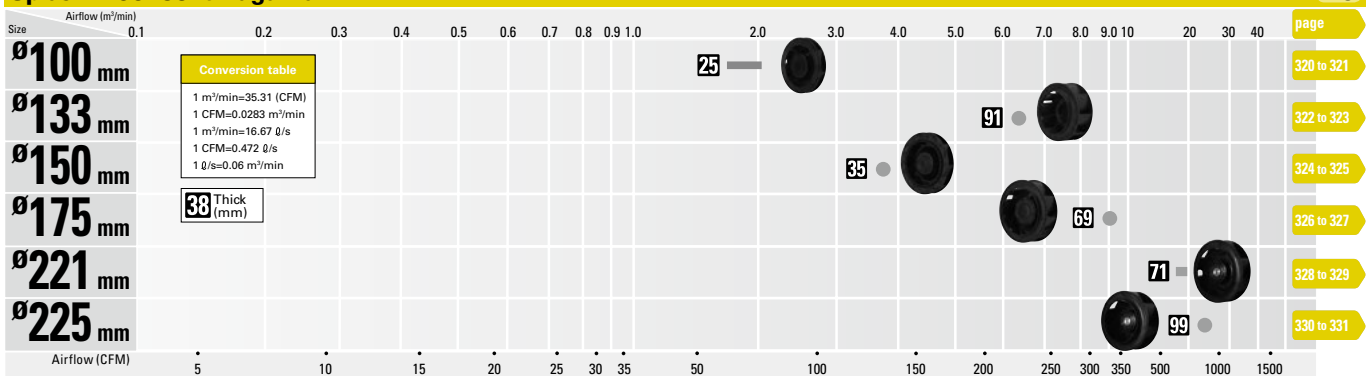
Splash Proof Fan

DC



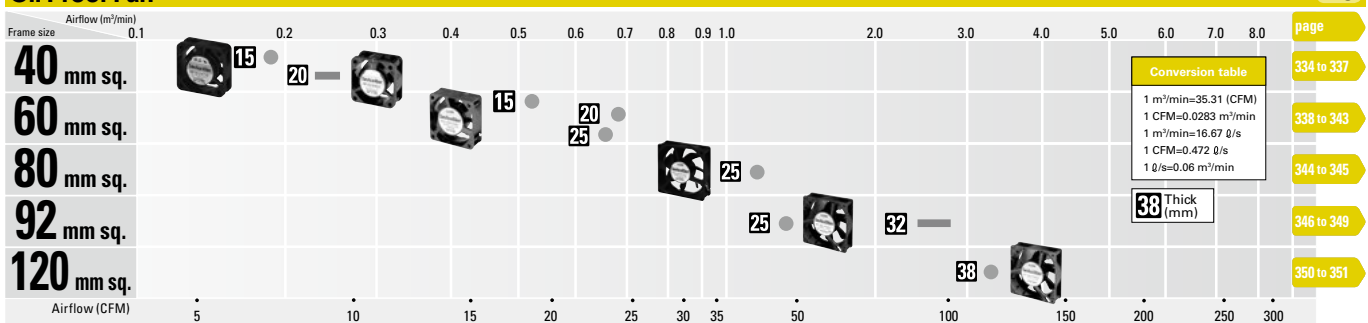
Splash Proof Centrifugal Fan

