



# 40x40x28 mm

San Ace 40W 9WL type   

DC  
Splash Proof Fan 40 mm sq.

## General Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ..... See the table below. (L10 life: 90% survival rate for continuous operation in indoor 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ..... 70 g
- Ingress protection ..... IP68 For more information on IP rating, refer to p. 621.

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
9WL0412P3J001	12	10.8 to 13.2	100	0.52	6.24	17500	0.63 22.2	400 1.61	51	-20 to +70	150000/60°C (185000/40°C)
			20	0.06	0.72	3600	0.13 4.6	16.9 0.07	20		
9WL0412P3G001			100	0.4	4.8	15500	0.56 19.7	310 1.24	47		
			20	0.06	0.72	3300	0.12 4.2	14.0 0.06	18		
9WL0424P3J001	24	21.6 to 26.4	100	0.26	6.24	17500	0.63 22.2	400 1.61	51		
			20	0.04	0.96	4000	0.14 5.1	20.9 0.08	22		
9WL0424P3G001			100	0.2	4.8	15500	0.56 19.7	310 1.24	47		
			20	0.04	0.96	3000	0.11 3.8	11.6 0.05	16		

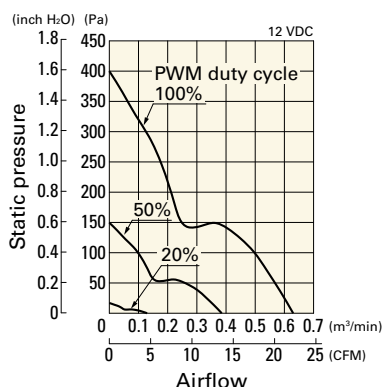
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 655.

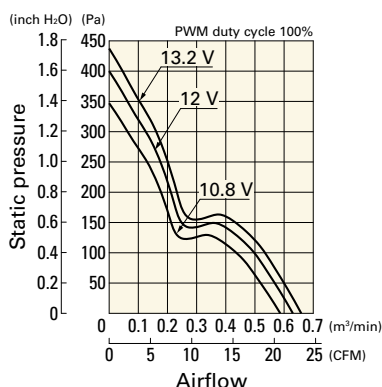
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL0412P3J001** With pulse sensor with PWM control

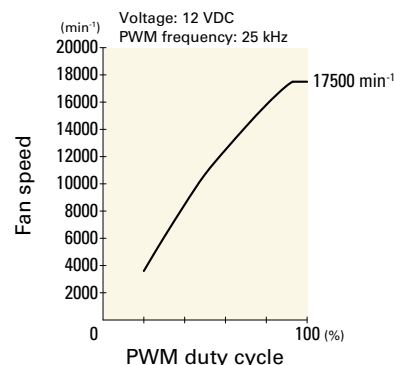
PWM duty cycle



Operating voltage range



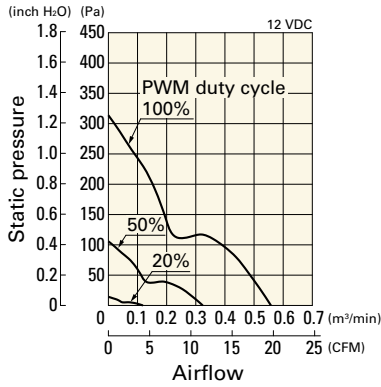
PWM duty - Speed characteristics example



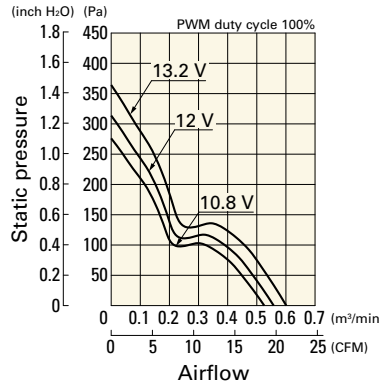
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL0412P3G001** With pulse sensor with PWM control

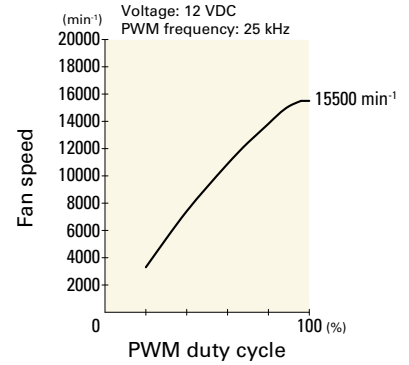
PWM duty cycle



Operating voltage range

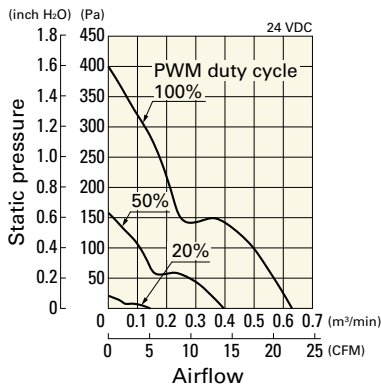


PWM duty - Speed characteristics example

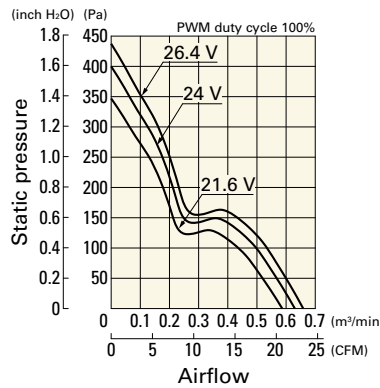


**9WL0424P3J001** With pulse sensor with PWM control

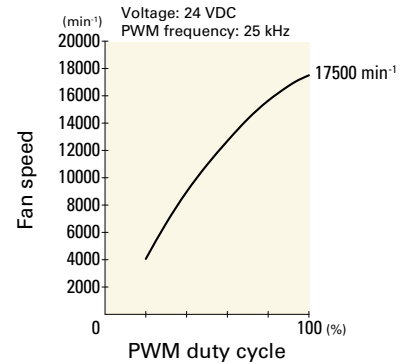
PWM duty cycle



Operating voltage range

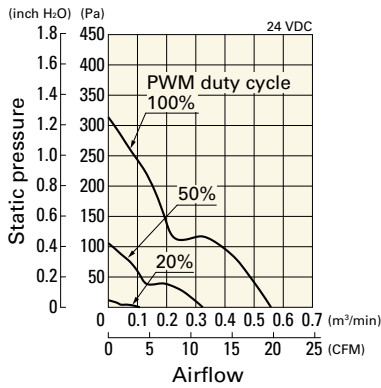


PWM duty - Speed characteristics example

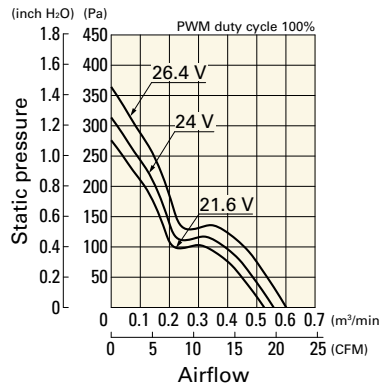


**9WL0424P3G001** With pulse sensor with PWM control

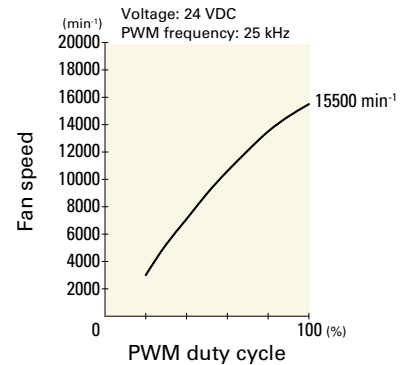
PWM duty cycle



Operating voltage range

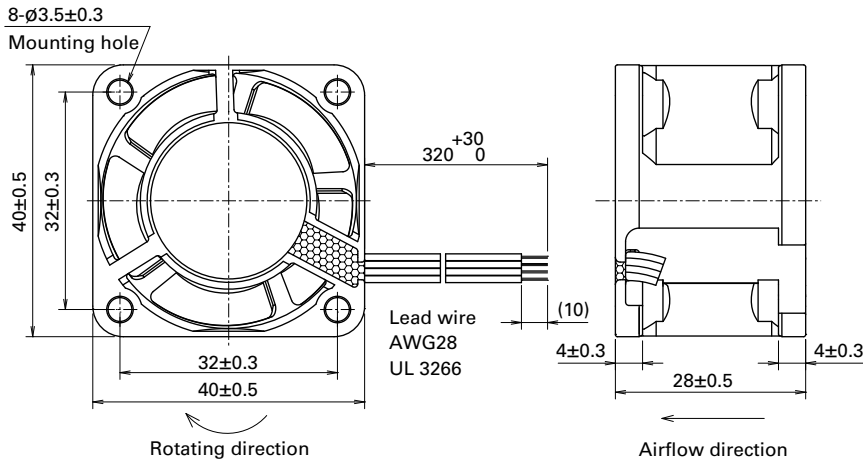


PWM duty - Speed characteristics example

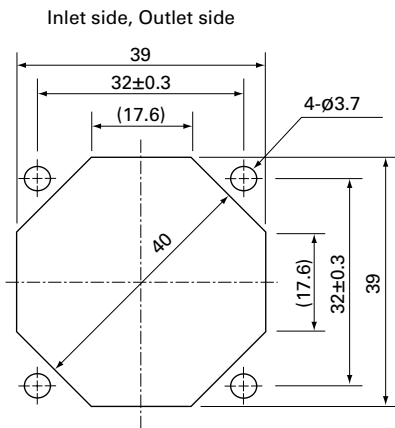


DC  
Splash Proof Fan 40 mm sq.

**Dimensions (unit: mm)**



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



**Options**

Finger guards

page: p. 598

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



# 60x60x25 mm

San Ace 60W 9WL type   US

DC  
Splash Proof Fan 60 mm sq.

## General Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ..... See the table below. (L10 life: 90% survival rate for continuous operation in indoor 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ..... 120 g
- Ingress protection ..... IP68 For more information on IP rating, refer to p. 621.

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]		
9WL0612P4S001	12	10.8 to 13.2	100	0.67	8.04	11000	1.4 49.4	300 1.204	53	-20 to +70	180000/60°C (215000/40°C)		
			20	0.06	0.72	2900	0.36 12.7	20.8 0.083	20				
9WL0612P4J001			100	0.39	4.68	8650	1.1 38.8	182 0.73	47				
			25	0.04	0.48	2100	0.27 9.5	10.7 0.043	17				
9WL0612P4H001			100	0.17	2.04	6150	0.78 27.5	97 0.389	36				
			25	0.03	0.36	1350	0.17 6.0	4.7 0.018	14				
9WL0624P4S001		24	21.6 to 26.4	100	0.34	8.16	11000	1.4 49.4	300 1.204			53	
				20	0.03	0.72	2900	0.36 12.7	20.8 0.083			20	
				9WL0624P4J001	100	0.19	4.56	8650	1.1 38.8			182 0.73	47
					20	0.02	0.48	2200	0.28 9.8			12.0 0.048	17
				9WL0624P4H001	100	0.08	1.92	6150	0.78 27.5			97 0.389	36
					20	0.02	0.48	1300	0.16 5.6			4.3 0.017	14

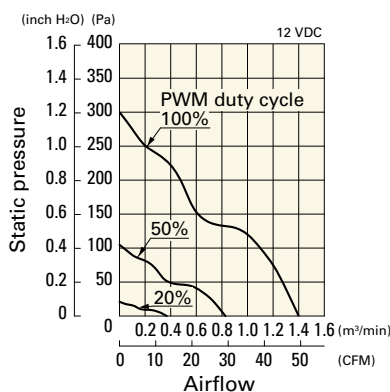
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 655.

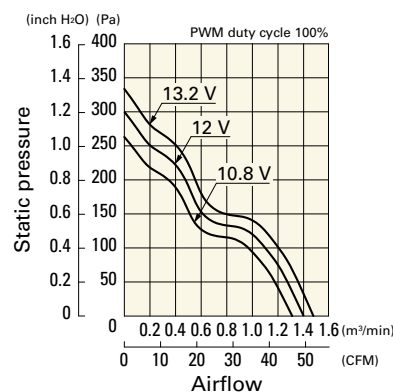
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL0612P4S001** With pulse sensor with PWM control

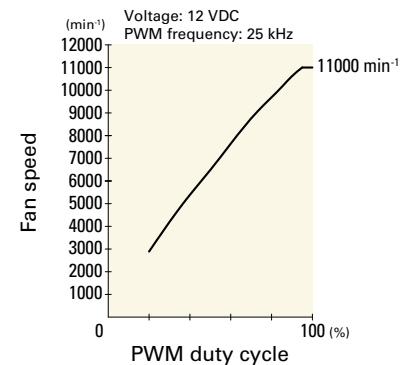
PWM duty cycle



Operating voltage range



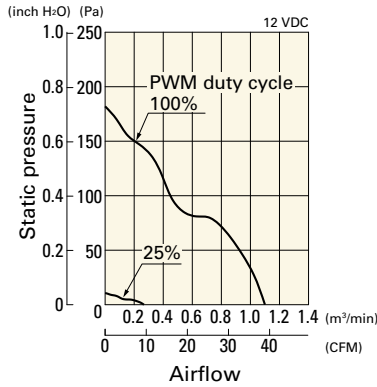
PWM duty - Speed characteristics example



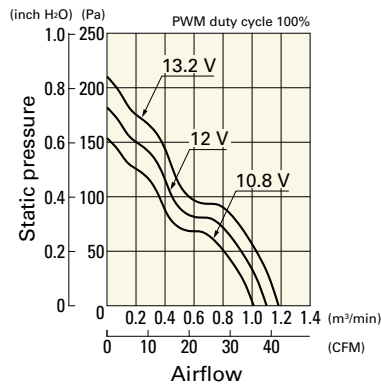
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL0612P4J001** With pulse sensor with PWM control

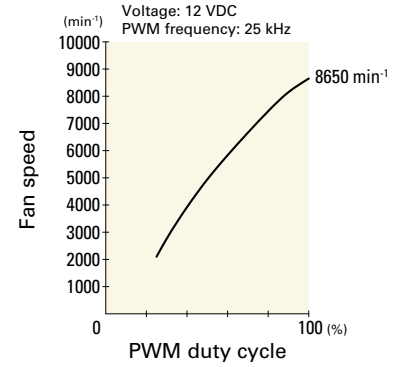
PWM duty cycle



Operating voltage range

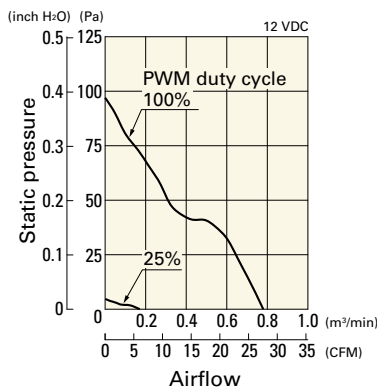


PWM duty - Speed characteristics example

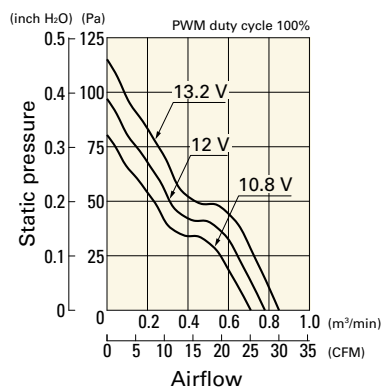


**9WL0612P4H001** With pulse sensor with PWM control

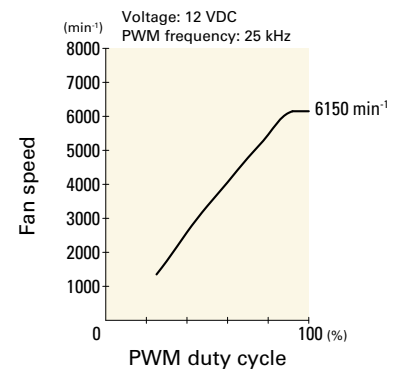
PWM duty cycle



Operating voltage range

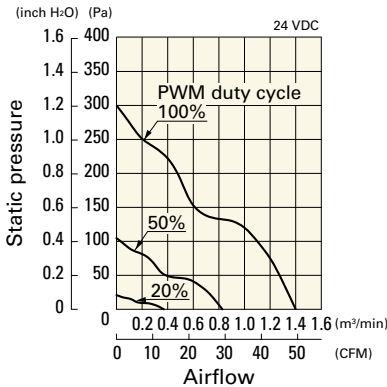


PWM duty - Speed characteristics example

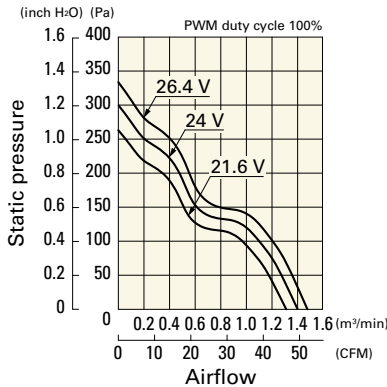


**9WL0624P4S001** With pulse sensor with PWM control

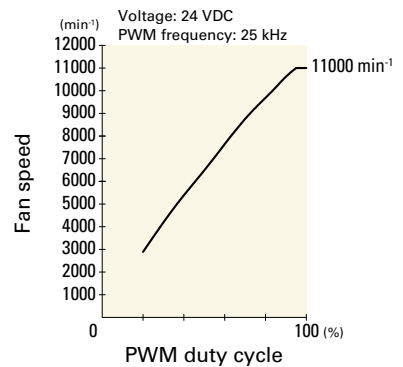
PWM duty cycle



Operating voltage range

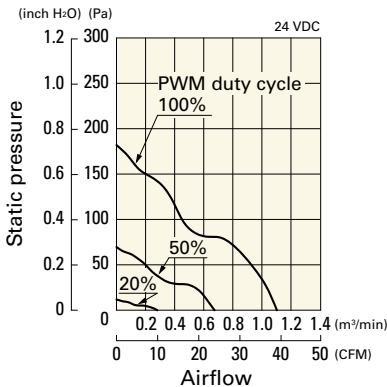


PWM duty - Speed characteristics example

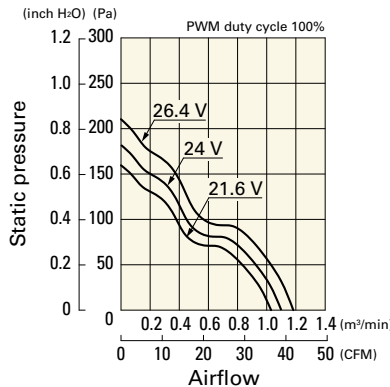


**9WL0624P4J001** With pulse sensor with PWM control

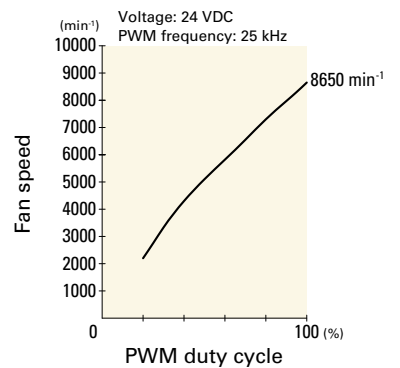
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

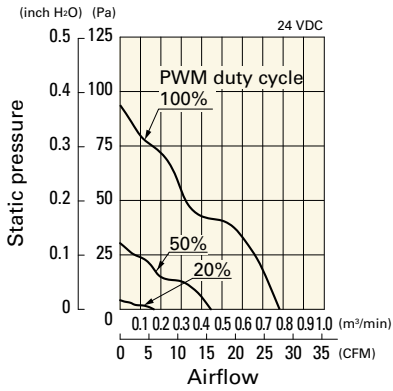


DC  
Splash Proof Fan 60 mm sq.

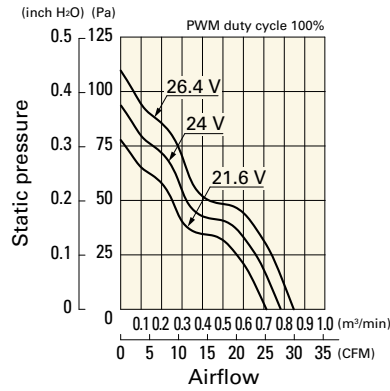
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0624P4H001 With pulse sensor with PWM control

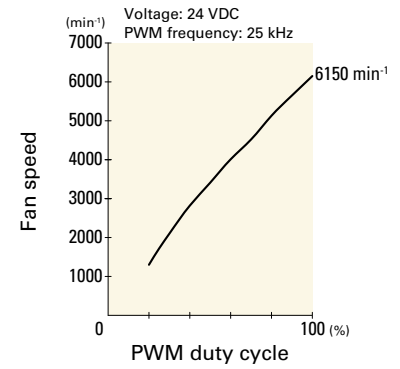
PWM duty cycle



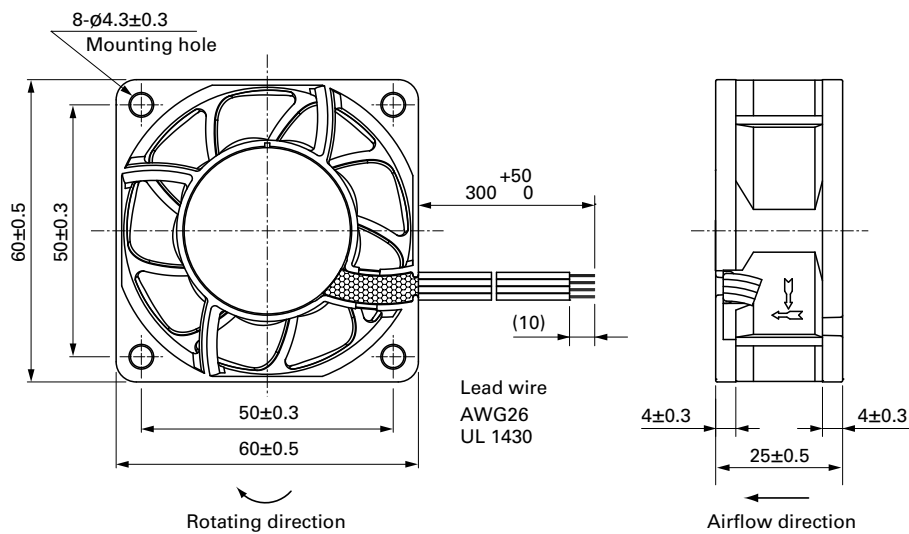
Operating voltage range



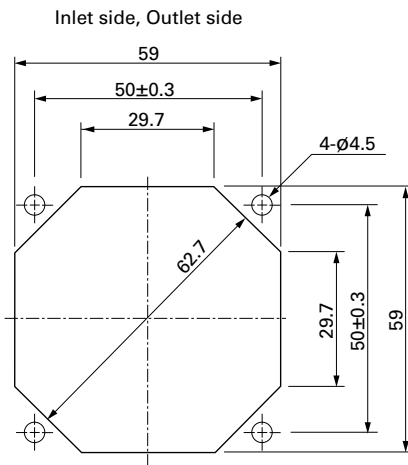
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1003G



# 80x80x25 mm

San Ace 80W 9WL type   

DC  
Splash Proof Fan 80 mm sq.

## General Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ..... See the table below. (L10 life: 90% survival rate for continuous operation in indoor 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown  
(For models without PWM control, there is no speed control wiring.)
- Mass ..... 150 g
- Ingress protection ..... IP68 For more information on IP rating, refer to p. 621.

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]		
9WL0812P4J001	12	10.8 to 13.2	100	0.6	7.2	7400	2.07 73.0	177 0.71	49	-20 to +70	180000/60°C (215000/40°C)		
			20	0.06	0.72	1800	0.5 17.6	10.4 0.04	16				
9WL0812P4G001			100	0.3	3.6	5500	1.54 54.3	98 0.39	43				
			25	0.05	0.6	1400	0.39 13.7	6.3 0.02	14				
9WL0812P4H001			100	0.12	1.44	3700	1.03 36.3	44 0.17	31				
			30	0.04	0.48	1100	0.3 10.5	3.9 0.01	13				
9WL0824P4J001			24	21.6 to 26.4	100	0.28	6.72	7400	2.07 73.0			177 0.71	49
					20	0.05	1.2	2400	0.67 23.6			18.6 0.07	22
9WL0824P4G001					100	0.14	3.36	5500	1.54 54.3			98 0.39	43
					20	0.02	0.48	1200	0.33 11.6			4.6 0.01	13
9WL0824P4H001	100	0.05			1.2	3700	1.03 36.3	44 0.17	31				
	30	0.02			0.48	1100	0.3 10.5	3.9 0.01	13				

\* 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.

The models listed below **have a pulse sensor.**

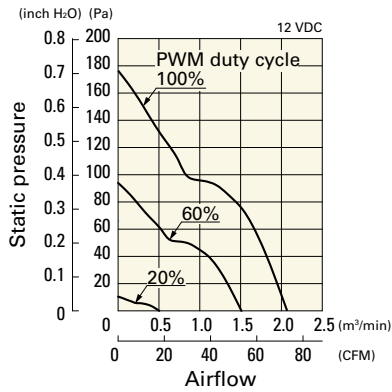
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9WL0812L4001	12	8 to 13.2	0.06	0.72	2300	0.64 22.6	17 0.068	22	-20 to +70	180000/60°C (215000/40°C)
9WL0824F4001	24	12 to 26.4	0.045	1.08	3300	0.92 32.5	35 0.14	29		
9WL0824L4001		14 to 26.4	0.03	0.72	2300	0.64 22.6	17 0.068	22		

Note: Sensor and control options are available for selection. Refer to the table on p. 655.

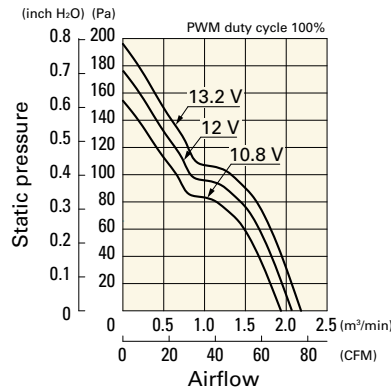
**Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example**

**9WL0812P4J001** With pulse sensor with PWM control

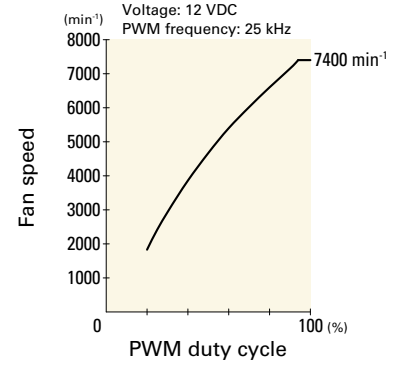
PWM duty cycle



Operating voltage range

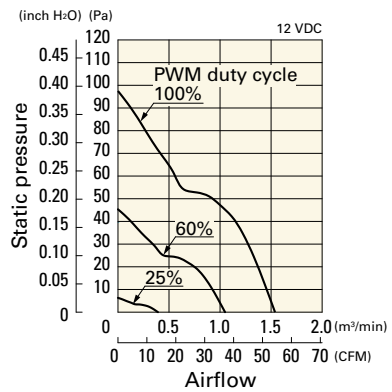


PWM duty - Speed characteristics example

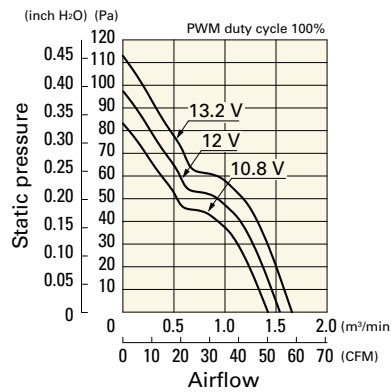


**9WL0812P4G001** With pulse sensor with PWM control

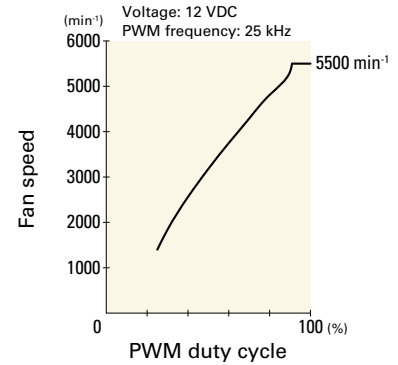
PWM duty cycle



Operating voltage range

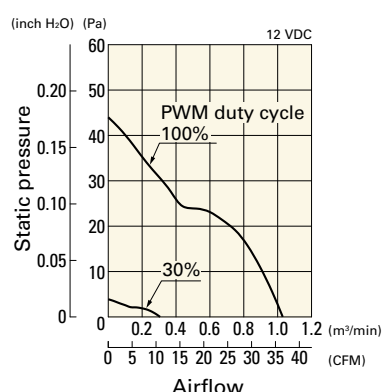


PWM duty - Speed characteristics example

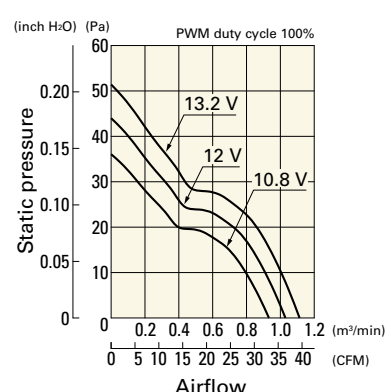


**9WL0812P4H001** With pulse sensor with PWM control

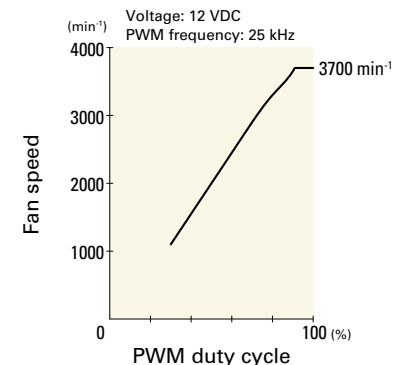
PWM duty cycle



Operating voltage range

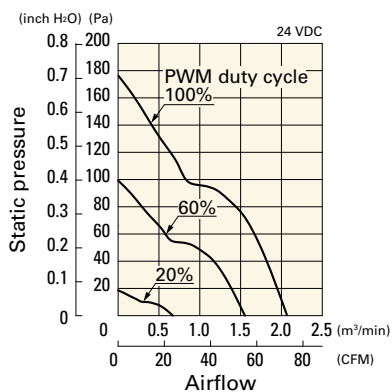


PWM duty - Speed characteristics example

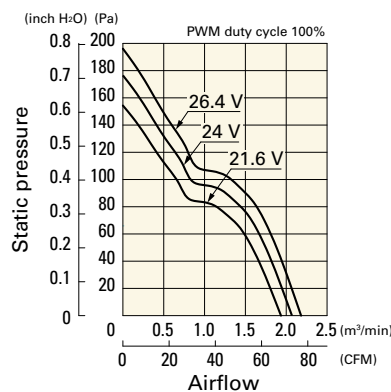


**9WL0824P4J001** With pulse sensor with PWM control

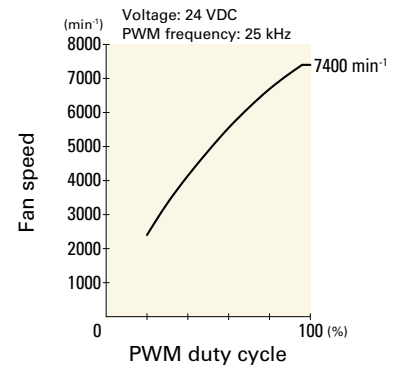
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example



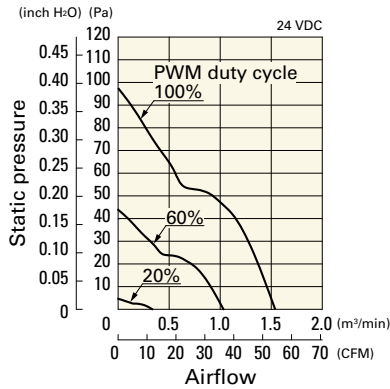
**DC**  
Splash Proof Fan 80 mm sq.



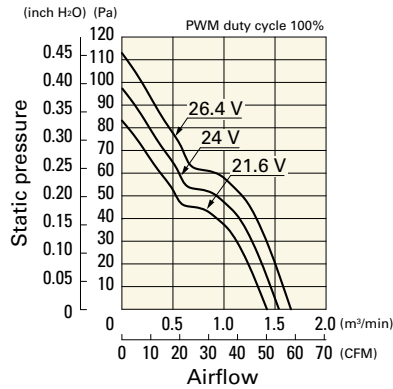
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL0824P4G001** With pulse sensor with PWM control

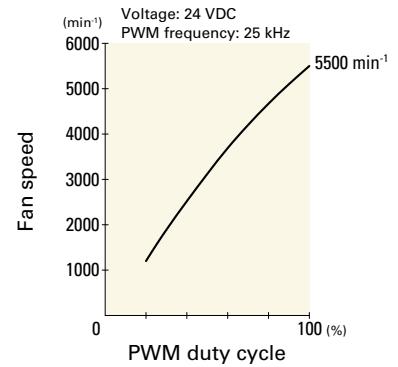
PWM duty cycle



Operating voltage range

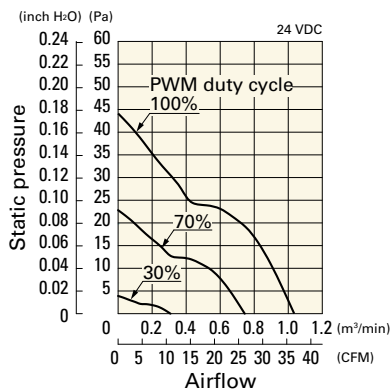


PWM duty - Speed characteristics example

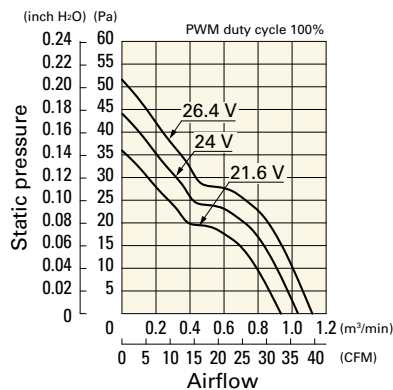


**9WL0824P4H001** With pulse sensor with PWM control

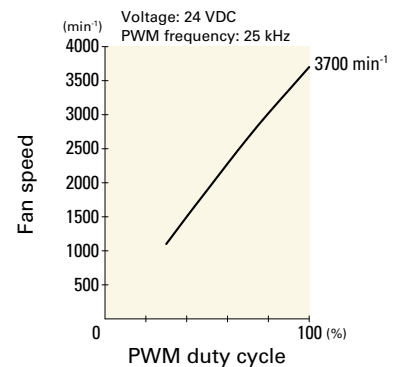
PWM duty cycle



Operating voltage range



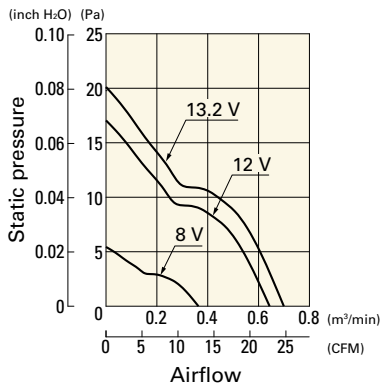
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

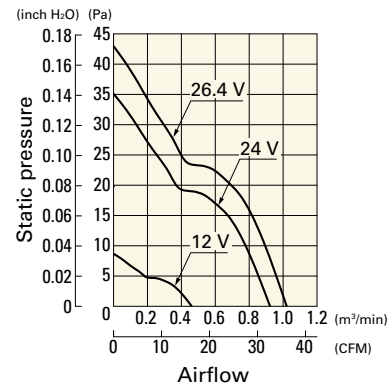
**9WL0812L4001** With pulse sensor

Operating voltage range



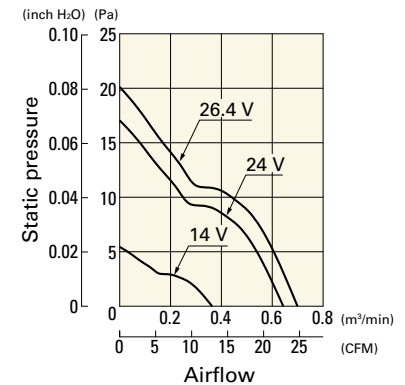
**9WL0824F4001** With pulse sensor

Operating voltage range

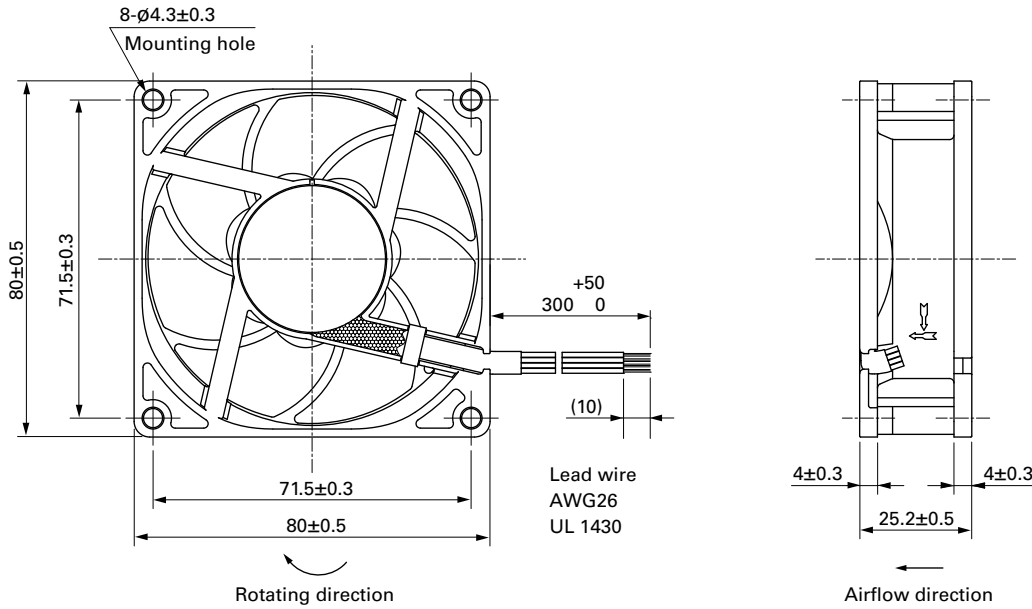


**9WL0824L4001** With pulse sensor

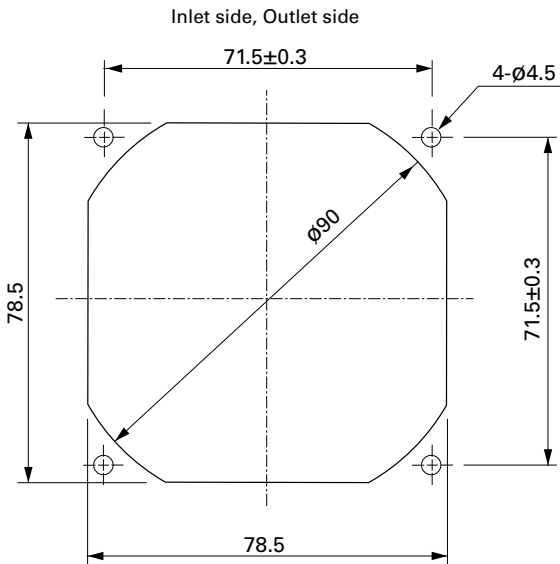
Operating voltage range



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



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



**Options**

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1002G



# 92x92x25 mm

San Ace 92W 9WL type   

## General Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ..... See the table below. (L10 life: 90% survival rate for continuous operation in indoor 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown  
(For models without PWM control, there is no speed control wiring.)
- Mass ..... 170 g
- Ingress protection ..... IP68 For more information on IP rating, refer to p. 621.

