Long Life Fan

Cooling fan with Max. 180,000 hours of expected life.
Related product: Splash Proof Fan p. 368, 374, 380, 389, 393

Model Numbering System

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

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

Fans with PWM control

9LG	06	12	P	4	S	001
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 (40×40) 06 (60×60) 08 (80×80) 09 (92×92) 12 (120×120) 14 (140×140) 17 (ø172) 57 (ø172×150 (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 (76) 1 (38) 3 (28) 4 (25) 5 (51) 8 (80)
Sensor specifications	01, 001 With a pulse sensor 02, 002 Without a sensor D01, D001 With a lock sensor

How to Read Specifications (DC fan)

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

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9GA0412G7001	12	7 to 13.8	0.17	2.04	13100	0.36	12.7	192	0.77	42	-20 to +70	40000/60°C (70000/40°C)

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The airflow at 0 Pa static pressure when the fan is operating at rated voltage. (Measured using the double chamber method)
Max. static pressure ····· The static pressure at 0 m^3/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.

40×40×28 mm

San Ace 40L 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. 616.
- 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 ..... 60 g

Specifications

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

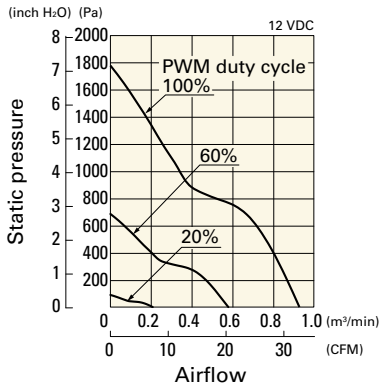
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG0412P3G001	12	10.2 to 13.8	100	1.9	22.8	33500	0.93	32.9	1780	7.15	68	-20 to +70	80000/60˚C (115000/40˚C)
			20	0.09	1.08	7500	0.2	7.07	89	0.36	33		
9LG0412P3S001			100	1.23	14.8	28000	0.77	27.2	1290	5.18	65		100000/60˚C (135000/40˚C)
			20	0.07	0.84	5700	0.15	5.3	53	0.21	28		
9LG0412P3H001			100	0.69	8.28	22500	0.62	21.9	830	3.33	62		
			20	0.07	0.84	5700	0.15	5.3	53	0.21	28		
9LG0424P3G001	24	21.6 to 26.4	100	0.95	22.8	33500	0.93	32.9	1780	7.15	68		80000/60˚C (115000/40˚C)
			20	0.07	1.68	6800	0.18	6.36	73	0.29	32		
9LG0424P3S001			100	0.61	14.6	28000	0.77	27.2	1290	5.18	65		100000/60˚C (135000/40˚C)
			20	0.05	1.2	5000	0.13	4.59	41	0.16	27		
9LG0424P3H001			100	0.34	8.16	22500	0.62	21.9	830	3.33	62		
			20	0.05	1.2	5000	0.13	4.59	41	0.16	27		

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

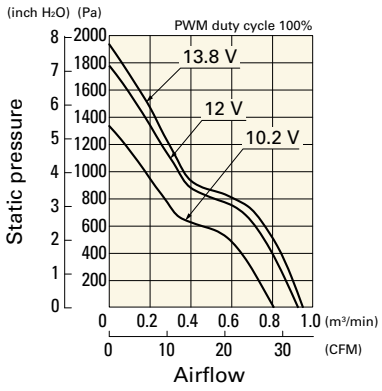
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0412P3G001 With pulse sensor with PWM control

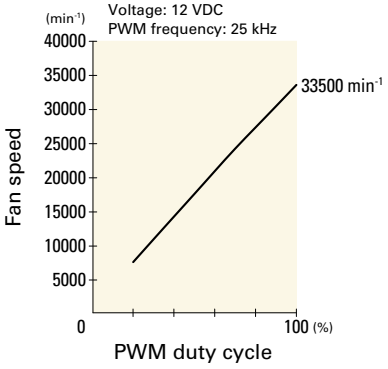
PWM duty cycle



Operating voltage range



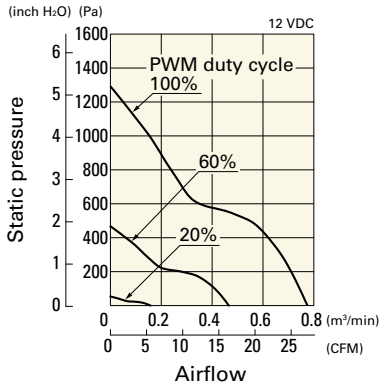
PWM duty - Speed characteristics example



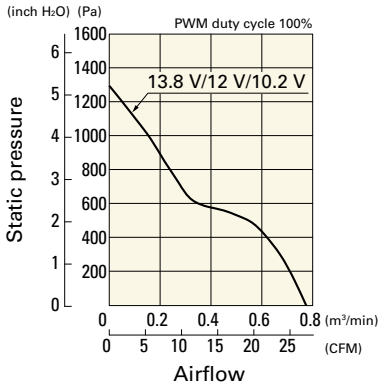
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0412P3S001 With pulse sensor with PWM control

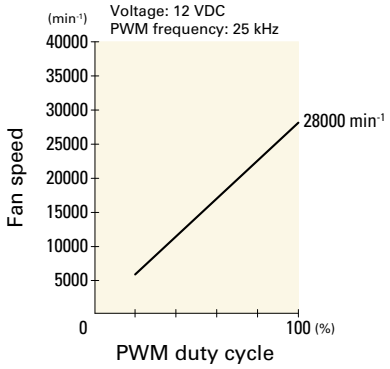
PWM duty cycle



Operating voltage range

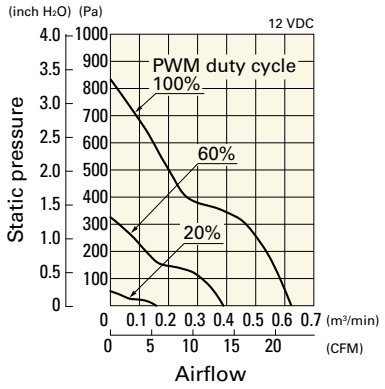


PWM duty - Speed characteristics example

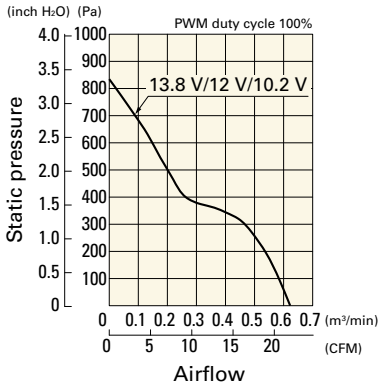


9LG0412P3H001 With pulse sensor with PWM control

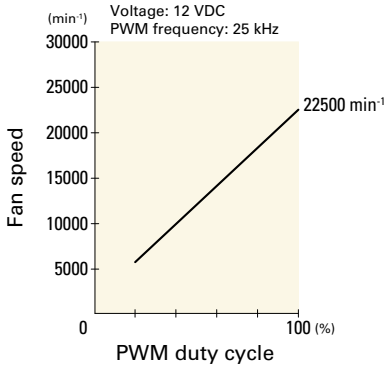
PWM duty cycle



Operating voltage range

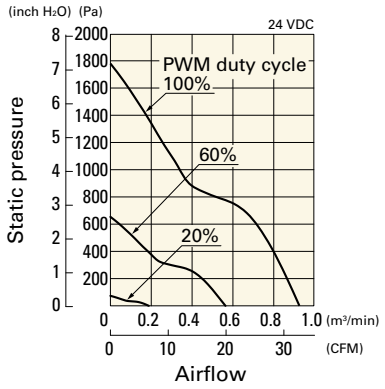


PWM duty - Speed characteristics example

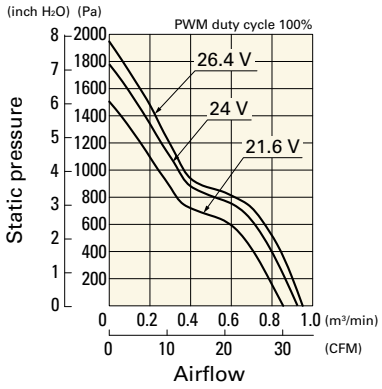


9LG0424P3G001 With pulse sensor with PWM control

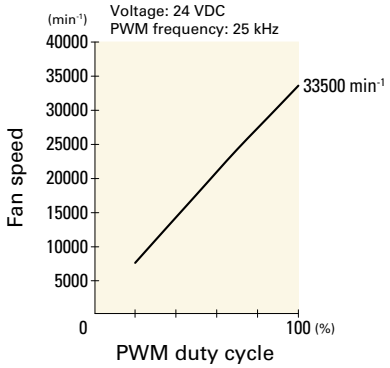
PWM duty cycle



Operating voltage range

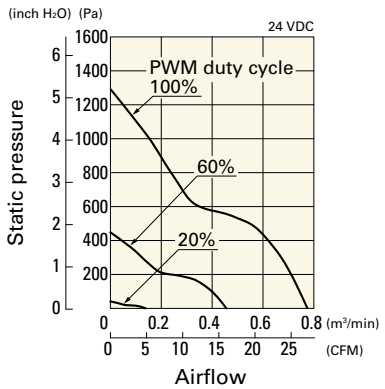


PWM duty - Speed characteristics example

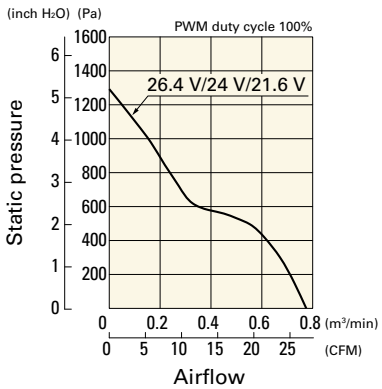


9LG0424P3S001 With pulse sensor with PWM control

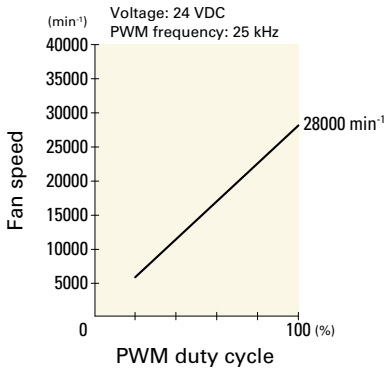
PWM duty cycle



Operating voltage range



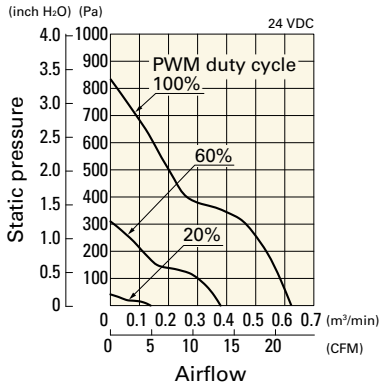
PWM duty - Speed characteristics example



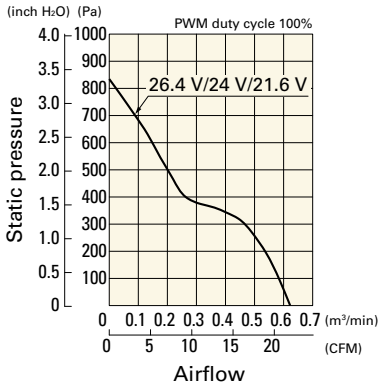
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0424P3H001 With pulse sensor with PWM control

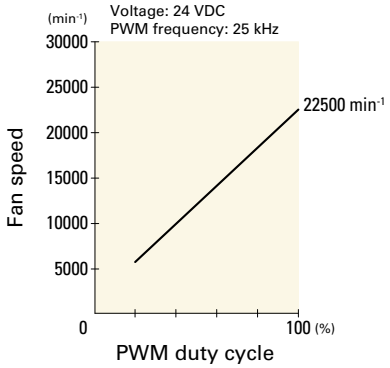
PWM duty cycle



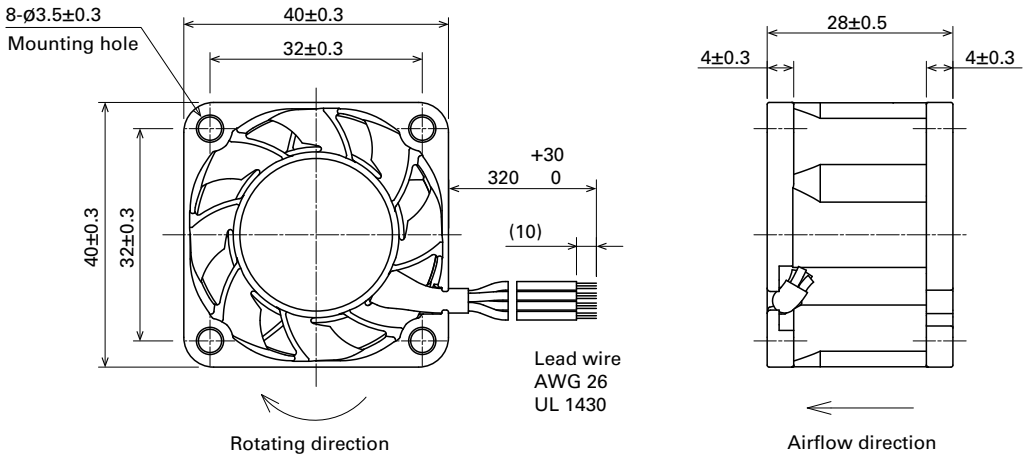
Operating voltage range



PWM duty - Speed characteristics example

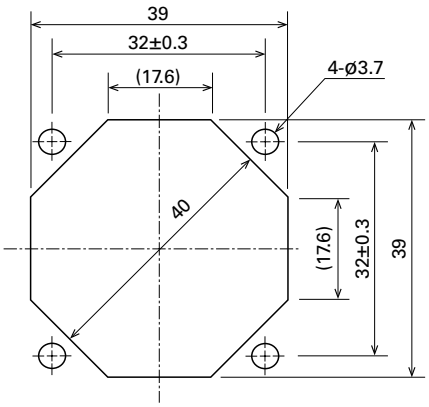


Dimensions (unit: mm)



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

Inlet side, Outlet side



Options

Finger guards page: p. 598

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

40×40×28 mm

San Ace 40L 9L type

General Specifications

- Material ..... Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ..... See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60˚C, rated voltage) Expected life at 40°C is for reference only.
- Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 616.
- 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.**

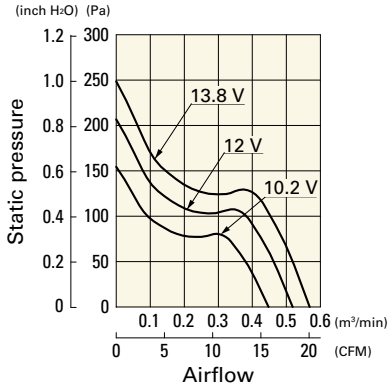
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9L0412J301	12	10.2 to 13.8	0.31	3.72	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. 653.

Airflow - Static Pressure Characteristics

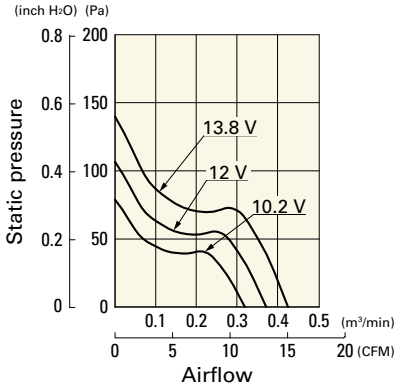
9L0412J301 With pulse sensor

Operating voltage range



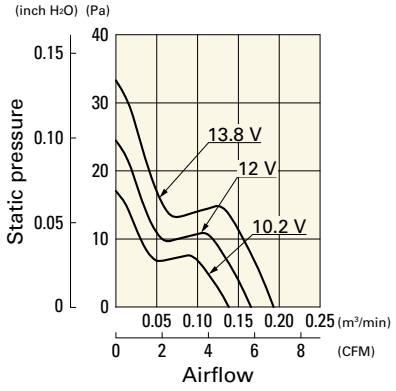
9L0412H301 With pulse sensor

Operating voltage range



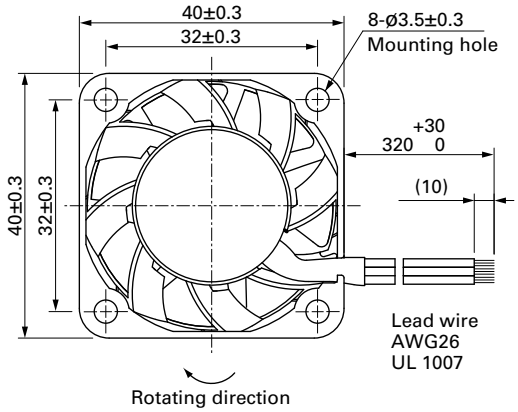
9L0412M301 With pulse sensor

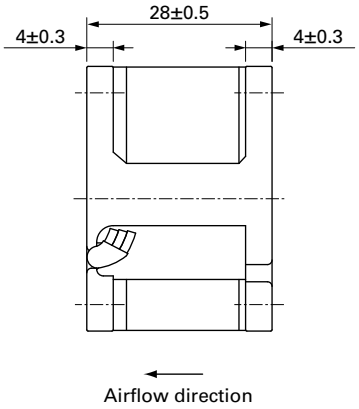
Operating voltage range



Dimensions (unit: mm)

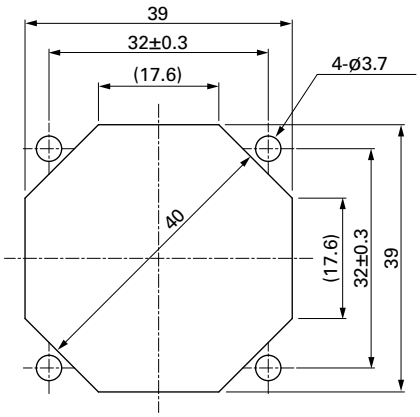
Screw-mount the fan through both flanges.





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

Inlet side, Outlet side



Options

Finger guards page: p. 598

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

60×60×25 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. 616.
- 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⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	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	180000/60˚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		

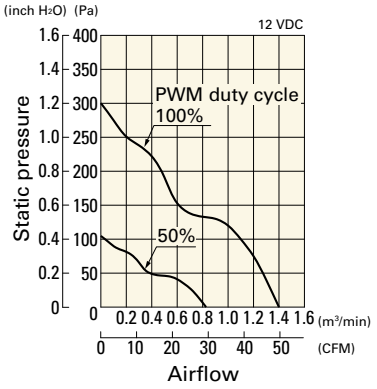
* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 653.

