San Ace 92 9RA type

DC Fan

Features

Low Noise

Compared to our current product,(1) noise level has been reduced by 5 dB(A).

Energy Saving

Power consumption has been reduced by approximately 13% compared to the current product.(2)

High Static Pressure

The maximum static pressure has increased by approximately 8% compared to the current product.(1)

Rich Lineup

The lineup offers four different rotational speeds for each of 12/24/48 V rated voltages. The broad lineup of fans enables you to choose the right fan best suited to your applications.

(1) Comparison of the new product (model 9RA0948J1001) and current DC fan of the same size (model 9G0948J101).

(2) Comparison of the new product (model 9RA0912G1001) and current DC fan of the same size (model 9G0912G101).

92 × 92 × 38 mm

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.

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]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH$_2$O]	SPL [dB(A)]	Operating temperature [°C]	Expected life [h]
9RA0912P1J001	12	10.8 to 13.2	100	1.24	14.9	6400	3.28	116	192	0.77	50	-20 to +70	40000/60°C (70000/40°C)
			20	0.07	0.8	1600	0.82	29	12.0	0.05	12		
9RA0912P1G001			100	0.96	11.5	5800	2.97	105	158	0.63	47		
			20	0.06	0.7	1400	0.72	25	9.2	0.04	10		
9RA0924P1J001	24	21.6 to 26.4	100	0.62	14.9	6400	3.28	116	192	0.77	50		
			20	0.07	1.7	2200	1.13	40	22.7	0.09	19		
9RA0924P1G001			100	0.48	11.5	5800	2.97	105	158	0.63	47		
			20	0.05	1.2	2000	1.02	36	18.8	0.08	17		
9RA0948P1J001	48	43.2 to 52.8	100	0.31	14.9	6400	3.28	116	192	0.77	50		
			20	0.03	1.4	2000	1.02	36	18.8	0.08	17		
9RA0948P1G001			100	0.25	12.0	5800	2.97	105	158	0.63	47		
			20	0.03	1.4	1700	0.87	31	13.6	0.05	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 ribs and pulse sensors**. For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	Rated current [A]	Rated input [W]	Rated speed [min^{-1}]	Max. airflow [m^3/min]	Max. airflow [CFM]	Max. static pressure [Pa]	Max. static pressure [inchH$_2$O]	SPL [dB(A)]	Operating temperature [°C]	Expected life [h]
9RA0912J1001	12	7 to 13.2	1.24	14.9	6400	3.28	116	192	0.77	50	-20 to +70	40000/60°C (70000/40°C)
9RA0912G1001		7 to 13.8	0.96	11.5	5800	2.97	105	158	0.63	47		
9RA0912H1001			0.52	6.2	4650	2.36	83	102	0.41	40		
9RA0924J1001	24	14 to 26.4	0.62	14.9	6400	3.28	116	192	0.77	50		
9RA0924G1001		14 to 27.6	0.48	11.5	5800	2.97	105	158	0.63	47		
9RA0924H1001			0.26	6.2	4650	2.36	83	102	0.41	40		
9RA0948J1001	48	36 to 52.8	0.31	14.9	6400	3.28	116	192	0.77	50		
9RA0948G1001		36 to 55.2	0.25	12.0	5800	2.97	105	158	0.63	47		
9RA0948H1001			0.14	6.7	4650	2.36	83	102	0.41	40		

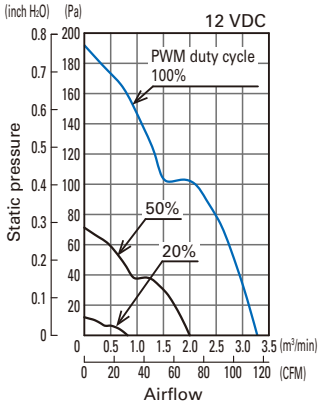
Models with the following sensor specifications are also available as options: Lock sensor

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 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 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.
- ☐ Operating temperature ····· Refer to specifications (Non-condensing)
- ☐ 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 ····· 210 g

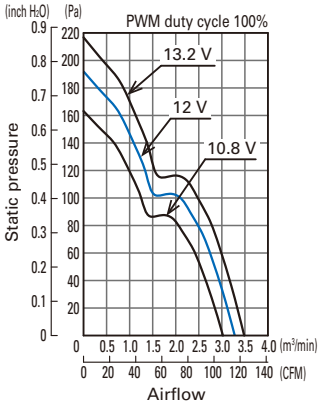
Airflow - Static Pressure Characteristics

