

Splash Proof Fan

Cooling fan of IP54, IP55 and IP68 waterproof capability. For more information on IP rating, refer to p. 587.
 Related product: Splash Proof Centrifugal Fan p. 299, Splash Proof Blower p. 331, Oil Proof Fan p. 335

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

| | | | | | | |
|------------|------------|-----------|------------|-----------------|-----------------------|------------|
| 9WL | 14 | 48 | L | 1 | 001 | |
| Type name | Frame size | Voltage | Speed code | Frame thickness | Sensor specifications | Frame form |

Fans with PWM control function

| | | | | | | | |
|------------|------------|-----------|----------------------|-----------------|------------|--|------------|
| 9WV | 08 | 48 | P | 1 | H | 001 | |
| Type name | Frame size | Voltage | PWM control function | Frame thickness | Speed code | Individual customer's spec (2 to 3 digits) | Frame form |

| | | | | | | | | |
|-----------------------|-------------------------------|-------|-------|------------------|------------------------------|---------|--------------------|--------------------|
| Type name | 9WL 9WP 9WV etc. | | | | | | | |
| Frame size (mm) | 04 | 06 | 08 | 09 | 12 | 14 | 17 | 57 |
| | 40×40 | 60×60 | 80×80 | 92×92 | 120×120 | 140×140 | ∅172 | ∅172×150 (sidecut) |
| Voltage (V) | 12 | 24 | 48 | | | | | |
| | 12 | 24 | 48 | etc. | | | | |
| Speed code | A | D | E | F | G | H | J | L M S etc. |
| Frame thickness (mm) | 1 | 4 | 5 | 6 | | | | |
| | 38 | 25 | 51 | 20 | | | | |
| Sensor specifications | 01, 001 | | | 02, 002 | | | D01, D001 | |
| | With a pulse sensor | | | Without a sensor | | | With a lock sensor | |
| Frame form | Nil | | | | 1 | | | |
| | Plastic frame: Ribbed frame | | | | Plastic frame: Ribless frame | | | |
| | Aluminum frame: Ribless frame | | | | | | | |

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 [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|---------------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|--|--|--------------|----------------------------|----------------------------|
| 9GA0412G7001 | 12 | 7 to 13.8 | 0.17 | 2.04 | 13100 | 0.36 12.7 | 192 0.77 | 42 | -20 to +70 | 40000/60°C (70000/40°C) |

- Rated voltage This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
- Operating voltage range The voltage range over which fan operation is guaranteed.
- Rated current The current when the fan is operating at rated voltage (at free air).
- Rated input The power value when the fan is operating at rated voltage (at free air).
- Rated speed The speed when the fan is operating at rated voltage (at free air).
- Max. airflow The airflow at 0 Pa static pressure when the fan is operating at rated voltage. (Measured using the double chamber method)
- Max. static pressure The static pressure at 0 m³/min airflow when the fan is operating at rated voltage. (Measured using the double chamber method)
- SPL A-weighted sound pressure level (SPL) when the fan operates at the rated speed.
 For the measurement method, see the Technical Materials section in the catalog.
- Operating temperature The temperature range over which fan operation is guaranteed (Non-condensing).
- Expected life Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only.
 For more information, please refer to the technical material section.



40x40x28 mm

San Ace 40W 9WL type   US

DC
Splash Proof Fan 40 mm sq.

General Specifications

- Material Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage)
Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 580.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black Sensor Yellow Control Brown
- Mass 70 g
- Ingress protection IP68

Specifications

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

| Model no. | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|---------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|--|--|--------------|----------------------------|------------------------------|
| 9WL0412P3J001 | 12 | 10.8 to 13.2 | 100 | 0.52 | 6.24 | 17500 | 0.63 22.2 | 400 1.61 | 51 | -20 to +70 | 150000/60°C (185000/40°C) |
| | | | 20 | 0.06 | 0.72 | 3600 | 0.13 4.6 | 16.9 0.07 | 20 | | |
| 9WL0412P3G001 | | | 100 | 0.4 | 4.8 | 15500 | 0.56 19.7 | 310 1.24 | 47 | | |
| | | | 20 | 0.06 | 0.72 | 3300 | 0.12 4.2 | 14.0 0.06 | 18 | | |
| 9WL0424P3J001 | 24 | 21.6 to 26.4 | 100 | 0.26 | 6.24 | 17500 | 0.63 22.2 | 400 1.61 | 51 | | |
| | | | 20 | 0.04 | 0.96 | 4000 | 0.14 5.1 | 20.9 0.08 | 22 | | |
| 9WL0424P3G001 | | | 100 | 0.2 | 4.8 | 15500 | 0.56 19.7 | 310 1.24 | 47 | | |
| | | | 20 | 0.04 | 0.96 | 3000 | 0.11 3.8 | 11.6 0.05 | 16 | | |

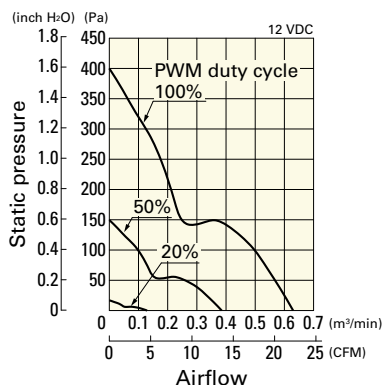
* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 618.

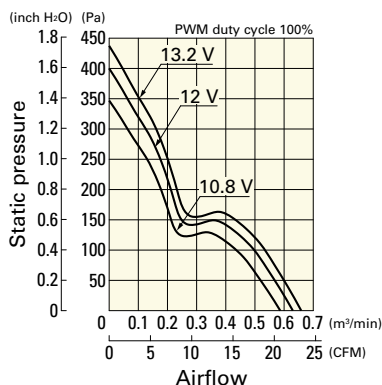
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0412P3J001 With pulse sensor with PWM control function

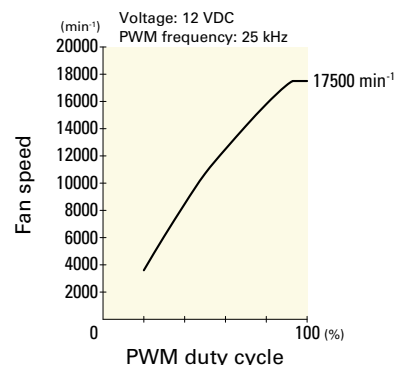
PWM duty cycle



Operating voltage range



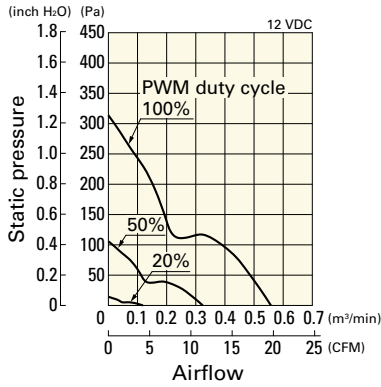
PWM duty - Speed characteristics example



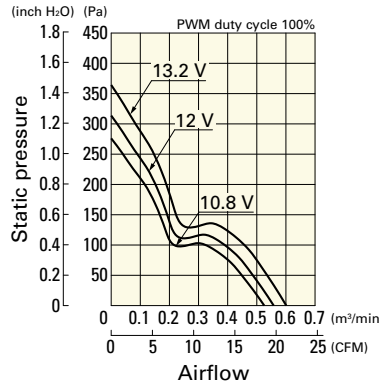
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0412P3G001 With pulse sensor with PWM control function

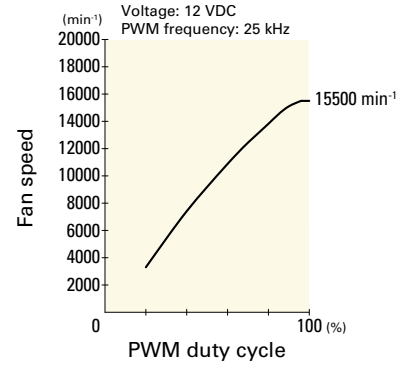
PWM duty cycle



Operating voltage range

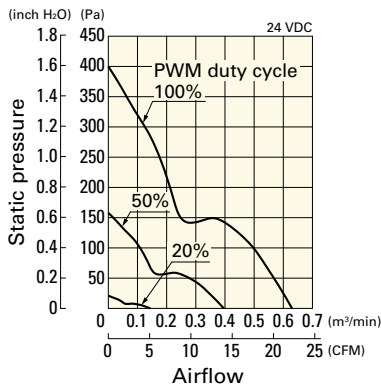


PWM duty - Speed characteristics example

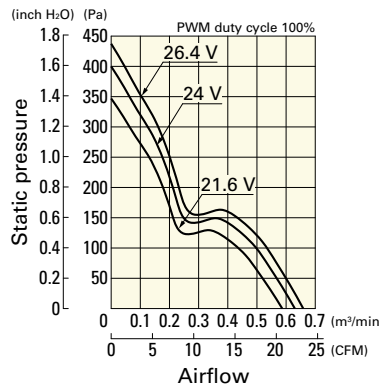


9WL0424P3J001 With pulse sensor with PWM control function

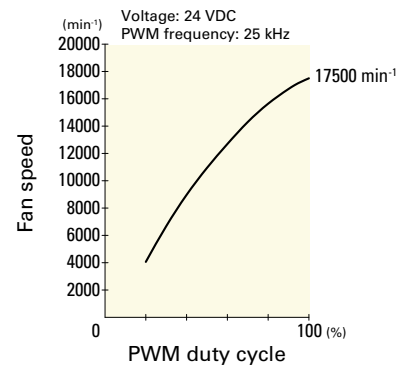
PWM duty cycle



Operating voltage range

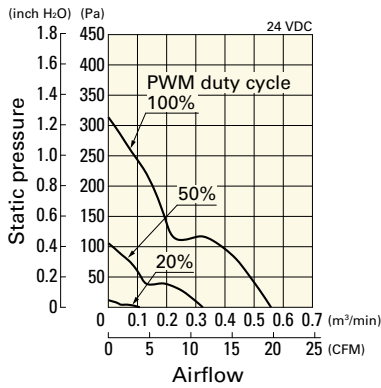


PWM duty - Speed characteristics example

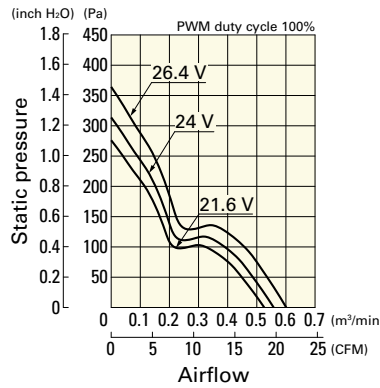


9WL0424P3G001 With pulse sensor with PWM control function

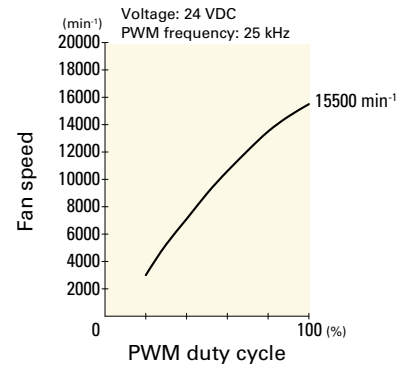
PWM duty cycle



Operating voltage range

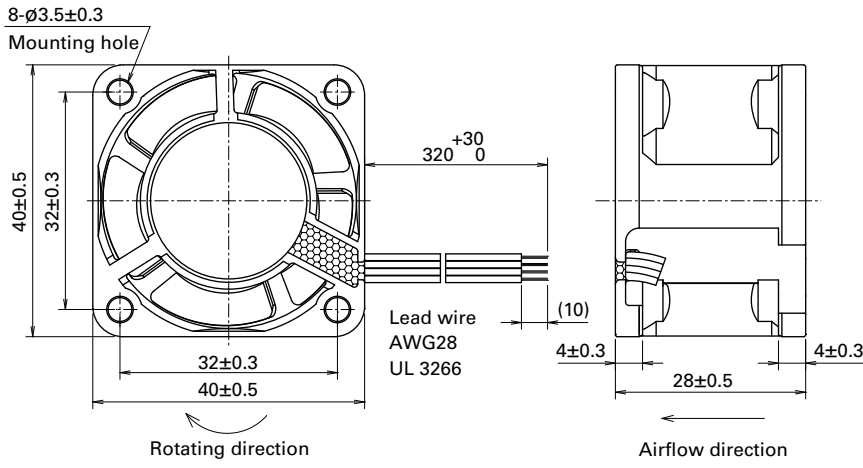


PWM duty - Speed characteristics example

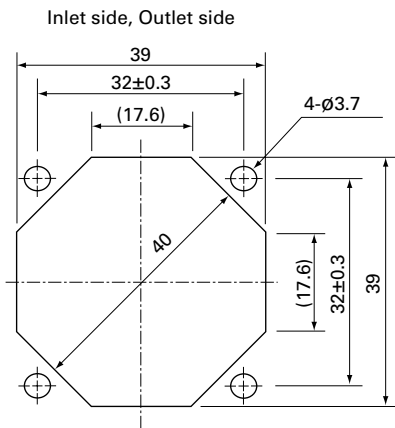


DC
Splash Proof Fan 40 mm sq.

Dimensions (unit: mm)



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



Options

Finger guards

page: p. 564

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



60x60x25 mm

San Ace 60W 9WL type   US

General Specifications

- Material Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage) Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection, Reverse polarity protection For details, please refer to p. 580.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black Sensor Yellow Control Brown
- Mass 120 g
- Ingress protection IP68

Specifications

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

| Model no. | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|--|--|--------------|----------------------------|------------------------------|
| 9WL0612P4S001 | 12 | 10.8 to 13.2 | 100 | 0.67 | 8.04 | 11000 | 1.4 49.4 | 300 1.204 | 53 | -20 to +70 | 180000/60°C (215000/40°C) |
| | | | 20 | 0.06 | 0.72 | 2900 | 0.36 12.7 | 20.8 0.083 | 20 | | |
| 9WL0612P4J001 | | | 100 | 0.39 | 4.68 | 8650 | 1.1 38.8 | 182 0.73 | 47 | | |
| | | | 20 | 0.03 | 0.36 | 1150 | 0.13 4.8 | 3.3 0.013 | 14 | | |
| 9WL0612P4H001 | | | 100 | 0.17 | 2.04 | 6150 | 0.78 27.5 | 97 0.389 | 36 | | |
| | | | 20 | 0.03 | 0.36 | 1350 | 0.17 6.0 | 4.7 0.018 | 14 | | |
| 9WL0624P4S001 | 24 | 21.6 to 26.4 | 100 | 0.34 | 8.16 | 11000 | 1.4 49.4 | 300 1.204 | 53 | | |
| | | | 20 | 0.03 | 0.72 | 2900 | 0.36 12.7 | 20.8 0.083 | 20 | | |
| 9WL0624P4J001 | | | 100 | 0.19 | 4.56 | 8650 | 1.1 38.8 | 182 0.73 | 47 | | |
| | | | 20 | 0.02 | 0.48 | 2200 | 0.28 9.8 | 12.0 0.048 | 17 | | |
| 9WL0624P4H001 | | | 100 | 0.08 | 1.92 | 6150 | 0.78 27.5 | 97 0.389 | 36 | | |
| | | | 20 | 0.02 | 0.48 | 1300 | 0.16 5.6 | 4.3 0.017 | 14 | | |

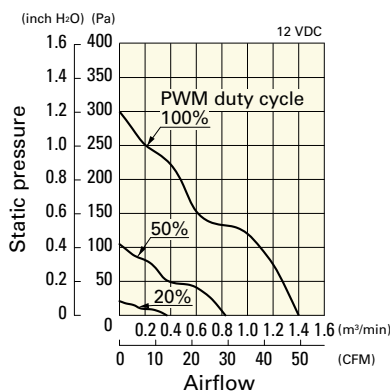
* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 618.

