

# Counter Rotating Fan

Counter rotating fans feature high airflow and high static pressure.

Related product: Long Life Fan pp. 365, 372

## Model Numbering System

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

9CRA	04	12	K	4	01
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications

Fans with PWM control function

9CRA	03	12	P	4	K	03
Type name	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec (2 to 3 digits)

Type name	9CRA	9CRH	etc.
Frame size (mm)	03	04	06 08 12 57
	38×38	40×40	60×60 80×80 120×120 <sup>ø172×150</sup> (sidecut)
Voltage (V)	12	48	
	12	48	
Speed code	G	H	J K S etc.
Frame thickness (mm)	0	4	5 6 8 9
	76	48	51, 56 56 80 102
Sensor specifications	01, 001	02, 002	D01, D001
	With a pulse sensor	Without a sensor	With a lock sensor

## How to Read Specifications (DC fan)

The following is a sample. See respective product pages for detailed information.

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. static pressure [Pa]	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 airflow at 0 Pa static pressure when the fan is operating at rated voltage. (Measured using the double chamber method)

Max. static pressure ..... The static pressure at 0 m³/min airflow when the fan is operating at rated voltage. (Measured using the double chamber method)

SPL ..... A-weighted sound pressure level (SPL) when the fan operates at the rated speed.

For the measurement method, see the Technical Materials section in the catalog.

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.

**Counter Rotating Fan****38x38x48 mm****San Ace 38 9CRA type △ cFMus****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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet  $\oplus$ Red  $\ominus$ Black [Sensor] Yellow [Control] Brown  
Outlet  $\oplus$ Orange  $\ominus$ Gray [Sensor] Purple [Control] White
- Mass ..... 80 g

**Specifications**

The models listed below have 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 <sup>-1</sup> ] Inlet      Outlet	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CRA0312P4K03	12	10.8 to 13.2	100	1.5	18.0	17600 14520	0.77 27.2	700.0 2.81	64	-20 to +70	40000/60°C (70000/40°C)
			0	0.2	2.4	5280 4200	0.22 7.8	54.9 0.22	33		
9CRA0312P4J03			100	1.1	13.2	16000 13200	0.7 24.7	560.0 2.25	62		
			0	0.18	2.2	4800 3960	0.21 7.4	50.4 0.2	31		

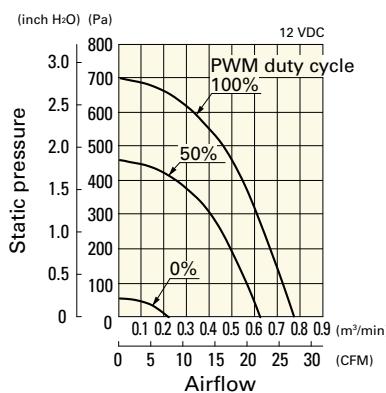
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 604.

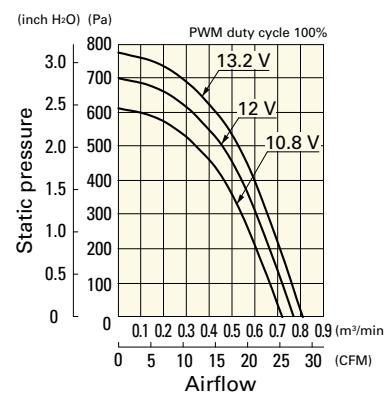
**Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example**

**9CRA0312P4K03** With pulse sensor with PWM control function

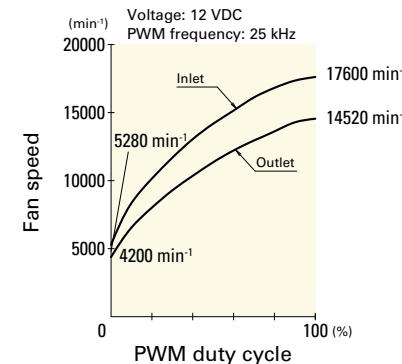
## PWM duty cycle



## Operating voltage range



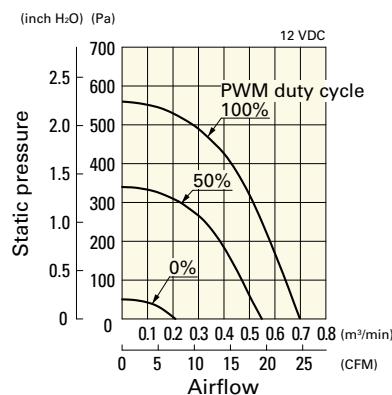
## PWM duty - Speed characteristics example



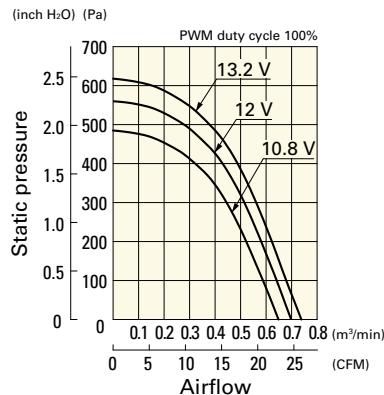
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRA0312P4J03** With pulse sensor with PWM control function

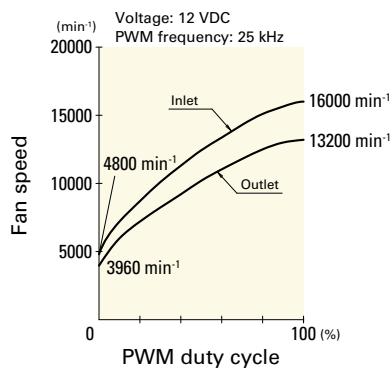
### PWM duty cycle



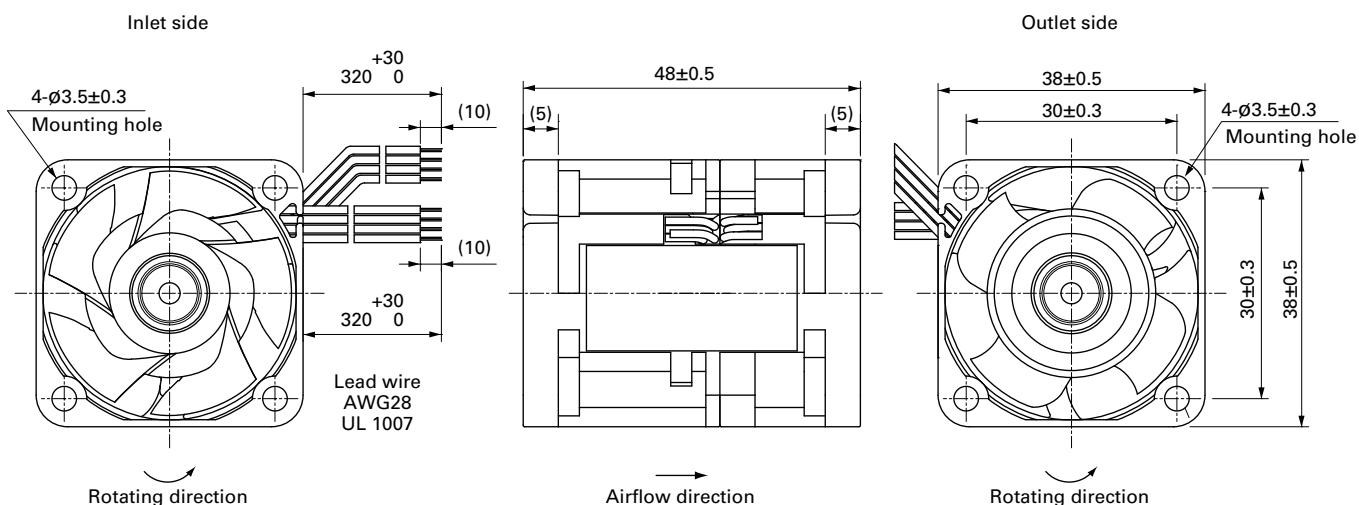
### Operating voltage range



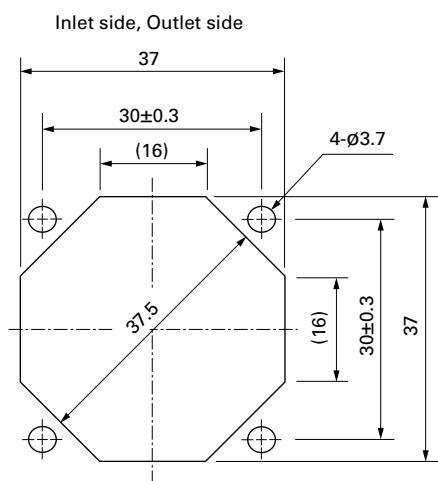
### PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

Model no.: 109-1065

**Counter Rotating Fan****40x40x48 mm****San Ace 40 9CRA 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection  
For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet Red Black Yellow Brown  
Outlet Orange Gray Purple White
- Mass ..... 80 g

**Specifications**

The models listed below have 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] Inlet      Outlet	Max. airflow [m³/min] [CFM]	Max. static pressure [Pa] [inch H₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CRA0412P4K03	12	10.8 to 13.2	100	1.6	19.2	17500 11700	0.92 32.5	650.0 2.61	64	-20 to +70	40000/60°C (70000/40°C)
			0	0.19	2.28	5250 3510	0.276 9.75	58.5 0.235	33		
9CRA0412P4J03	12	10.8 to 13.2	100	1.2	14.4	16200 10800	0.85 30.0	560.0 2.25	62		
			0	0.15	1.8	4500 3000	0.236 8.33	43.2 0.173	28		
9CRA0412P4G03	12	10.8 to 13.2	100	1.0	12.0	14700 9800	0.77 27.2	460.0 1.85	59		
			0	0.15	1.8	4410 2940	0.231 8.16	41.4 0.166	28		

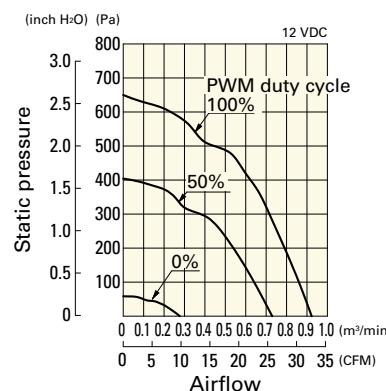
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 604.

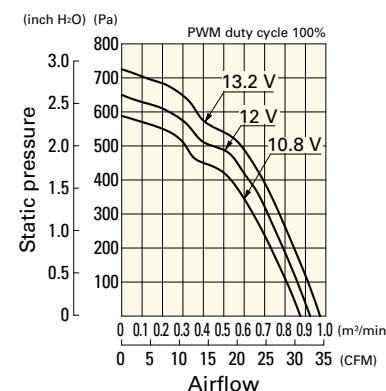
**Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example**

9CRA0412P4K03 With pulse sensor with PWM control function

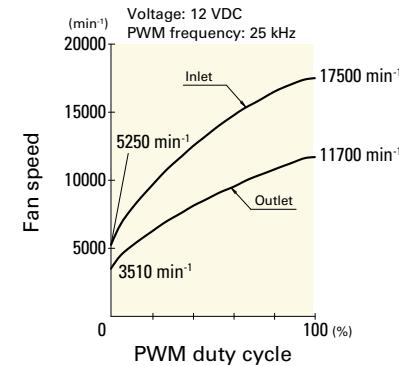
## PWM duty cycle



## Operating voltage range



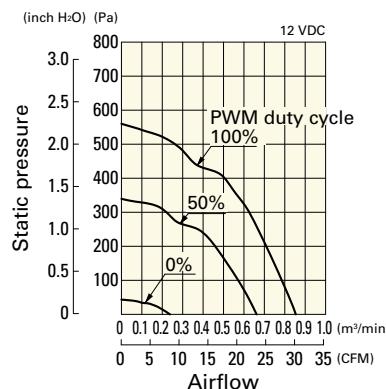
## PWM duty - Speed characteristics example



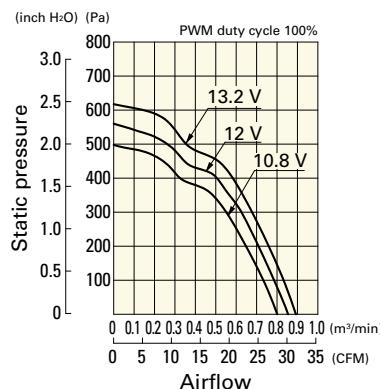
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRA0412P4J03** With pulse sensor with PWM control function