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]		
9WL0912P4J001	12	10.8 to 13.2	100	0.42	5.04	5000	2.2 77.7	105 0.42	44	-20 to +70	180000/60°C (215000/40°C)		
			20	0.04	0.48	1200	0.52 18.4	6.04 0.024	11				
9WL0912P4G001			100	0.3	3.6	4400	1.93 68.2	81 0.33	40				
			20	0.04	0.48	1000	0.43 15.1	4.18 0.016	8				
9WL0912P4S001			100	0.22	2.64	3850	1.69 59.7	62.1 0.25	37				
			30	0.04	0.48	1400	0.61 21.5	8.21 0.032	13				
9WL0912P4H001			100	0.15	1.8	3150	1.38 48.7	41.6 0.17	32				
			35	0.04	0.48	1100	0.48 16.9	5.07 0.02	9				
9WL0924P4J001			24	21.6 to 26.4	100	0.21	5.04	5000	2.2 77.7			105 0.42	44
					20	0.02	0.48	1100	0.48 16.9			5.07 0.02	9
9WL0924P4S001					100	0.11	2.64	3850	1.69 59.7			62.1 0.25	37
					30	0.02	0.48	1300	0.57 20.1			7.08 0.028	12
9WL0924P4H001	100	0.07			1.68	3150	1.38 48.7	41.6 0.17	32				
	30	0.02			0.48	1000	0.43 15.1	4.18 0.016	8				

\* 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.

The models listed below **have a pulse sensor.**

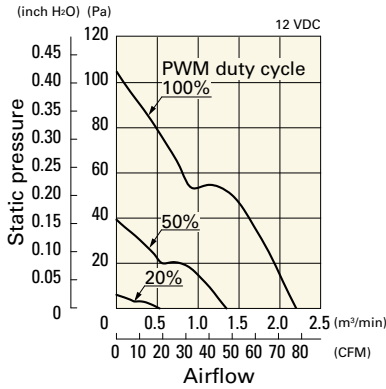
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9WL0912M4001	12	10.2 to 13.8	0.08	0.96	2400	1.05 37.1	24.1 0.097	24	-20 to +70	180000/60°C (215000/40°C)
9WL0924F4001	24	20.4 to 27.6	0.05	1.2	2800	1.22 43.1	32.8 0.13	29		
9WL0924M4001			0.04	0.96	2400	1.05 37.1	24.1 0.097	24		

Note: Sensor and control options are available for selection. Refer to the table on p. 655.

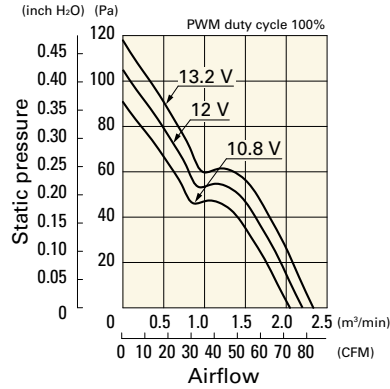
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL0912P4J001** With pulse sensor with PWM control

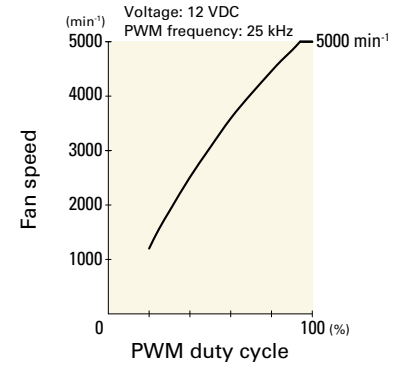
PWM duty cycle



Operating voltage range

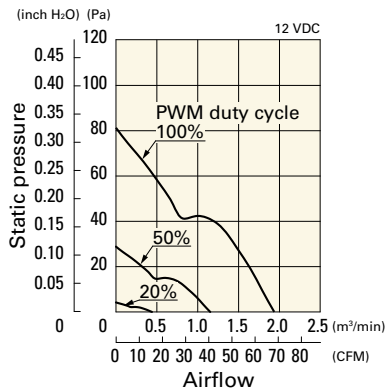


PWM duty - Speed characteristics example

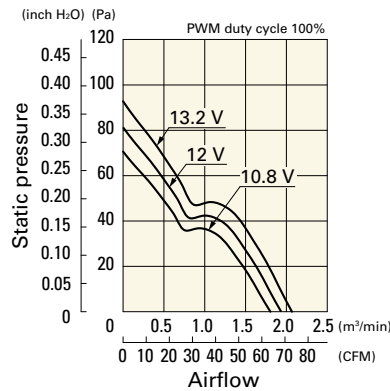


**9WL0912P4G001** With pulse sensor with PWM control

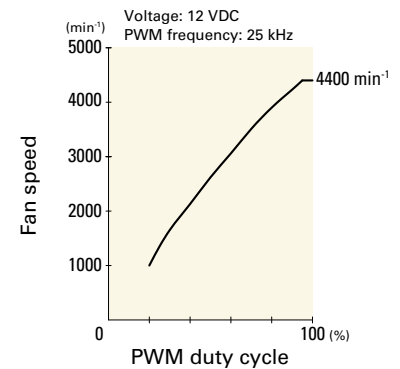
PWM duty cycle



Operating voltage range

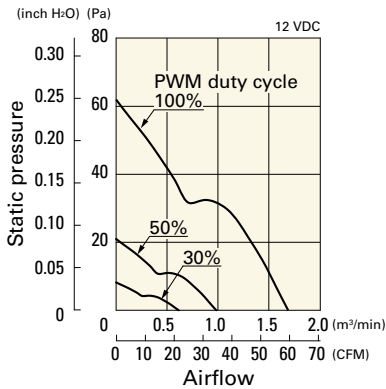


PWM duty - Speed characteristics example

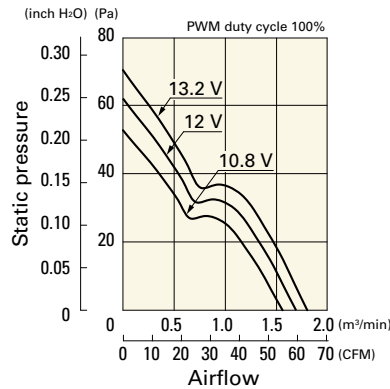


**9WL0912P4S001** With pulse sensor with PWM control

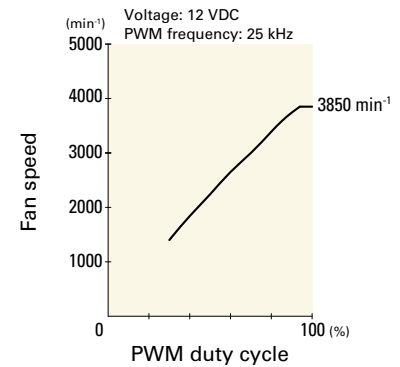
PWM duty cycle



Operating voltage range

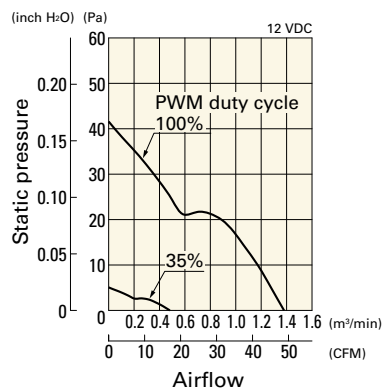


PWM duty - Speed characteristics example

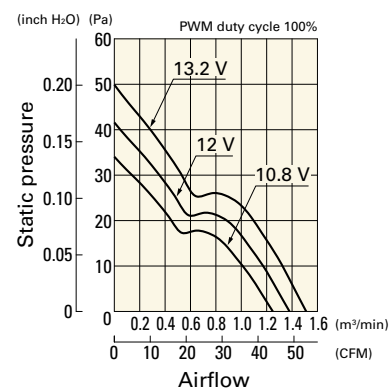


**9WL0912P4H001** With pulse sensor with PWM control

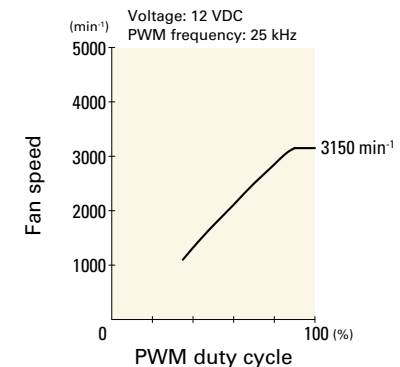
PWM duty cycle



Operating voltage range



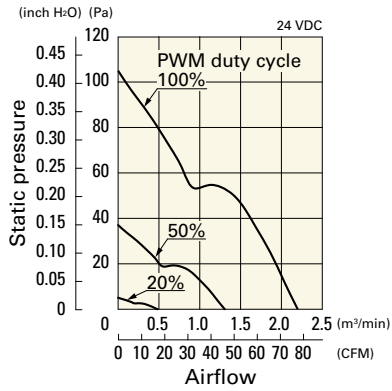
PWM duty - Speed characteristics example



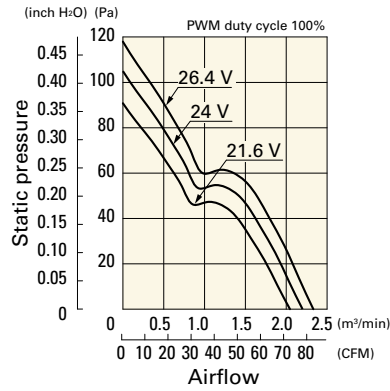
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL0924P4J001** With pulse sensor with PWM control

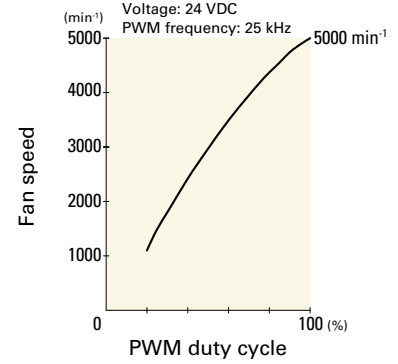
PWM duty cycle



Operating voltage range

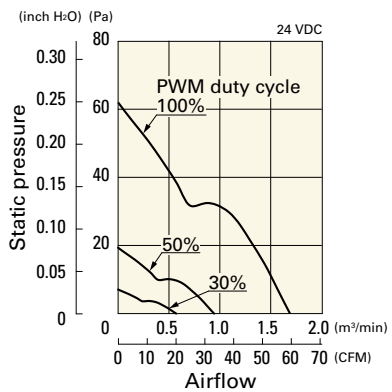


PWM duty - Speed characteristics example

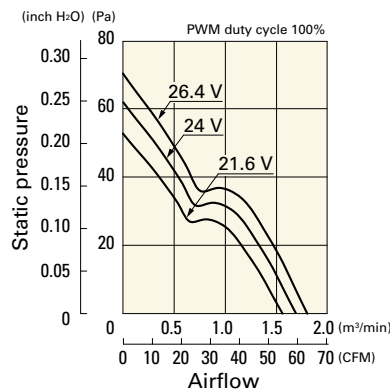


**9WL0924P4S001** With pulse sensor with PWM control

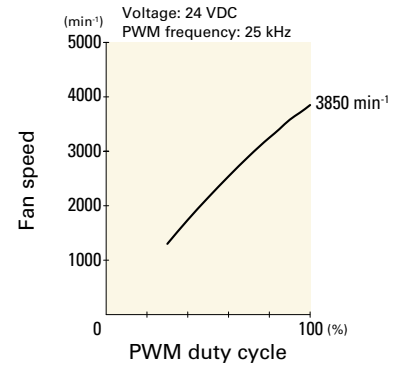
PWM duty cycle



Operating voltage range

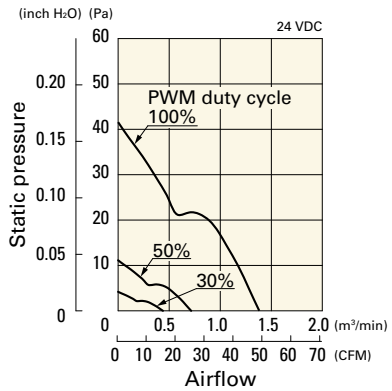


PWM duty - Speed characteristics example

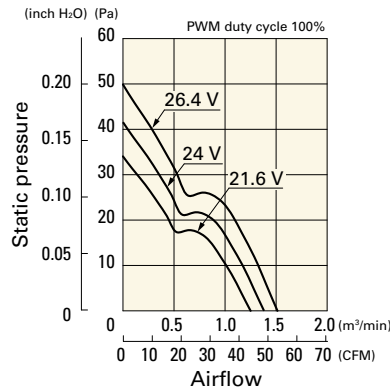


**9WL0924P4H001** With pulse sensor with PWM control

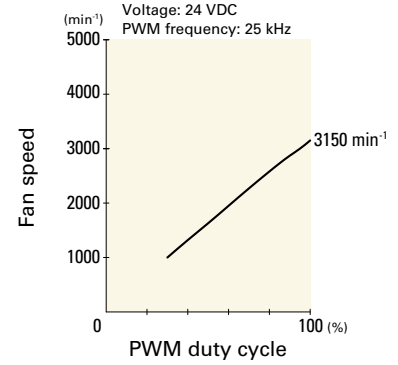
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

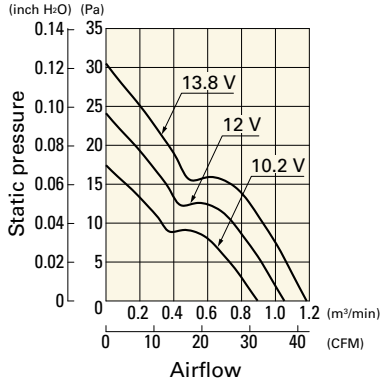


DC  
Splash Proof Fan 92 mm sq.

**Airflow - Static Pressure Characteristics**

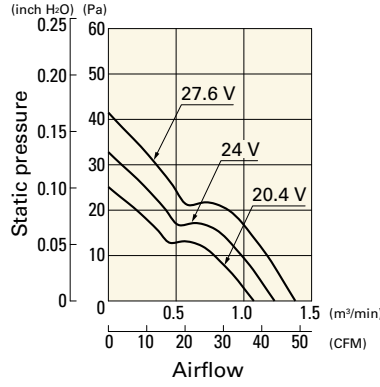
**9WL0912M4001** With pulse sensor

Operating voltage range



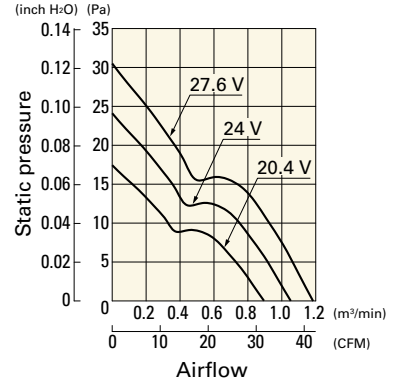
**9WL0924F4001** With pulse sensor

Operating voltage range

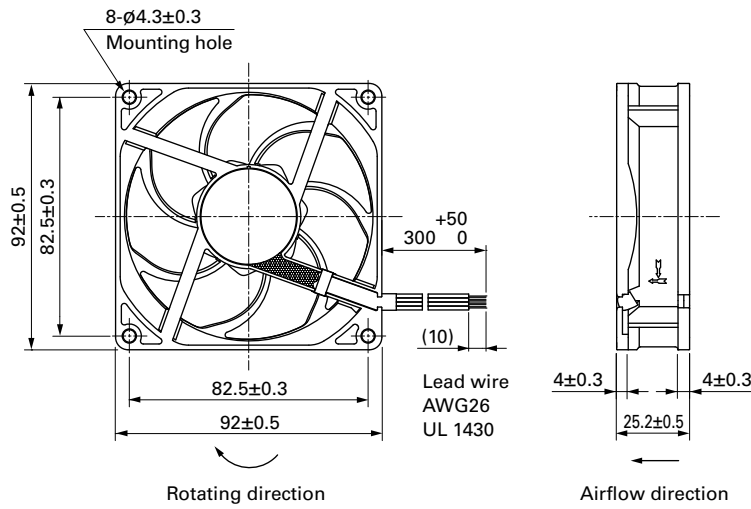


**9WL0924M4001** With pulse sensor

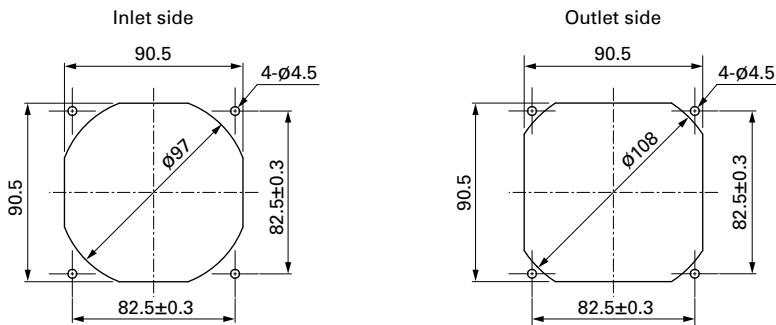
Operating voltage range



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



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



**Options**

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-101G



# 92x92x38 mm

San Ace 92W 9WL type

## General Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life ..... See the table below. (L10 life: 90% survival rate for continuous operation in indoor 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. 614.
- 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 ..... ⊕Red ⊖Black Sensor Yellow Control Brown
- Mass ..... 300 g
- Ingress protection ..... IP68 For more information on IP rating, refer to p. 621.

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
9WL0912P1H001	12	10.2 to 13.2	100	1.9	22.8	9000	3.7 130.6	430 1.72	61	-20 to +70	100000/60°C (135000/40°C)
			20	0.13	1.56	2700	1.11 39.1	48.0 0.19	30		
9WL0912P1F001	12	10.2 to 13.2	100	0.95	11.4	7000	2.9 102.4	263 1.05	55		
			20	0.1	1.2	2000	0.83 29.3	26.3 0.1	22		
9WL0924P1H001	24	20.4 to 26.4	100	0.95	22.8	9000	3.7 130.6	430 1.72	61		
			20	0.07	1.68	2700	1.11 39.1	48.0 0.19	30		
9WL0924P1F001	24	20.4 to 26.4	100	0.5	12	7000	2.9 102.4	263 1.05	55		
			20	0.06	1.44	2000	0.83 29.3	26.3 0.1	22		
9WL0948P1H601	48	40.8 to 52.8	100	0.48	23.04	9000	3.7 130.6	430 1.72	61		
			20	0.05	2.4	2700	1.11 39.1	48.0 0.19	30		
9WL0948P1F601	48	40.8 to 52.8	100	0.24	11.52	7000	2.9 102.4	263 1.05	55		
			20	0.05	2.4	2000	0.83 29.3	26.3 0.1	22		

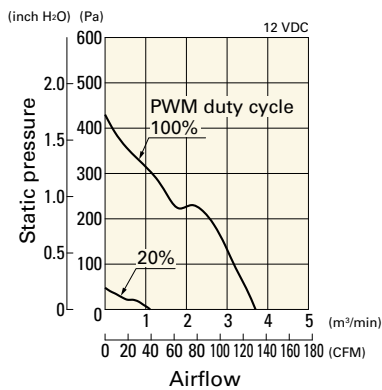
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 655.

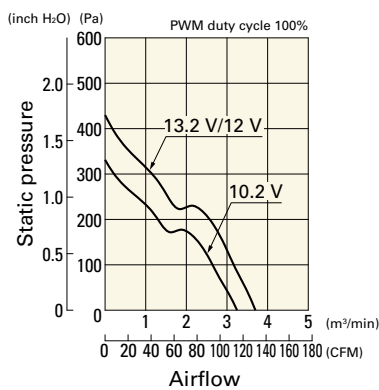
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL0912P1H001** With pulse sensor with PWM control

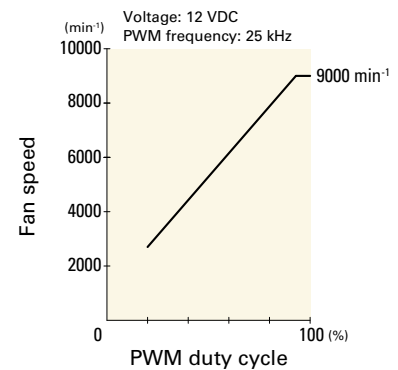
PWM duty cycle



Operating voltage range



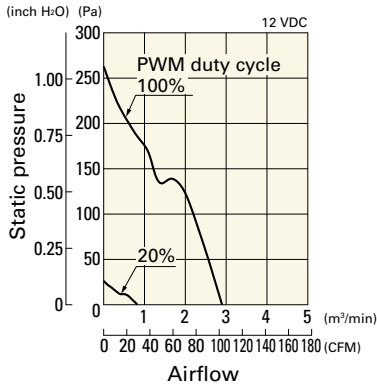
PWM duty - Speed characteristics example



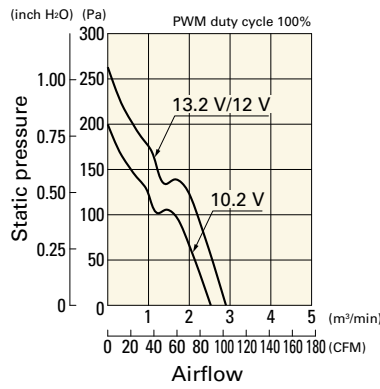
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL0912P1F001** With pulse sensor with PWM control

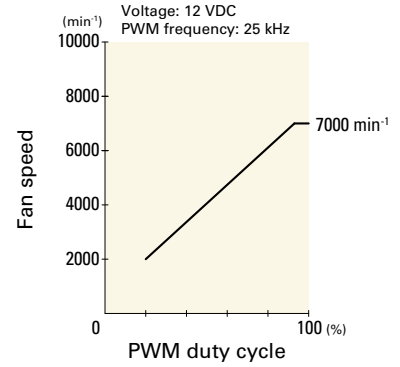
PWM duty cycle



Operating voltage range

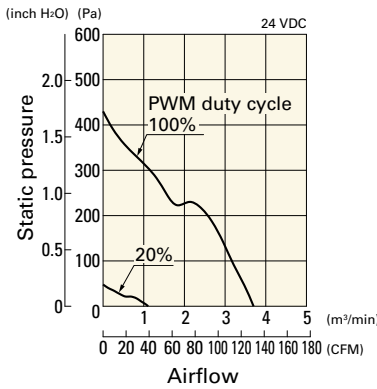


PWM duty - Speed characteristics example

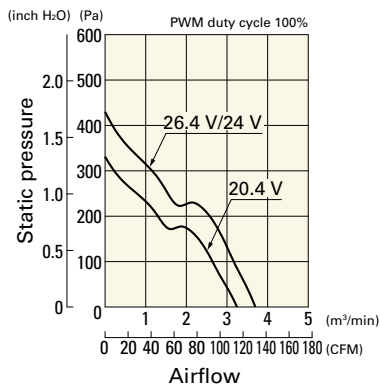


**9WL0924P1H001** With pulse sensor with PWM control

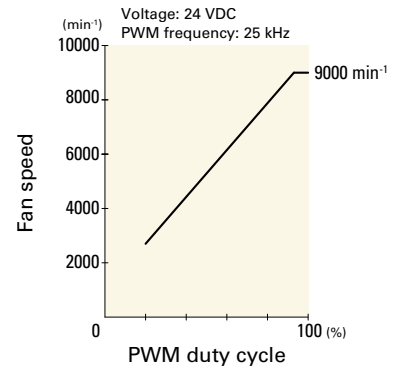
PWM duty cycle



Operating voltage range

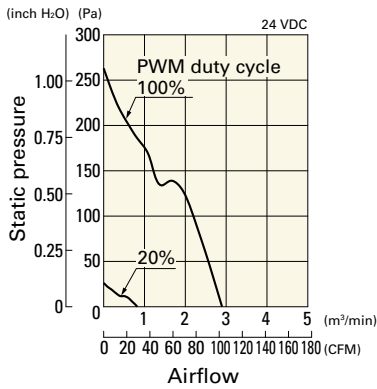


PWM duty - Speed characteristics example

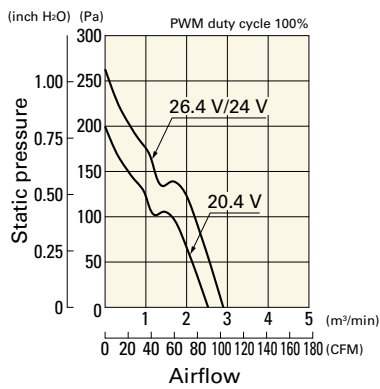


**9WL0924P1F001** With pulse sensor with PWM control

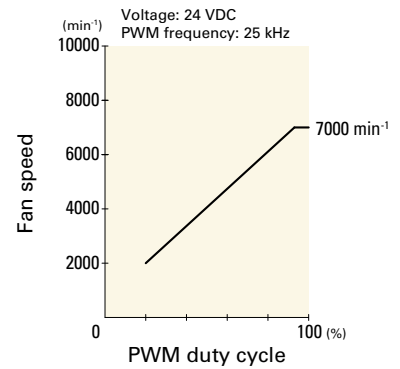
PWM duty cycle



Operating voltage range

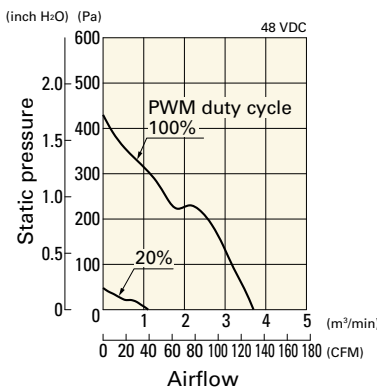


PWM duty - Speed characteristics example

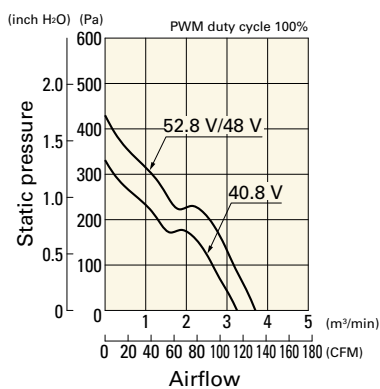


**9WL0948P1H601** With pulse sensor with PWM control

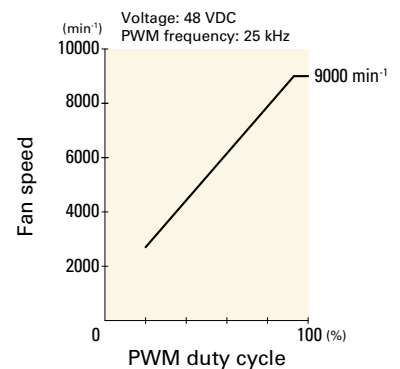
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

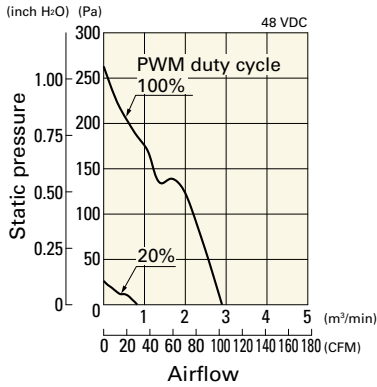




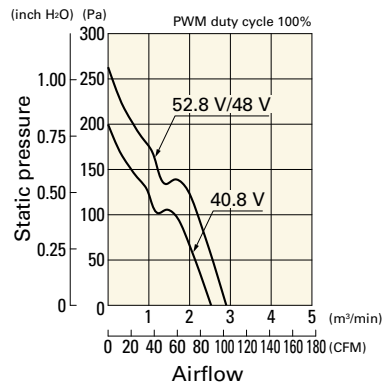
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0948P1F601 With pulse sensor with PWM control

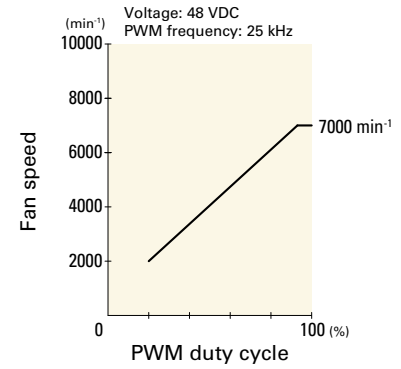
PWM duty cycle



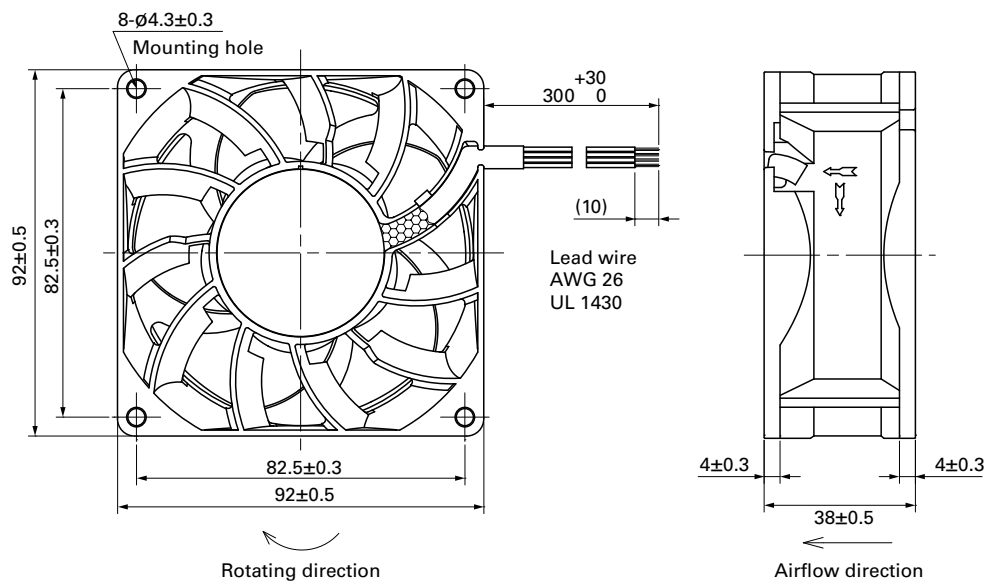
Operating voltage range



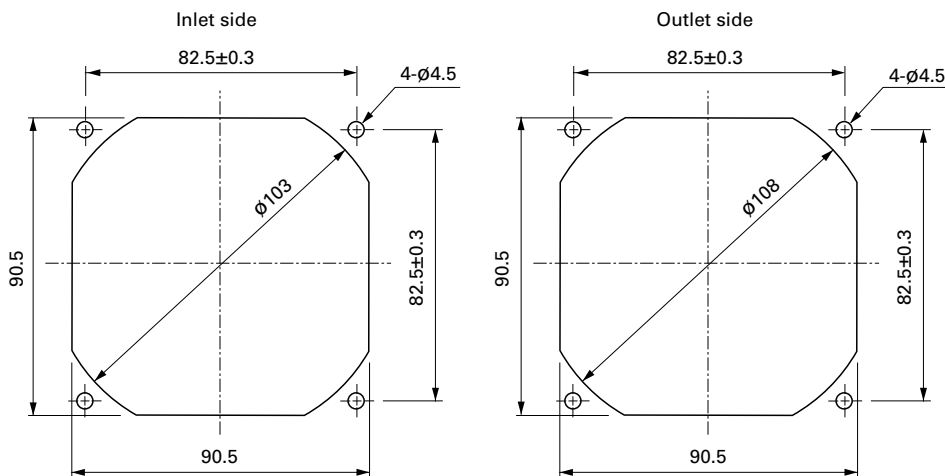
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 598

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

Resin finger guards




page: p. 605

Model no.: 109-1001G

DC  
Splash Proof Fan 92 mm sq.



# 140x140x38 mm

San Ace 140W 9WL type   

## General Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ..... See the table below. (L10 life: 90% survival rate for continuous operation in indoor 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown  
(For models without PWM control, there is no speed control wiring.)
- Mass ..... 740 g
- Ingress protection ..... IP68 For more information on IP rating, refer to p. 621.

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]	
9WL1412P1A001	12	10.2 to 13.8	100	3.72	44.64	6900	8.0 282	516 2.07	68	-20 to +70	100000/60°C (135000/40°C)	
			20	0.27	3.24	2300	2.66 93	80 0.32	39			
9WL1412P1H001			100	1.7	20.4	5200	6.0 212	300 1.2	62			
			20	0.27	3.24	2300	2.66 93	80 0.32	39			
9WL1412P1M001			100	0.6	7.2	3300	3.7 130	170 0.68	46			
			20	0.16	1.92	1300	1.45 51	26 0.1	29			
9WL1424P1A001		24	20.4 to 27.6	100	1.86	44.64	6900	8.0 282	516 2.07			68
				20	0.17	4.08	2300	2.66 93	80 0.32			39
9WL1424P1H001				100	0.85	20.4	5200	6.0 212	300 1.2			62
				20	0.16	3.84	2300	2.66 93	80 0.32			39
9WL1424P1M001				100	0.3	7.2	3300	3.7 130	170 0.68			46
				20	0.11	2.64	1300	1.45 51	26 0.1			29
9WL1448P1A001	48	40.8 to 55.2	100	0.92	44.16	6900	8.0 282	516 2.07	68			
			20	0.11	5.28	2300	2.66 93	80 0.32	39			
9WL1448P1H001			100	0.42	20.16	5200	6.0 212	300 1.2	62			
			20	0.11	5.28	2300	2.66 93	80 0.32	39			
9WL1448P1M001			100	0.15	7.2	3300	3.7 130	170 0.68	46			
			20	0.09	4.32	1300	1.45 51	26 0.1	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.

