

# San Ace 221W 9W2T type

## Splash Proof Centrifugal Fan

### ■ Features

#### High Airflow

Maximum airflow achieves 19.6 m<sup>3</sup>/min.\*

#### Water and Dust Resistant

This fan has an IP56 rated water and dust proof performance.\*\* It ensures stable operation of the fans even in harsh environments.

#### Low Noise and High Energy Efficiency

The PWM control function enables the external control of fan speed, contributing to lower noise and higher energy efficiency of devices.

\* The value is for the 9W2TP48P0S001 model.

\*\* Ingress Protection (IP Code) rating is defined by International Electrotechnical Commission (IEC).

IP56 rating:

- Protection against a level of dust that could hinder operation or impair safety
- Protection against high pressure water jets



∅221×71 mm

### ■ Specifications

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

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. airflow [m <sup>3</sup> /min] [CFM]	Max. static pressure [Pa] [inchHzO]	SPL [dB(A)]	Operating temperature [°C]	Expected life [h]
9W2TP24P0H001	24	16 to 36	100	3.35	80.4	3050	17.6 621	530 2.13	71.5	-25 to +70	40000/60°C (70000/40°C)
			15	0.4	9.6	1000	5.75 203	57.0 0.23	53.5		
9W2TP48P0S001	48	36 to 72	100	2.3	110.4	3400	19.6 692	659 2.65	73.5		
			15	0.2	9.6	1000	5.75 203	57.0 0.23	53.5		

\* PWM frequency: 25 kHz. Fan does not rotate when PWM duty cycle is 0%.

When inlet nozzle [Option (Model: 109-1135H)] is mounted.

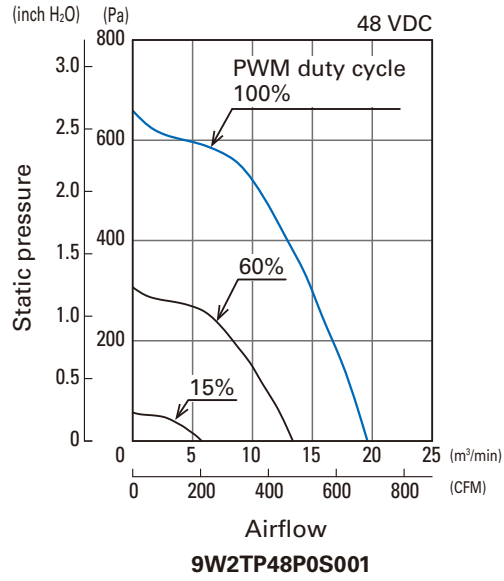
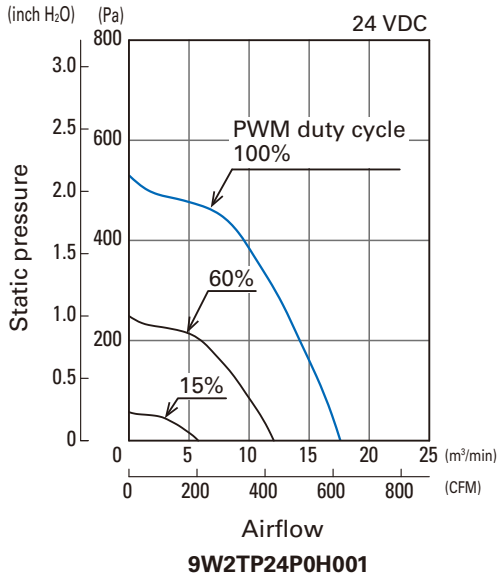
Max input of 9W2TP24P0H001: 150 W, 9W2TP48P0S001: 210 W at rated voltage.