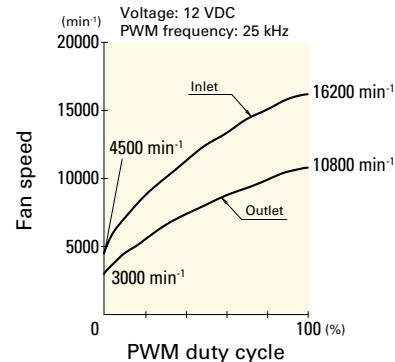
### PWM duty cycle



### Operating voltage range

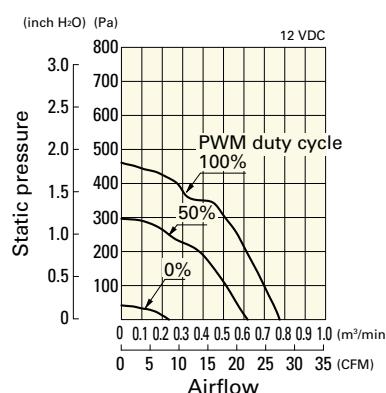


### PWM duty - Speed characteristics example

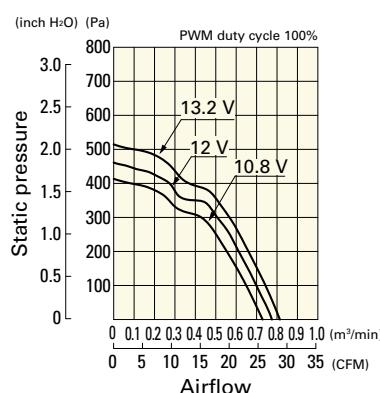


**9CRA0412P4G03** With pulse sensor with PWM control function

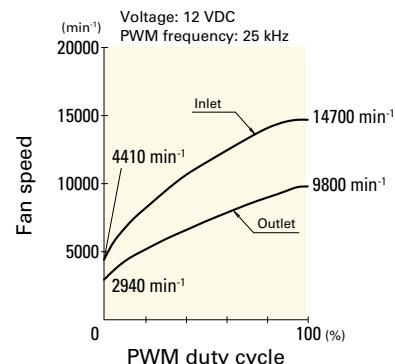
### PWM duty cycle



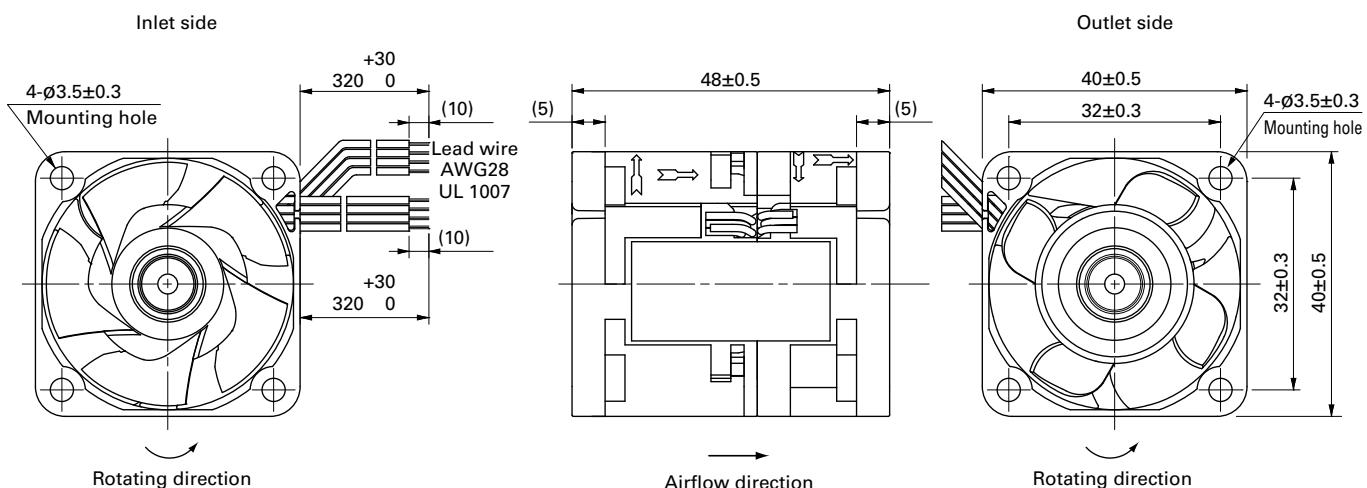
### Operating voltage range



### PWM duty - Speed characteristics example



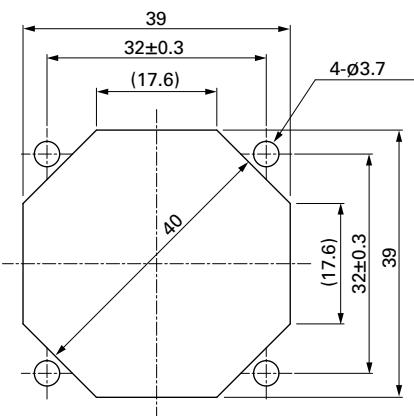
## Dimensions (unit: mm)



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

DC Counter Rotating Fan 40 mm sq.

Inlet side, Outlet side



## ■ Options

Finger guards

page: p. 564

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

## Counter Rotating Fan

# 40x40x56 mm



**San Ace 40 9CRJ type**

DC

Counter Rotating Fan 40 mm sq.

### 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet Red Black Yellow Brown  
Outlet Orange Gray Purple White
- Mass ..... 110 g

### Specifications

The models listed below have 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] Inlet      Outlet	Max. airflow [m³/min]      [CFM]	Max. static pressure [Pa]      [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CRJ0412P5J001	12	10.8 to 12.6	100	3.1	37.2	36200      32000	1.06      37.4	2400      9.64	72	-20 to +70	30000/60°C (53000/40°C)
			20	0.1	1.2	4500      4000	0.11      3.9	40      0.16	28		

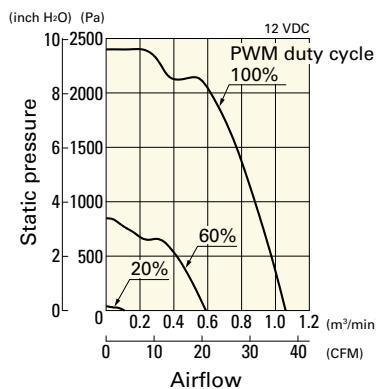
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The mark indicates Short LeadTime Service applicable models. See p. 630 for details.

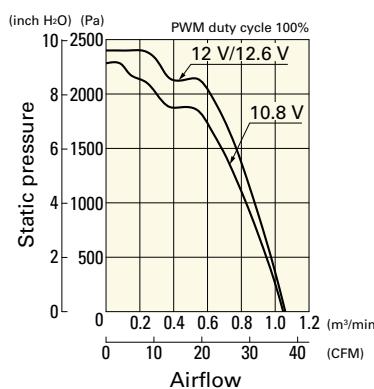
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRJ0412P5J001** With pulse sensor with PWM control function

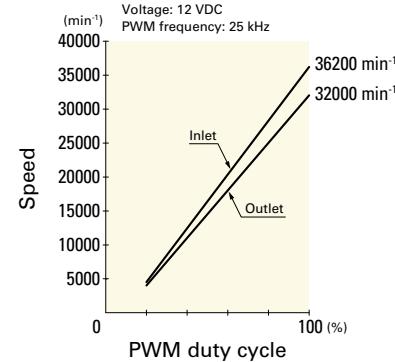
#### PWM duty cycle

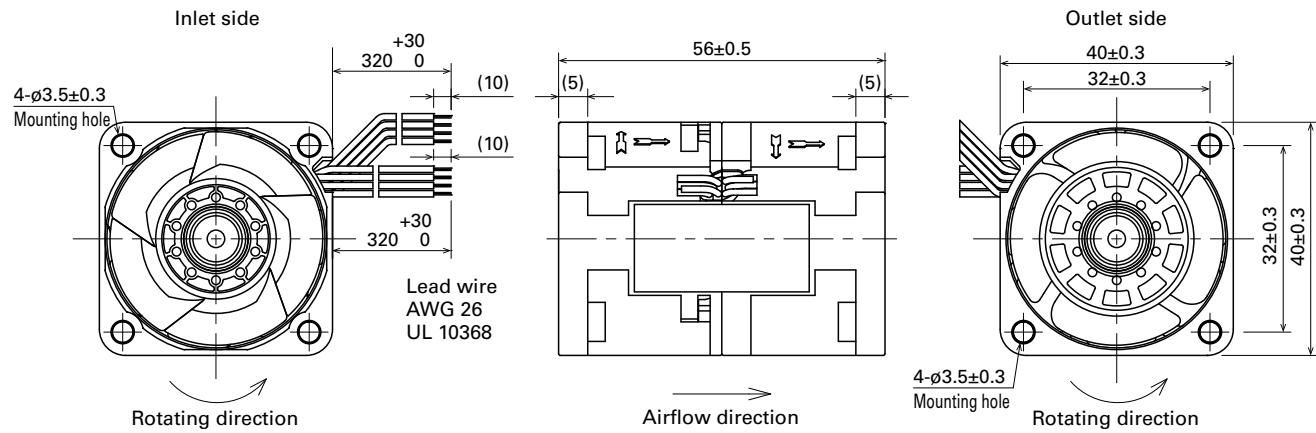
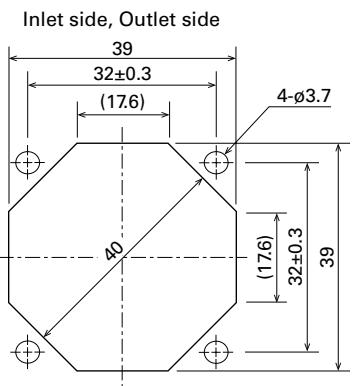


#### Operating voltage range



#### PWM duty - Speed characteristics example



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

Finger guards

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



# 40x40x56 mm

**San Ace 40 9CRH type**

## 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet Red Black Yellow Brown  
Outlet Orange Gray Purple White
- Mass ..... 110 g

## Specifications

The models listed below have 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] Inlet      Outlet	Max. airflow [m³/min] [CFM]	Max. static pressure [Pa] [inch H₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CRH0412P5J001	12	10.8 to 12.6	100	2.52	30.24	29500 25500	0.93 32.9	1700 6.83	70	-20 to +70	30000/60°C (53000/40°C)
			20	0.06	0.72	3000 2600	0.08 2.8	17 0.07	20		

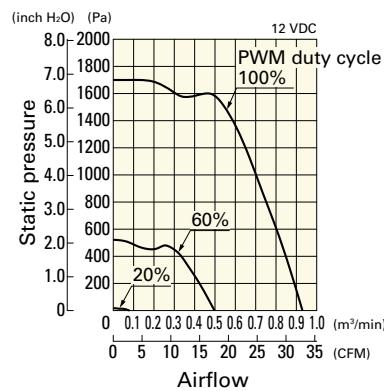
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The mark indicates Short Lead Time Service applicable models. See p. 630 for details.

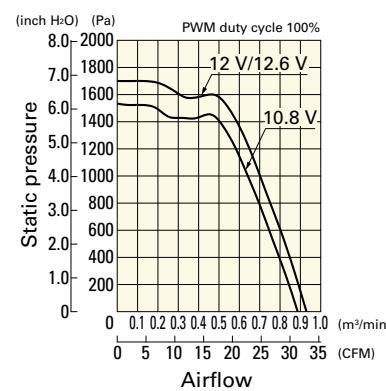
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRH0412P5J001** With pulse sensor with PWM control function

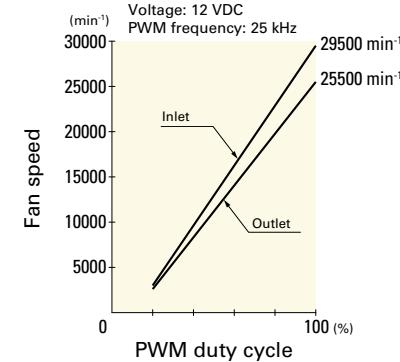
### PWM duty cycle

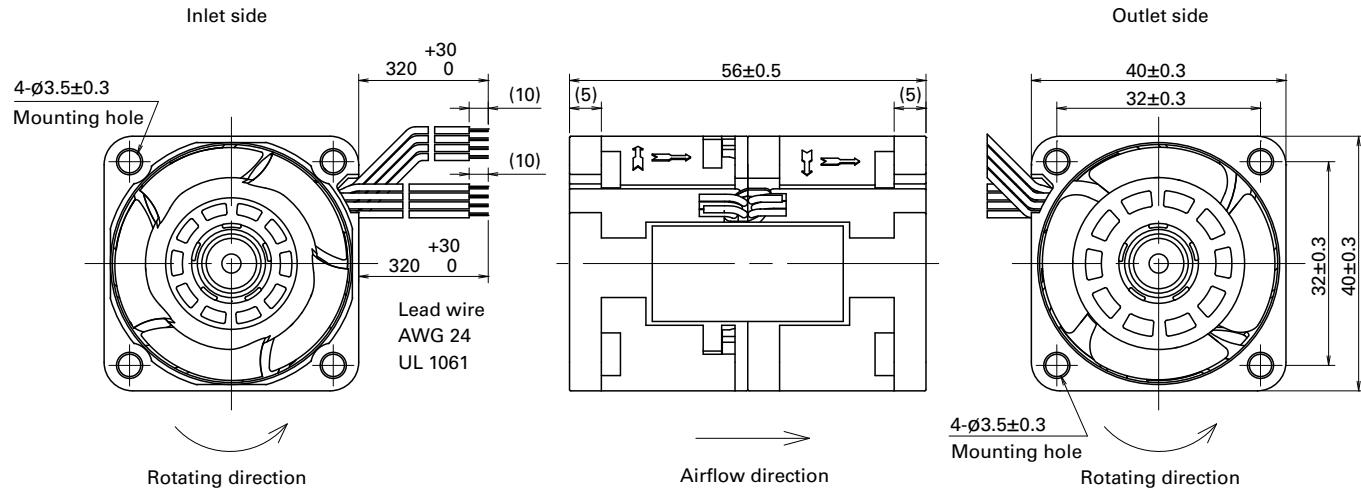
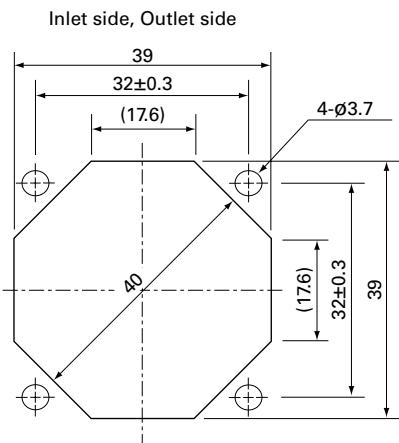