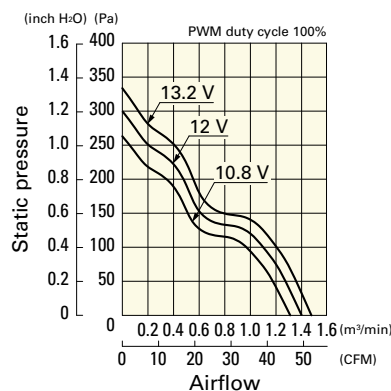
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0612P4S001 With pulse sensor with PWM control function

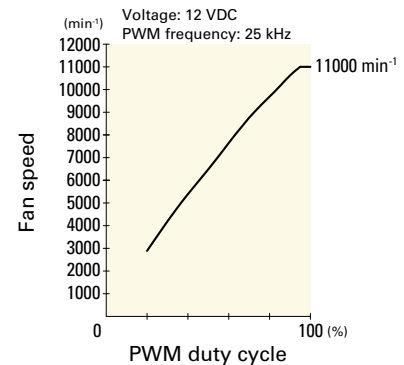
PWM duty cycle



Operating voltage range



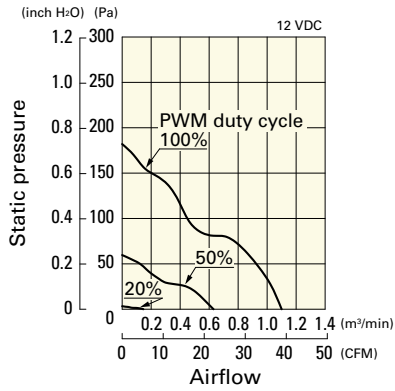
PWM duty - Speed characteristics example



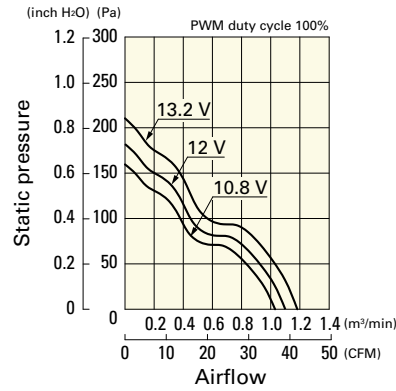
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0612P4J001 With pulse sensor with PWM control function

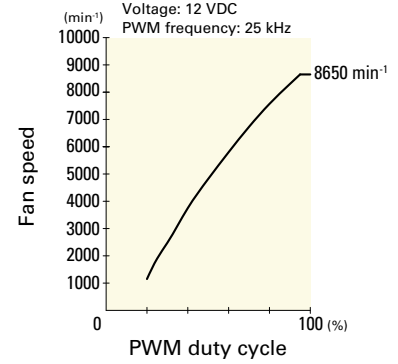
PWM duty cycle



Operating voltage range

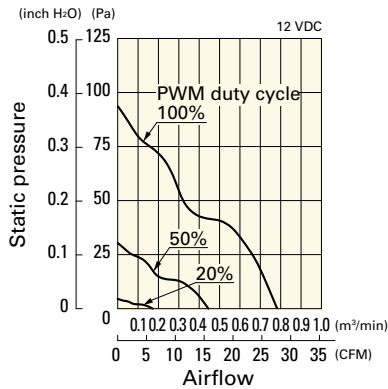


PWM duty - Speed characteristics example

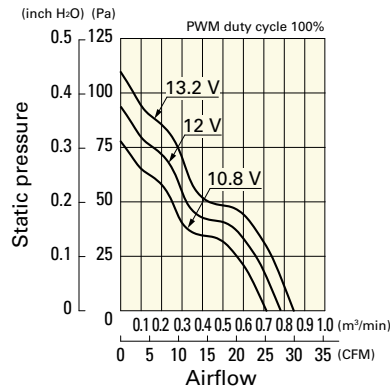


9WL0612P4H001 With pulse sensor with PWM control function

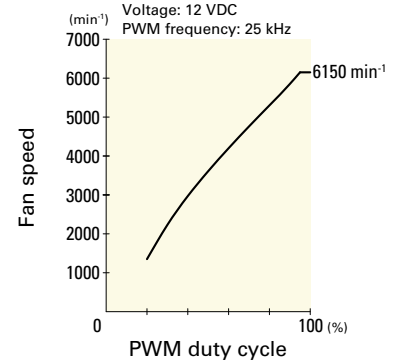
PWM duty cycle



Operating voltage range

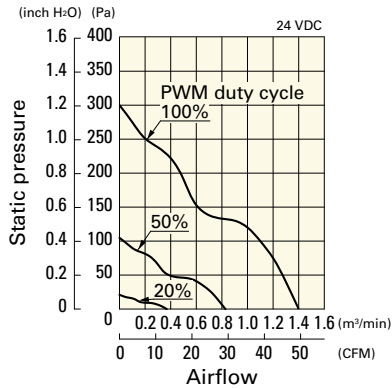


PWM duty - Speed characteristics example

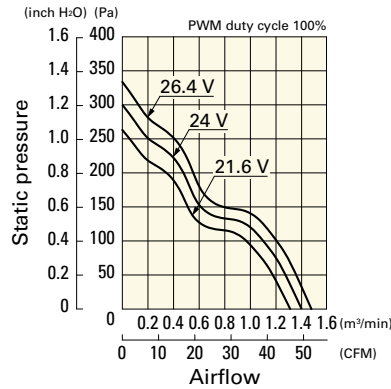


9WL0624P4S001 With pulse sensor with PWM control function

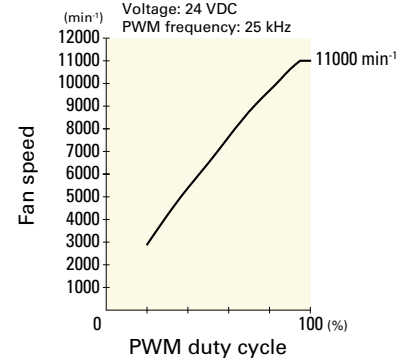
PWM duty cycle



Operating voltage range

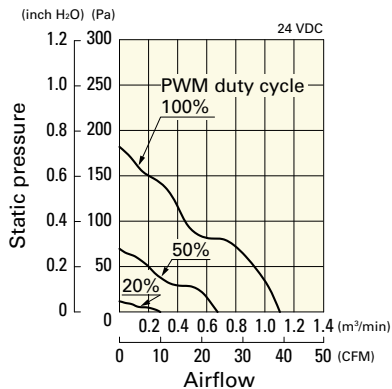


PWM duty - Speed characteristics example

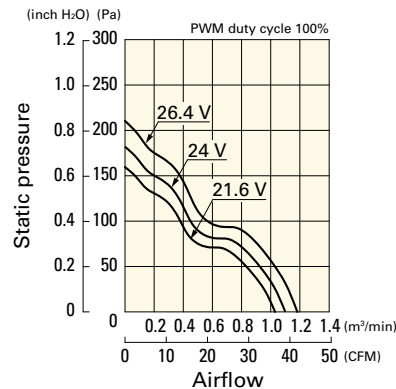


9WL0624P4J001 With pulse sensor with PWM control function

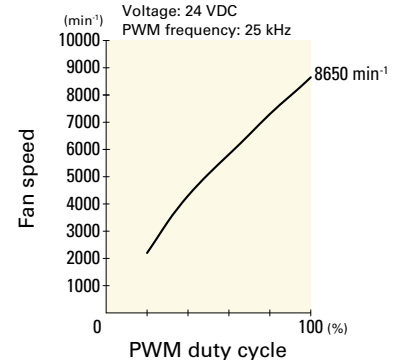
PWM duty cycle



Operating voltage range



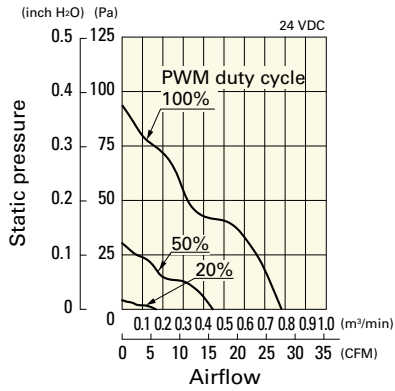
PWM duty - Speed characteristics example



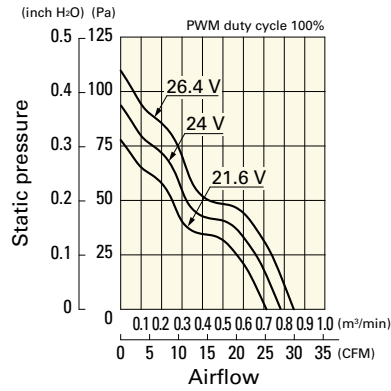
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0624P4H001 With pulse sensor with PWM control function

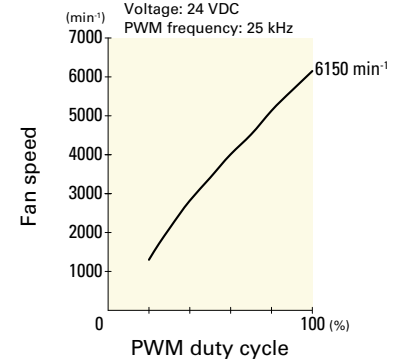
PWM duty cycle



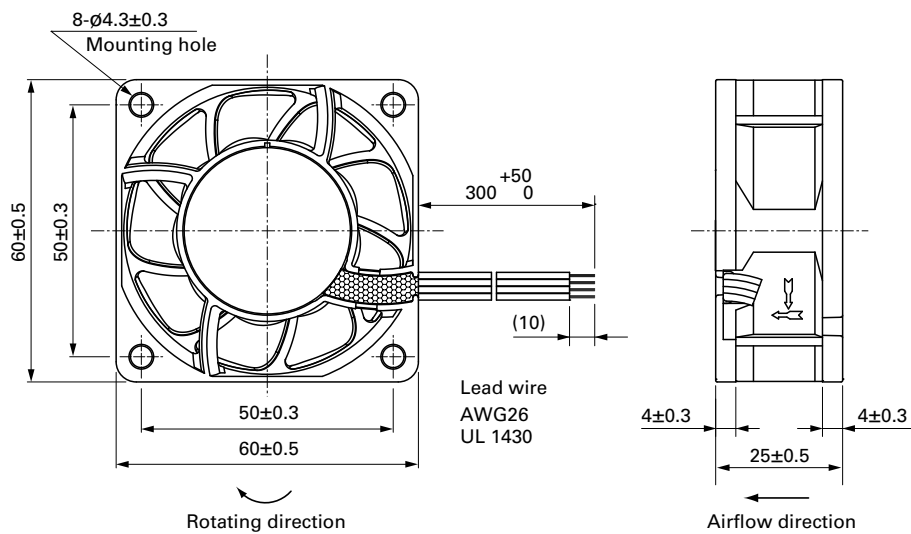
Operating voltage range



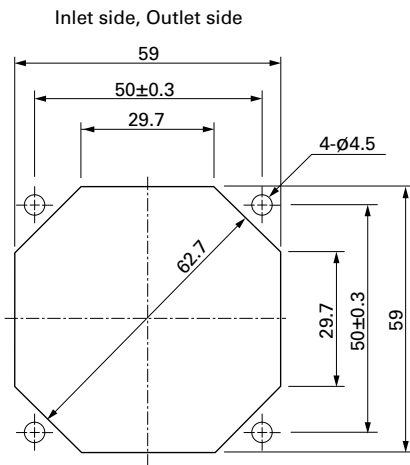
PWM duty - Speed characteristics example



Dimensions (unit: mm)



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



Options

Finger guards

page: p. 564

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

Resin finger guards

page: p. 571

Model no.: 109-1003G

DC
Splash Proof Fan 60 mm sq.



80x80x25 mm

San Ace 80W 9WL type   

DC
Splash Proof Fan 80 mm sq.

General Specifications

- Material Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage)
Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 580.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black Sensor Yellow Control Brown
(For models without PWM control function, there is no speed control wiring.)
- Mass 150 g
- Ingress protection IP68

Specifications

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

| Model no. | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | | Max. static pressure [Pa] [inchH ₂ O] | | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] | | | | |
|---------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|--|------|--|------|--------------|----------------------------|------------------------------|------|----|------------|------------------------------|
| 9WL0812P4J001 | 12 | 10.8 to 13.2 | 100 | 0.6 | 7.2 | 7400 | 2.07 | 73.0 | 177 | 0.71 | 49 | -20 to +70 | 180000/60°C (215000/40°C) | | | | |
| | | | 20 | 0.06 | 0.72 | 1800 | 0.5 | 17.6 | 10.4 | 0.04 | 16 | | | | | | |
| 9WL0812P4G001 | | | 100 | 0.3 | 3.6 | 5500 | 1.54 | 54.3 | 98 | 0.39 | 43 | | | | | | |
| | | | 25 | 0.05 | 0.6 | 1400 | 0.39 | 13.7 | 6.3 | 0.02 | 14 | | | | | | |
| 9WL0812P4H001 | | | 100 | 0.12 | 1.44 | 3700 | 1.03 | 36.3 | 44 | 0.17 | 31 | | | | | | |
| | | | 25 | 0.04 | 0.48 | 1100 | 0.3 | 10.5 | 3.9 | 0.01 | 13 | | | | | | |
| 9WL0824P4J001 | | | 24 | 21.6 to 26.4 | 100 | 0.28 | 6.72 | 7400 | 2.07 | 73.0 | 177 | | | 0.71 | 49 | -20 to +70 | 180000/60°C (215000/40°C) |
| | | | | | 20 | 0.05 | 1.2 | 2400 | 0.67 | 23.6 | 18.6 | | | 0.07 | 22 | | |
| 9WL0824P4G001 | 100 | 0.14 | | | 3.36 | 5500 | 1.54 | 54.3 | 98 | 0.39 | 43 | | | | | | |
| | 20 | 0.02 | | | 0.48 | 1200 | 0.33 | 11.6 | 4.6 | 0.01 | 13 | | | | | | |
| 9WL0824P4H001 | 100 | 0.05 | | | 1.2 | 3700 | 1.03 | 36.3 | 44 | 0.17 | 31 | | | | | | |
| | 30 | 0.02 | | | 0.48 | 1100 | 0.3 | 10.5 | 3.9 | 0.01 | 13 | | | | | | |

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

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

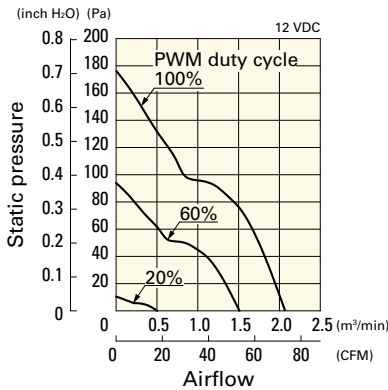
| Model no. | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | | Max. static pressure [Pa] [inchH ₂ O] | | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|--------------|-------------------|-----------------------------|-------------------|-------------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

Note: Sensor and control options are available for selection. Refer to the table on pp. 618 to 619.