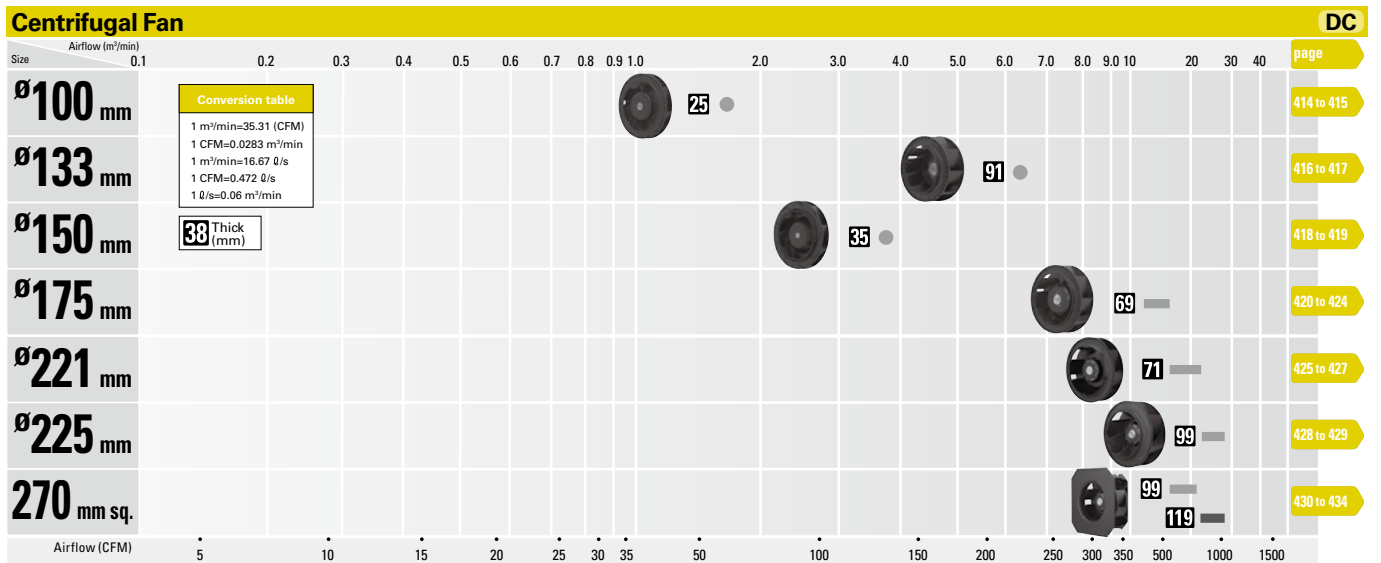
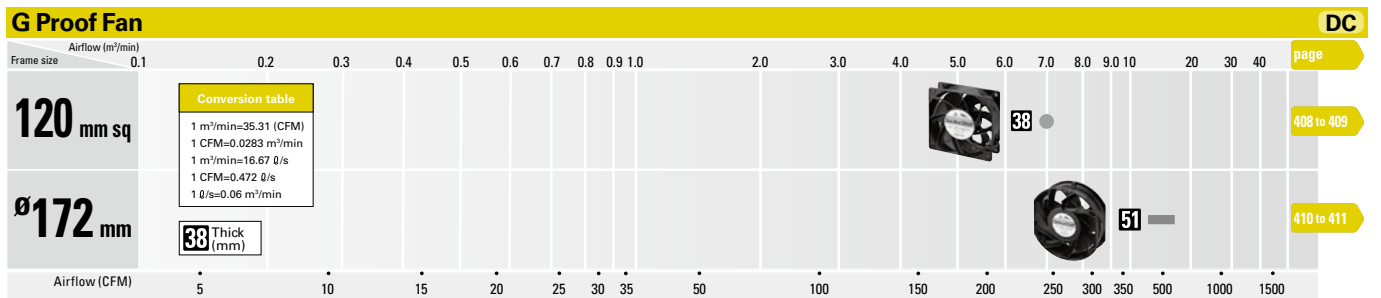
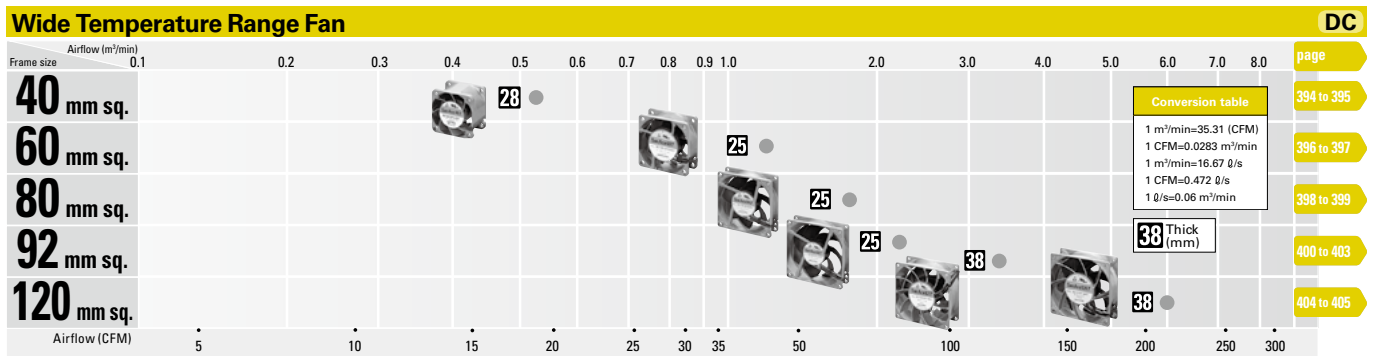
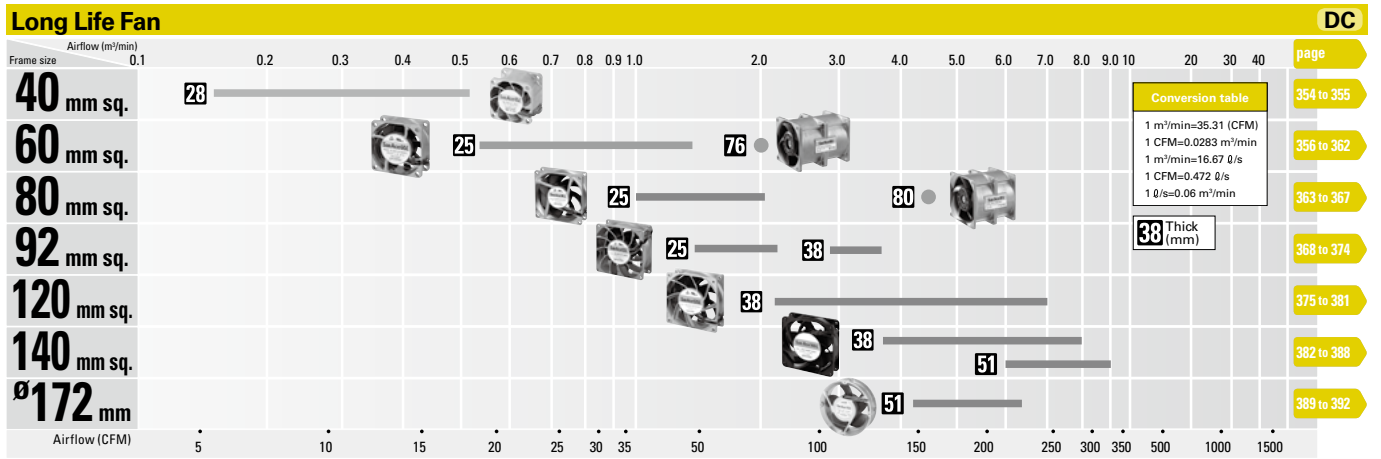
DC