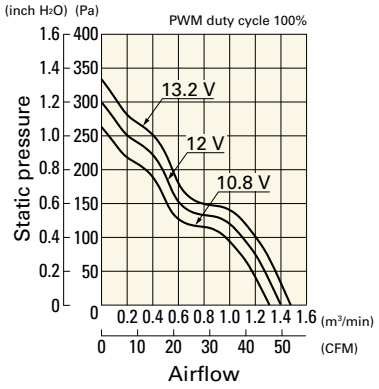
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0612P4S001 With pulse sensor with PWM control

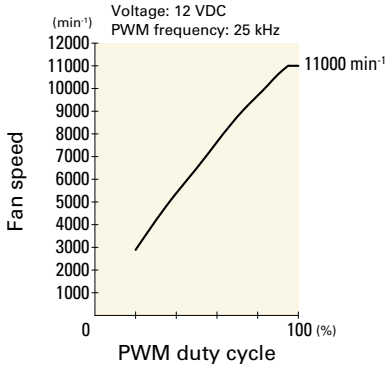
PWM duty cycle



Operating voltage range

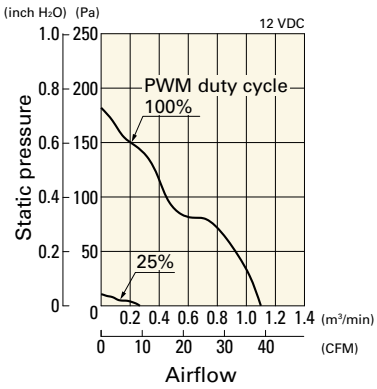


PWM duty - Speed characteristics example

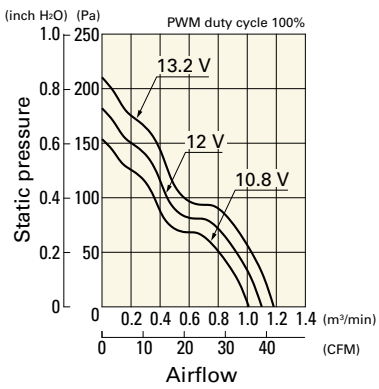


9LG0612P4J001 With pulse sensor with PWM control

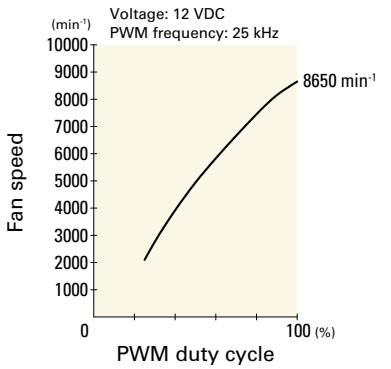
PWM duty cycle



Operating voltage range

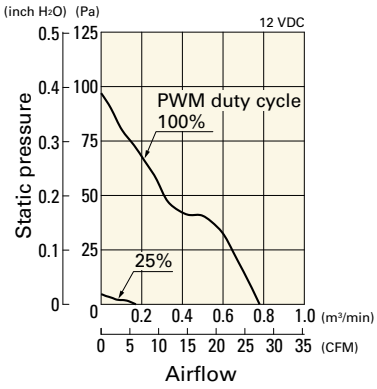


PWM duty - Speed characteristics example

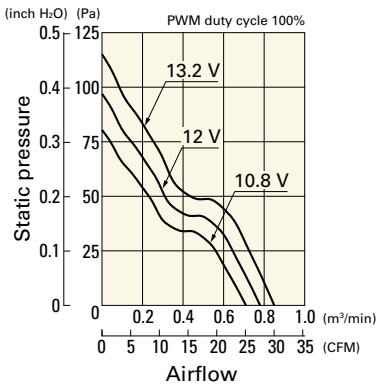


9LG0612P4H001 With pulse sensor with PWM control

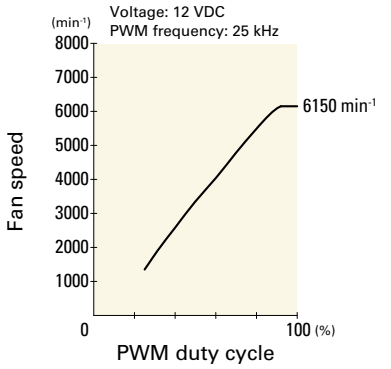
PWM duty cycle



Operating voltage range

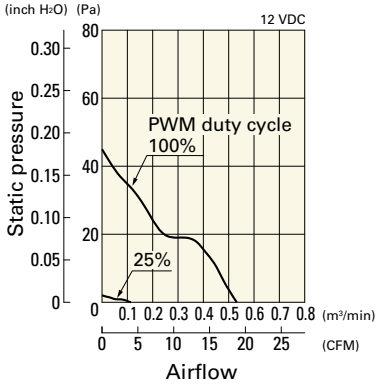


PWM duty - Speed characteristics example

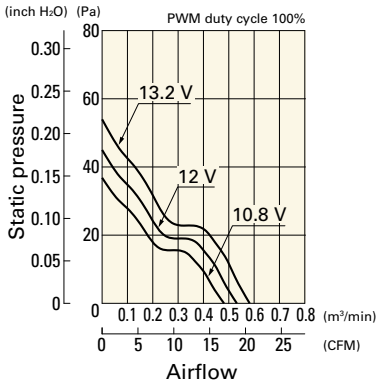


9LG0612P4M001 With pulse sensor with PWM control

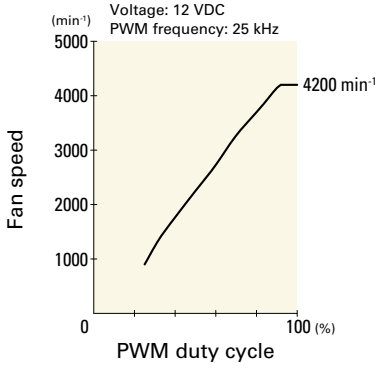
PWM duty cycle



Operating voltage range



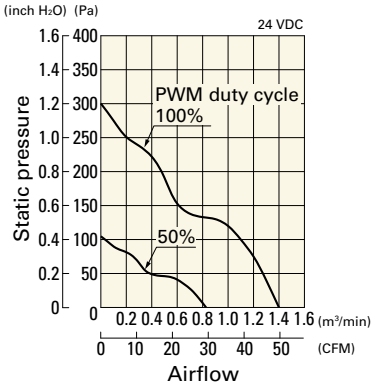
PWM duty - Speed characteristics example



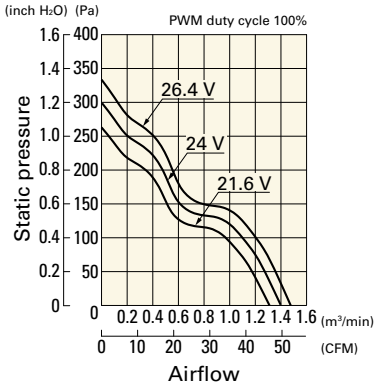
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0624P4S001 With pulse sensor with PWM control

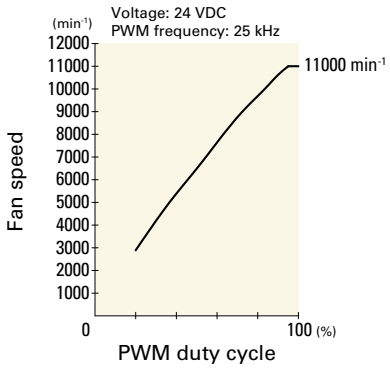
PWM duty cycle



Operating voltage range

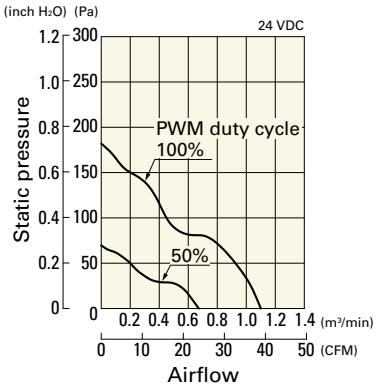


PWM duty - Speed characteristics example

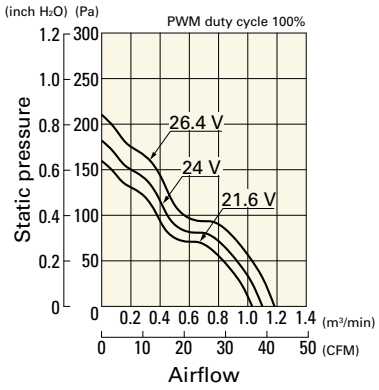


9LG0624P4J001 With pulse sensor with PWM control

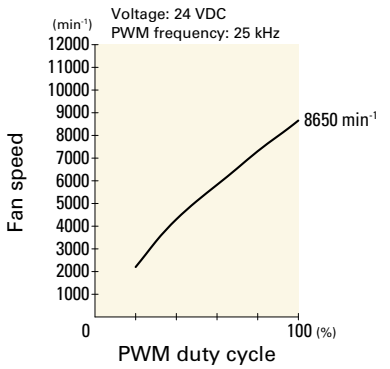
PWM duty cycle



Operating voltage range

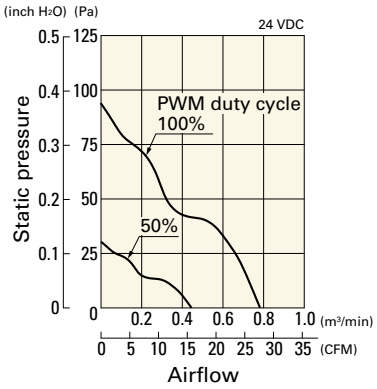


PWM duty - Speed characteristics example

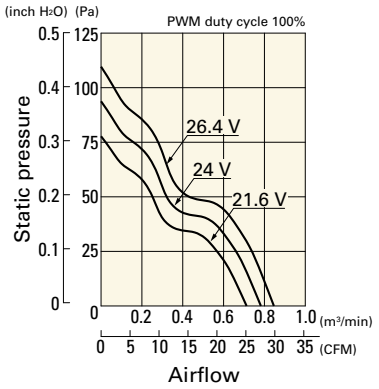


9LG0624P4H001 With pulse sensor with PWM control

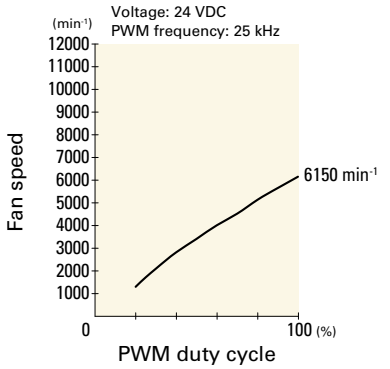
PWM duty cycle



Operating voltage range

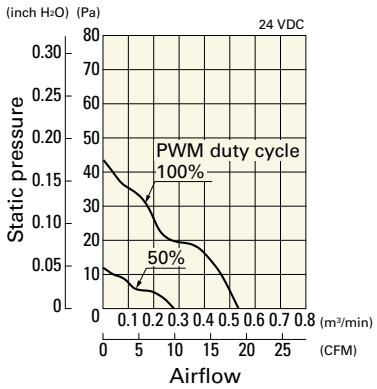


PWM duty - Speed characteristics example

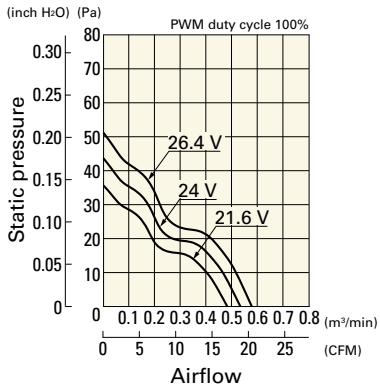


9LG0624P4M001 With pulse sensor with PWM control

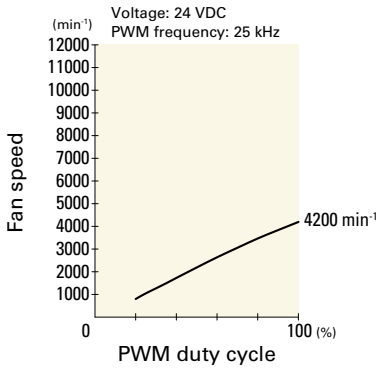
PWM duty cycle



Operating voltage range



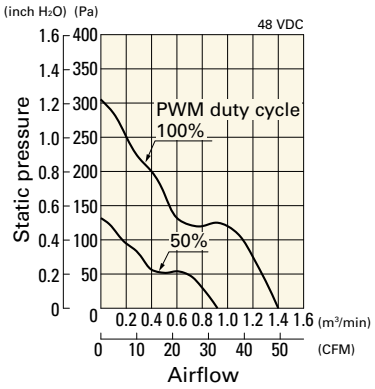
PWM duty - Speed characteristics example



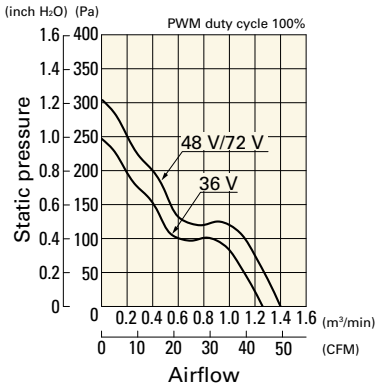
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0648P4S001 With pulse sensor with PWM control

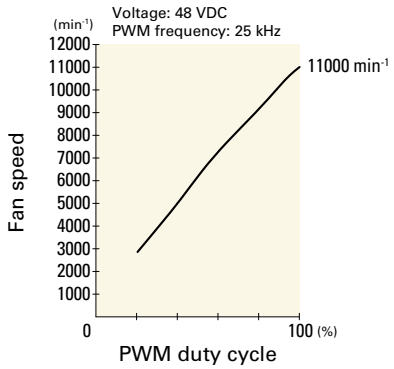
PWM duty cycle



Operating voltage range

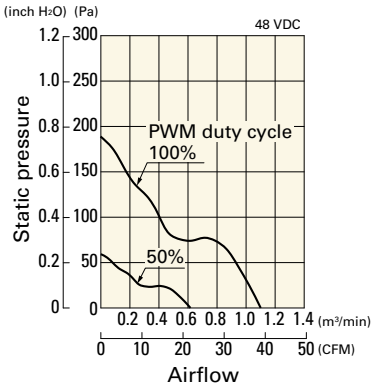


PWM duty - Speed characteristics example

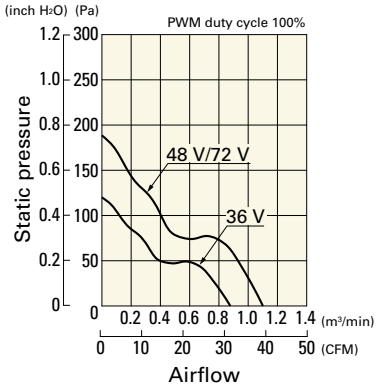


9LG0648P4J001 With pulse sensor with PWM control

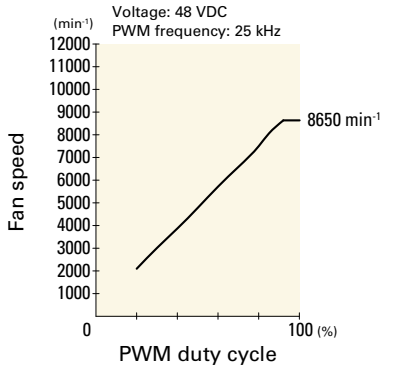
PWM duty cycle



Operating voltage range

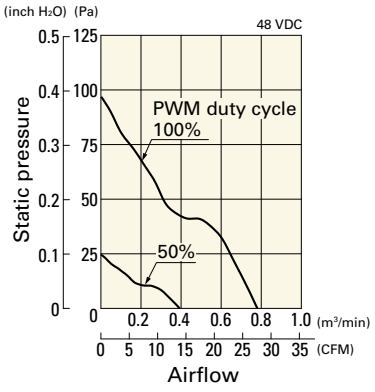


PWM duty - Speed characteristics example

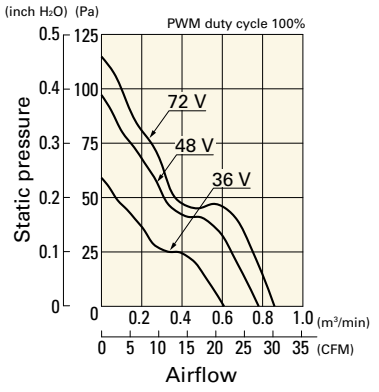


9LG0648P4H001 With pulse sensor with PWM control

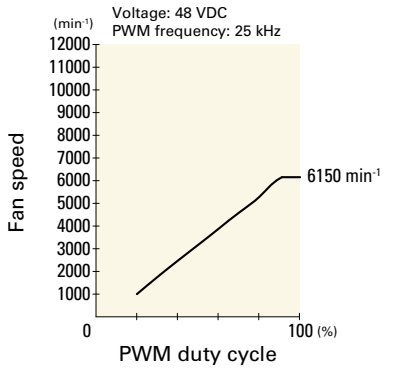
PWM duty cycle



Operating voltage range

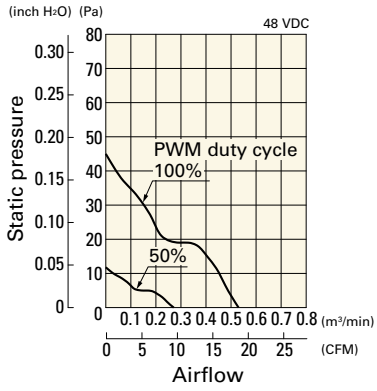


PWM duty - Speed characteristics example

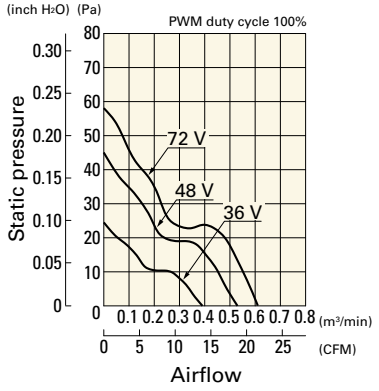


9LG0648P4M001 With pulse sensor with PWM control

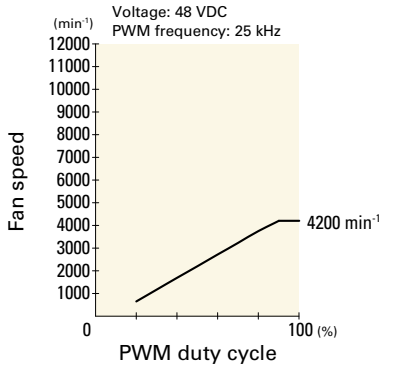
PWM duty cycle



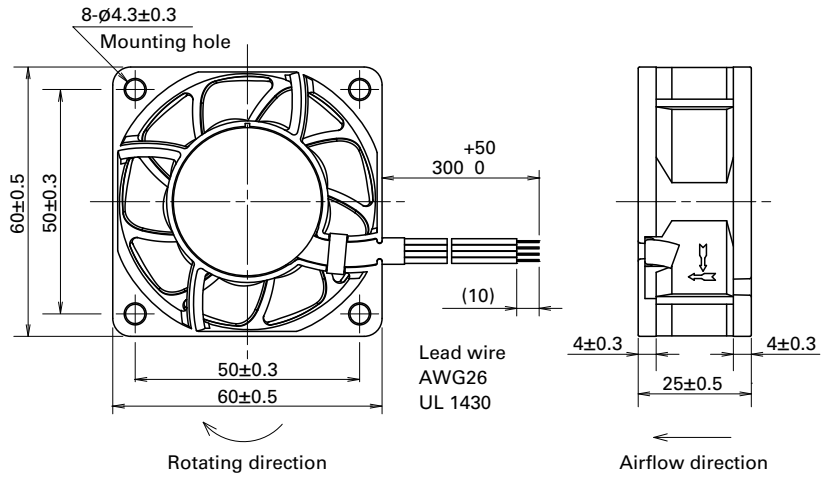
Operating voltage range



PWM duty - Speed characteristics example

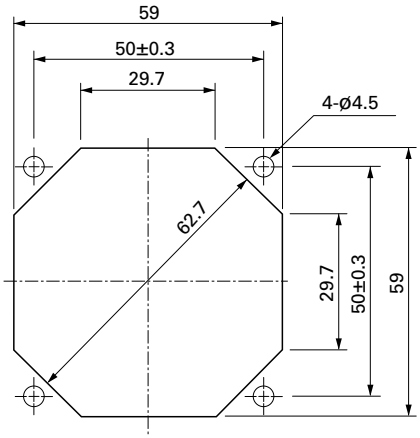


Dimensions (unit: mm)



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

Inlet side, Outlet side



Options

Finger guards page: p. 598

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

Resin filter kits page: p. 606

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

Resin finger guards page: p. 605

Model no.: 109-1003G

60×60×76 mm

San Ace 60L 9CRLB 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. 616.
- 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 ..... 280 g

Specifications

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

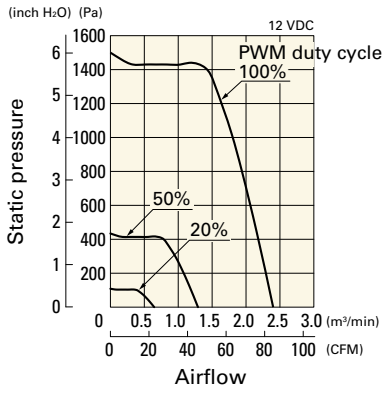
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9CRLB0612P0G001	12	10.8 to 13.2	100	3.6	43.2	19700	18300	2.4	84.8	1500	6.00	75	-20 to +70	100000/60˚C (135000/40˚C)
			20	0.28	3.36	5300	4800	0.64	22.6	110	0.44	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.