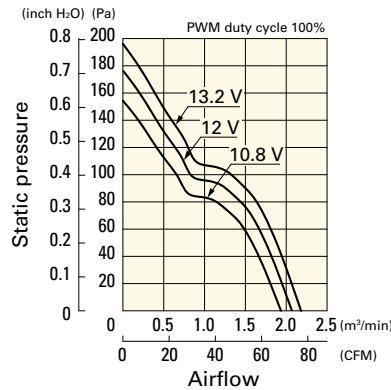
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0812P4J001 With pulse sensor with PWM control function

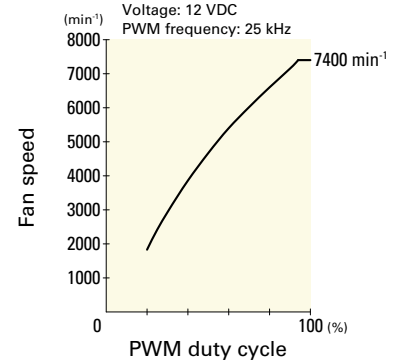
PWM duty cycle



Operating voltage range

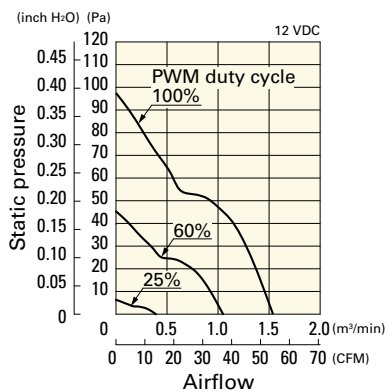


PWM duty - Speed characteristics example

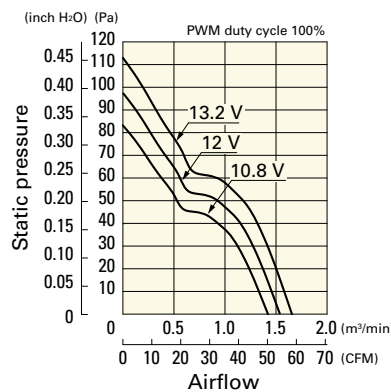


9WL0812P4G001 With pulse sensor with PWM control function

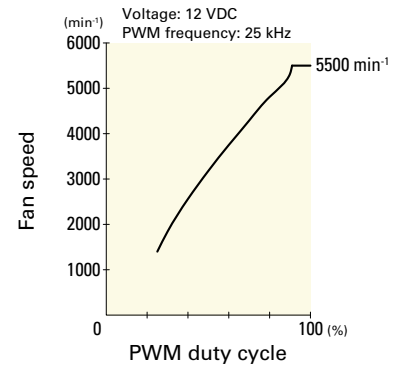
PWM duty cycle



Operating voltage range

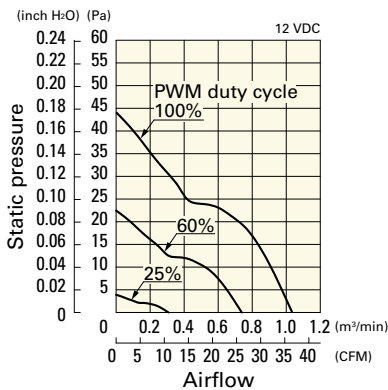


PWM duty - Speed characteristics example

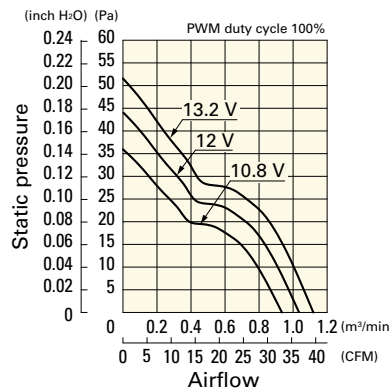


9WL0812P4H001 With pulse sensor with PWM control function

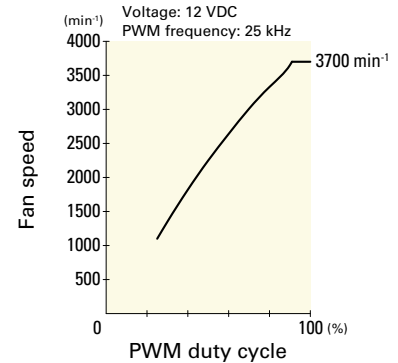
PWM duty cycle



Operating voltage range

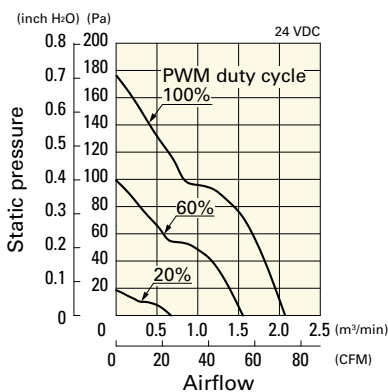


PWM duty - Speed characteristics example

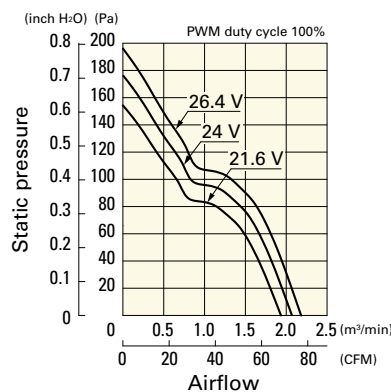


9WL0824P4J001 With pulse sensor with PWM control function

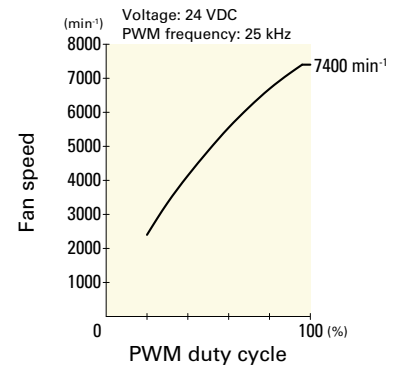
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

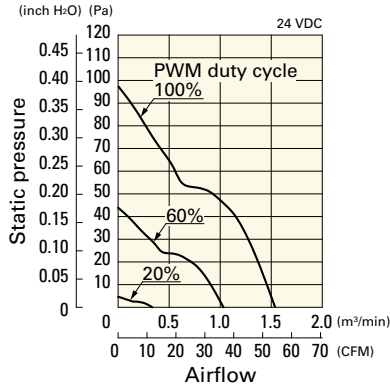


DC
Splash Proof Fan 80 mm sq.

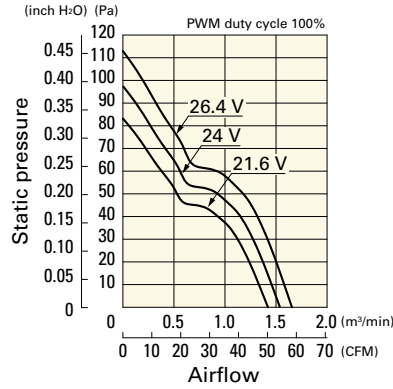
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0824P4G001 With pulse sensor with PWM control function

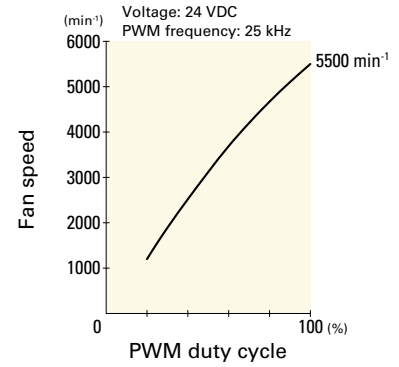
PWM duty cycle



Operating voltage range

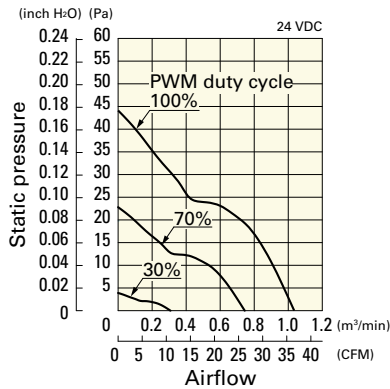


PWM duty - Speed characteristics example

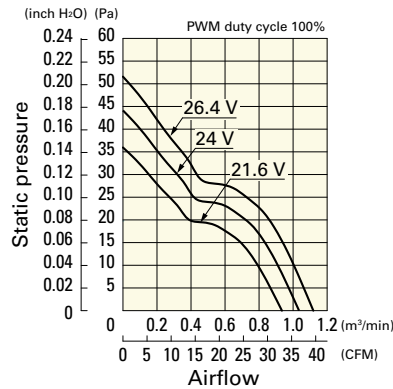


9WL0824P4H001 With pulse sensor with PWM control function

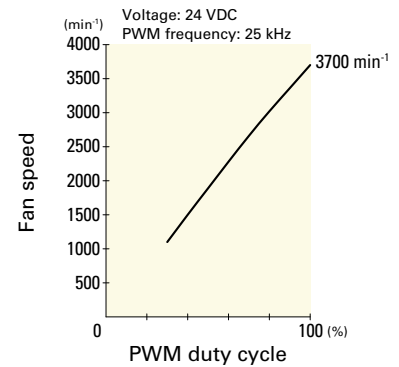
PWM duty cycle



Operating voltage range



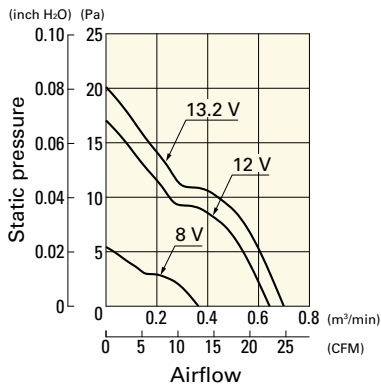
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

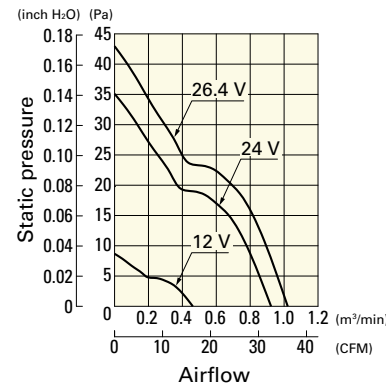
9WL0812L4001 With pulse sensor

Operating voltage range



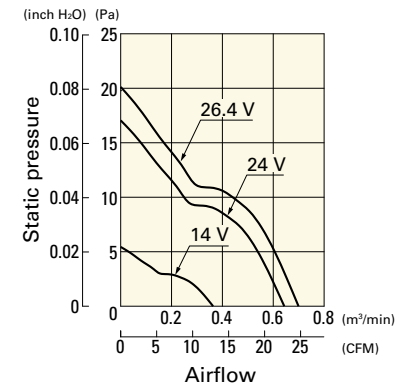
9WL0824F4001 With pulse sensor

Operating voltage range

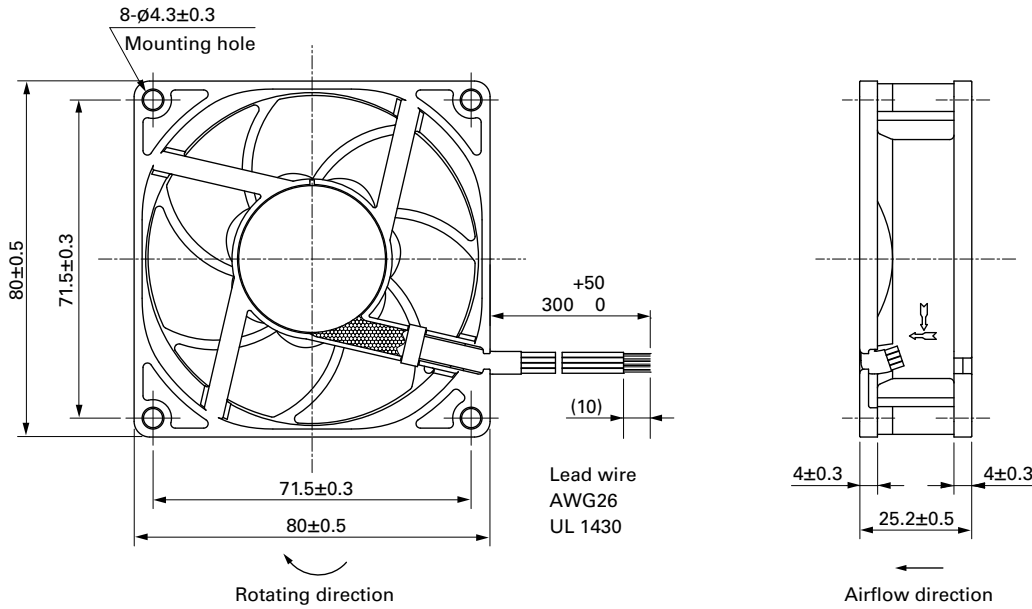


9WL0824L4001 With pulse sensor

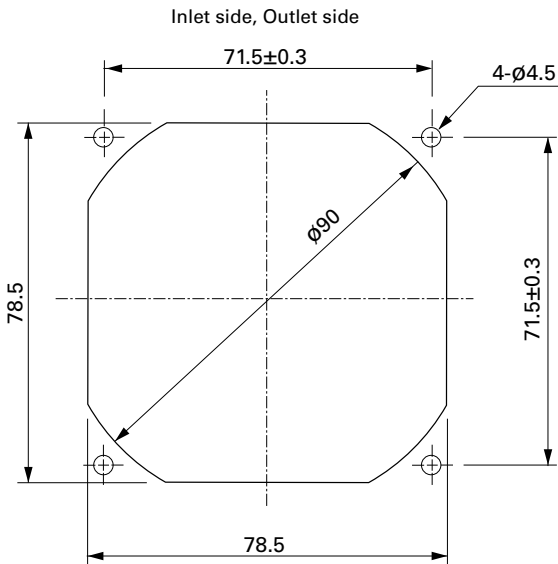
Operating voltage range



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



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



Options

Finger guards

page: p. 564

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

Resin finger guards

page: p. 571

Model no.: 109-1002G



92x92x25 mm

San Ace 92W 9WL type   

DC
Splash Proof Fan 92 mm sq.