The models listed below **have a pulse sensor.**

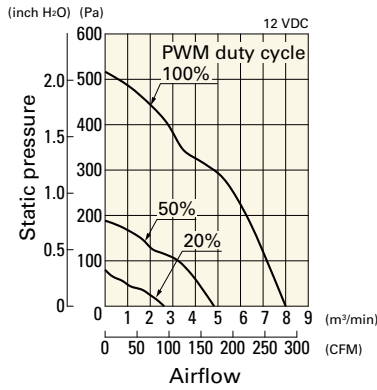
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9WL1448L1001	48	40.8 to 55.2	0.11	5.3	2300	2.6 91.9	80 0.32	39	-20 to +70	100000/60°C (135000/40°C)

Note: Sensor and control options are available for selection. Refer to the table on pp. 655 to 656.

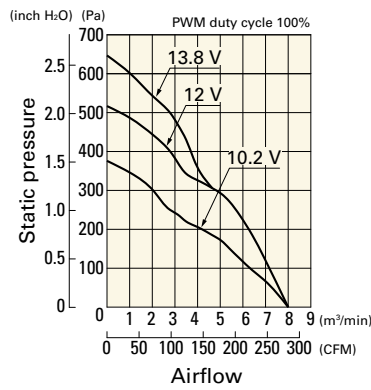
**Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example**

**9WL1412P1A001** With pulse sensor with PWM control

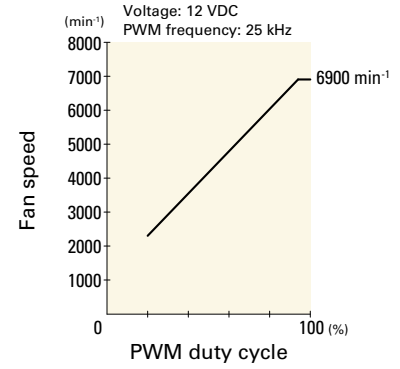
PWM duty cycle



Operating voltage range

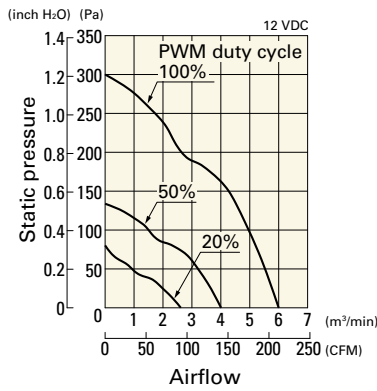


PWM duty - Speed characteristics example

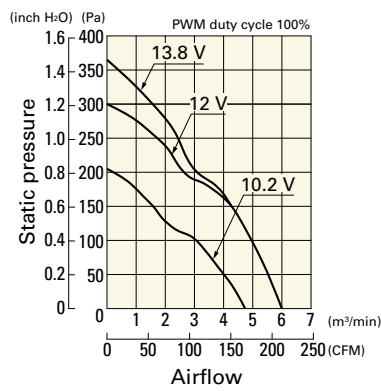


**9WL1412P1H001** With pulse sensor with PWM control

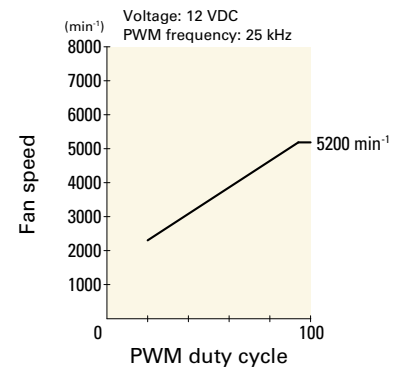
PWM duty cycle



Operating voltage range

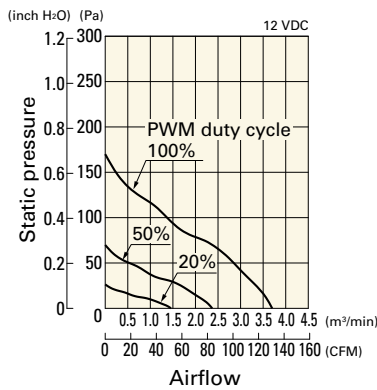


PWM duty - Speed characteristics example

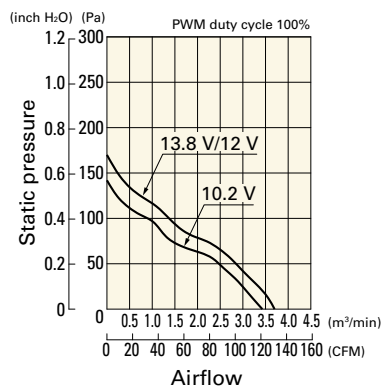


**9WL1412P1M001** With pulse sensor with PWM control

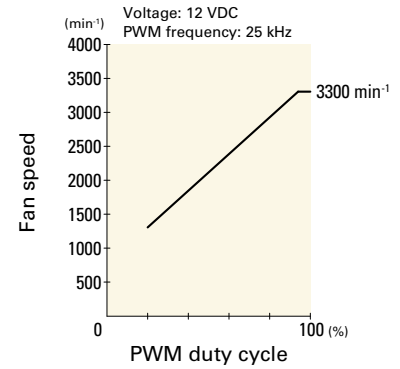
PWM duty cycle



Operating voltage range

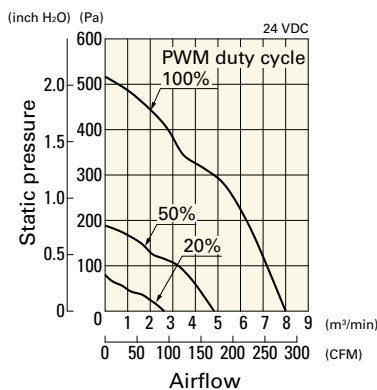


PWM duty - Speed characteristics example

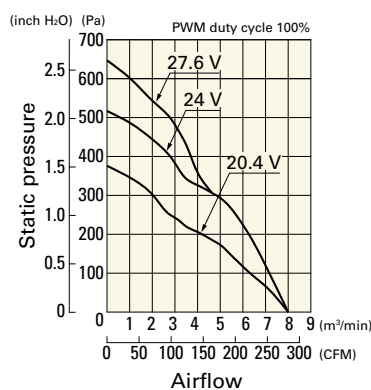


**9WL1424P1A001** With pulse sensor with PWM control

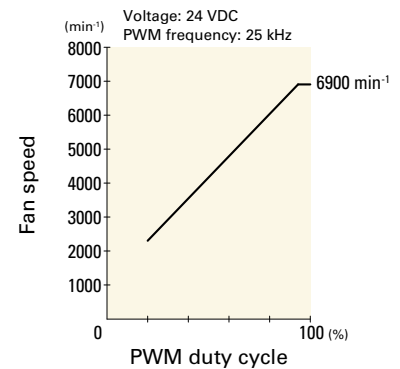
PWM duty cycle



Operating voltage range



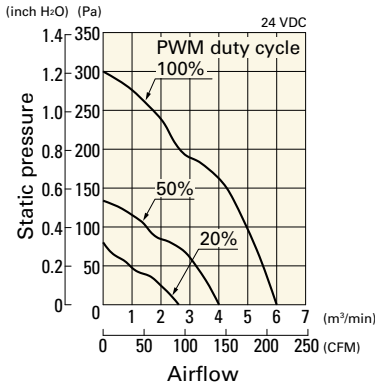
PWM duty - Speed characteristics example



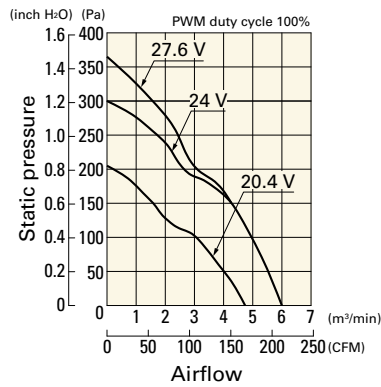
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL1424P1H001** With pulse sensor with PWM control

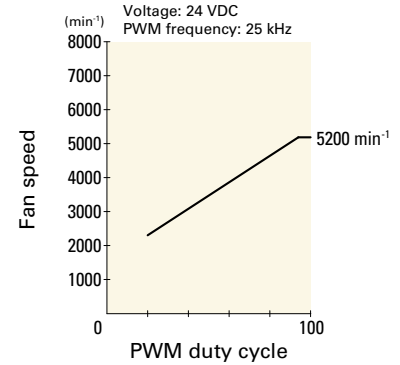
PWM duty cycle



Operating voltage range

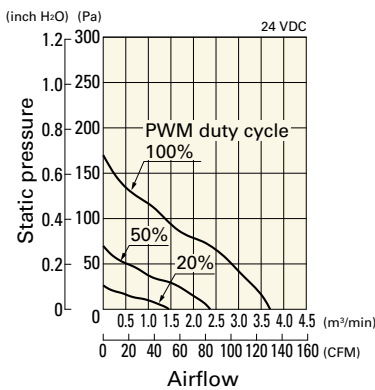


PWM duty - Speed characteristics example

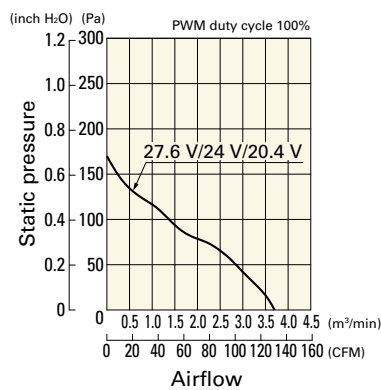


**9WL1424P1M001** With pulse sensor with PWM control

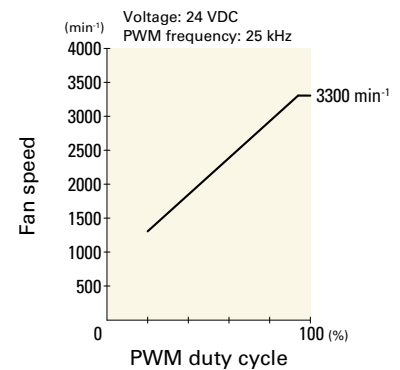
PWM duty cycle



Operating voltage range

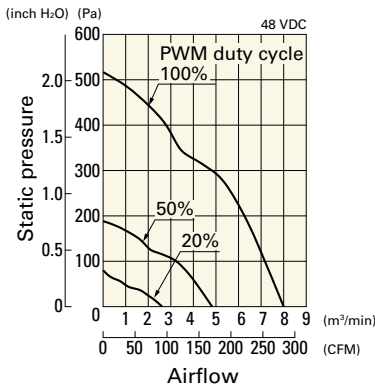


PWM duty - Speed characteristics example

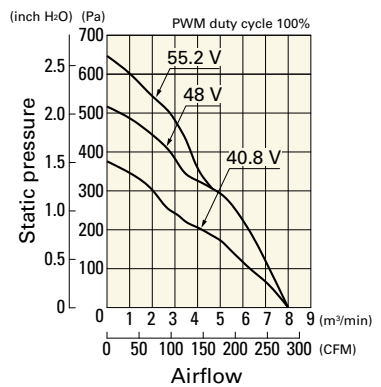


**9WL1448P1A001** With pulse sensor with PWM control

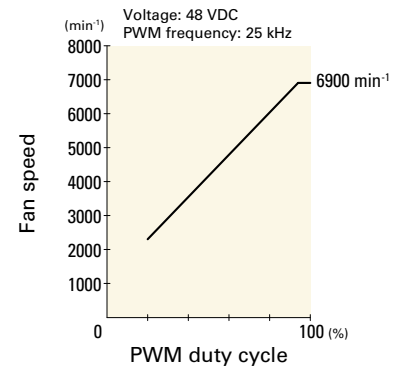
PWM duty cycle



Operating voltage range

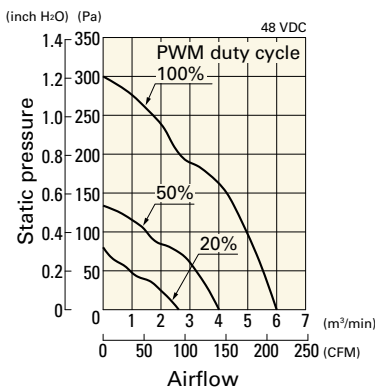


PWM duty - Speed characteristics example

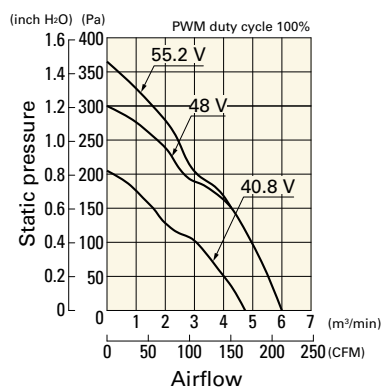


**9WL1448P1H001** With pulse sensor with PWM control

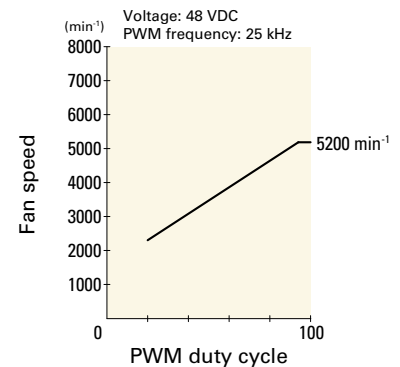
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

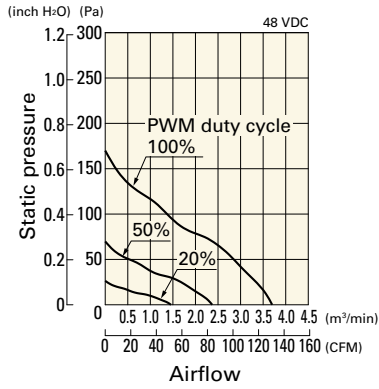


DC  
Splash Proof Fan 140 mm sq.

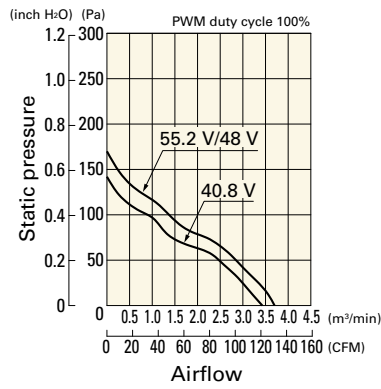
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL1448P1M001** With pulse sensor with PWM control

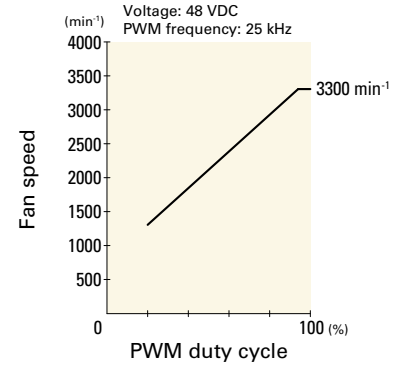
PWM duty cycle



Operating voltage range



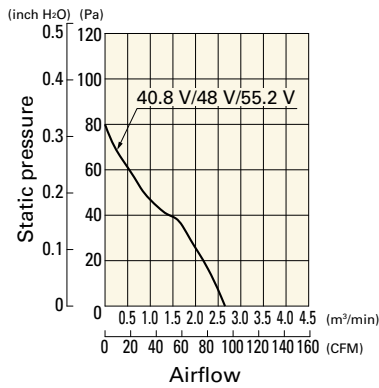
PWM duty - Speed characteristics example



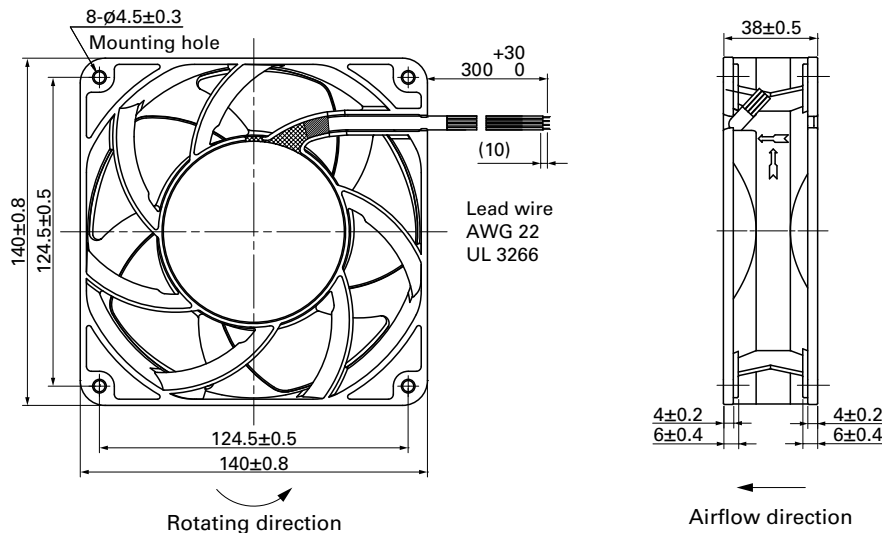
## Airflow - Static Pressure Characteristics

**9WL1448L1001** With pulse sensor

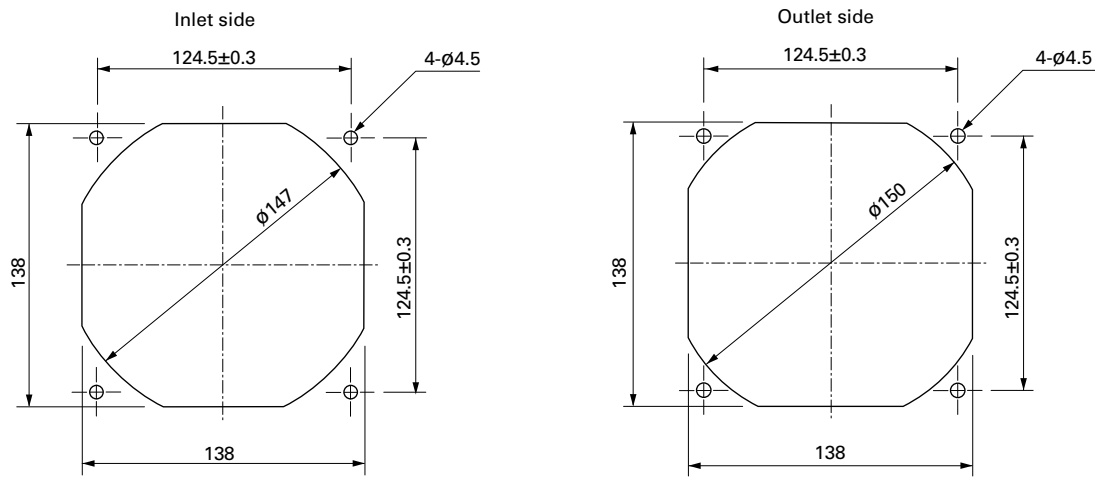
Operating voltage range



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



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



## Options



Finger guards

page: p. 599

Model no.: 109-719, 109-719H



# 140x140x51 mm

San Ace 140W 9WL type   

DC  
Splash Proof Fan 140 mm sq.

## General Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ..... See the table below. (L10 life: 90% survival rate for continuous operation in indoor 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown  
(For models without PWM control, there is no speed control wiring.)
- Mass ..... 930 g
- Ingress protection ..... IP68 For more information on IP rating, refer to p. 621.

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
9WL1412P5G001	12	10.2 to 13.8	100	5.16	62	7500	9.0 318	655 2.63	69	-20 to +70	100000/60°C (135000/40°C)
			20	0.31	3.72	2300	2.75 97	80 0.32	38		
9WL1412P5S001	12	10.2 to 13.8	100	1.83	22	5000	6.0 212	295 1.18	57		
			20	0.31	3.72	2300	2.75 97	80 0.32	38		
9WL1424P5G001	24	20.4 to 27.6	100	2.58	62	7500	9.0 318	655 2.63	69		
			20	0.16	3.84	2300	2.75 97	80 0.32	38		
9WL1424P5S001	24	20.4 to 27.6	100	0.91	22	5000	6.0 212	295 1.18	57		
			20	0.16	3.84	2300	2.75 97	80 0.32	38		
9WL1448P5G001	48	40.8 to 55.2	100	1.29	62	7500	9.0 318	655 2.63	69		
			20	0.12	5.76	2300	2.75 97	80 0.32	38		
9WL1448P5S001	48	40.8 to 55.2	100	0.45	22	5000	6.0 212	295 1.18	57		
			20	0.12	5.76	2300	2.75 97	80 0.32	38		

\* 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.

The models listed below **have a pulse sensor.**

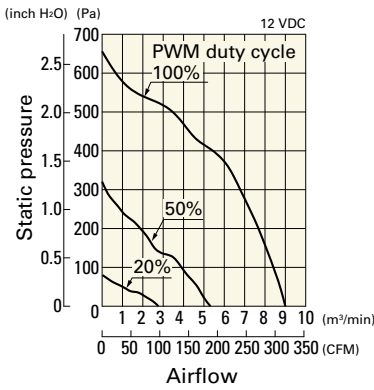
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9WL1412A5001	12	10.2 to 13.8	2.61	31.4	5700	6.9 243.8	500 2	61	-20 to +70	100000/60°C (135000/40°C)
9WL1412H5001			1	12	4100	4.9 173.1	260 1.04	52		
9WL1412M5001			0.43	5.16	2600	3.1 109.5	100 0.4	40		
9WL1424A5001	24	20.4 to 27.6	1.21	29.10	5700	6.9 243.8	540 2.17	61		
9WL1424H5001			0.55	13.2	4100	4.9 173.1	260 1.04	52		
9WL1424M5001			0.23	5.52	2600	3.1 109.5	100 0.4	40		
9WL1448A5001	48	40.8 to 55.2	0.66	31.7	5700	6.9 243.8	540 2.17	61		
9WL1448H5001			0.31	14.9	4100	4.9 173.1	260 1.04	52		
9WL1448M5001			0.15	7.2	2600	3.1 109.5	100 0.4	40		

Note: Sensor and control options are available for selection. Refer to the table on pp. 655 to 656.

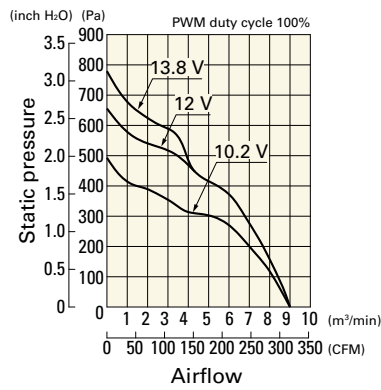
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL1412P5G001** With pulse sensor with PWM control

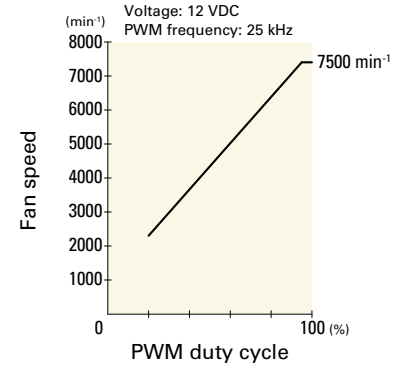
PWM duty cycle



Operating voltage range

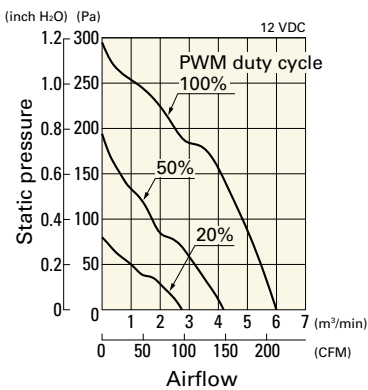


PWM duty - Speed characteristics example

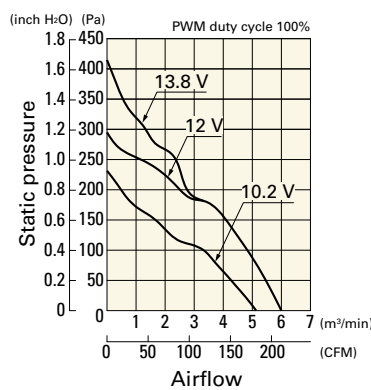


**9WL1412P5S001** With pulse sensor with PWM control

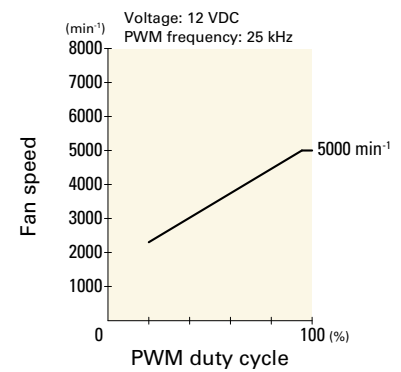
PWM duty cycle



Operating voltage range

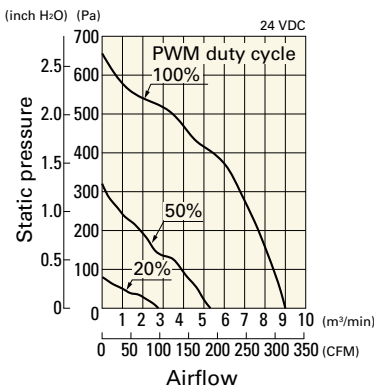


PWM duty - Speed characteristics example

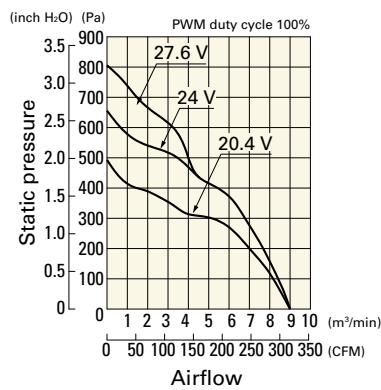


**9WL1424P5G001** With pulse sensor with PWM control

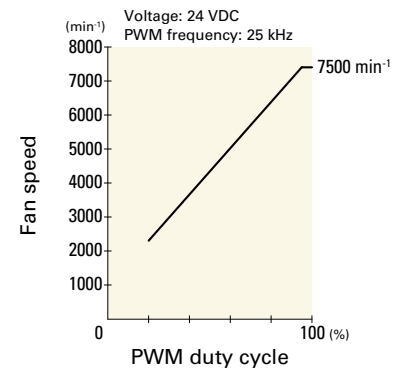
PWM duty cycle



Operating voltage range

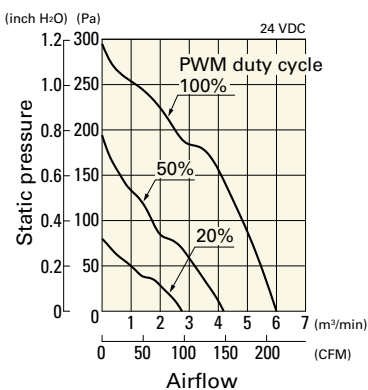


PWM duty - Speed characteristics example

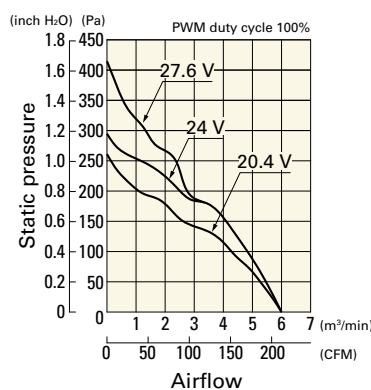


**9WL1424P5S001** With pulse sensor with PWM control

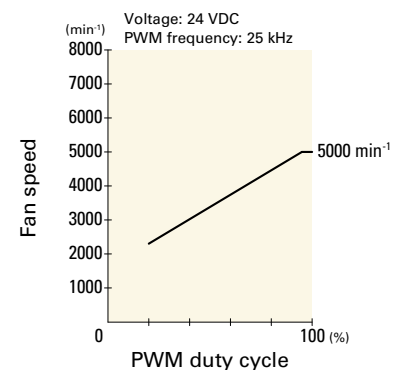
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example



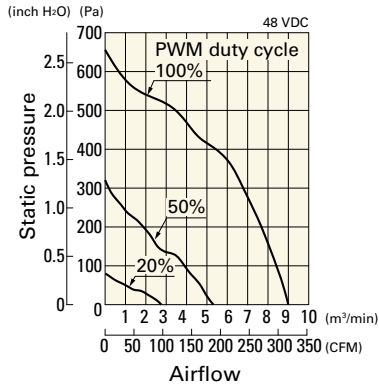
DC  
Splash Proof Fan 140 mm sq.



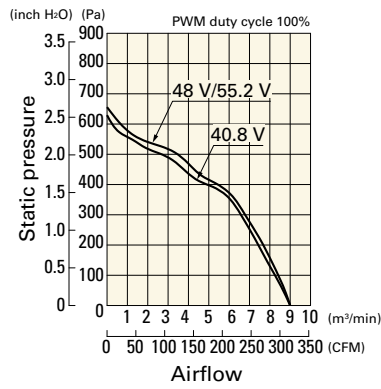
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9WL1448P5G001** With pulse sensor with PWM control

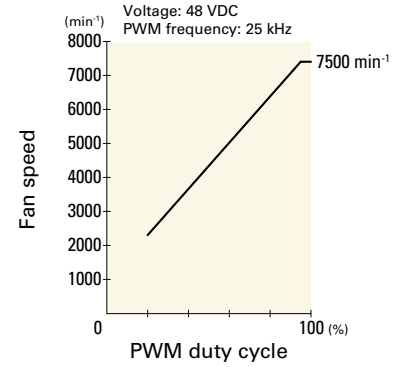
PWM duty cycle



Operating voltage range

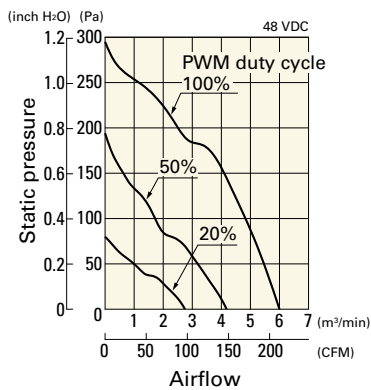


PWM duty - Speed characteristics example

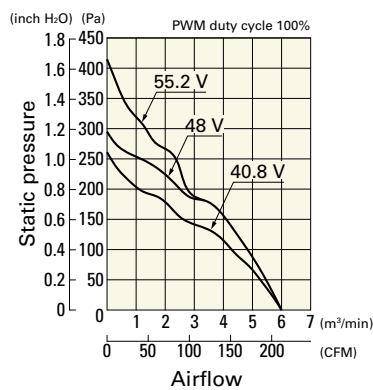


**9WL1448P5S001** With pulse sensor with PWM control

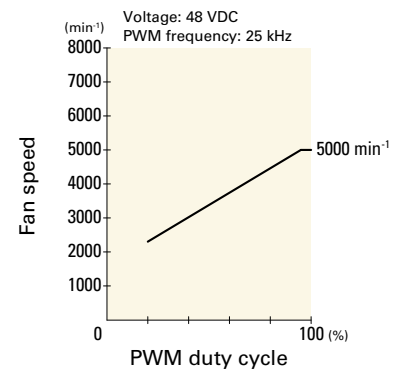
PWM duty cycle



Operating voltage range



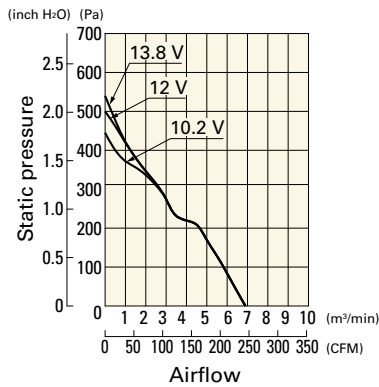
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

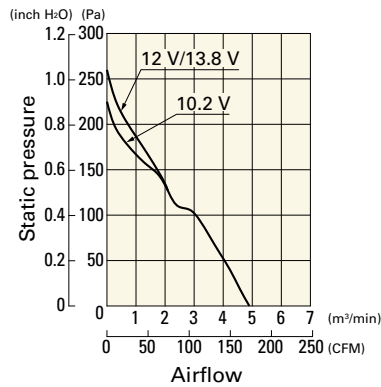
**9WL1412A5001** With pulse sensor

Operating voltage range



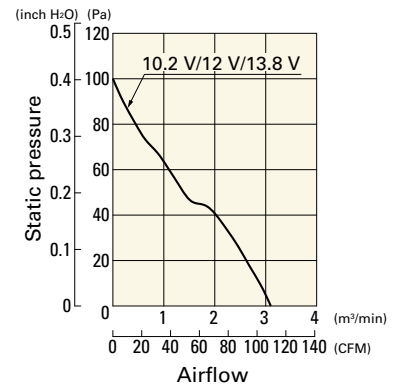
**9WL1412H5001** With pulse sensor

Operating voltage range



**9WL1412M5001** With pulse sensor

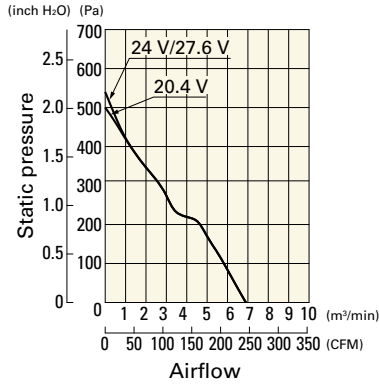
Operating voltage range



## Airflow - Static Pressure Characteristics

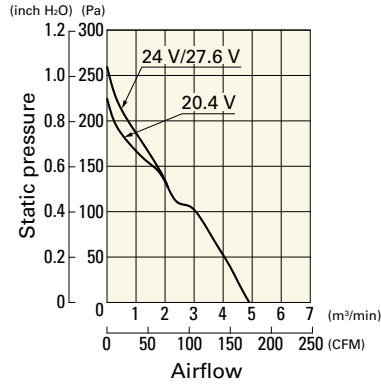
**9WL1424A5001** With pulse sensor

Operating voltage range



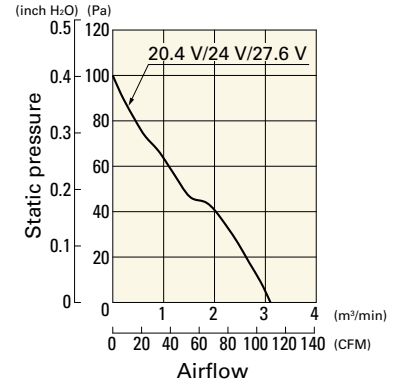
**9WL1424H5001** With pulse sensor

Operating voltage range



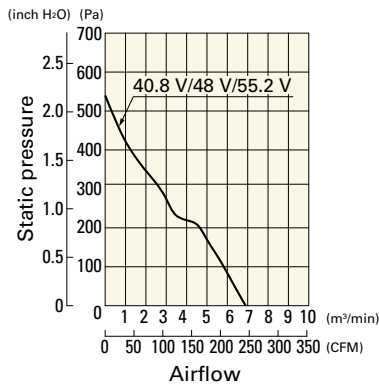
**9WL1424M5001** With pulse sensor

Operating voltage range



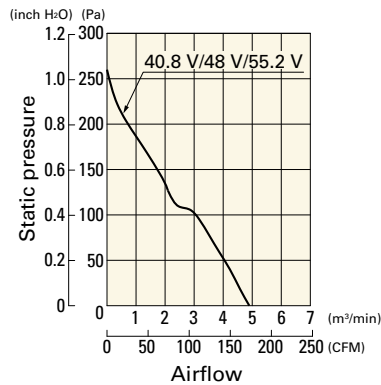
**9WL1448A5001** With pulse sensor

Operating voltage range



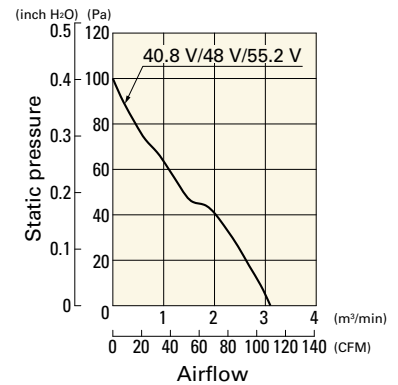
**9WL1448H5001** With pulse sensor

Operating voltage range

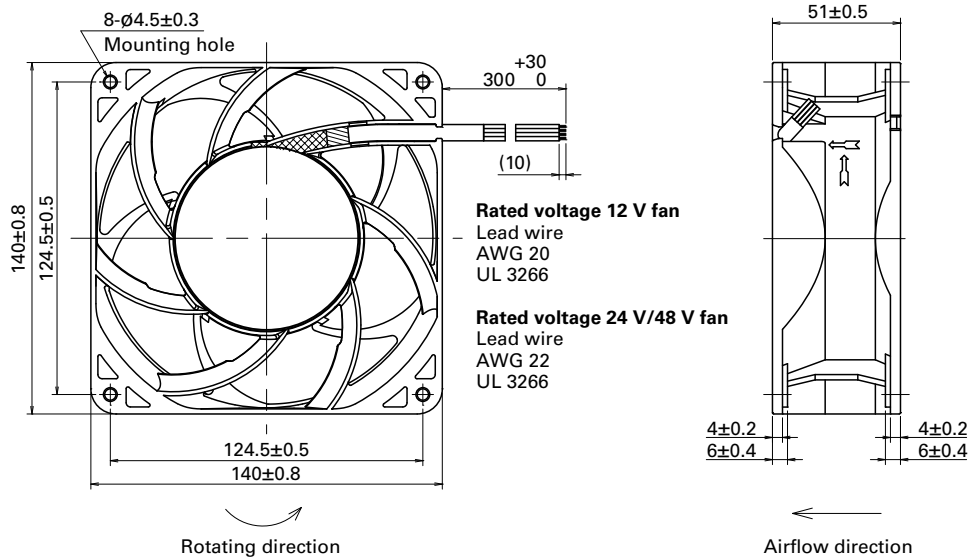


**9WL1448M5001** With pulse sensor

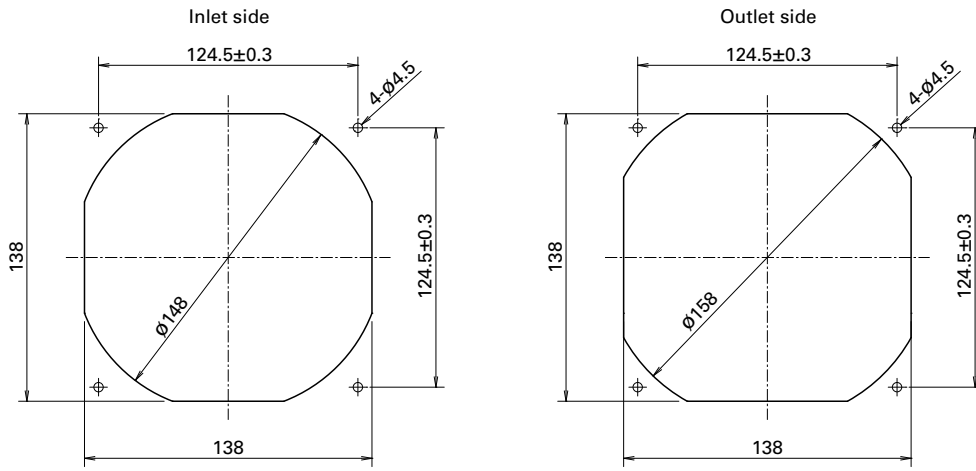
Operating voltage range



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



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



**Options**

Finger guards

page: p. 599

Model no.: 109-719, 109-719H

# Long Life Fan

Cooling fan with Max. 180,000 hours of expected life.