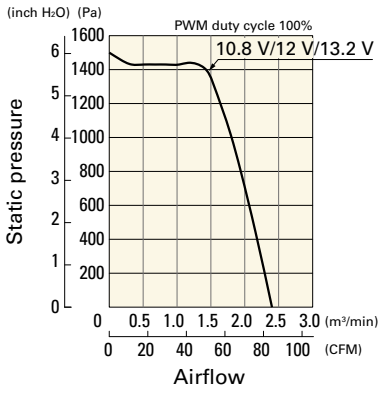
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRLB0612P0G001 With pulse sensor with PWM control

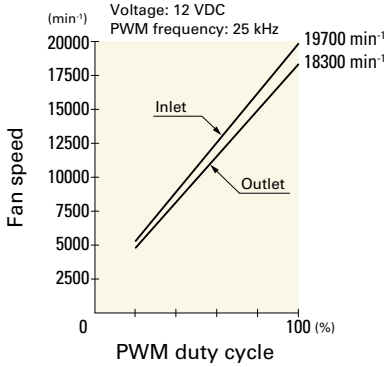
PWM duty cycle



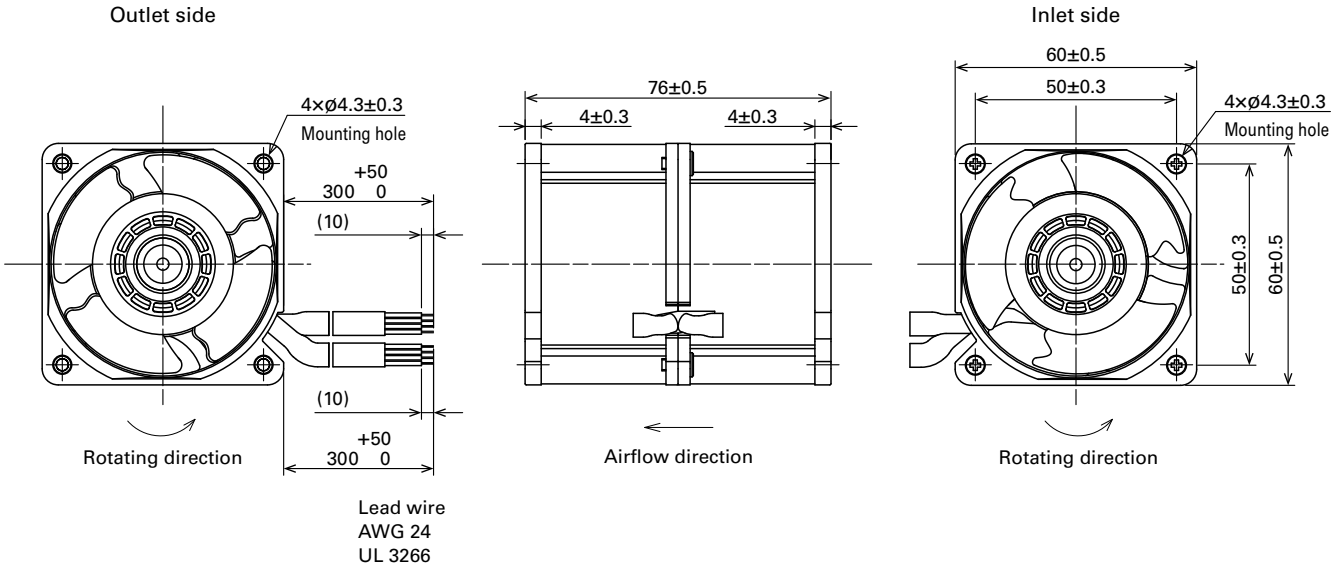
Operating voltage range



PWM duty - Speed characteristics example

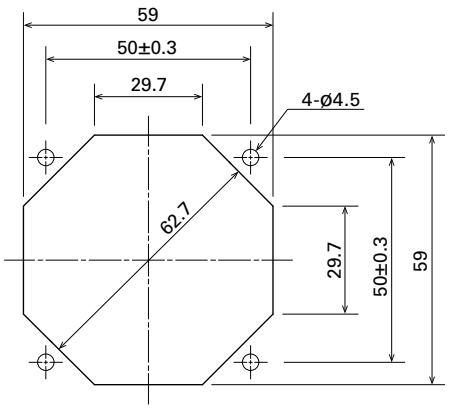


Dimensions (unit: mm)



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

Inlet side, Outlet side



Options

Finger guards page: p. 598

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

Resin filter kits page: p. 606

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

Resin finger guards page: p. 605

Model no.: 109-1003G

80×80×25 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. 616.
- 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⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
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.**

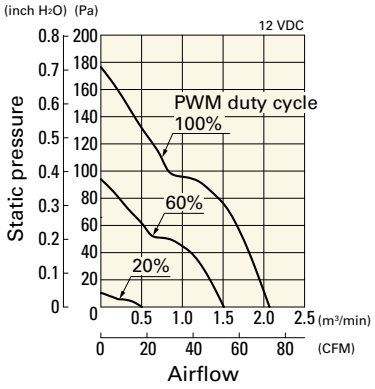
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG0812S4001	12	6 to 13.2	0.17	2.04	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: Sensor and control options are available for selection. Refer to the table on p. 653.

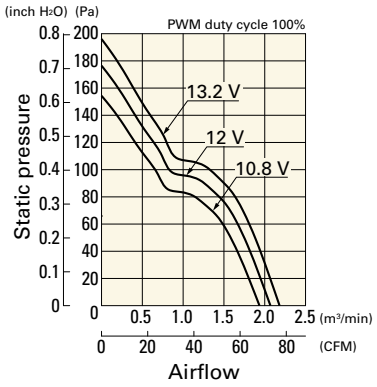
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0812P4J001 With pulse sensor with PWM control

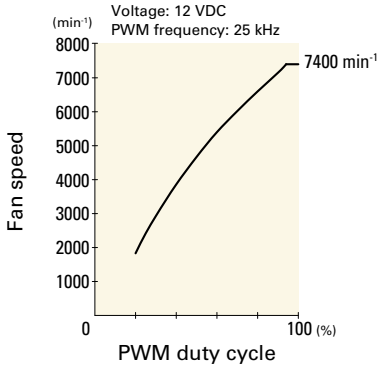
PWM duty cycle



Operating voltage range

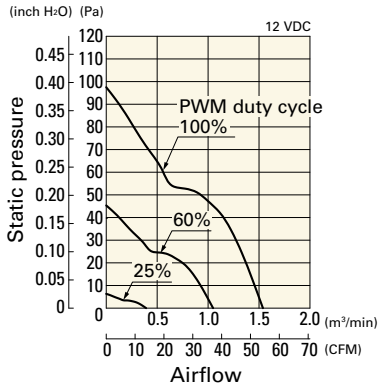


PWM duty - Speed characteristics example

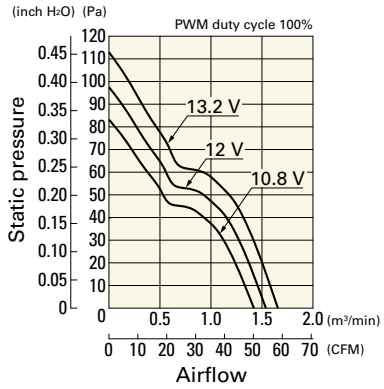


9LG0812P4G001 With pulse sensor with PWM control

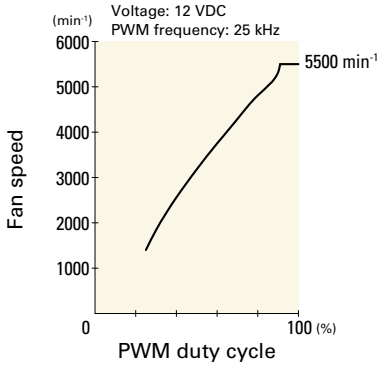
PWM duty cycle



Operating voltage range

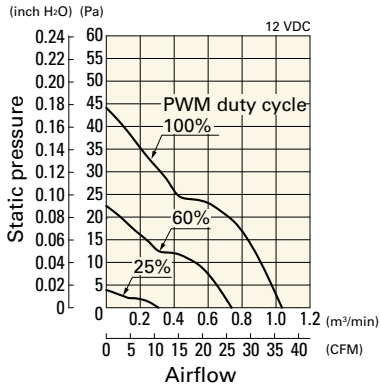


PWM duty - Speed characteristics example

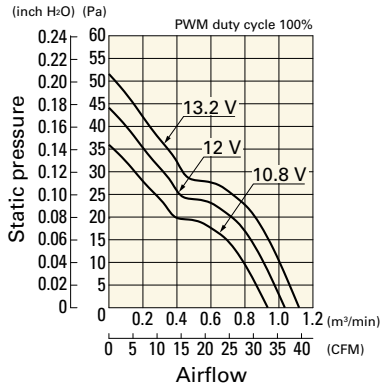


9LG0812P4H001 With pulse sensor with PWM control

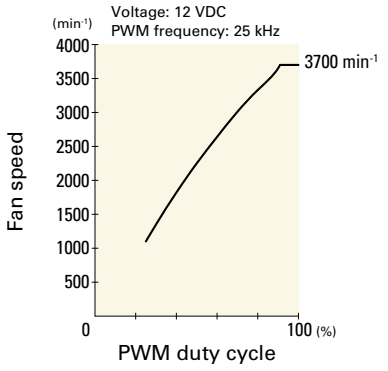
PWM duty cycle



Operating voltage range

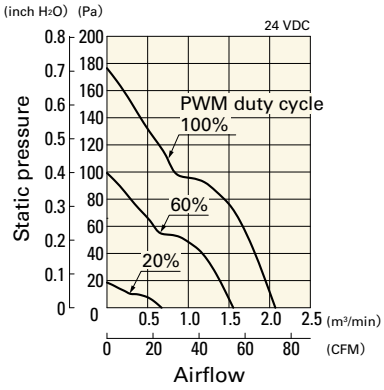


PWM duty - Speed characteristics example

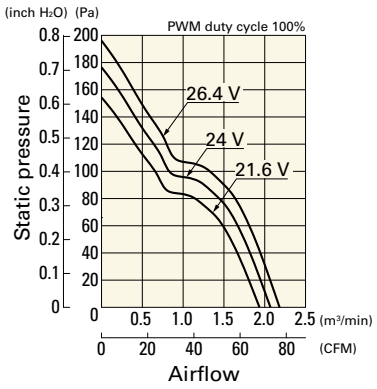


9LG0824P4J001 With pulse sensor with PWM control

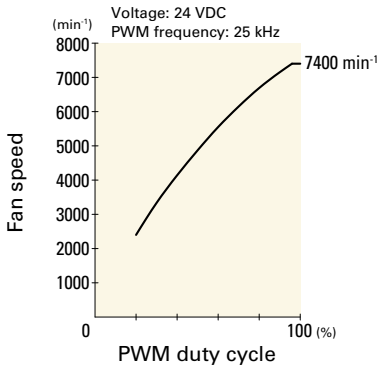
PWM duty cycle



Operating voltage range



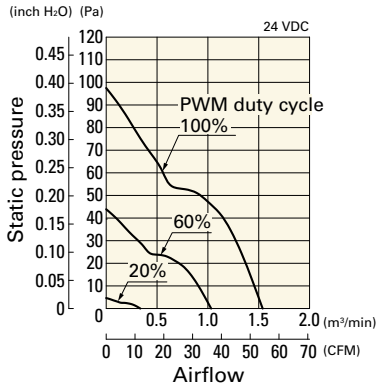
PWM duty - Speed characteristics example



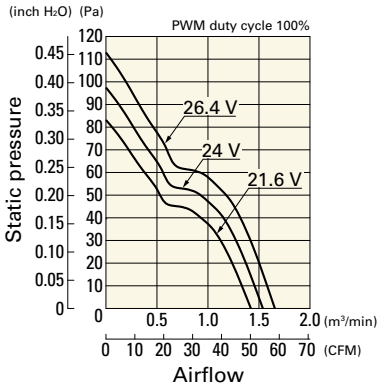
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0824P4G001 With pulse sensor with PWM control

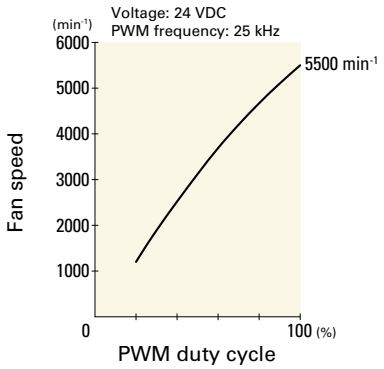
PWM duty cycle



Operating voltage range

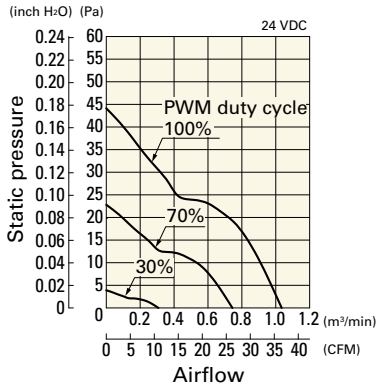


PWM duty - Speed characteristics example

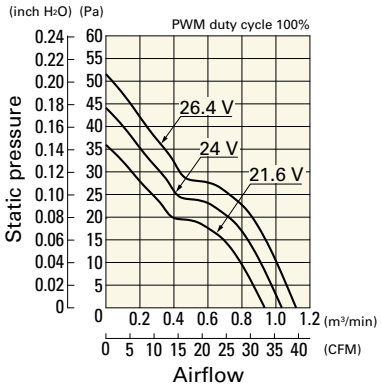


9LG0824P4H001 With pulse sensor with PWM control

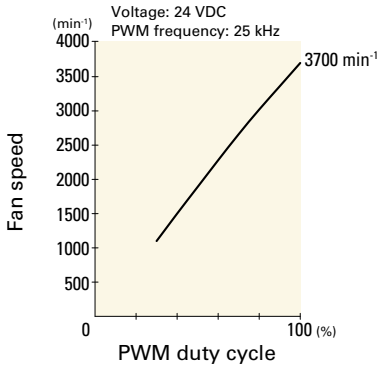
PWM duty cycle



Operating voltage range



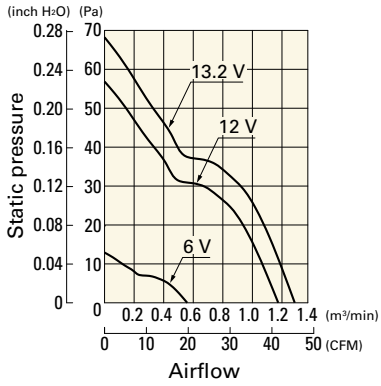
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

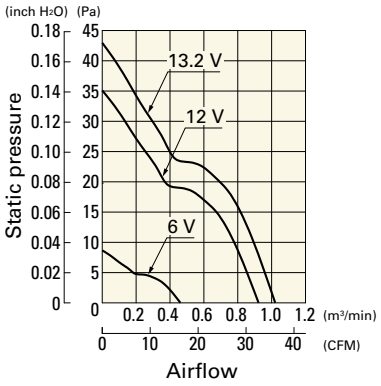
9LG0812S4001 With pulse sensor

Operating voltage range



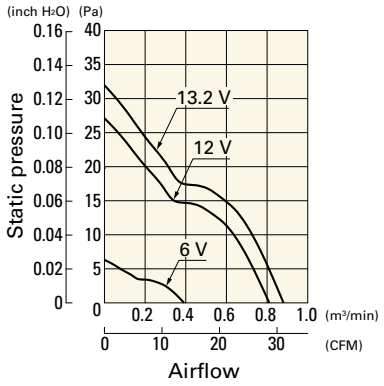
9LG0812F4001 With pulse sensor

Operating voltage range



9LG0812M4001 With pulse sensor

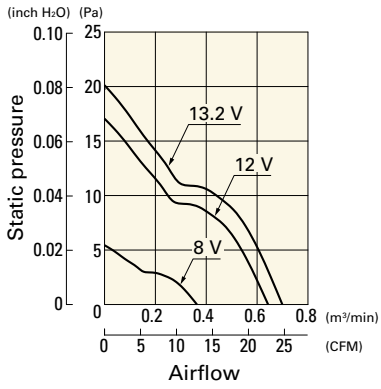
Operating voltage range



Airflow - Static Pressure Characteristics

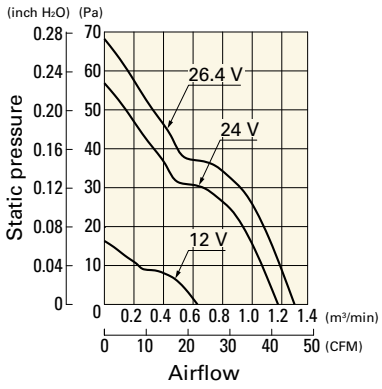
9LG0812L4001 With pulse sensor

Operating voltage range



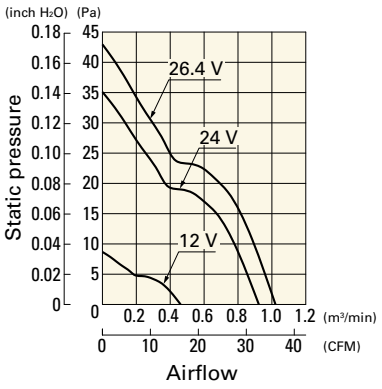
9LG0824S4001 With pulse sensor

Operating voltage range



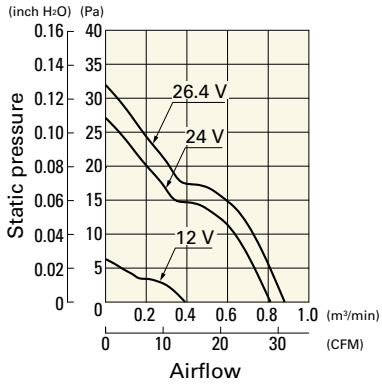
9LG0824F4001 With pulse sensor

Operating voltage range



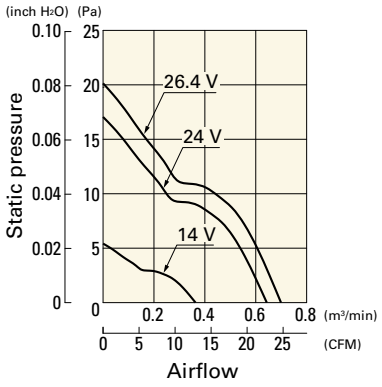
9LG0824M4001 With pulse sensor

Operating voltage range

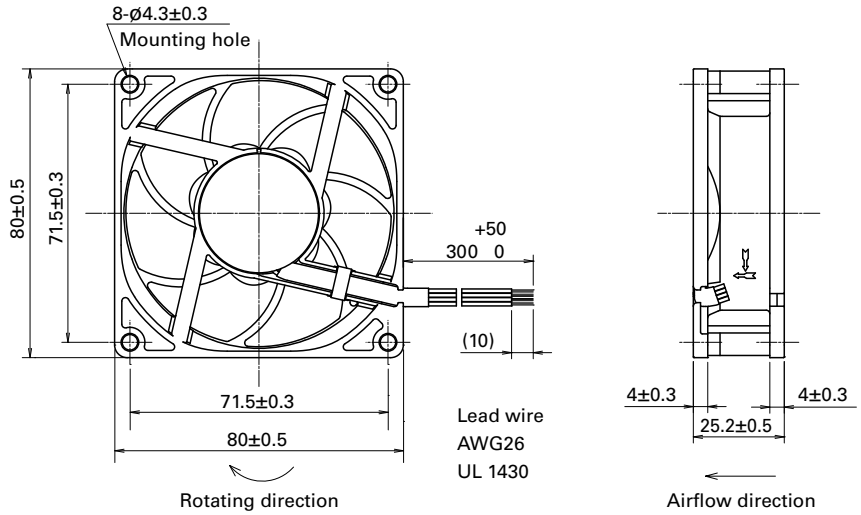


9LG0824L4001 With pulse sensor

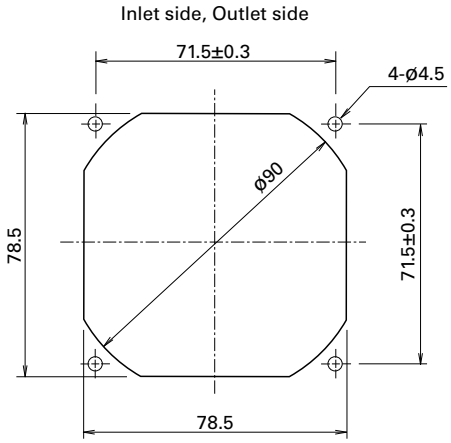
Operating voltage range



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 filter kits page: p. 606

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

Resin finger guards page: p. 605

Model no.: 109-1002G

80×80×80 mm

San Ace 80L 9CRL 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. 616.
- 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.**

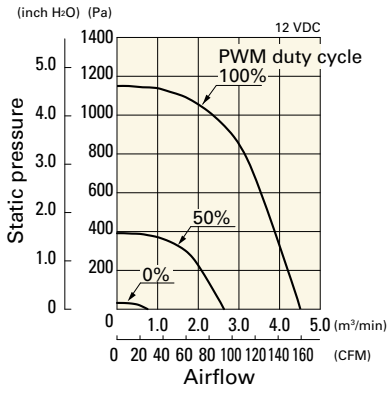
Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹] Inlet	Rated speed [min⁻¹] Outlet	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
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.