General Specifications

- Material Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage)
Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 580.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black Sensor Yellow Control Brown
(For models without PWM control function, there is no speed control wiring.)
- Mass 170 g
- Ingress protection IP68

Specifications

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

| Model no. | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] | |
|---------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|--|--|--------------|----------------------------|------------------------------|----|
| 9WL0912P4J001 | 12 | 10.8 to 13.2 | 100 | 0.42 | 5.04 | 5000 | 2.2 77.7 | 105 0.42 | 44 | -20 to +70 | 180000/60°C (215000/40°C) | |
| | | | 20 | 0.04 | 0.48 | 1200 | 0.52 18.4 | 6.04 0.024 | 11 | | | |
| 9WL0912P4G001 | | | 100 | 0.3 | 3.6 | 4400 | 1.93 68.2 | 81 0.33 | 40 | | | |
| | | | 20 | 0.04 | 0.48 | 1000 | 0.43 15.1 | 4.18 0.016 | 8 | | | |
| 9WL0912P4S001 | | | 100 | 0.22 | 2.64 | 3850 | 1.69 59.7 | 62.1 0.25 | 37 | | | |
| | | | 30 | 0.04 | 0.48 | 1400 | 0.61 21.5 | 8.21 0.032 | 13 | | | |
| 9WL0912P4H001 | | 100 | 0.15 | 1.8 | 3150 | 1.38 48.7 | 41.6 0.17 | 32 | | | | |
| | | 30 | 0.04 | 0.48 | 1100 | 0.48 16.9 | 5.07 0.02 | 9 | | | | |
| 9WL0924P4J001 | | 24 | 21.6 to 26.4 | 100 | 0.21 | 5.04 | 5000 | 2.2 77.7 | 105 0.42 | | | 44 |
| | | | | 20 | 0.02 | 0.48 | 1100 | 0.48 16.9 | 5.07 0.02 | | | 9 |
| 9WL0924P4S001 | | | | 100 | 0.11 | 2.64 | 3850 | 1.69 59.7 | 62.1 0.25 | | | 37 |
| | | | | 30 | 0.02 | 0.48 | 1300 | 0.57 20.1 | 7.08 0.028 | | | 12 |
| 9WL0924P4H001 | 100 | | | 0.07 | 1.68 | 3150 | 1.38 48.7 | 41.6 0.17 | 32 | | | |
| | 30 | | | 0.02 | 0.48 | 1000 | 0.43 15.1 | 4.18 0.016 | 8 | | | |

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

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

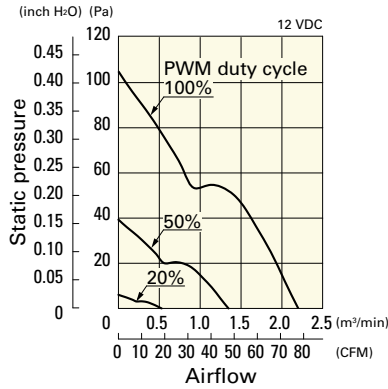
| Model no. | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|--------------|-------------------|-----------------------------|-------------------|-----------------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

Note: Sensor and control options are available for selection. Refer to the table on p. 619.

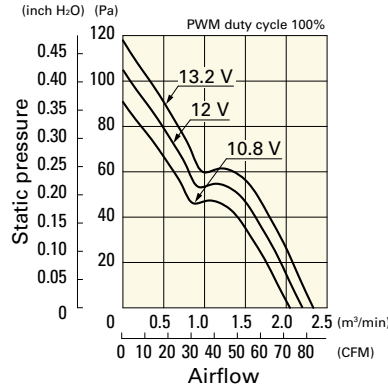
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0912P4J001 With pulse sensor with PWM control function

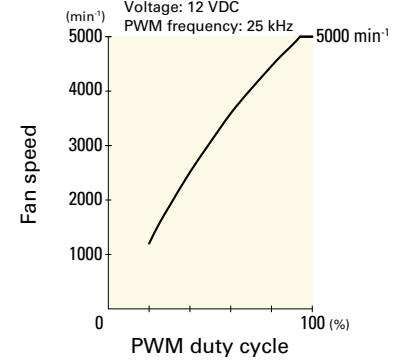
PWM duty cycle



Operating voltage range

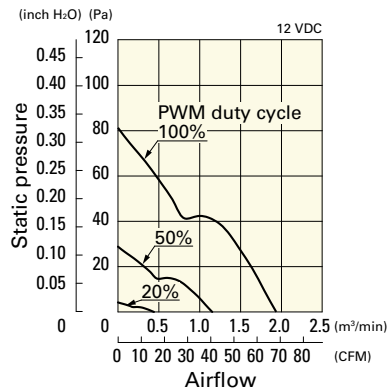


PWM duty - Speed characteristics example

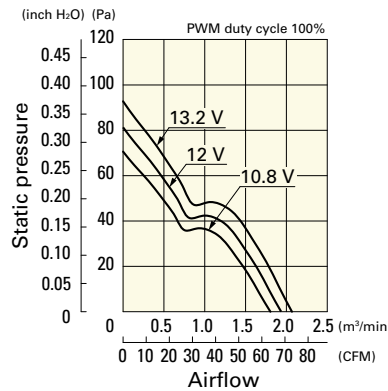


9WL0912P4G001 With pulse sensor with PWM control function

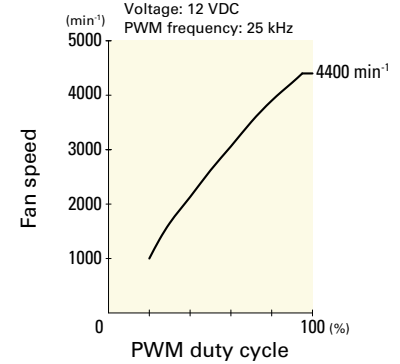
PWM duty cycle



Operating voltage range

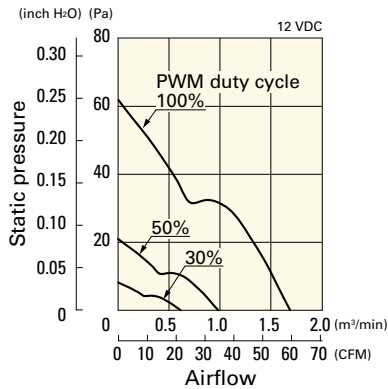


PWM duty - Speed characteristics example

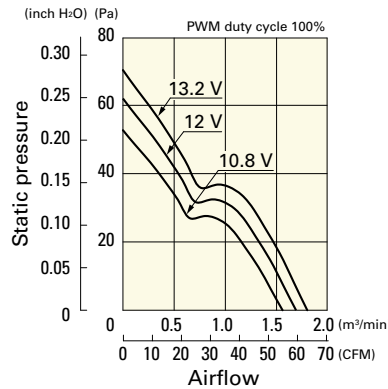


9WL0912P4S001 With pulse sensor with PWM control function

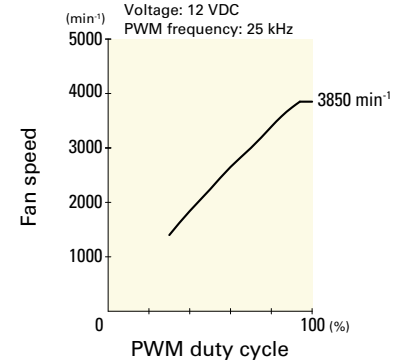
PWM duty cycle



Operating voltage range

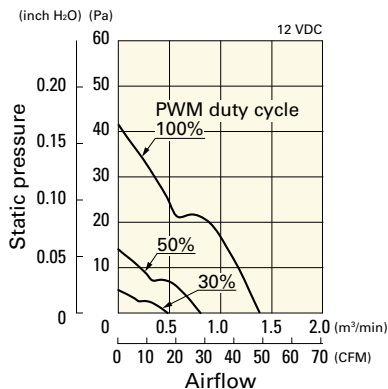


PWM duty - Speed characteristics example

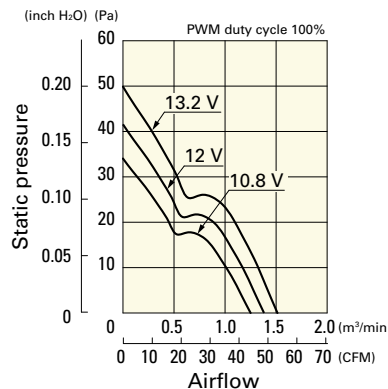


9WL0912P4H001 With pulse sensor with PWM control function

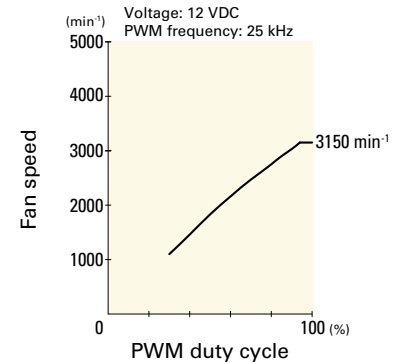
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

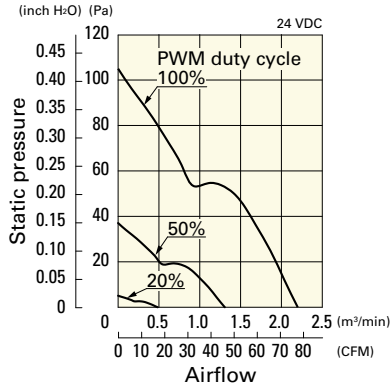


DC
Splash Proof Fan 92 mm sq.

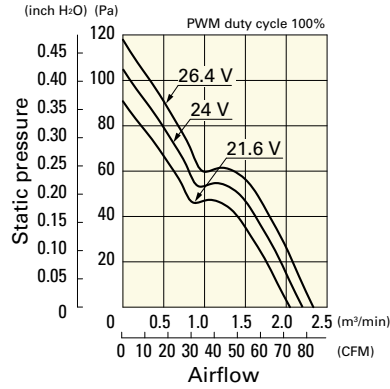
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0924P4J001 With pulse sensor with PWM control function

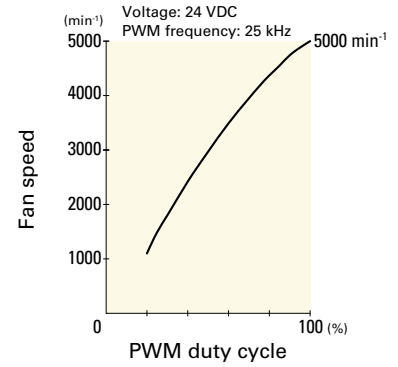
PWM duty cycle



Operating voltage range

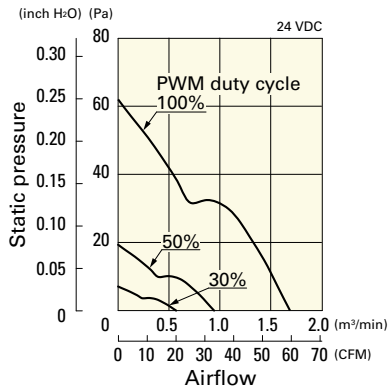


PWM duty - Speed characteristics example

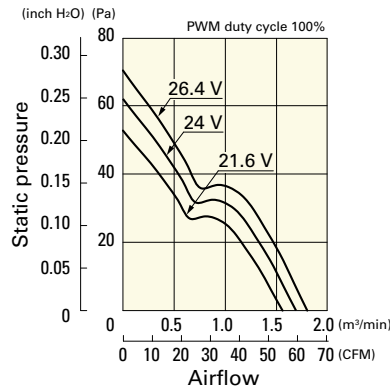


9WL0924P4S001 With pulse sensor with PWM control function

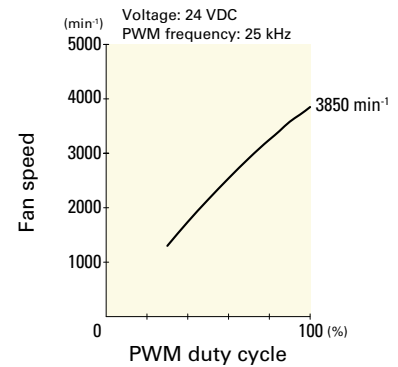
PWM duty cycle



Operating voltage range

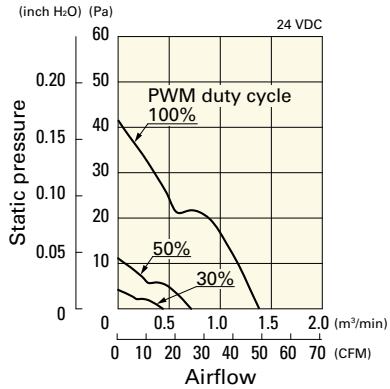


PWM duty - Speed characteristics example

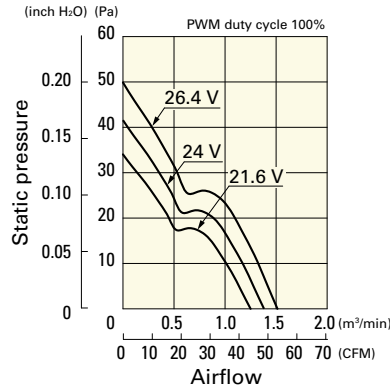


9WL0924P4H001 With pulse sensor with PWM control function

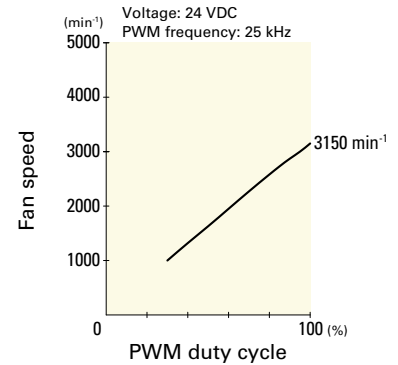
PWM duty cycle



Operating voltage range



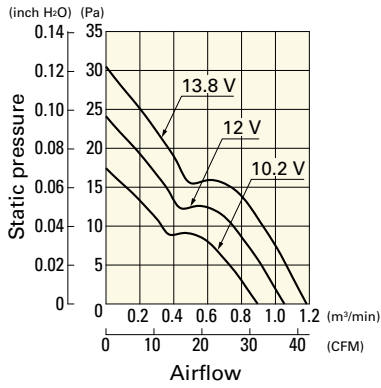
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