### Operating voltage range



### PWM duty - Speed characteristics example



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

Finger guards

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

## Counter Rotating Fan

# 40x40x56 mm

San Ace 40 9CRV type 



### 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection  
For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet Red Black Yellow Brown  
Outlet Orange Gray Purple White
- Mass ..... 100 g

### Specifications

The models listed below have 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 [m³/min] / [CFM]	Max. static pressure [Pa] / [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
			Inlet	Outlet							
9CRV0412P5J201	12	10.8 to 13.2	100	1.8	21.6	22500 / 20000	0.9 / 31.8	1050 / 4.22	68	-20 to +70	40000/60°C (70000/40°C)
			0	0.11	1.32	3800 / 3500	0.14 / 4.9	30 / 0.12	26		

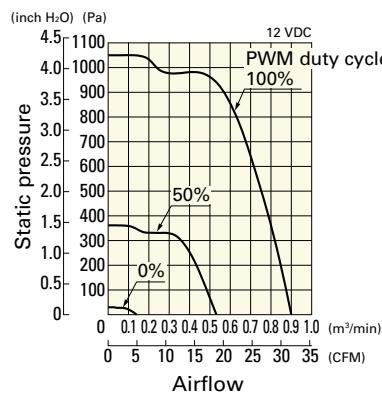
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The mark indicates Short Lead Time Service applicable models. See p. 630 for details.

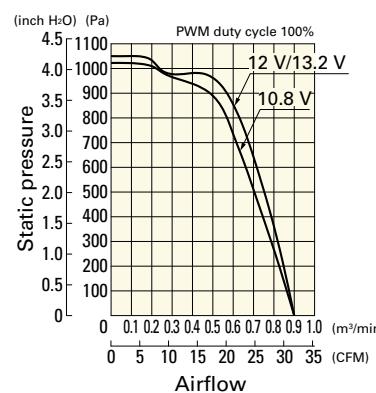
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRV0412P5J201 With pulse sensor with PWM control function

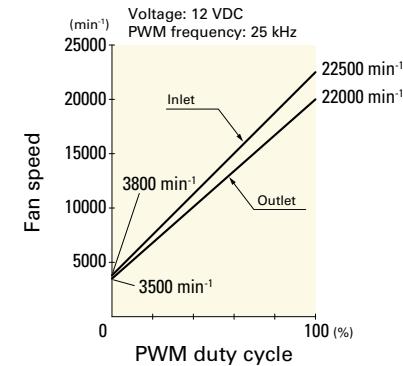
#### PWM duty cycle

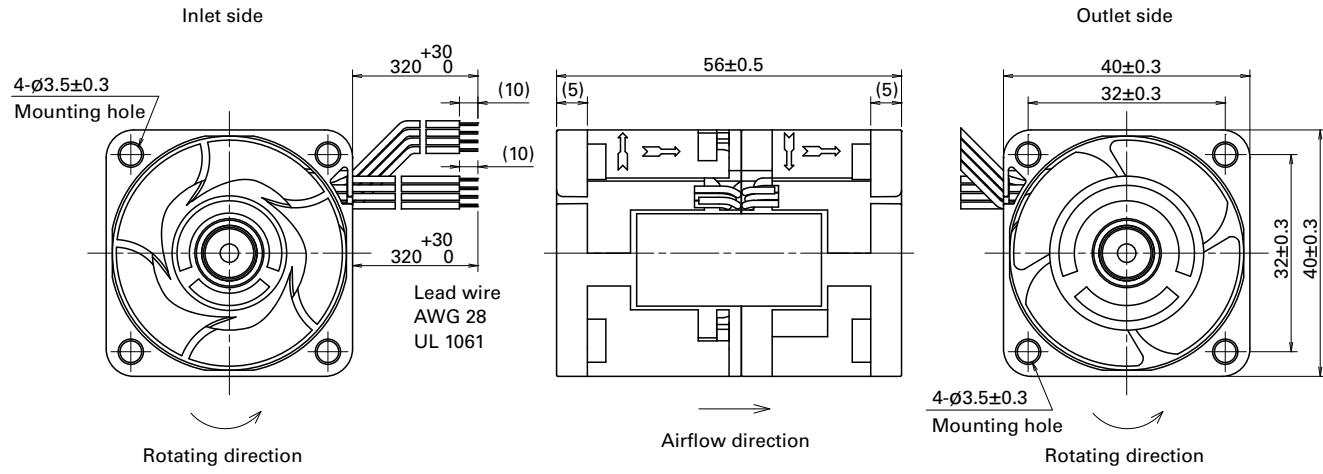
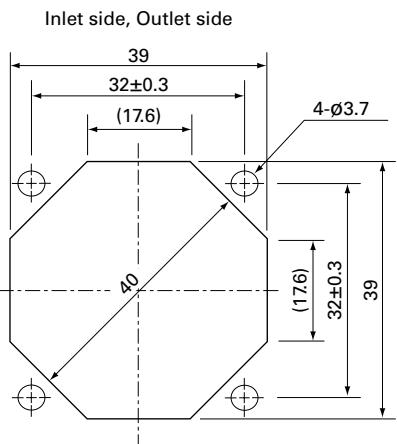


#### Operating voltage range



#### PWM duty - Speed characteristics example



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

Finger guards

page: p. 564

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

## Counter Rotating Fan

# 40x40x56 mm

**San Ace 40 9CRE** type Low Vibration Fan 



DC

Counter Rotating Fan 40 mm sq.

### General Specifications

- Material ..... Frame: Aluminum, 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet Red Black Yellow Brown  
Outlet Orange Gray Purple White
- Mass ..... 110 g

### Specifications

The models listed below have 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 [m³/min] Inlet Outlet	Max. static pressure [Pa] [inch H₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
<b>9CRE0412P5J03</b>	12	10.8 to 13.2	100	1.4	16.8	15800 12200	0.9 31.8	570.0 2.29	62	-20 to +70	40000/60°C (70000/40°C)

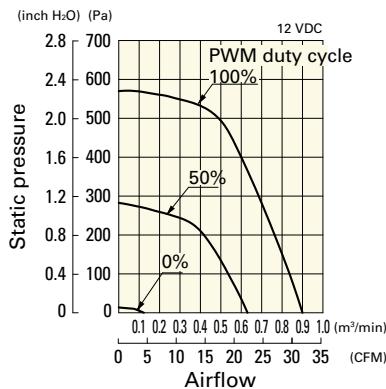
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 605.

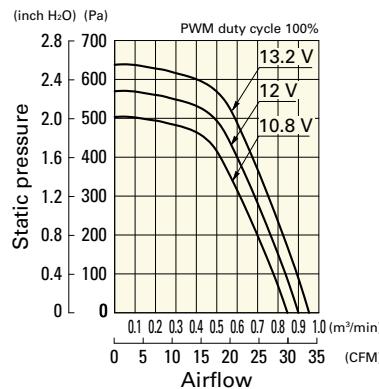
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRE0412P5J03** With pulse sensor with PWM control function

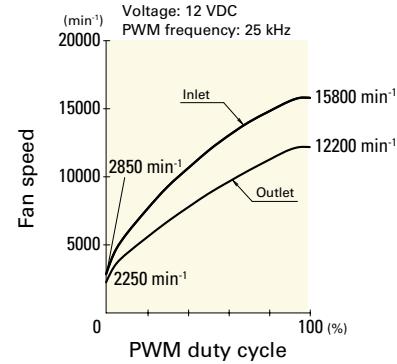
#### PWM duty cycle

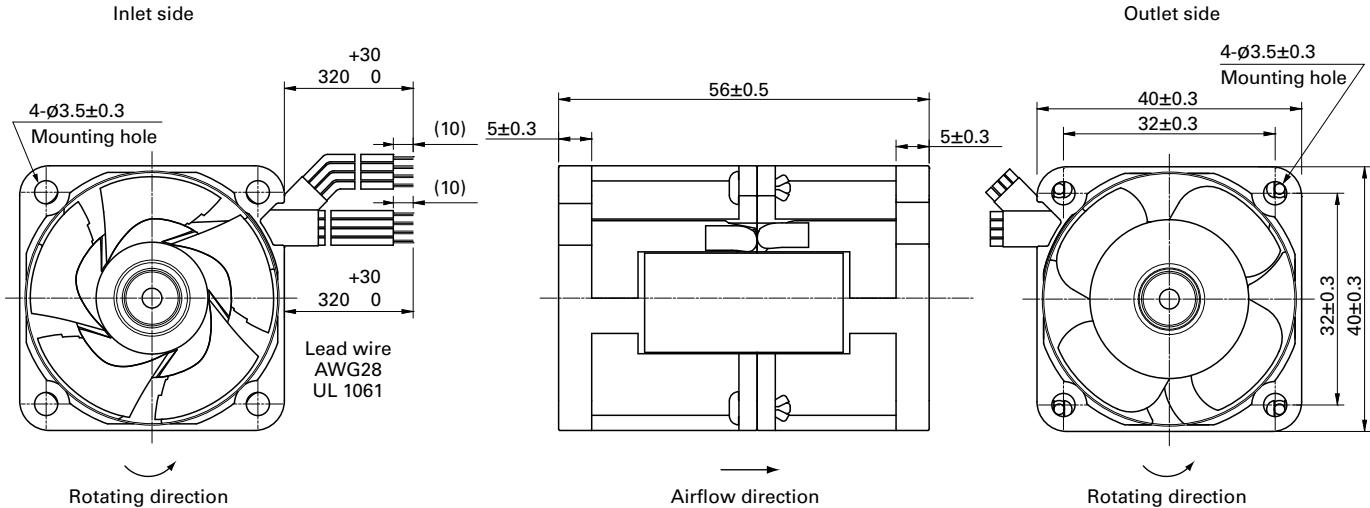
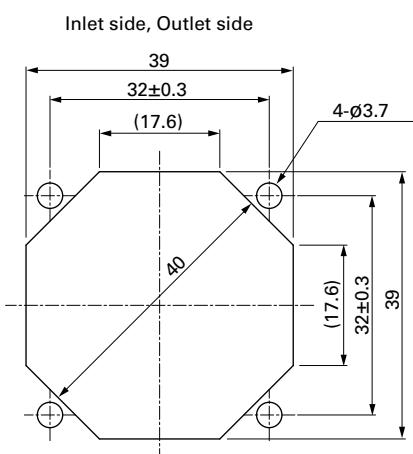


#### Operating voltage range



#### PWM duty - Speed characteristics example



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

Finger guards

page: p. 564

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

## Counter Rotating Fan

# 60x60x51 mm



### San Ace 60 9CR type △ cULus

DC

Counter Rotating Fan 60 mm sq.

#### 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection  
For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet  $\oplus$ Red  $\ominus$ Black [Sensor] Yellow [Control] Brown  
Outlet  $\oplus$ Orange  $\ominus$ Gray [Sensor] Purple [Control] White
- Mass ..... 180 g

#### Specifications

The models listed below have 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 <sup>-1</sup> ] Inlet      Outlet	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inch H <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CR0612P5G03	12	10.8 to 13.2	100	2.7	32.4	11500 9000	2.03 71.7	600 2.41	68	-20 to +70	40000/60°C (70000/40°C)
			0	0.22	2.64	3000 2300	0.48 16.9	40 0.16	34		
9CR0612P5H03			100	2.0	24.0	10500 8200	1.85 65.4	500 2.01	65		
			0	0.22	2.64	3000 2300	0.48 16.9	40 0.16	34		

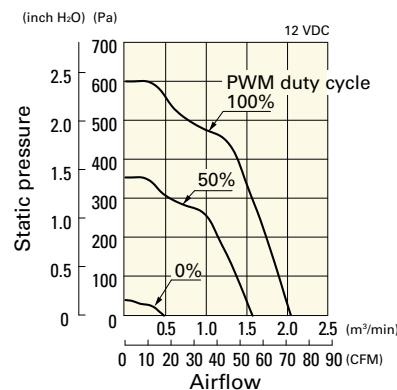
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 604.

