

# San Ace 92

## 9CRA type

### Counter Rotating Fan

#### Features

##### High Airflow and High Static Pressure

The maximum airflow has increased by 14% compared with our conventional product.\*

Furthermore, it has achieved industry-leading maximum static pressure of 1,650 Pa.

It provides effective cooling especially for high density equipment.

\*: Compared with when two of our conventional DC fan, 92 × 92 × 38 mm San Ace 92 9HV type (model no.: 9HV0912P1G001), are connected in series for operation.



## 92 × 92 × 76 mm

#### Specifications

The following nos. have **PWM controls, pulse sensors.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle (Note 1, 2) [%]	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 (Note 3) [h]
9CRA0912P0G001	12	10.2 to 13.2	100	9.0	108.0	13,300 12,200	5.8 205	1,650 6.63	81	-20 to +70	40,000 / 60 °C (70,000 / 40 °C)
			20	0.42	5.04	3,500 3,200	1.48 52.3	140 0.56	47		
9CRA0948P0G601	48	36 to 60	100	2.2	105.6	13,300 12,200	5.8 205	1,650 6.63	81		
			20	0.15	7.20	3,500 3,200	1.48 52.3	140 0.56	47		

Note 1: PWM frequency: 25 kHz Note 2: Fan does not rotate when PWM duty cycle is 0%. Note 3: Expected life at 40 °C ambient is just reference value.

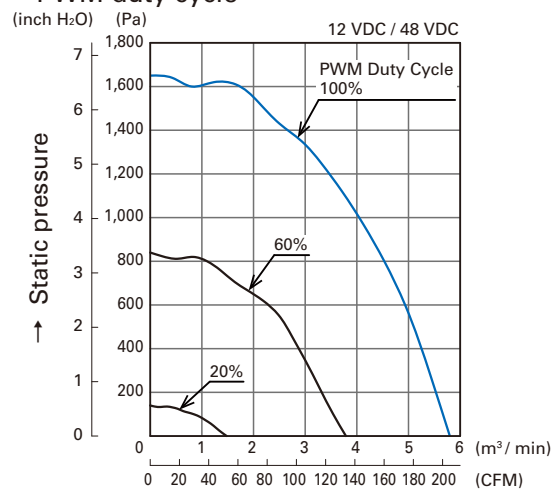
Models with the following sensor specifications are also available as options: **Without sensor** **Pulse sensor** **Lock sensor**

#### Common Specifications

- ☐ Material ..... Frame, Impeller: Plastics (Flammability: UL94V-0)
- ☐ Expected life ..... Refer to specifications  
(L10: Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- ☐ Motor protection system ..... Current blocking function and reverse polarity protection
- ☐ Dielectric strength ..... 50 / 60 Hz, 500 VAC, 1 minute (between lead conductor and frame)
- ☐ Sound pressure level (SPL) ..... Expressed as the value at 1 m from air inlet side
- ☐ Operating temperature ..... Refer to specifications (Non-condensing)
- ☐ Storage temperature ..... -30 °C to +70 °C (Non-condensing)
- ☐ Lead wire ..... Inlet: ⊕ Red ⊖ Black Sensor: Yellow Control: Brown  
Outlet: ⊕ Orange ⊖ Gray Sensor: Purple Control: White
- ☐ Mass ..... 510 g

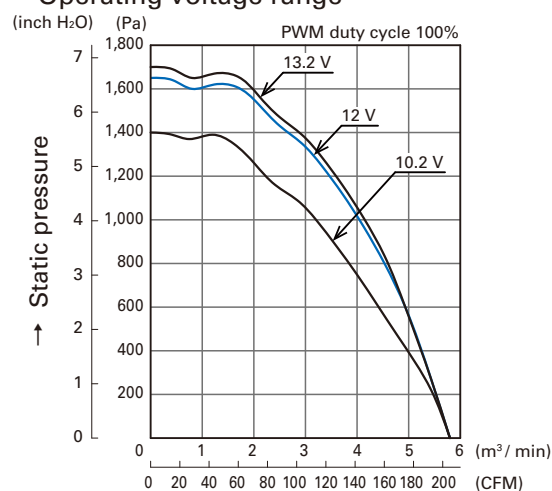
## Airflow - Static Pressure Characteristics