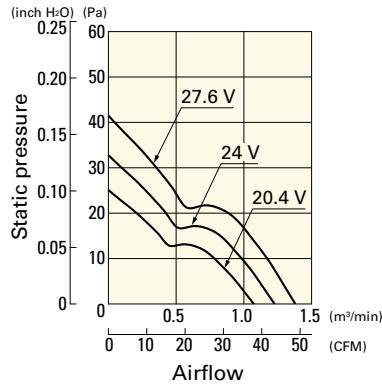
9WL0912M4001 With pulse sensor

Operating voltage range



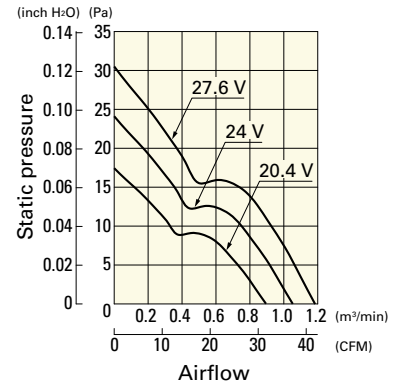
9WL0924F4001 With pulse sensor

Operating voltage range

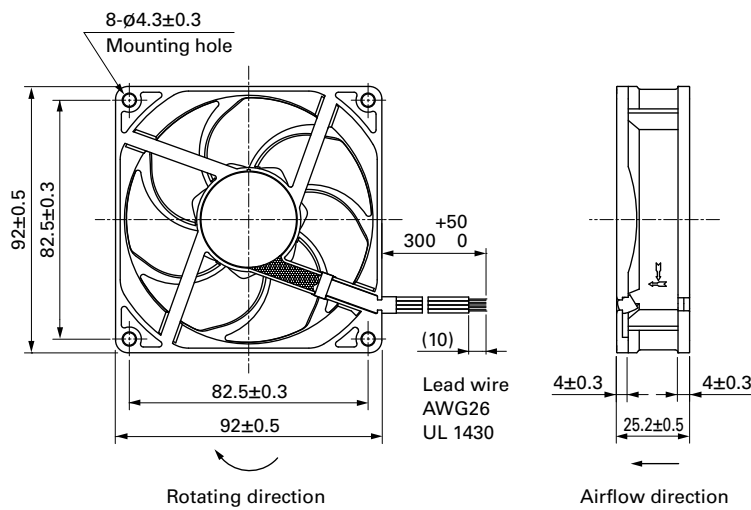


9WL0924M4001 With pulse sensor

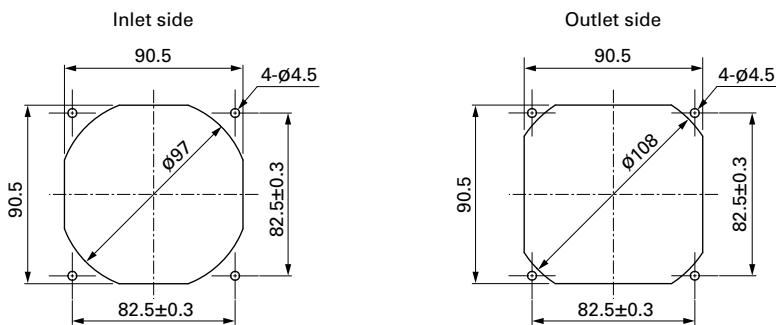
Operating voltage range



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



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



Options

Finger guards

page: p. 564

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

Resin finger guards

page: p. 571

Model no.: 109-101G



92x92x38 mm

San Ace 92W 9WL type  

DC
Splash Proof Fan 92 mm sq.

General Specifications

- Material Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage)
Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 580.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black Sensor Yellow Control Brown
- Mass 300 g
- Ingress protection IP68

Specifications

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

| Model no. | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|---------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|--|--|--------------|----------------------------|------------------------------|
| 9WL0912P1H001 | 12 | 10.2 to 13.2 | 100 | 1.9 | 22.8 | 9000 | 3.7 130.6 | 430 1.72 | 61 | -20 to +70 | 100000/60°C (135000/40°C) |
| | | | 20 | 0.13 | 1.56 | 2700 | 1.11 39.1 | 48.0 0.19 | 30 | | |
| 9WL0912P1F001 | 12 | 10.2 to 13.2 | 100 | 0.95 | 11.4 | 7000 | 2.9 102.4 | 263 1.05 | 55 | | |
| | | | 20 | 0.1 | 1.2 | 2000 | 0.83 29.3 | 26.3 0.1 | 22 | | |
| 9WL0924P1H001 | 24 | 20.4 to 26.4 | 100 | 0.95 | 22.8 | 9000 | 3.7 130.6 | 430 1.72 | 61 | | |
| | | | 20 | 0.07 | 1.68 | 2700 | 1.11 39.1 | 48.0 0.19 | 30 | | |
| | | | 100 | 0.5 | 12 | 7000 | 2.9 102.4 | 263 1.05 | 55 | | |
| 9WL0924P1F001 | 24 | 20.4 to 26.4 | 20 | 0.06 | 1.44 | 2000 | 0.83 29.3 | 26.3 0.1 | 22 | | |
| | | | 100 | 0.48 | 23.04 | 9000 | 3.7 130.6 | 430 1.72 | 61 | | |
| | | | 20 | 0.05 | 2.4 | 2700 | 1.11 39.1 | 48.0 0.19 | 30 | | |
| 9WL0948P1H601 | 48 | 40.8 to 52.8 | 100 | 0.24 | 11.52 | 7000 | 2.9 102.4 | 263 1.05 | 55 | | |
| | | | 20 | 0.05 | 2.4 | 2000 | 0.83 29.3 | 26.3 0.1 | 22 | | |
| | | | 100 | 0.24 | 11.52 | 7000 | 2.9 102.4 | 263 1.05 | 55 | | |
| 9WL0948P1F601 | 48 | 40.8 to 52.8 | 20 | 0.05 | 2.4 | 2000 | 0.83 29.3 | 26.3 0.1 | 22 | | |

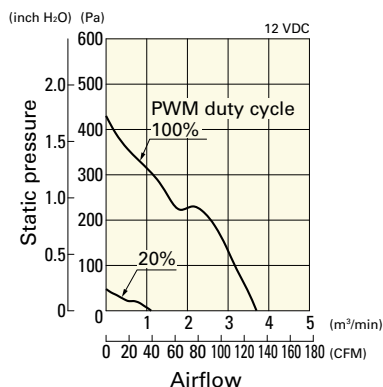
* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 619.

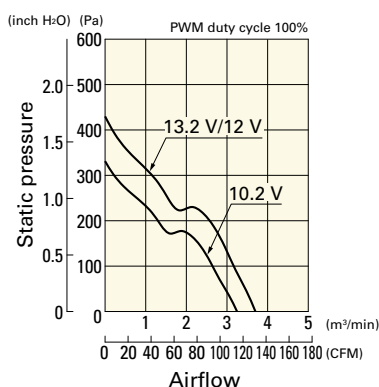
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0912P1H001 With pulse sensor with PWM control function

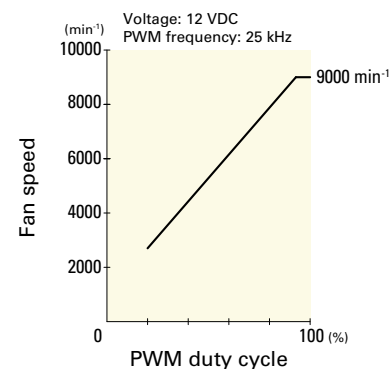
PWM duty cycle



Operating voltage range



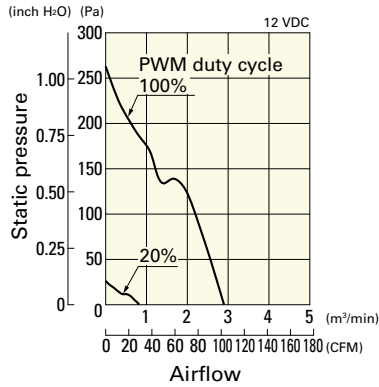
PWM duty - Speed characteristics example



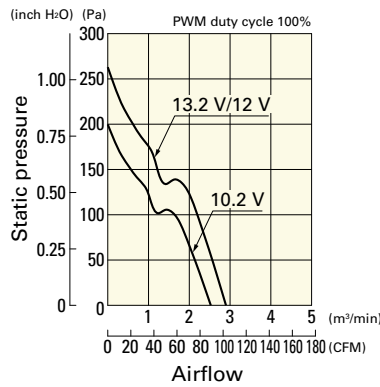
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0912P1F001 With pulse sensor with PWM control function

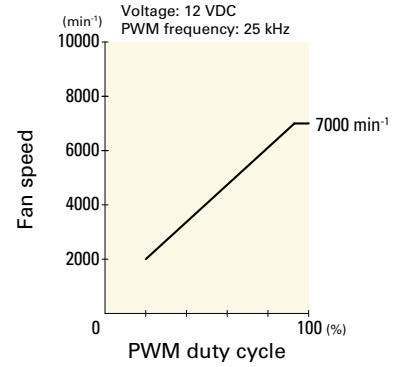
PWM duty cycle



Operating voltage range

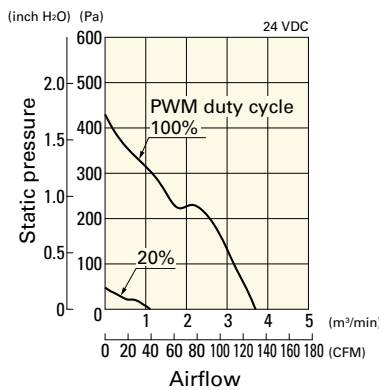


PWM duty - Speed characteristics example

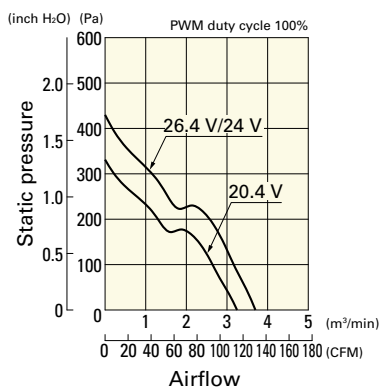


9WL0924P1H001 With pulse sensor with PWM control function

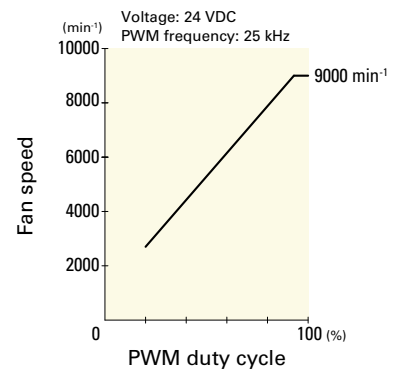
PWM duty cycle



Operating voltage range

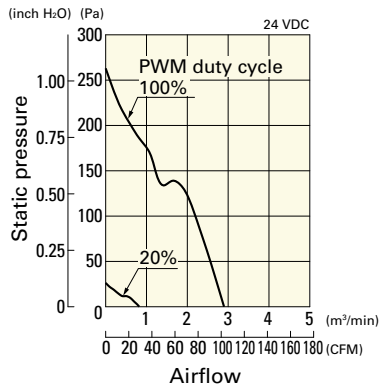


PWM duty - Speed characteristics example

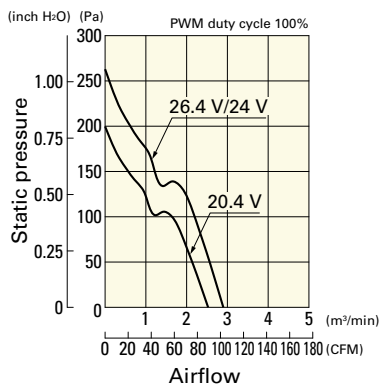


9WL0924P1F001 With pulse sensor with PWM control function

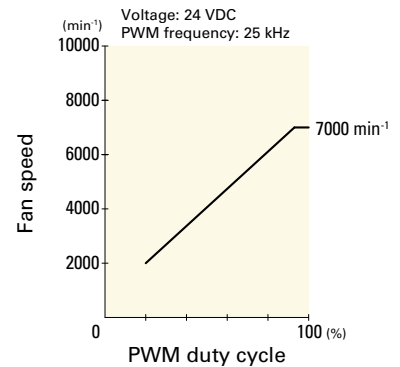
PWM duty cycle



Operating voltage range

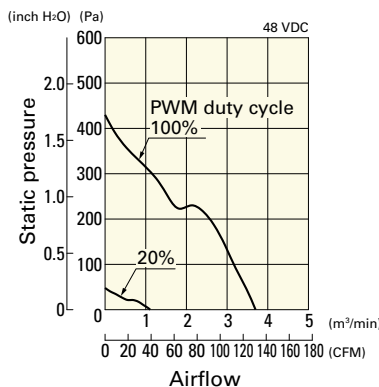


PWM duty - Speed characteristics example

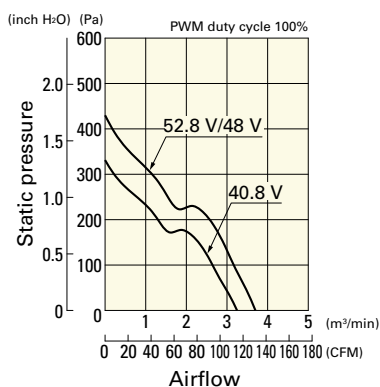


9WL0948P1H601 With pulse sensor with PWM control function

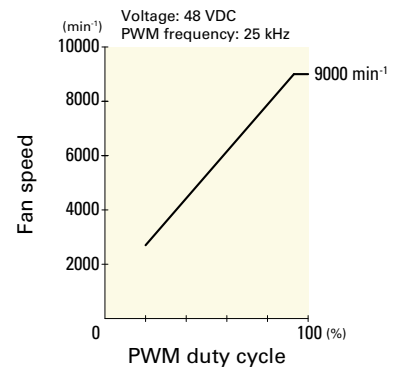
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

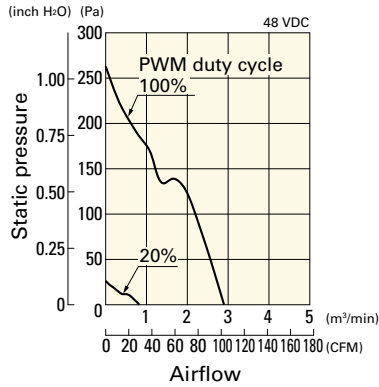


DC
Splash Proof Fan 92 mm sq.