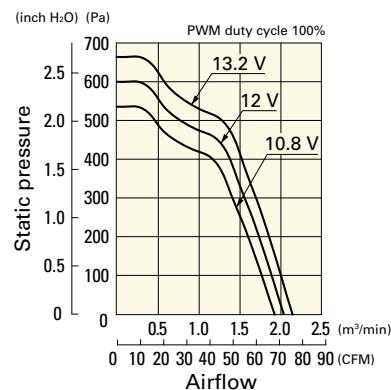
#### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CR0612P5G03 With pulse sensor with PWM control function

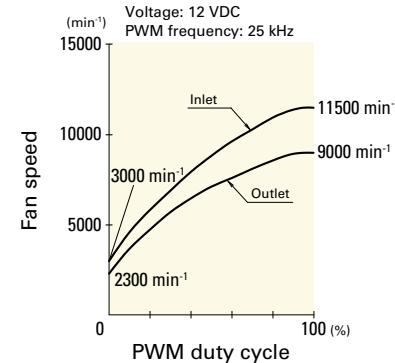
PWM duty cycle



Operating voltage range



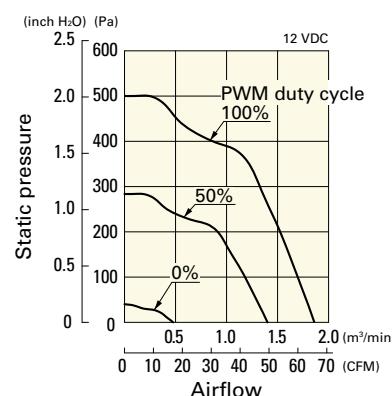
PWM duty - Speed characteristics example



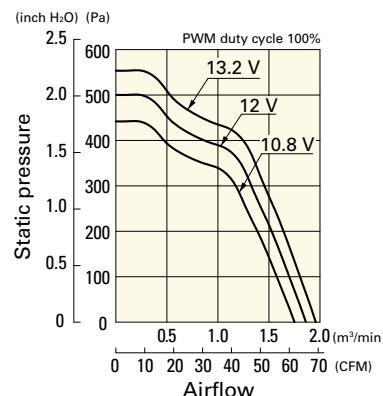
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CR0612P5H03** With pulse sensor with PWM control function

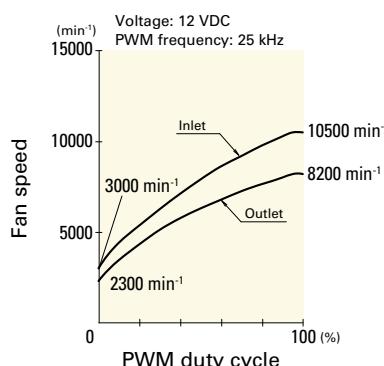
### PWM duty cycle



### Operating voltage range

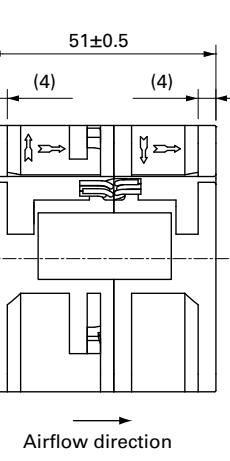
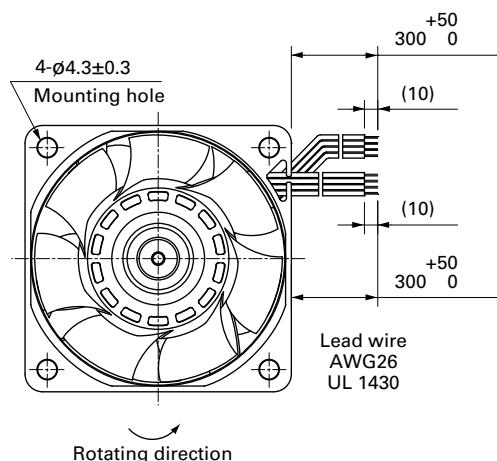


### PWM duty - Speed characteristics example

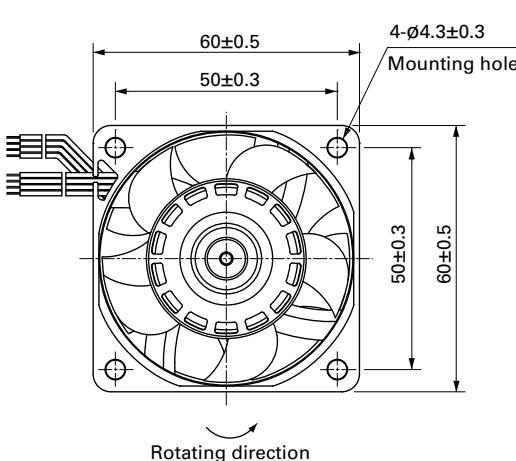


## Dimensions (unit: mm)

### Inlet side



### Outlet side

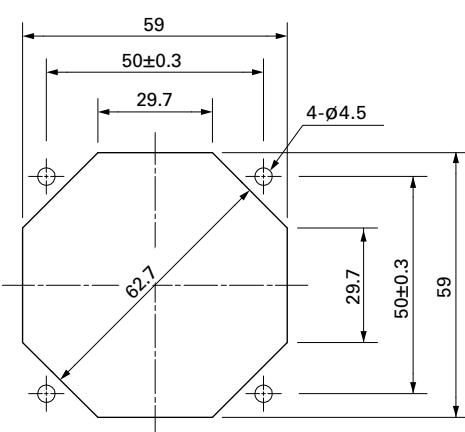


Rotating direction

Airflow direction

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

Inlet side, Outlet side



## Options

Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

Resin finger guards

page: p. 571

Model no.: 109-1003G

Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)

## Counter Rotating Fan

ECO PRODUCTS

# 60x60x56 mm

## San Ace 60 9CRA type △ cFMus



### 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet  $\oplus$ Red  $\ominus$ Black  $\begin{matrix} \text{Sensor} \\ \text{Yellow} \end{matrix}$   $\begin{matrix} \text{Control} \\ \text{Brown} \end{matrix}$   
Outlet  $\oplus$ Orange  $\ominus$ Gray  $\begin{matrix} \text{Sensor} \\ \text{Purple} \end{matrix}$   $\begin{matrix} \text{Control} \\ \text{White} \end{matrix}$
- Mass ..... 200 g

### Specifications

The models listed below have 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 <sup>-1</sup> ] Inlet      Outlet	Max. airflow [m <sup>3</sup> /min]      [CFM]	Max. static pressure [Pa]      [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
② 9CRA0612P6K001	12	10.8 to 13.2	100	3.1	37.2	18300 15800	2.28 80.5	1130 4.54	73	-20 to +70	30000/60°C (53000/40°C)
			0	0.17	2.0	3800 3300	0.47 16.6	49 0.2	35		40000/60°C (70000/40°C)
② 9CRA0612P6J001	12	10.8 to 13.2	100	2.3	27.6	16800 14500	2.1 74.2	950 3.82	70		40000/60°C (70000/40°C)
			0	0.15	1.8	3800 3300	0.47 16.6	49 0.2	35		
② 9CRA0612P6G001	12	10.8 to 13.2	100	1.3	15.6	13500 11400	1.65 58.3	620 2.49	65		
			0	0.1	1.2	3000 2500	0.36 12.7	31 0.12	29		

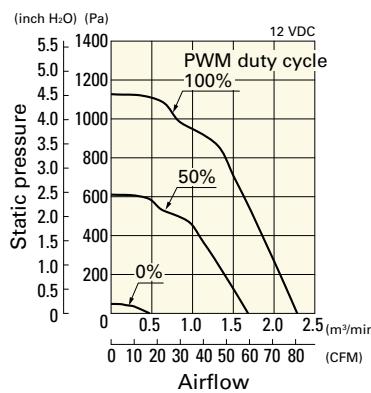
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The ② mark indicates Short LeadTime Service applicable models. See p. 630 for details.

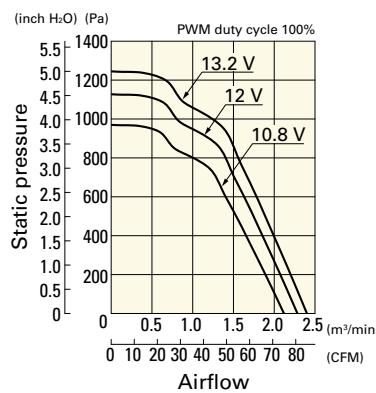
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0612P6K001 With pulse sensor with PWM control function

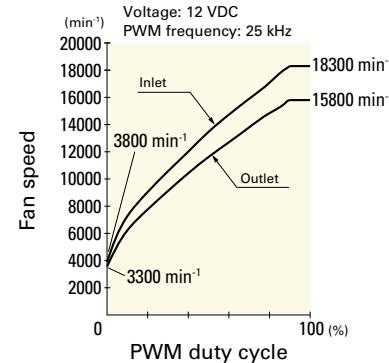
#### PWM duty cycle



#### Operating voltage range



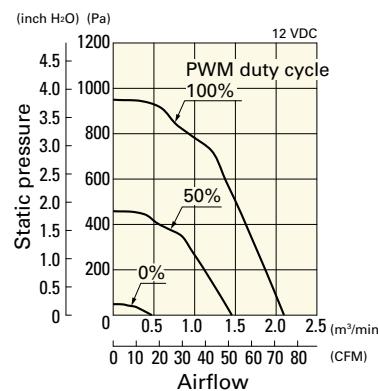
#### PWM duty - Speed characteristics example



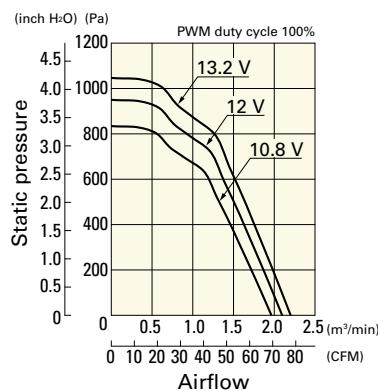
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRA0612P6J001** With pulse sensor with PWM control function

