

NEW PRODUCT INFORMATION

# San Ace 136RF

## Reversible Flow Fan

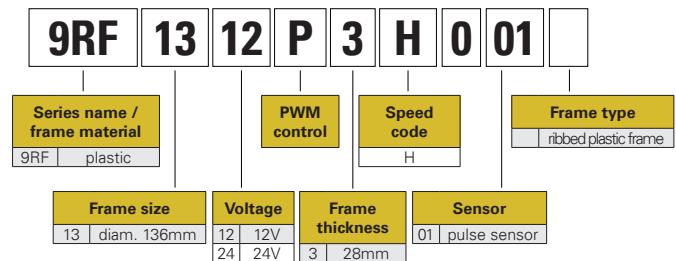
SANYO DENKI EUROPE SA. is pleased to introduce its new **San Ace 136 9RF type** DC fan, measuring 136mm diameter by 28mm thick. This reversible flow fan has been designed to deliver air flow in the two opposite directions, contributing to reduce equipment costs and to save space.



### Features

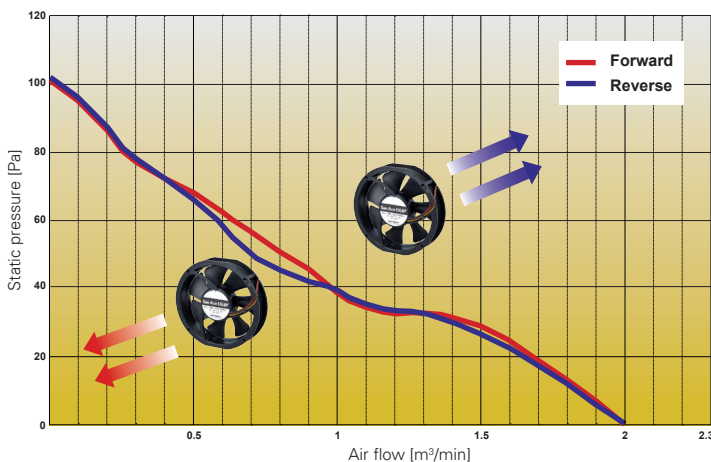
- 1 Reduces the required number of fans**
  - wind direction of the fan can be switched so fewer fans are required
  - reduces equipment costs and saves space
- 2 Same cooling performance in both directions**  
approximately same air flow and static pressure in both directions
- 3 PWM Speed Control Function**  
to manage power consumption and noise

### How to read Model Number\*

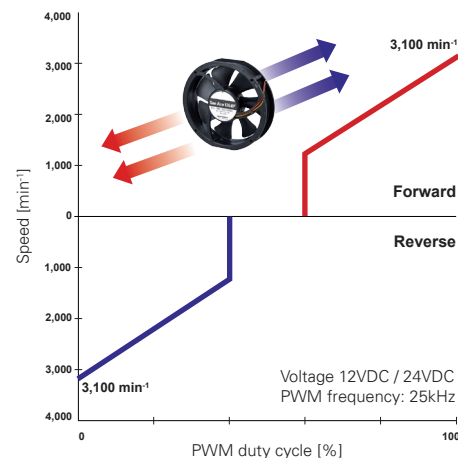


(\* contact us for available model numbers)

### Air Flow / Static Pressure Curves



### PWM Duty Cycle / Speed



### Main Specifications 9RF serie

- Size ..... 1 size : 136mm diameter by 28mm thick
- Air flow ..... 2m³/min - 70.7CFM
- Static pressure ..... forward: 102Pa - reverse: 104Pa
- Rated voltage ..... 12 or 24VDC depending on models
- Expected life time ..... 40,000 hours at 60°C
- Speed control ..... PWM (25kHz)
- Standard sensor ..... pulse sensor; without sensor & lock sensor (in option)

### Target Applications

- House mechanical ventilation
- Air conditioner
- Cold drink vending machines
- Food display cases
- Printing machines
- Paper converting machines

# San Ace 136RF

## Reversible Flow Fan

### Features

#### Reduces the required number of fans

- Multiple fans are usually needed to blow air in both directions to ventilate houses, and to cool drink vending machines, food display cases, and printers.
- Wind direction of the fan can be switched so fewer fans are required.
- Reduces equipment costs and saves space.
- Rotational speed is controlled using an external PWM signal to deliver an appropriate rotational speed, reducing noise and saving energy.