Oil Proof Fan

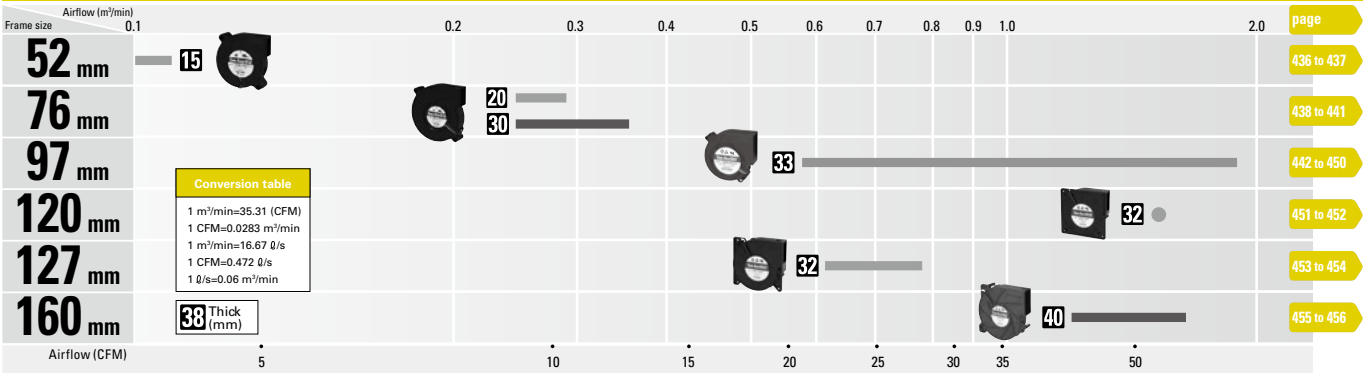
DC





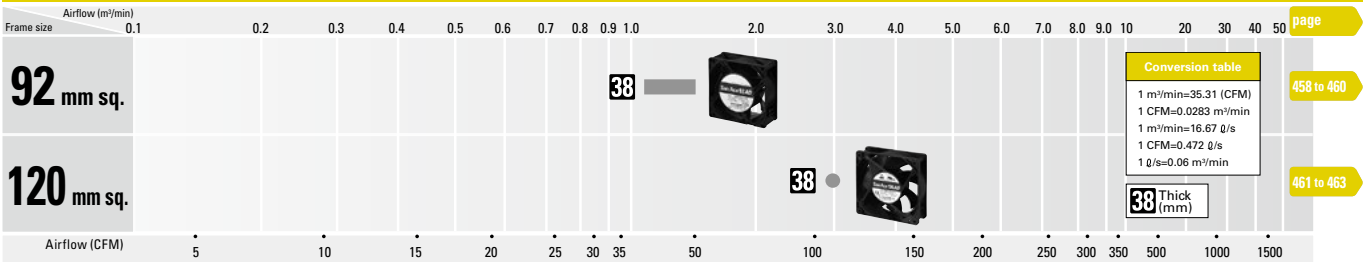
Blower

DC



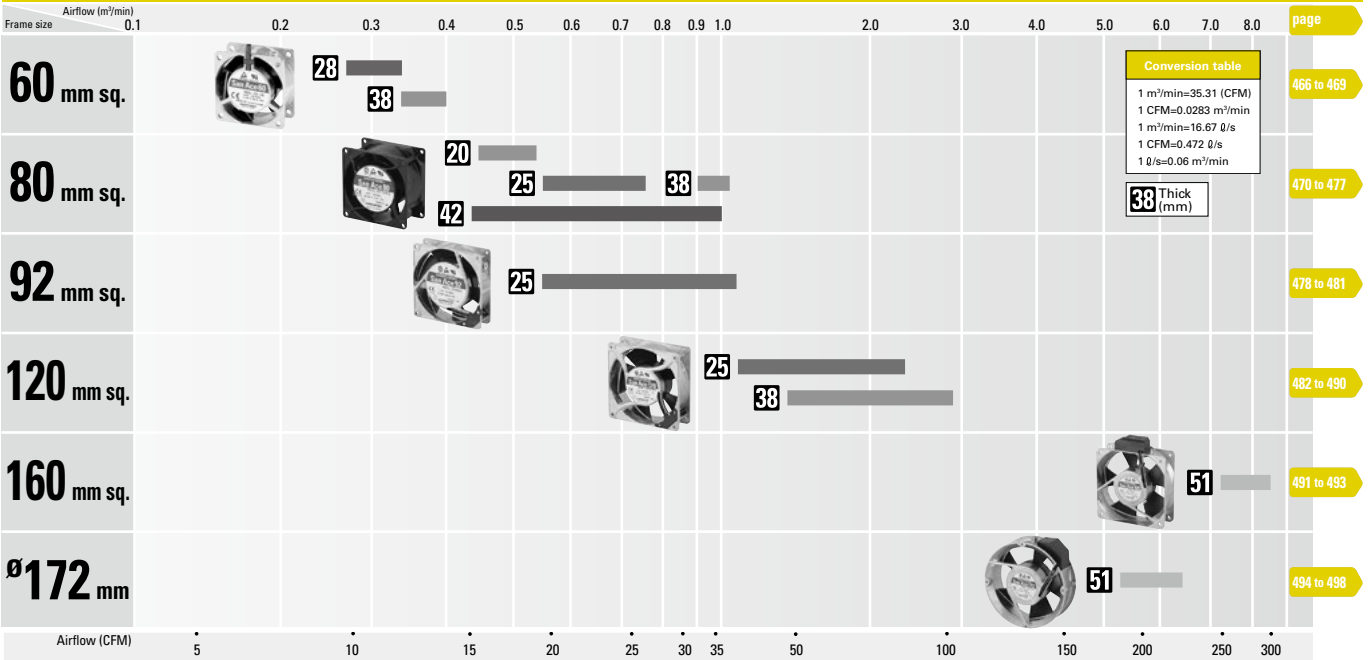
ACDC Fan

AC



AC Fan

AC



DC Fan

Wide lineup including low power consumption fans (9GA type), silent fans (9S type), and high airflow and high static pressure fans.

Model Numbering System Not every combination of the following codes or characters is available. Contact us for an available combination.

9GV	12	12	J	1	01	1
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications	Frame form

Fans with PWM control function

9GV	12	12	P	4	G	01	
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec (2 to 4 digits)	Frame form

Type name	9E	9P	9R	9A	9EC	9G	9GA	9GAX	9GV	9GE	9GX	9HV	9HVA	9S	9SG	
Frame size (mm)	03	04	05	06	08	09	12	13	14	15	17	36	47	57	20	
	38×38	40×40	52×52	60×60	80×80	92×92	120×120	127×127	140×140	150×150	∅172	36×36	∅172×147 (sidecut)	∅172×150 (sidecut)	∅200	
Voltage (V)	05	12	24	48												
	5	12	24	48	etc.											
Speed code	A	B	C	D	E	F	G	H	J	K	L	M	S	W	etc.	
Frame thickness (mm)	0	1	2	3	4	5	6	7	9							
	70	38	32	28	25	50, 51	20	15	10							
Sensor specifications	01 or 001				02 or 002				D01 or D001							
	With a pulse sensor				Without a sensor				With a lock sensor							
Frame form	Nil				1				3							
	Plastic frame: Ribbed frame				Plastic frame: Ribless frame				40 × 40 × 28 mm for 1U applications				Plastic frame: Ribbed frame			
	Aluminum frame: Ribless frame															

How to Read Specifications (DC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36 12.7	192 0.77	42	-20 to +70	40000/60°C (70000/40°C)

- Rated voltage This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
- Operating voltage range The voltage range over which fan operation is guaranteed.
- Rated current The current when the fan is operating at rated voltage (at free air).
- Rated input The power value when the fan is operating at rated voltage (at free air).
- Rated speed The speed when the fan is operating at rated voltage (at free air).
- Max. airflow The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device). Airflow is the volume of air generated by the fan per unit of time.
- Max. static pressure The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device). Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
- SPL SPL stands for Sound Pressure Level. The noise level during the fan's rated operation. Please refer to the technical material section for the measurement method.
- Operating temperature The temperature range over which fan operation is guaranteed (Non- condensing).
- Expected life Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only. For more information, please refer to the technical material section.

36×36×28 mm

San Ace 36 9GX/9GV type   US (Model no.: 9GX3612P3K001 only) /   



General Specifications

- Material Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30~+70°C (Non-condensing, Model no.: 9GX3612P3K001 only), -20 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
(For models without PWM control function, there is no speed control wiring.)
- Mass 46 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GX3612P3K001	12	10.8 to 13.2	100	1.3	15.6	24000	0.69 24.4	838 3.367	66	-10 to +60	40000/60°C (70000/40°C)
			0	0.07	0.84	3200	0.09 3.2	14.0 0.056	32		

* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 556).

The models listed below **have ribs and pulse sensors.**

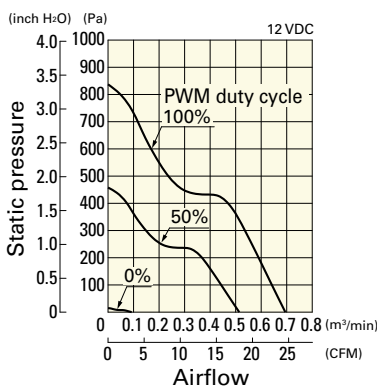
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GV3612J301	12	7.0 to 13.2	0.75	9.0	19000	0.55 19.4	525 2.108	58.5	-20 to +60	40000/60°C
9GV3612G301			0.34	4.08	14000	0.4 14.1	275 1.104	52.0		

Other sensor specifications are available as options. Refer to the index (p. 556).