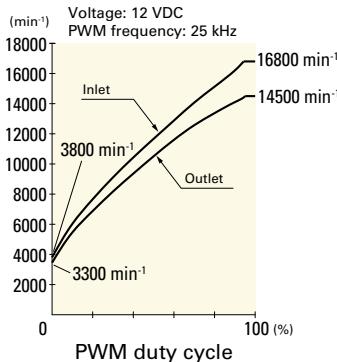
### PWM duty cycle



### Operating voltage range

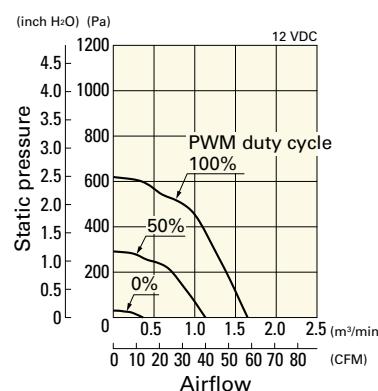


### PWM duty - Speed characteristics example

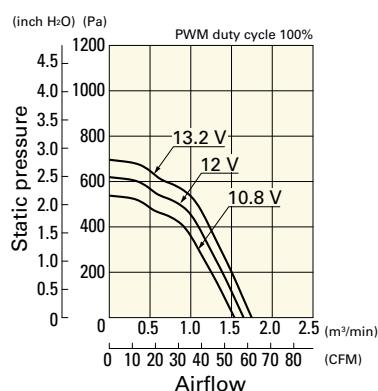


**9CRA0612P6G001** With pulse sensor with PWM control function

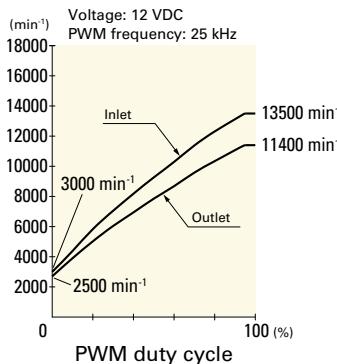
### PWM duty cycle



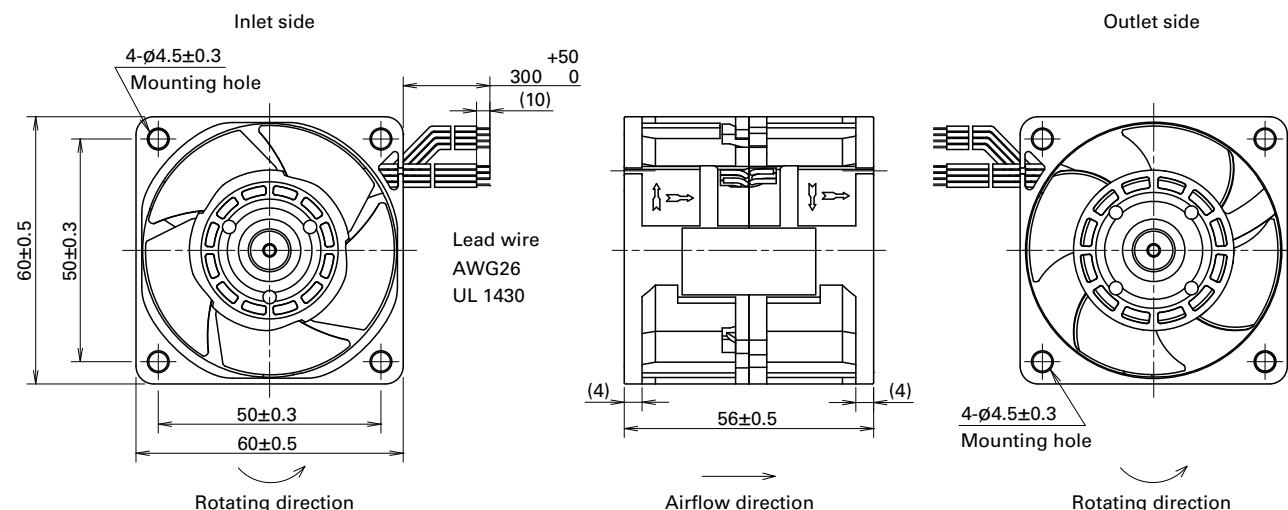
### Operating voltage range



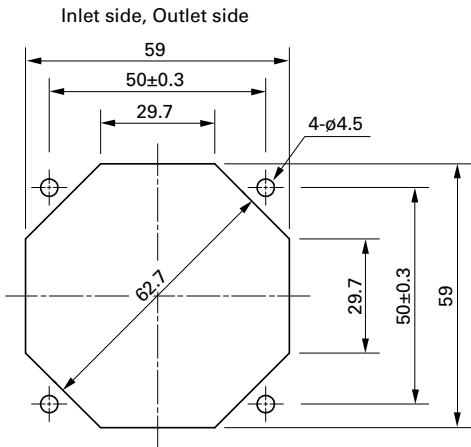
### PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



### ■ Options

Finger guards  
Model no.: 109-139E, 109-139H

page: p. 564

Resin finger guards  
Model no.: 109-1003G

page: p. 571

Resin filter kits  
Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)

**Counter Rotating Fan****60x60x76 mm****San Ace 60 9CRE** type Low Vibration Fan **General Specifications**

- Material ..... Frame: Aluminum, 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection  
For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet Red Black Yellow Brown  
Outlet Orange Gray Purple White
- Mass ..... 300 g

**Specifications**

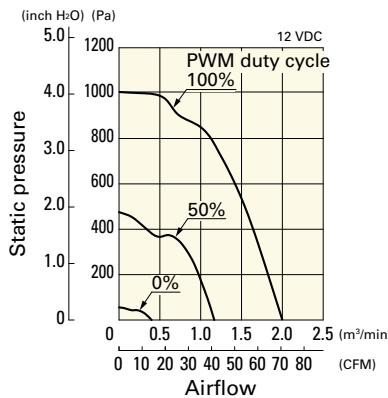
The models listed below have pulse sensors with PWM control function.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet      Outlet	Max. airflow [m³/min] [CFM]	Max. static pressure [Pa] [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
<b>9CRE0612P0G001</b>	12	10.8 to 13.2	100	2.3	27.6	16500 13000	2.0 70.6	1000 4.0	66	-20 to +70	40000/60°C (70000/40°C)
			0	0.22	2.7	3600 2800	0.43 15.1	47.6 0.19	32		

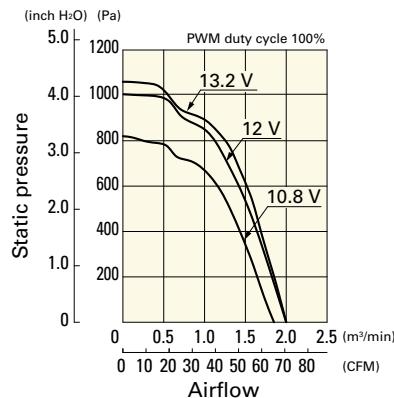
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

**Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example****9CRE0612P0G001** With pulse sensor with PWM control function

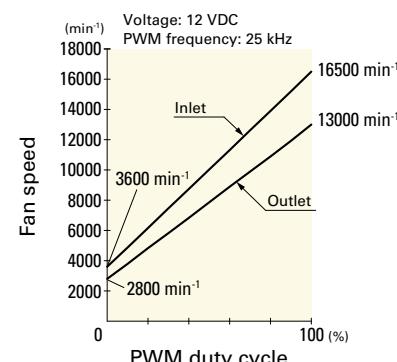
## PWM duty cycle

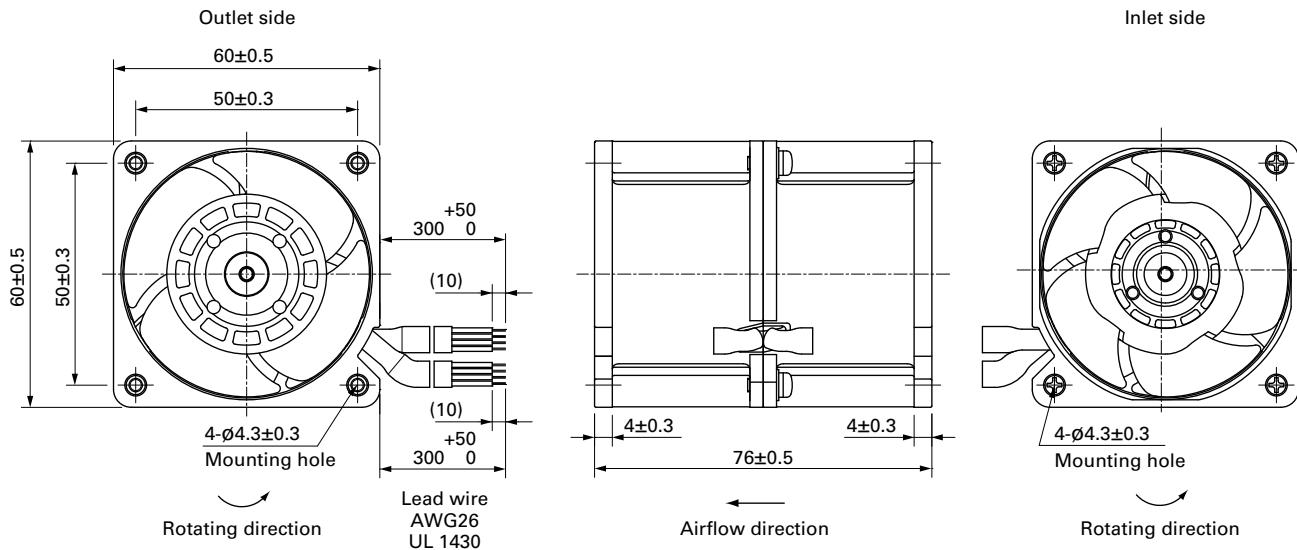
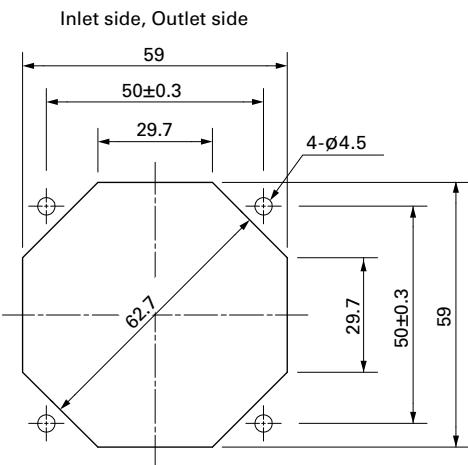


## Operating voltage range



## PWM duty - Speed characteristics example



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

Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

Resin finger guards

page: p. 571

Model no.: 109-1003G

Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)



# 60x60x76 mm

**San Ace 60 9CRA type**

## 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection  
For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet Red Black Yellow Brown  
Outlet Orange Gray Purple White
- Mass ..... 270 g

## Specifications

The models listed below have 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] Inlet      Outlet	Max. airflow [m³/min] [CFM]	Max. static pressure [Pa] [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CRA0612P0G001	12	10.8 to 13.2	100	2.3	27.6	16500 13000	2.0 70.6	1000 4.0	66	-20 to +70	40000/60°C (70000/40°C)
			0	0.22	2.7	3600 2800	0.43 15.1	47.6 0.19	32		
9CRA0612P0S001			100	1.5	18.0	14000 11000	1.7 60.0	720 2.89	63		
			0	0.17	2.1	3200 2500	0.38 13.4	37.6 0.15	29		

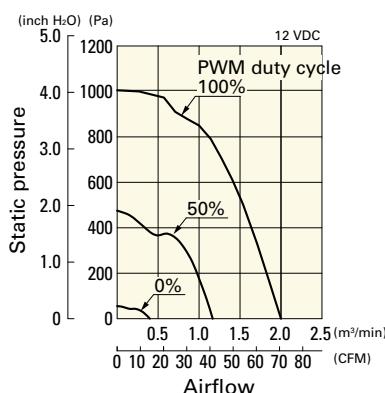
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The mark indicates Short LeadTime Service applicable models. See p. 630 for details.

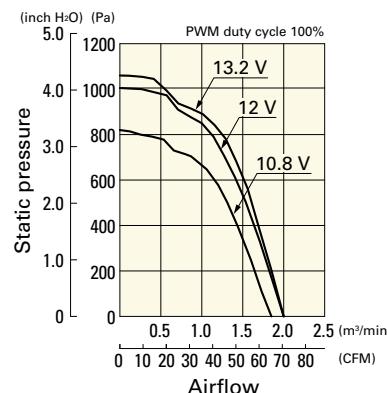
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRA0612P0G001** With pulse sensor with PWM control function

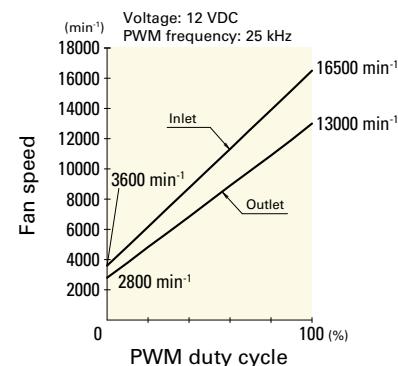
### PWM duty cycle



### Operating voltage range



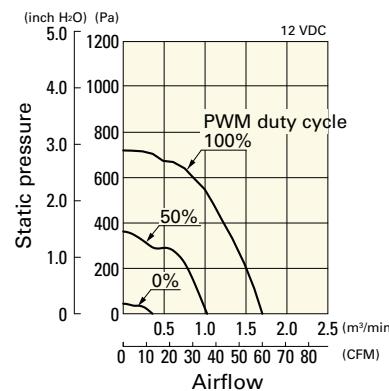
### PWM duty - Speed characteristics example



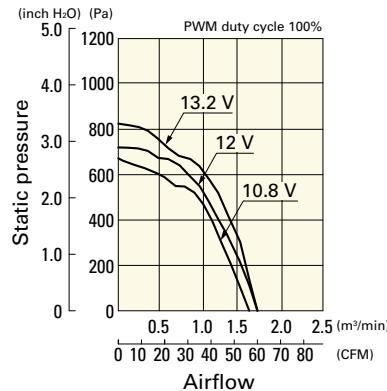
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRA0612P0S001** With pulse sensor with PWM control function

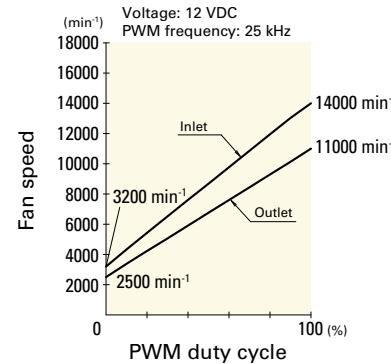
### PWM duty cycle



### Operating voltage range

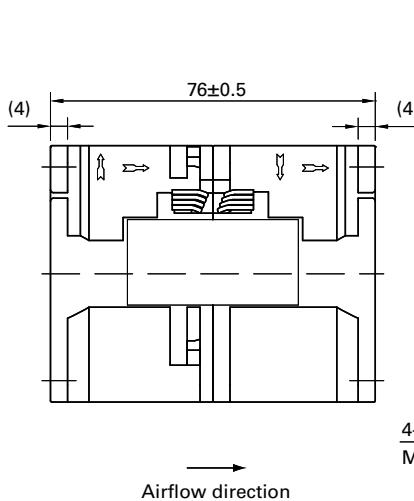
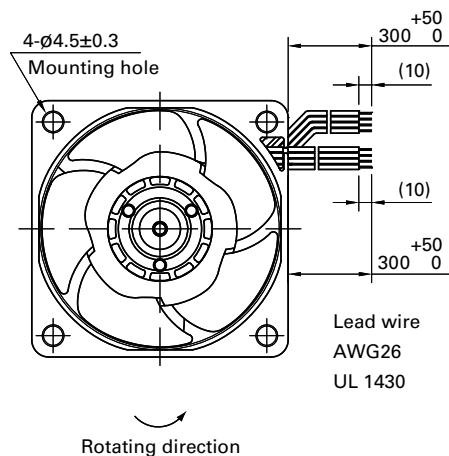


