San Ace 40 9HVA type
High Static Pressure Fan

Features

High Static Pressure and High Airflow
This fan delivers a maximum static pressure of 2300 Pa and a maximum airflow of 1.05 m³/min. Compared with our current model,* the maximum static pressure has increased by 2.1 times and the maximum airflow has increased by 1.3 times.

Energy-saving
Power consumption has been reduced by approximately 20% compared with the current model.*

Space-saving
This fan delivers higher cooling performance than our 40 × 40 × 56 mm Counter Rotating Fan.** The smaller fan size provides enhanced design flexibility.

* Current model: San Ace 40/9HV type 40 × 40 × 28 mm DC Fan (model no. 9HVA0412P3K001).
** San Ace 40/9CRV type 40 × 40 × 56 mm Counter Rotating Fan (model no. 9CRV0412P5J201).

Specifications

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

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<tbody>
<tr>
<td>9HVA0412P3J001</td>
<td>12</td>
<td>10.2 to 13.8</td>
<td>100</td>
<td>2.6</td>
<td>31.2</td>
<td>38000</td>
<td>1.05</td>
<td>37.1</td>
<td>2300</td>
<td>9.24</td>
<td>71</td>
<td>-20 to +70</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: With sensor Lock sensor

Common Specifications

☐ Material ............................... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
☐ Expected life ............................. Refer to specifications
☐ 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 VAC 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 ........................................ 57 g

Airflow - Static Pressure Characteristics

PWM duty cycle

Operating voltage range

PWM duty cycle 100%

PWM Duty - Speed Characteristics Example

Voltage: 12 VDC
PWM frequency: 25 kHz

38000 min⁻¹

40 × 40 × 28 mm

Features

PWM Duty Cycle - Speed Characteristics Example

Voltage: 12 VDC
PWM frequency: 25 kHz

38000 min⁻¹
### PWM Input Signal Example

**Input signal waveform**

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<table>
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<tbody>
<tr>
<td>$V_{IN}$</td>
<td>$V_L$</td>
</tr>
<tr>
<td>$T_1$</td>
<td>$T$</td>
</tr>
</tbody>
</table>

$V_{IN} = 4.75$ to $5.25$ V  \[ V_L = 0 \text{ to } 0.4 \text{ V} \]

PWM duty cycle ($\%$) = $\frac{V_L}{V_{IN}}$ x $100$

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

**Specifications for Pulse Sensors**

**Output circuit: Open collector**

**Output waveform (Need pull-up resistor)**

In case of steady running

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<td>$T_1$</td>
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$V_{IN} = 13.8$ V max.  \[ I_{C} = 5$ mA max.  \[ V_{CE} = (V_{SAT}) = 0.6$ V max. \]

PWM duty cycle (%) = $\frac{V_{L}}{V_{IN}}$ x $100$

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.

### Dimensions (unit: mm)

- **Mounting hole**
  - $4-\Phi 3.5 \pm 0.3$
  - $40 \pm 0.3$
  - $32 \pm 0.3$

- **Lead wire**
  - AWG 26
  - UL 1430

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

**Inlet side, Outlet side**

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<tr>
<td>$32 \pm 0.3$</td>
<td>$40 \pm 0.3$</td>
</tr>
<tr>
<td>$4-\Phi 3.7$</td>
<td>$4-\Phi 3.5$</td>
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**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.