

# San Ace 92RF

## 9RF type

### Reversible Flow Fan

#### Features

##### Reduces the required number of fans

- Wind direction of the fan can be switched so fewer fans are required. It therefore contributes to reducing equipment costs and saving space. It is suitable for the ventilation of houses, beverage vending machines, food display cases, LED lights, and other places where multiple fans are used to blow air in opposite directions.

- Controlling of rotational speed and wind direction can be performed by external PWM signals to deliver an appropriate rotational speed, contributing to reducing noise and saving energy.

##### Equivalent cooling performance in both directions

- It delivers approximately the same airflow and static pressure in both blowing directions, so ventilation management is easy.



φ92 mm × 38 mm

#### Specifications

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

Model no.	Airflow direction	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle (Note) [%]	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 [h]
9RF0912P1H001	Forward	12	10.2 to 13.8	100	0.17	2.0	5,500	1.20 42.4	156 0.63	39	-20 to +70	40,000 / 60 °C (70,000 / 40 °C)
	Reverse			0								
9RF0924P1H001	Forward	24	20.4 to 27.6	100	0.09	2.2	5,500	1.20 42.4	156 0.63	39		
	Reverse			0								

Note PWM frequency: 25 kHz

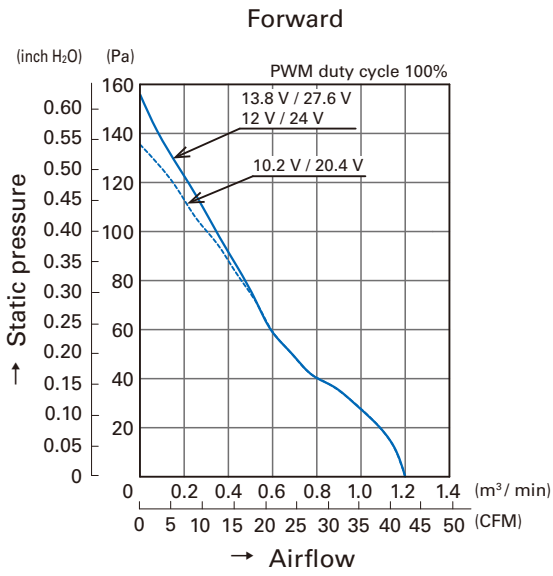
Models with the following sensor specifications are also available as options: **Without sensor**

Please contact us for availability of the following sensor specifications as it depends on the model: **Lock sensor**

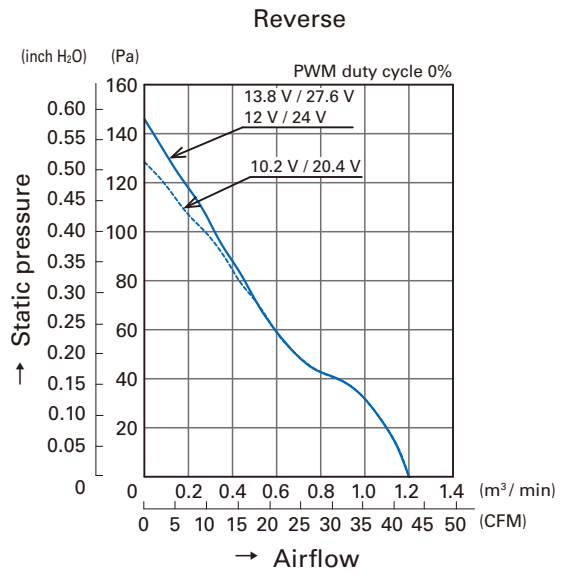
#### Common Specifications

- 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)  
Expected life at 40 °C ambient is just reference value.
- 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 ..... ⊕Red ⊖Black Sensor: Yellow Control: Brown
- Mass ..... Approx. 150 g