### PWM duty - Speed characteristics example

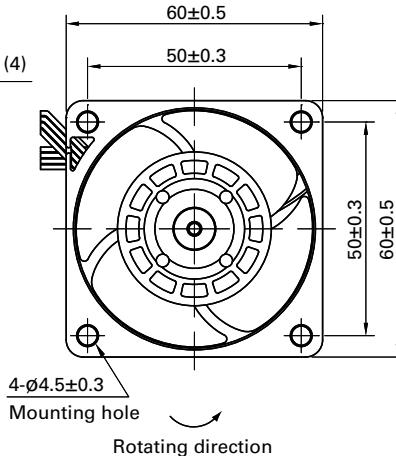


## Dimensions (unit: mm)

Inlet side



Outlet side



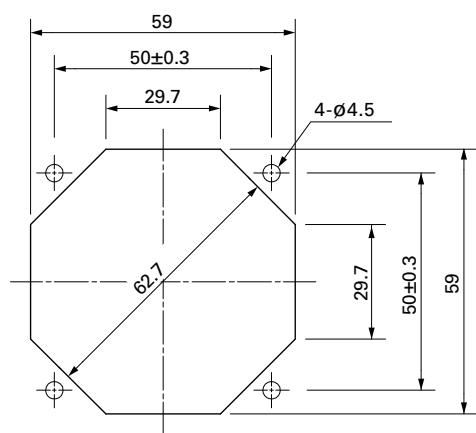
Rotating direction

Airflow direction

Rotating direction

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

Inlet side, Outlet side



## Options

### Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

### Resin finger guards

page: p. 571

Model no.: 109-1003G

### Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)

**Counter Rotating Fan****80x80x80 mm****San Ace 80 9CRB type △ cULus****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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection  
For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet  $\oplus$ Red  $\ominus$ Black  $\begin{matrix} \text{Sensor} \\ \text{Yellow} \end{matrix}$   $\begin{matrix} \text{Control} \\ \text{Brown} \end{matrix}$   
Outlet  $\oplus$ Orange  $\ominus$ Gray  $\begin{matrix} \text{Sensor} \\ \text{Purple} \end{matrix}$   $\begin{matrix} \text{Control} \\ \text{White} \end{matrix}$
- Mass ..... 430 g

**Specifications**

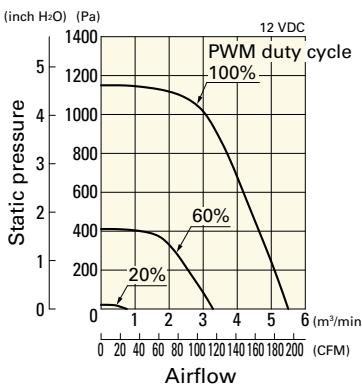
The models listed below have pulse sensors with PWM control function.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ] Inlet      Outlet	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CRB0812P8G001	12	10.8 to 13.2	100	9.2	110.4	14600 12200	5.5 194	1150 4.6	80	-20 to +70	40000/60°C (70000/40°C)
			20	0.17	2.04	2000 1670	0.7 24.7	21.6 0.09	24		

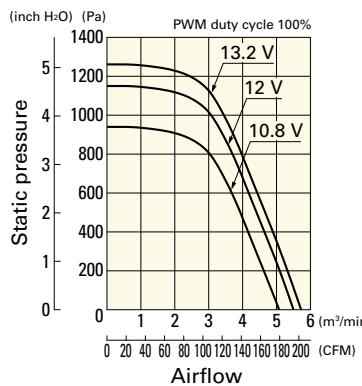
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The  mark indicates Short LeadTime Service applicable models. See p. 630 for details.**Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example****9CRB0812P8G001** With pulse sensor with PWM control function

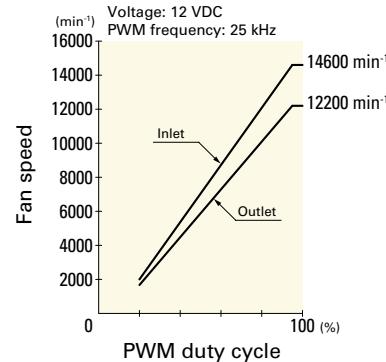
## PWM duty cycle



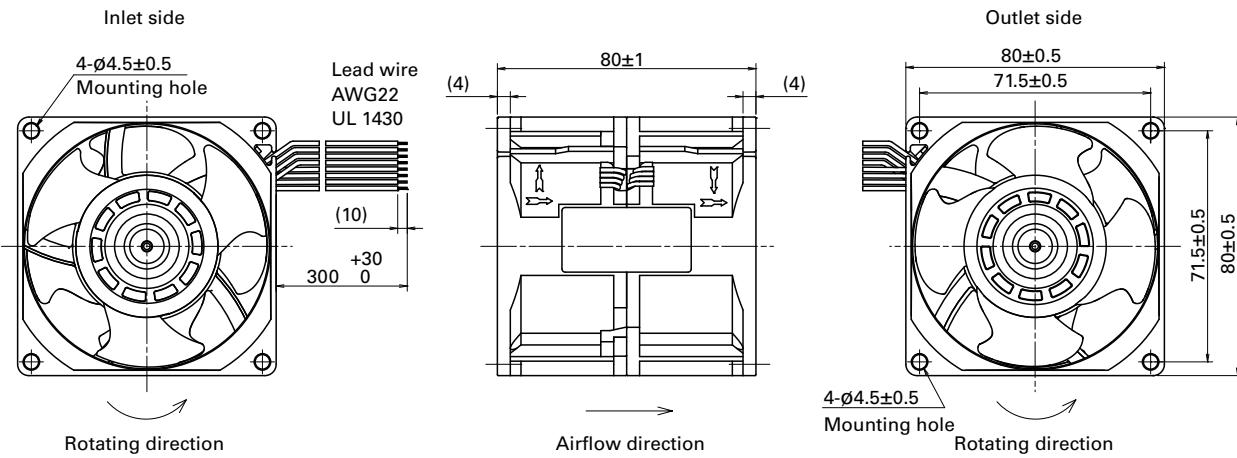
## Operating voltage range



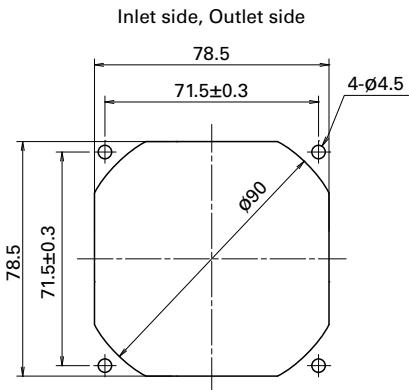
## PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

**Counter Rotating Fan****80x80x80 mm****San Ace 80 9CRE** type Low Vibration Fan **General Specifications**

- Material ..... Frame: Aluminum, 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet Red Black Yellow Brown  
Outlet Orange Gray Purple White
- Mass ..... 490 g

**Specifications**

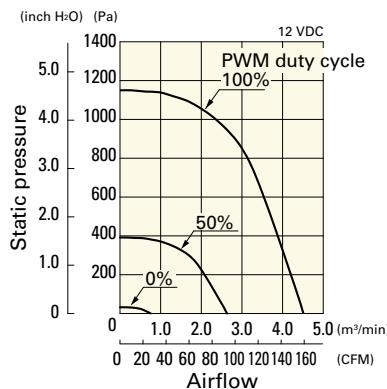
The models listed below have pulse sensors with PWM control function.

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet      Outlet	Max. airflow [m³/min] [CFM]	Max. static pressure [Pa] [inch H₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
<b>9CRE0812P8G001</b>	12	10.8 to 13.2	100	5.3	63.6	12000 11300	4.5 158.9	1150 4.62	76	-20 to +70	40000/60°C (70000/40°C)
			0	0.2	2.4	2000 1900	0.74 26.1	31.9 0.13	30		

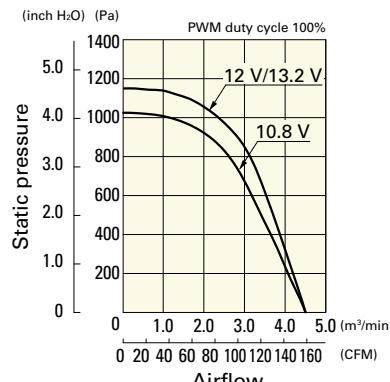
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

**Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example****9CRE0812P8G001** With pulse sensor with PWM control function

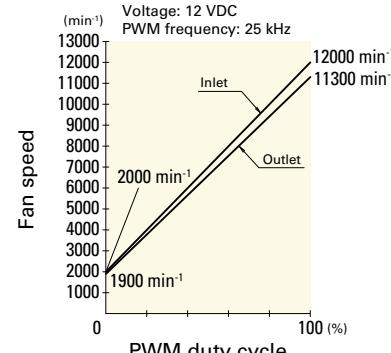
PWM duty cycle



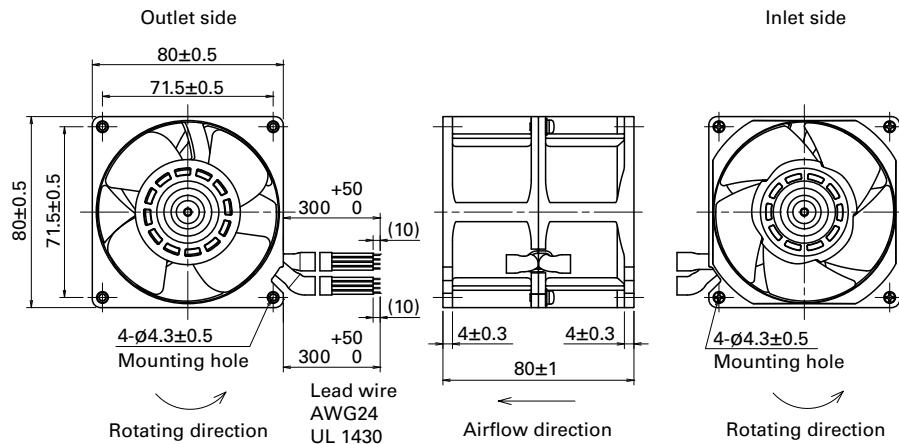
Operating voltage range



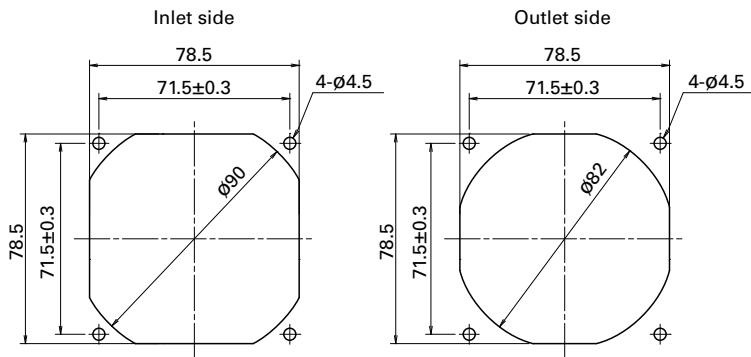
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

**Counter Rotating Fan****80x80x80 mm****San Ace 80 9CRA type △ cFMus****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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection  
For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet  $\oplus$ Red  $\ominus$ Black  $\begin{matrix} \text{Sensor} \\ \text{Yellow} \end{matrix}$   $\begin{matrix} \text{Control} \\ \text{Brown} \end{matrix}$   
Outlet  $\oplus$ Orange  $\ominus$ Gray  $\begin{matrix} \text{Sensor} \\ \text{Purple} \end{matrix}$   $\begin{matrix} \text{Control} \\ \text{White} \end{matrix}$
- Mass ..... 450 g

**Specifications**

The models listed below have 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 <sup>-1</sup> ] Inlet      Outlet	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inch H <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CRA0812P8G001	12	10.8 to 13.2	100	5.3	63.6	12000 11300	4.5 158.9	1150 4.62	76	-20 to +70	40000/60°C (70000/40°C)
			0	0.2	2.4	2000 1900	0.74 26.1	31.9 0.13	30		
9CRA0824P8G001	24	21.6 to 26.4	100	2.65	63.6	12000 11300	4.5 158.9	1150 4.62	76	-20 to +70	40000/60°C (70000/40°C)
			0	0.09	2.16	2000 1900	0.74 26.1	31.9 0.13	30		
9CRA0848P8G001	48	40.8 to 55.2	100	1.32	63.4	12000 11300	4.5 158.9	1150 4.62	76	-20 to +70	40000/60°C (70000/40°C)
			0	0.29	13.9	5000 4700	1.88 66.2	200 0.8	52		

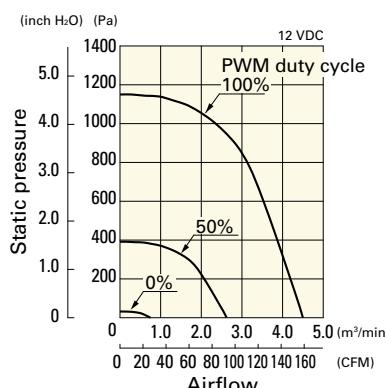
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note 1: Sensor and control options are available for selection. Refer to the table on p. 605.