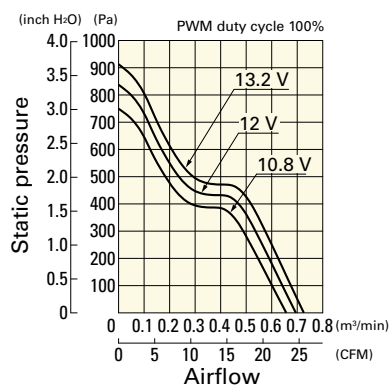
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GX3612P3K001 With pulse sensor with PWM control function

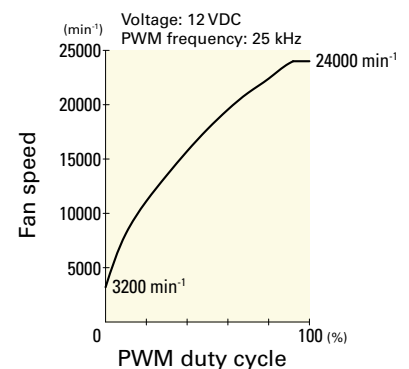
PWM duty cycle



Operating voltage range



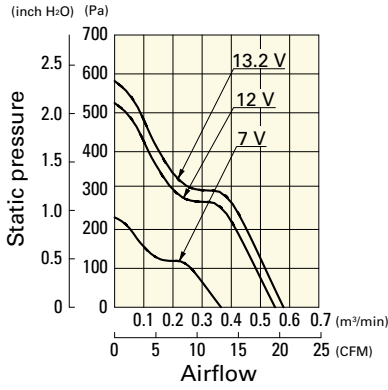
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

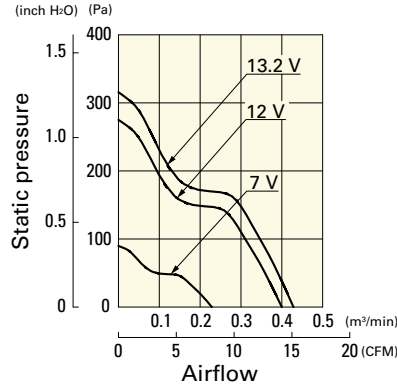
9GV3612J301 With pulse sensor

Operating voltage range

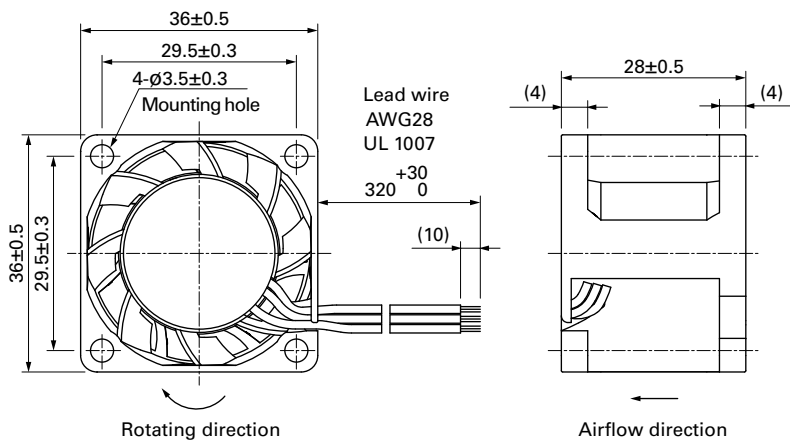


9GV3612G301 With pulse sensor

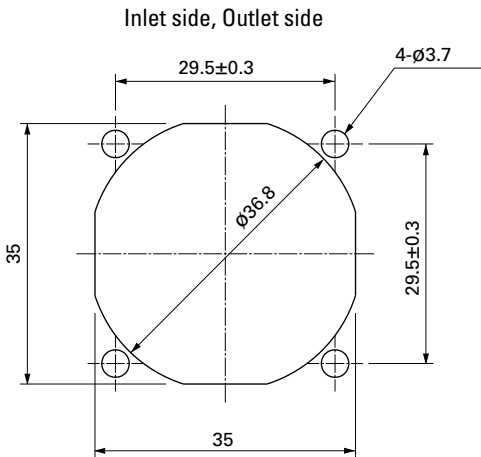
Operating voltage range



Dimensions (unit: mm) (With pulse sensor)



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



Options

Finger guards

page: p. 513

Model no.: 109-1050



38x38x28 mm

San Ace 38 9GA type Low Power Consumption Fan

General Specifications

- Material Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass 52 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0312P3K001	12	10.8 to 13.2	100	0.62	7.4	25000	0.6 21.2	800 3.21	59.0	-20 to +70	40000/60°C (70000/40°C)
			0	0.06	0.7	3000	0.07 2.5	11 0.04	15.0		
9GA0312P3J001			100	0.52	6.2	23500	0.57 20.1	720 2.89	57.5		
			0	0.06	0.7	3000	0.07 2.5	11 0.04	15.0		
9GA0312P3G001			100	0.33	4.0	19000	0.45 15.9	460 1.85	53.0		
			0	0.06	0.7	3000	0.07 2.5	11 0.04	15.0		

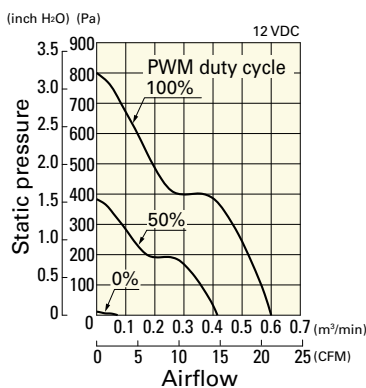
* PWM frequency: 25 kHz

Other sensor specifications are available as options. Refer to the index (p. 551).

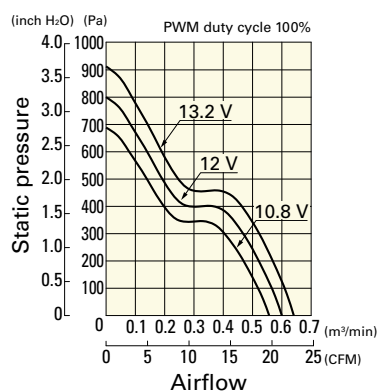
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0312P3K001 With pulse sensor with PWM control function

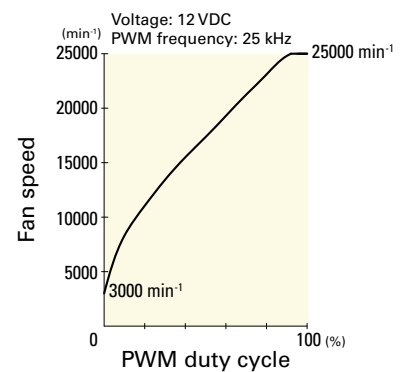
PWM duty cycle



Operating voltage range



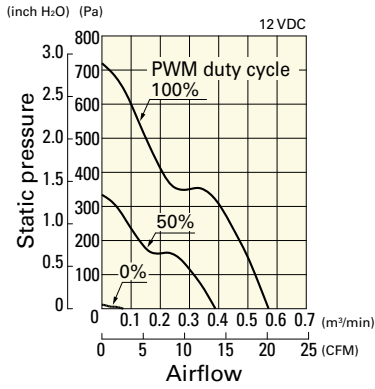
PWM duty - Speed characteristics example