### ■ Common Specifications

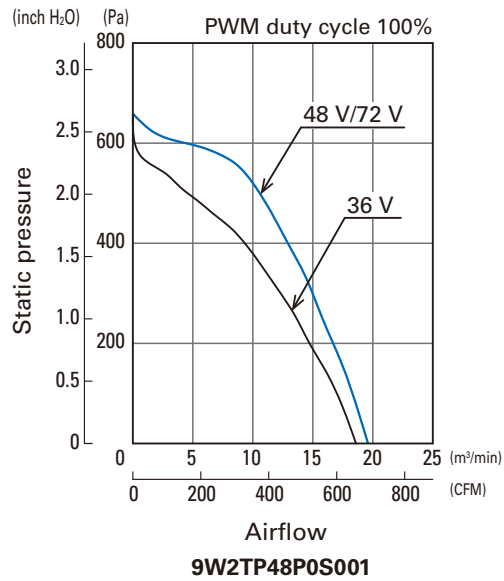
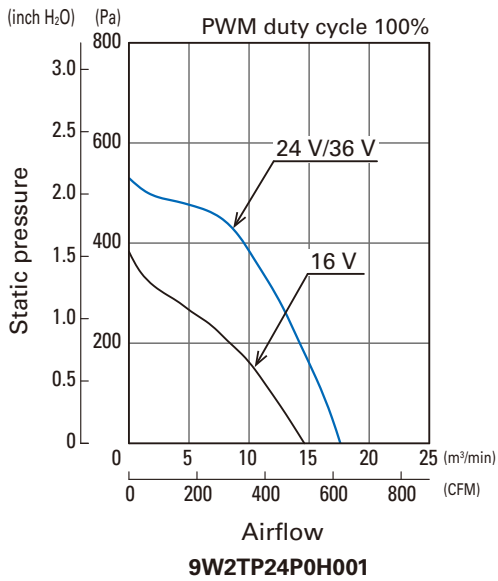
- Material ..... Motor case: Aluminum (Black coating), Impeller: Plastics (Flammability: UL 94V-0)
- Expected life ..... Refer to specifications  
(Indoor, L10: Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)  
Expected life at 40°C ambient is just reference value.
- Motor protection system ..... Current blocking function and reverse polarity protection
- Dielectric strength ..... 50/60 Hz, 500 VAC, 1 minute (between lead conductor and motor case)
- 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 to +70°C (Non-condensing)
- Lead wire ..... ⊕Red ⊖Black Sensor: Yellow Control: Brown
- Mass ..... Approx. 1250 g

## Airflow - Static Pressure Characteristics

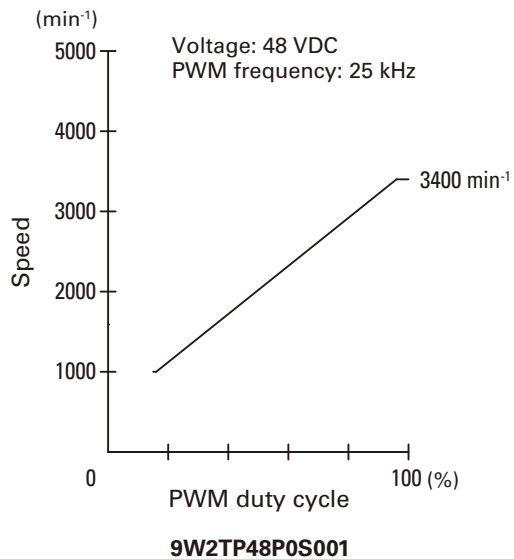
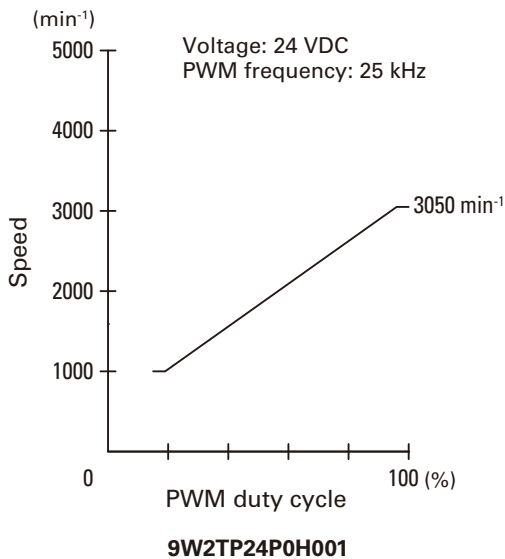
- PWM duty cycle