#### Same cooling performance in both directions

- Has approximately the same airflow and static pressure in both blowing directions, so it is easy to control performance.



φ 136×28mm

### Specifications

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

Model no.	Rotation 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]
9RF1312P3H001	Forward	12	10.2 to 13.8	100	0.15	1.8	3,100	2.00 70.7	102 0.410	35	-20 to +70	40,000 / 60°C
	Reverse			0								
9RF1324P3H001	Forward	24	20.4 to 27.6	100	0.09	2.2	3,100	2.00 70.7	102 0.410	35		
	Reverse			0								

Note: PWM frequency: 25 kHz

Available options: **Without Sensor**

Please inquire as the availability of these options depends on the model. ⇒

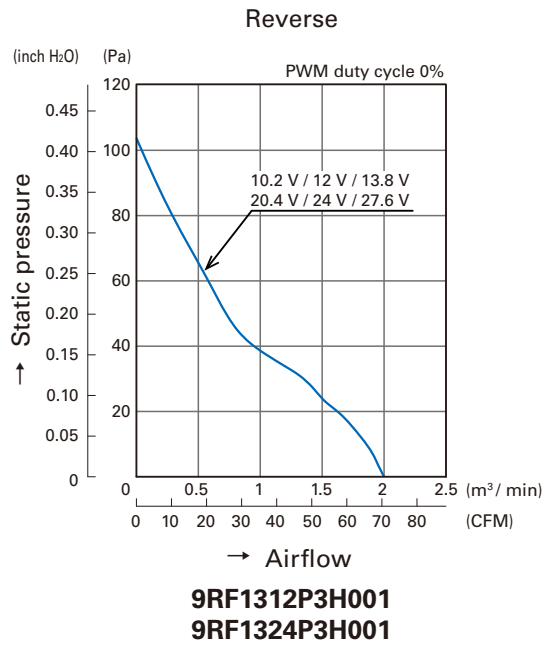
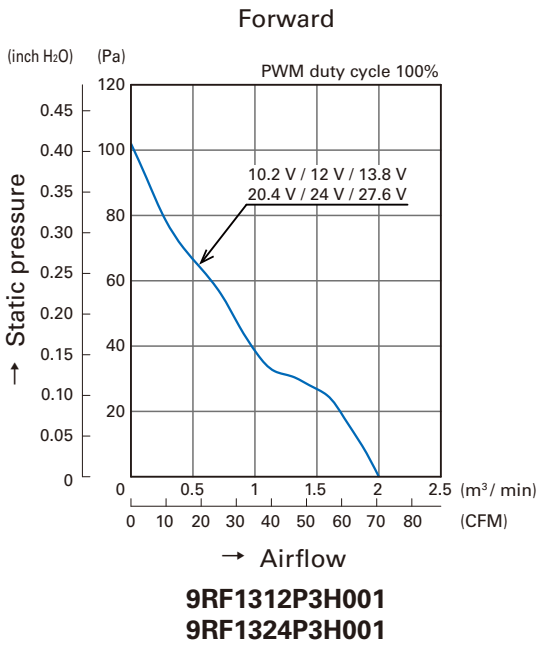
**Lock sensor**