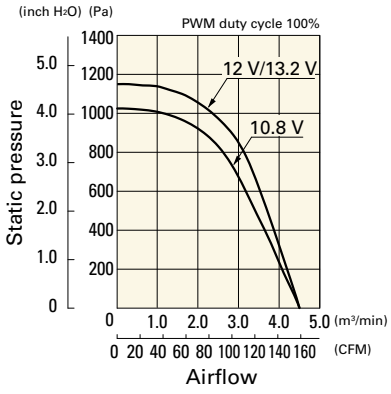
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9CRL0812P8G001 With pulse sensor with PWM control

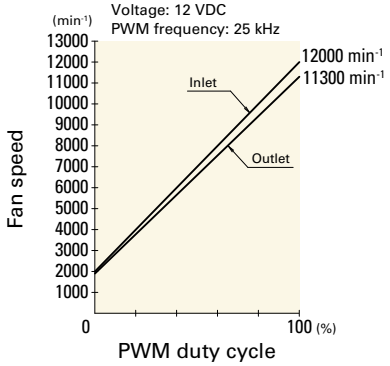
PWM duty cycle



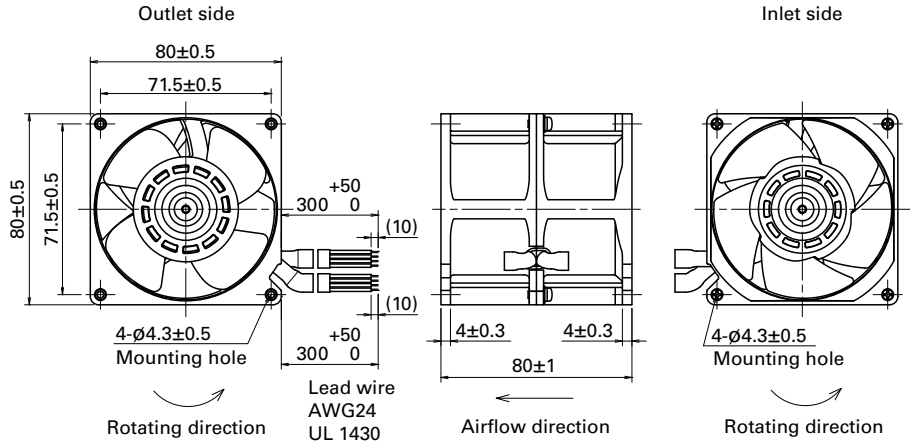
Operating voltage range



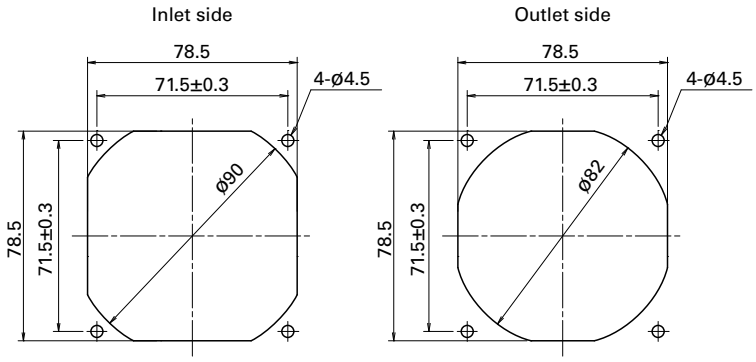
PWM duty - Speed characteristics example



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 filter kits page: p. 606

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

Resin finger guards page: p. 605

Model no.: 109-1002G

92×92×25 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. 616.
- 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⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	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.**

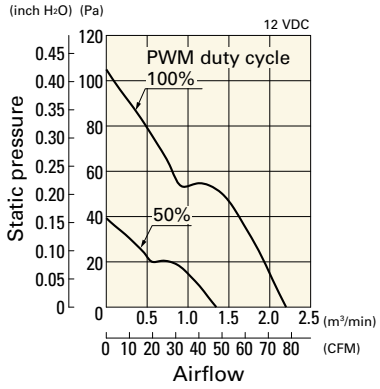
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG0912F4001	12	10.2 to 13.8	0.1	1.2	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: Sensor and control options are available for selection. Refer to the table on p. 653 to 654.

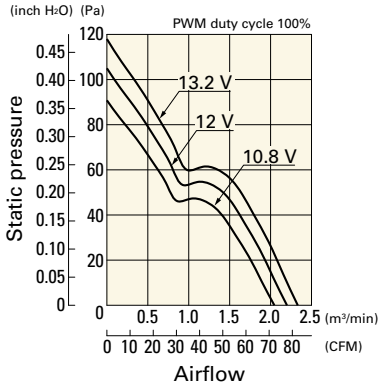
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0912P4J001 With pulse sensor with PWM control

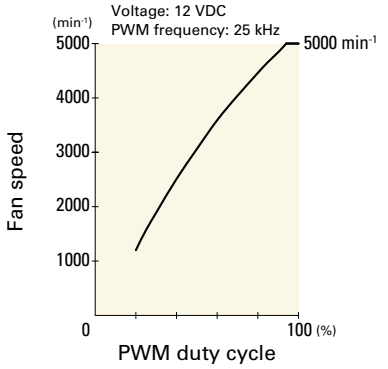
PWM duty cycle



Operating voltage range

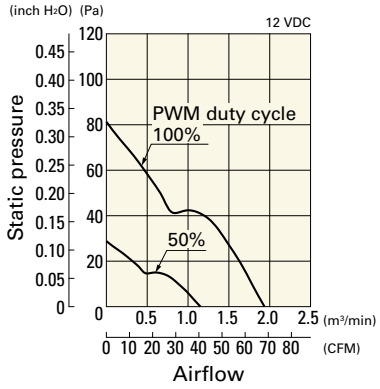


PWM duty - Speed characteristics example

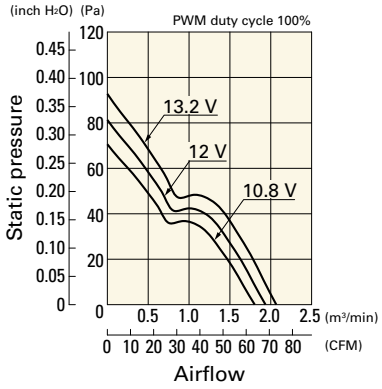


9LG0912P4G001 With pulse sensor with PWM control

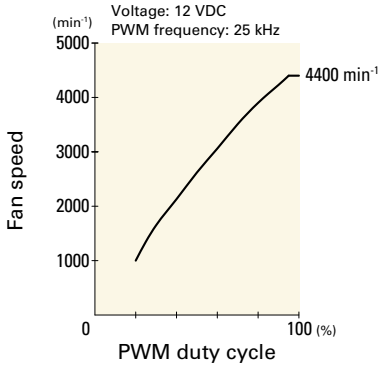
PWM duty cycle



Operating voltage range

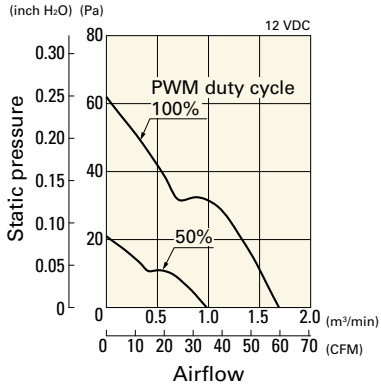


PWM duty - Speed characteristics example

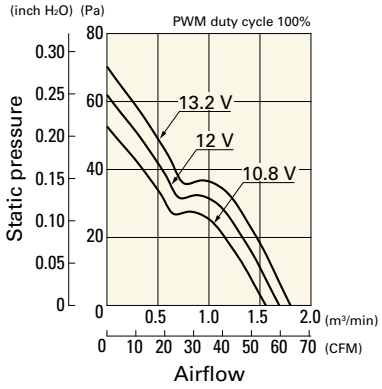


9LG0912P4S001 With pulse sensor with PWM control

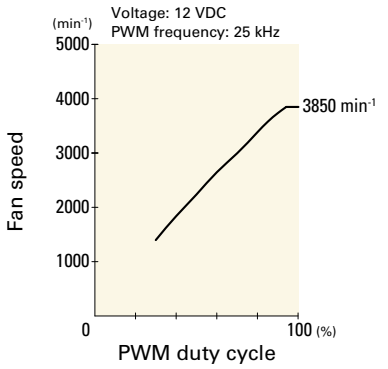
PWM duty cycle



Operating voltage range

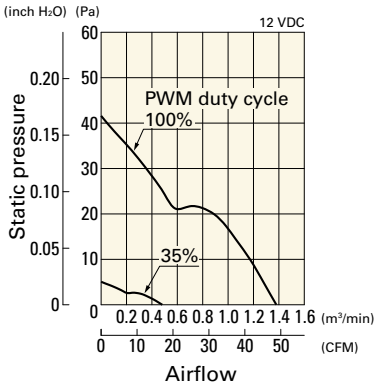


PWM duty - Speed characteristics example

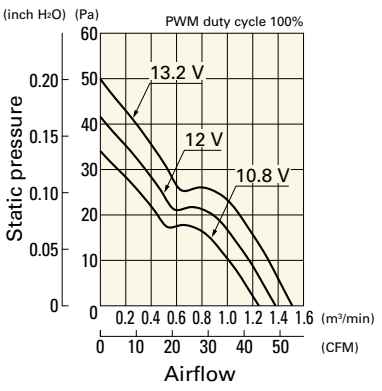


9LG0912P4H001 With pulse sensor with PWM control

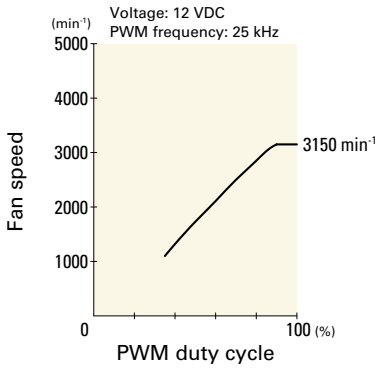
PWM duty cycle



Operating voltage range



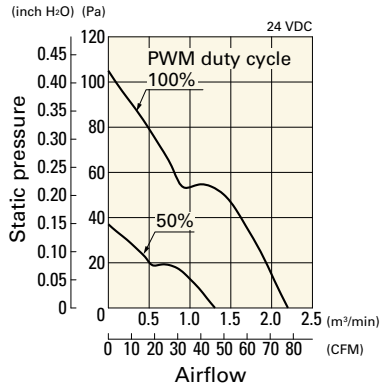
PWM duty - Speed characteristics example



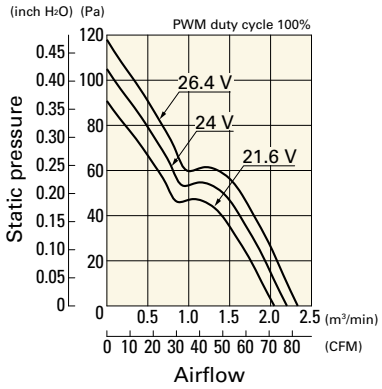
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0924P4J001 With pulse sensor with PWM control

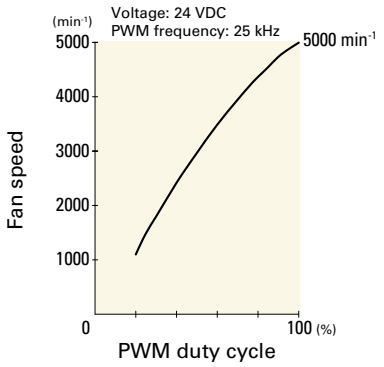
PWM duty cycle



Operating voltage range

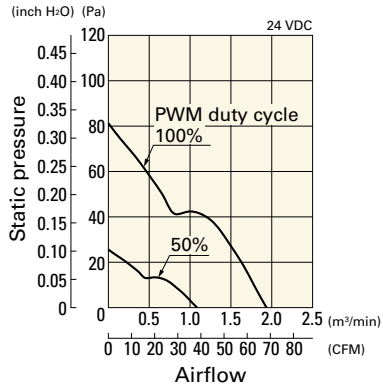


PWM duty - Speed characteristics example

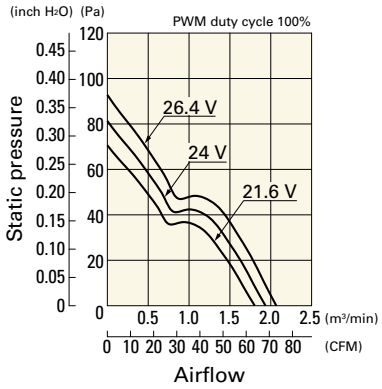


9LG0924P4G001 With pulse sensor with PWM control

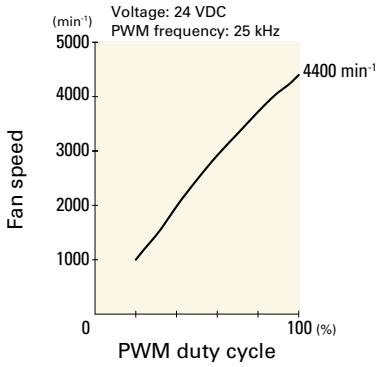
PWM duty cycle



Operating voltage range

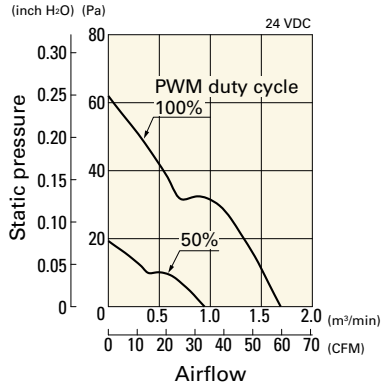


PWM duty - Speed characteristics example

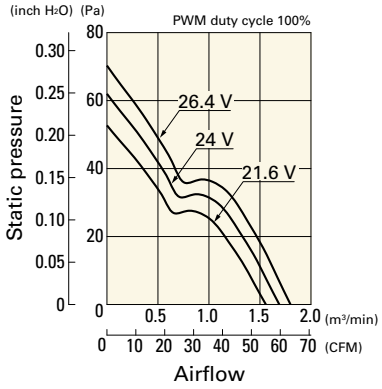


9LG0924P4S001 With pulse sensor with PWM control

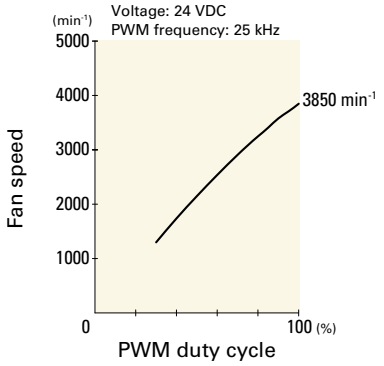
PWM duty cycle



Operating voltage range

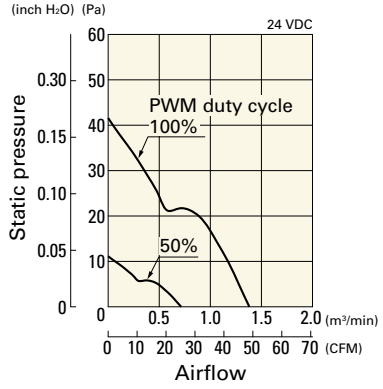


PWM duty - Speed characteristics example

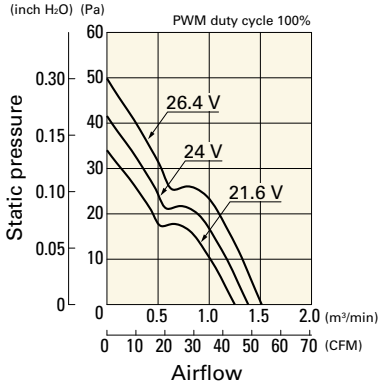


9LG0924P4H001 With pulse sensor with PWM control

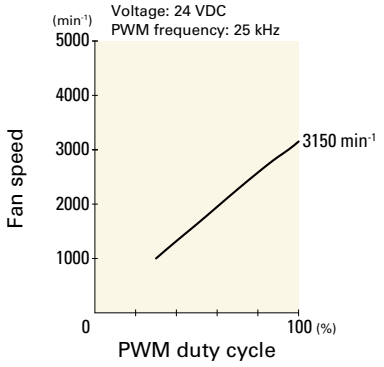
PWM duty cycle



Operating voltage range



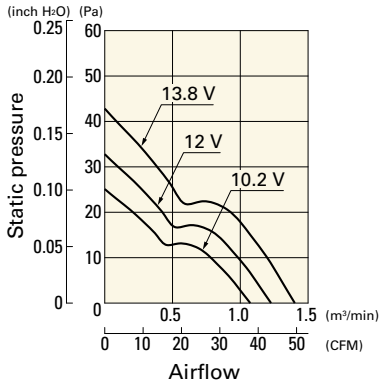
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