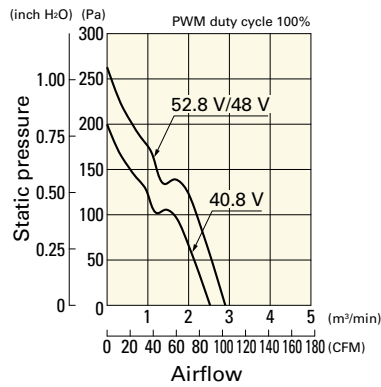
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL0948P1F601 With pulse sensor with PWM control function

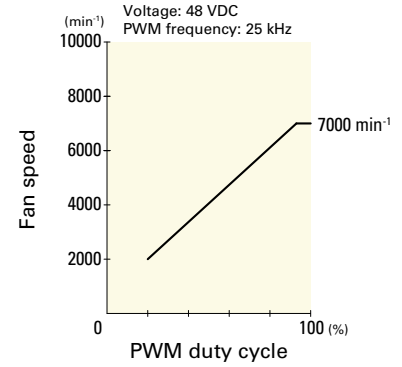
PWM duty cycle



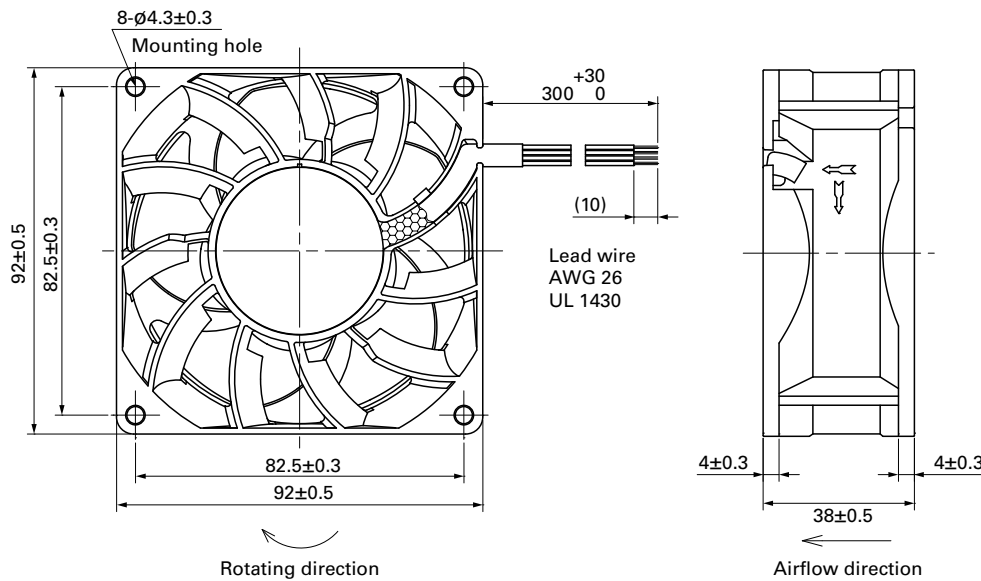
Operating voltage range



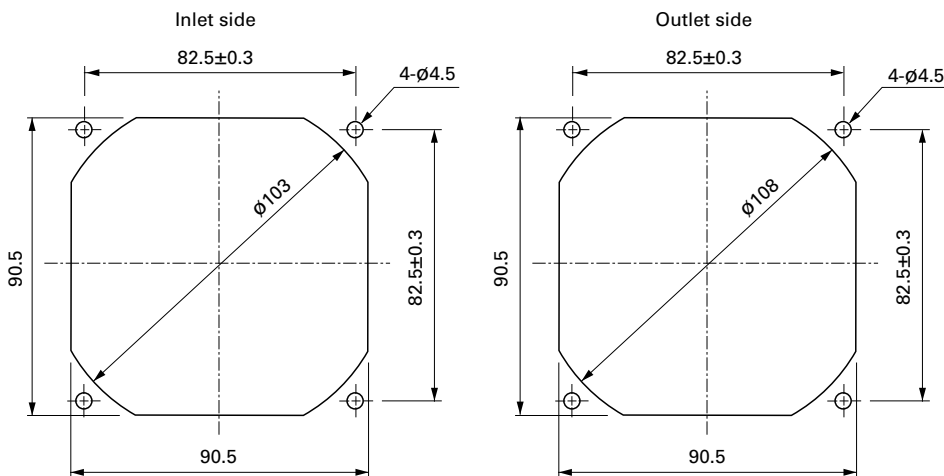
PWM duty - Speed characteristics example



Dimensions (unit: mm)



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



Options

Finger guards

page: p. 564

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




Resin finger guards

page: p. 571

Model no.: 109-1001G



140x140x38 mm

San Ace 140W 9WL type   

DC
Splash Proof Fan 140 mm sq.

General Specifications

- Material Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage)
Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 580.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black Sensor Yellow Control Brown
(For models without PWM control function, there is no speed control wiring.)
- Mass 740 g
- Ingress protection IP68

Specifications

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

| Model no. | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] | |
|---------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|--|--|--------------|----------------------------|------------------------------|----|
| 9WL1412P1A001 | 12 | 10.2 to 13.8 | 100 | 3.72 | 44.64 | 6900 | 8.0 282 | 516 2.07 | 68 | -20 to +70 | 100000/60°C (135000/40°C) | |
| | | | 20 | 0.27 | 3.24 | 2300 | 2.66 93 | 80 0.32 | 39 | | | |
| 9WL1412P1H001 | | | 100 | 1.7 | 20.4 | 5200 | 6.0 212 | 300 1.2 | 62 | | | |
| | | | 20 | 0.27 | 3.24 | 2300 | 2.66 93 | 80 0.32 | 39 | | | |
| 9WL1412P1M001 | | | 100 | 0.6 | 7.2 | 3300 | 3.7 130 | 170 0.68 | 46 | | | |
| | | | 20 | 0.16 | 1.92 | 1300 | 1.45 51 | 26 0.1 | 29 | | | |
| 9WL1424P1A001 | | 24 | 20.4 to 27.6 | 100 | 1.86 | 44.64 | 6900 | 8.0 282 | 516 2.07 | | | 68 |
| | | | | 20 | 0.17 | 4.08 | 2300 | 2.66 93 | 80 0.32 | | | 39 |
| 9WL1424P1H001 | | | | 100 | 0.85 | 20.4 | 5200 | 6.0 212 | 300 1.2 | | | 62 |
| | | | | 20 | 0.16 | 3.84 | 2300 | 2.66 93 | 80 0.32 | | | 39 |
| 9WL1424P1M001 | | | | 100 | 0.3 | 7.2 | 3300 | 3.7 130 | 170 0.68 | | | 46 |
| | | | | 20 | 0.11 | 2.64 | 1300 | 1.45 51 | 26 0.1 | | | 29 |
| 9WL1448P1A001 | 48 | 40.8 to 55.2 | 100 | 0.92 | 44.16 | 6900 | 8.0 282 | 516 2.07 | 68 | | | |
| | | | 20 | 0.11 | 5.28 | 2300 | 2.66 93 | 80 0.32 | 39 | | | |
| 9WL1448P1H001 | | | 100 | 0.42 | 20.16 | 5200 | 6.0 212 | 300 1.2 | 62 | | | |
| | | | 20 | 0.11 | 5.28 | 2300 | 2.66 93 | 80 0.32 | 39 | | | |
| 9WL1448P1M001 | | | 100 | 0.15 | 7.2 | 3300 | 3.7 130 | 170 0.68 | 46 | | | |
| | | | 20 | 0.09 | 4.32 | 1300 | 1.45 51 | 26 0.1 | 29 | | | |

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

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

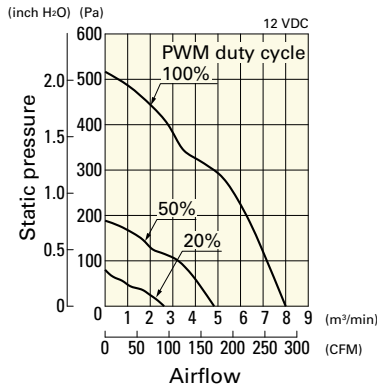
| Model no. | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|--------------|-------------------|-----------------------------|-------------------|-----------------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

Note: Sensor and control options are available for selection. Refer to the table on p. 619.

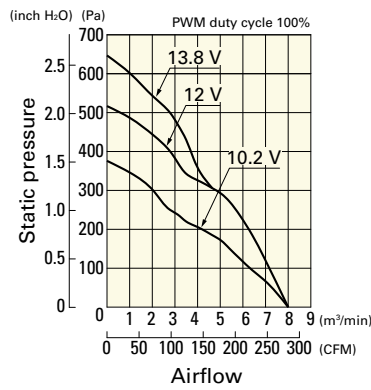
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL1412P1A001 With pulse sensor with PWM control function

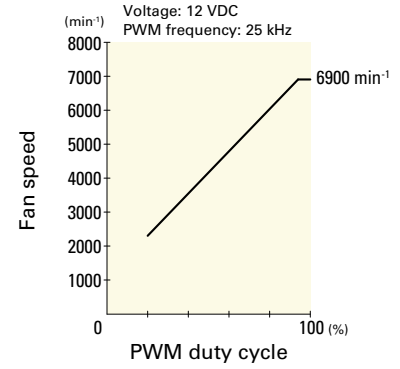
PWM duty cycle



Operating voltage range

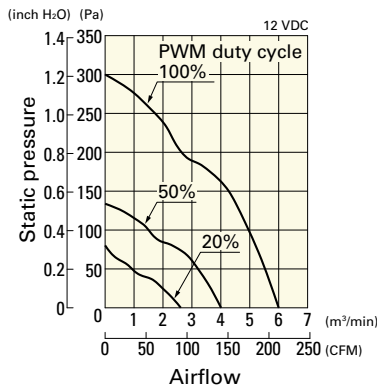


PWM duty - Speed characteristics example

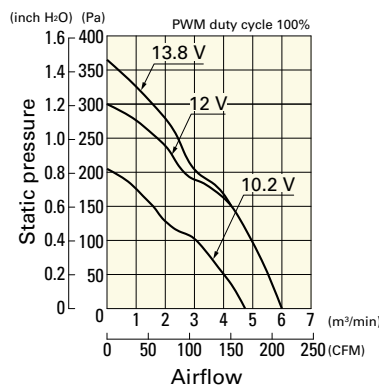


9WL1412P1H001 With pulse sensor with PWM control function

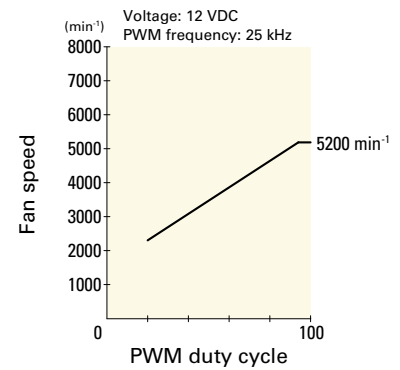
PWM duty cycle



Operating voltage range

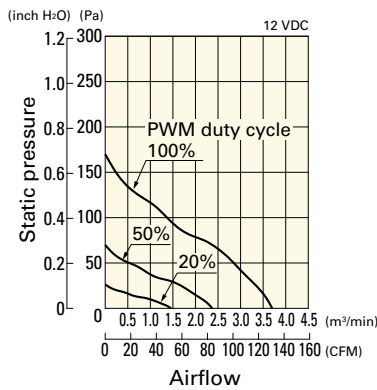


PWM duty - Speed characteristics example

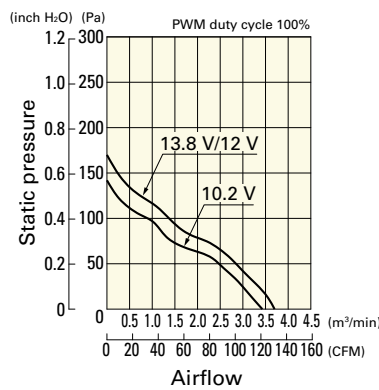


9WL1412P1M001 With pulse sensor with PWM control function

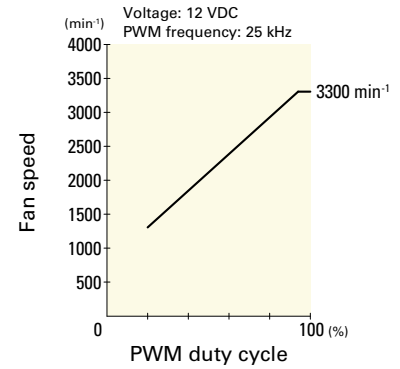
PWM duty cycle



Operating voltage range

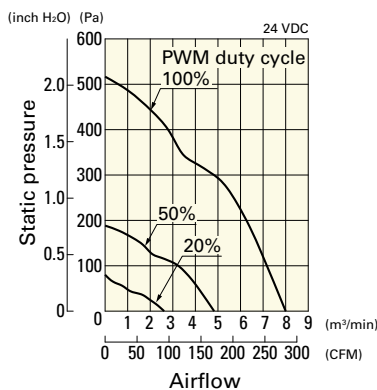


PWM duty - Speed characteristics example

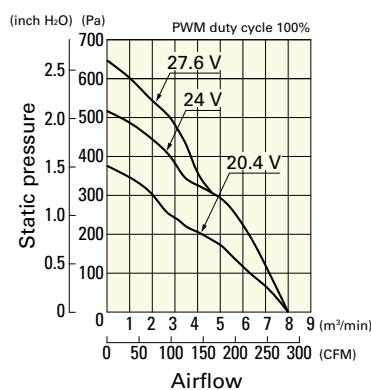


9WL1424P1A001 With pulse sensor with PWM control function

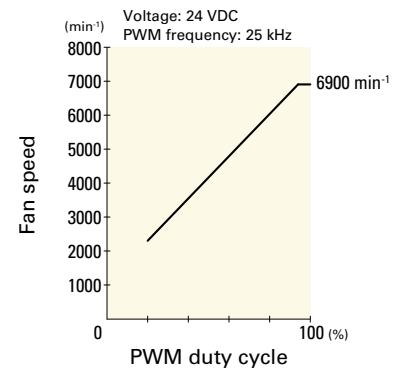
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

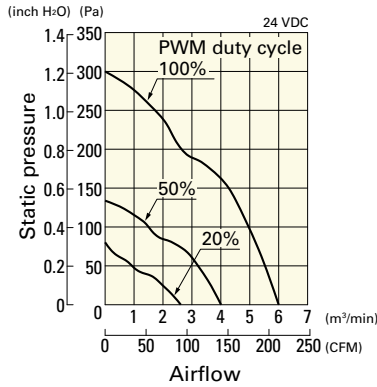


DC
Splash Proof Fan 140 mm sq.