### Common Specifications

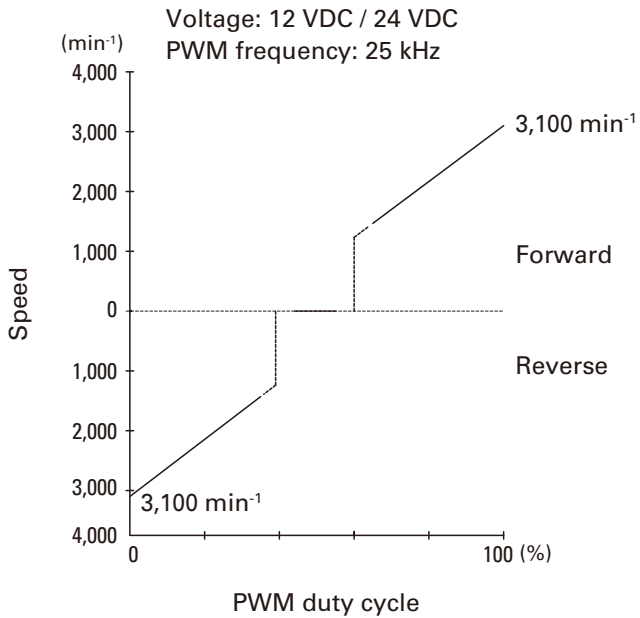
- Material ..... Frame, Impeller: Plastics (Flammability: UL94V-0)
- Expected life ..... Refer to specifications  
(L10: Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)
- Motor protection system ..... Current blocking function and reverse polarity protection
- Dielectric 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. 220 g

# San Ace 136RF

## Airflow - Static Pressure Characteristics

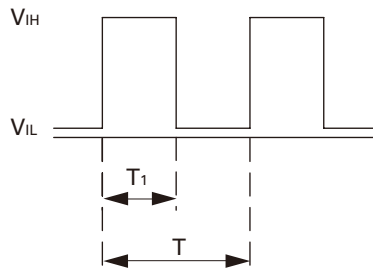


## PWM Duty - Speed Characteristics Example



**PWM Input Signal Example**

Input signal waveform



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

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

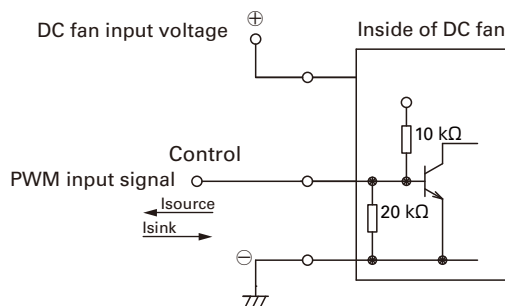
Source current ( $I_{source}$ ) : 1 mA max. at control voltage 0 V

Sink current ( $I_{sink}$ ) : 1 mA max. at control voltage 5.25 V

Control terminal voltage: 5.25 V max. (Open circuit)

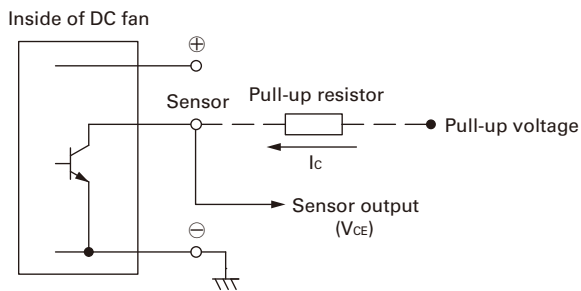
When the control lead wire is open, the fan speed is the same as the one at a PWM duty cycle of 100%. Either TTL input, open collector or open drain can be used for PWM control input signal.

**Example of Connection Schematic**



**Specifications for Pulse Sensors**

Output circuit: Open collector



**Rated voltage 12 V fan**

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

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

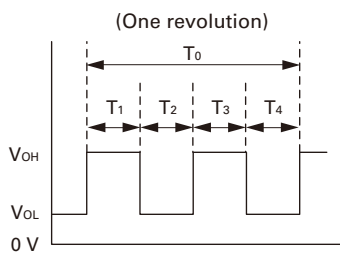
**Rated voltage 24 V fan**

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

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

Output waveform (Need pull-up resistor)