## Airflow - Static Pressure Characteristics

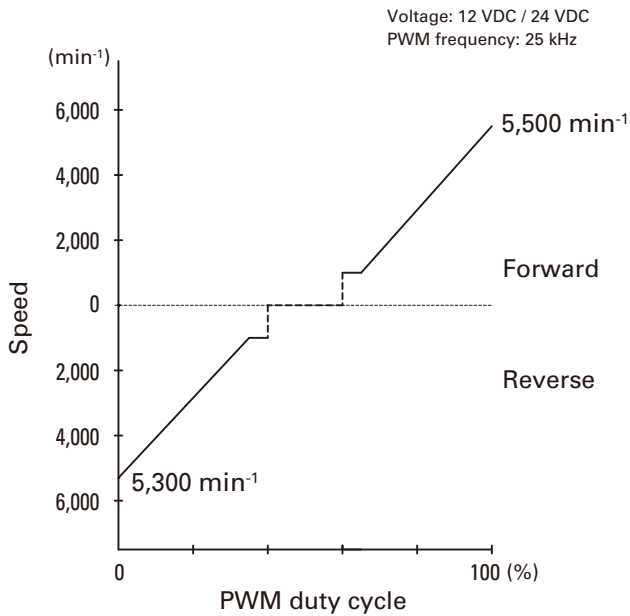


**9RF0912P1H001**  
**9RF0924P1H001**



**9RF0912P1H001**  
**9RF0924P1H001**

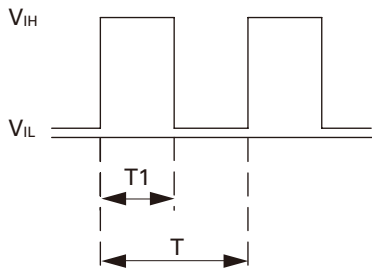
## PWM Duty - Speed Characteristics Example



**9RF0912P1H001**  
**9RF0924P1H001**

### PWM Input Signal Example

Input signal waveform



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

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

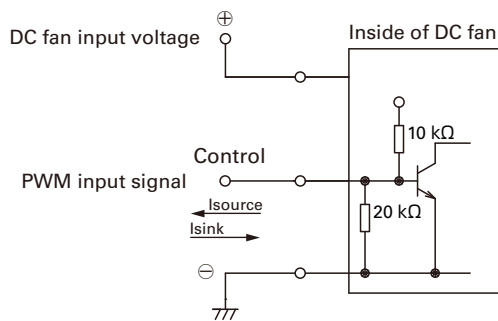
Current source ( $I_{source}$ ) = 1 mA max. (when control voltage is 0 V)

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)

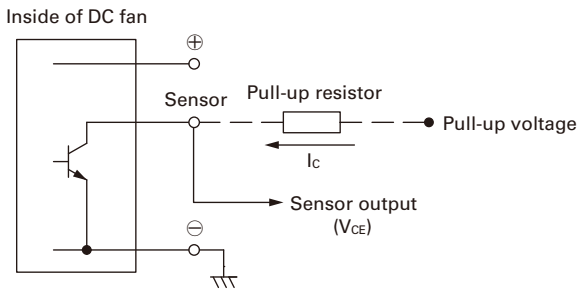
When control terminal is open, fan rotational speed is the same as when PWM duty cycle is 100%.  
Either TTL input, open collector or open drain can be used for PWM control input signal.

### Example of Connection Schematic



### Specifications for Pulse Sensors

Output circuit: Open collector



#### Rated voltage 12 V fan

$V_{CE} = +13.8 \text{ V max.}$

$I_c = 5 \text{ mA max. [} V_{OL} = V_{CE} \text{ (SAT)} = 0.6 \text{ V max.]}$

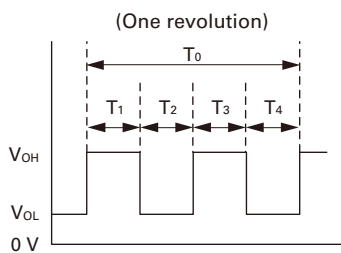
#### Rated voltage 24 V fan

$V_{CE} = +27.6 \text{ V max.}$

$I_c = 5 \text{ mA max. [} V_{OL} = V_{CE} \text{ (SAT)} = 0.6 \text{ V max.]}$

Output waveform (Need pull-up resistor)