PWM duty cycle



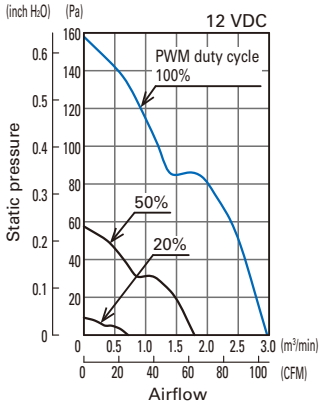
9RA0912P1J001

Operating voltage range



9RA0912P1J001

PWM duty cycle



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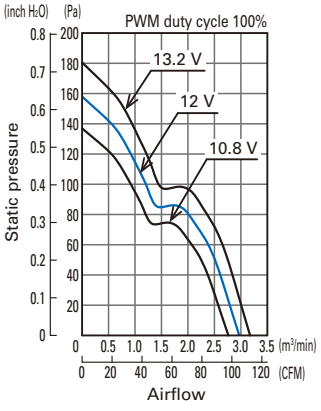
Operating voltage range



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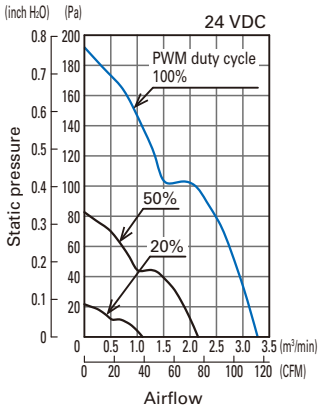
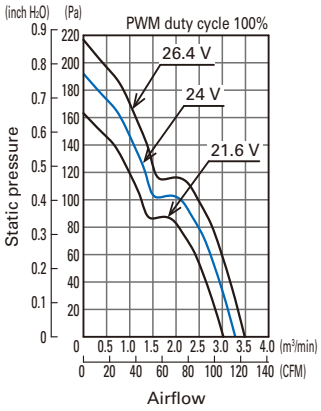
PWM duty cycle



9RA0924P1J001

Operating voltage range



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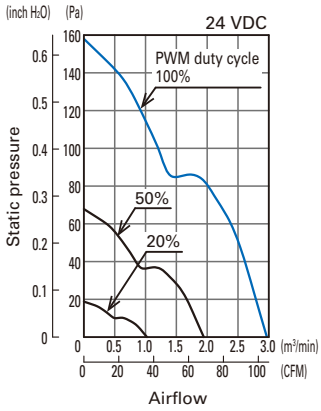
PWM duty cycle



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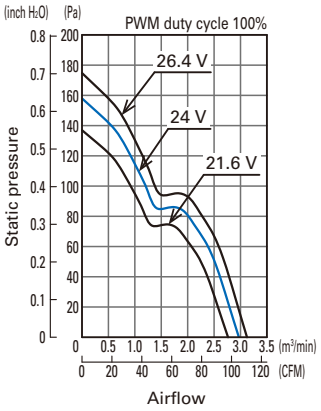
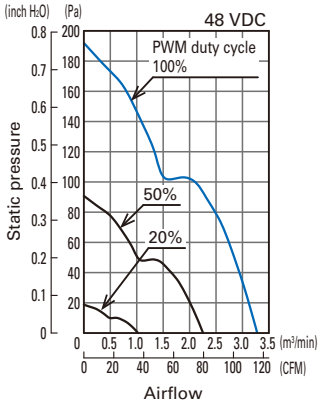
Operating voltage range