In case of steady running

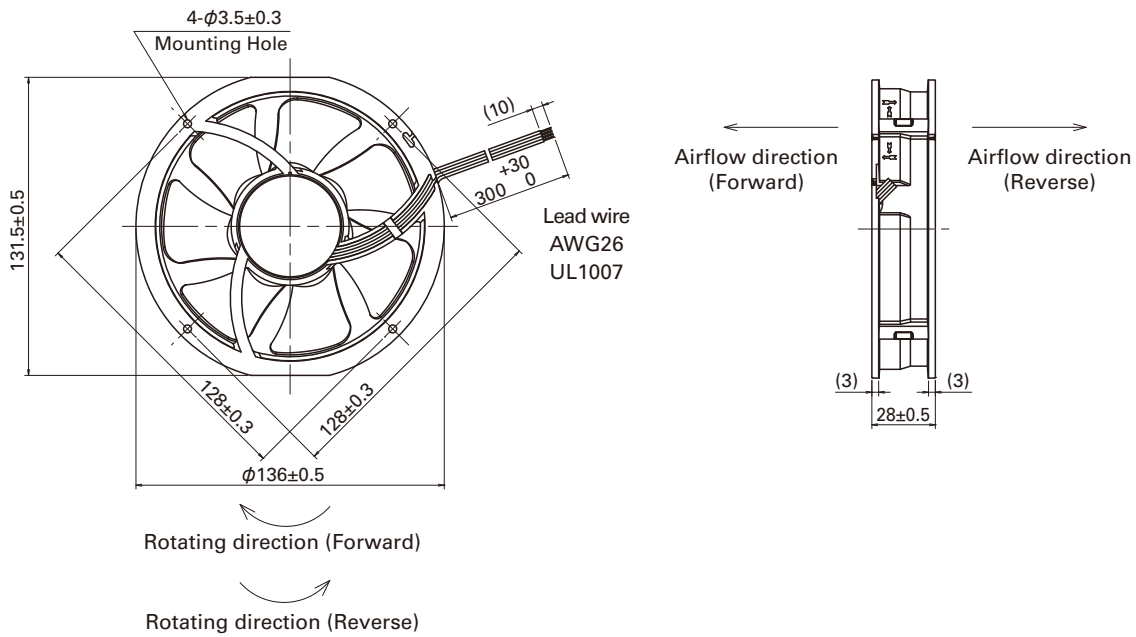


$T_{1\text{ to }4} \doteq (1/4) T_0$

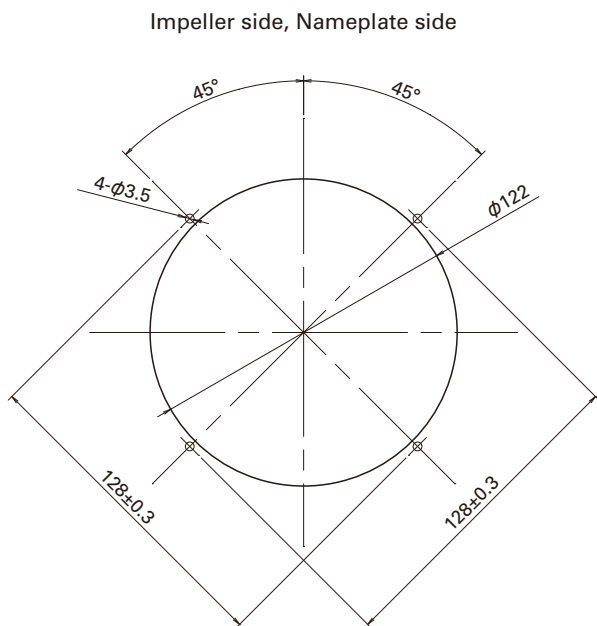
$T_{1\text{ to }4} \doteq (1/4) T_0 = 60/4N \text{ (sec)}$

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

**Dimensions (unit: mm)**



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



**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.
- To protect against electrolytic corrosion that may occur in locations with strong electromagnetic noise, we provide fans that are unaffected by electrolytic corrosion.

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<http://www.sanyodenki.com>

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