Related product: Splash Proof Fan pp. 266, 272, 278, 287, 291

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

<b>9L</b>	<b>04</b>	<b>12</b>	<b>J</b>	<b>3</b>	<b>01</b>
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications

Fans with PWM control

<b>9LG</b>	<b>06</b>	<b>12</b>	<b>P</b>	<b>4</b>	<b>S</b>	<b>001</b>
Type name	Frame size	Voltage	PWM control	Frame thickness	Speed code	Individual customer's spec (2 to 3 digits)

Type name	9CRL 9L 9LG etc.								
Frame size (mm)	04	06	08	09	12	14	17	57	
	40×40	60×60	80×80	92×92	120×120	140×140	∅172	∅172×150 (sidecut)	
Voltage (V)	12	24	48						
	12	24	48	etc.					
Speed code	E F G H J L M S etc.								
Frame thickness (mm)	0	1	3	4	5	8			
	76	38	28	25	51	80			
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 <sup>-1</sup> ]	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]
<b>9GA0412G7001</b>	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 m<sup>3</sup>/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.



# 40x40x28 mm

San Ace 40L 9L type

DC Long Life 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. 614.
- 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 ..... ⊕Red ⊖Black Sensor Yellow
- Mass ..... 55 g

## Specifications

The models listed below **have a pulse sensor**.

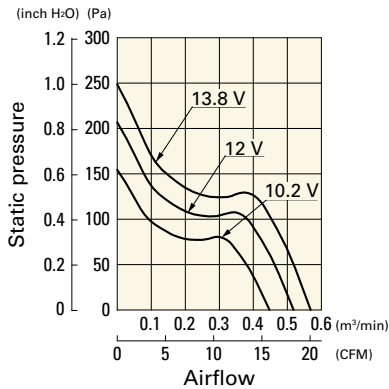
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9L0412J301	12	10.2 to 13.8	0.31	3.72	11700	0.52 18.4	206 0.827	48	-20 to +70	100000/60°C (135000/40°C)
9L0412H301			0.15	1.8	8400	0.37 13.1	106 0.426	40		
9L0412M301			0.045	0.54	4000	0.16 5.65	24 0.096	19		

Note: Sensor and control options are available for selection. Refer to the table on p. 647.

## Airflow - Static Pressure Characteristics

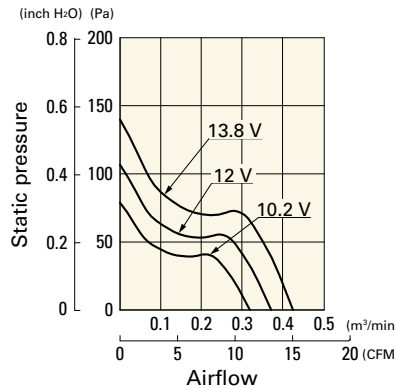
9L0412J301 With pulse sensor

Operating voltage range



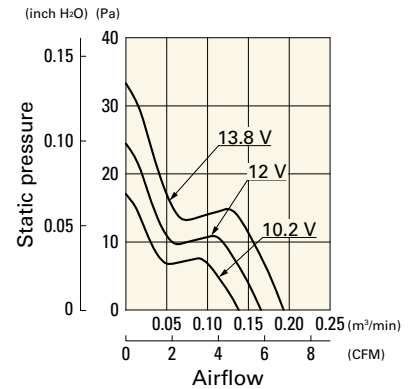
9L0412H301 With pulse sensor

Operating voltage range

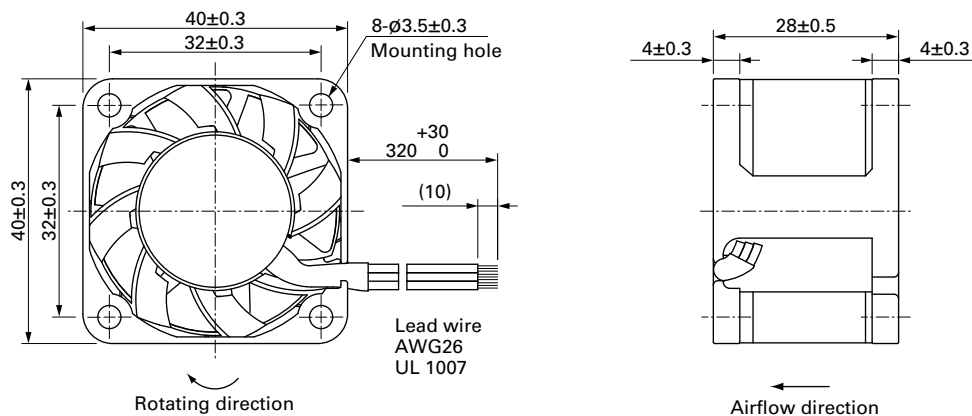


9L0412M301 With pulse sensor

Operating voltage range



## Dimensions (unit: mm)







# 60x60x25 mm

San Ace 60L 9LG type

## 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ..... 100 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
» 9LG0612P4S001	12	10.8 to 13.2	100	0.67	8.04	11000	1.4 49.4	300 1.204	53	-20 to +70	18000/60°C (215000/40°C)
			20	0.06	0.72	2900	0.36 12.7	20.8 0.083	20		
» 9LG0612P4J001			100	0.39	4.68	8650	1.1 38.8	182 0.73	47		
			25	0.04	0.48	2100	0.26 9.1	10.7 0.042	17		
» 9LG0612P4H001			100	0.17	2.04	6150	0.78 27.5	97 0.389	35		
			25	0.03	0.36	1350	0.17 6.0	4.7 0.018	14		
» 9LG0612P4M001	100	0.09	1.08	4200	0.53 18.7	45 0.18	24				
	25	0.03	0.36	900	0.11 3.8	2.0 0.008	14				
» 9LG0624P4S001	24	21.6 to 26.4	100	0.34	8.16	11000	1.4 49.4	300 1.204	53		
			20	0.03	0.72	2900	0.36 12.7	20.8 0.083	20		
» 9LG0624P4J001			100	0.19	4.56	8650	1.1 38.8	182 0.73	47		
			20	0.02	0.48	2200	0.28 9.8	12.0 0.048	17		
» 9LG0624P4H001			100	0.08	1.92	6150	0.78 27.5	97 0.389	35		
			20	0.02	0.48	1300	0.16 5.6	4.3 0.017	14		
» 9LG0624P4M001	100	0.04	0.96	4200	0.53 18.7	45 0.18	24				
	20	0.01	0.24	800	0.1 3.5	1.6 0.006	14				
» 9LG0648P4S001	48	36 to 72	100	0.18	8.64	11000	1.4 49.4	305 1.224	53		
			20	0.02	0.96	2900	0.36 12.7	20.8 0.083	20		
» 9LG0648P4J001			100	0.1	4.8	8650	1.1 38.8	182 0.73	47		
			20	0.02	0.96	2100	0.26 9.1	10.7 0.042	17		
» 9LG0648P4H001			100	0.06	2.88	6150	0.78 27.5	97 0.389	35		
			20	0.02	0.96	1000	0.12 4.2	2.5 0.01	14		
» 9LG0648P4M001	100	0.04	1.92	4200	0.53 18.7	45 0.18	24				
	20	0.02	0.96	650	0.08 2.8	1.0 0.004	14				

\* 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.

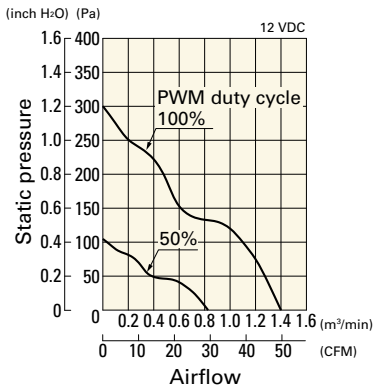
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 647 to 648.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 668 for details.

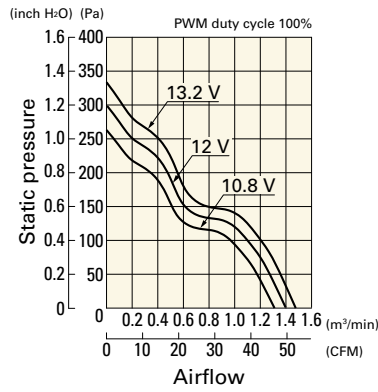
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG0612P4S001** With pulse sensor with PWM control

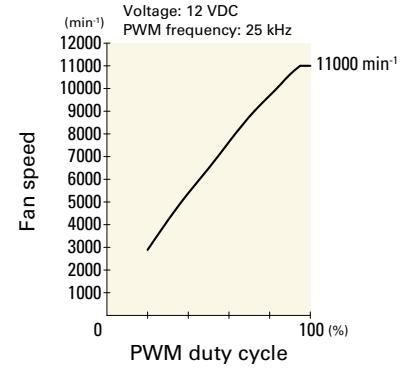
PWM duty cycle



Operating voltage range

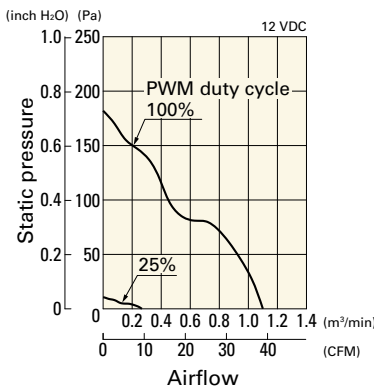


PWM duty - Speed characteristics example

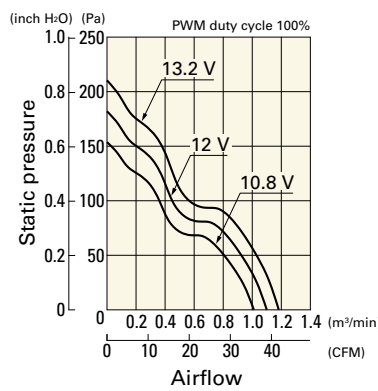


**9LG0612P4J001** With pulse sensor with PWM control

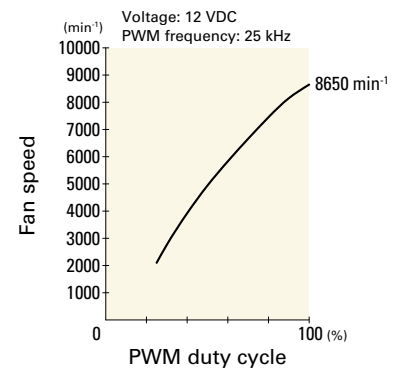
PWM duty cycle



Operating voltage range

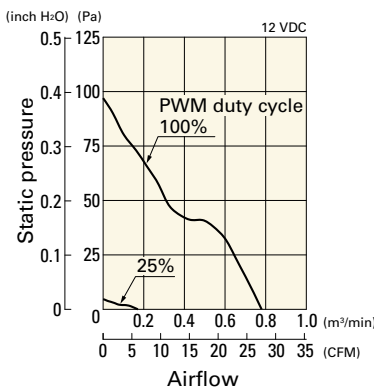


PWM duty - Speed characteristics example

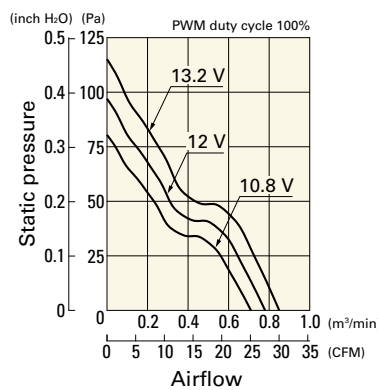


**9LG0612P4H001** With pulse sensor with PWM control

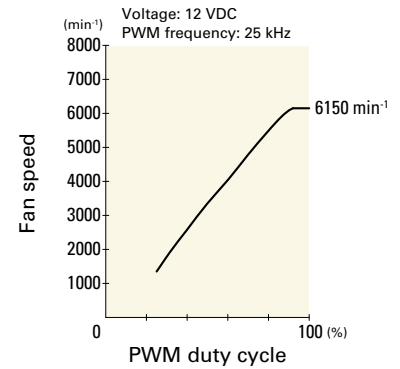
PWM duty cycle



Operating voltage range

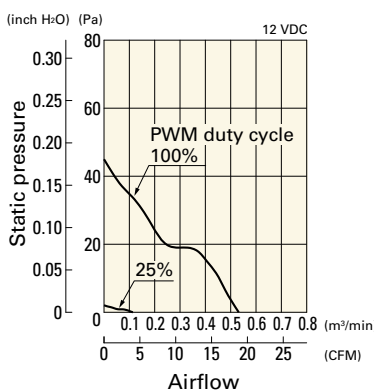


PWM duty - Speed characteristics example

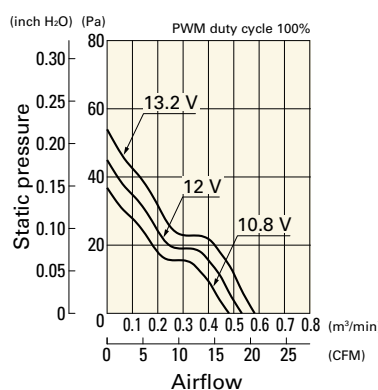


**9LG0612P4M001** With pulse sensor with PWM control

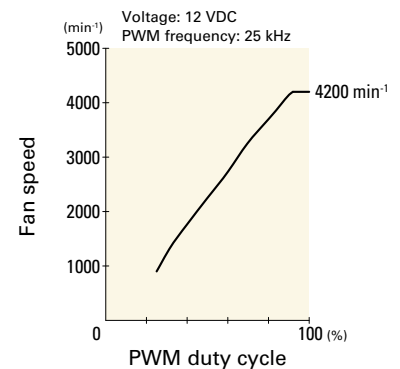
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example



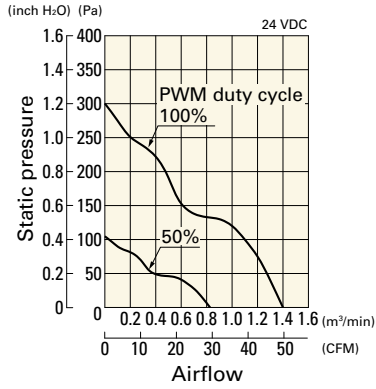
DC  
Long Life Fan 60 mm sq.



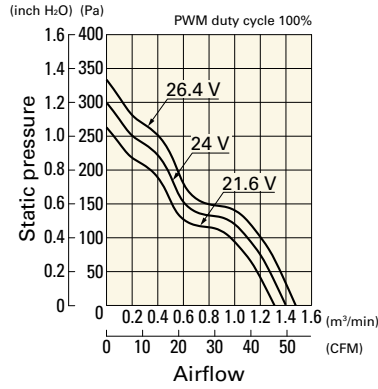
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG0624P4S001** With pulse sensor with PWM control

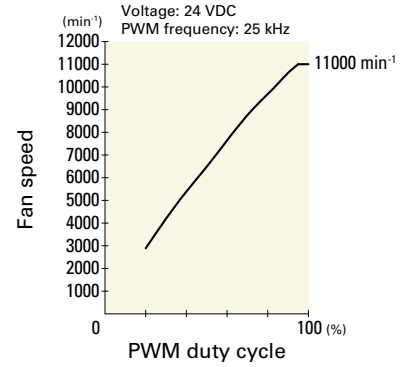
PWM duty cycle



Operating voltage range

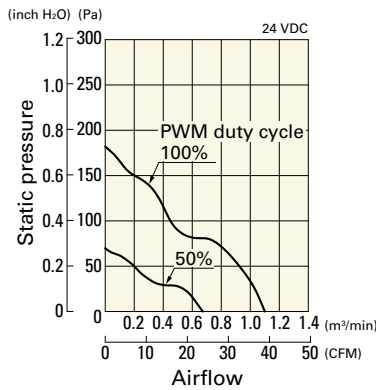


PWM duty - Speed characteristics example

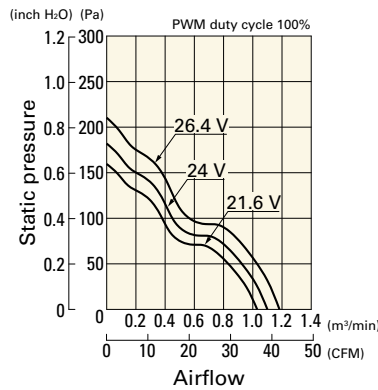


**9LG0624P4J001** With pulse sensor with PWM control

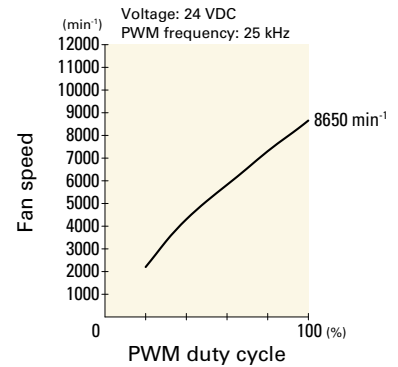
PWM duty cycle



Operating voltage range

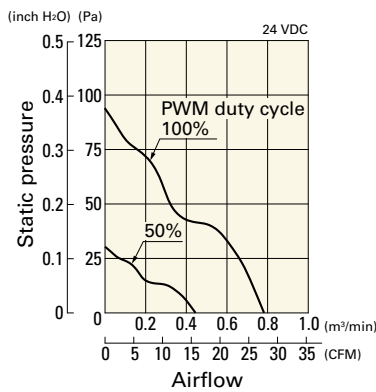


PWM duty - Speed characteristics example

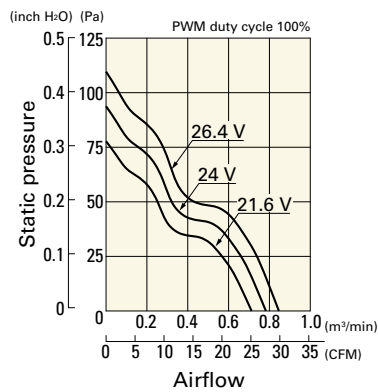


**9LG0624P4H001** With pulse sensor with PWM control

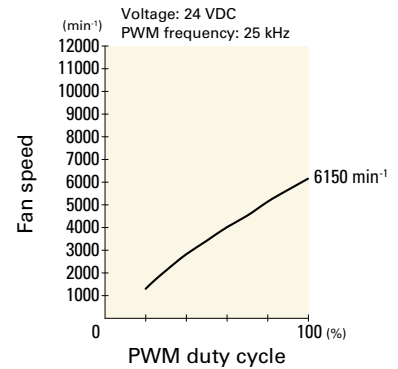
PWM duty cycle



Operating voltage range

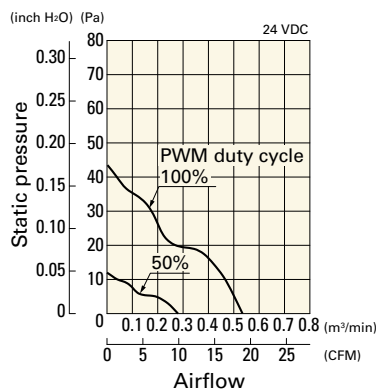


PWM duty - Speed characteristics example

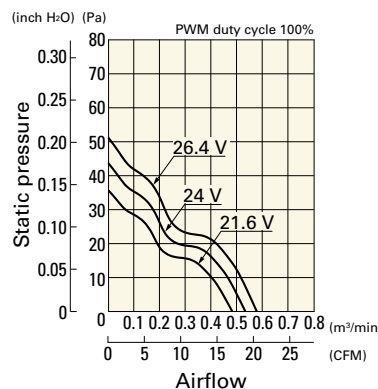


**9LG0624P4M001** With pulse sensor with PWM control

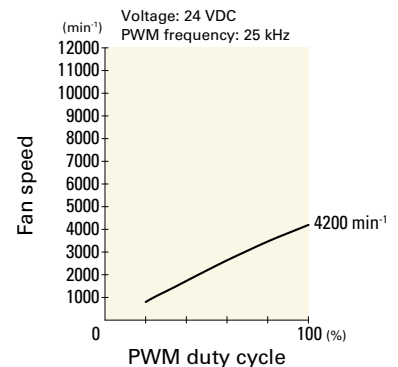
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

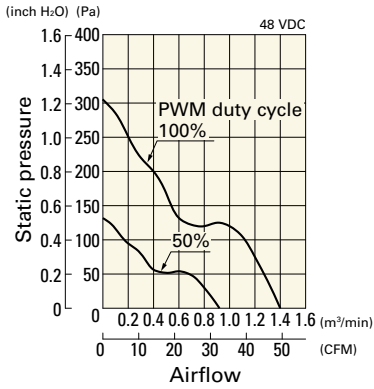


DC Long Life Fan 60 mm sq.

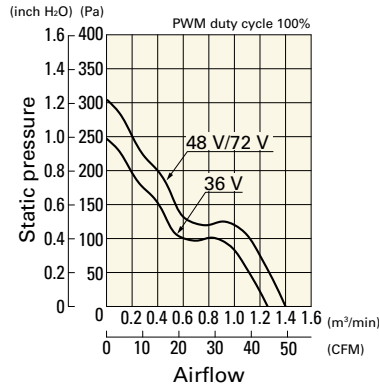
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG0648P4S001** With pulse sensor with PWM control

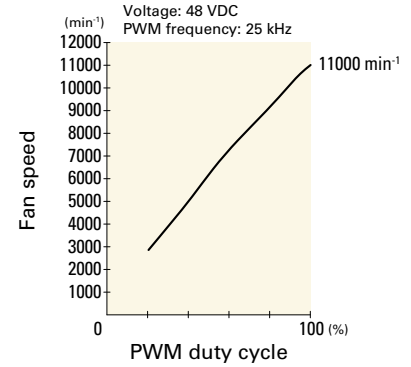
PWM duty cycle



Operating voltage range

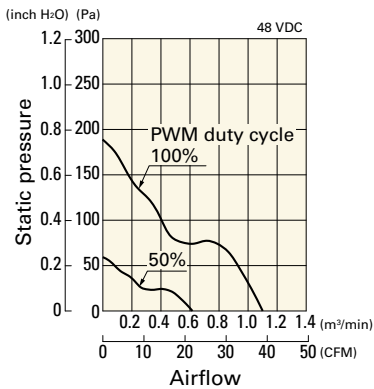


PWM duty - Speed characteristics example

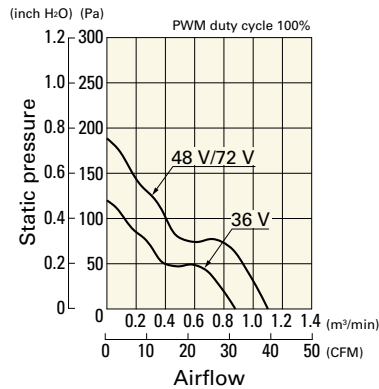


**9LG0648P4J001** With pulse sensor with PWM control

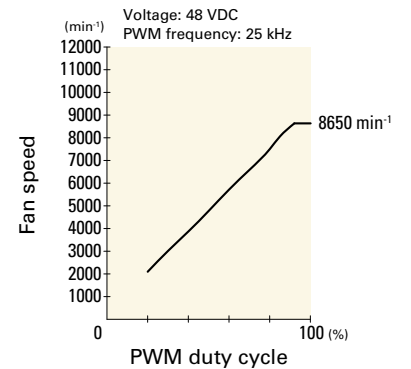
PWM duty cycle



Operating voltage range

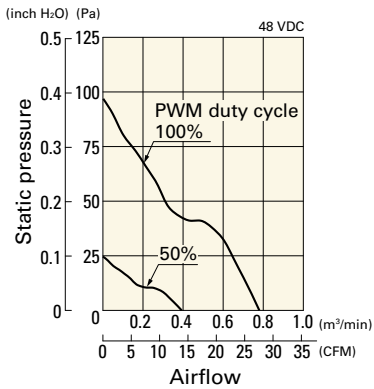


PWM duty - Speed characteristics example

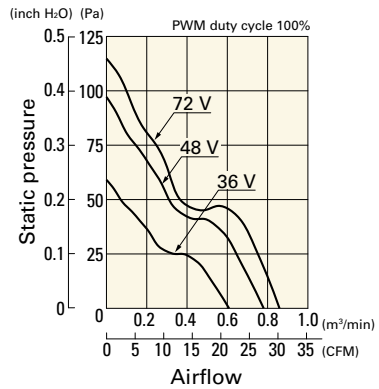


**9LG0648P4H001** With pulse sensor with PWM control

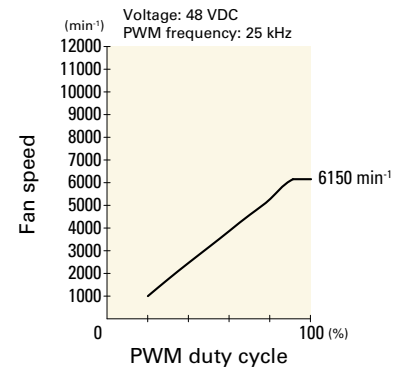
PWM duty cycle



Operating voltage range

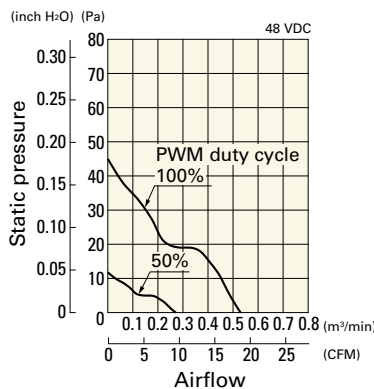


PWM duty - Speed characteristics example

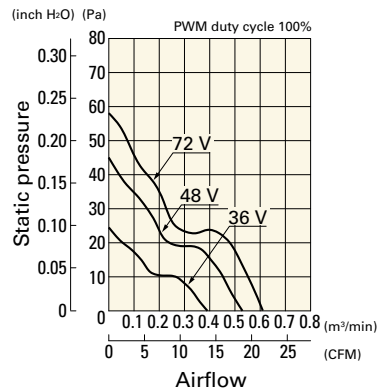


**9LG0648P4M001** With pulse sensor with PWM control

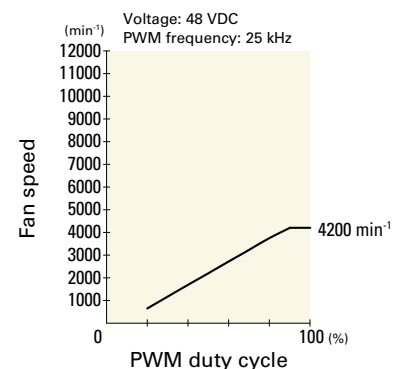
PWM duty cycle



Operating voltage range

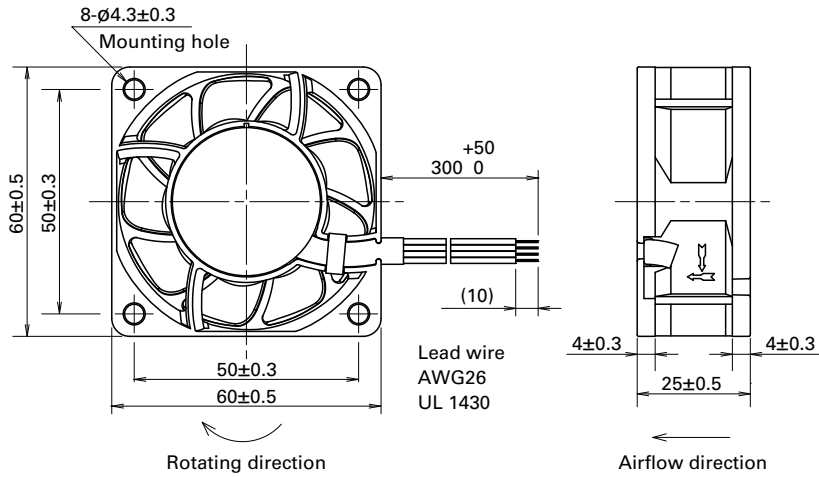


PWM duty - Speed characteristics example

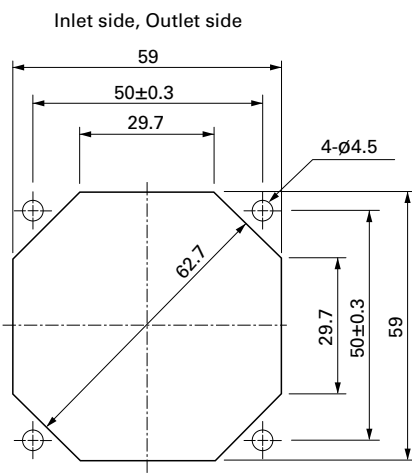


DC  
Long Life Fan 60 mm sq.

## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 598

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

### Resin finger guards

page: p. 605

Model no.: 109-1003G

### Resin filter kits

page: p. 606

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



# 60x60x76 mm

San Ace 60L 9CRLA type

## General Specifications

- Material ..... Frame: Aluminum (Black coating), 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. 614.
- 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 ..... 310 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]		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]
						Inlet	Outlet							
9CRLA0612P0G001	12	10.8 to 13.2	100	3.0	36.0	16500	17800	2.1	74.1	1400	5.62	70	-20 to +70	100000/60°C (135000/40°C)
			20	0.4	4.8	5000	5400	0.64	22.6	128	0.51	43		

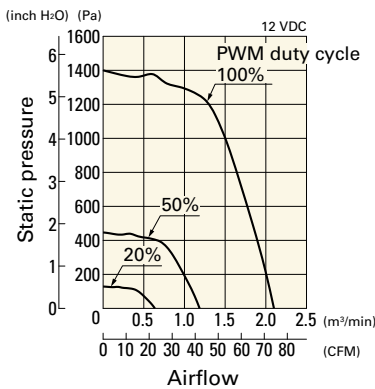
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The mark indicates Short LeadTime Service applicable models. See p. 668 for details.

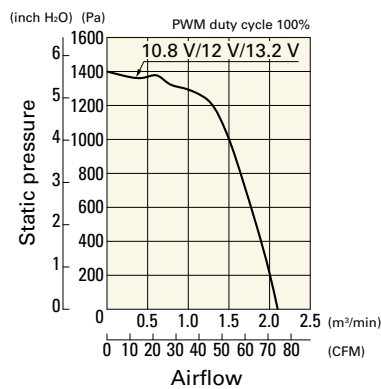
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRLA0612P0G001** With pulse sensor with PWM control

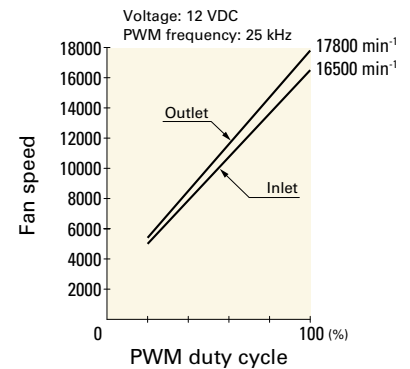
PWM duty cycle



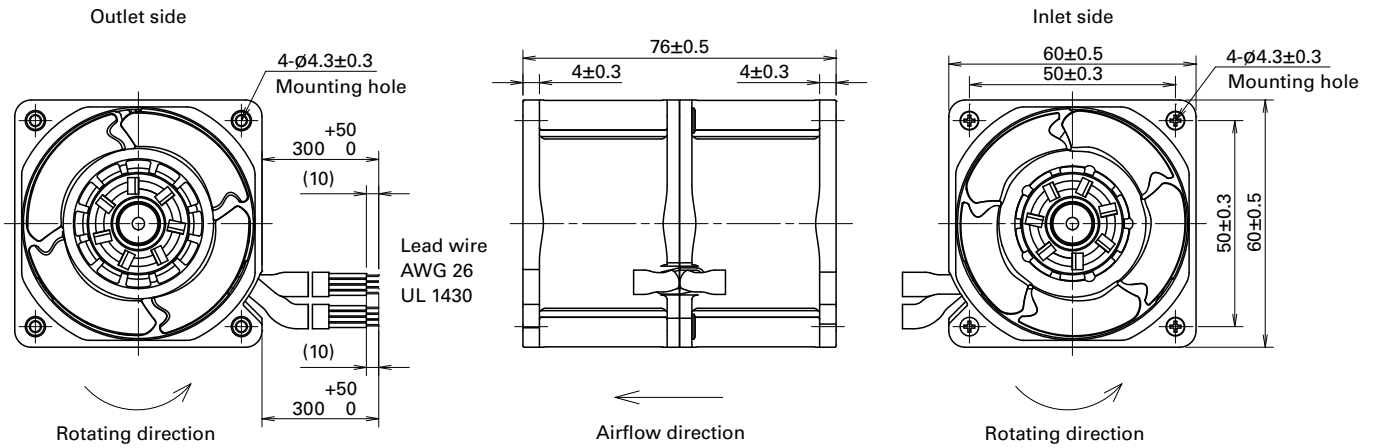
Operating voltage range



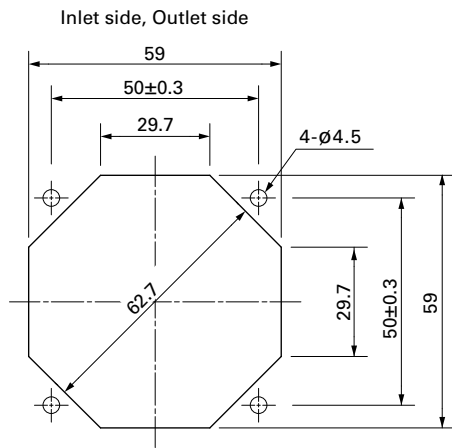
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1003G

Resin filter kits

page: p. 606

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



# 80x80x25 mm

San Ace 80L 9LG type

## 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown  
(For models without PWM control, there is no speed control wiring.)
- Mass ..... 130 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow		Max. static pressure		SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
							[m <sup>3</sup> /min]	[CFM]	[Pa]	[inchH <sub>2</sub> O]			
» 9LG0812P4J001	12	10.8 to 13.2	100	0.6	7.2	7400	2.07	73.0	177	0.71	49	-20 to +70	180000/60°C (215000/40°C)
			20	0.06	0.72	1800	0.5	17.6	10.4	0.04	16		
» 9LG0812P4G001			100	0.3	3.6	5500	1.54	54.3	98	0.39	43		
			25	0.05	0.6	1400	0.39	13.7	6.3	0.02	14		
» 9LG0812P4H001			100	0.12	1.44	3700	1.03	36.3	44	0.17	31		
			25	0.04	0.48	1100	0.3	10.5	3.9	0.01	13		
» 9LG0824P4J001	24	21.6 to 26.4	100	0.28	6.72	7400	2.07	73.0	177	0.71	49		
			20	0.05	1.2	2400	0.67	23.6	18.6	0.07	22		
» 9LG0824P4G001			100	0.14	3.36	5500	1.54	54.3	98	0.39	43		
			20	0.02	0.48	1200	0.33	11.6	4.6	0.01	13		
» 9LG0824P4H001			100	0.05	1.2	3700	1.03	36.3	44	0.17	31		
			30	0.02	0.48	1100	0.3	10.5	3.9	0.01	13		

\* 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.