### • PWM duty cycle

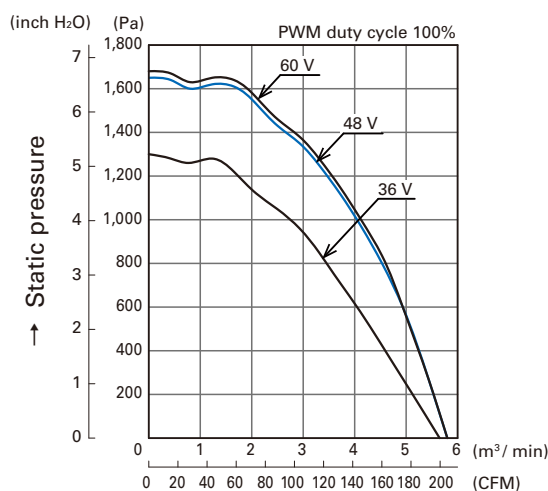


**9CRA0912P0G001**  
**9CRA0948P0G601**

### • Operating voltage range

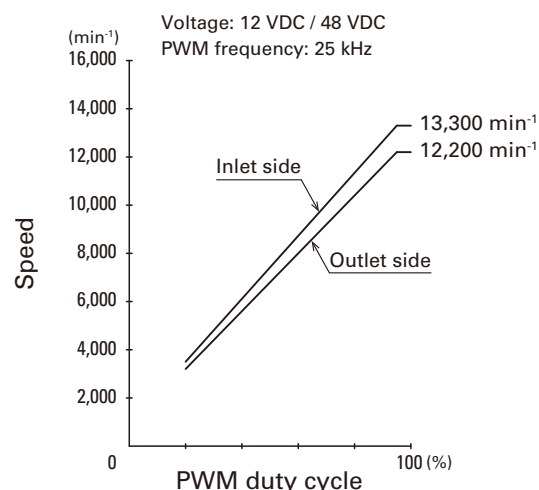


**9CRA0912P0G001**



**9CRA0948P0G601**

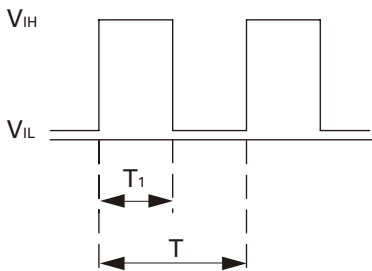
## PWM Duty - Speed Characteristics Example



**9CRA0912P0G001**  
**9CRA0948P0G601**

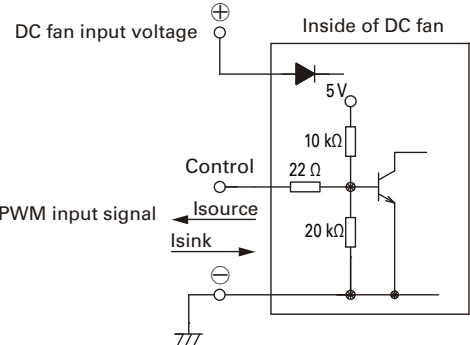
PWM Input Signal Example

Input signal waveform

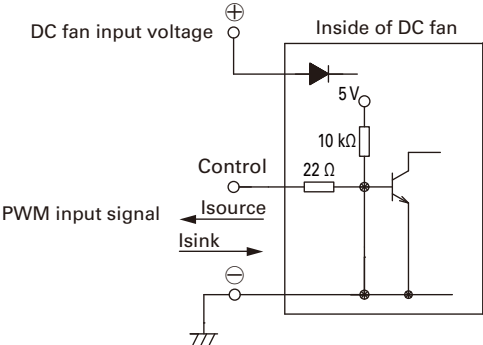


$V_{IH}=4.75\text{ V to }5.25\text{ V}$   
 $V_{IL}=0\text{ V to }0.4\text{ V}$   
 $\text{PWM duty cycle (\%)} = \frac{T_1}{T} \times 100$   
 $\text{PWM frequency } 25\text{ (kHz)} = \frac{1}{T}$   
Source current ( $I_{source}$ ) : 2 mA max. at control voltage 0 V  
Sink current ( $I_{sink}$ ) : 2 mA max. at control voltage 5.25 V  
Control terminal voltage: 5.25 V max. (Open circuit)  
When the control lead wire is open,  
the fan speed is the same as the one at a PWM duty cycle of 100%.  
Either TTL input, open collector or open drain can be used for  
PWM control input signal.