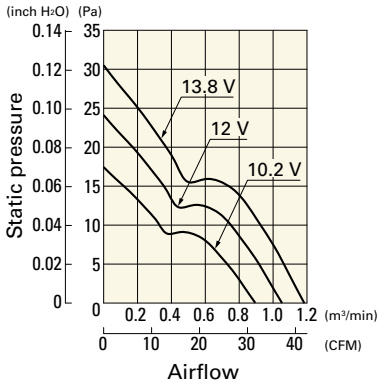
9LG0912F4001 With pulse sensor

Operating voltage range



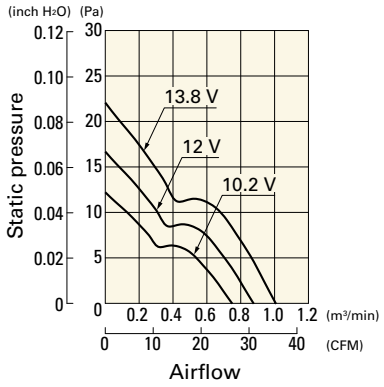
9LG0912M4001 With pulse sensor

Operating voltage range



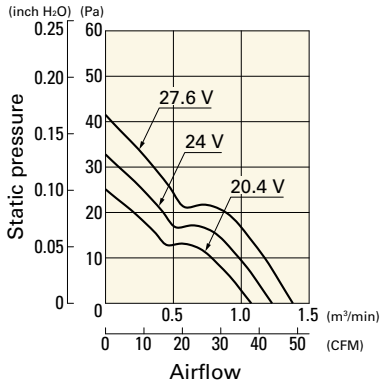
9LG0912L4001 With pulse sensor

Operating voltage range



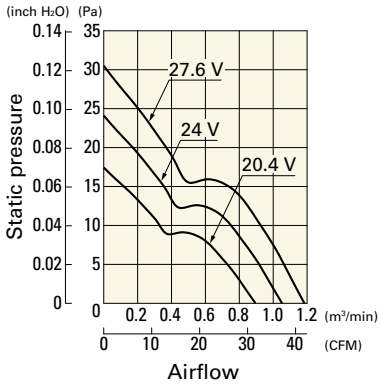
9LG0924F4001 With pulse sensor

Operating voltage range



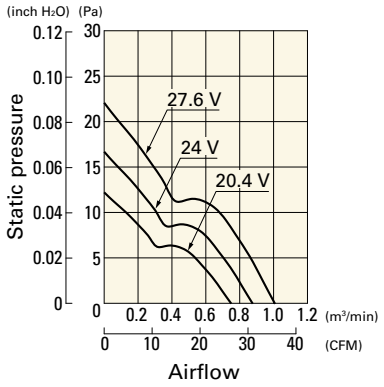
9LG0924M4001 With pulse sensor

Operating voltage range



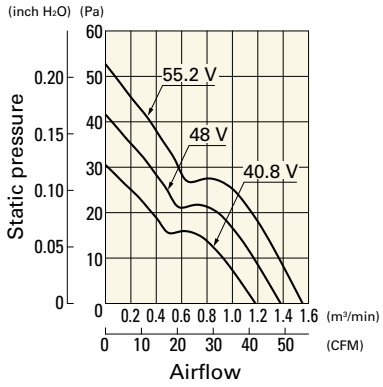
9LG0924L4001 With pulse sensor

Operating voltage range

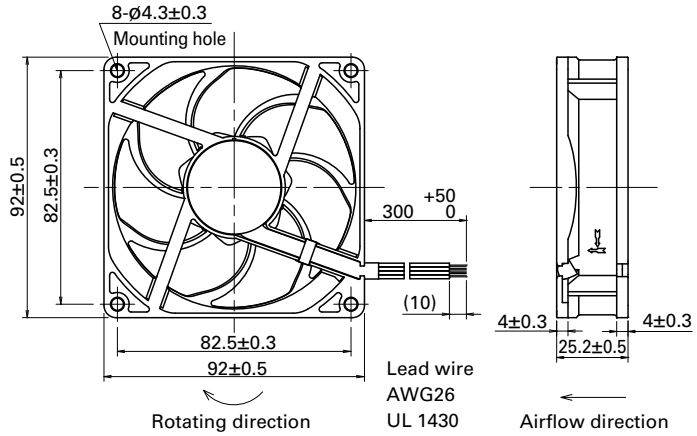


9LG0948H4001 With pulse sensor

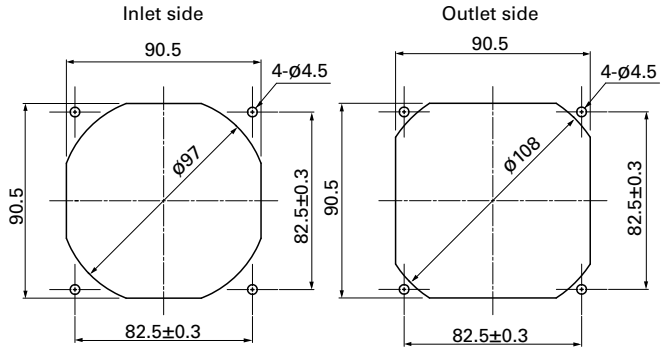
Operating voltage range



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 filter kits page: p. 606

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

Resin finger guards page: p. 605

Model no.: 109-1001G

92×92×38 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. 616.
- 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⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	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			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			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		

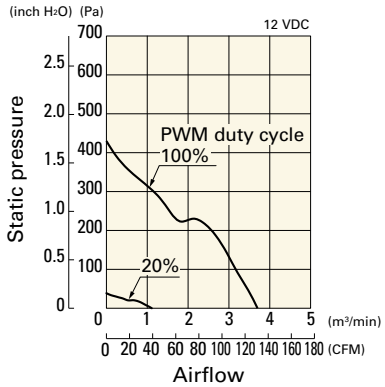
* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 653 to 654.

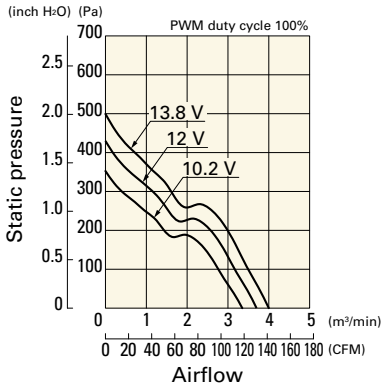
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0912P1H001 With pulse sensor with PWM control

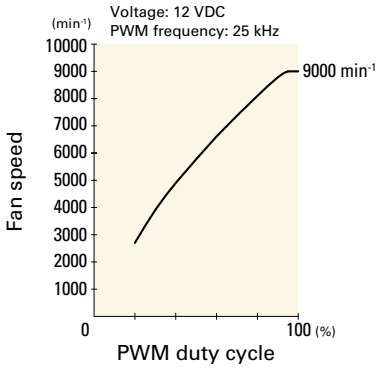
PWM duty cycle



Operating voltage range



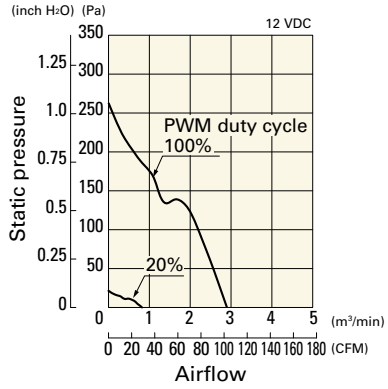
PWM duty - Speed characteristics example



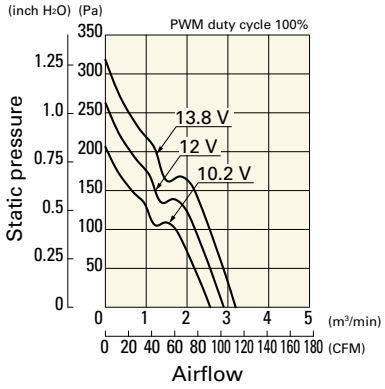
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG0912P1F001 With pulse sensor with PWM control

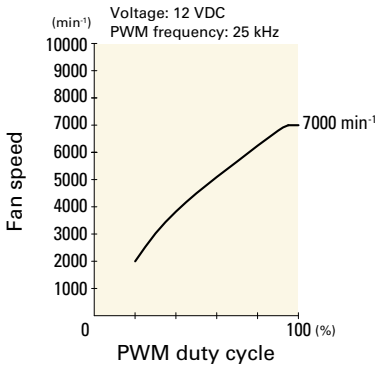
PWM duty cycle



Operating voltage range

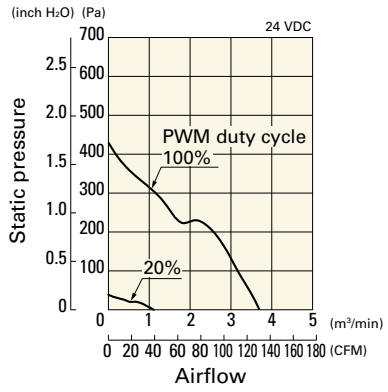


PWM duty - Speed characteristics example

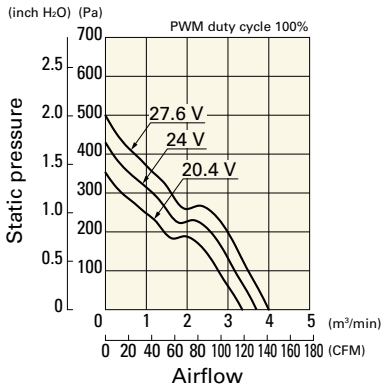


9LG0924P1H001 With pulse sensor with PWM control

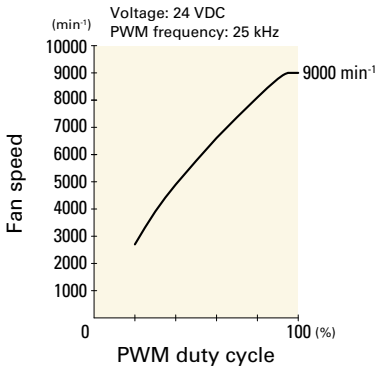
PWM duty cycle



Operating voltage range

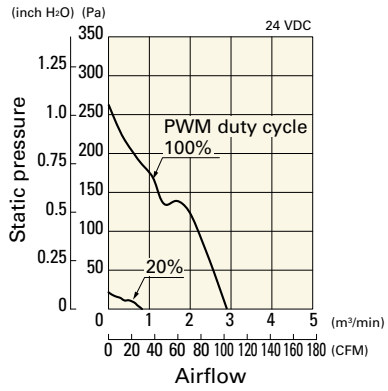


PWM duty - Speed characteristics example

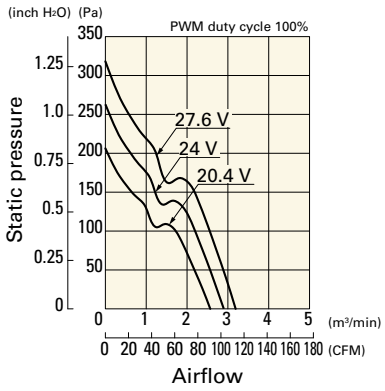


9LG0924P1F001 With pulse sensor with PWM control

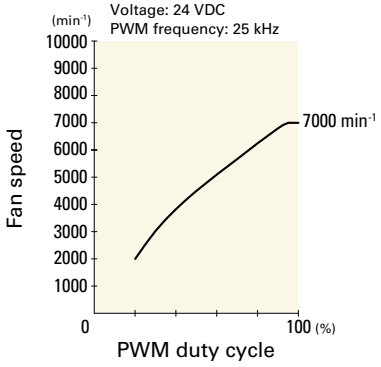
PWM duty cycle



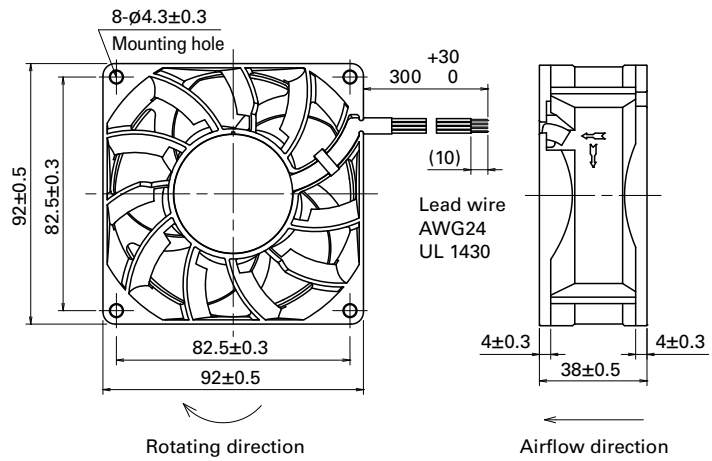
Operating voltage range



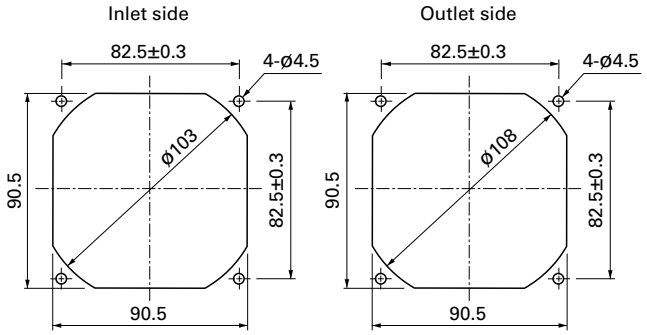
PWM duty - Speed characteristics example



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 filter kits page: p. 606

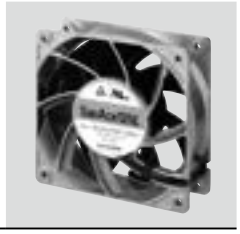
Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI), 109-1001F30 (30PPI), 109-1001F40 (40PPI)

Resin finger guards page: p. 605

Model no.: 109-1001G

120×120×38 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. 616.
- 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⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	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.**

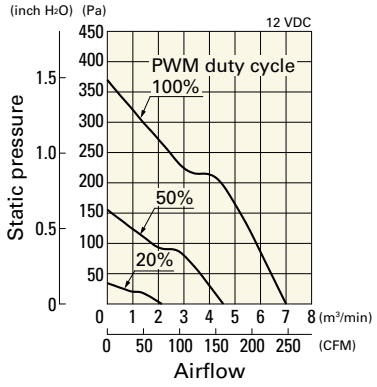
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG1212F1001	12	8 to 13.8	0.39	4.68	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: Sensor and control options are available for selection. Refer to the table on p. 654.

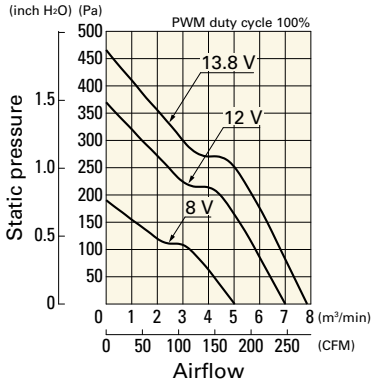
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1212P1G001 With pulse sensor with PWM control

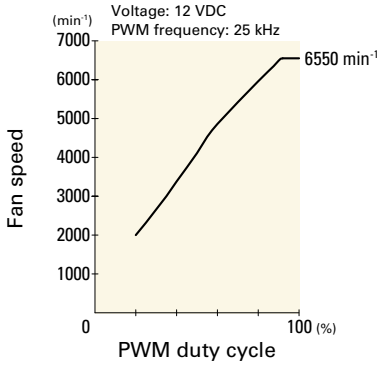
PWM duty cycle



Operating voltage range

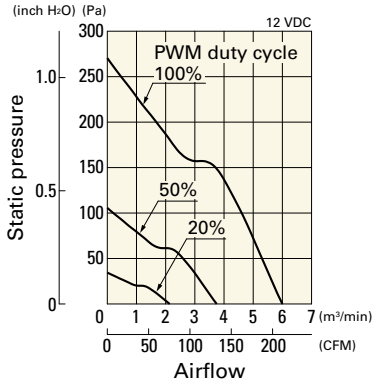


PWM duty - Speed characteristics example

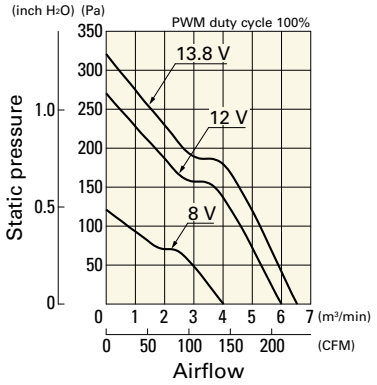


9LG1212P1S001 With pulse sensor with PWM control

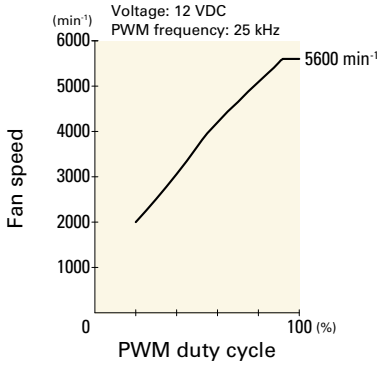
PWM duty cycle



Operating voltage range

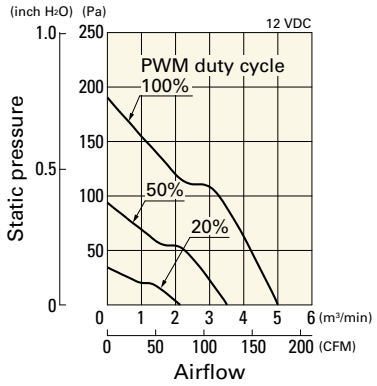


PWM duty - Speed characteristics example

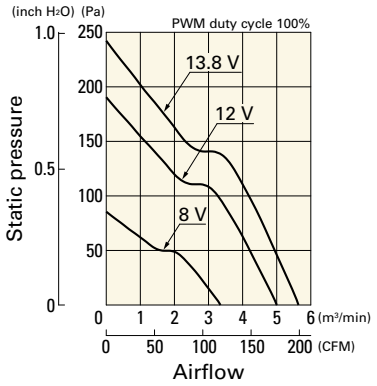


9LG1212P1H001 With pulse sensor with PWM control

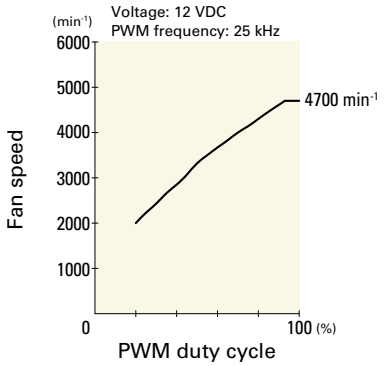
PWM duty cycle



Operating voltage range

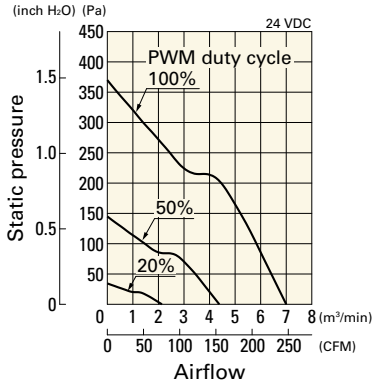


PWM duty - Speed characteristics example

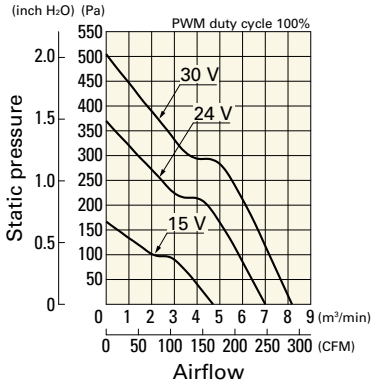


9LG1224P1G001 With pulse sensor with PWM control

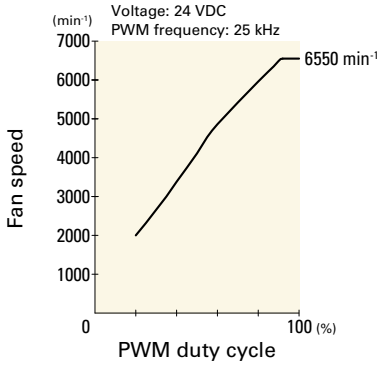
PWM duty cycle



Operating voltage range



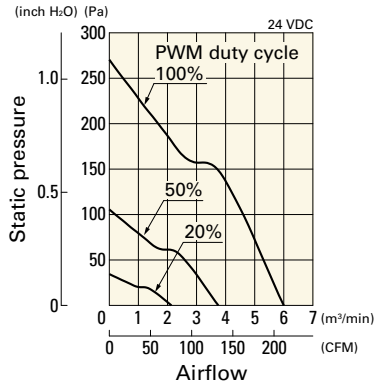
PWM duty - Speed characteristics example



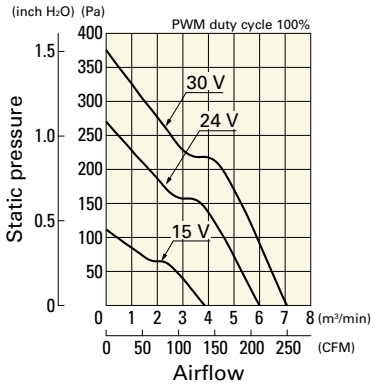
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1224P1S001 With pulse sensor with PWM control