The models listed below **have a pulse sensor.**

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow		Max. static pressure		SPL [dB (A)]	Operating temperature [°C]	Expected life [h]	
						[m <sup>3</sup> /min]	[CFM]	[Pa]	[inchH <sub>2</sub> O]				
» 9LG0812S4001	12	6 to 13.2	0.17	2.04	4200	1.17	41.3	56	0.22	35	-20 to +70	180000/60°C (215000/40°C)	
» 9LG0812F4001			0.1	1.2	3300	0.92	32.5	35	0.14	29			
» 9LG0812M4001			0.08	0.96	2900	0.8	28.3	27	0.11	25			
» 9LG0812L4001		8 to 13.2	0.06	0.72	2300	0.64	22.6	17	0.068	22			
» 9LG0824S4001		24	12 to 26.4	0.07	1.68	4200	1.17	41.3	56	0.22			35
» 9LG0824F4001				0.045	1.08	3300	0.92	32.5	35	0.14			29
» 9LG0824M4001	0.04			0.96	2900	0.8	28.3	27	0.11	25			
» 9LG0824L4001	14 to 26.4	0.03	0.72	2300	0.64	22.6	17	0.068	22				

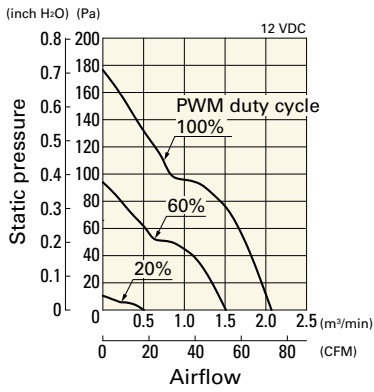
Note 1: Sensor and control options are available for selection. Refer to the table on p. 648.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 668 for details.

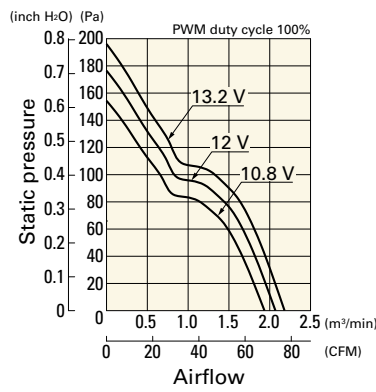
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG0812P4J001** With pulse sensor with PWM control

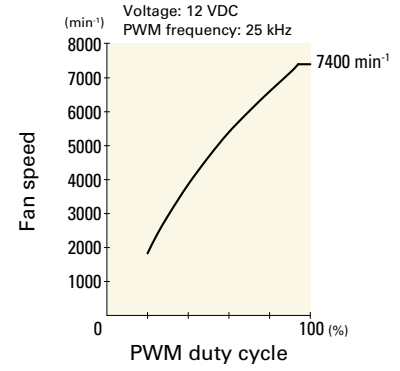
PWM duty cycle



Operating voltage range

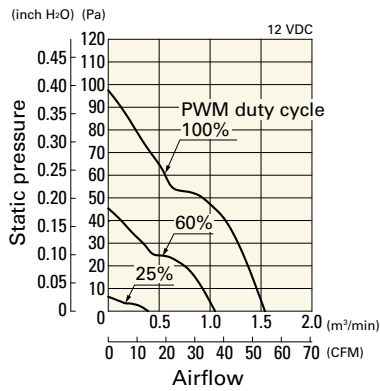


PWM duty - Speed characteristics example

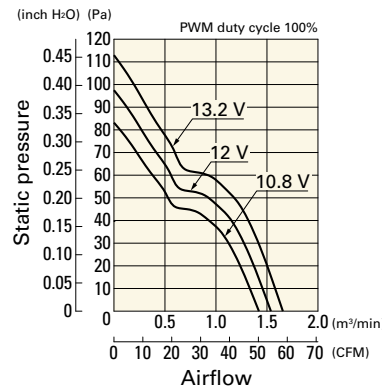


**9LG0812P4G001** With pulse sensor with PWM control

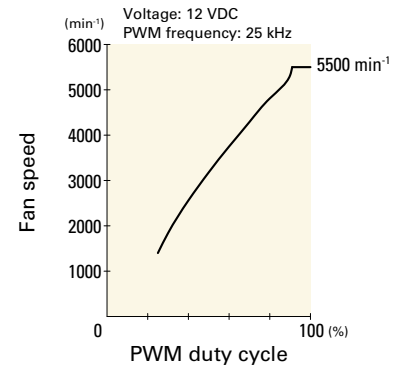
PWM duty cycle



Operating voltage range

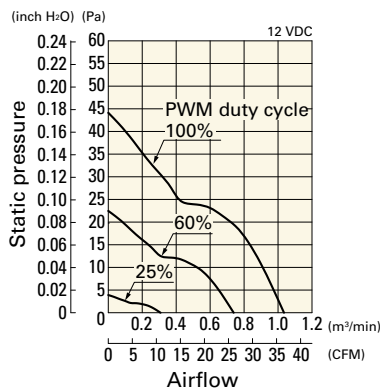


PWM duty - Speed characteristics example

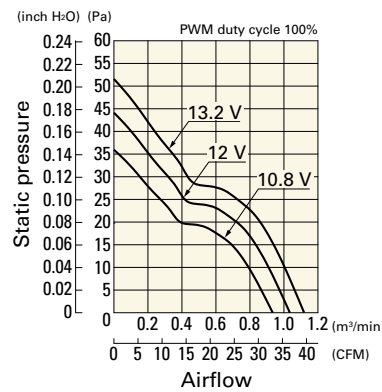


**9LG0812P4H001** With pulse sensor with PWM control

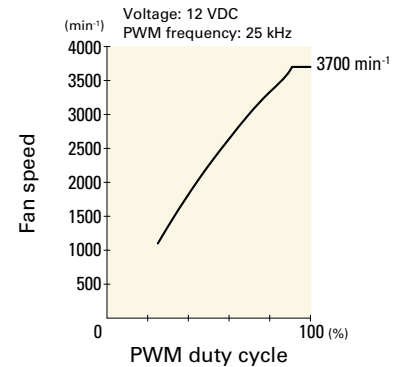
PWM duty cycle



Operating voltage range

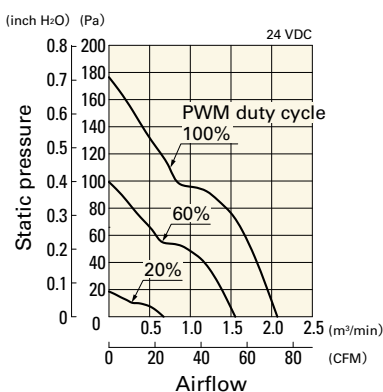


PWM duty - Speed characteristics example

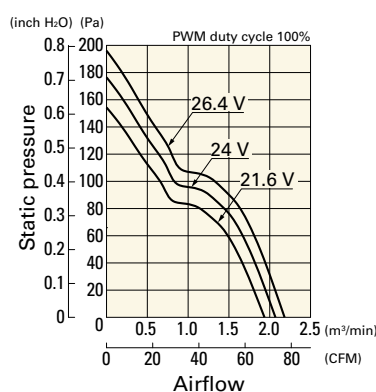


**9LG0824P4J001** With pulse sensor with PWM control

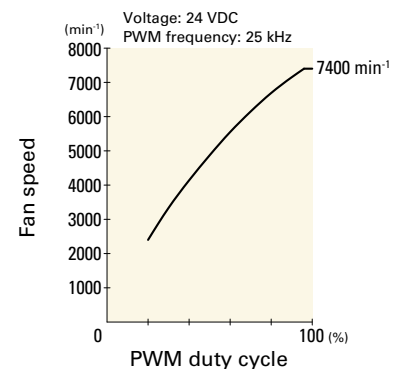
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

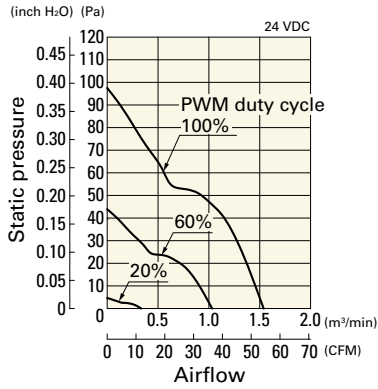


DC Long Life Fan 80 mm sq.

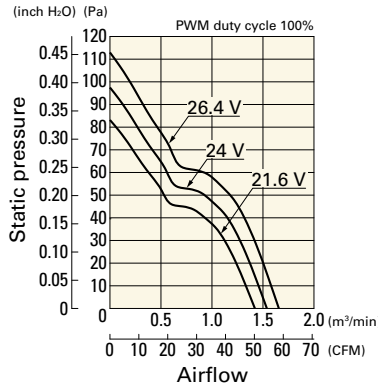
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG0824P4G001** With pulse sensor with PWM control

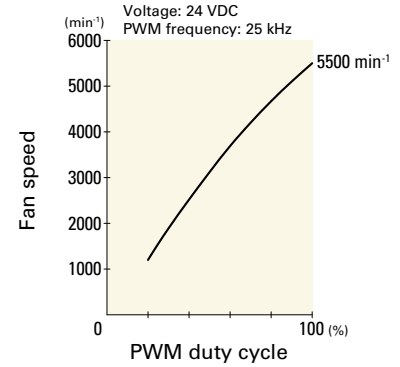
PWM duty cycle



Operating voltage range

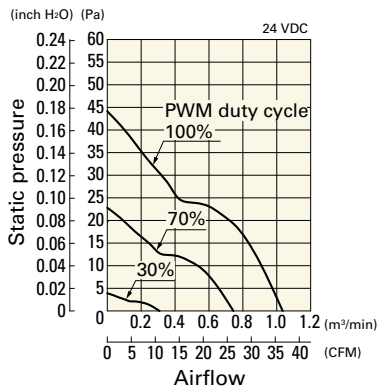


PWM duty - Speed characteristics example

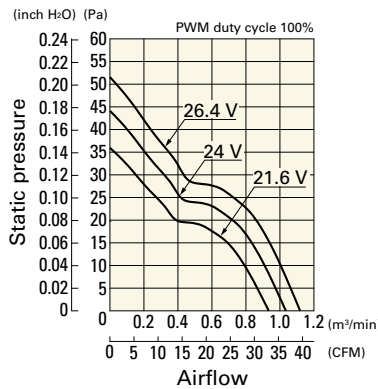


**9LG0824P4H001** With pulse sensor with PWM control

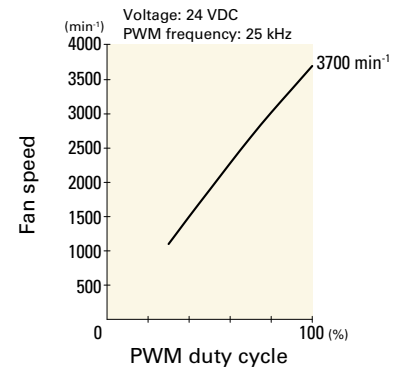
PWM duty cycle



Operating voltage range



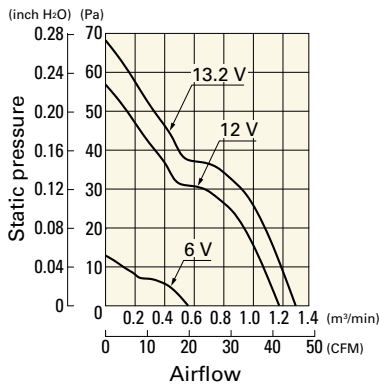
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

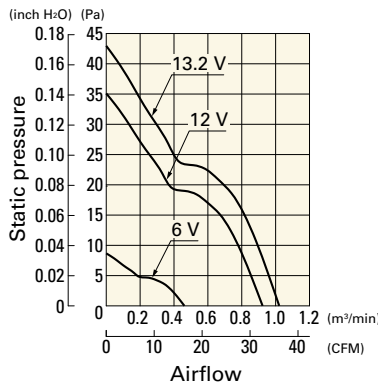
**9LG0812S4001** With pulse sensor

Operating voltage range



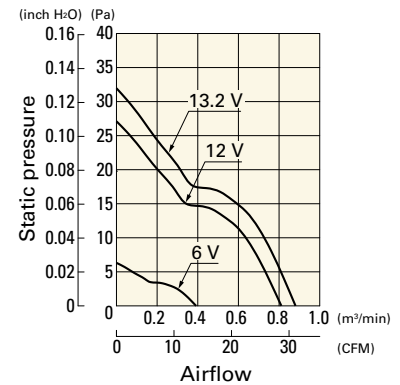
**9LG0812F4001** With pulse sensor

Operating voltage range



**9LG0812M4001** With pulse sensor

Operating voltage range



DC

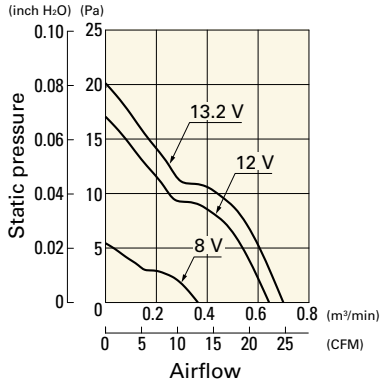
Long Life Fan 80 mm sq.



## Airflow - Static Pressure Characteristics

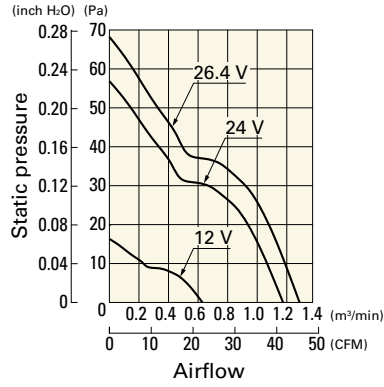
**9LG0812L4001** With pulse sensor

Operating voltage range



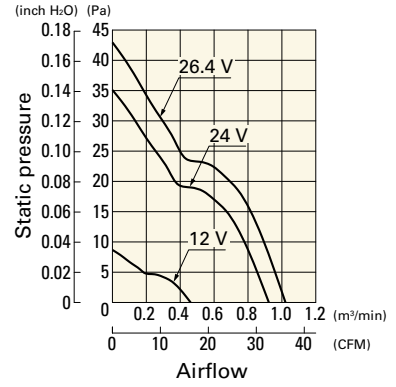
**9LG0824S4001** With pulse sensor

Operating voltage range



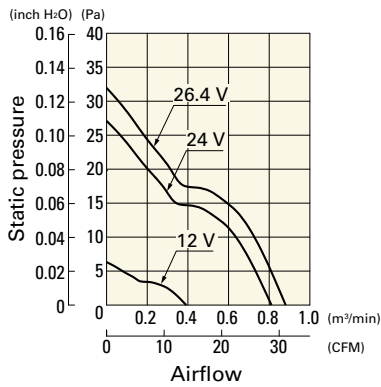
**9LG0824F4001** With pulse sensor

Operating voltage range



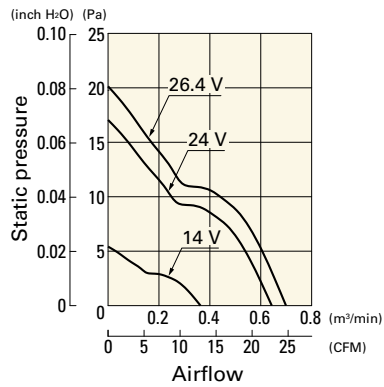
**9LG0824M4001** With pulse sensor

Operating voltage range



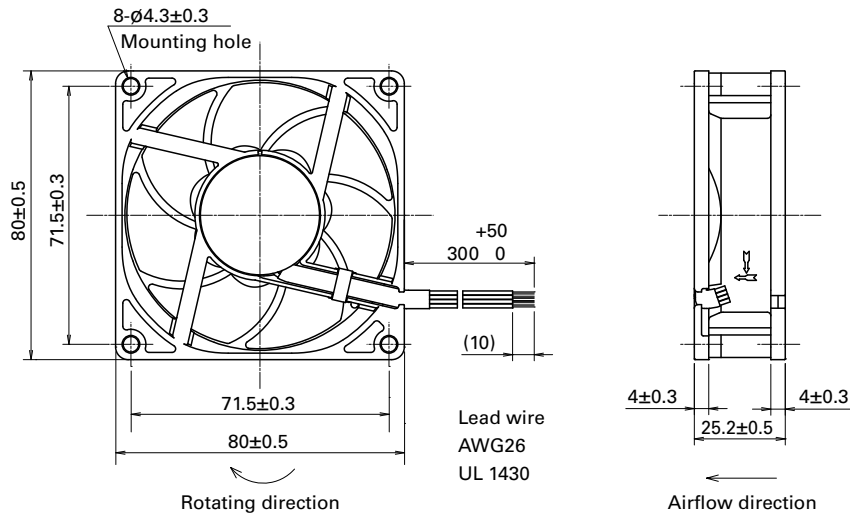
**9LG0824L4001** With pulse sensor

Operating voltage range

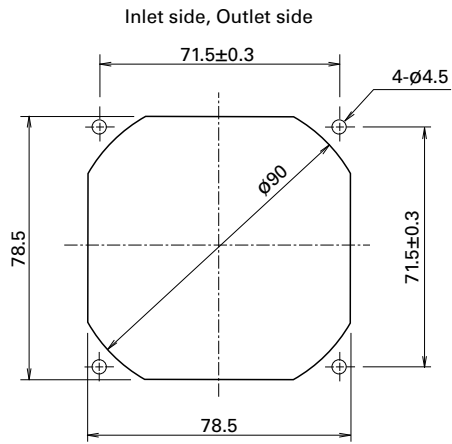


DC Long Life Fan 80 mm sq.

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



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



## Options

### Finger guards

page: p. 598

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

### Resin finger guards

page: p. 605

Model no.: 109-1002G

### Resin filter kits

page: p. 606

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



# 80x80x80 mm

San Ace 80L 9CRL type

DC Long Life Fan 80 mm sq.

## 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. 614.
- 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 ..... 490 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]		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]
						Inlet	Outlet							
9CRL0812P8G001	12	10.8 to 13.2	100	5.3	63.6	12000	11300	4.5	158.9	1150	4.62	76	-20 to +70	130000/60°C (165000/40°C)
			0	0.2	2.4	2000	1900	0.74	26.1	31.9	0.13	30		

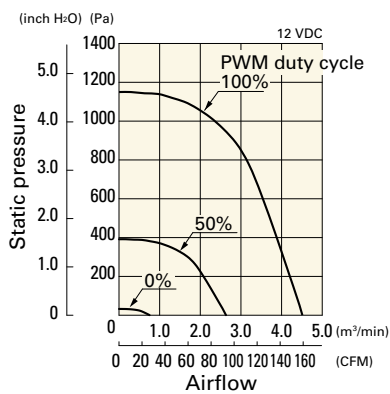
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The mark indicates Short Lead Time Service applicable models. See p. 668 for details.

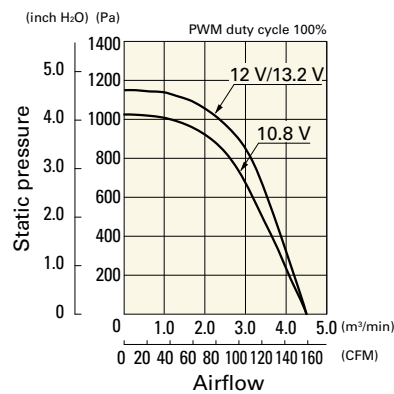
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9CRL0812P8G001** With pulse sensor with PWM control

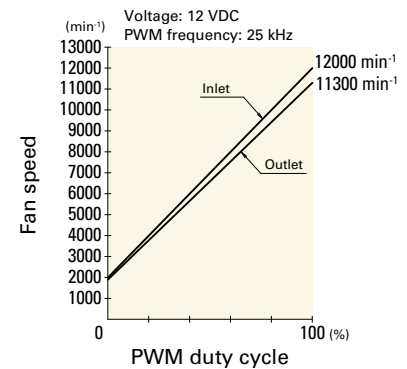
PWM duty cycle



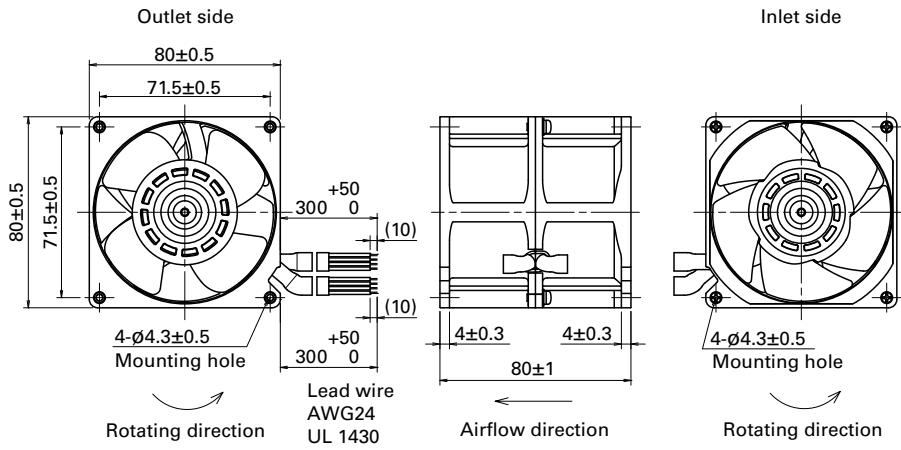
Operating voltage range



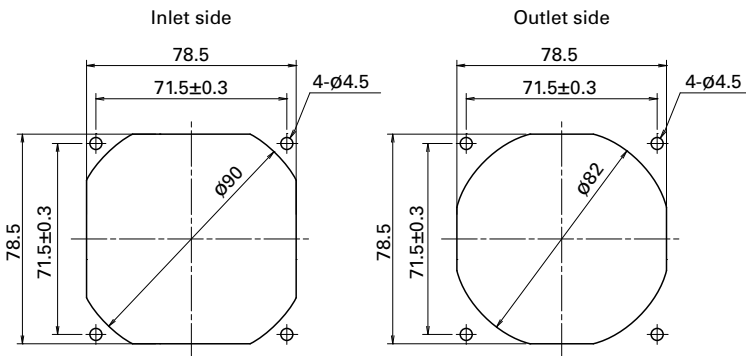
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 598

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

### Resin finger guards

page: p. 605

Model no.: 109-1002G

### Resin filter kits

page: p. 606

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



# 92x92x25 mm

San Ace 92L 9LG type

## 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown (For models without PWM control, there is no speed control wiring.)
- Mass ..... 150 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>2</sup> /min] [CFM]		Max. static pressure [Pa] [inchH <sub>2</sub> O]		SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9LG0912P4J001	12	10.8 to 13.2	100	0.42	5.04	5000	2.2	77.7	105	0.42	44	-20 to +70	180000/60°C (215000/40°C)
9LG0912P4G001			100	0.3	3.6	4400	1.93	68.2	81	0.33	40		
9LG0912P4S001			100	0.22	2.64	3850	1.69	59.7	62.1	0.25	37		
9LG0912P4H001			100	0.15	1.8	3150	1.38	48.7	41.6	0.17	32		
9LG0924P4J001	24	21.6 to 26.4	100	0.21	5.04	5000	2.2	77.7	105	0.42	44		
9LG0924P4G001			100	0.15	3.6	4400	1.93	68.2	81	0.33	40		
9LG0924P4S001			100	0.11	2.64	3850	1.69	59.7	62.1	0.25	37		
9LG0924P4H001			100	0.07	1.68	3150	1.38	48.7	41.6	0.17	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.

The models listed below **have a pulse sensor.**

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>2</sup> /min] [CFM]		Max. static pressure [Pa] [inchH <sub>2</sub> O]		SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9LG0912F4001	12	10.2 to 13.8	0.1	1.2	2800	1.22	43.1	32.8	0.13	29	-20 to +70	180000/60°C (215000/40°C)
9LG0912M4001			0.08	0.96	2400	1.05	37.1	24.1	0.097	24		
9LG0912L4001			0.07	0.84	2000	0.87	30.7	16.7	0.067	19		
9LG0924F4001	24	20.4 to 27.6	0.05	1.2	2800	1.22	43.1	32.8	0.13	29		
9LG0924M4001			0.04	0.96	2400	1.05	37.1	24.1	0.097	24		
9LG0924L4001			0.03	0.72	2000	0.87	30.7	16.7	0.067	19		
9LG0948H4001	48	40.8 to 55.2	0.04	1.92	3150	1.38	48.7	41.6	0.17	32		

Note 1: Sensor and control options are available for selection. Refer to the table on p. 648.

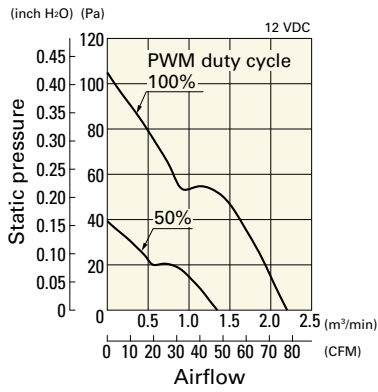
Note 2: The mark indicates Short Lead Time Service applicable models. See p. 668 for details.

DC Long Life Fan 92 mm sq.

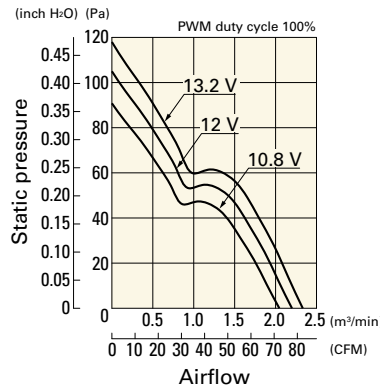
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG0912P4J001** With pulse sensor with PWM control

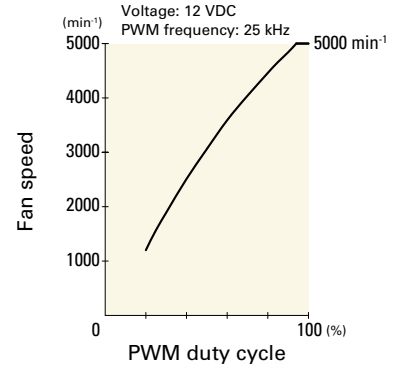
PWM duty cycle



Operating voltage range

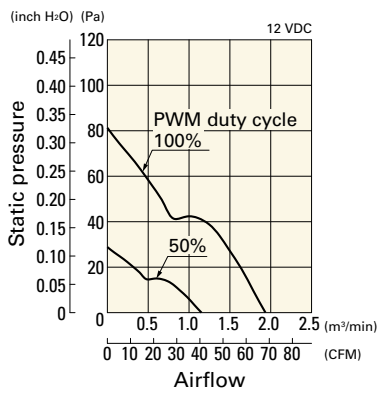


PWM duty - Speed characteristics example

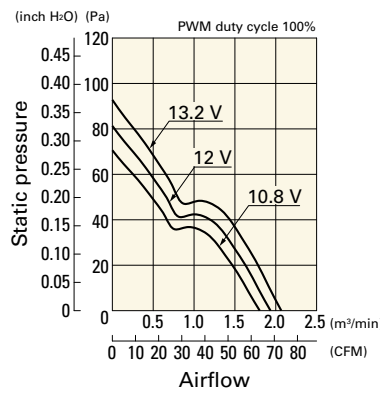


**9LG0912P4G001** With pulse sensor with PWM control

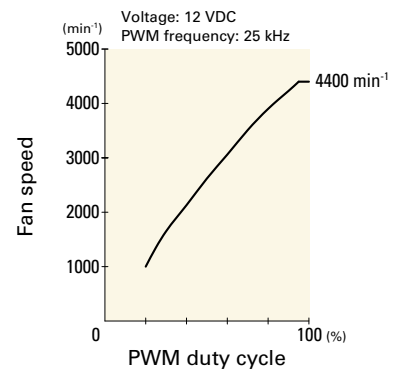
PWM duty cycle



Operating voltage range

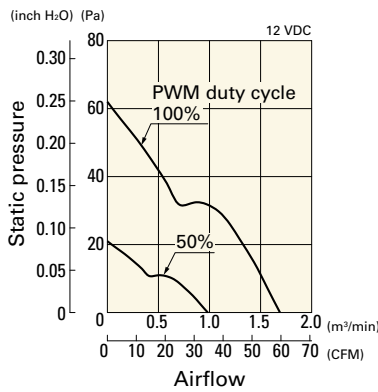


PWM duty - Speed characteristics example

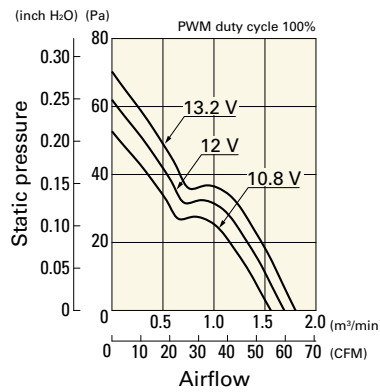


**9LG0912P4S001** With pulse sensor with PWM control

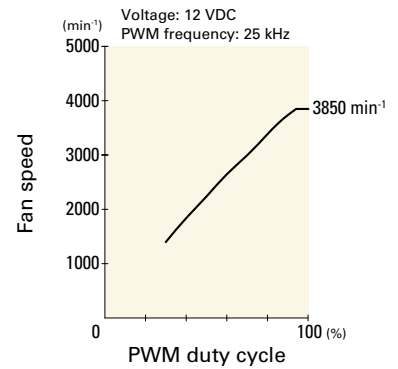
PWM duty cycle



Operating voltage range

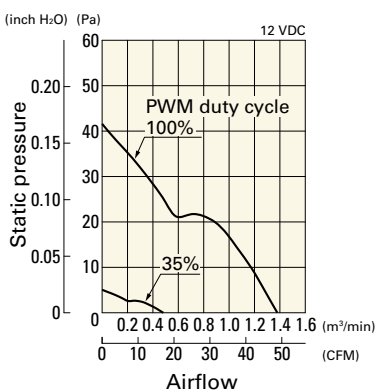


PWM duty - Speed characteristics example

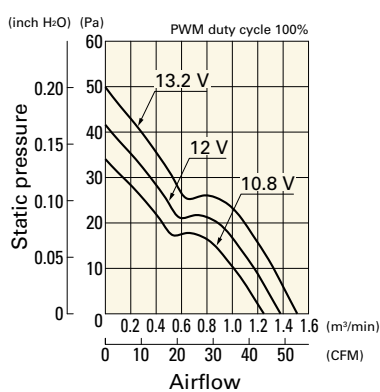


**9LG0912P4H001** With pulse sensor with PWM control

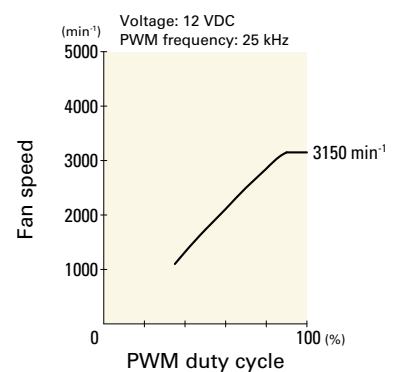
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

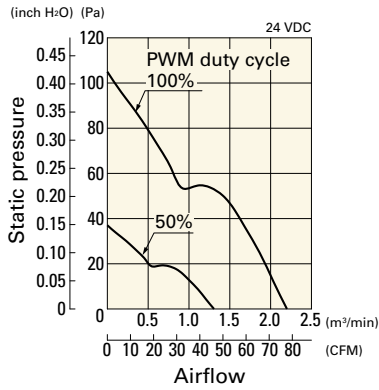


DC  
Long Life Fan 92 mm sq.