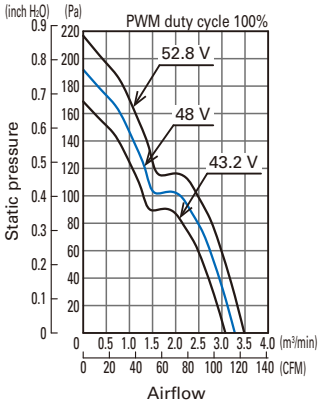
9RA0924P1G001

PWM duty cycle



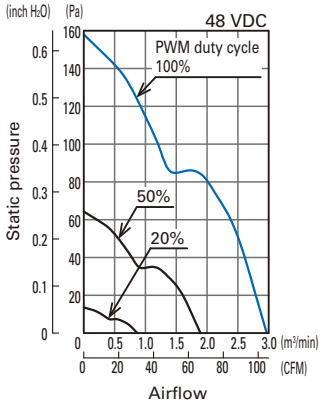
9RA0948P1J001

Operating voltage range



9RA0948P1J001

PWM duty cycle



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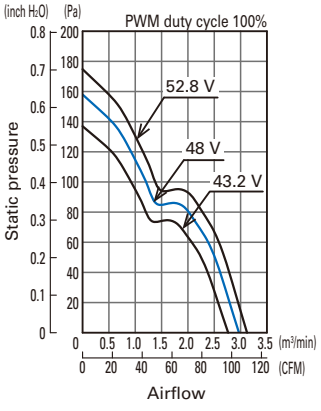
Operating voltage range



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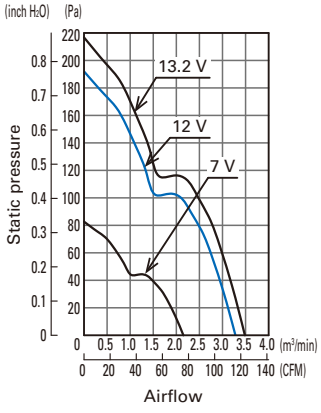
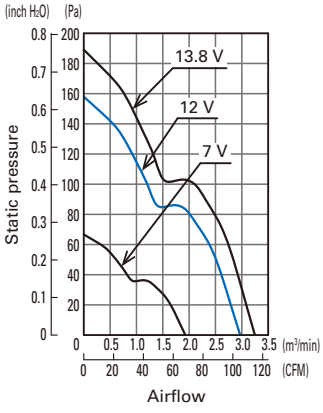
Operating voltage range



9RA0912J1001



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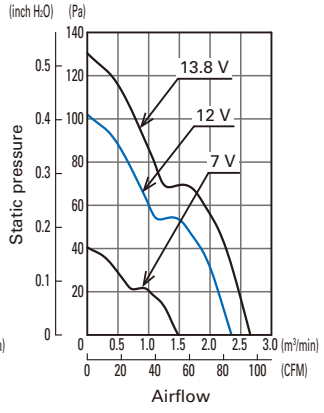

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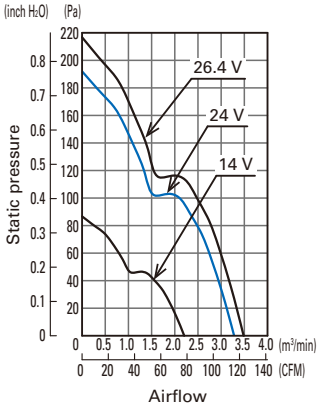
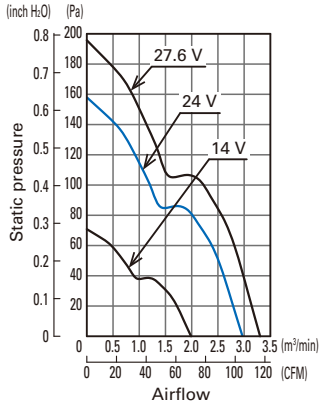


9RA0924J1001

Airflow - Static Pressure Characteristics

Operating voltage range



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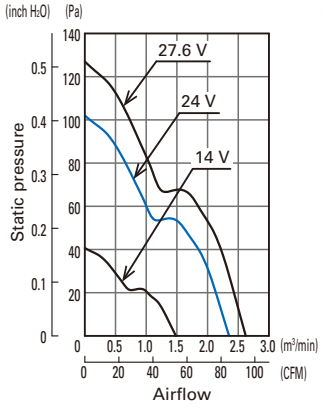

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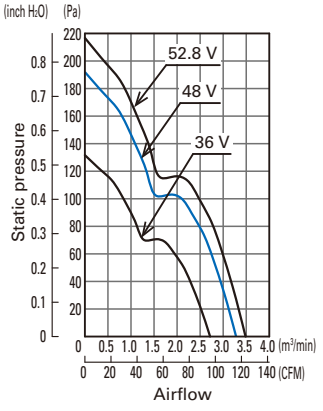

