San Ace 92W 9WPA type
Splash Proof Fan

Features

High Airflow and High Static Pressure
This fan delivers a maximum airflow of 2.45 m³/min and a maximum static pressure of 126 Pa.
Compared with the current models,(1) the maximum airflow has increased by 1.4 times and maximum static pressure has increased by 1.9 times.

Water and Dust Resistance
These fans have IP68-rated(2) water and dust protection. They maintain stable operation even in harsh environments.

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

(1) Current models: San Ace 92W P type 92 × 92 × 25 mm DC Fan (model no. 9WP0924G401).
(2) The degree of protection (IP code) is defined by IEC 60529 (International Electrotechnical Commission).

Specifications

The models listed below have ribs and pulse sensors with PWM control function. For models without ribs, append “1” to the end of model numbers.

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<tbody>
<tr>
<td>9WPA0912P4G001</td>
<td>12</td>
<td>10.8 to 13.2</td>
<td>100</td>
<td>0.5</td>
<td>6</td>
<td>5700</td>
<td>2.45</td>
<td>86.5</td>
<td>126</td>
<td>0.51</td>
<td>47</td>
<td>20 to +70</td>
<td>40000/80°C (70000/40°C)</td>
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<tr>
<td>9WPA0924P4G001</td>
<td>24</td>
<td>21.6 to 26.4</td>
<td>100</td>
<td>0.25</td>
<td>6</td>
<td>5700</td>
<td>2.45</td>
<td>86.5</td>
<td>126</td>
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* PWM input frequency is 25 kHz; models without specifications at 0% PWM duty cycle have zero fan speed at 0%.

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

Common Specifications

- **Material**: Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- **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 function**: Locked rotor burnout protection, Reverse polarity protection
- **Dielectric strength**: 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- **Insulation resistance**: 10 MΩ or more with a 500 VDC megger (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, Yellow, Brown
- **Mass**: 135 g
- **Ingress protection**: IP68
Airflow - Static Pressure Characteristics

- **PWM duty cycle**

  ![Graph showing airflow and static pressure characteristics with PWM duty cycle](image1)

- **Operating voltage range**

  ![Graph showing airflow and static pressure characteristics with different operating voltages](image2)

PWM Duty - Speed Characteristics Example

- **Voltage: 12/24 VDC**

  ![Graph showing fan speed and PWM duty cycle](image3)

Specifications for Pulse Sensors

- **Output circuit:** Open collector

  ![Diagram showing pulse sensor connections](image4)

- **Output waveform:** Need pull-up resistor

  ![Diagram showing output waveform](image5)

- | Sensor Pull-up resistor | Pull-up voltage |
<table>
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<tr>
<td>Current source (Isource)</td>
<td>1 mA max. (when control voltage is 0 V)</td>
</tr>
<tr>
<td>Current sink (Isink)</td>
<td>1 mA max. (when control voltage is 5.25 V)</td>
</tr>
<tr>
<td>Control terminal voltage</td>
<td>5.25 V max. (when control terminal is open)</td>
</tr>
</tbody>
</table>

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.
### PWM Input Signal Example

**Input signal waveform**

\[
V_H, V_L, T_1, T
\]

- \(V_H = 4.75\) to 5.25 V, \(V_L = 0\) to 0.4 V
- PWM duty cycle (%) = \(\frac{T_1}{T} \times 100\)
- PWM frequency = 25 kHz
- Current source (\(I_{source}\)) = 1 mA max. (when control voltage is 0 V)
- Current sink (\(I_{sink}\)) = 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

![Connection Schematic](image)

### Specifications for Pulse Sensors

- **Output circuit**: Open collector

  **Rated voltage 12 V fan**
  
  - \(V_{CL} = +13.2\) V max.
  - \(I_c = 5\) mA max. \([V_{CL} = V_{CE} (SAT) = 0.6\) V max.\]

  **Rated voltage 24 V fan**
  
  - \(V_{CL} = +26.4\) V max.
  - \(I_c = 5\) mA max. \([V_{CL} = V_{CE} (SAT) = 0.6\) V max.\]

- **Output waveform** (Need pull-up resistor)
  
  In case of steady running

  \(T_{1u} = \frac{1}{4} T_0\)
  
  \(T_{1u} = \frac{1}{4} T_0 = \frac{60}{4N}\) (s)
  
  \(N = \text{Fan speed (min}\(^{-1}\))\)
**Dimensions** (unit: mm) *(With ribs)*

- **Mounting hole**: 4-ø4.5±0.3
- **Lead wire**: AWG 26
- **UL 1430**: UL 1430

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

- **Inlet side**
  - ø108
  - 82.5±0.3
  - 4-ø4.5

- **Outlet side**
  - 90.5
  - 82.5±0.3

**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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