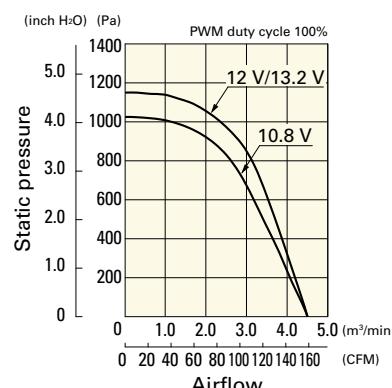
Note 2: The mark indicates Short Lead Time Service applicable models. See p. 630 for details.

**Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example****9CRA0812P8G001** With pulse sensor with PWM control function

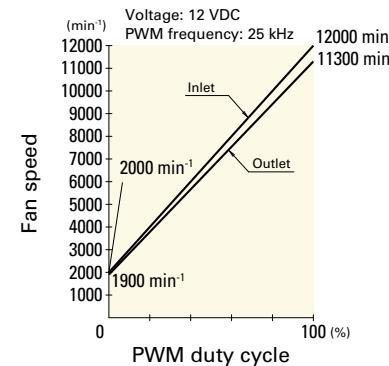
## PWM duty cycle



## Operating voltage range



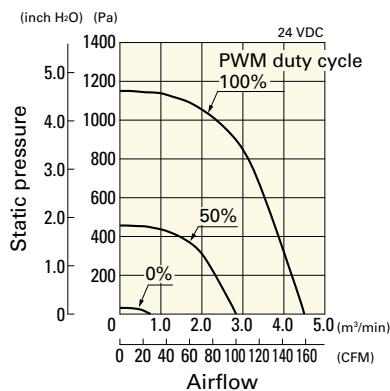
## PWM duty - Speed characteristics example



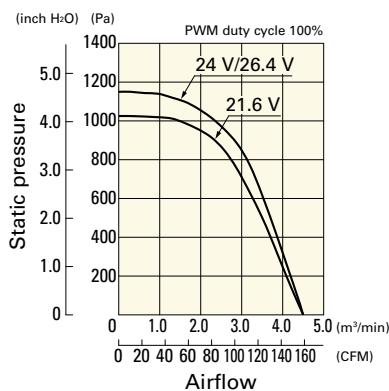
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRA0824P8G001** With pulse sensor with PWM control function

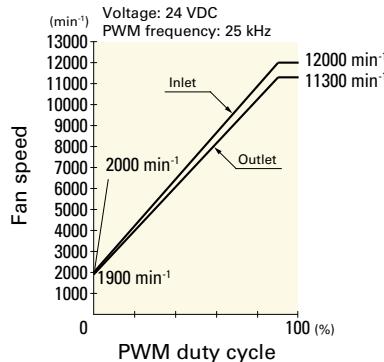
### PWM duty cycle



### Operating voltage range

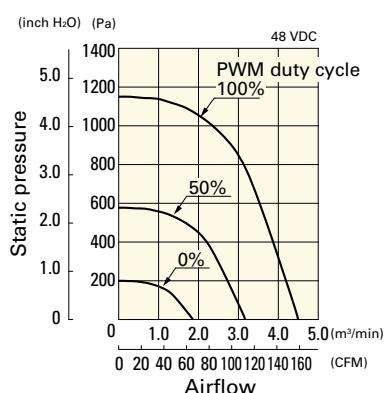


### PWM duty - Speed characteristics example

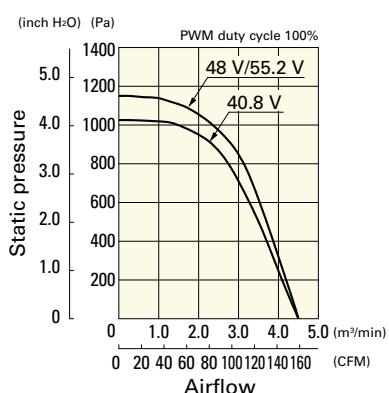


**9CRA0848P8G001** With pulse sensor with PWM control function

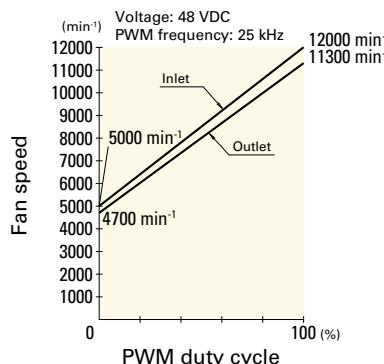
### PWM duty cycle



### Operating voltage range

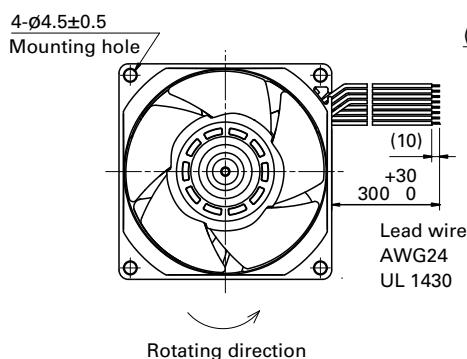


### PWM duty - Speed characteristics example

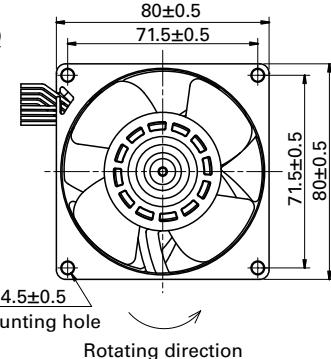


## Dimensions (unit: mm)

### Inlet side

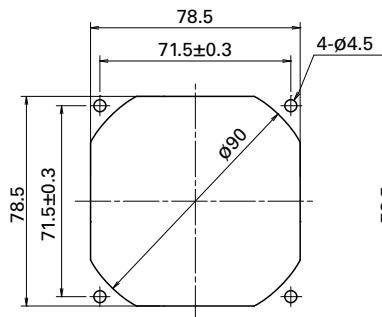


### Outlet side

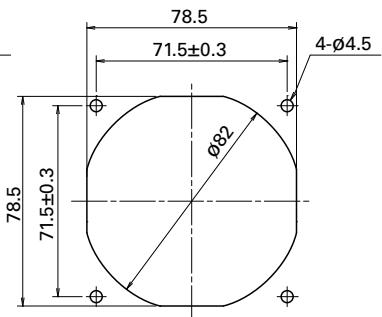


## Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

### Inlet side



### Outlet side



**Options****Finger guards**

page: p. 564

Model no.: 109-049E, 109-049H

**Resin finger guards**

page: p. 571

Model no.: 109-1002G

**Resin filter kits**

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

## Counter Rotating Fan

ECO PRODUCTS

# 92x92x76 mm

## San Ace 92 9CRA type △ cULus



### 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet  $\oplus$ Red  $\ominus$ Black [Sensor] Yellow [Control] Brown  
Outlet  $\oplus$ Orange  $\ominus$ Gray [Sensor] Purple [Control] White
- Mass ..... 510 g

### Specifications

The models listed below have 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 <sup>-1</sup> ] Inlet      Outlet	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
② 9CRA0912P0G001	12	10.2 to 13.2	100	9.0	108.0	13300 12200	5.8 205	1650 6.63	81	-20 to +70	40000/60°C (70000/40°C)
			20	0.42	5.04	3500 3200	1.48 52.3	140 0.56	47		
② 9CRA0948P0G601	48	36 to 60	100	2.2	105.6	13300 12200	5.8 205	1650 6.63	81	-20 to +70	40000/60°C (70000/40°C)
			20	0.15	7.2	3500 3200	1.48 52.3	140 0.56	47		

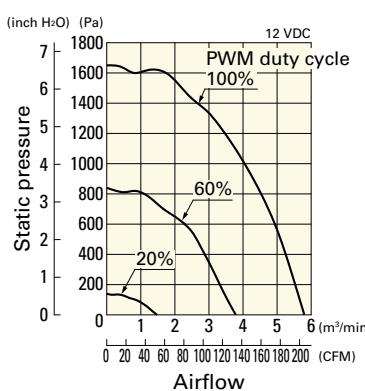
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The ② mark indicates Short LeadTime Service applicable models. See p. 630 for details.

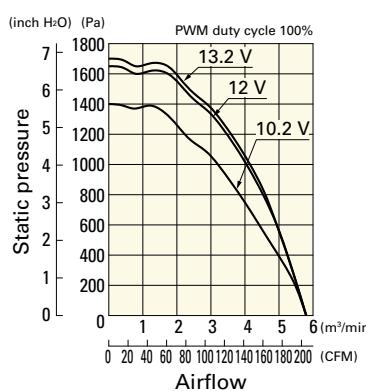
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRA0912P0G001 With pulse sensor with PWM control function

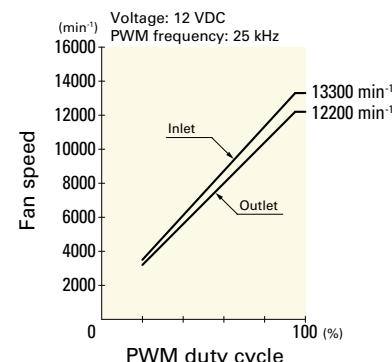
PWM duty cycle



Operating voltage range



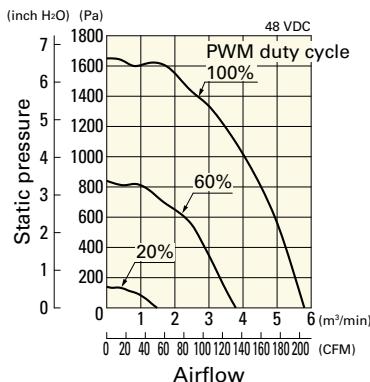
PWM duty - Speed characteristics example



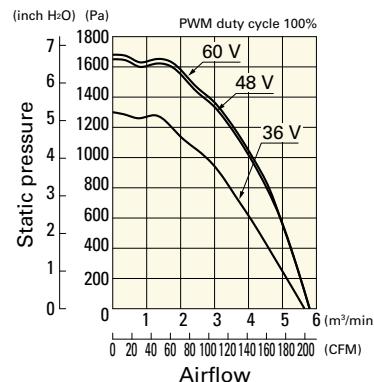
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRA0948P0G601** With pulse sensor with PWM control function

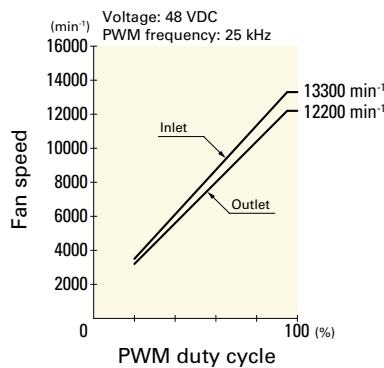
### PWM duty cycle



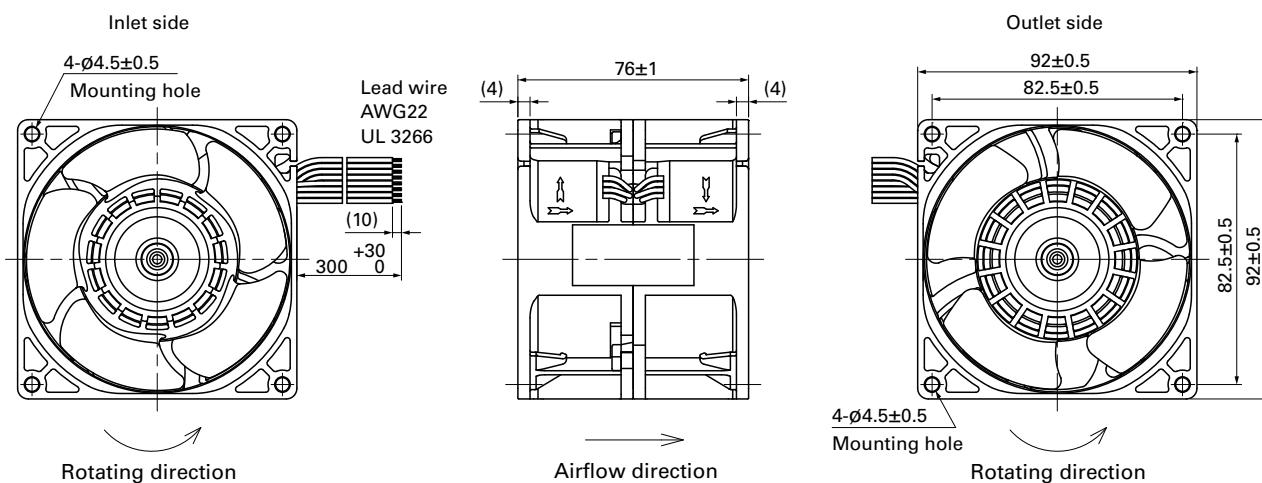
### Operating voltage range



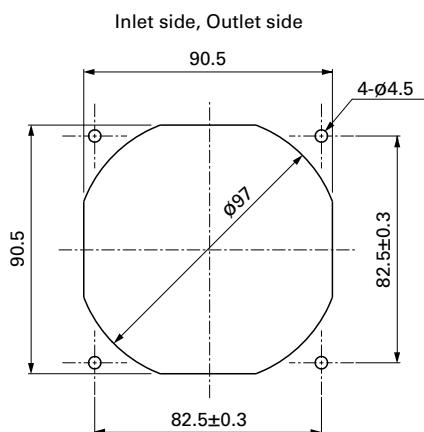
### PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

### Finger guards

Model no.: 109-099E, 109-099H

page: p. 564

### Resin finger guards

Model no.: 109-1001G

page: p. 571

### Resin filter kits

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)

page: p. 572

## Counter Rotating Fan



# 120×120×76 mm

San Ace 120 9CR type △ cRus

DC

Counter Rotating Fan 120 mm sq.