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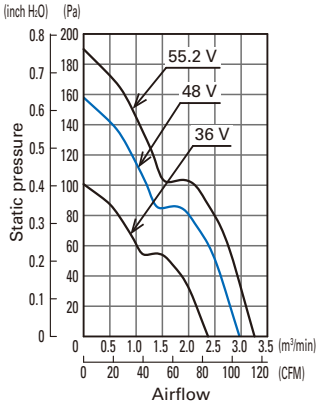

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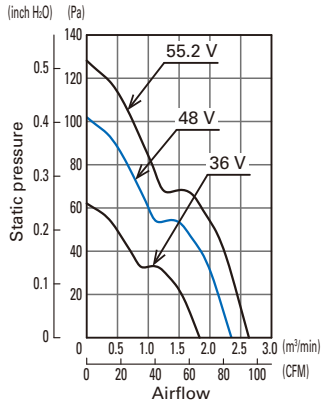
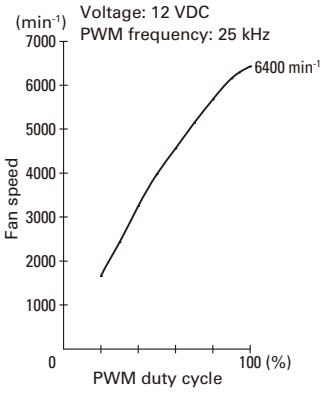
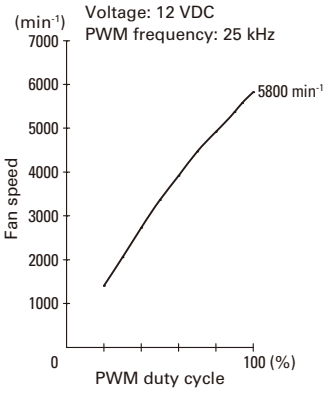


9RA0948H1001

PWM Duty - Speed Characteristics Example



9RA0912P1J001



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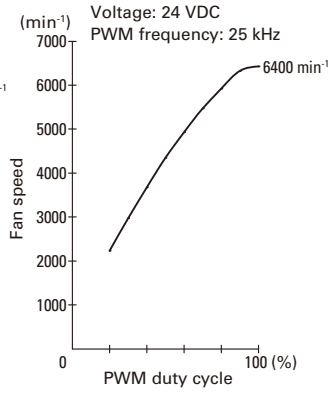

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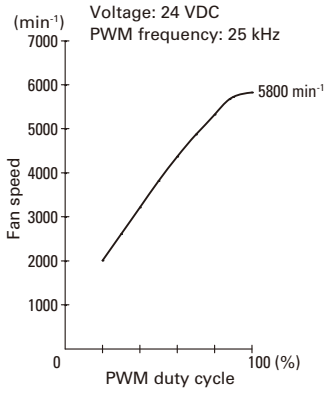

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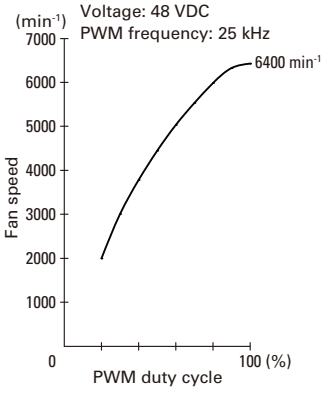

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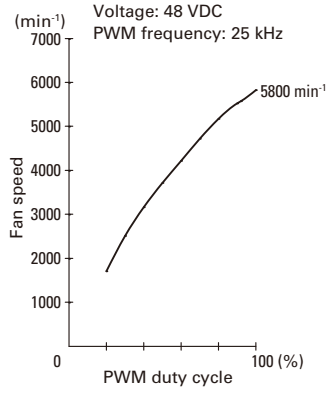
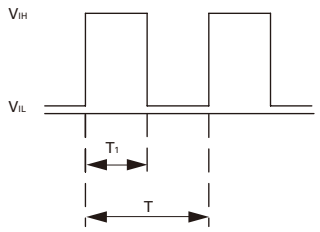