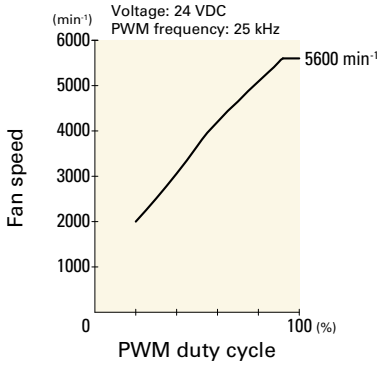
PWM duty cycle



Operating voltage range

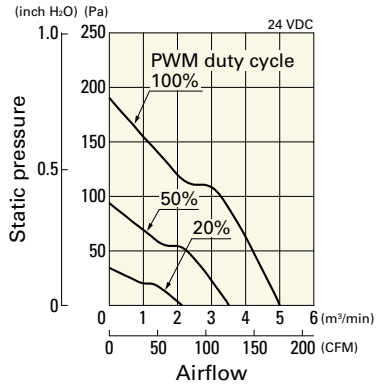


PWM duty - Speed characteristics example

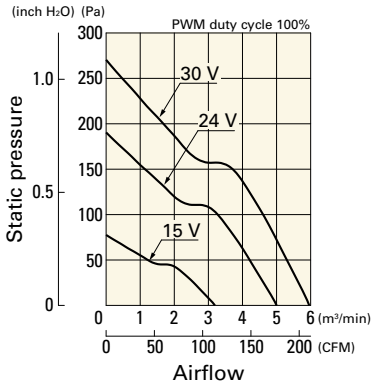


9LG1224P1H001 With pulse sensor with PWM control

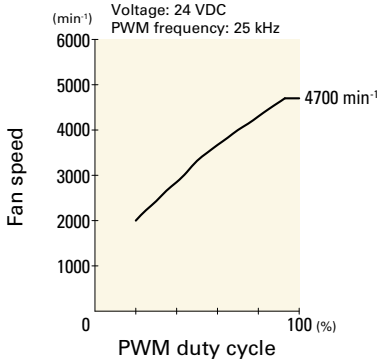
PWM duty cycle



Operating voltage range

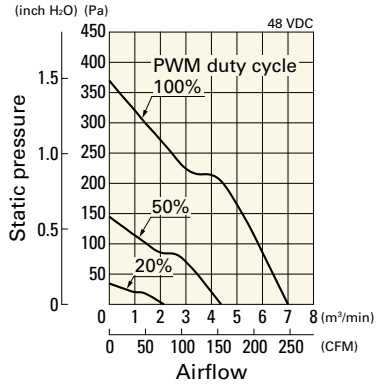


PWM duty - Speed characteristics example

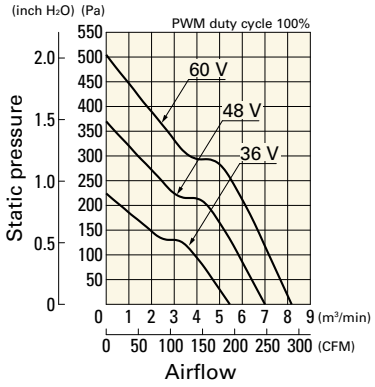


9LG1248P1G001 With pulse sensor with PWM control

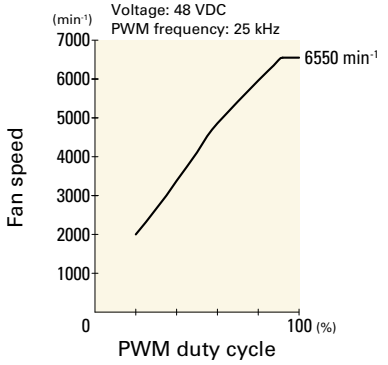
PWM duty cycle



Operating voltage range

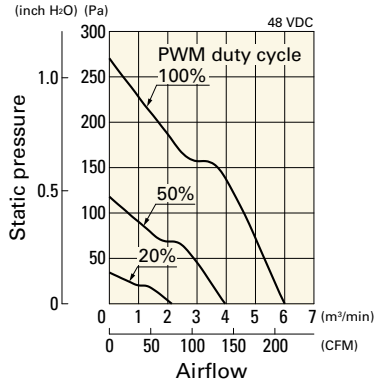


PWM duty - Speed characteristics example

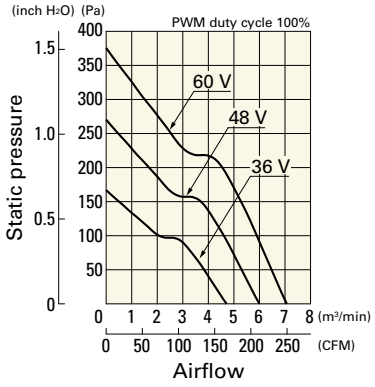


9LG1248P1S001 With pulse sensor with PWM control

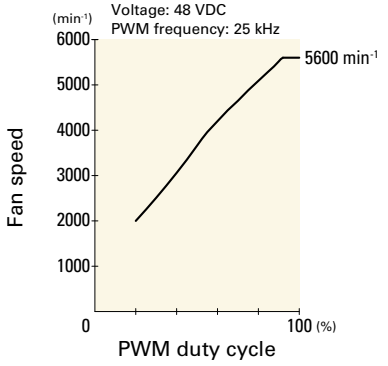
PWM duty cycle



Operating voltage range



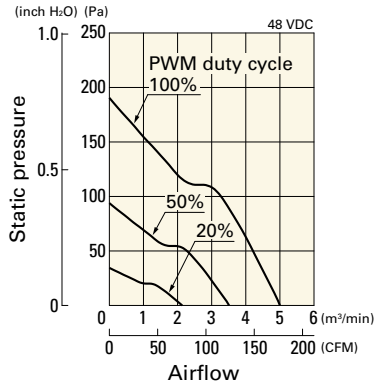
PWM duty - Speed characteristics example



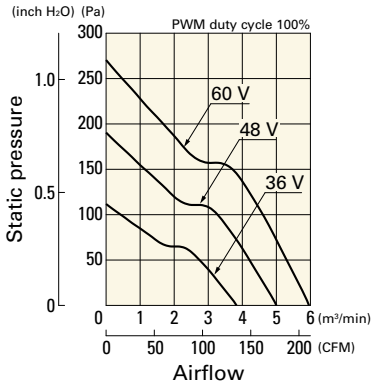
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1248P1H001 With pulse sensor with PWM control

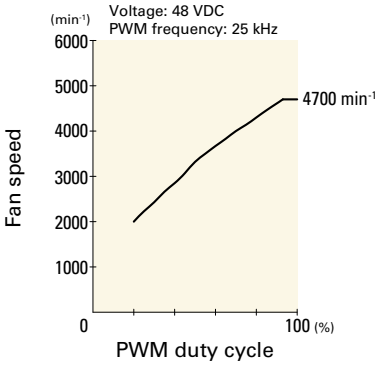
PWM duty cycle



Operating voltage range



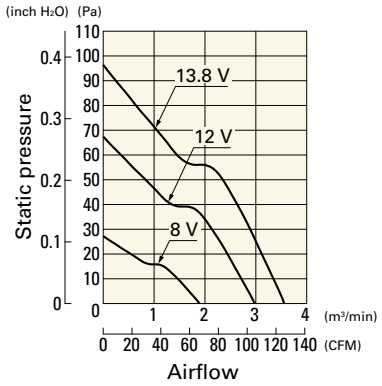
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

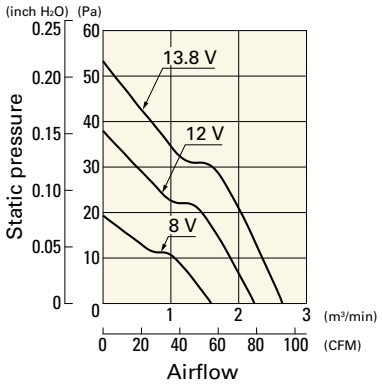
9LG1212F1001 With pulse sensor

Operating voltage range



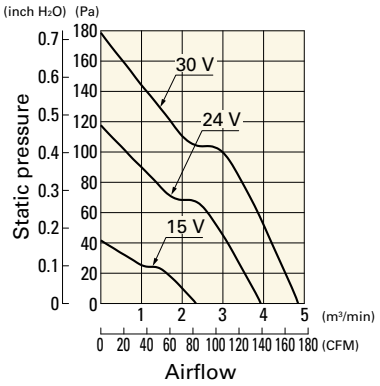
9LG1212M1001 With pulse sensor

Operating voltage range



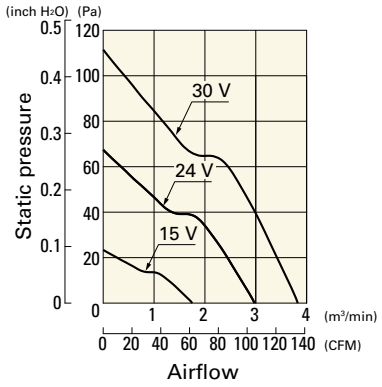
9LG1224A1001 With pulse sensor

Operating voltage range



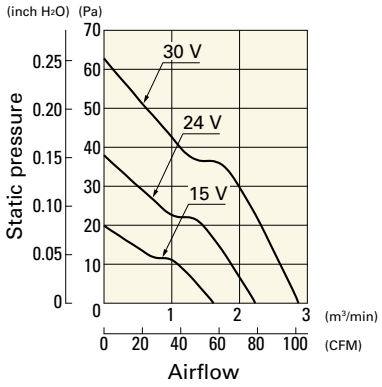
9LG1224F1001 With pulse sensor

Operating voltage range



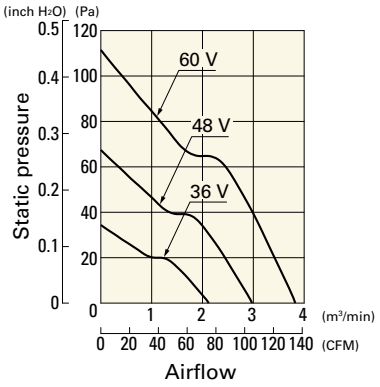
9LG1224M1001 With pulse sensor

Operating voltage range



9LG1248F1001 With pulse sensor

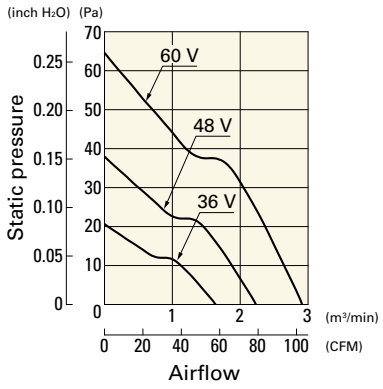
Operating voltage range



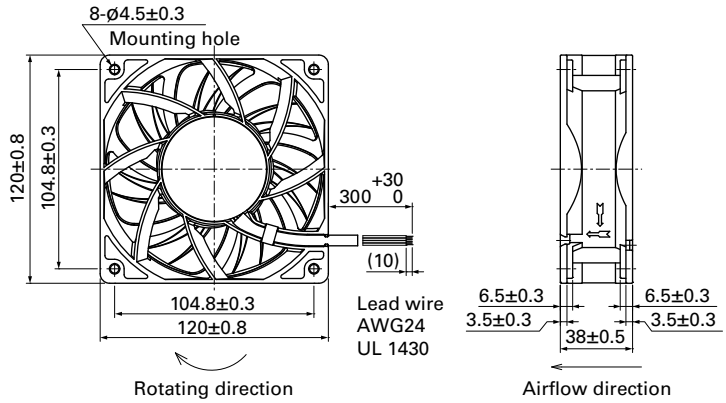
Airflow - Static Pressure Characteristics

9LG1248M1001 With pulse sensor

Operating voltage range

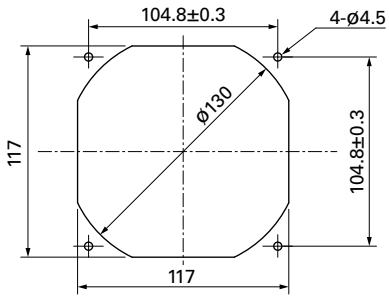


Dimensions (unit: mm) (With pulse sensor with PWM control)



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

Inlet side, Outlet side



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)

140×140×38 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. 616.
- 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⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	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.**

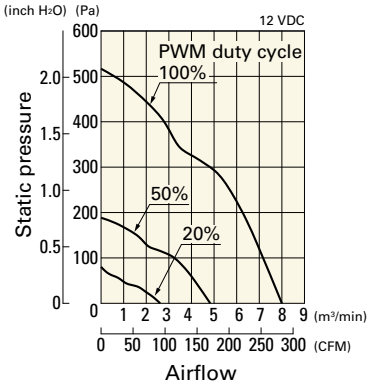
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG1412L1001	12	10.2 to 13.8	0.27	3.3	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: Sensor and control options are available for selection. Refer to the table on p. 654.

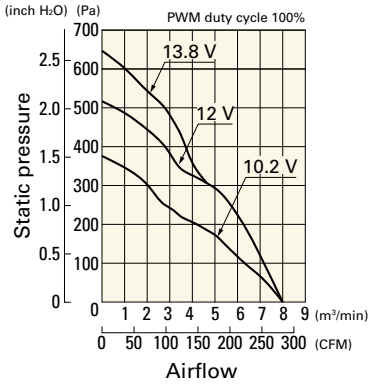
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1412P1A001 With pulse sensor with PWM control

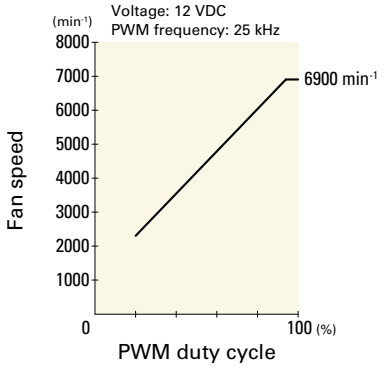
PWM duty cycle



Operating voltage range

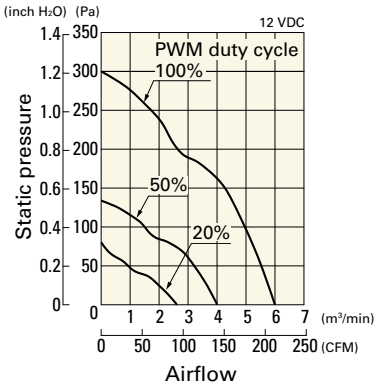


PWM duty - Speed characteristics example

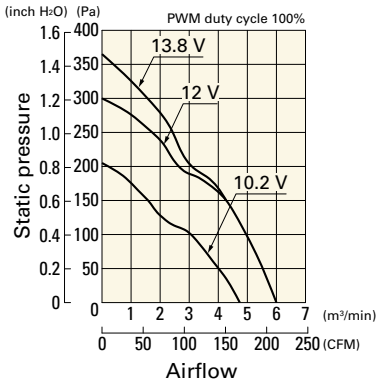


9LG1412P1H001 With pulse sensor with PWM control

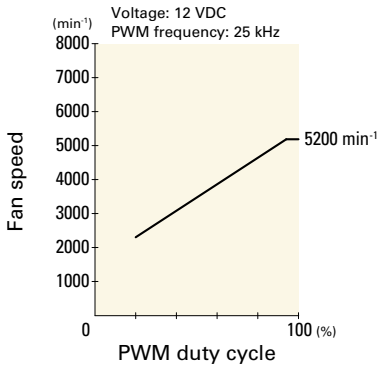
PWM duty cycle



Operating voltage range

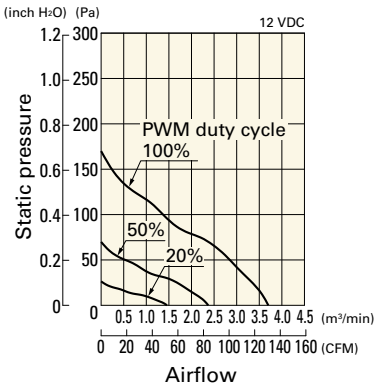


PWM duty - Speed characteristics example

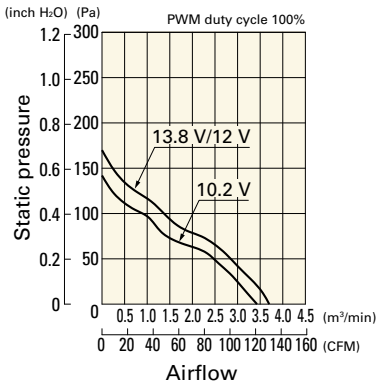


9LG1412P1M001 With pulse sensor with PWM control

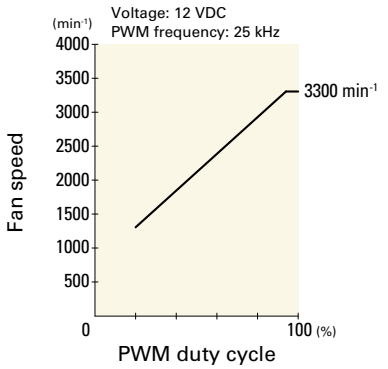
PWM duty cycle



Operating voltage range

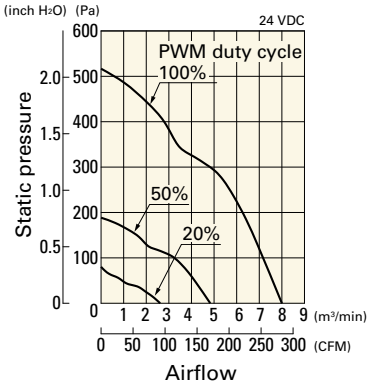


PWM duty - Speed characteristics example

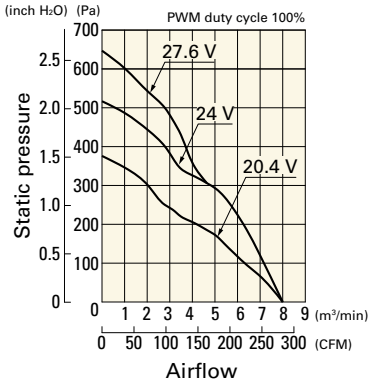


9LG1424P1A001 With pulse sensor with PWM control

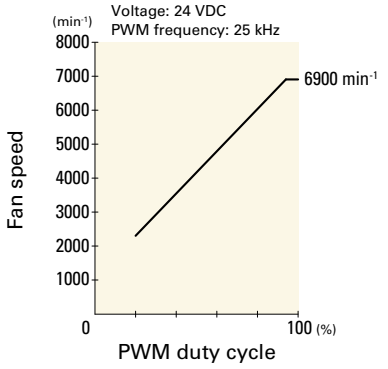
PWM duty cycle



Operating voltage range



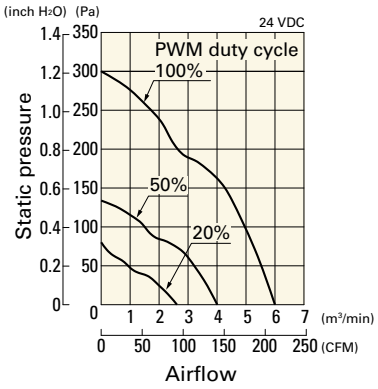
PWM duty - Speed characteristics example



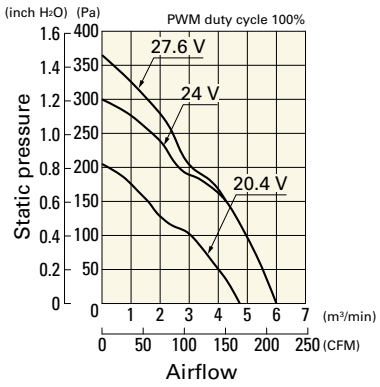
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1424P1H001 With pulse sensor with PWM control