### 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet  $\oplus$ Red  $\ominus$ Black [Sensor] Yellow [Control] Brown  
Outlet  $\oplus$ Orange  $\ominus$ Gray [Sensor] Purple [Control] White
- Mass ..... 670 g

### Specifications

The models listed below have 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 <sup>-1</sup> ] Inlet      Outlet	Max. airflow [m <sup>3</sup> /min]      [CFM]	Max. static pressure [Pa]      [inch H <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CR1212P0G03	12	10.8 to 13.2	100	7.2	86.4	6200      3800	8.5      300	480      1.93	70	-20 to +60	40000/60°C (70000/40°C)
			0	1.1	13.2	2700      1800	3.8      134	95      0.38	51		

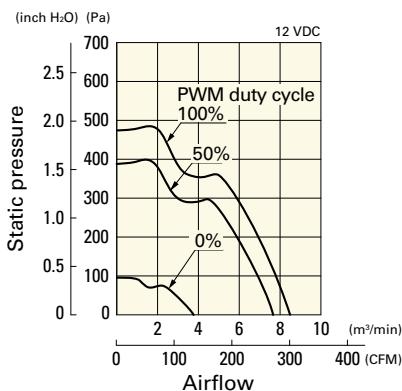
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 604.

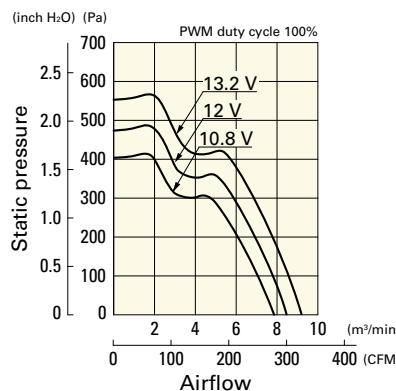
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CR1212P0G03 With pulse sensor with PWM control function

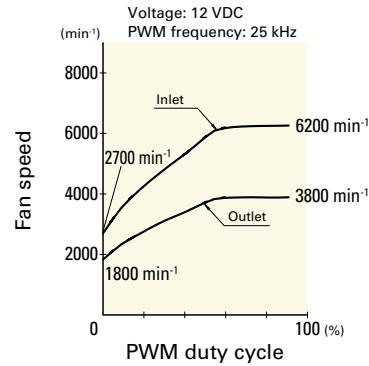
#### PWM duty cycle

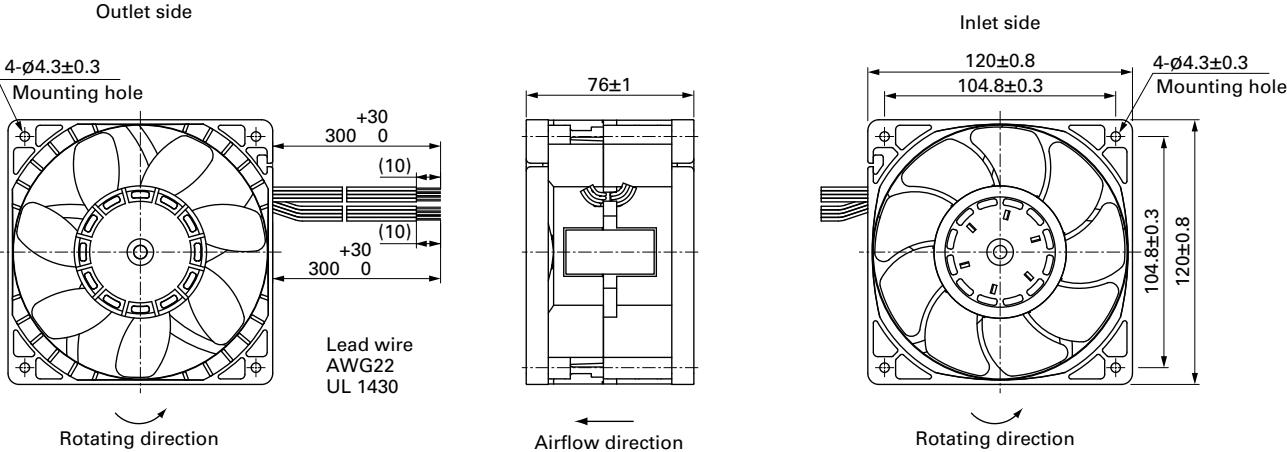
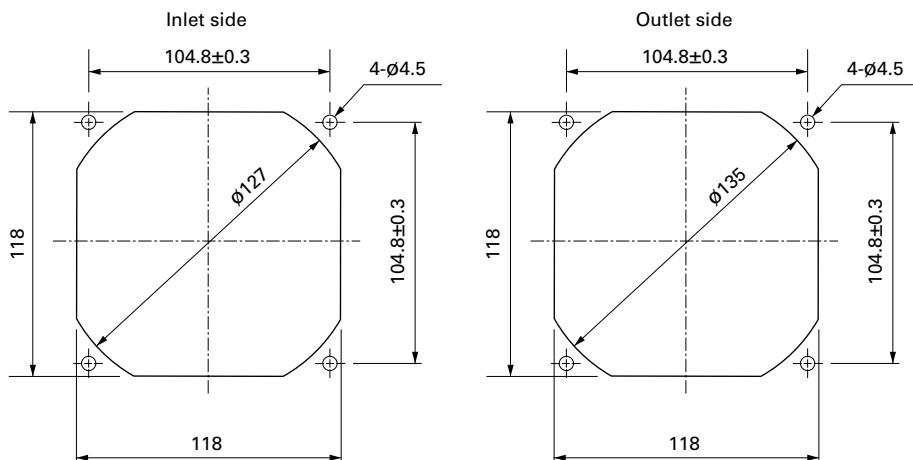


#### Operating voltage range



#### PWM duty - Speed characteristics example



**Dimensions (unit: mm)****Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)****Options****Finger guards**

page: p. 565

Model no.: 109-019E, 109-019K

**Resin finger guards**

page: p. 571

Model no.: 109-1000G

**Resin filter kits**

page: p. 572

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),  
109-1000F30 (30PPI), 109-1000F40 (40PPI)

## Counter Rotating Fan

ECO PRODUCTS



# Ø172x150x102 mm

San Ace 172 9CR type

Sidecut type

### General Specifications

- Material ..... Frame: Aluminum, 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) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature ..... -30 to +70°C (Non-condensing)
- Lead wire ..... Inlet Red Black Sensor Yellow Control Brown  
Outlet Orange Gray Sensor Purple Control White
- Mass ..... 1600 g

### Specifications

The models listed below have 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 [m³/min] Inlet Outlet	Max. static pressure [Pa] [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9CR5748P9G001	48	36 to 72	100	5.5	264	7300 6400	18 636	1400 5.62	83	-20 to +70	40000/60°C (70000/40°C)
			0	0.5	24	2400 1900	5.5 194.3	152 0.61	54		

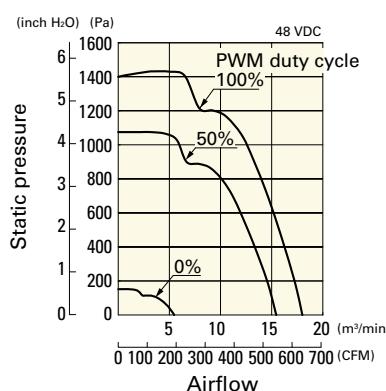
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The mark indicates Short LeadTime Service applicable models. See p. 630 for details.

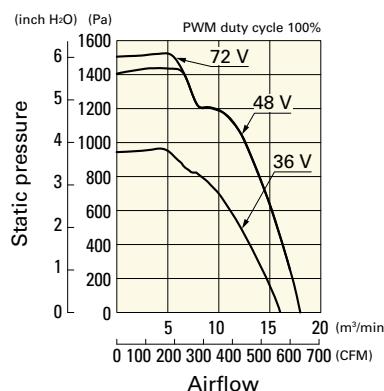
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CR5748P9G001 With pulse sensor with PWM control function

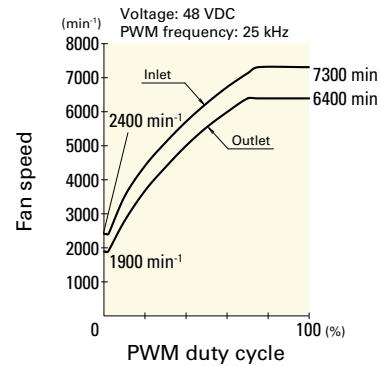
#### PWM duty cycle

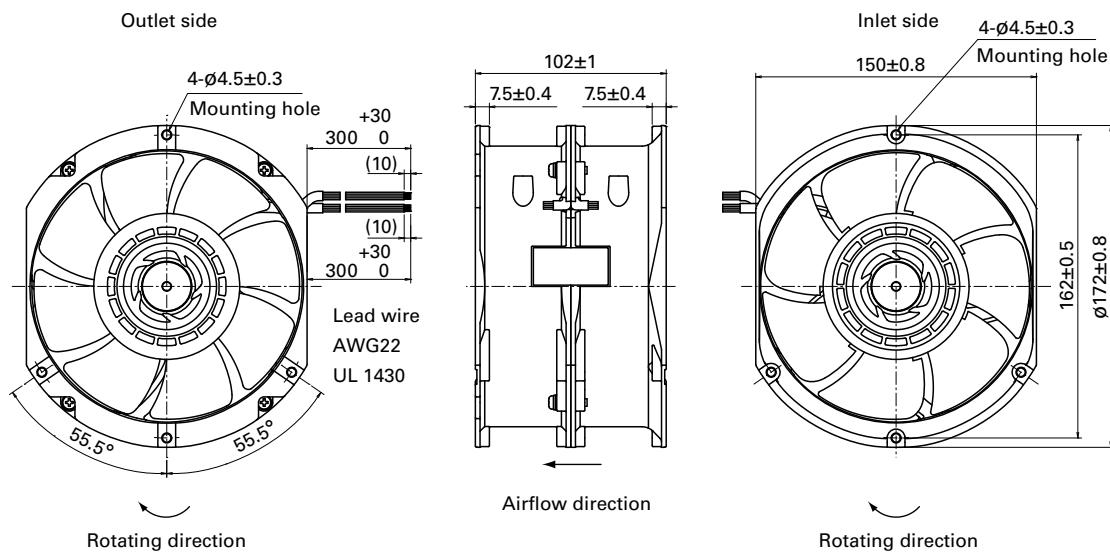
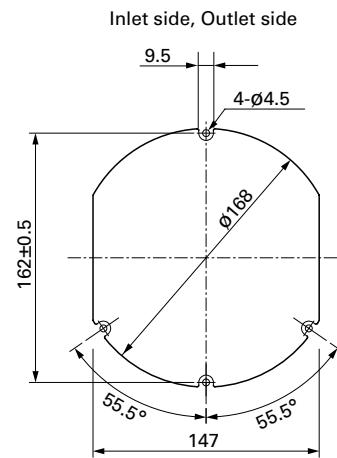


#### Operating voltage range



#### PWM duty - Speed characteristics example



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

Finger guards

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Model no.: 109-319J, 109-319E, 109-319H