San Ace 80W 9WPA type
Splash Proof Fan

**Features**

**High Airflow and High Static Pressure**
This fan delivers a maximum airflow of 2.32 m³/min and a maximum static pressure of 210 Pa.
Compared with the current models, the maximum airflow has increased by 1.5 times and maximum static pressure has increased by 2.6 times.

**Water and Dust Resistance**
These fans have IP68-rated 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 80 9WP type 80 × 80 × 25 mm DC Fan (model nos. 9WP0812G401).
(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>9WPA0812P4G001</td>
<td>12</td>
<td>10.8 to 13.2</td>
<td>100</td>
<td>0.71</td>
<td>8.52</td>
<td>8250</td>
<td>2.32 81.9</td>
<td>210 0.84</td>
<td>54</td>
<td>20 to +70</td>
<td>40000/80°C (70000/40°C)</td>
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<tr>
<td>9WPA0824P4G001</td>
<td>24</td>
<td>21.6 to 26.4</td>
<td>100</td>
<td>0.36</td>
<td>8.64</td>
<td>8250</td>
<td>2.32 81.9</td>
<td>210 0.84</td>
<td>54</td>
<td>20 to +70</td>
<td>40000/80°C (70000/40°C)</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, Sensor, Yellow, Control, Brown
- **Mass**: 130 g
- **Ingress protection**: IP68
Airflow - Static Pressure Characteristics

- **PWM duty cycle**
  - Voltage: 12/24 VDC
  - PWM frequency: 25 kHz
  - Current source (Isource) = 1 mA max. (when control voltage is 0 V)
  - Current sink (Isink) = 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.

- **Operating voltage range**
  - Voltage: 12/24 VDC
  - PWM duty cycle 100%
  - 13.2/26.4 V
  - 12/24 V
  - 10.8/21.6 V

PWM Duty - Speed Characteristics Example

- Voltage: 12/24 VDC
- PWM frequency: 25 kHz
- Fan speed: 8250 min⁻¹

Specifications for Pulse Sensors

- Output circuit: Open collector
- T1 to 4 ≈ (1/4) T0
- T1 to 4 ≈ (1/4) T0 = 60/4N (s)
- N = Fan speed (min⁻¹)

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

- Sensor output (VCE)
- Sensor Pull-up resistor
- Pull-up voltage
- Rated voltage 12 V fan
  - VCE = +13.2 V max.
  - Ic = 5 mA max. [VOL = VCE (SAT) = 0.8 V max.]
- Rated voltage 24 V fan
  - VCE = +26.4 V max.
  - Ic = 5 mA max. [VOL = VCE (SAT) = 0.8 V max.]

Example of Connection Schematic
**PWM Input Signal Example**

Input signal waveform

\[ V_{\text{IH}} \]
\[ V_{\text{IL}} \]
\[ T_1 \]
\[ T \]

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

PWM duty cycle (\%) = \[ \frac{T_1}{T} \times 100 \]

PWM frequency 25 (kHz) = \[ \frac{1}{T} \]

Current source (Isource) = 1 mA max. (when control voltage is 0 V)

Current sink (Isink) = 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 Diagram](image-url)

**Specifications for Pulse Sensors**

Output circuit: Open collector

Inside of fan

Sensor Pull-up resistor Pull-up voltage

Sensor output \( V_{\text{C}} \)

Rated voltage 12 V fan

\[ V_{\text{C}} = +13.2 \text{ V max.} \]

\[ I_c = 5 \text{ mA max.} \]

\[ V_{\text{C}} = V_{\text{C}} \text{ (SAT) = 0.8 V max.} \]

Rated voltage 24 V fan

\[ V_{\text{C}} = +26.4 \text{ V max.} \]

\[ I_c = 5 \text{ mA max.} \]

\[ V_{\text{C}} = V_{\text{C}} \text{ (SAT) = 0.8 V max.} \]

Output waveform (Need pull-up resistor)

In case of steady running

(One revolution)

\[ T_{1u} = \frac{1}{4} T_0 \]

\[ T_{1u} = \frac{1}{4} T_0 = 60/4N \text{ (s)} \]

\[ N = \text{Fan speed (min}^{-1}) \]
Dimensions (unit: mm) (With ribs)

Reference Dimensions of Mounting Holes and Vent Opening (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.