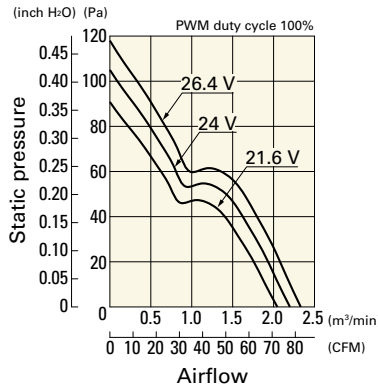
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG0924P4J001** With pulse sensor with PWM control

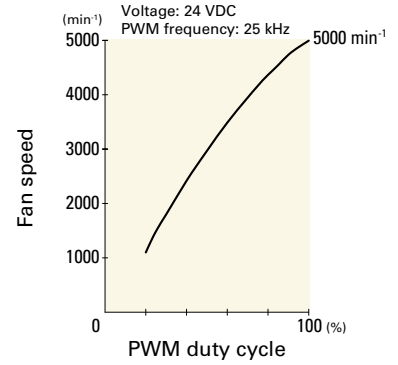
PWM duty cycle



Operating voltage range

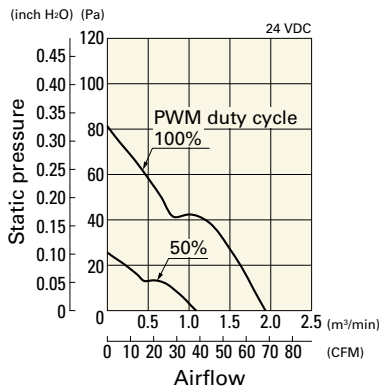


PWM duty - Speed characteristics example

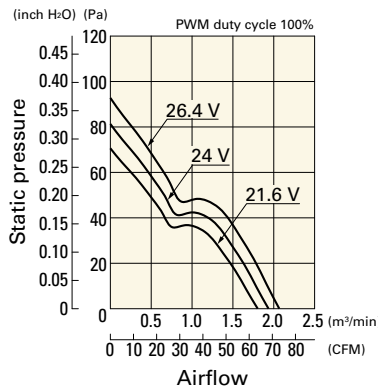


**9LG0924P4G001** With pulse sensor with PWM control

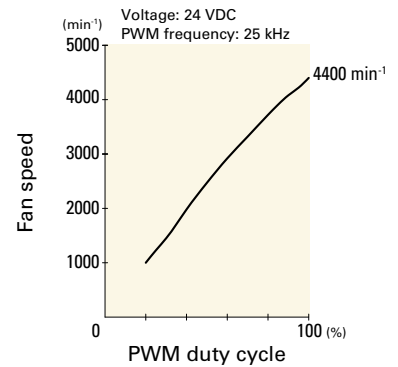
PWM duty cycle



Operating voltage range

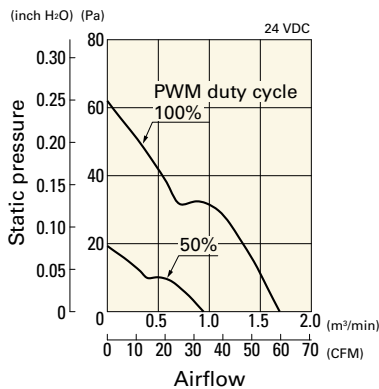


PWM duty - Speed characteristics example

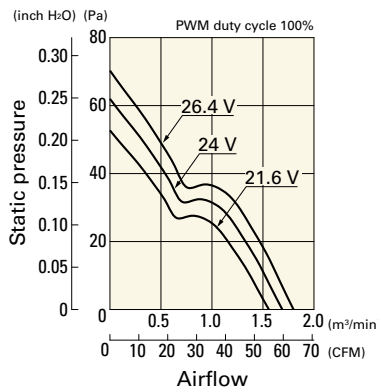


**9LG0924P4S001** With pulse sensor with PWM control

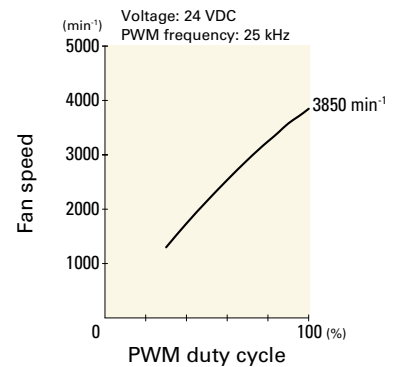
PWM duty cycle



Operating voltage range

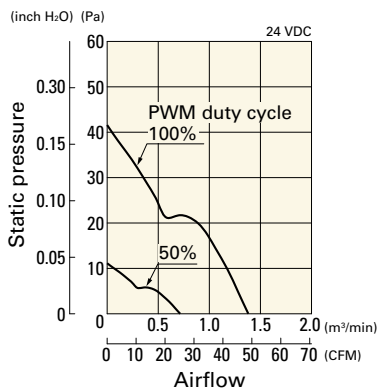


PWM duty - Speed characteristics example

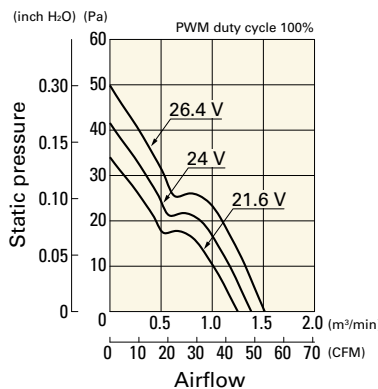


**9LG0924P4H001** With pulse sensor with PWM control

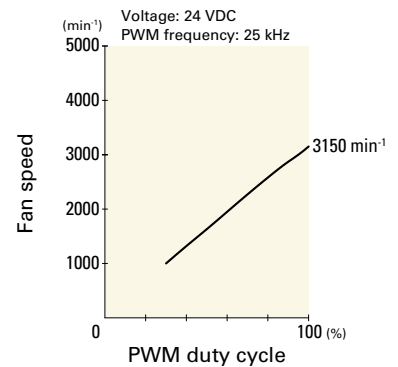
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

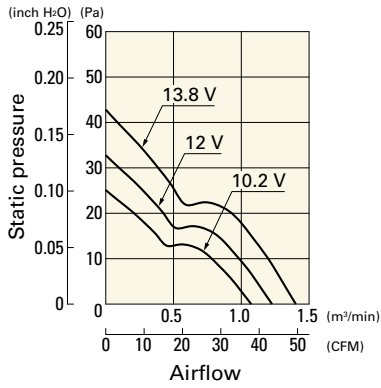


DC Long Life Fan 92 mm sq.

## Airflow - Static Pressure Characteristics

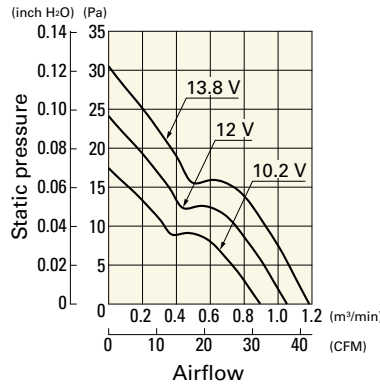
**9LG0912F4001** With pulse sensor

Operating voltage range



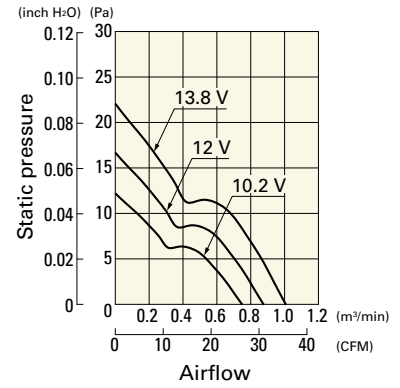
**9LG0912M4001** With pulse sensor

Operating voltage range



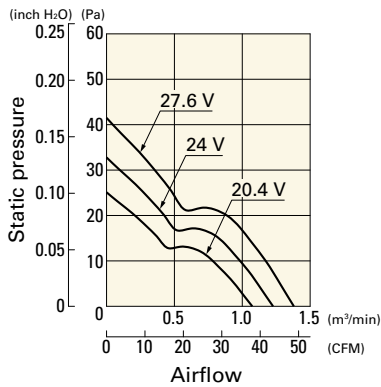
**9LG0912L4001** With pulse sensor

Operating voltage range



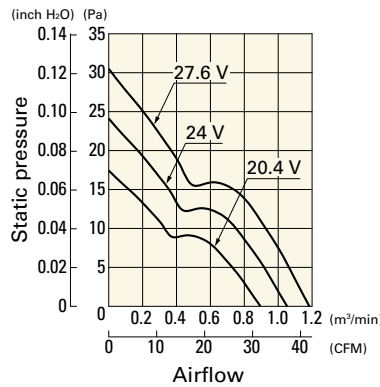
**9LG0924F4001** With pulse sensor

Operating voltage range



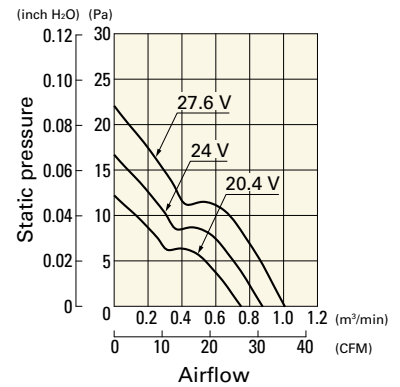
**9LG0924M4001** With pulse sensor

Operating voltage range



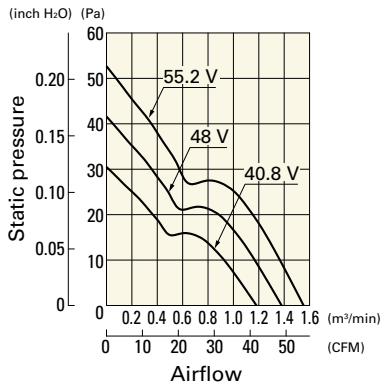
**9LG0924L4001** With pulse sensor

Operating voltage range

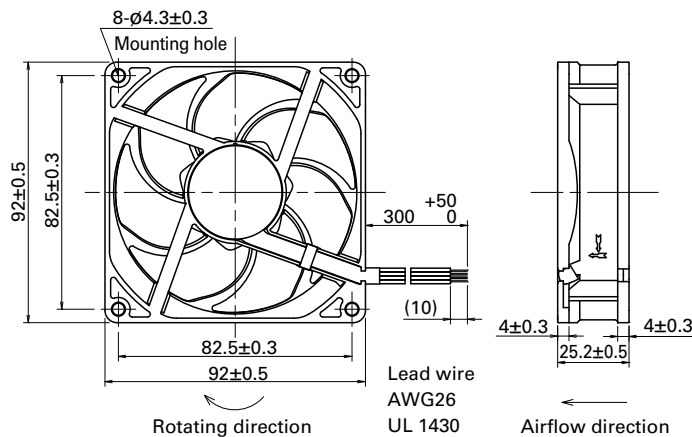


**9LG0948H4001** With pulse sensor

Operating voltage range

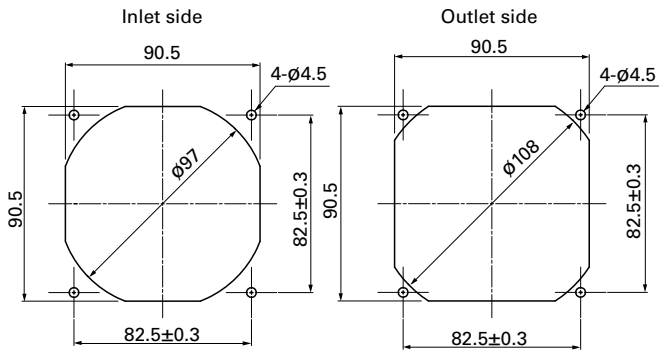


## Dimensions (unit: mm) (With pulse sensor with PWM control)





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



## Options

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1001G

Resin filter kits

page: p. 606

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



# 92x92x38 mm

San Ace 92L 9LG type

## 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown
- Mass ..... 270 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
▶▶ 9LG0912P1H001	12	10.2 to 13.8	100	2.0	24.0	9000	3.7 130.6	430 1.72	61	-20 to +70	180000/60°C (215000/40°C)
			20	0.18	2.16	2700	1.11 39.1	38.7 0.15	30		
▶▶ 9LG0912P1F001	12	10.2 to 13.8	100	1.0	12.0	7000	2.9 102.4	263 1.05	55		
			20	0.11	1.32	2000	0.83 29.3	21.5 0.08	22		
▶▶ 9LG0924P1H001	24	20.4 to 27.6	100	0.9	21.6	9000	3.7 130.6	430 1.72	61		
			20	0.08	1.92	2700	1.11 39.1	38.7 0.15	30		
▶▶ 9LG0924P1F001	24	20.4 to 27.6	100	0.5	12.0	7000	2.9 102.4	263 1.05	55		
			20	0.06	1.44	2000	0.83 29.3	21.5 0.08	22		

\* 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.

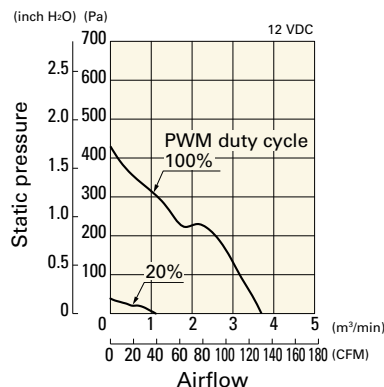
Note 1: Sensor and control options are available for selection. Refer to the table on p. 648.

Note 2: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 668 for details.

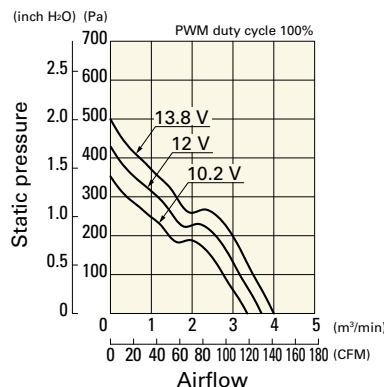
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0912P1H001 With pulse sensor with PWM control

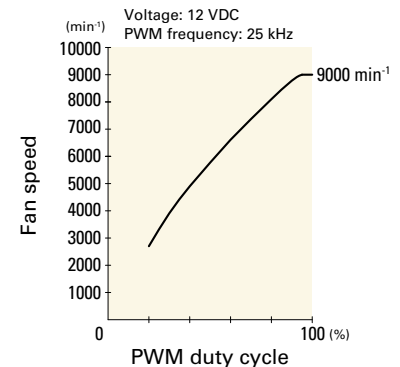
PWM duty cycle



Operating voltage range



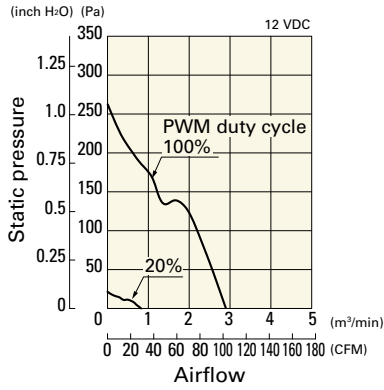
PWM duty - Speed characteristics example



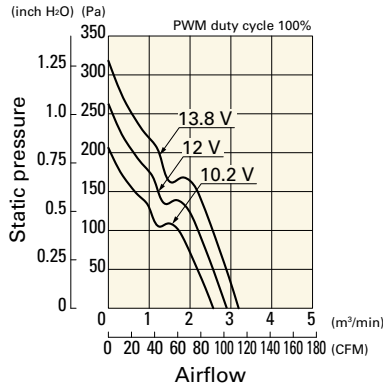
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG0912P1F001** With pulse sensor with PWM control

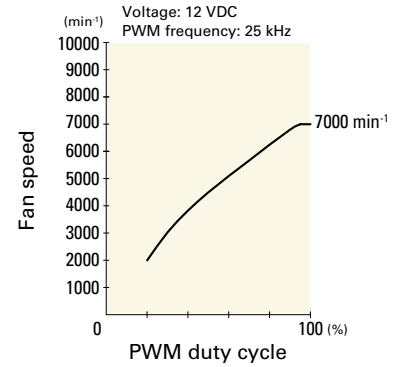
PWM duty cycle



Operating voltage range

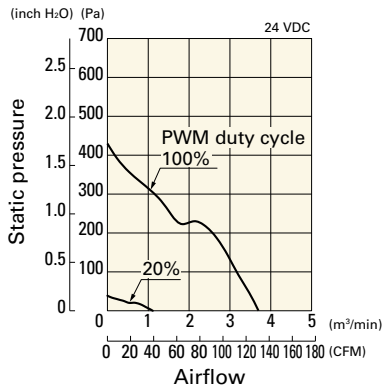


PWM duty - Speed characteristics example

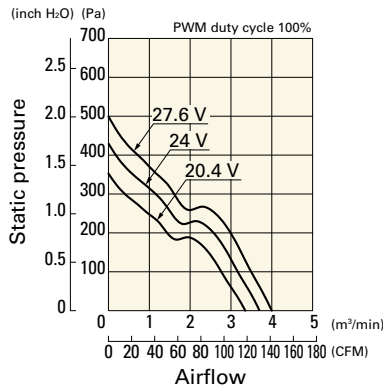


**9LG0924P1H001** With pulse sensor with PWM control

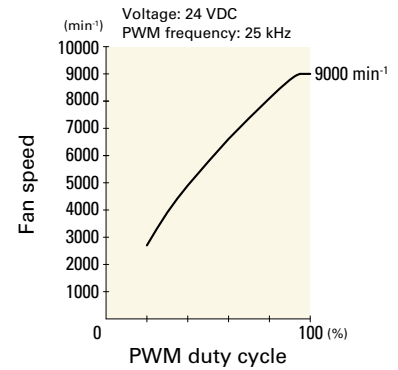
PWM duty cycle



Operating voltage range

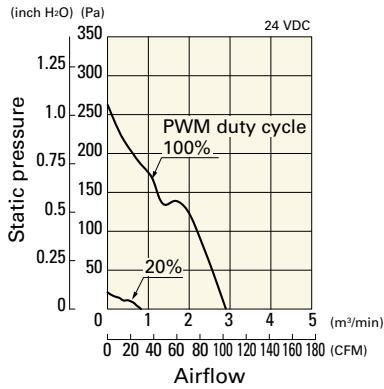


PWM duty - Speed characteristics example

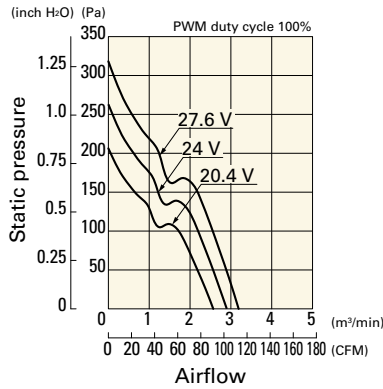


**9LG0924P1F001** With pulse sensor with PWM control

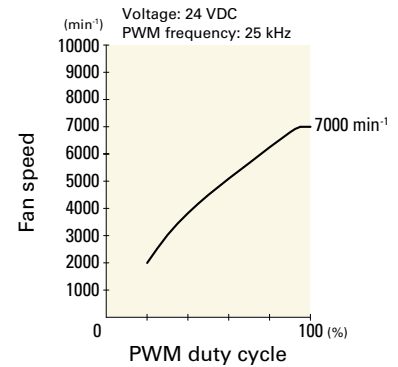
PWM duty cycle



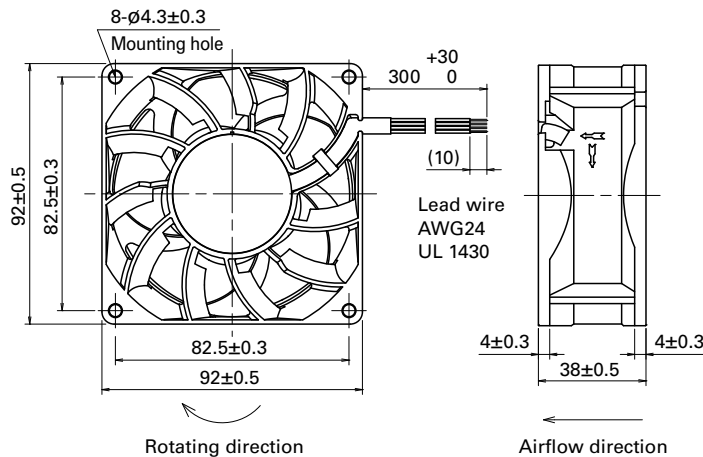
Operating voltage range



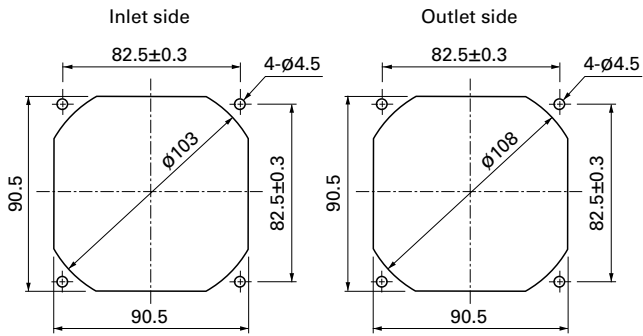
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 598

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

### Resin finger guards

page: p. 605

Model no.: 109-1001G

### Resin filter kits

page: p. 606

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



# 120x120x38 mm

San Ace 120L 9LG type

## 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown  
(For models without PWM control, there is no speed control wiring.)
- Mass ..... 420 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]	
» 9LG1212P1G001	12	8.0 to 13.8	100	3.2	38.4	6550	7.0 247.1	370 1.48	62	-20 to +70	180000/60°C (215000/40°C)	
			20	0.24	2.88	2000	2.13 75.2	34.4 0.13	36			
» 9LG1212P1S001			100	2.2	26.4	5600	6.0 211.8	270 1.08	58			
			20	0.24	2.88	2000	2.13 75.2	34.4 0.13	36			
» 9LG1212P1H001			100	1.4	16.8	4700	5.0 176.5	190 0.76	54			
			20	0.24	2.88	2000	2.13 75.2	34.4 0.13	36			
» 9LG1224P1G001		24	15 to 30	100	1.6	38.4	6550	7.0 247.1	370 1.48			62
				20	0.12	2.88	2000	2.13 75.2	34.4 0.13			36
» 9LG1224P1S001				100	1.1	26.4	5600	6.0 211.8	270 1.08			58
			20	0.12	2.88	2000	2.13 75.2	34.4 0.13	36			
» 9LG1224P1H001			100	0.7	16.8	4700	5.0 176.5	190 0.76	54			
			20	0.12	2.88	2000	2.13 75.2	34.4 0.13	36			
» 9LG1248P1G001	48	36 to 60	100	0.8	38.4	6550	7.0 247.1	370 1.48	62			
			20	0.08	3.84	2000	2.13 75.2	34.4 0.13	36			
» 9LG1248P1S001			100	0.55	26.4	5600	6.0 211.8	270 1.08	58			
		20	0.08	3.84	2000	2.13 75.2	34.4 0.13	36				
» 9LG1248P1H001		100	0.35	16.8	4700	5.0 176.5	190 0.76	54				
		20	0.08	3.84	2000	2.13 75.2	34.4 0.13	36				

\* 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.

The models listed below **have a pulse sensor.**

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
» 9LG1212F1001	12	8 to 13.8	0.39	4.68	2800	3 106	67.6 0.27	39	-20 to +70	180000/60°C (215000/40°C)
» 9LG1212M1001			0.22	2.64	2100	2.2 77.7	37.9 0.15	33		
» 9LG1224A1001	24	15 to 30	0.37	8.88	3700	3.9 137.8	117.8 0.47	48		
» 9LG1224F1001			0.19	4.56	2800	3 106	67.6 0.27	39		
» 9LG1224M1001			0.11	2.64	2100	2.2 77.7	37.9 0.15	33		
» 9LG1248F1001	48	36 to 60	0.11	5.28	2800	3 106	67.6 0.27	39		
» 9LG1248M1001			0.07	3.36	2100	2.2 77.7	37.9 0.15	33		

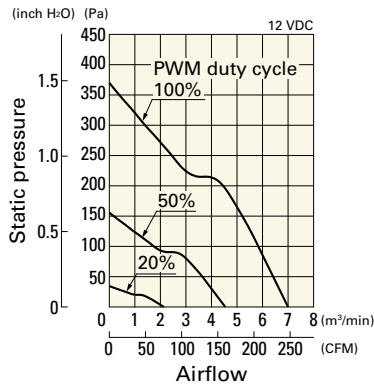
Note 1: Sensor and control options are available for selection. Refer to the table on p. 648.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 668 for details.

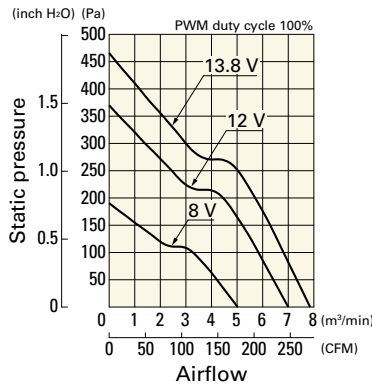
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

## 9LG1212P1G001 With pulse sensor with PWM control

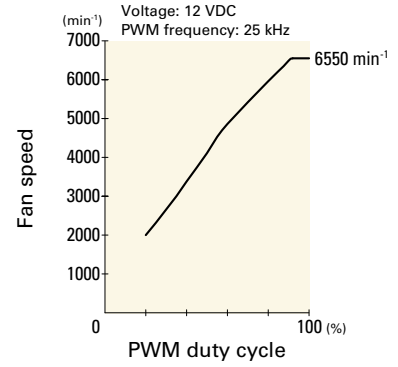
PWM duty cycle



Operating voltage range

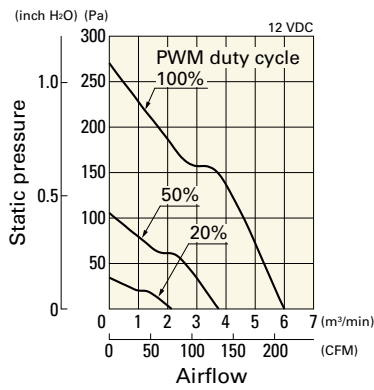


PWM duty - Speed characteristics example

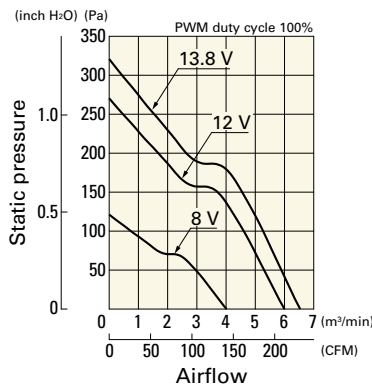


## 9LG1212P1S001 With pulse sensor with PWM control

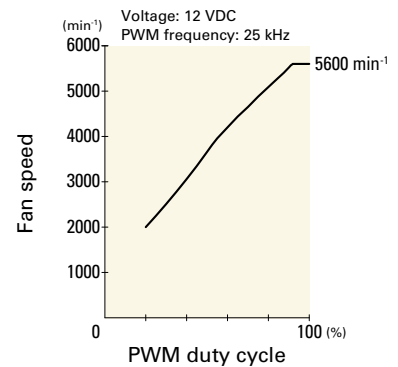
PWM duty cycle



Operating voltage range

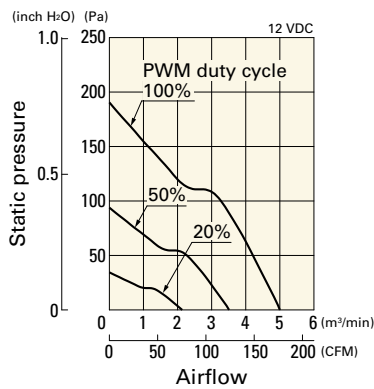


PWM duty - Speed characteristics example

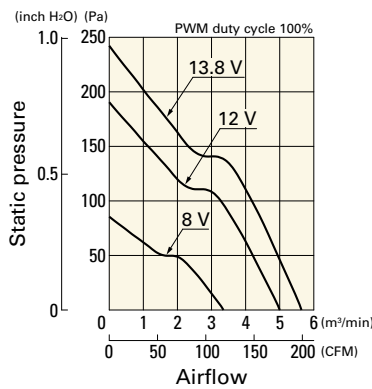


## 9LG1212P1H001 With pulse sensor with PWM control

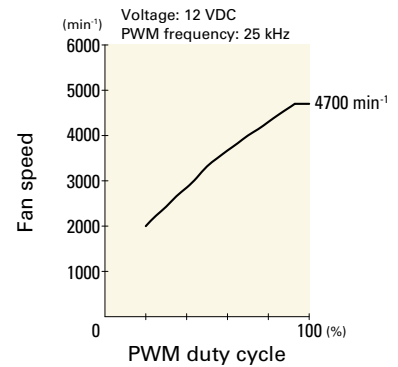
PWM duty cycle



Operating voltage range

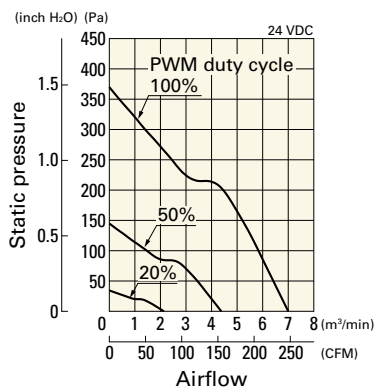


PWM duty - Speed characteristics example

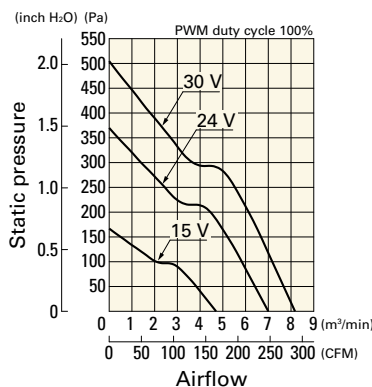


## 9LG1224P1G001 With pulse sensor with PWM control

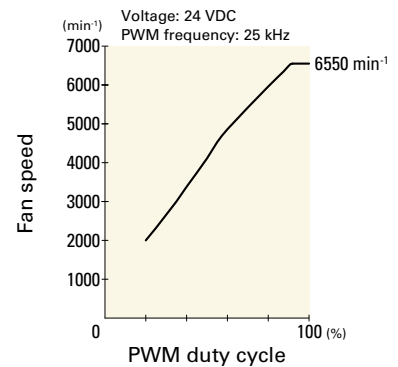
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

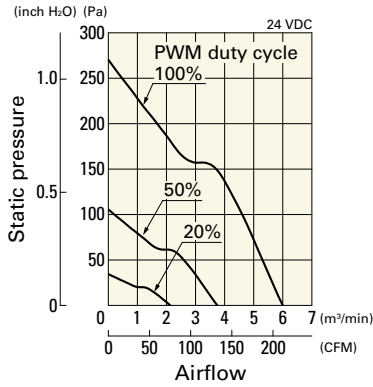


DC  
Long Life Fan 120 mm sq.

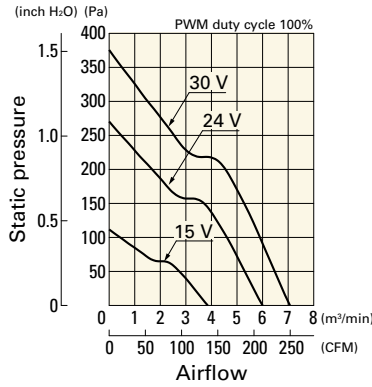
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG1224P1S001** With pulse sensor with PWM control

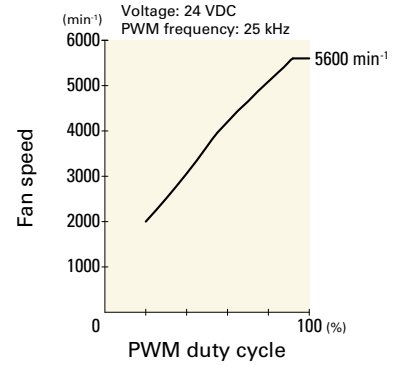
PWM duty cycle



Operating voltage range

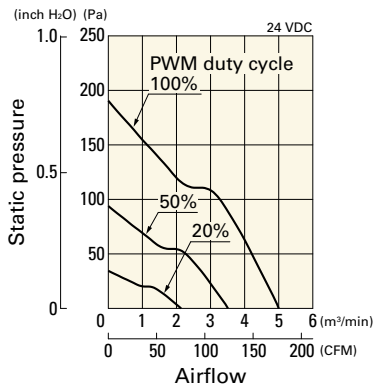


PWM duty - Speed characteristics example

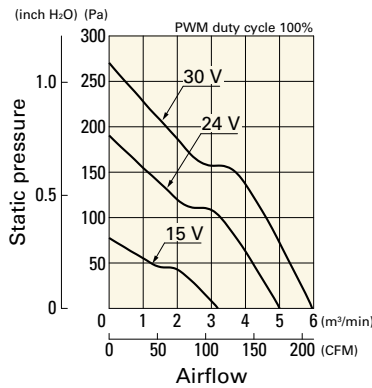


**9LG1224P1H001** With pulse sensor with PWM control

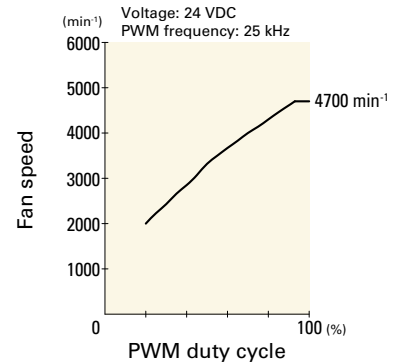
PWM duty cycle



Operating voltage range

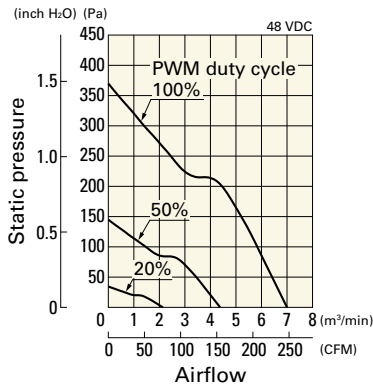


PWM duty - Speed characteristics example

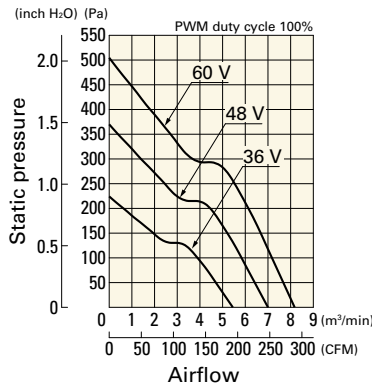


**9LG1248P1G001** With pulse sensor with PWM control

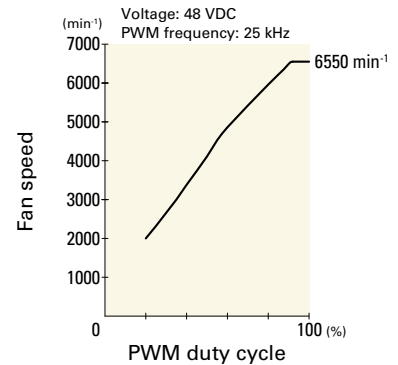
PWM duty cycle



Operating voltage range

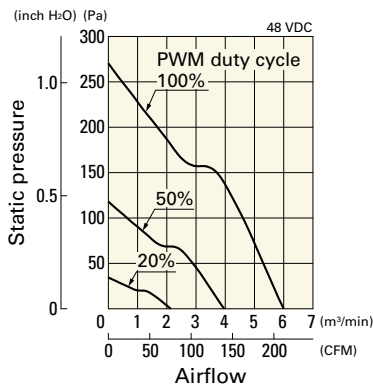


PWM duty - Speed characteristics example

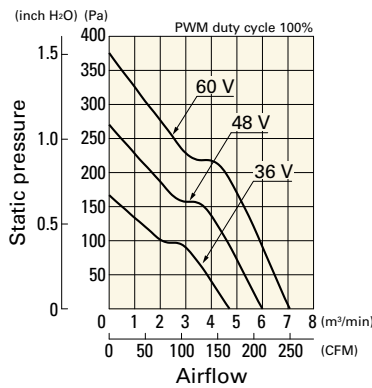


**9LG1248P1S001** With pulse sensor with PWM control

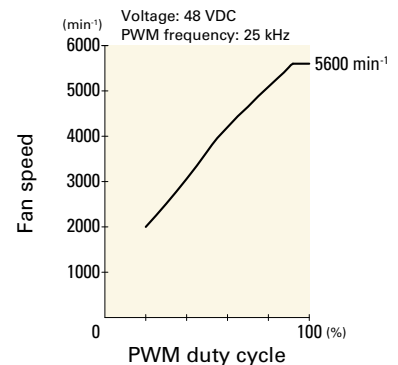
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

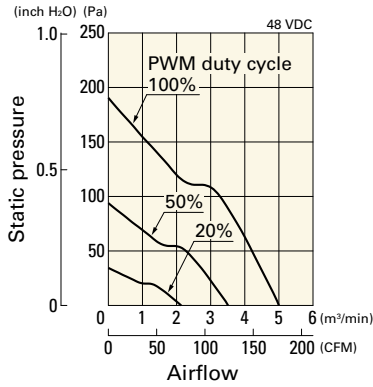


DC Long Life Fan 120 mm sq.

