

# San Ace 97W

## 9W1B type

### Splash Proof Blower

#### Features

##### High Static Pressure and High Airflow

This blower delivers a maximum static pressure of 540 Pa and a maximum airflow of 1.09 m<sup>3</sup>/min.\*

Blowers can send out straight airflow with high static pressure, making them suitable for localized and spot cooling applications.

##### Water and Dust Resistance

Its IP68-rated\*\* water and dust protection ensures stable fan operation even in harsh environments.

##### High Energy Efficiency and Low Noise

The PWM control function enables the control of fan speed, contributing to lowering noise and improving energy efficiency of devices.

\* These values are for models 9W1BM12P2H001 and 9W1BM24P2H001

\*\* The degree of protection (IP code) is defined by IEC 60529 (International Electrotechnical Commission).

IP68:

- Completely protected against dust
- Protected against submersion in water



## 97 × 33 mm

#### Specifications

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

| Model no.     | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB(A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|-------------|----------------------------|----------------------------|
| 9W1BM12P2H001 | 12                | 10.2 to 13.8                | 100                 | 1.30              | 15.6            | 4800                             | 1.09 38.5                                | 540 2.17                                         | 58          | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|               |                   |                             | 20                  | 0.14              | 1.68            | 1500                             | 0.32 11.3                                | 51 0.20                                          | 30          |                            |                            |
| 9W1BM12P2M001 |                   |                             | 100                 | 0.90              | 10.8            | 4100                             | 0.93 32.8                                | 380 1.53                                         | 55          |                            |                            |
|               |                   |                             | 20                  | 0.14              | 1.68            | 1500                             | 0.32 11.3                                | 51 0.20                                          | 30          |                            |                            |
| 9W1BM24P2H001 | 24                | 20.4 to 27.6                | 100                 | 0.65              | 15.6            | 4800                             | 1.09 38.5                                | 540 2.17                                         | 58          |                            |                            |
|               |                   |                             | 20                  | 0.07              | 1.68            | 1500                             | 0.32 11.3                                | 51 0.20                                          | 30          |                            |                            |
| 9W1BM24P2M001 |                   |                             | 100                 | 0.45              | 10.8            | 4100                             | 0.93 32.8                                | 380 1.53                                         | 55          |                            |                            |
|               |                   |                             | 20                  | 0.07              | 1.68            | 1500                             | 0.32 11.3                                | 51 0.20                                          | 30          |                            |                            |

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

Models with the following sensor specifications are also available as options: **Without sensor** **Lock sensor**

#### Common Specifications

- ☐ Material ..... Frame: Aluminum (Black coating), Plastic (Flammability: UL 94V-0)  
Impeller: Plastic (Flammability: UL 94V-0)
- ☐ Expected life ..... Refer to specifications  
(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 system ..... Current blocking function and reverse polarity protection
- ☐ Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- ☐ Sound pressure level (SPL) ..... At 1 m away from the air inlet
- ☐ Operating temperature ..... Refer to specifications (Non-condensing)
- ☐ Storage temperature ..... -30 to +70°C (Non-condensing)
- ☐ Lead wire ..... ⊕ Red ⊖ Black **Sensor** Yellow **Control** Brown
- ☐ Mass ..... 240 g
- ☐ Ingress protection ..... IP68

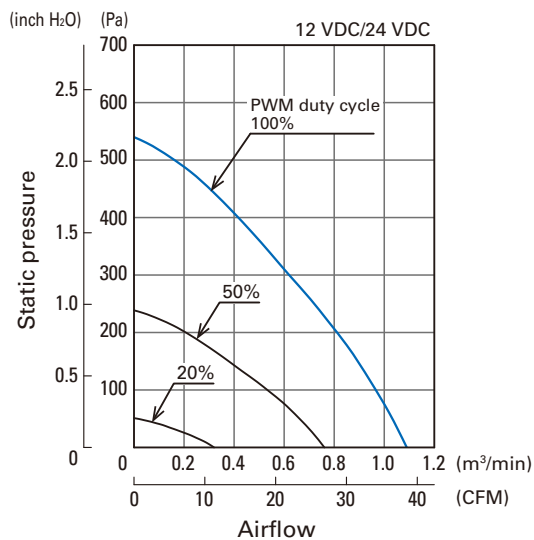
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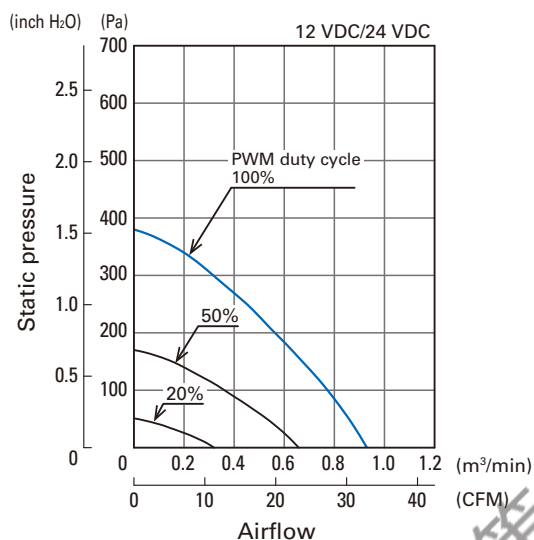