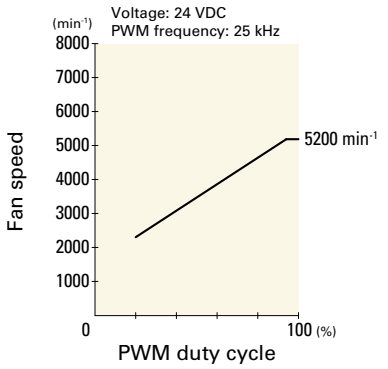
PWM duty cycle



Operating voltage range

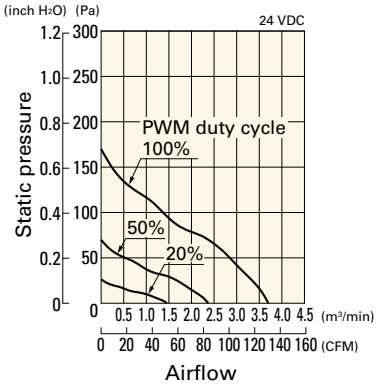


PWM duty - Speed characteristics example

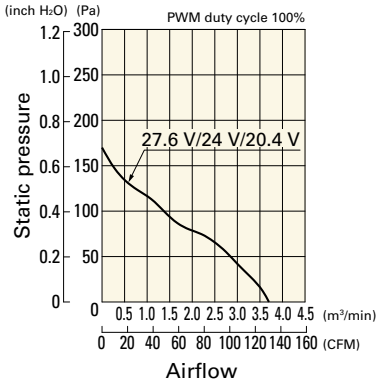


9LG1424P1M001 With pulse sensor with PWM control

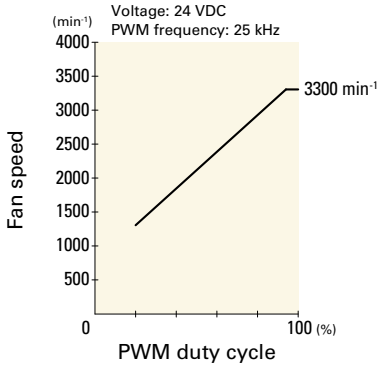
PWM duty cycle



Operating voltage range

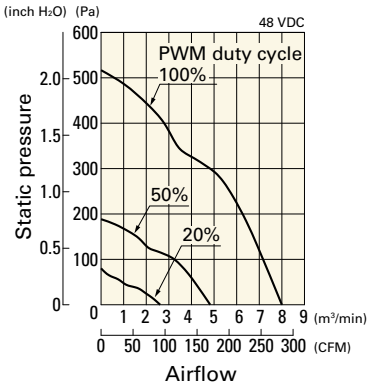


PWM duty - Speed characteristics example

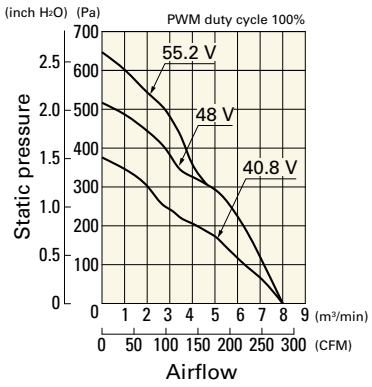


9LG1448P1A001 With pulse sensor with PWM control

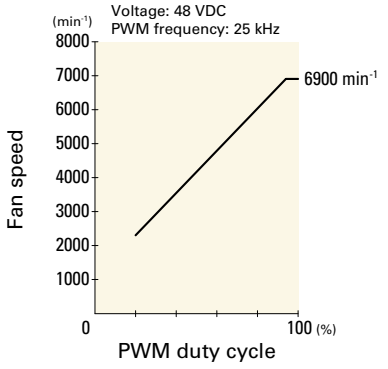
PWM duty cycle



Operating voltage range

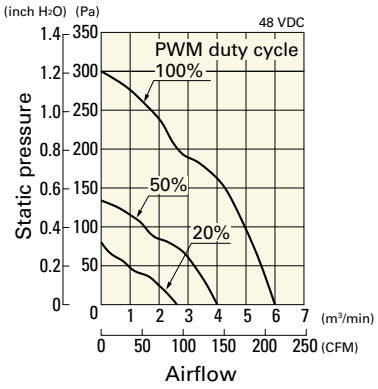


PWM duty - Speed characteristics example

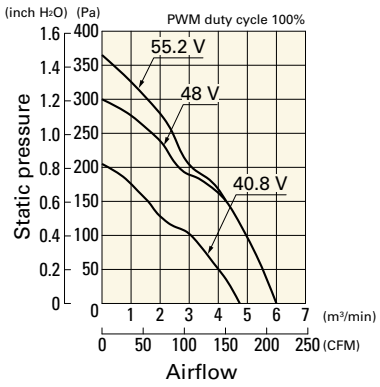


9LG1448P1H001 With pulse sensor with PWM control

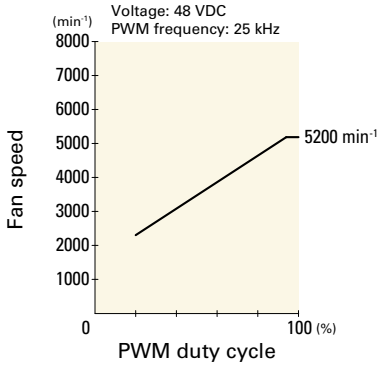
PWM duty cycle



Operating voltage range



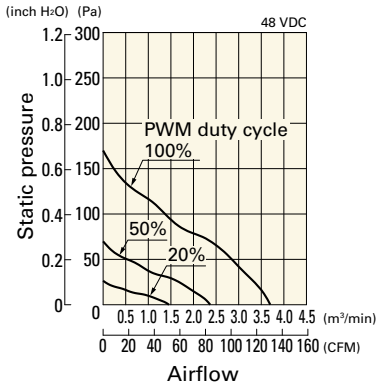
PWM duty - Speed characteristics example



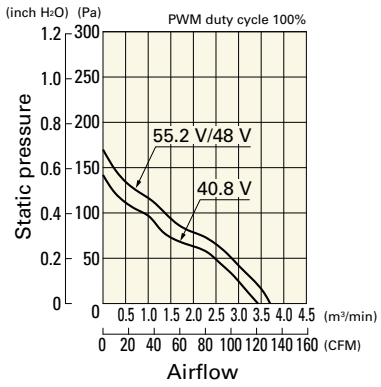
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1448P1M001 With pulse sensor with PWM control

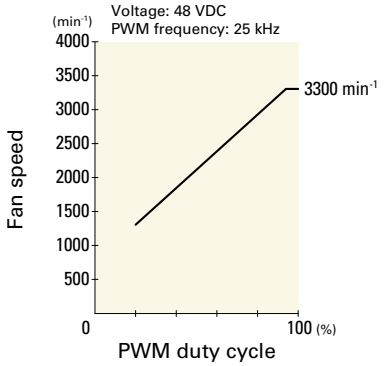
PWM duty cycle



Operating voltage range



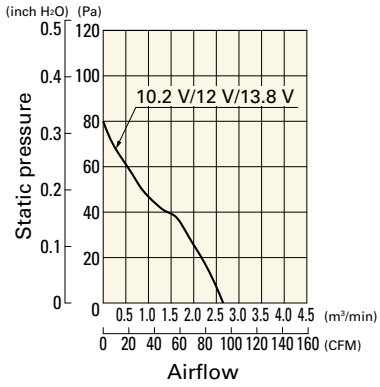
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

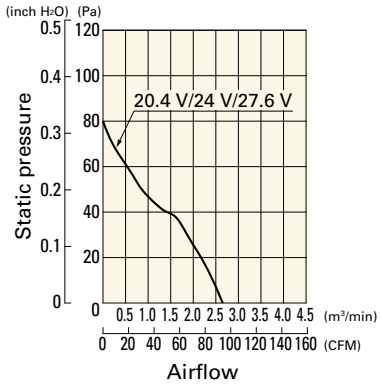
9LG1412L1001 With pulse sensor

Operating voltage range



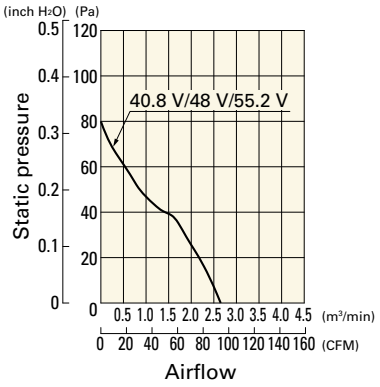
9LG1424L1001 With pulse sensor

Operating voltage range

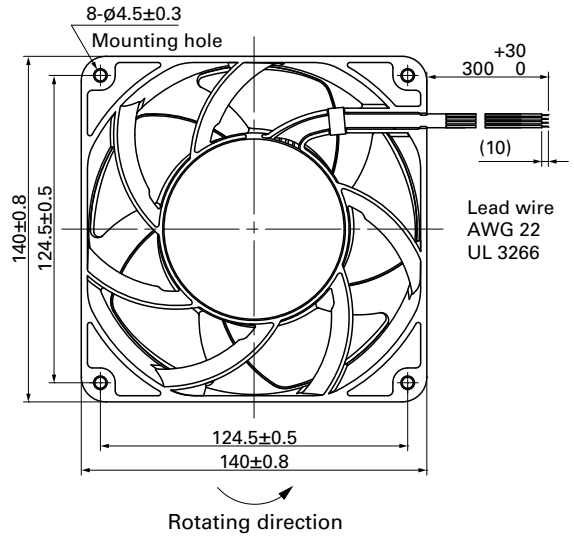


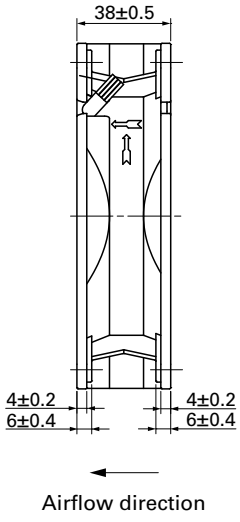
9LG1448L1001 With pulse sensor

Operating voltage range

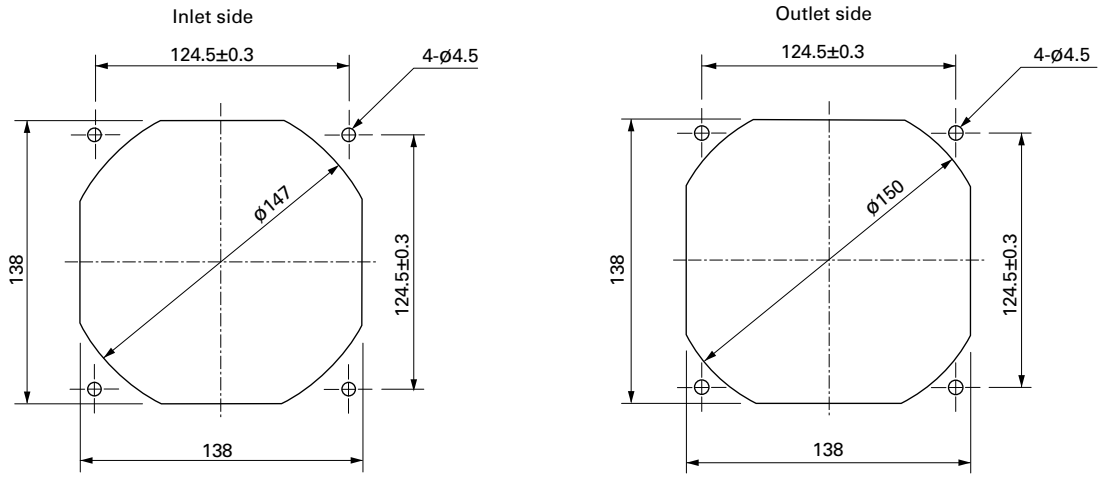


Dimensions (unit: mm) (With pulse sensor with PWM control)





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



Options

Finger guards page: p. 599

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

140×140×51 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. 616.
- 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⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	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)
			20	0.31	3.72	2300	2.75	97	80	0.32	38		
9LG1412P5S001			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		
9LG1424P5G001	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		
9LG1424P5S001			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		
9LG1448P5G001	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		
9LG1448P5S001			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.**

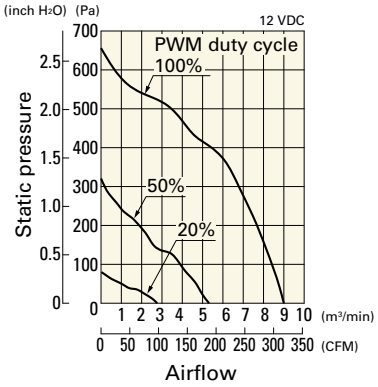
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
9LG1412A5001	12	10.2 to 13.8	2.61	31.4	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: Sensor and control options are available for selection. Refer to the table on p. 654.

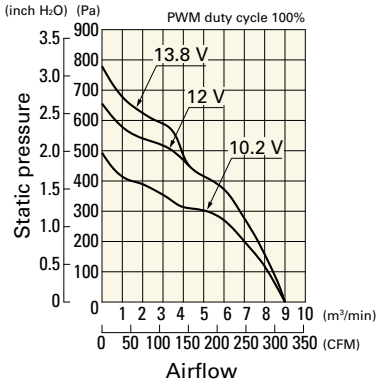
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1412P5G001 With pulse sensor with PWM control

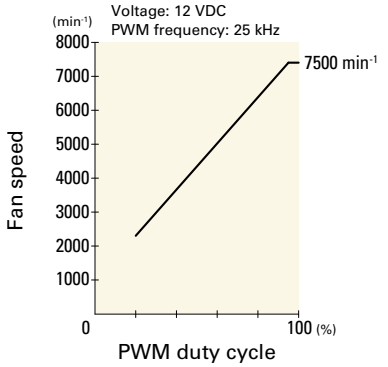
PWM duty cycle



Operating voltage range

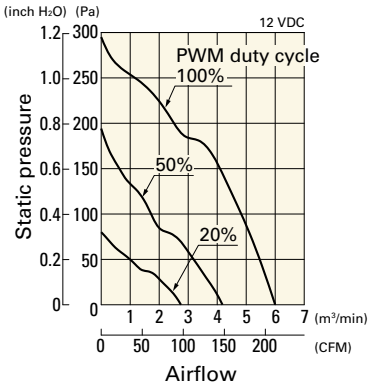


PWM duty - Speed characteristics example

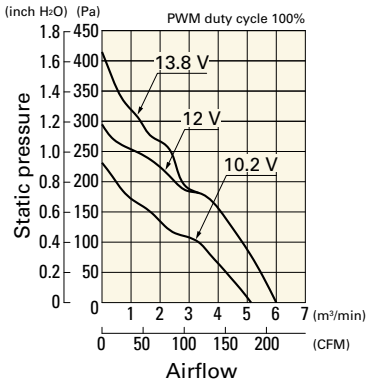


9LG1412P5S001 With pulse sensor with PWM control

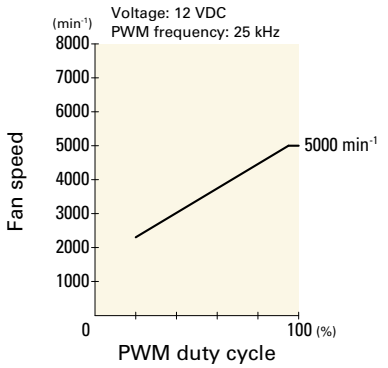
PWM duty cycle



Operating voltage range

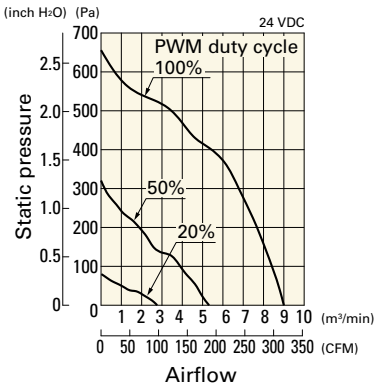


PWM duty - Speed characteristics example

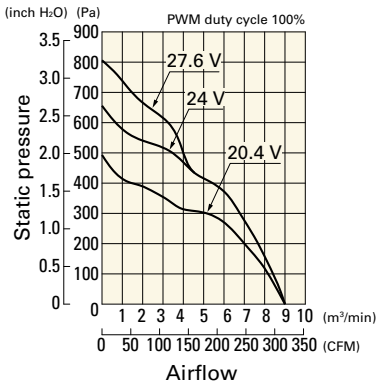


9LG1424P5G001 With pulse sensor with PWM control

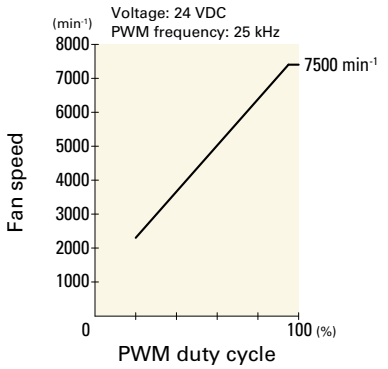
PWM duty cycle



Operating voltage range

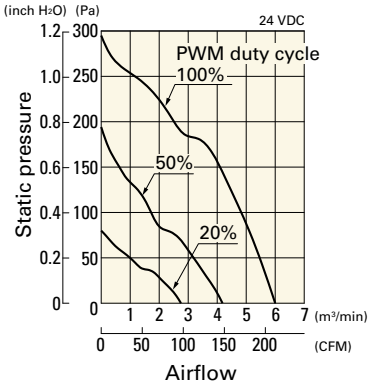


PWM duty - Speed characteristics example

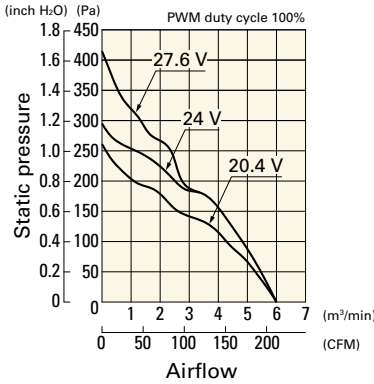


9LG1424P5S001 With pulse sensor with PWM control

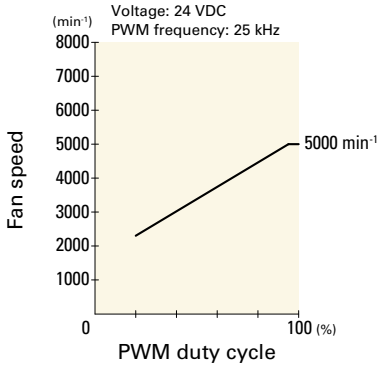
PWM duty cycle



Operating voltage range



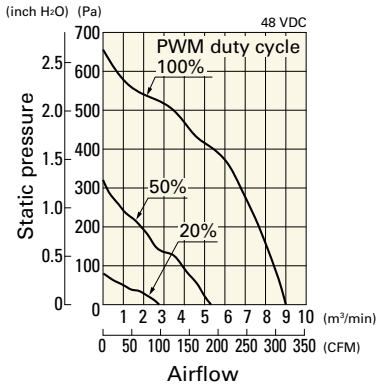
PWM duty - Speed characteristics example



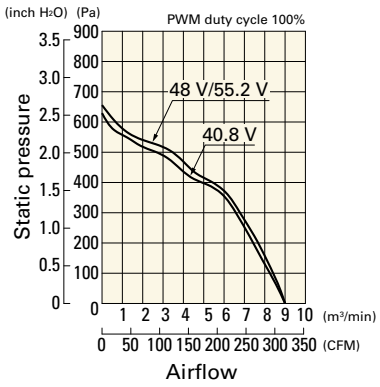
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9LG1448P5G001 With pulse sensor with PWM control