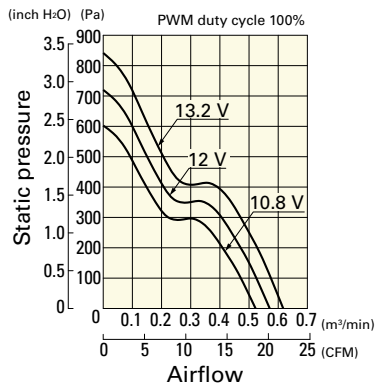
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0312P3J001 With pulse sensor with PWM control function

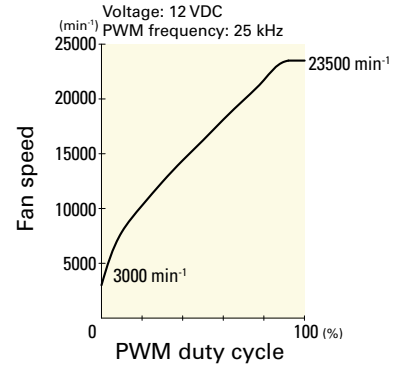
PWM duty cycle



Operating voltage range

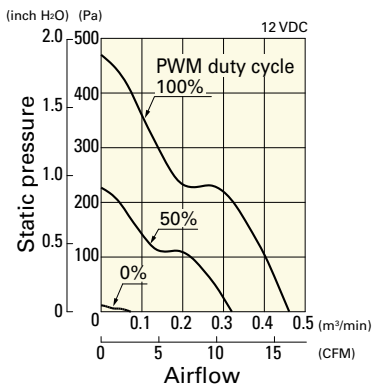


PWM duty - Speed characteristics example

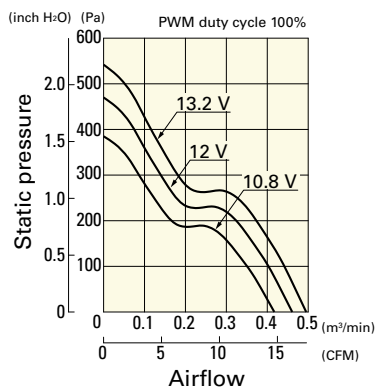


9GA0312P3G001 With pulse sensor with PWM control function

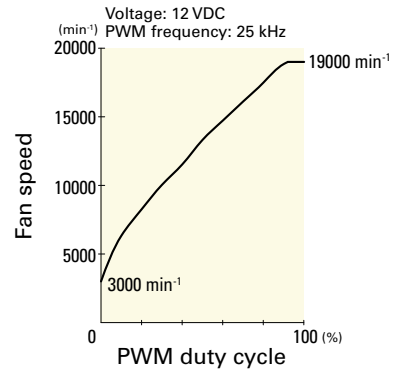
PWM duty cycle



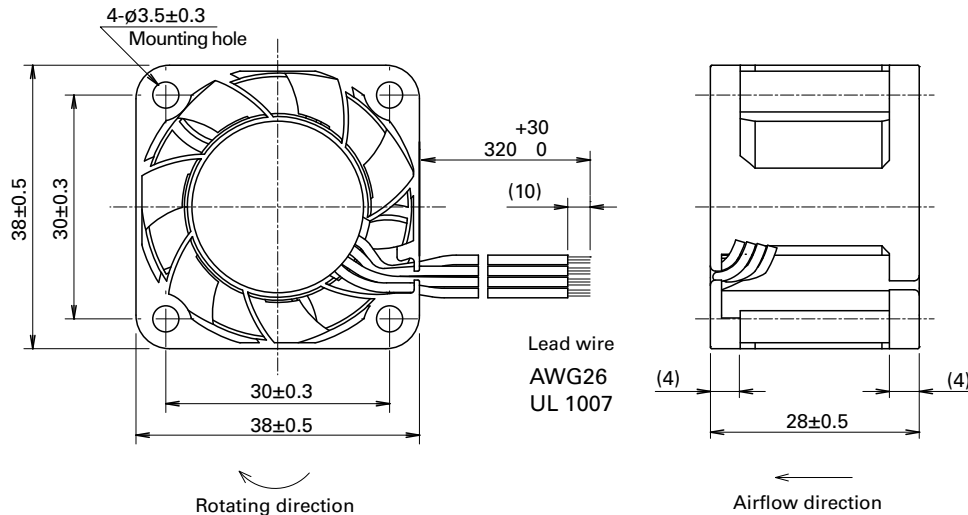
Operating voltage range



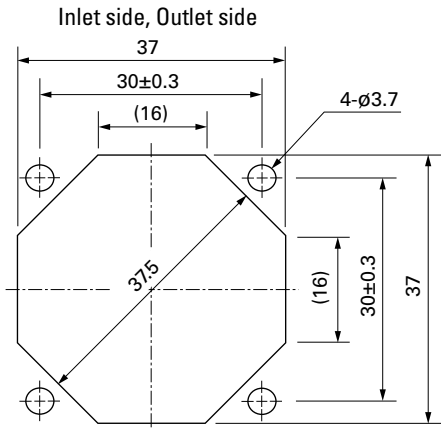
PWM duty - Speed characteristics example



Dimensions (unit: mm) (With ribs)



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



■ Options

Finger guards page: p. 513

Model no.: 109-1065



38x38x28 mm

San Ace 38 9GV type

General Specifications

- Material Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -20 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black (Sensor) Yellow
- Mass 50 g

Specifications

The models listed below **have ribs and pulse sensors**. For models without ribs, append "1" to the end of model numbers.

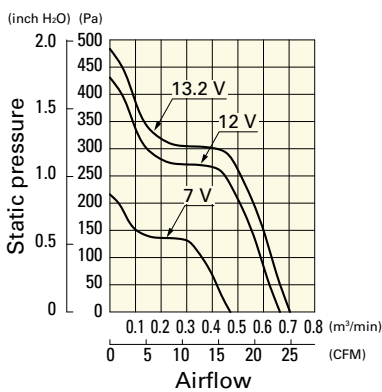
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GV0312K301	12	7 to 13.2	0.79	9.48	18200	0.65 23	425 1.707	59	-20 to +60	40000/60°C
9GV0312J301			0.6	7.2	15900	0.57 20	315 1.265	54		
9GV0312G301			0.4	4.8	13500	0.48 17	220 0.924	50		
9GV0312E301		4.5 to 13.2	0.21	2.52	10500	0.37 13.1	130 0.522	43		
9GV0312H301			0.16	1.92	7000	0.24 8.5	60 0.241	34		

Other sensor specifications are available as options. Refer to the index (p. 554).