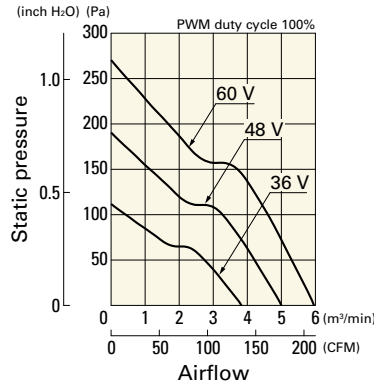
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG1248P1H001** With pulse sensor with PWM control

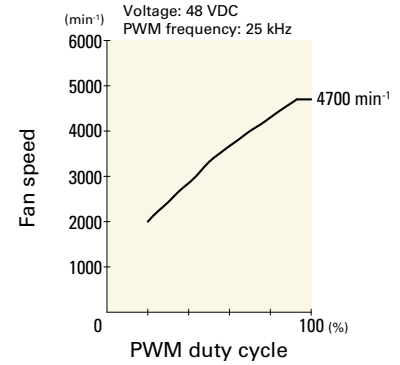
PWM duty cycle



Operating voltage range



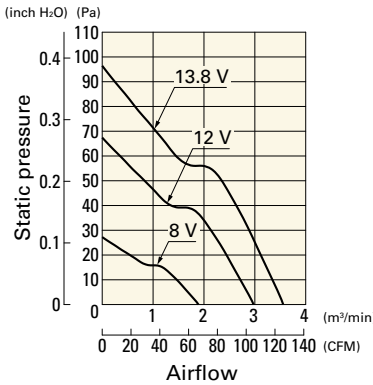
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

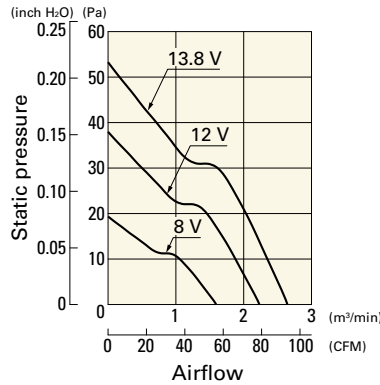
**9LG1212F1001** With pulse sensor

Operating voltage range



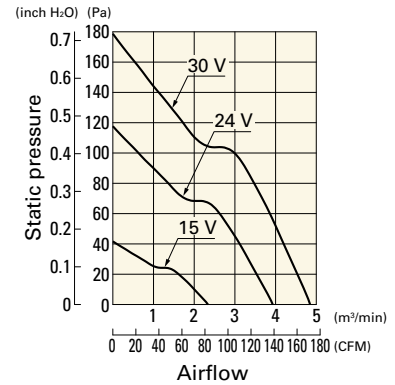
**9LG1212M1001** With pulse sensor

Operating voltage range



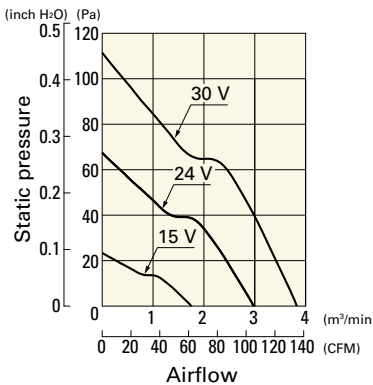
**9LG1224A1001** With pulse sensor

Operating voltage range



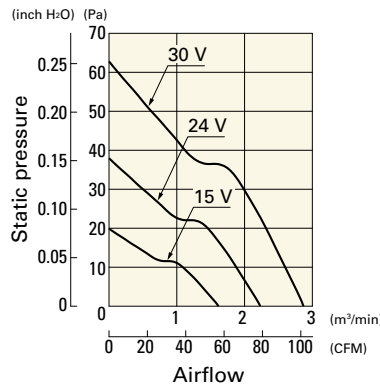
**9LG1224F1001** With pulse sensor

Operating voltage range



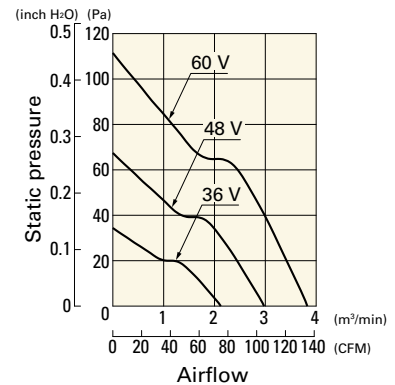
**9LG1224M1001** With pulse sensor

Operating voltage range



**9LG1248F1001** With pulse sensor

Operating voltage range



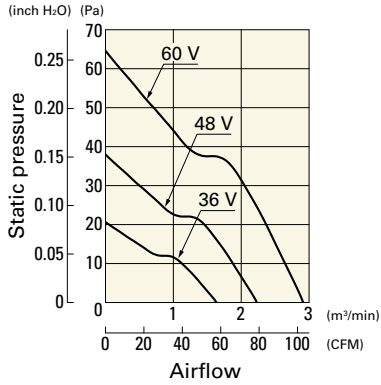
DC  
Long Life Fan 120 mm sq.



## Airflow - Static Pressure Characteristics

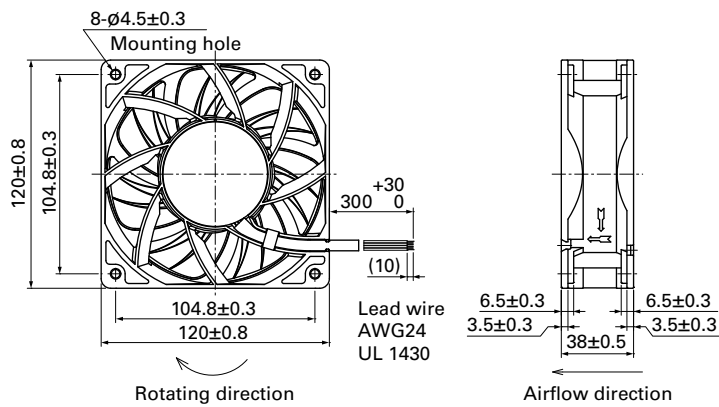
**9LG1248M1001** With pulse sensor

Operating voltage range

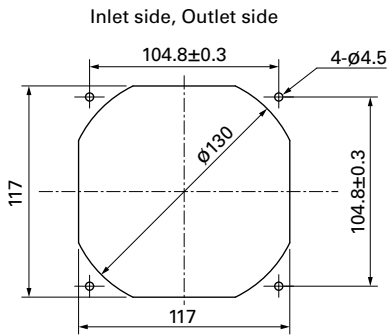


Long Life Fan 120 mm sq.

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



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



## Options

Finger guards

page: p. 599

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

Resin finger guards

page: p. 605

Model no.: 109-1000G

Resin filter kits

page: p. 606

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



# 120×120×38 mm

San Ace 120L 9GL type

## 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. 614.
- 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 ..... ⊕Red ⊖Black or Blue  Sensor Yellow
- Mass ..... 370 g

## Specifications

The models listed below **have a pulse sensor**.

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
9GL1212G101	12	10.2 to 13.8	0.98	11.8	3600	3.88 137	135 0.542	49	-20 to +70	80000/60°C (115000/40°C)
9GL1212E101			0.61	7.32	3100	3.34 118	100 0.402	46		
9GL1212H101		7 to 13.8	0.38	4.56	2600	2.8 99	70.4 0.283	39		100000/60°C (135000/40°C)
9GL1212F101			0.28	3.36	2280	2.45 87	54.2 0.218	36		
9GL1212M101			0.21	2.52	1950	2.1 74	39.6 0.159	32		
9GL1224G101			24	20.4 to 27.6	0.5	12.0	3600	3.88 137		
9GL1224E101	0.34	8.16			3100	3.34 118	100 0.402	46		
9GL1224H101	14 to 27.6	0.22		5.28	2600	2.8 99	70.4 0.283	39		100000/60°C (135000/40°C)
9GL1224F101		0.16		3.84	2280	2.45 87	54.2 0.218	36		
9GL1224M101		0.11		2.64	1950	2.1 74	39.6 0.159	32		
9GL1248G101		48		40.8 to 55.2	0.25	12.0	3600	3.88 137		
9GL1248E101	0.17		8.16		3100	3.34 118	100 0.402	46		
9GL1248H101	0.11		5.28		2600	2.8 99	70.4 0.283	39	100000/60°C (135000/40°C)	
9GL1248F101	0.09		4.32		2280	2.45 87	54.2 0.218	36		
9GL1248M101	0.07		3.36		1950	2.1 74	39.6 0.159	32		

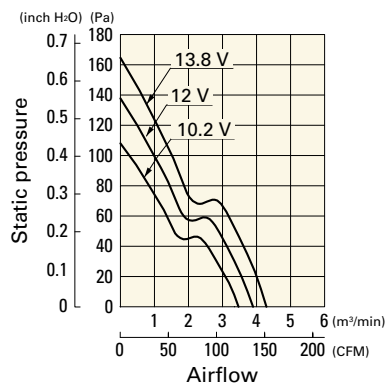
Note 1: Sensor and control options are available for selection. Refer to the table on p. 645.

Note 2: The mark indicates Short Lead Time Service applicable models. See p. 668 for details.

## Airflow - Static Pressure Characteristics

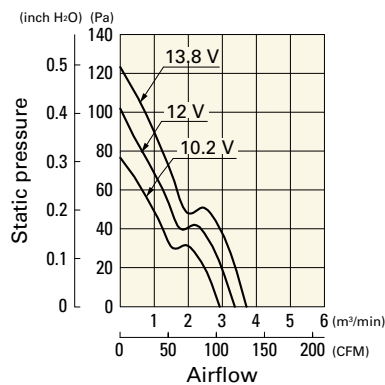
9GL1212G101 With pulse sensor

Operating voltage range



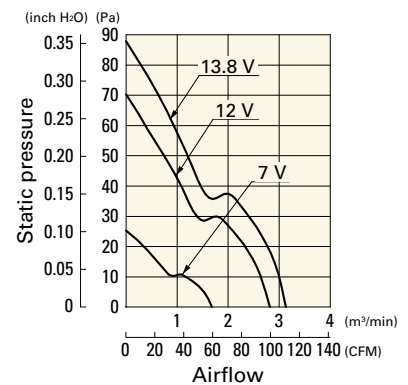
9GL1212E101 With pulse sensor

Operating voltage range



9GL1212H101 With pulse sensor

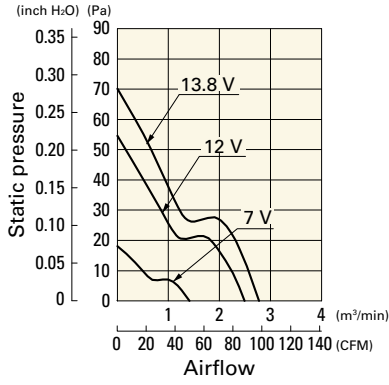
Operating voltage range



## Airflow - Static Pressure Characteristics

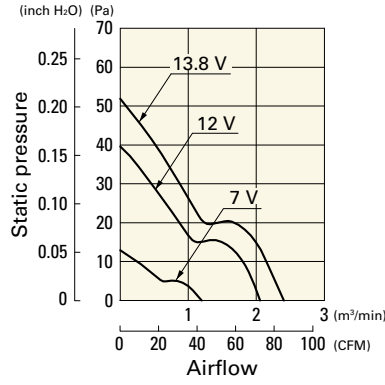
**9GL1212F101** With pulse sensor

Operating voltage range



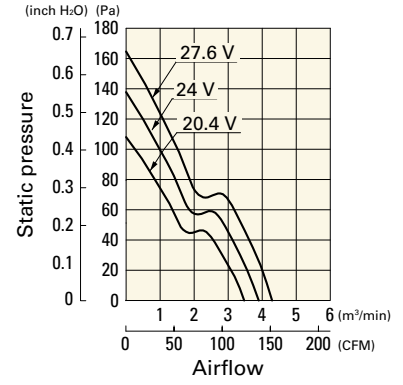
**9GL1212M101** With pulse sensor

Operating voltage range



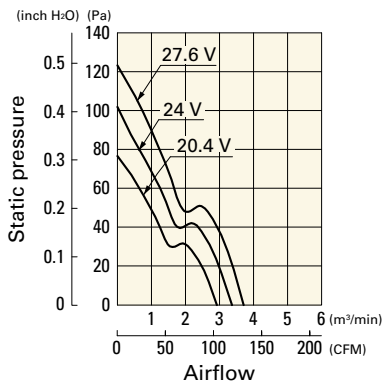
**9GL1224G101** With pulse sensor

Operating voltage range



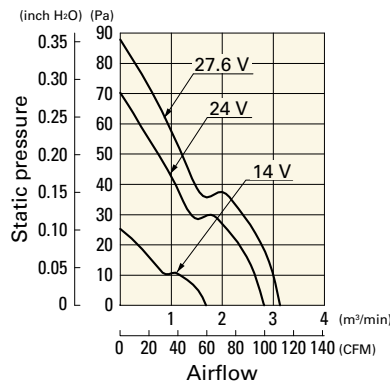
**9GL1224E101** With pulse sensor

Operating voltage range



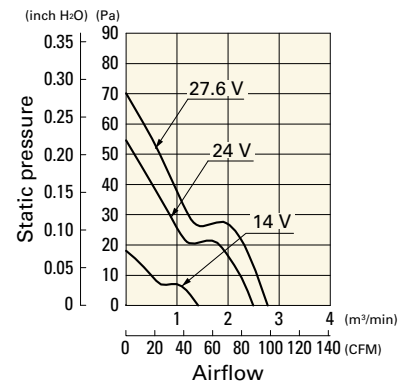
**9GL1224H101** With pulse sensor

Operating voltage range



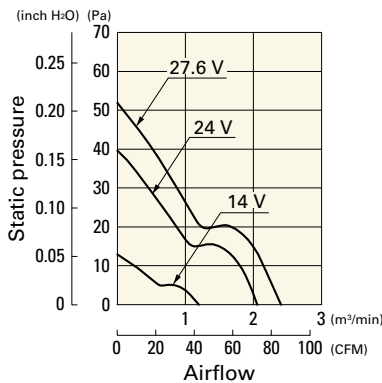
**9GL1224F101** With pulse sensor

Operating voltage range



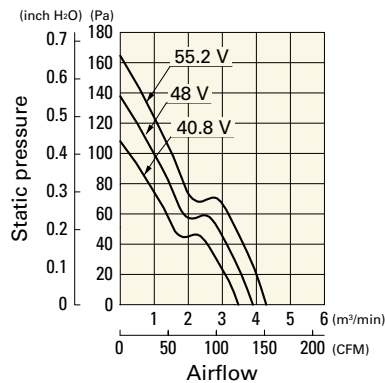
**9GL1224M101** With pulse sensor

Operating voltage range



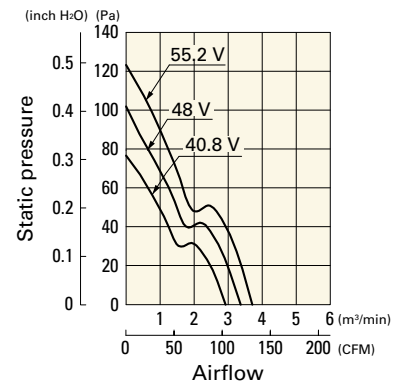
**9GL1248G101** With pulse sensor

Operating voltage range



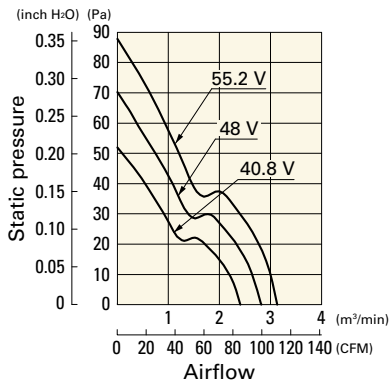
**9GL1248E101** With pulse sensor

Operating voltage range



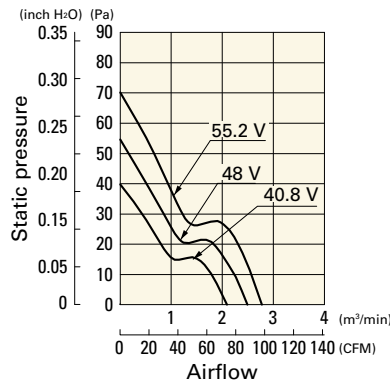
**9GL1248H101** With pulse sensor

Operating voltage range



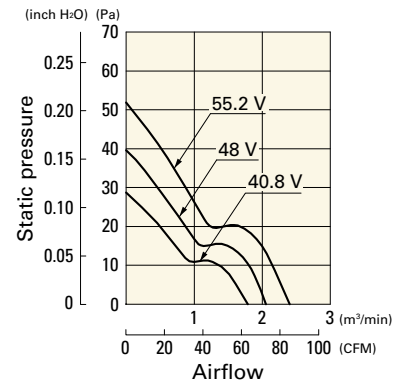
**9GL1248F101** With pulse sensor

Operating voltage range



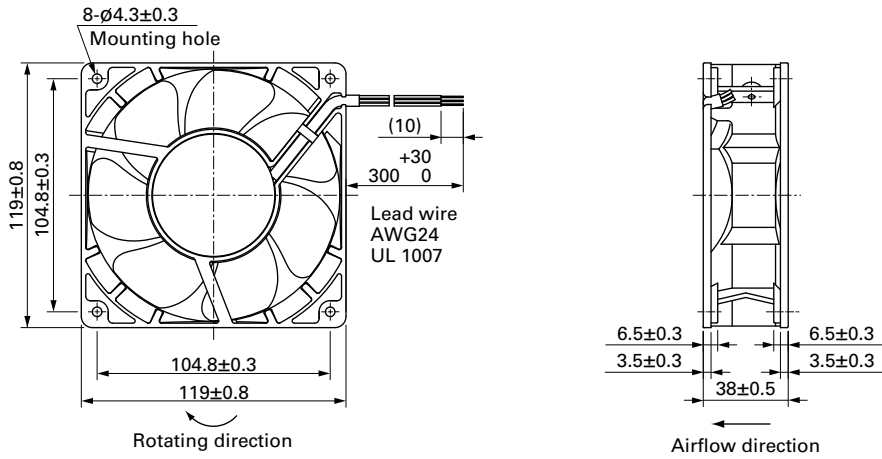
**9GL1248M101** With pulse sensor

Operating voltage range

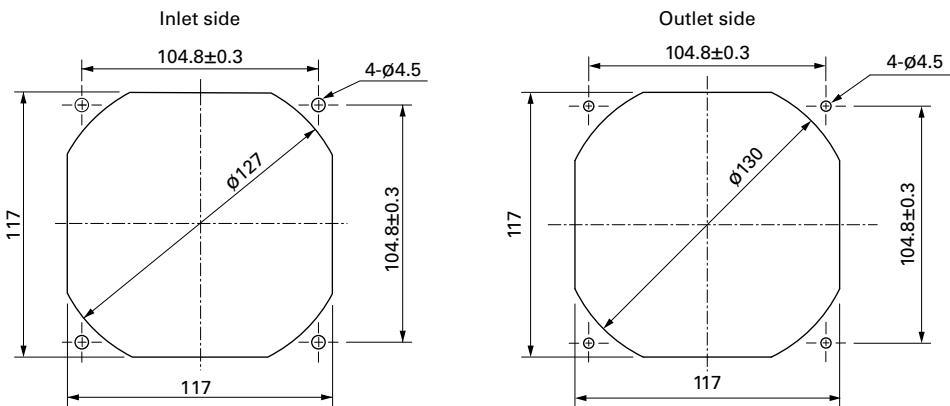


DC Long Life Fan 120 mm sq.

## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 599

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

### Resin finger guards

page: p. 605

Model no.: 109-1000G

### Resin filter kits

page: p. 606

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



# 140x140x38 mm

San Ace 140L 9LG type

## General Specifications

- Material ..... Frame: Aluminum (Black coating), 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown  
(For models without PWM control, there is no speed control wiring.)
- Mass ..... 640 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]	
» 9LG1412P1A001	12	10.2 to 13.8	100	3.72	44.64	6900	8.0 282	516 2.07	68	-20 to +70	180000/60°C (215000/40°C)	
			20	0.27	3.24	2300	2.66 93	80 0.32	39			
» 9LG1412P1H001			100	1.7	20.4	5200	6.0 212	300 1.2	62			
			20	0.27	3.24	2300	2.66 93	80 0.32	39			
» 9LG1412P1M001			100	0.6	7.2	3300	3.7 130	170 0.68	46			
			20	0.16	1.92	1300	1.45 51	26 0.1	29			
» 9LG1424P1A001		24	20.4 to 27.6	100	1.86	44.64	6900	8.0 282	516 2.07			68
				20	0.17	4.08	2300	2.66 93	80 0.32			39
» 9LG1424P1H001				100	0.85	20.4	5200	6.0 212	300 1.2			62
			20	0.16	3.84	2300	2.66 93	80 0.32	39			
» 9LG1424P1M001			100	0.3	7.2	3300	3.7 130	170 0.68	46			
			20	0.11	2.64	1300	1.45 51	26 0.1	29			
» 9LG1448P1A001	48	40.8 to 55.2	100	0.92	44.16	6900	8.0 282	516 2.07	68			
			20	0.11	5.28	2300	2.66 93	80 0.32	39			
» 9LG1448P1H001			100	0.42	20.16	5200	6.0 212	300 1.2	62			
		20	0.11	5.28	2300	2.66 93	80 0.32	39				
» 9LG1448P1M001		100	0.15	7.2	3300	3.7 130	170 0.68	46				
		20	0.09	4.32	1300	1.45 51	26 0.1	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.

The models listed below **have a pulse sensor.**

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
» 9LG1412L1001	12	10.2 to 13.8	0.27	3.3	2300	2.6 91.9	80 0.32	39	-20 to +70	180000/60°C (215000/40°C)
» 9LG1424L1001	24	20.4 to 27.6	0.17	4.1	2300	2.6 91.9	80 0.32	39		
» 9LG1448L1001	48	40.8 to 55.2	0.11	5.3	2300	2.6 91.9	80 0.32	39		

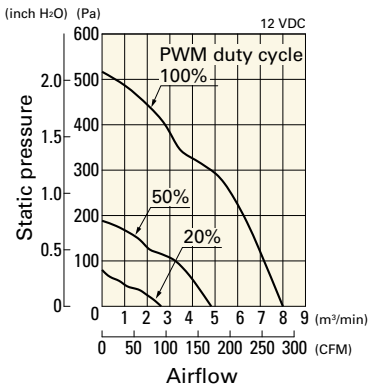
Note 1: Sensor and control options are available for selection. Refer to the table on p. 649.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 668 for details.

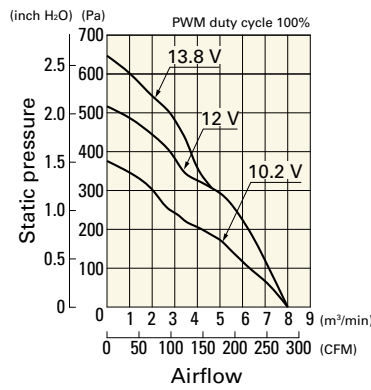
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG1412P1A001** With pulse sensor with PWM control

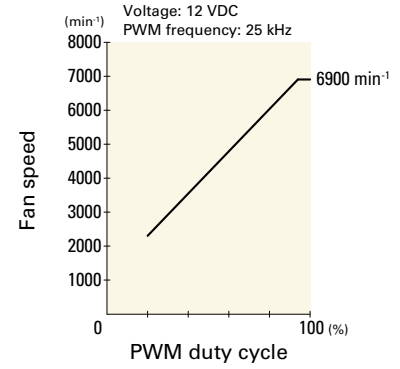
PWM duty cycle



Operating voltage range

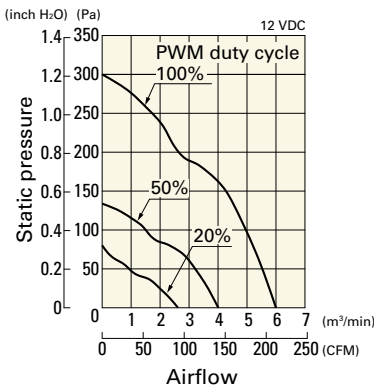


PWM duty - Speed characteristics example

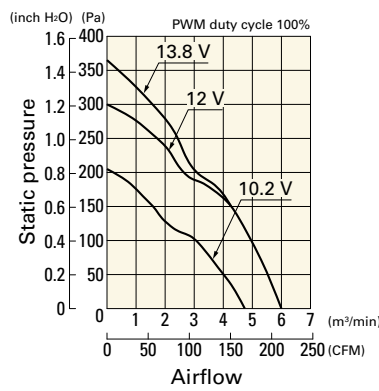


**9LG1412P1H001** With pulse sensor with PWM control

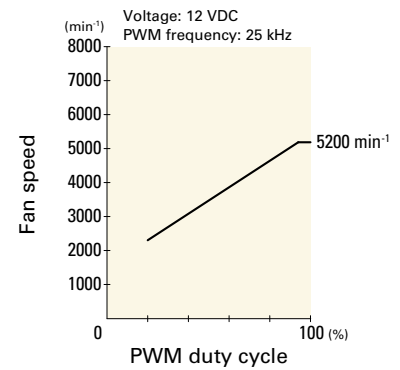
PWM duty cycle



Operating voltage range

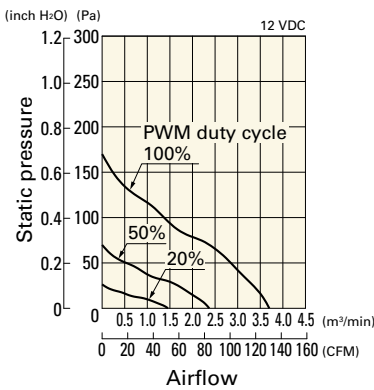


PWM duty - Speed characteristics example

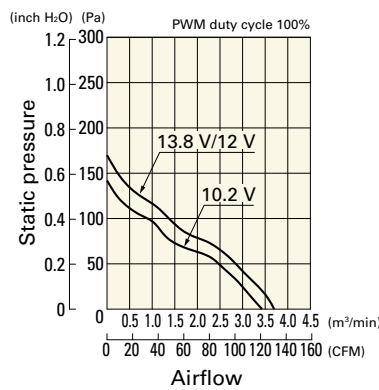


**9LG1412P1M001** With pulse sensor with PWM control

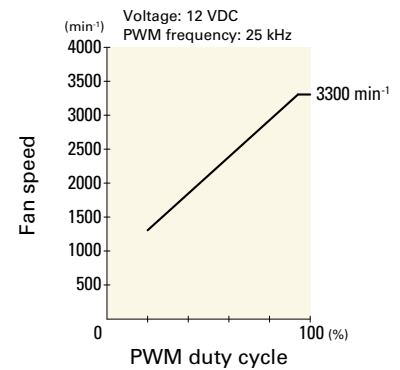
PWM duty cycle



Operating voltage range

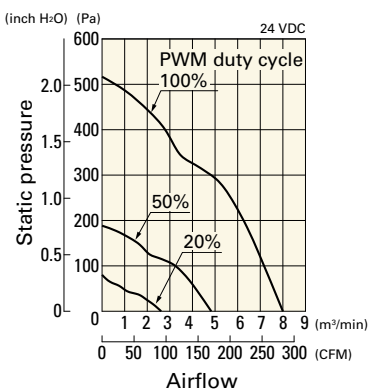


PWM duty - Speed characteristics example

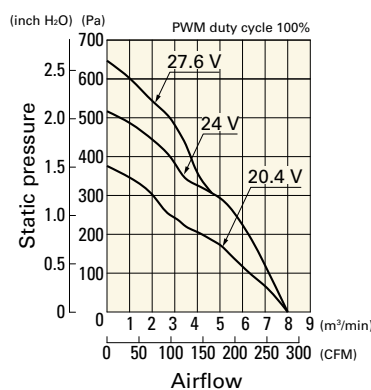


**9LG1424P1A001** With pulse sensor with PWM control

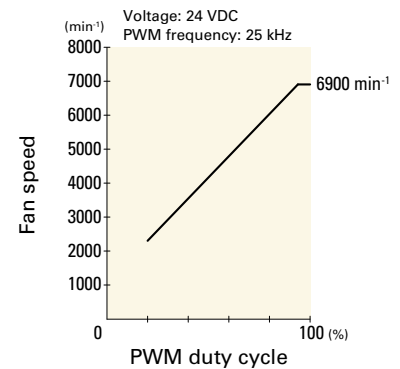
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

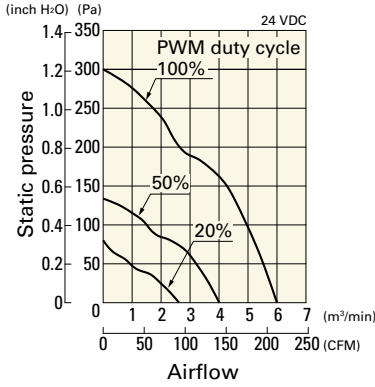


DC  
Long Life Fan 140 mm sq.

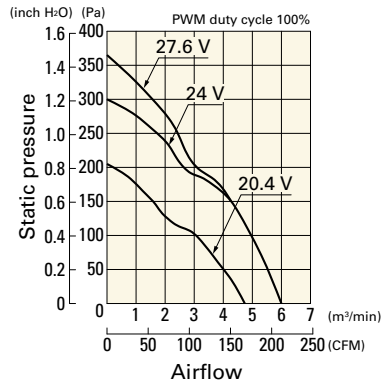
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG1424P1H001** With pulse sensor with PWM control

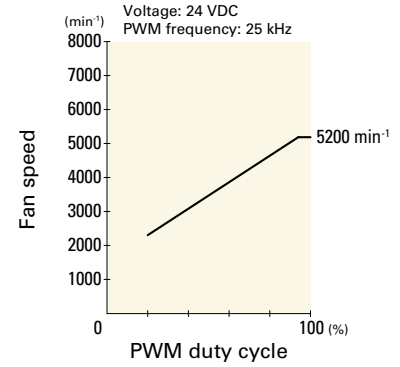
PWM duty cycle



Operating voltage range

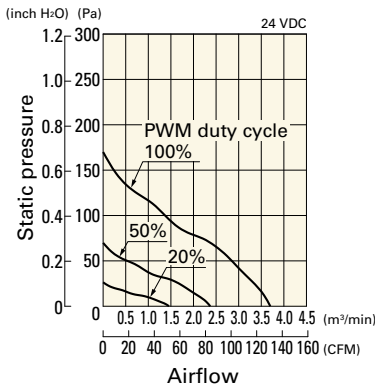


PWM duty - Speed characteristics example

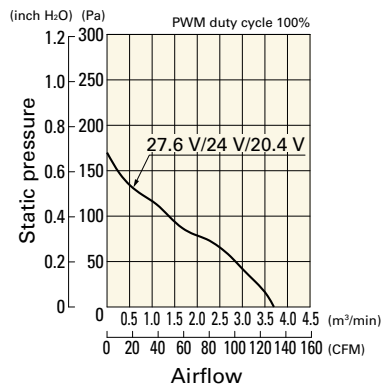


**9LG1424P1M001** With pulse sensor with PWM control

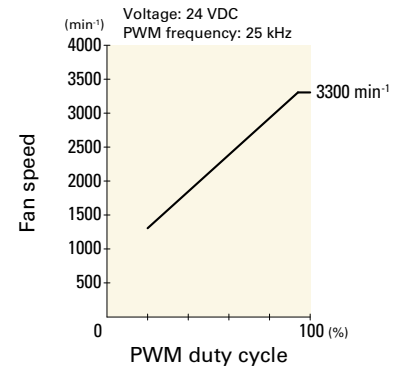
PWM duty cycle



Operating voltage range

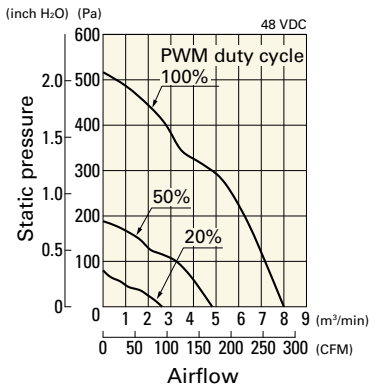


PWM duty - Speed characteristics example

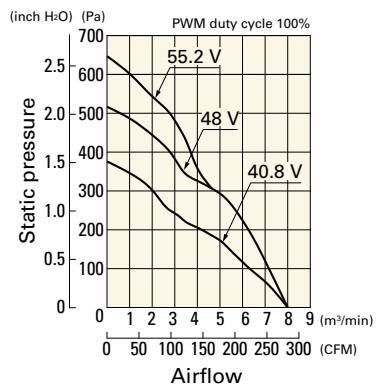


**9LG1448P1A001** With pulse sensor with PWM control

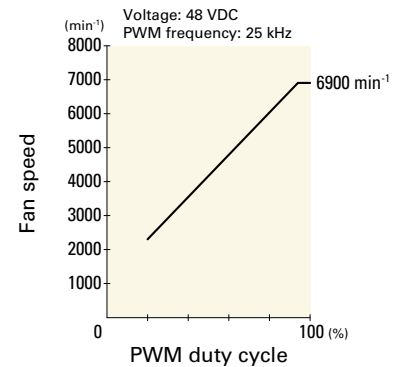
PWM duty cycle



Operating voltage range

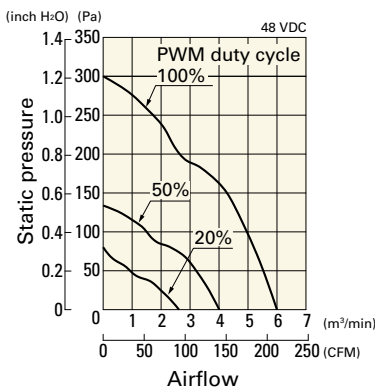


PWM duty - Speed characteristics example

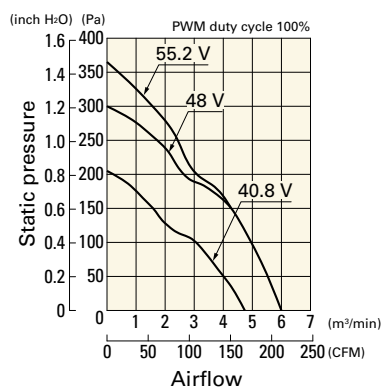


**9LG1448P1H001** With pulse sensor with PWM control

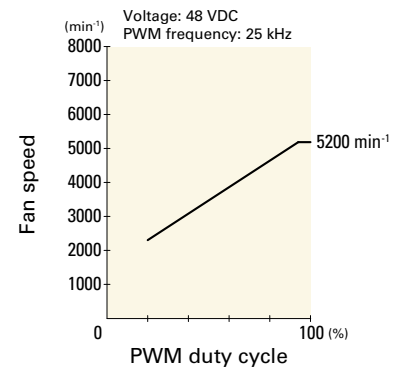
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

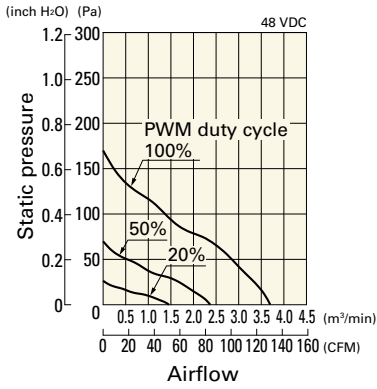


DC Long Life Fan 140 mm sq.

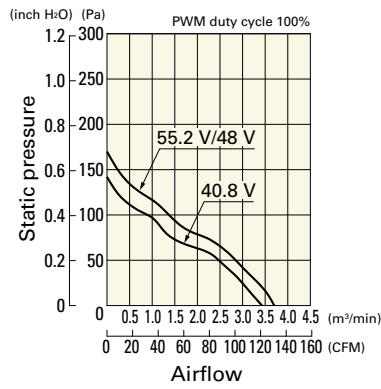
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG1448P1M001** With pulse sensor with PWM control

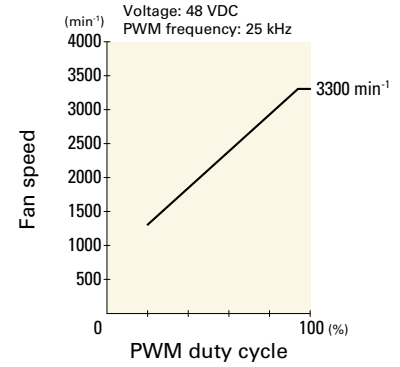
PWM duty cycle



Operating voltage range



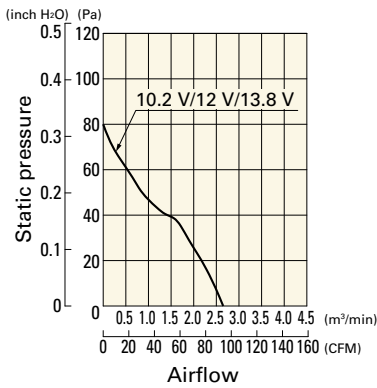
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

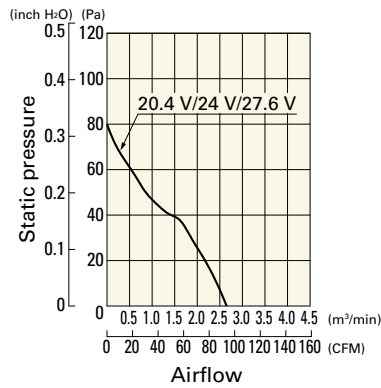
**9LG1412L1001** With pulse sensor

Operating voltage range



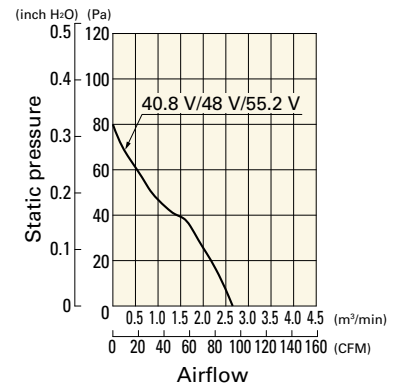
**9LG1424L1001** With pulse sensor

Operating voltage range

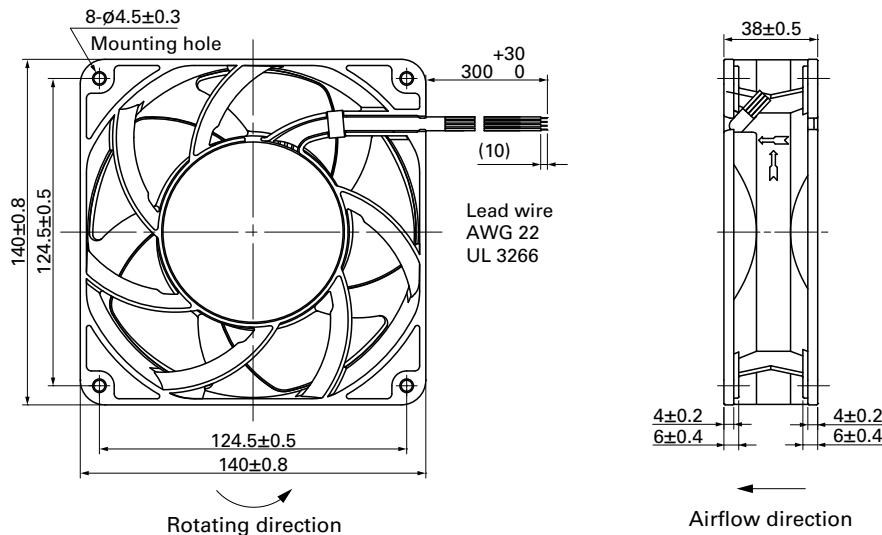


**9LG1448L1001** With pulse sensor

Operating voltage range



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

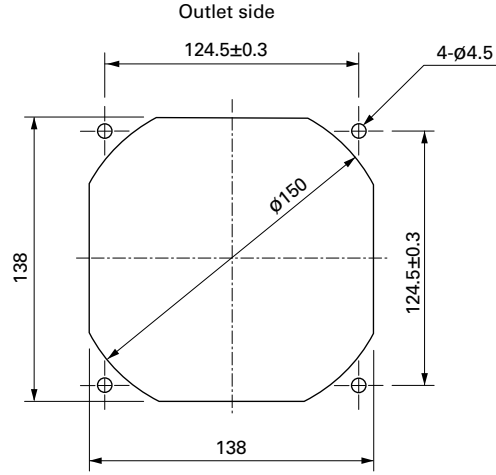
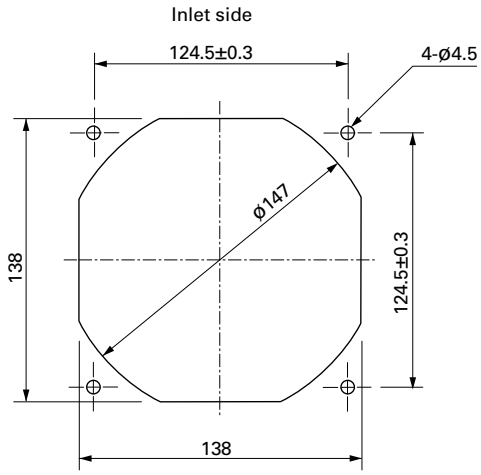


DC

Long Life Fan 140 mm sq.