## Airflow - Static Pressure Characteristics

- PWM duty cycle

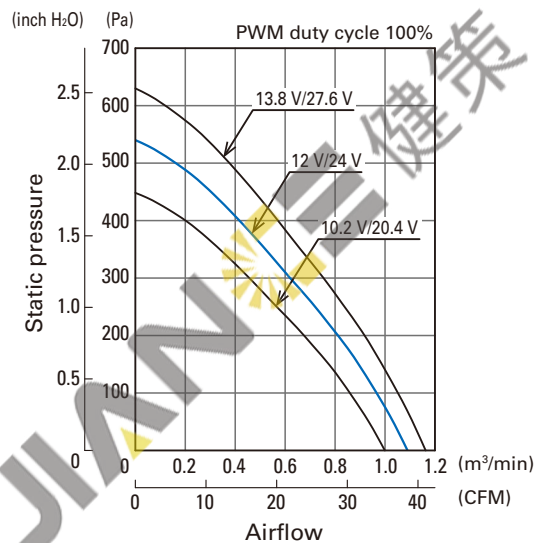


9W1BM12P2H001  
9W1BM24P2H001

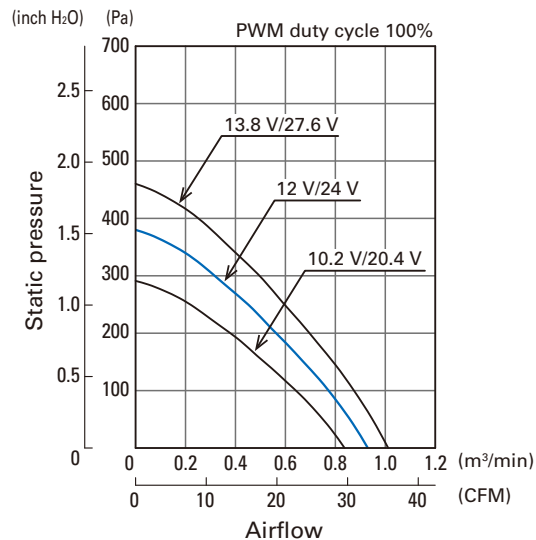


9W1BM12P2M001  
9W1BM24P2M001

- Operating voltage range

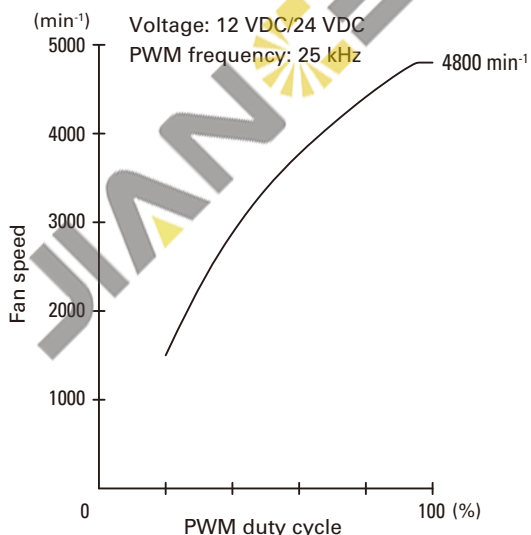


9W1BM12P2H001  
9W1BM24P2H001

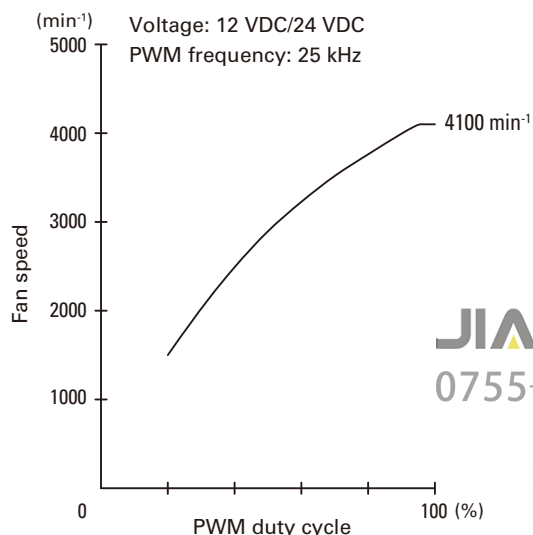


9W1BM12P2M001  
9W1BM24P2M001

## PWM Duty - Speed Characteristics Example



9W1BM12P2H001  
9W1BM24P2H001

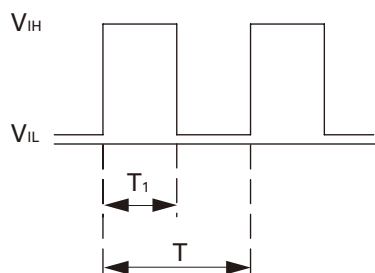


9W1BM12P2M001  
9W1BM24P2M001



## PWM Input Signal Example

Input signal waveform



$$V_{IH} = 4.75 \text{ to } 5.25 \text{ V} \quad V_{IL} = 0 \text{ to } 0.4 \text{ V}$$

$$\text{PWM duty cycle (\%)} = \frac{T_1}{T} \times 100 \quad \text{PWM frequency } 25 \text{ (kHz)} = \frac{1}{T}$$