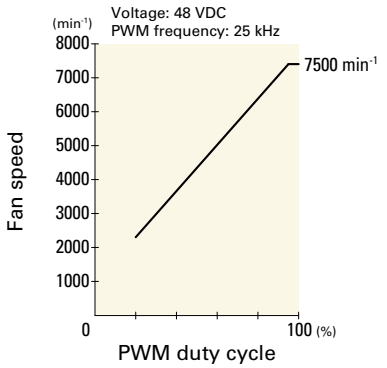
PWM duty cycle



Operating voltage range

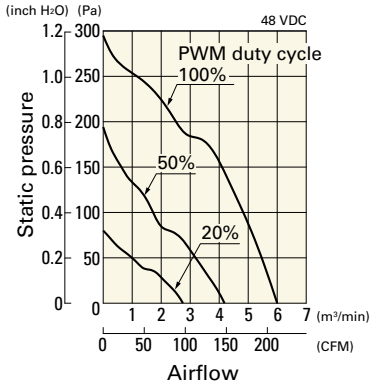


PWM duty - Speed characteristics example

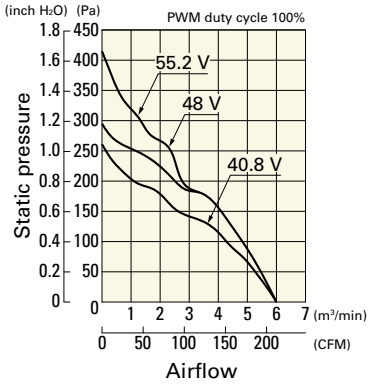


9LG1448P5S001 With pulse sensor with PWM control

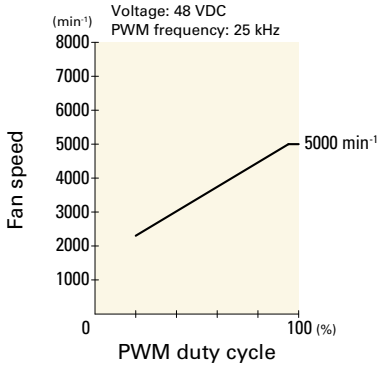
PWM duty cycle



Operating voltage range



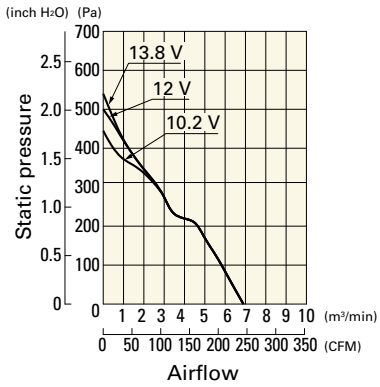
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

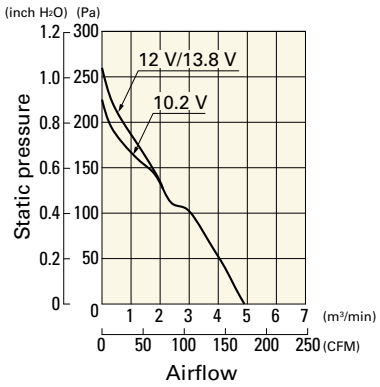
9LG1412A5001 With pulse sensor

Operating voltage range



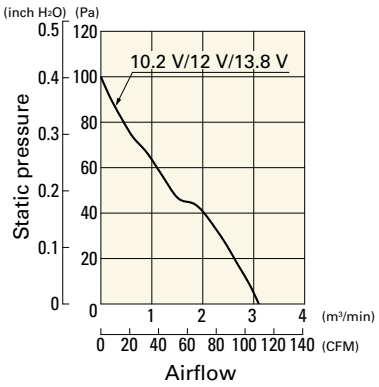
9LG1412H5001 With pulse sensor

Operating voltage range



9LG1412M5001 With pulse sensor

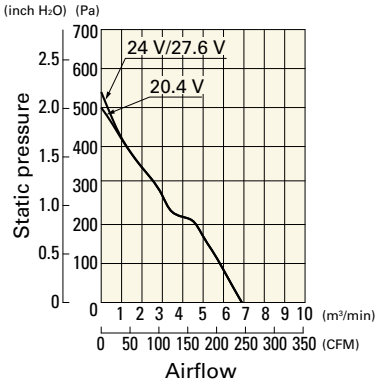
Operating voltage range



Airflow - Static Pressure Characteristics

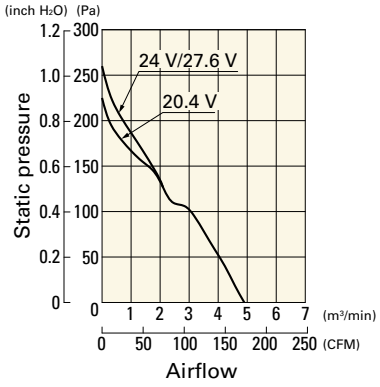
9LG1424A5001 With pulse sensor

Operating voltage range



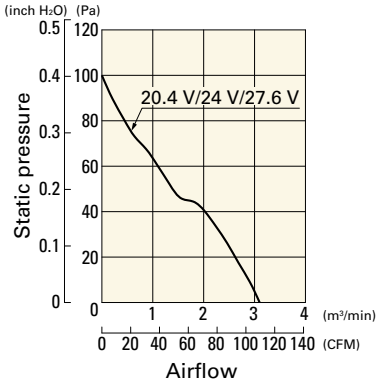
9LG1424H5001 With pulse sensor

Operating voltage range



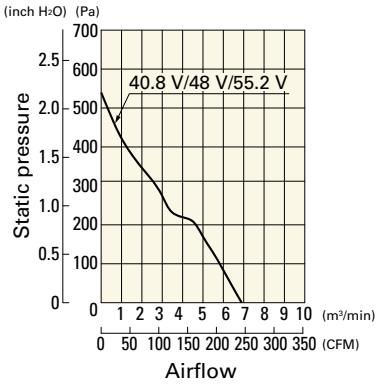
9LG1424M5001 With pulse sensor

Operating voltage range



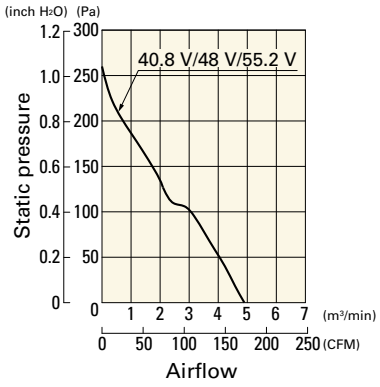
9LG1448A5001 With pulse sensor

Operating voltage range



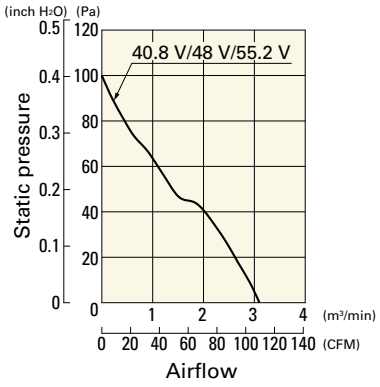
9LG1448H5001 With pulse sensor

Operating voltage range

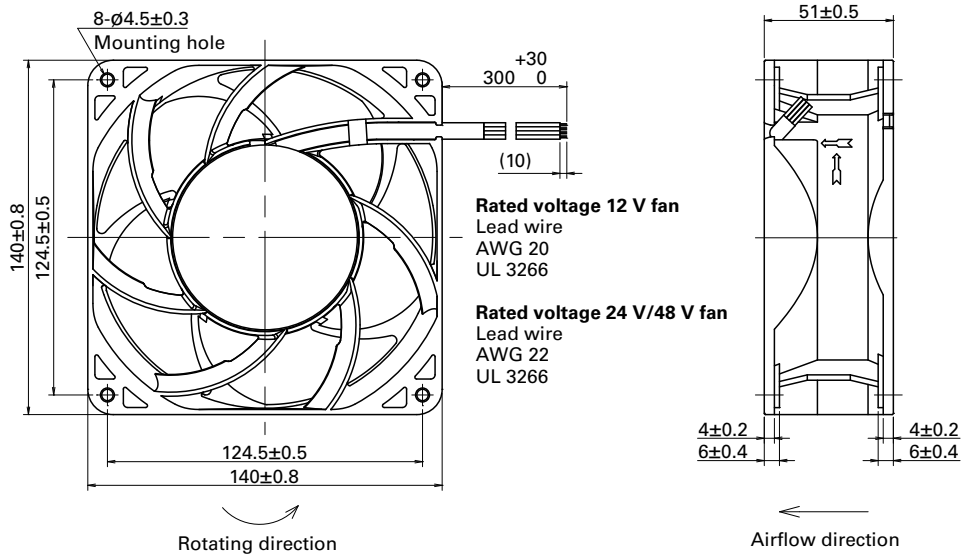


9LG1448M5001 With pulse sensor

Operating voltage range



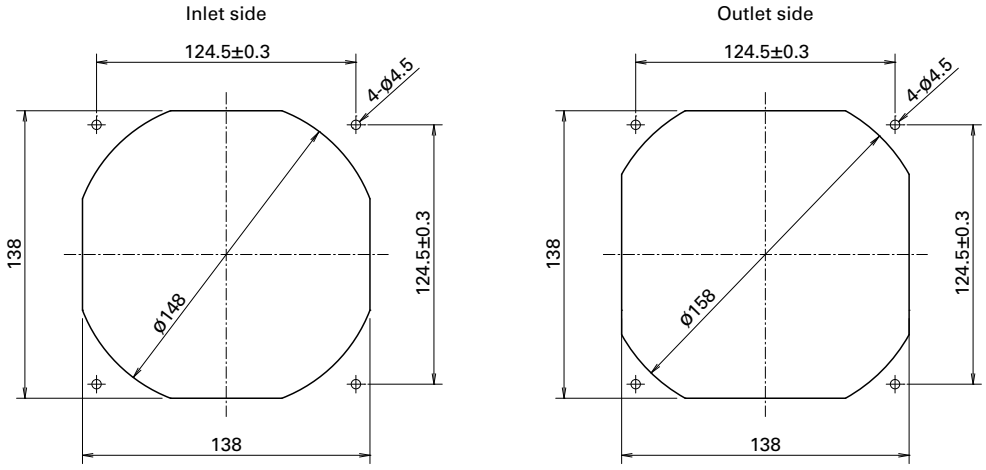
Dimensions (unit: mm) (With pulse sensor with PWM control)



Rated voltage 12 V fan
Lead wire
AWG 20
UL 3266

Rated voltage 24 V/48 V fan
Lead wire
AWG 22
UL 3266

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



Options

Finger guards page: p. 599

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

ø172×150×51 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. 616.
- 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.**

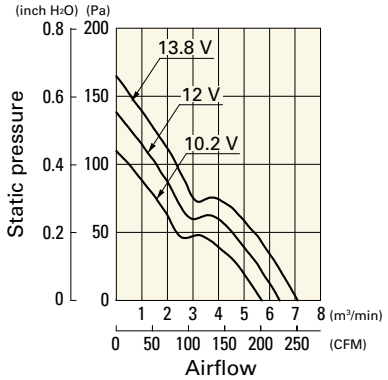
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109L5712H501	12	10.2 to 13.8	1.2	14.4	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. 645.

Airflow - Static Pressure Characteristics

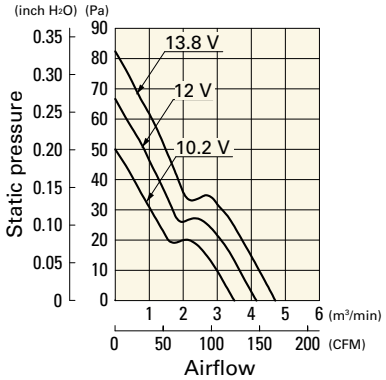
109L5712H501 With pulse sensor

Operating voltage range



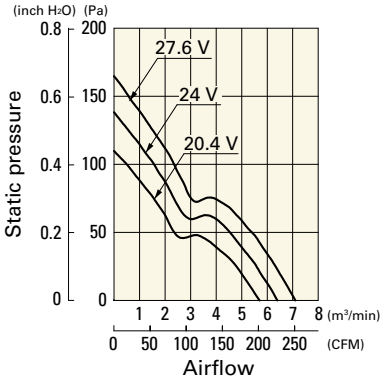
109L5712M501 With pulse sensor

Operating voltage range



109L5724H501 With pulse sensor

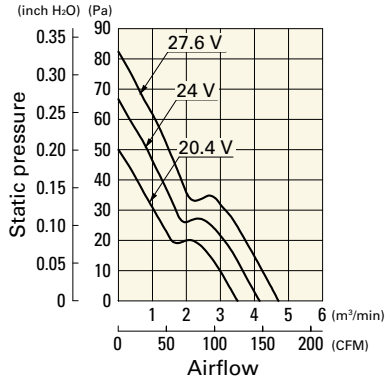
Operating voltage range



Airflow - Static Pressure Characteristics

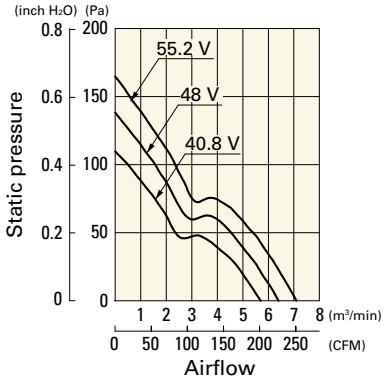
109L5724M501 With pulse sensor

Operating voltage range



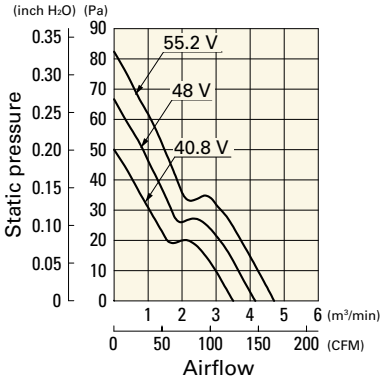
109L5748H501 With pulse sensor

Operating voltage range

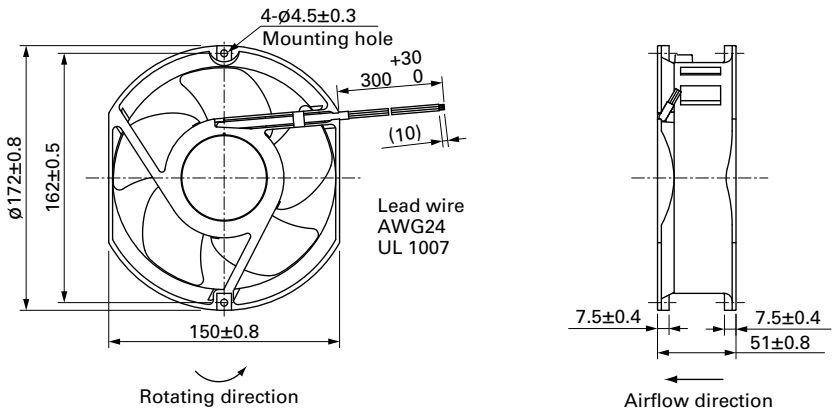


109L5748M501 With pulse sensor

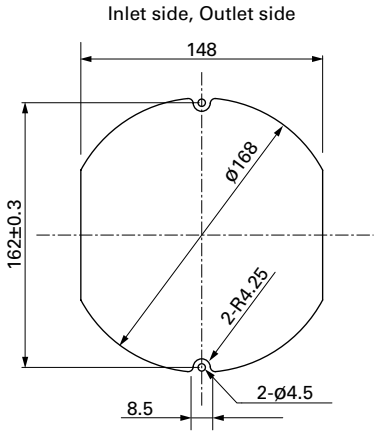
Operating voltage range



Dimensions (unit: mm)



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



Options

Finger guards page: p. 600

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

ø172×51 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. 616.
- 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.**

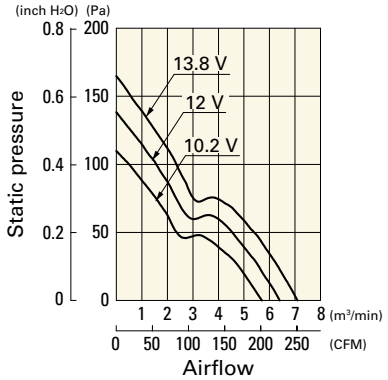
Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH₂O]	SPL [dB (A)]	Operating temperature [˚C]	Expected life [h]
109L1712H501	12	10.2 to 13.8	1.2	14.4	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. 645.

Airflow - Static Pressure Characteristics

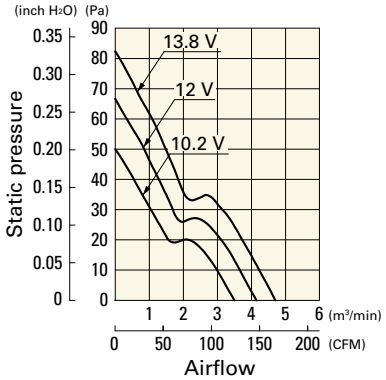
109L1712H501 With pulse sensor

Operating voltage range



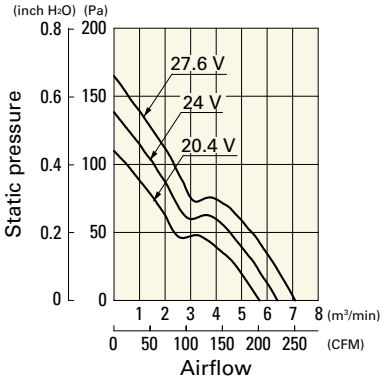
109L1712M501 With pulse sensor

Operating voltage range



109L1724H501 With pulse sensor

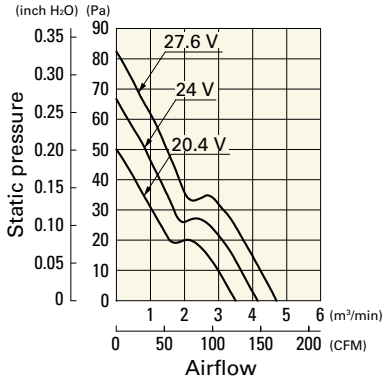
Operating voltage range



Airflow - Static Pressure Characteristics

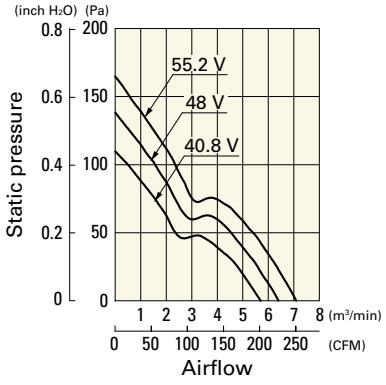
109L1724M501 With pulse sensor

Operating voltage range



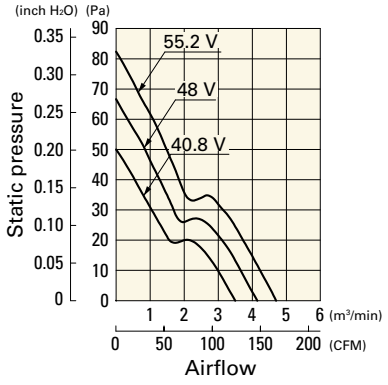
109L1748H501 With pulse sensor

Operating voltage range

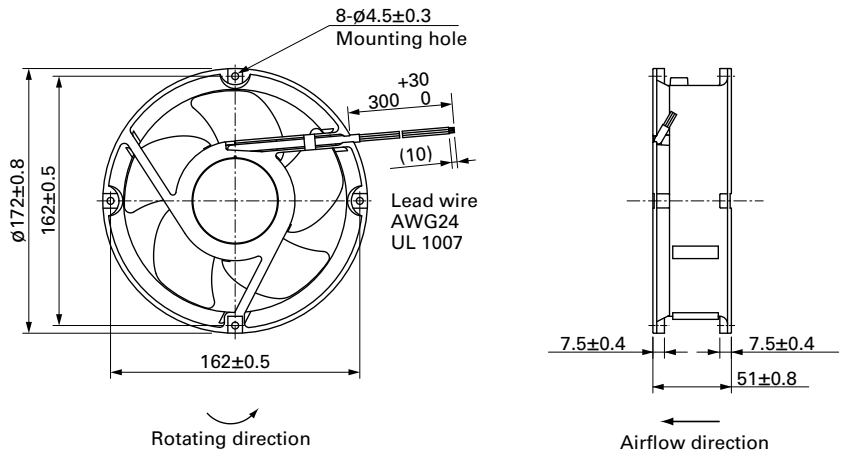


109L1748M501 With pulse sensor

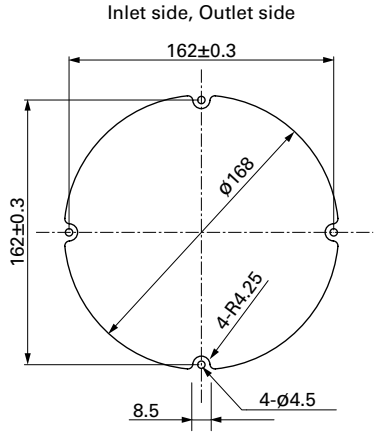
Operating voltage range



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