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



Options

Finger guards

page: p. 599

Model no.: 109-719, 109-719H

DC

Long Life Fan 140 mm sq.



# 140x140x51 mm

San Ace 140L 9LG type

## General Specifications

- Material ..... Frame: Aluminum (Black coating), 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. 614.
- 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 ..... ⊕Red ⊖Black (Sensor) Yellow (Control) Brown  
(For models without PWM control, there is no speed control wiring.)
- Mass ..... 790 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
▶▶▶ 9LG1412P5G001	12	10.2 to 13.8	100	5.16	62	7500	9.0 318	655 2.63	69	-20 to +70	180000/60°C (215000/40°C)
▶▶▶ 9LG1412P5S001			20	0.31	3.72	2300	2.75 97	80 0.32	38		
▶▶▶ 9LG1424P5G001	24	20.4 to 27.6	100	1.83	22	5000	6.0 212	295 1.18	57		
			▶▶▶ 9LG1424P5S001	20	0.31	3.72	2300	2.75 97	80 0.32		
▶▶▶ 9LG1448P5G001	48	40.8 to 55.2	100	2.58	62	7500	9.0 318	655 2.63	69		
			▶▶▶ 9LG1448P5S001	20	0.16	3.84	2300	2.75 97	80 0.32		
▶▶▶ 9LG1448P5S001	48	40.8 to 55.2	100	0.91	22	5000	6.0 212	295 1.18	57		
			▶▶▶ 9LG1448P5S001	20	0.16	3.84	2300	2.75 97	80 0.32		
▶▶▶ 9LG1448P5S001	48	40.8 to 55.2	100	1.29	62	7500	9.0 318	655 2.63	69		
			▶▶▶ 9LG1448P5S001	20	0.12	5.76	2300	2.75 97	80 0.32		
▶▶▶ 9LG1448P5S001	48	40.8 to 55.2	100	0.45	22	5000	6.0 212	295 1.18	57		
			▶▶▶ 9LG1448P5S001	20	0.12	5.76	2300	2.75 97	80 0.32		

\* 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.

The models listed below **have a pulse sensor.**

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	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]
▶▶▶ 9LG1412A5001	12	10.2 to 13.8	2.61	31.4	5700	6.9 243.8	500 2	61	-20 to +70	180000/60°C (215000/40°C)
▶▶▶ 9LG1412H5001			1	12	4100	4.9 173.1	260 1.04	52		
▶▶▶ 9LG1412M5001			0.43	5.16	2600	3.1 109.5	100 0.4	40		
▶▶▶ 9LG1424A5001	24	20.4 to 27.6	1.21	29.1	5700	6.9 243.8	540 2.17	61		
▶▶▶ 9LG1424H5001			0.55	13.2	4100	4.9 173.1	260 1.04	52		
▶▶▶ 9LG1424M5001			0.23	5.52	2600	3.1 109.5	100 0.4	40		
▶▶▶ 9LG1448A5001	48	40.8 to 55.2	0.66	31.7	5700	6.9 243.8	540 2.17	61		
▶▶▶ 9LG1448H5001			0.31	14.9	4100	4.9 173.1	260 1.04	52		
▶▶▶ 9LG1448M5001			0.15	7.2	2600	3.1 109.5	100 0.4	40		

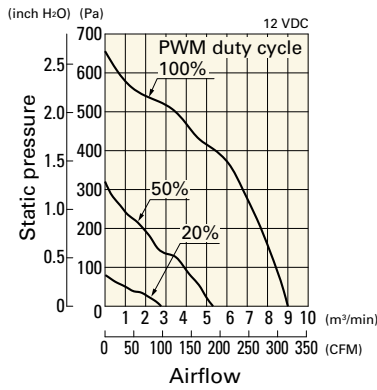
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 648 to 649.

Note 2: The ▶▶▶ mark indicates Short LeadTime Service applicable models. See p. 668 for details.

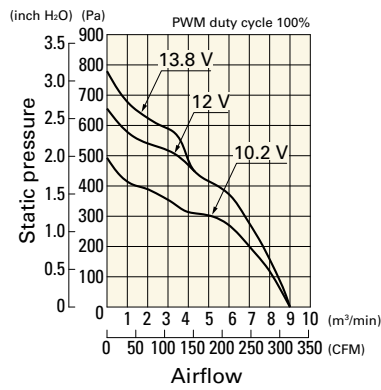
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG1412P5G001** With pulse sensor with PWM control

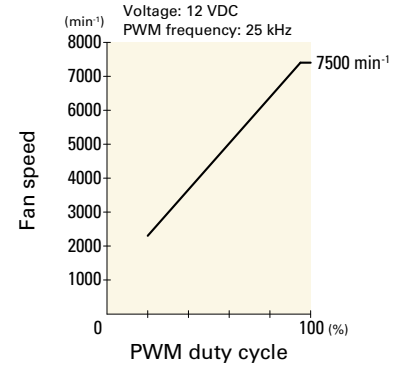
PWM duty cycle



Operating voltage range

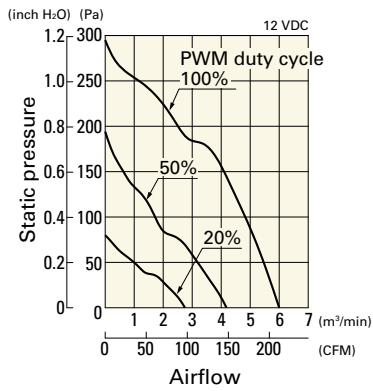


PWM duty - Speed characteristics example

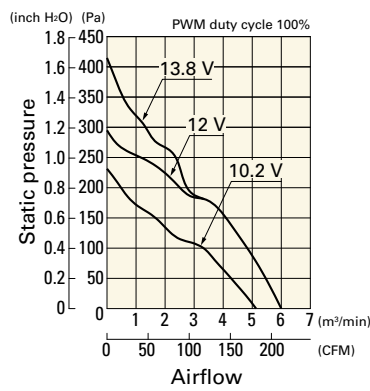


**9LG1412P5S001** With pulse sensor with PWM control

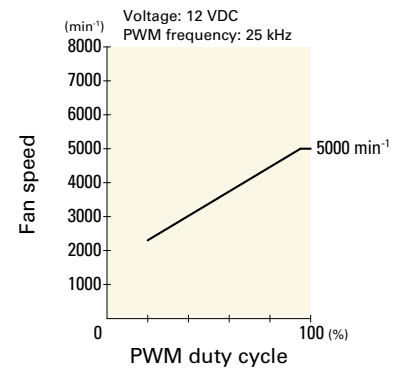
PWM duty cycle



Operating voltage range

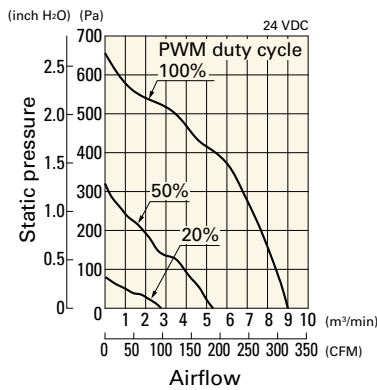


PWM duty - Speed characteristics example

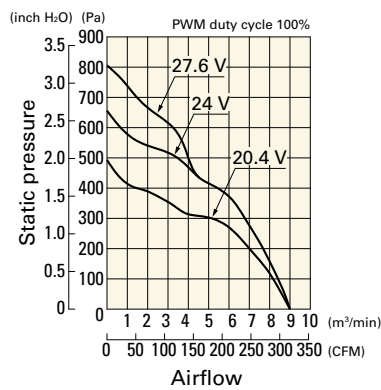


**9LG1424P5G001** With pulse sensor with PWM control

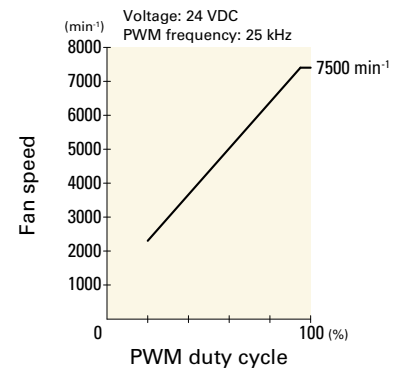
PWM duty cycle



Operating voltage range

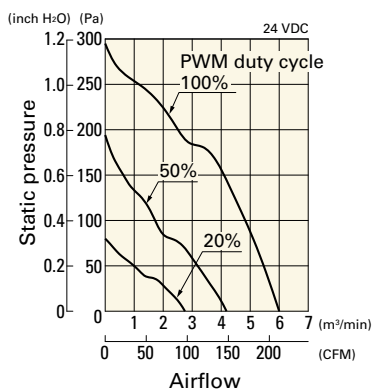


PWM duty - Speed characteristics example

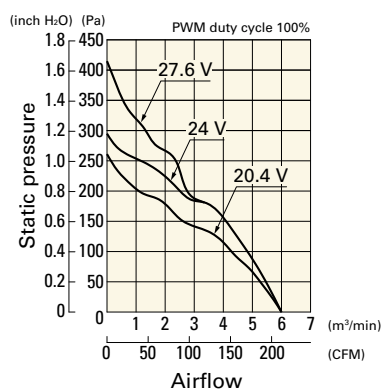


**9LG1424P5S001** With pulse sensor with PWM control

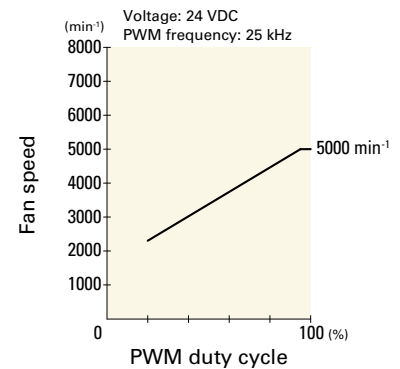
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

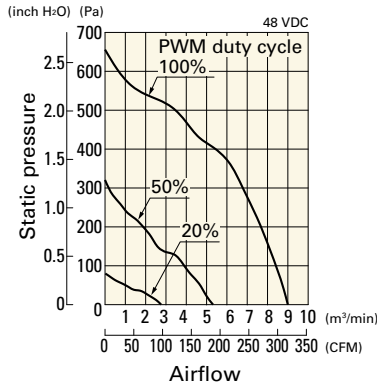


DC Long Life Fan 140 mm sq.

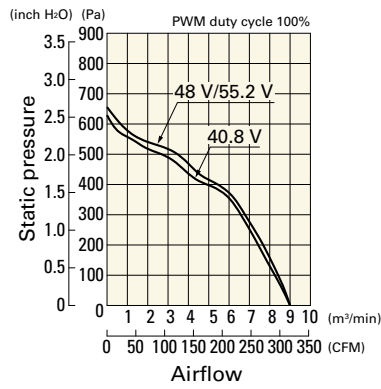
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG1448P5G001** With pulse sensor with PWM control

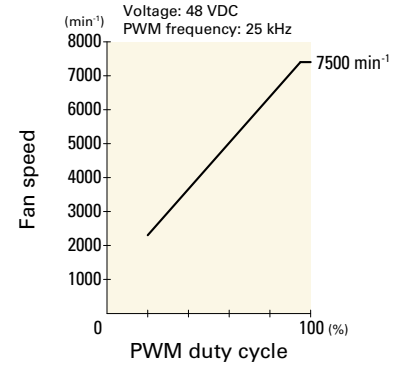
PWM duty cycle



Operating voltage range

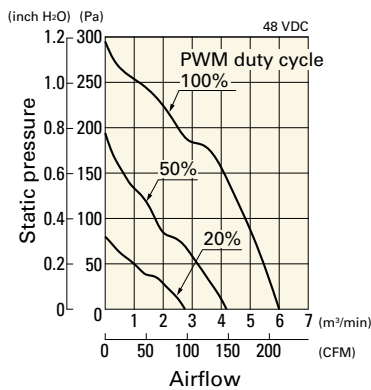


PWM duty - Speed characteristics example

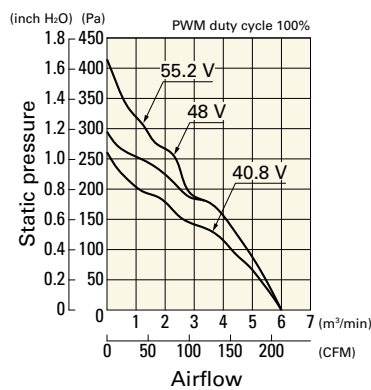


**9LG1448P5S001** With pulse sensor with PWM control

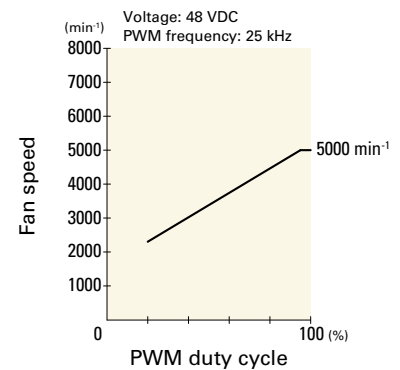
PWM duty cycle



Operating voltage range



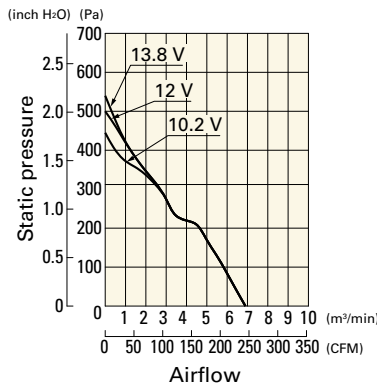
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

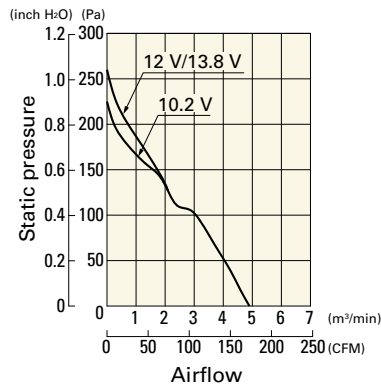
**9LG1412A5001** With pulse sensor

Operating voltage range



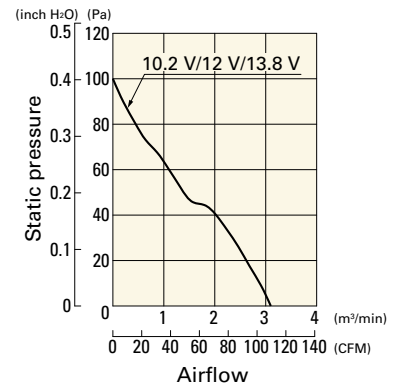
**9LG1412H5001** With pulse sensor

Operating voltage range



**9LG1412M5001** With pulse sensor

Operating voltage range

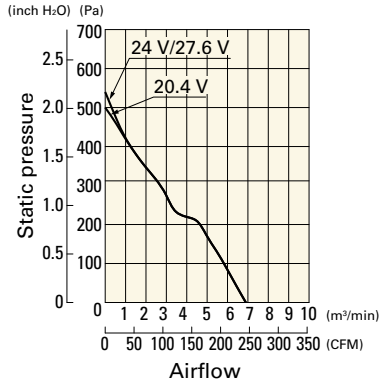


DC  
Long Life Fan 140 mm sq.

## Airflow - Static Pressure Characteristics

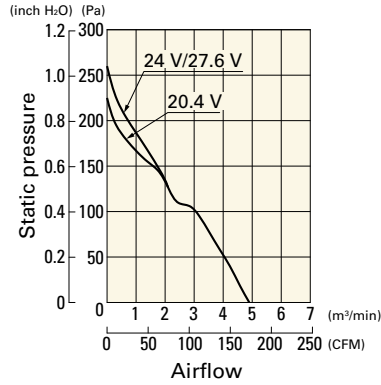
**9LG1424A5001** With pulse sensor

Operating voltage range



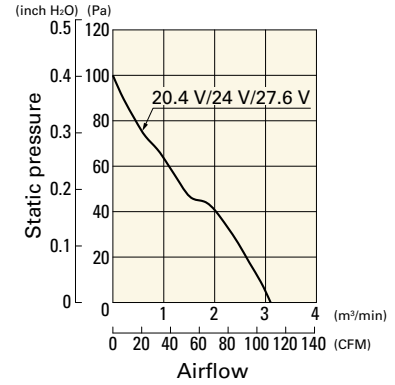
**9LG1424H5001** With pulse sensor

Operating voltage range



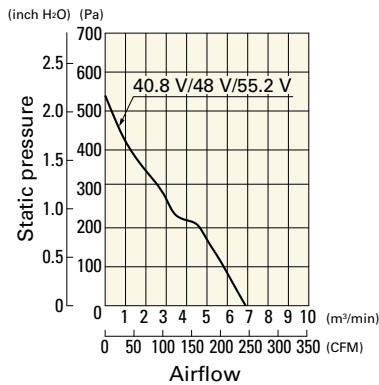
**9LG1424M5001** With pulse sensor

Operating voltage range



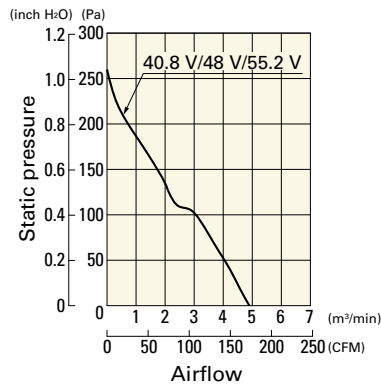
**9LG1448A5001** With pulse sensor

Operating voltage range



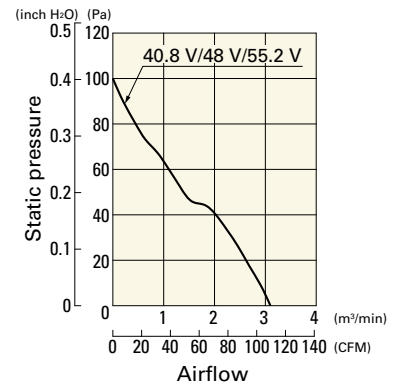
**9LG1448H5001** With pulse sensor

Operating voltage range



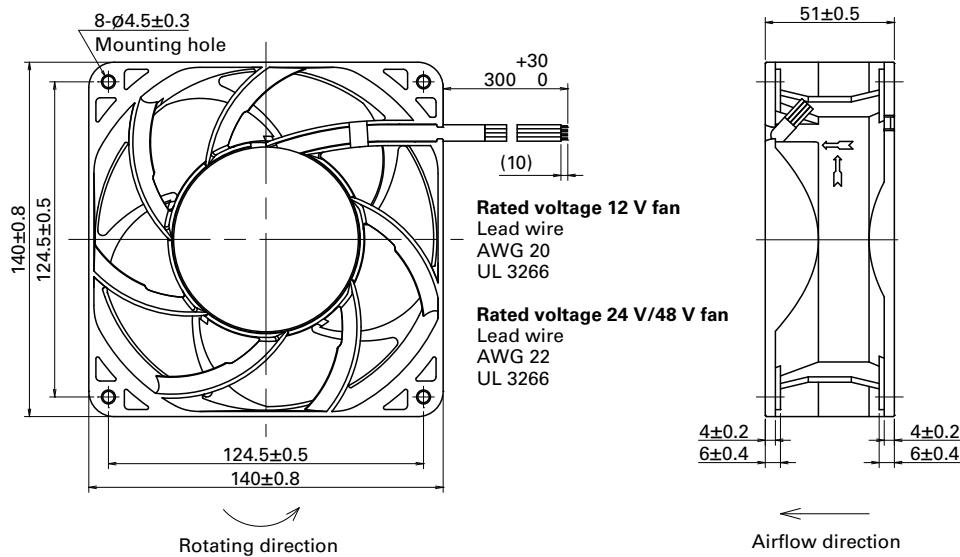
**9LG1448M5001** With pulse sensor

Operating voltage range

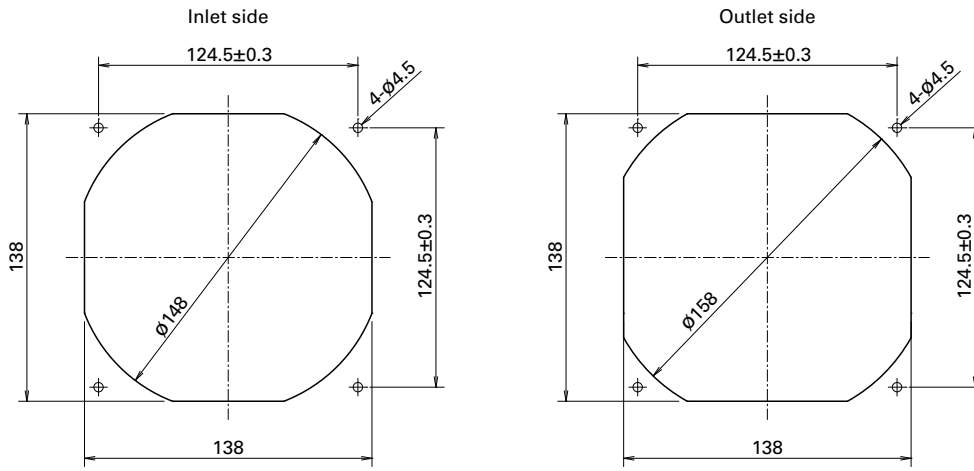


DC Long Life Fan 140 mm sq.

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



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



■ Options

Finger guards

page: p. 599

Model no.: 109-719, 109-719H



# ∅172×150×51 mm

San Ace 172L 9L type

Sidecut type

## 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. 614.
- 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 ..... ⊕Red ⊖Black or Blue  Sensor Yellow
- Mass ..... 760 g

## Specifications

The models listed below **have a pulse sensor**.

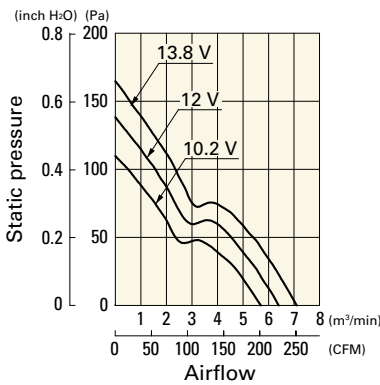
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
109L5712H501	12	10.2 to 13.8	1.2	14.4	3050	6.4 226	137.2 0.551	52	-20 to +70	100000/60°C (135000/40°C)
109L5712M501			0.48	5.76	2000	4.2 148	67.6 0.271	41		
109L5724H501	24	20.4 to 27.6	0.58	13.92	3050	6.4 226	137.2 0.551	52		
109L5724M501			0.2	4.8	2000	4.2 148	67.6 0.271	41		
109L5748H501	48	40.8 to 55.2	0.28	13.44	3050	6.4 226	137.2 0.551	52		
109L5748M501			0.11	5.28	2000	4.2 148	67.6 0.271	41		

Note: Sensor and control options are available for selection. Refer to the table on p. 639.

## Airflow - Static Pressure Characteristics

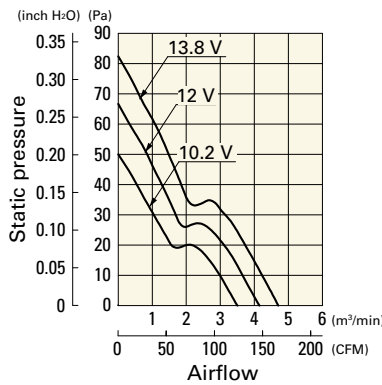
109L5712H501 With pulse sensor

Operating voltage range



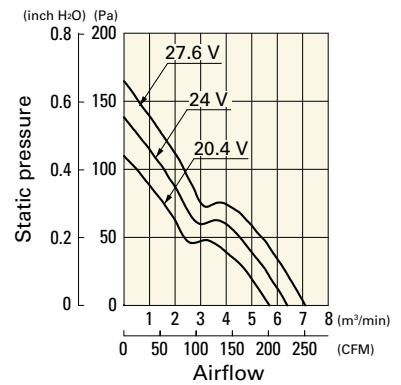
109L5712M501 With pulse sensor

Operating voltage range



109L5724H501 With pulse sensor

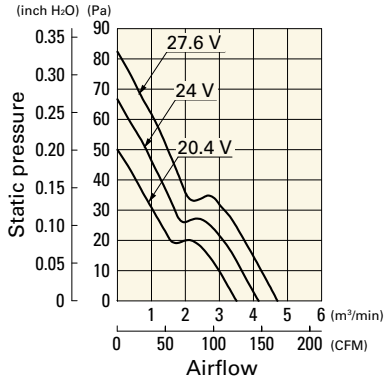
Operating voltage range



## Airflow - Static Pressure Characteristics

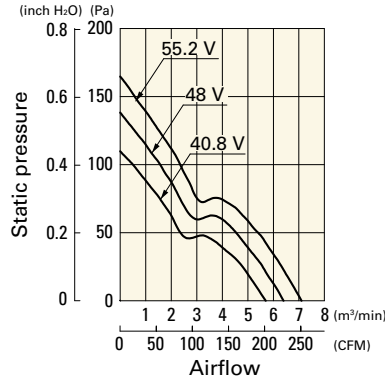
**109L5724M501** With pulse sensor

Operating voltage range



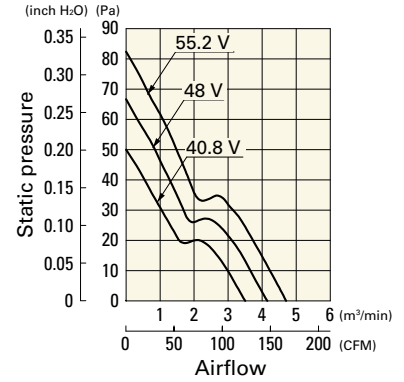
**109L5748H501** With pulse sensor

Operating voltage range

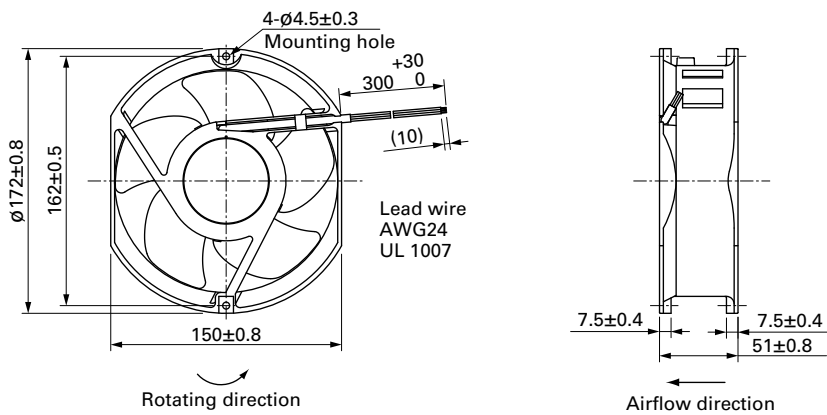


**109L5748M501** With pulse sensor

Operating voltage range

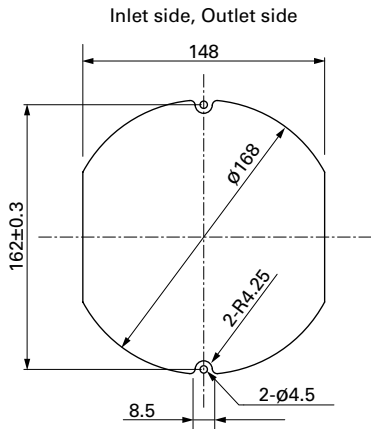


## Dimensions (unit: mm)



DC  
Long Life Fan  $\phi 172$  mm

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



## Options

Finger guards

page: p. 600

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





# ∅172x51 mm

San Ace 172L 9L type

Round type

## 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. 614.
- 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 ..... ⊕Red ⊖Black or Blue  Sensor Yellow
- Mass ..... 780 g

## Specifications

The models listed below **have a pulse sensor**.

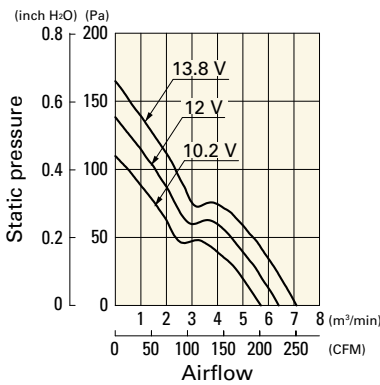
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
109L1712H501	12	10.2 to 13.8	1.2	14.4	3050	6.4 226	137.2 0.551	47	-20 to +70	100000/60°C (135000/40°C)
109L1712M501			0.48	5.76	2000	4.2 148	67.6 0.271	36		
109L1724H501	24	20.4 to 27.6	0.58	13.92	3050	6.4 226	137.2 0.551	47		
109L1724M501			0.2	4.8	2000	4.2 148	67.6 0.271	36		
109L1748H501	48	40.8 to 55.2	0.28	13.44	3050	6.4 226	137.2 0.551	47		
109L1748M501			0.11	5.28	2000	4.2 148	67.6 0.271	36		

Note: Sensor and control options are available for selection. Refer to the table on p. 639.

## Airflow - Static Pressure Characteristics

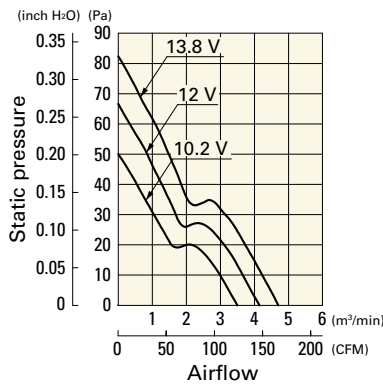
109L1712H501 With pulse sensor

Operating voltage range



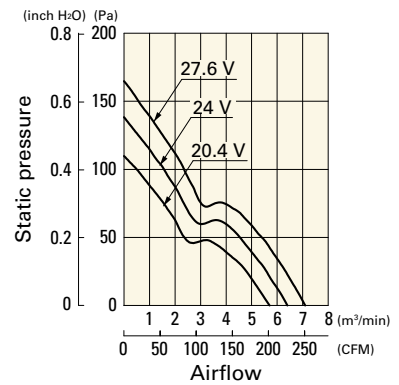
109L1712M501 With pulse sensor

Operating voltage range



109L1724H501 With pulse sensor

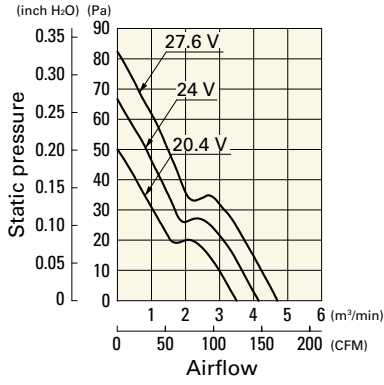
Operating voltage range



## Airflow - Static Pressure Characteristics

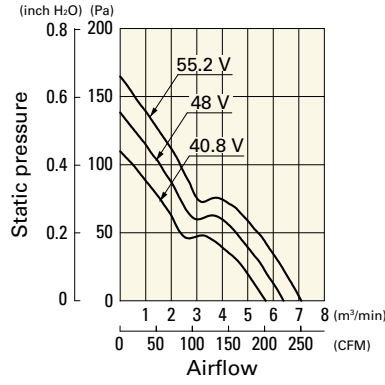
**109L1724M501** With pulse sensor

Operating voltage range



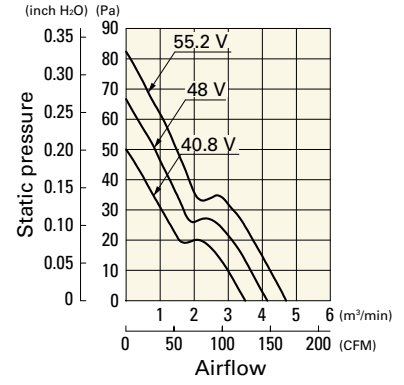
**109L1748H501** With pulse sensor

Operating voltage range

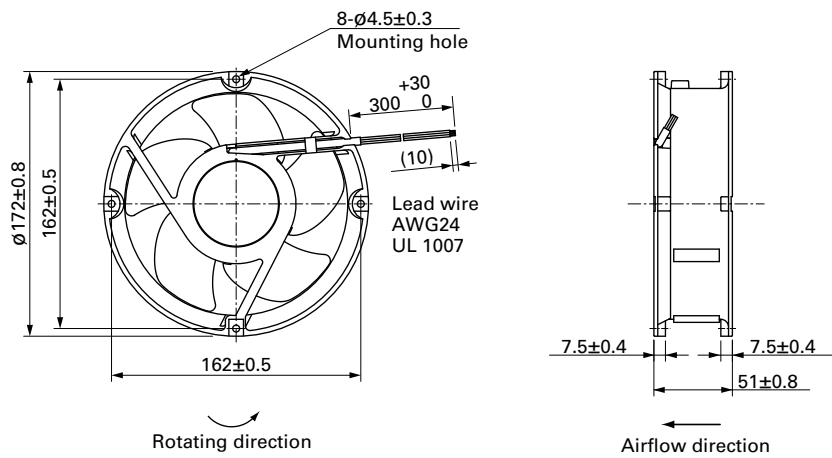


**109L1748M501** With pulse sensor

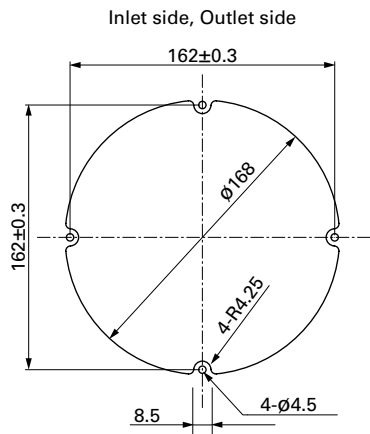
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 600

Model no.: 109-319E, 109-319H, 109-1066

DC  
Long Life Fan  $\phi 172$  mm