In case of steady running

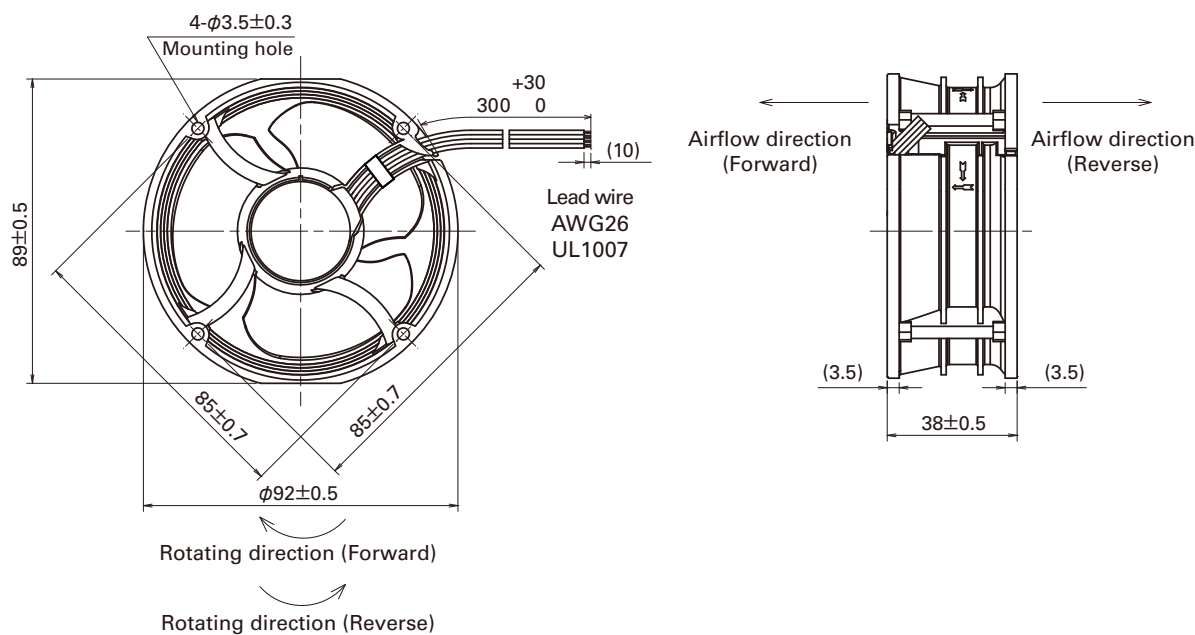


$$T_{1 \text{ to } 4} \doteq (1/4) T_0$$

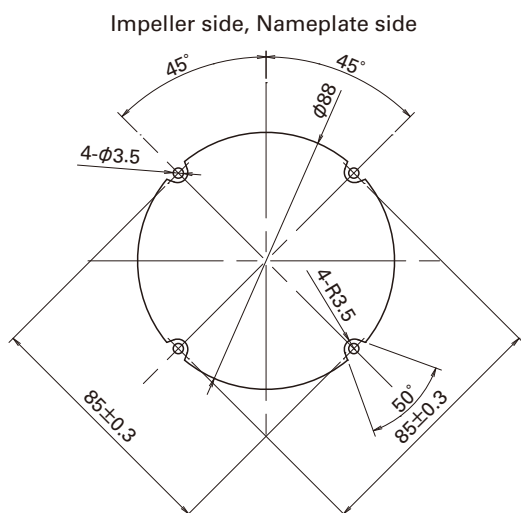
$$T_{1 \text{ to } 4} \doteq (1/4) T_0 = 60/4N \text{ (sec)}$$

$$N = \text{Fan speed (min}^{-1}\text{)}$$

## ■ Dimensions (unit: mm)



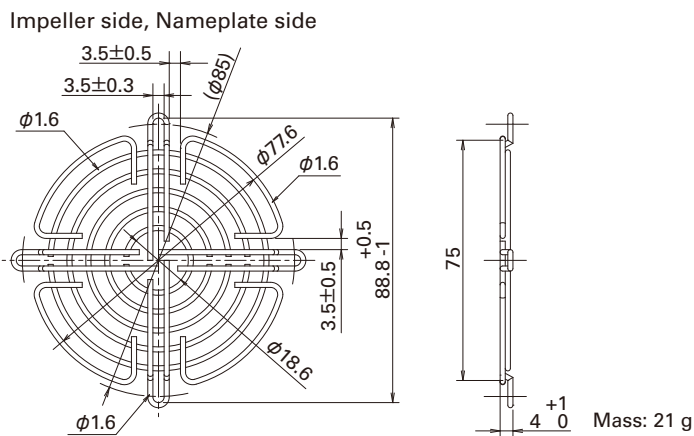
## ■ Reference Dimension of Mounting Holes and Vent Opening (unit: mm)



## ■ Option (unit: mm)

Finger guard

Model: 109-1147 Surface treatment: Nickel-chrome plating (Color: silver)



### 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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