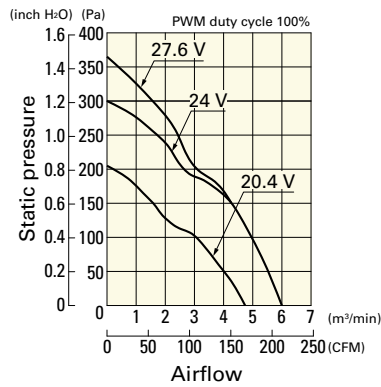
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL1424P1H001 With pulse sensor with PWM control function

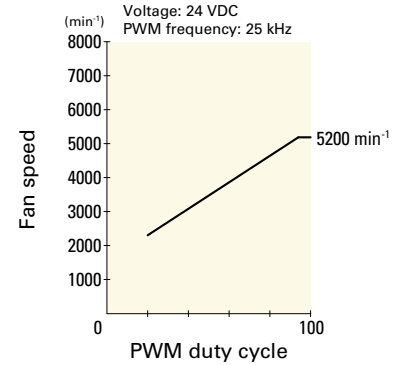
PWM duty cycle



Operating voltage range

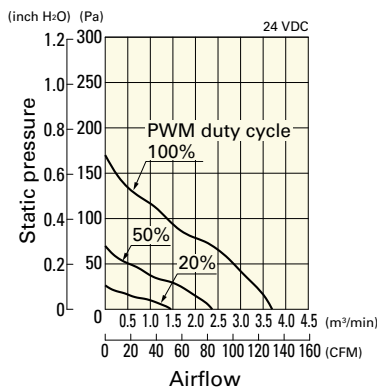


PWM duty - Speed characteristics example

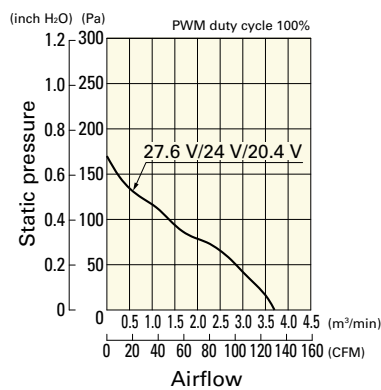


9WL1424P1M001 With pulse sensor with PWM control function

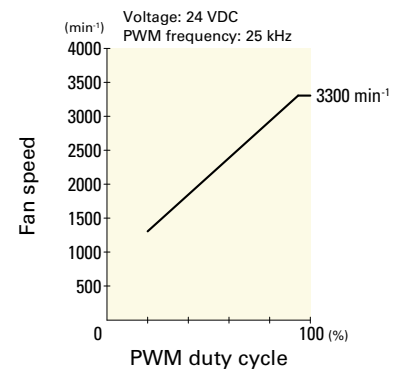
PWM duty cycle



Operating voltage range

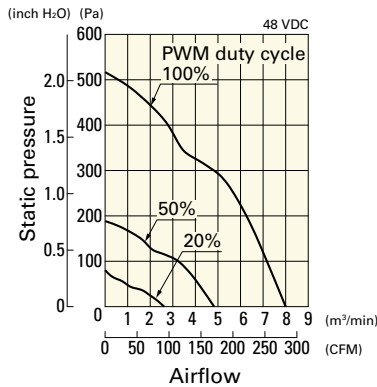


PWM duty - Speed characteristics example

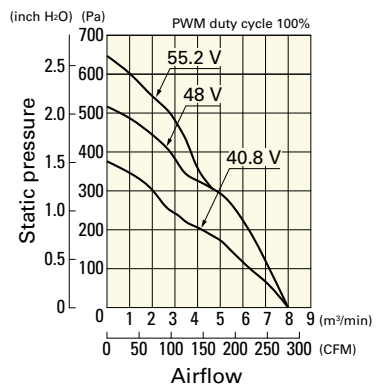


9WL1448P1A001 With pulse sensor with PWM control function

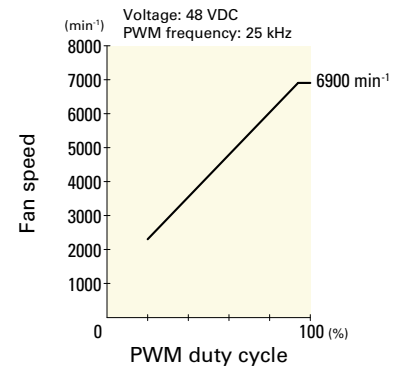
PWM duty cycle



Operating voltage range

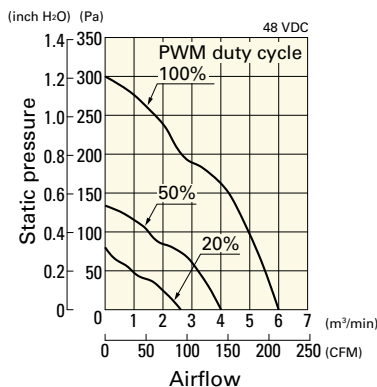


PWM duty - Speed characteristics example

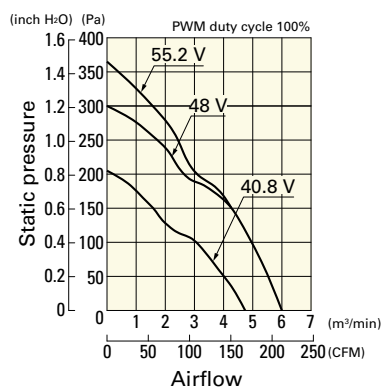


9WL1448P1H001 With pulse sensor with PWM control function

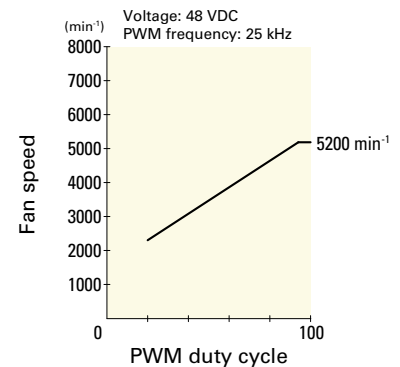
PWM duty cycle



Operating voltage range



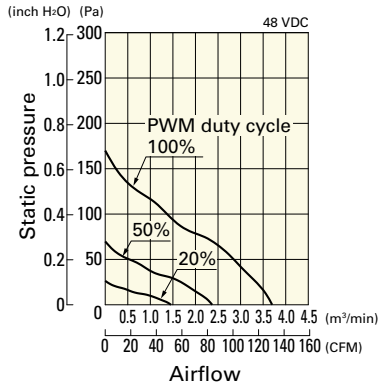
PWM duty - Speed characteristics example



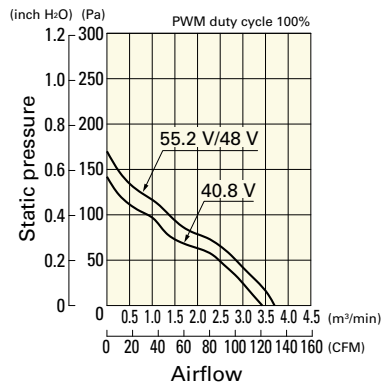
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL1448P1M001 With pulse sensor with PWM control function

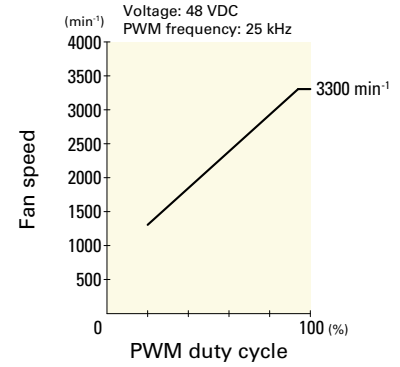
PWM duty cycle



Operating voltage range



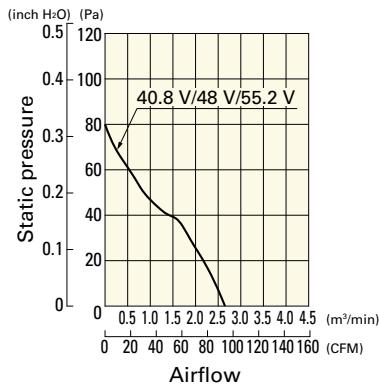
PWM duty - Speed characteristics example



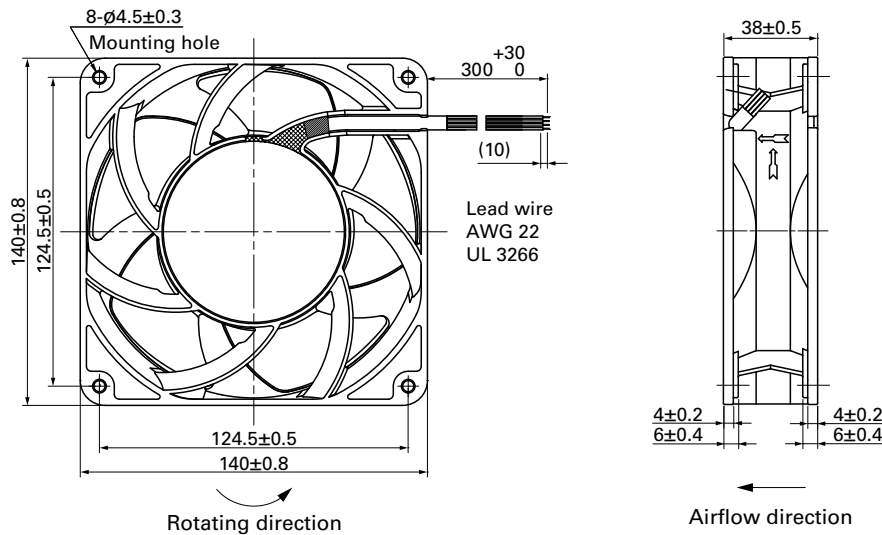
Airflow - Static Pressure Characteristics

9WL1448L1001 With pulse sensor

Operating voltage range

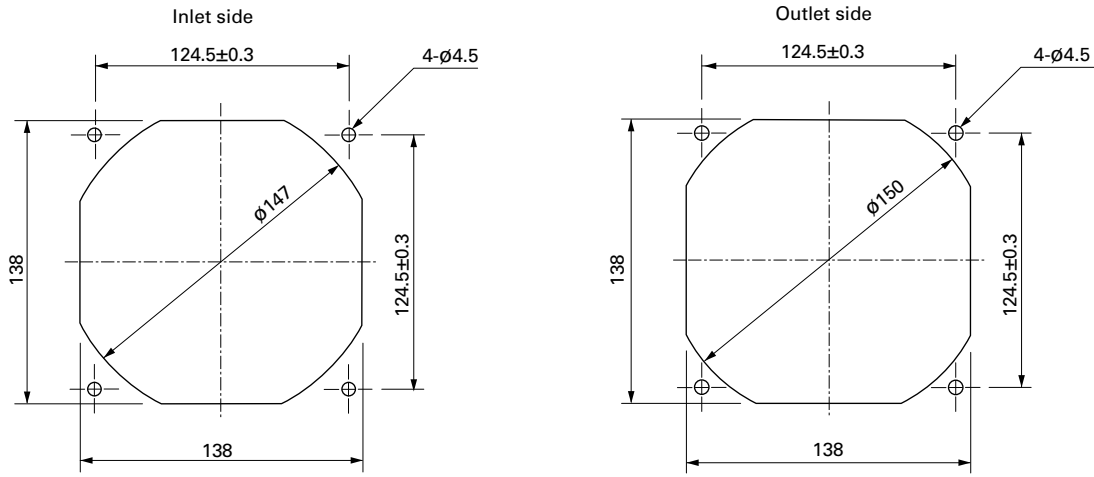


Dimensions (unit: mm) (With pulse sensor with PWM control function)



DC
Splash Proof Fan 140 mm sq.

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






Options

Finger guards page: p. 565

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



140x140x51 mm

San Ace 140W 9WL type   

General Specifications

- Material Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage) Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 580.
- Dielectric strength 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- Sound pressure level (SPL) A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire ⊕Red ⊖Black Sensor Yellow Control Brown
(For models without PWM control function, there is no speed control wiring.)
- Mass 930 g
- Ingress protection IP68

Specifications

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

| Model no. | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|---------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|--|--|--------------|----------------------------|------------------------------|
| 9WL1412P5G001 | 12 | 10.2 to 13.8 | 100 | 5.16 | 62 | 7500 | 9.0 318 | 655 2.63 | 69 | -20 to +70 | 100000/60°C (135000/40°C) |
| | | | 20 | 0.31 | 3.72 | 2300 | 2.75 97 | 80 0.32 | 38 | | |
| 9WL1412P5S001 | | | 100 | 1.83 | 22 | 5000 | 6.0 212 | 295 1.18 | 57 | | |
| | | | 20 | 0.31 | 3.72 | 2300 | 2.75 97 | 80 0.32 | 38 | | |
| 9WL1424P5G001 | 24 | 20.4 to 27.6 | 100 | 2.58 | 62 | 7500 | 9.0 318 | 655 2.63 | 69 | | |
| | | | 20 | 0.16 | 3.84 | 2300 | 2.75 97 | 80 0.32 | 38 | | |
| 9WL1424P5S001 | | | 100 | 0.91 | 22 | 5000 | 6.0 212 | 295 1.18 | 57 | | |
| | | | 20 | 0.16 | 3.84 | 2300 | 2.75 97 | 80 0.32 | 38 | | |
| 9WL1448P5G001 | 48 | 40.8 to 55.2 | 100 | 1.29 | 62 | 7500 | 9.0 318 | 655 2.63 | 69 | | |
| | | | 20 | 0.12 | 5.76 | 2300 | 2.75 97 | 80 0.32 | 38 | | |
| 9WL1448P5S001 | | | 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 pulse sensors.**

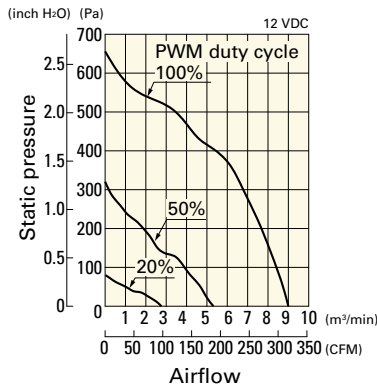
| Model no. | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min ⁻¹] | Max. airflow [m ³ /min] [CFM] | Max. static pressure [Pa] [inchH ₂ O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|--------------|-------------------|-----------------------------|-------------------|-----------------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

Note: Sensor and control options are available for selection. Refer to the table on p. 619.

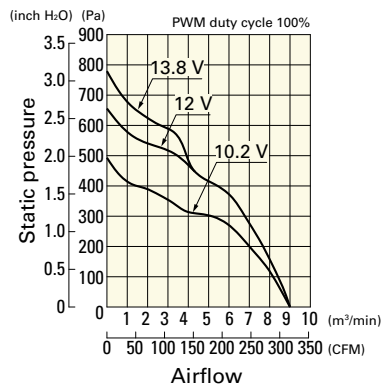
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL1412P5G001 With pulse sensor with PWM control function