9RA0948P1G001

PWM Input Signal Example

Input signal waveform



V_{IH} = 4.75 to 5.25 V V_{IL} = 0 to 0.4 V

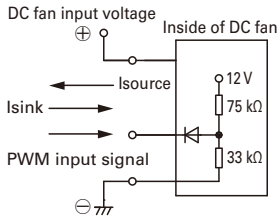
PWM duty cycle (%) = $\frac{T_1}{T} \times 100$ PWM frequency 25 (kHz) = $\frac{1}{T}$

Current source (Isource) = 1.0 mA max. (when control voltage is 0 V)

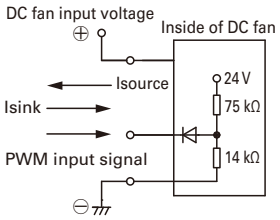
Current sink (Isink) = 1.0 mA max. (when control voltage is 5.25 V)

When the PWM control terminal is open,
the fan speed is the same as the speed at 100% PWM duty cycle.
The PWM signal can be used with open collector or drain input.
Note that when using an open collector or drain input,
or inputting a different voltage or frequency,
the speed relative to the PWM duty cycle may differ from this specification.

Example of Connection Schematic



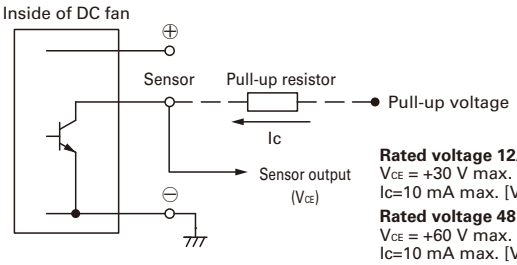
9RA0912P1J001
9RA0912P1G001



9RA0924P1J001
9RA0924P1G001
9RA0948P1J001
9RA0948P1G001

Specifications for Pulse Sensors

Output circuit: Open collector

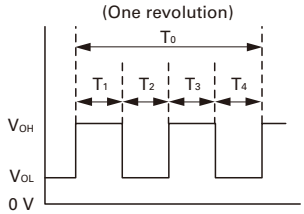


Rated voltage 12/24 V fan
V_{CE} = +30 V max.
Ic=10 mA max. [V_{OL}=V_{CE} (SAT)=0.6 V max.]

Rated voltage 48 V fan
V_{CE} = +60 V max.
Ic=10 mA max. [V_{OL}=V_{CE} (SAT)=0.4 V max.]

Output waveform (Need pull-up resistor)

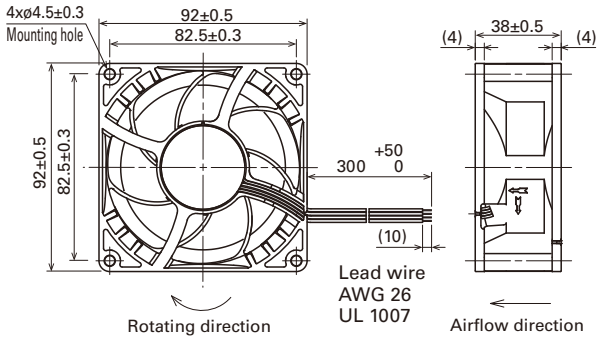
In case of steady running



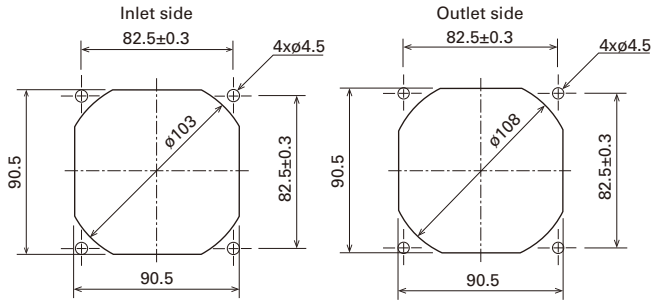
$T_{1\ to\ 4} \fallingdotseq (1/4)\ T_0$
$T_{1\ to\ 4} \fallingdotseq (1/4)\ T_0 = 60/4N$ (s)
N=Fan speed (min^{-1})

Dimensions (unit: mm)

(Ribbed frame with pulse sensor with PWM control function)



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



Options

Finger guards

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

Resin finger guards

Model no.: 109-1001G

Resin filter kits

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

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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