- Operating voltage range

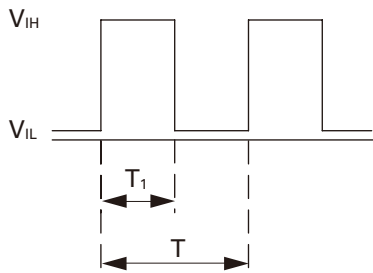


## PWM Duty - Speed Characteristics Example



**PWM Input Signal Example**

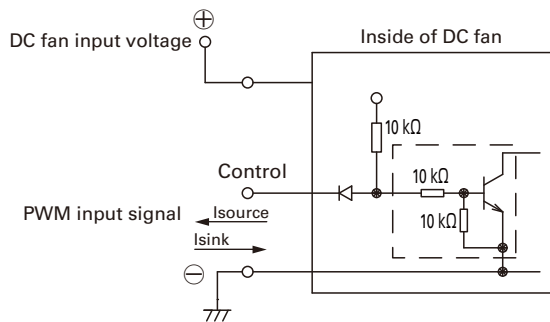
Input signal waveform



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

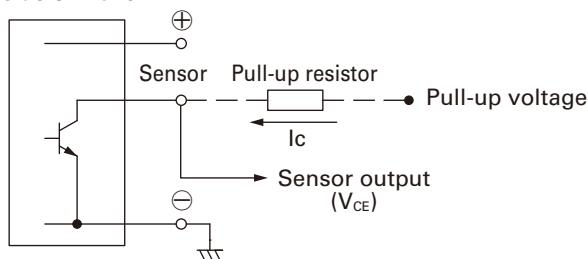
**Example of Connection Schematic**



**Specifications for Pulse Sensors**

Output circuit: Open collector

Inside of DC fan



**Rated Voltage 24 V Fan**

$V_{CE} = +36 \text{ V max.}$   
 $I_c = 10 \text{ mA max. [} V_{OL} = V_{CE} \text{ (SAT)} = 1 \text{ V max.]}$

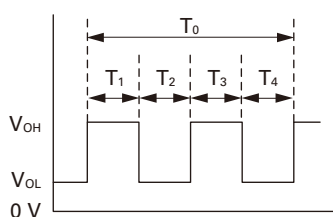
**Rated Voltage 48 V Fan**

$V_{CE} = +72 \text{ V max.}$   
 $I_c = 10 \text{ mA max. [} V_{OL} = V_{CE} \text{ (SAT)} = 1 \text{ V max.]}$

Output waveform (Need pull-up resistor)

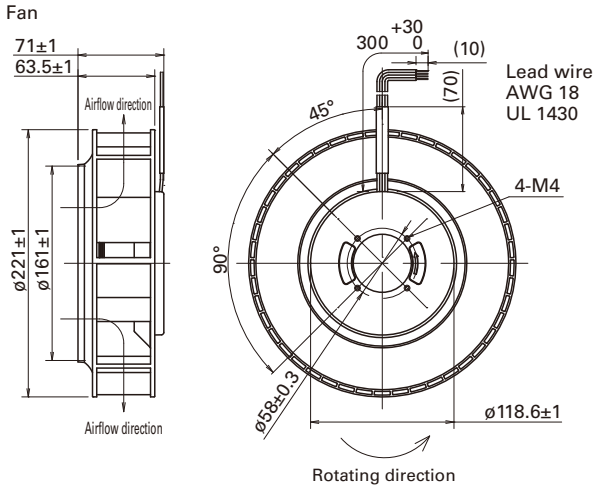
In case of steady running

(One revolution)

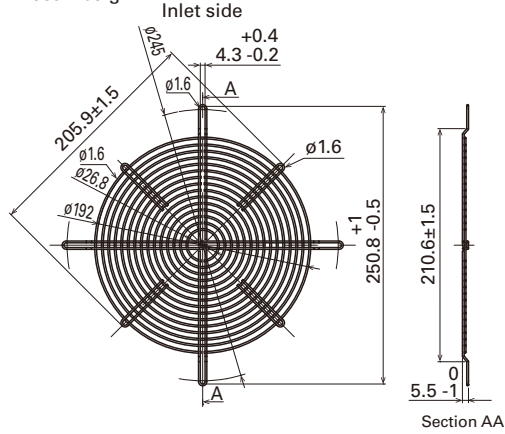


$T_{1 \text{ to } 4} \doteq (1/4) T_0$   
 $T_{1 \text{ to } 4} \doteq (1/4) T_0 = 60/4N \text{ (s)}$   
 $N = \text{Fan speed (min}^{-1}\text{)}$