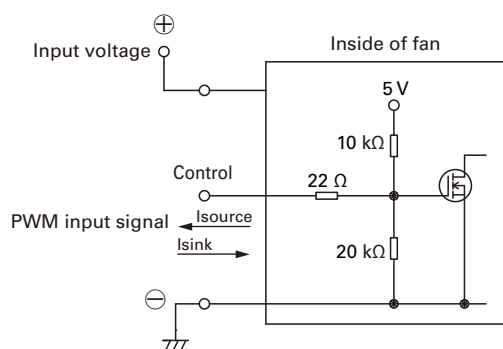
Current source ( $I_{\text{source}}$ ) = 1 mA max. (when control voltage is 0 V)

Current sink ( $I_{\text{sink}}$ ) = 1 mA max. (when control voltage is 5.25 V)

Control terminal voltage = 5.25 V max. (when control terminal is open)

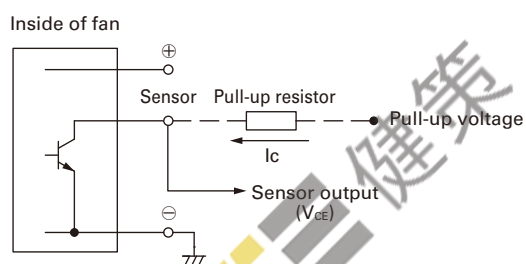
When the control terminal is open,  
fan speed is the same as when PWM duty cycle is 100%.  
Either TTL input, open collector or open drain can be used for  
PWM control input signal.

## Example of Connection Schematic



## Specifications for Pulse Sensors

Output circuit: Open collector



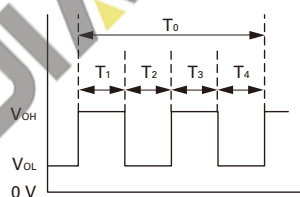
$$V_{CE} = +27.6 \text{ V max.}$$

$$I_C = 5 \text{ mA max. } [V_{OL} = V_{CE} (\text{SAT}) = 1.0 \text{ V max.}]$$

Output waveform (Need pull-up resistor)

In case of steady running

(One revolution)



$$T_{1 \text{ to } 4} \doteq (1/4) T_0$$

$$T_{1 \text{ to } 4} \doteq (1/4) T_0 = 60/4N \text{ (s)}$$

$$N = \text{Fan speed (min}^{-1}\text{)}$$

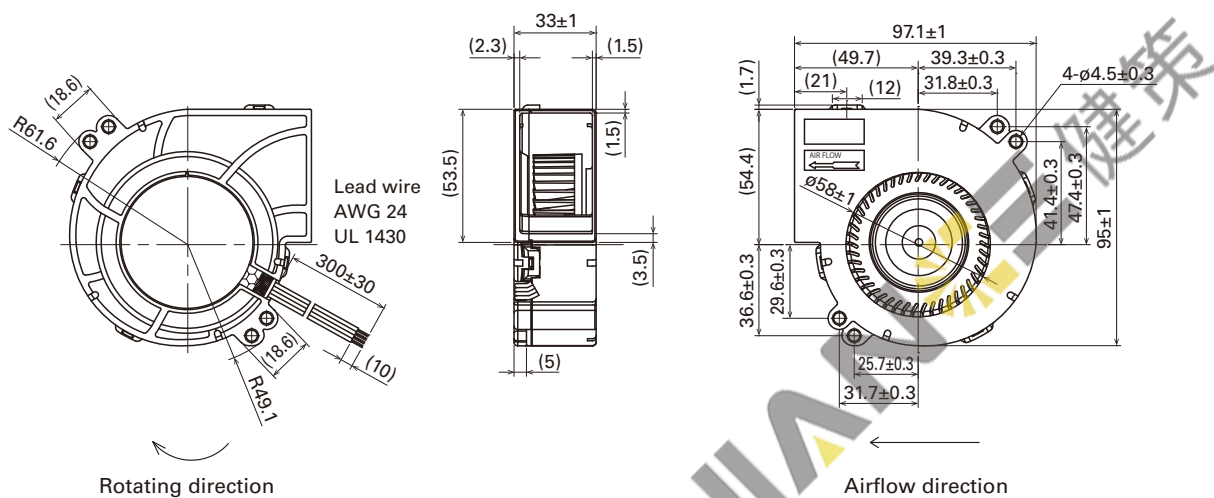
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## ■ Dimensions (unit: mm)



## Notice

- Please read the "Safety Precautions" on our website before using the product.
- The products shown in this catalog are subject to Japanese Export Control Law. Diversion contrary to the law of exporting country is prohibited.
- For protecting fan bearings against electrolytic corrosion near strong electromagnetic noise sources, we provide effective countermeasures such as Electrolytic Corrosion Proof Fans and EMC guards. Contact us for details.

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