Example of Connection Schematic



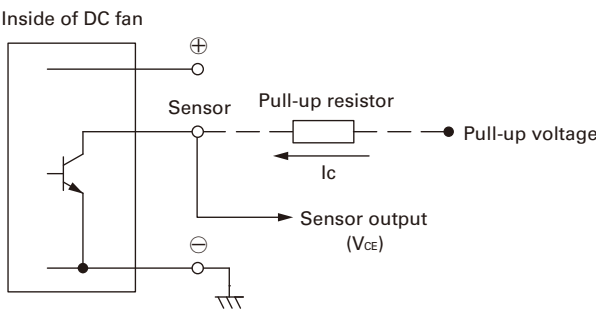
9CRA0912P0G001



9CRA0948P0G601

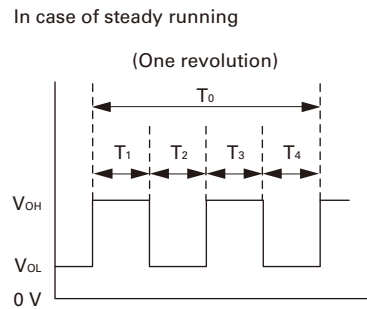
Specifications for Pulse Sensors

Output circuit: Open collector



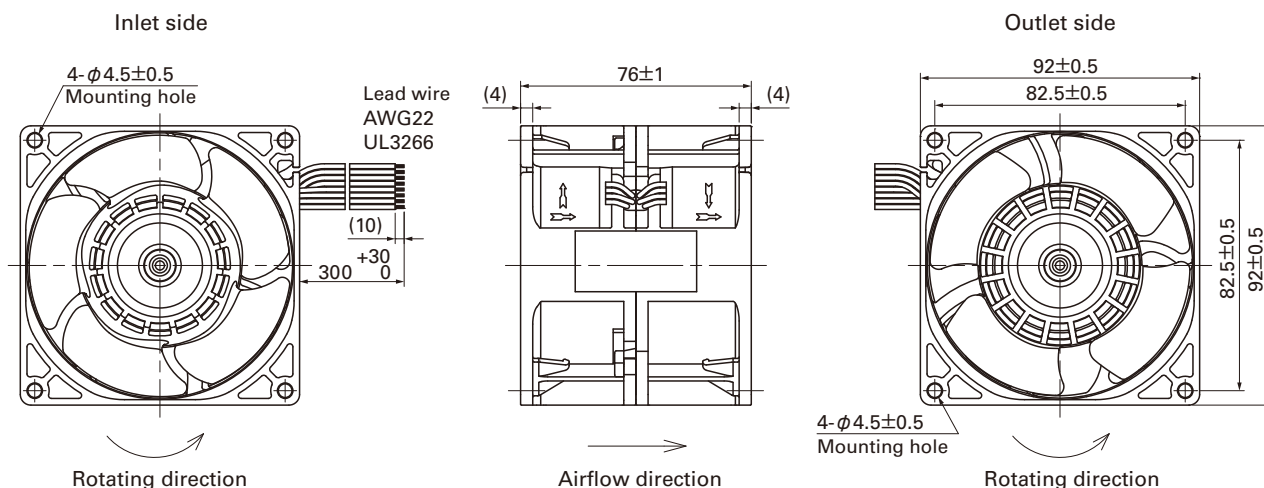
**Rated voltage 12 V fan**  
 $V_{CE} = +13.8\text{ V max.}$   
 $I_c = 5\text{ mA max. [}V_{OL} = V_{CE}(\text{SAT}) = 0.6\text{ V max.]}$   
**Rated voltage 48 V fan**  
 $V_{CE} = +60\text{ V max.}$   
 $I_c = 10\text{ mA max. [}V_{OL} = V_{CE}(\text{SAT}) = 0.6\text{ V max.]}$

Output waveform (Need pull-up resistor)

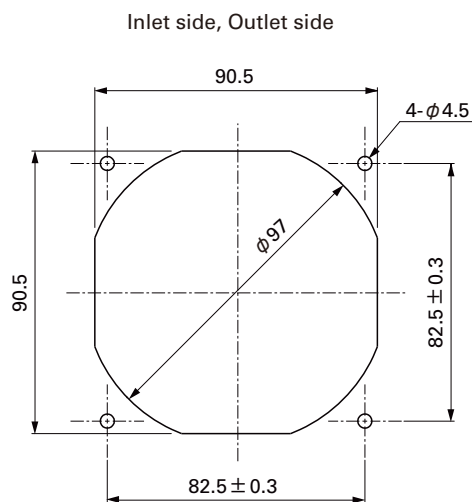


$T_{1\text{ to }4} \div (1/4) T_0$   
 $T_{1\text{ to }4} \div (1/4) T_0 = 60/4N\text{ (sec)}$   
 $N = \text{Fan speed (min}^{-1}\text{)}$

## ■ Dimensions (unit: mm)



## ■ 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.

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