Airflow - Static Pressure Characteristics

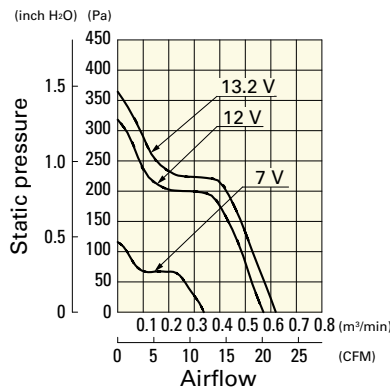
9GV0312K301 With pulse sensor

Operating voltage range



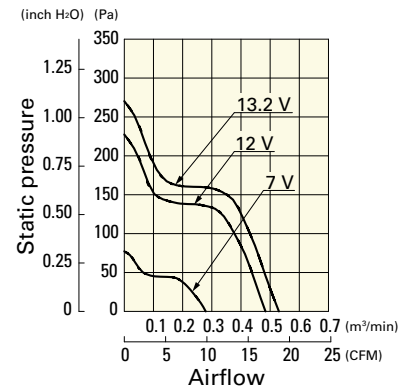
9GV0312J301 With pulse sensor

Operating voltage range



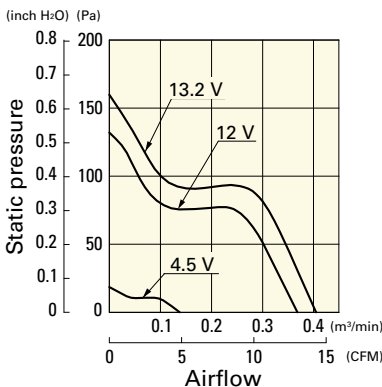
9GV0312G301 With pulse sensor

Operating voltage range



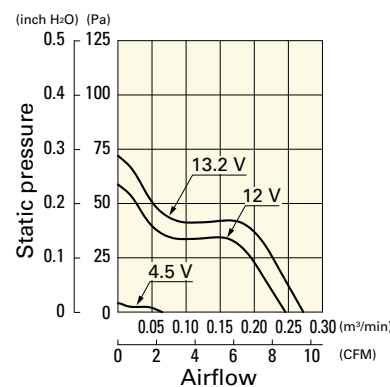
9GV0312E301 With pulse sensor

Operating voltage range

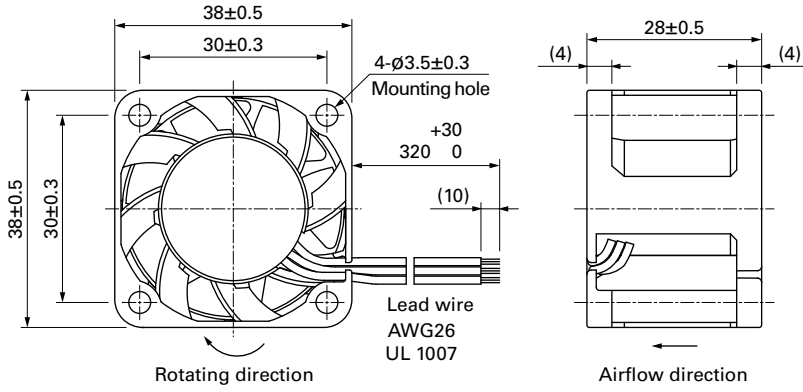


9GV0312H301 With pulse sensor

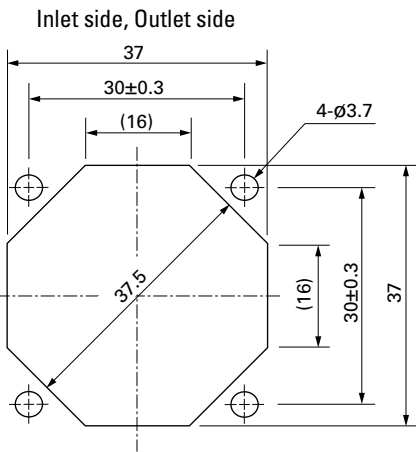
Operating voltage range



Dimensions (unit: mm) (With ribs)



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



Options

Finger guards

page: p. 513

Model no.: 109-1065

40x40x10 mm

San Ace 40 9P type   



General Specifications

- Material Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass 19 g

Specifications

The models listed below **have ribs and pulse sensors.**

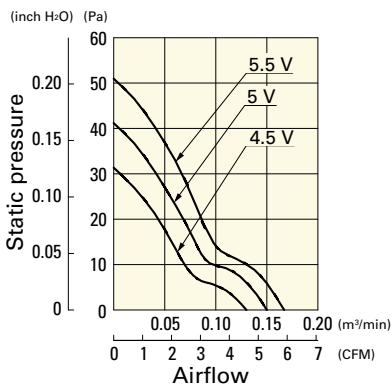
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
109P0405H901	5	4.5 to 5.5	0.16	0.8	6200	0.15 5.3	41.2 0.165	25	-10 to +60	40000/60°C
109P0405M901			0.11	0.55	5000	0.12 4.2	27 0.108	21		
109P0412H901	12	7 to 13.8	0.07	0.84	6200	0.15 5.3	41.2 0.165	25		
109P0412M901			0.06	0.72	5000	0.12 4.2	27 0.108	21		

Other sensor specifications are available as options. Refer to the index (pp. 543 to 544).