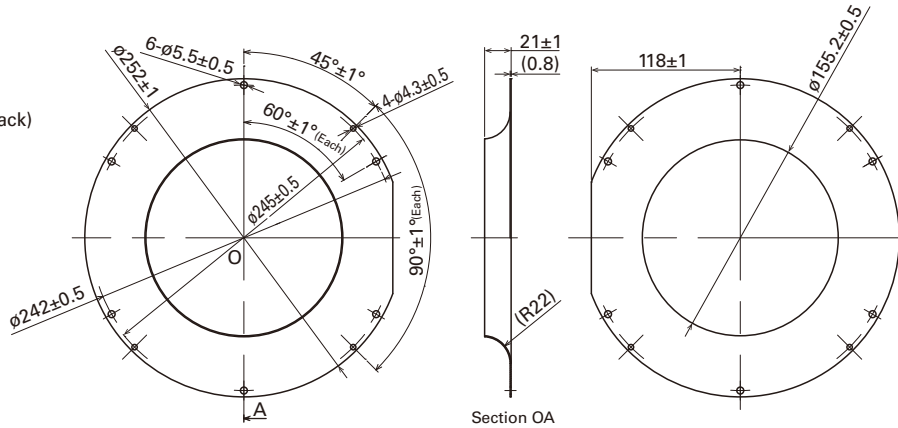
## Dimensions (unit: mm)



Finger guard (Model: 109-1138H)  
Surface treatment: Cation electropainting (black)  
Mass: 105 g

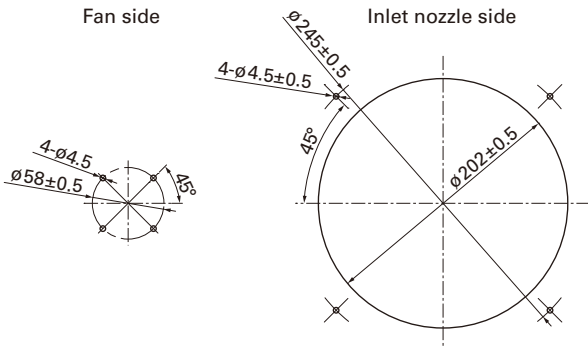


Inlet nozzle  
(Model: 109-1135H)  
Material: Steel sheet  
Surface treatment:  
Cation electropainting (black)  
Mass: 230 g

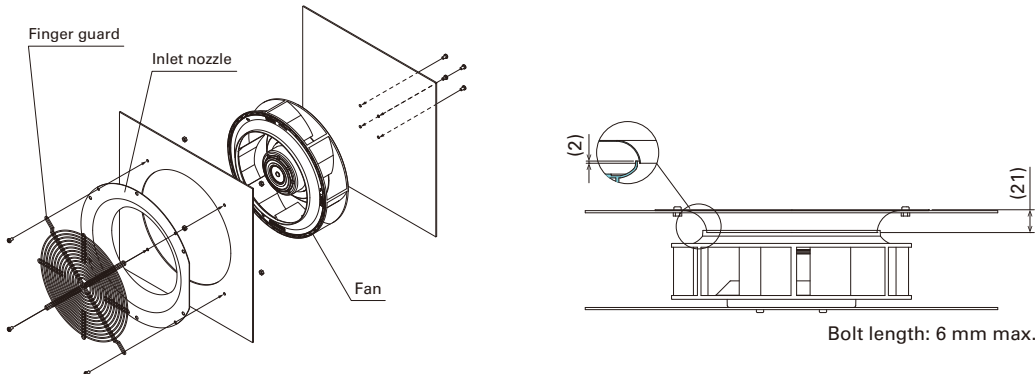


Inlet nozzle: Nozzle mounted in fan inlet side to adjust the flow of introduced air

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



## Reference Diagram for Mounting



### 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.

**SANYO DENKI CO., LTD.** 3-33-1, Minami-Otsuka, Toshima-ku, Tokyo 170-8451, Japan TEL: +81 3 5927 1020

<https://www.sanyodenki.com>

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