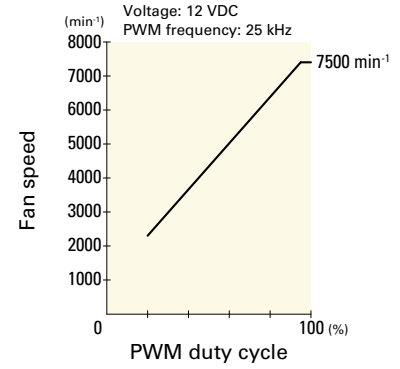
PWM duty cycle



Operating voltage range

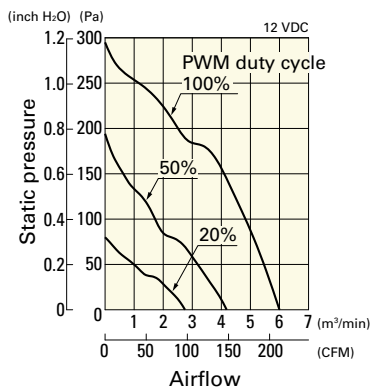


PWM duty - Speed characteristics example

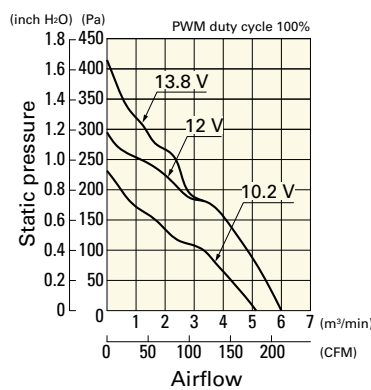


9WL1412P5S001 With pulse sensor with PWM control function

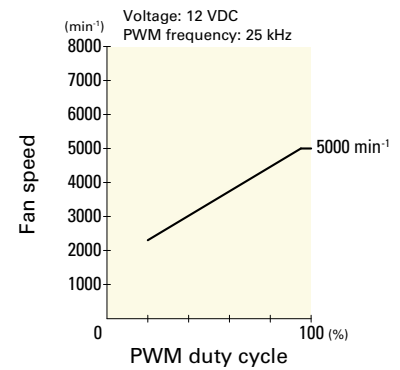
PWM duty cycle



Operating voltage range

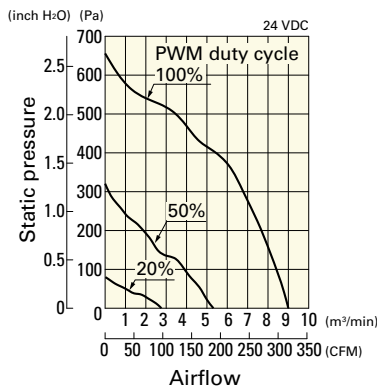


PWM duty - Speed characteristics example

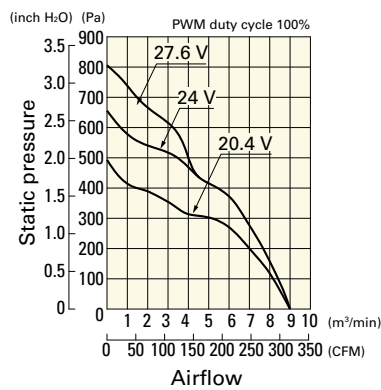


9WL1424P5G001 With pulse sensor with PWM control function

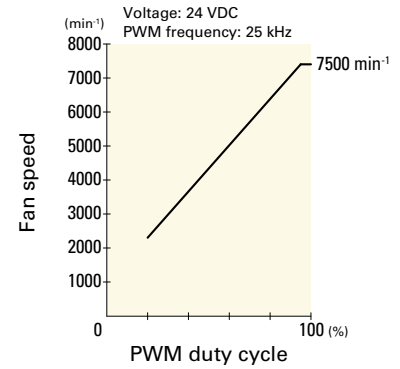
PWM duty cycle



Operating voltage range

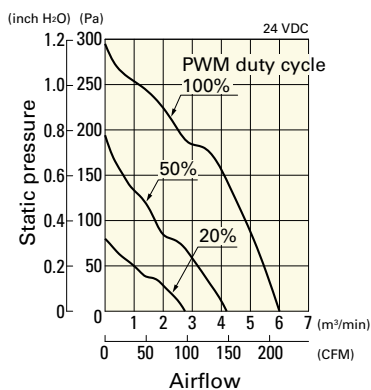


PWM duty - Speed characteristics example

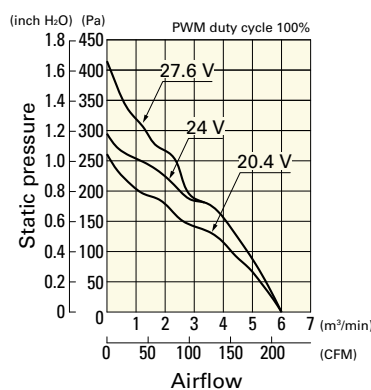


9WL1424P5S001 With pulse sensor with PWM control function

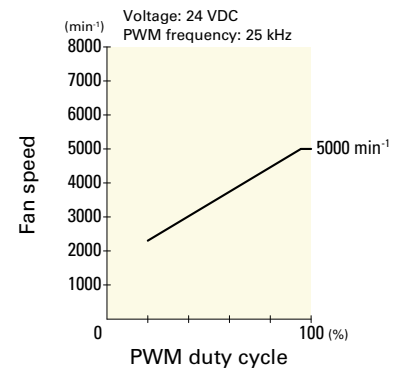
PWM duty cycle



Operating voltage range



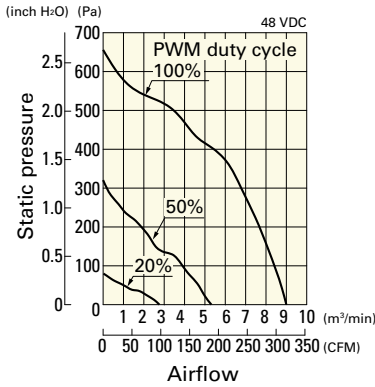
PWM duty - Speed characteristics example



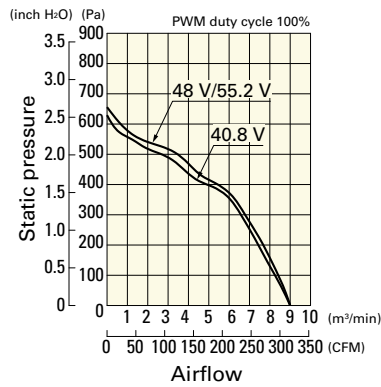
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9WL1448P5G001 With pulse sensor with PWM control function

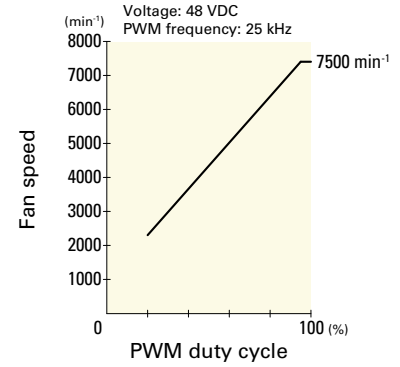
PWM duty cycle



Operating voltage range

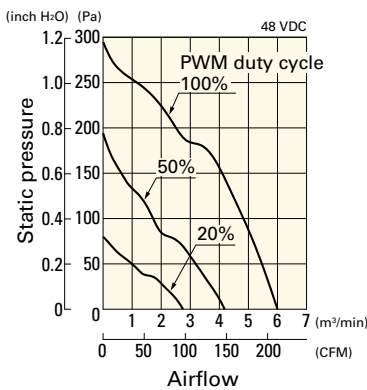


PWM duty - Speed characteristics example

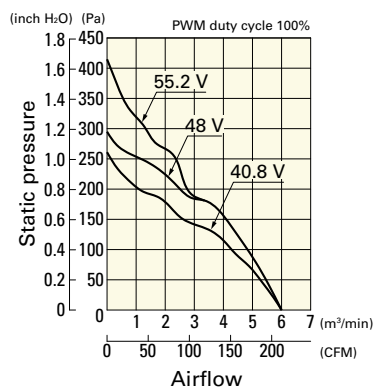


9WL1448P5S001 With pulse sensor with PWM control function

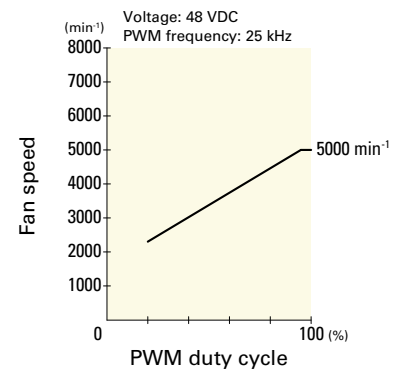
PWM duty cycle



Operating voltage range



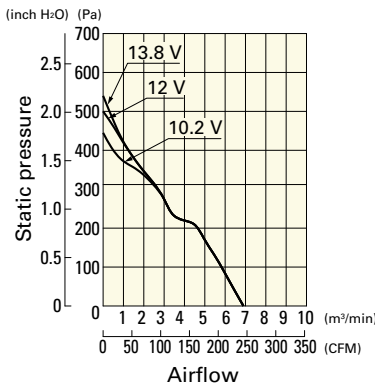
PWM duty - Speed characteristics example



Airflow - Static Pressure Characteristics

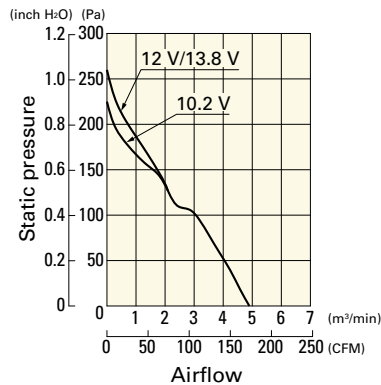
9WL1412A5001 With pulse sensor

Operating voltage range



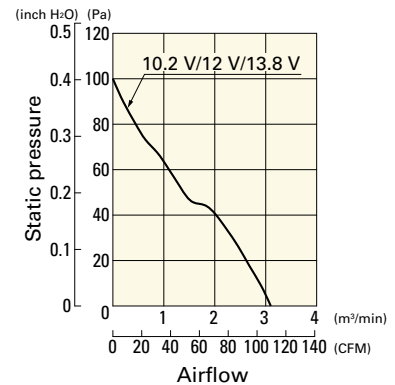
9WL1412H5001 With pulse sensor

Operating voltage range



9WL1412M5001 With pulse sensor

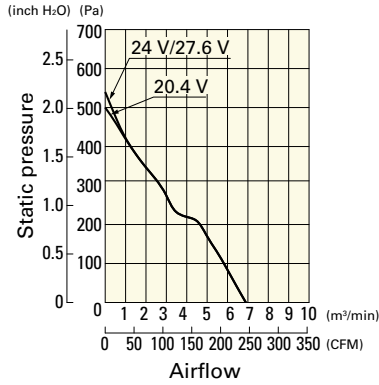
Operating voltage range



Airflow - Static Pressure Characteristics

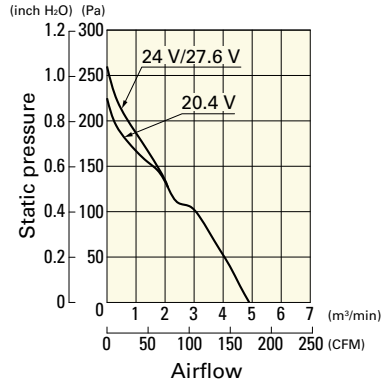
9WL1424A5001 With pulse sensor

Operating voltage range



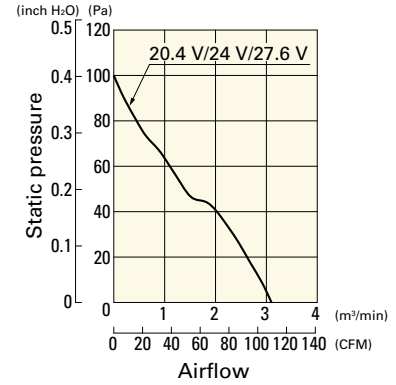
9WL1424H5001 With pulse sensor

Operating voltage range



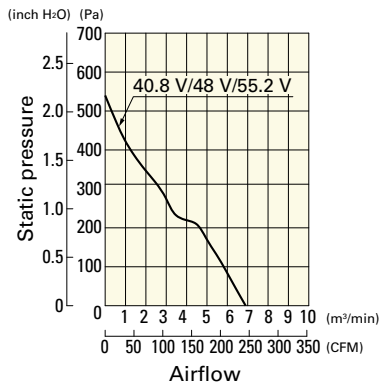
9WL1424M5001 With pulse sensor

Operating voltage range



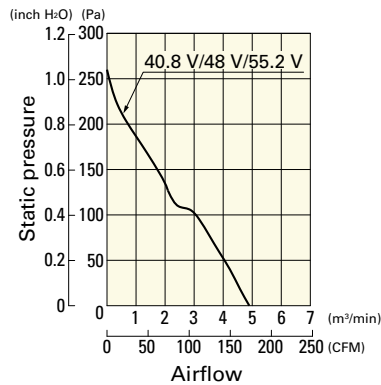
9WL1448A5001 With pulse sensor

Operating voltage range



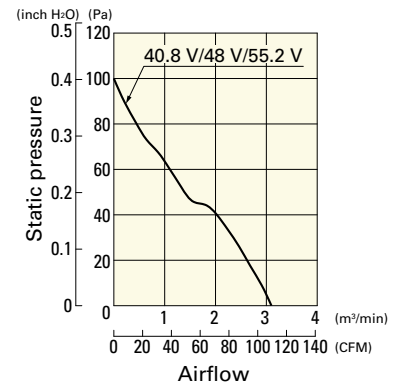
9WL1448H5001 With pulse sensor

Operating voltage range

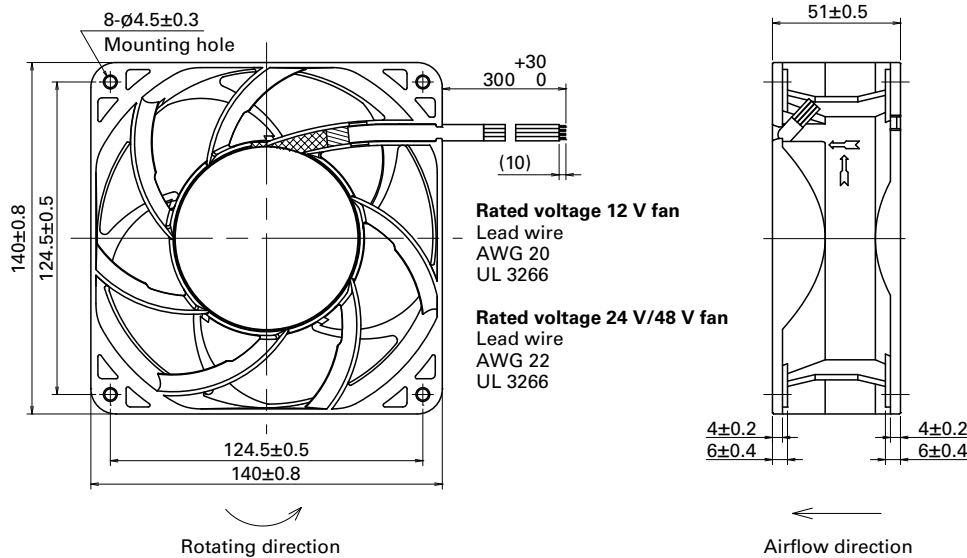


9WL1448M5001 With pulse sensor

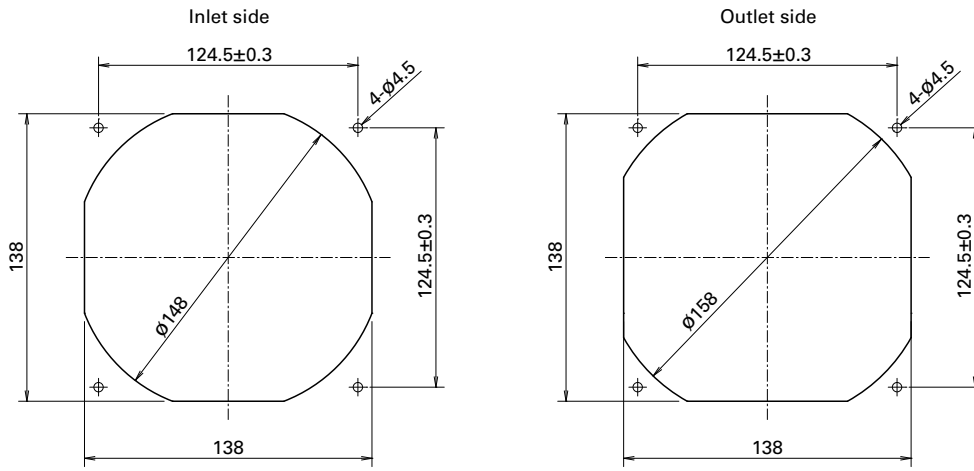
Operating voltage range



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



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



■ Options

Finger guards

page: p. 565

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