Airflow - Static Pressure Characteristics

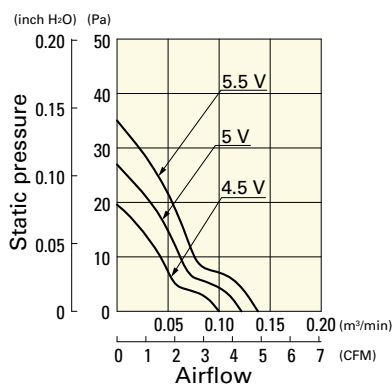
109P0405H901 With pulse sensor

Operating voltage range



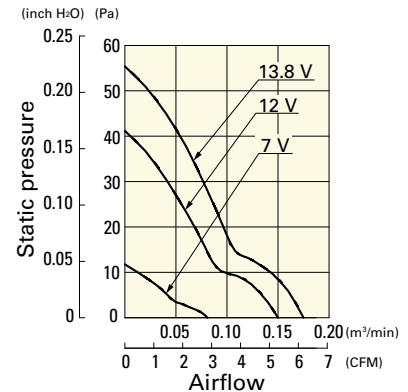
109P0405M901 With pulse sensor

Operating voltage range



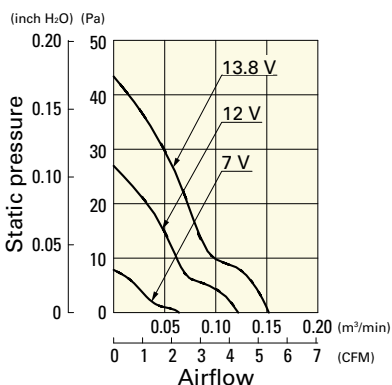
109P0412H901 With pulse sensor

Operating voltage range

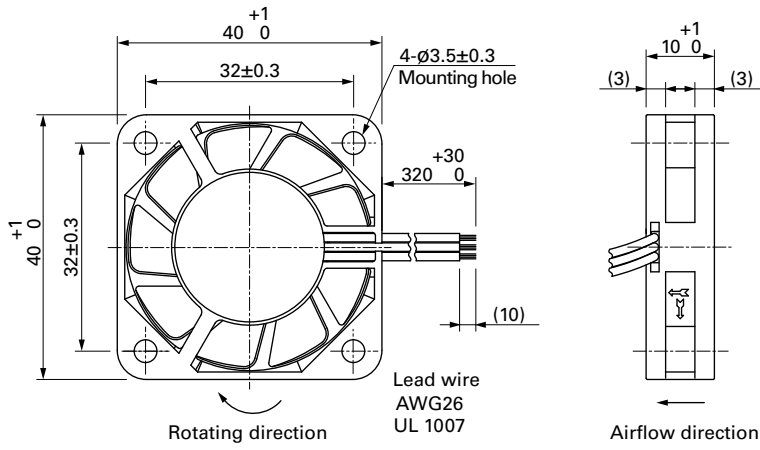


109P0412M901 With pulse sensor

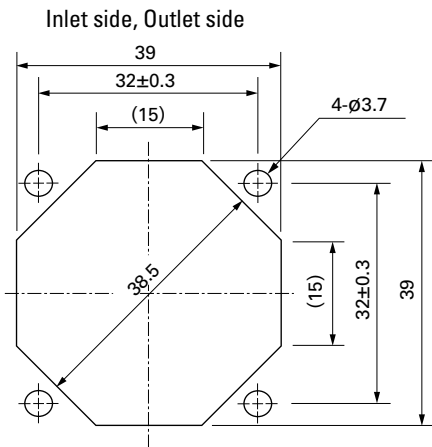
Operating voltage range



■ Dimensions (unit: mm)



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



■ Options

Finger guards

page: p. 513

Model no.: 109-059, 109-059H



40x40x15 mm

San Ace 40 9GA type Low Power Consumption Fan

General Specifications

- Material Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
(For models without PWM control function, there is no speed control wiring.)
- Mass 28 g

Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412P7G001	12	10.2 to 13.8	100	0.17	2.04	13100	0.36 12.7	192 0.77	42	-20 to +70	40000/60°C (70000/40°C)

* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

The models listed below **have ribs and pulse sensors.**

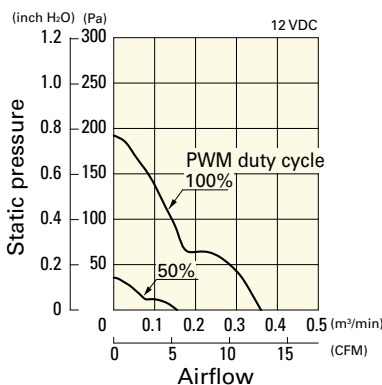
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36 12.7	192 0.77	42	-20 to +70	40000/60°C (70000/40°C)
9GA0412H7001			0.06	0.72	7300	0.2 7.1	59.6 0.24	28		

Other sensor specifications are available as options. Refer to the index (p. 551).

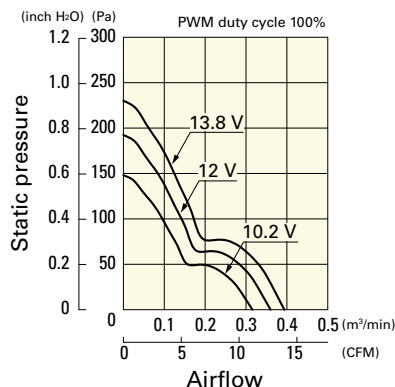
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9GA0412P7G001 With pulse sensor with PWM control function

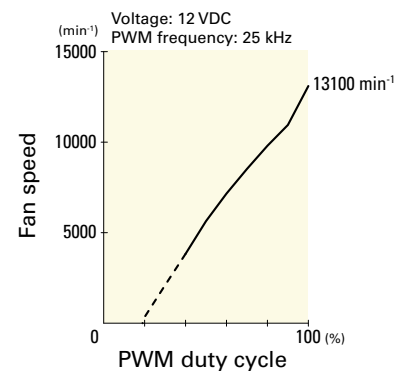
PWM duty cycle



Operating voltage range



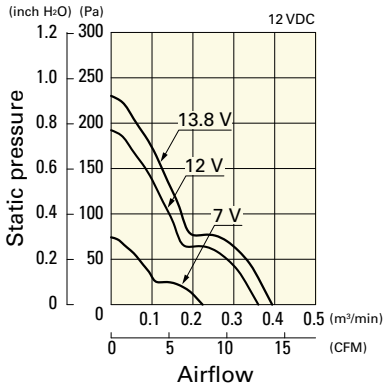
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

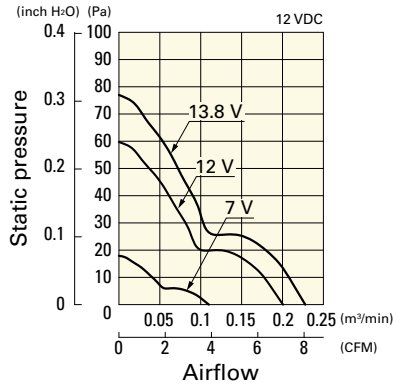
9GA0412G7001 With pulse sensor

Operating voltage range

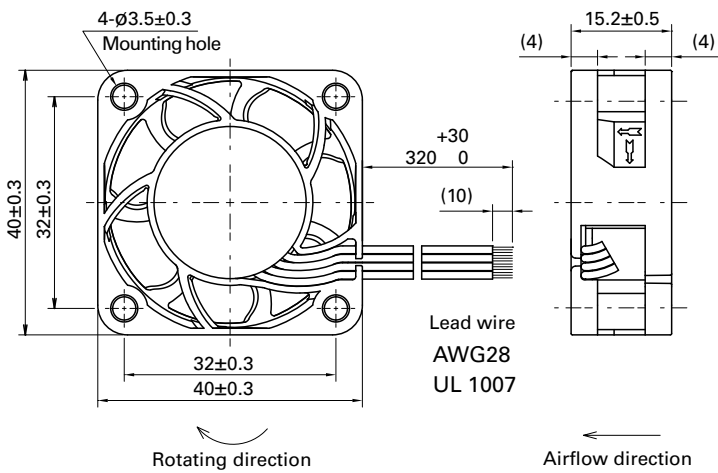


9GA0412H7001 With pulse sensor

Operating voltage range

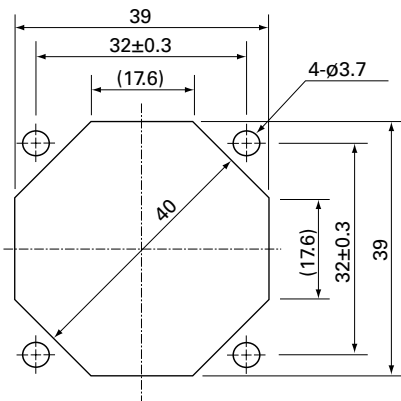


Dimensions (unit: mm) (With pulse sensor with PWM control function)



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

Inlet side, Outlet side



Options

Finger guards

page: p. 513

Model no.: 109-059, 109-059H

40x40x15 mm

San Ace 40 9P type   



General Specifications

- Material Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and frame)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black or Blue (Sensor) Yellow
- Mass 32 g

Specifications

The models listed below **have ribs and pulse sensors.**

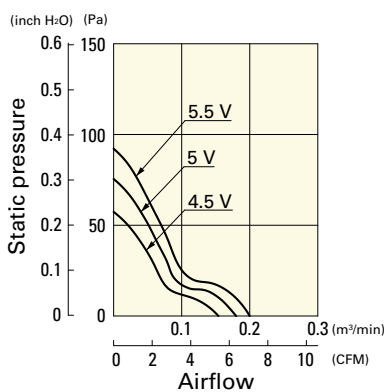
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]		
109P0405H701	5	4.5 to 5.5	0.28	1.4	7700	0.18 6.4	75.5 0.303	28	-20 to +60	60000/60°C		
109P0405M701			0.21	1.05	6500	0.15 5.3	52.9 0.213	24				
109P0412R701	12	7 to 13.8	0.13	1.56	9700	0.227 8.0	111.9 0.449	34		-20 to +70	40000/60°C	
109P0412S701			0.18	2.16	8600	0.2 7.06	92.1 0.369	32				
109P0412H701			10.2 to 13.8	0.13	1.56	7700	0.18 6.4	75.5 0.303				28
109P0412M701				0.095	1.14	6500	0.15 5.3	52.9 0.213				24
109P0424H701				24	20.4 to 27.6	0.08	1.92	7700	0.18 6.4			75.5 0.303

Other sensor specifications are available as options. Refer to the index (pp. 543 to 544).

Airflow - Static Pressure Characteristics

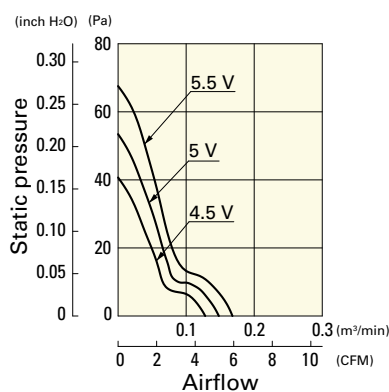
109P0405H701 With pulse sensor

Operating voltage range



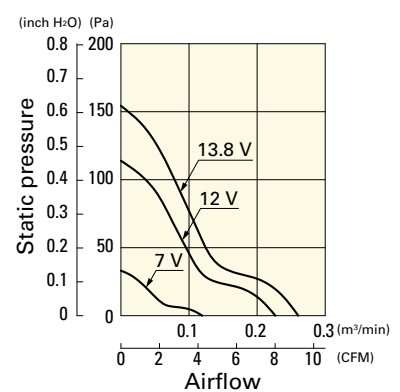
109P0405M701 With pulse sensor

Operating voltage range



109P0412R701 With pulse sensor

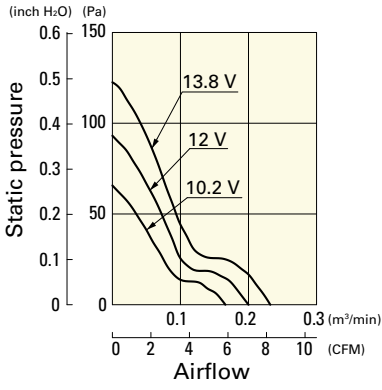
Operating voltage range



Airflow - Static Pressure Characteristics

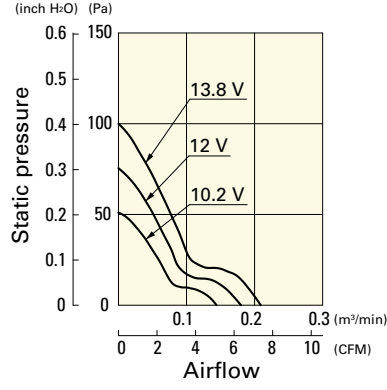
109P0412S701 With pulse sensor

Operating voltage range



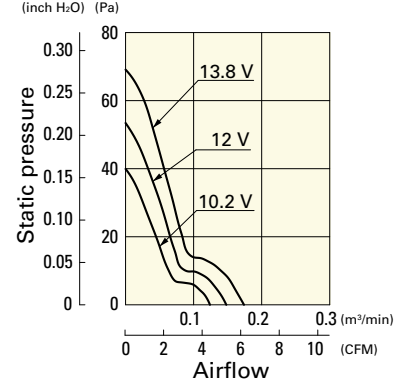
109P0412H701 With pulse sensor

Operating voltage range



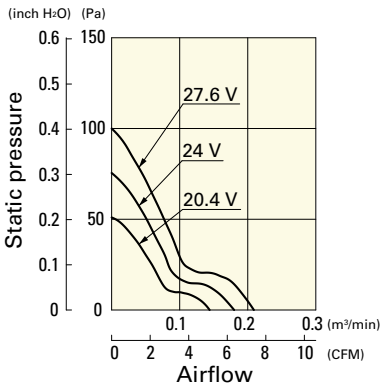
109P0412M701 With pulse sensor

Operating voltage range

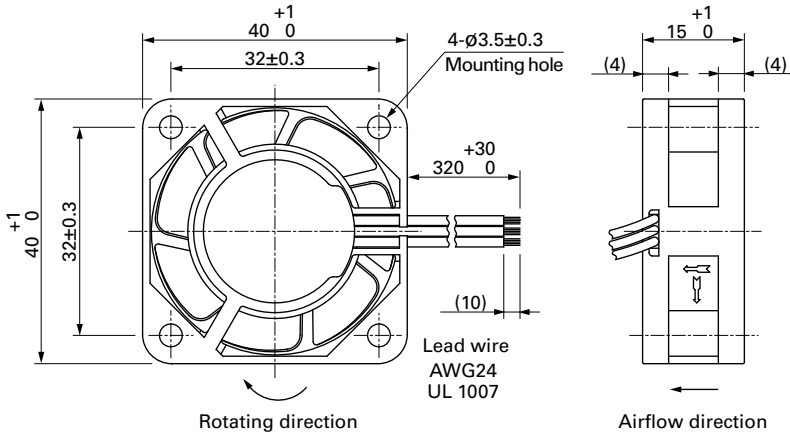


109P0424H701 With pulse sensor

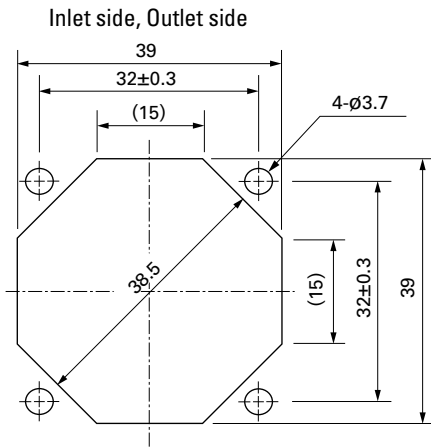
Operating voltage range



Dimensions (unit: mm)



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



Options

Finger guards

page: p. 513

Model no.: 109-059, 109-059H