# San Ace 225 W 9W2T type

# **Splash Proof Centrifugal Fan**

#### Features

## **High Airflow**

Maximum airflow achieves 23.5 m³/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.

- \* 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



# <sup>g</sup>225×99 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. a [m³/min]	irflow [CFM]	Max. sta [Pa]	tic pressure [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating temperature [°C]	Expected life [h]
9W2TS48P0S001	48	36 to 72	100	2.45	117.6	3000	23.5	830	635	2.55	72.0	75 +0 .70	40000/60°C
			15	0.24	11.5	1000	7.83	276	70.6	0.28	52.5		(70000/40°C)

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

When inlet nozzle [Option (Model: 109-1134H)] is mounted.

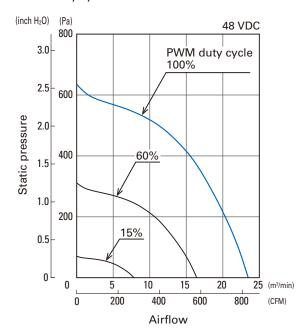
Max input is 220 W at rated voltage.

#### Common Specifications

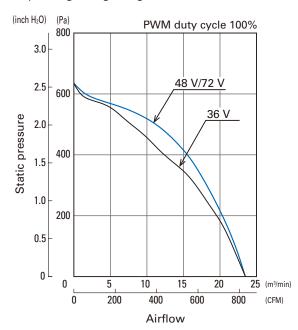
☐ Material · · · · · · · · · · · · · · · · · · ·	Motor case: Aluminum (Black coating), Impeller: Plastics (Flammability: UL 94V-0)
Expected life · · · · · · · · · · · · · · · · · · ·	Refer to specifications
	(L10: Survival rate: $90\%$ at $60^{\circ}$ C, rated voltage, and continuously run in a free air state)
	Expected life at 40°C ambient is just reference value.
$\square$ Motor protection system $\cdots\cdots$	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. 1500 g

# Airflow - Static Pressure Characteristics

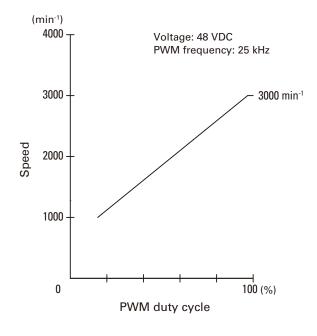
· PWM duty cycle



· Operating voltage range

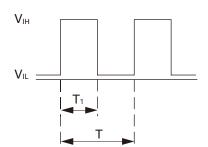


# PWM Duty - Speed Characteristics Example



# PWM Input Signal Example

#### Input signal waveform



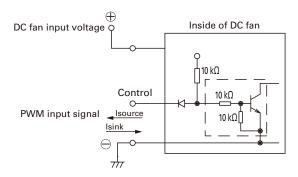
$$V_{\text{IH}} = 4.75 \text{ to } 5.25 \text{ V} \quad V_{\text{IL}} = 0 \text{ to } 0.4 \text{ V}$$

PWM duty cycle (%) = 
$$\frac{T_1}{T} \times 100$$
 PWM frequency 25 (kHz) =  $\frac{1}{T}$  Current source (Isource) = 1 mA max. (when control voltage is 0 V) Current sink (Isink) = 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.

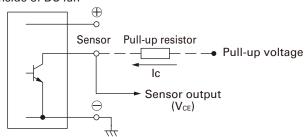
# Example of Connection Schematic



#### Specifications for Pulse Sensors

#### Output circuit: Open collector

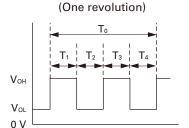
Inside of DC fan



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

## Output waveform (Need pull-up resistor)

In case of steady running



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

## Dimensions (unit: mm)

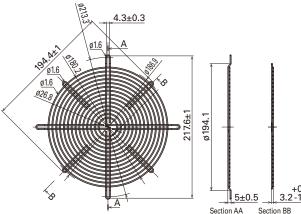
Fan

300 99±1.5 Lead wire AWG 18 90.4±1.5 UL 1430 Airflow direction 4-M4 90 ø225 ø153 ø118.6±1 Airflow direction Rotating direction

Finger guard (Model: 109-1137H)

Surface treatment: Cation electropainting (black)

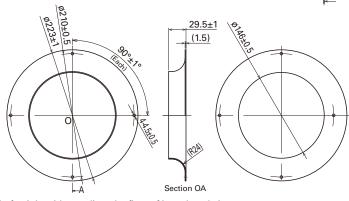
Mass: 94 g



Inlet nozzle (Model: 109-1134H) Material: Steel sheet Surface treatment:

Cation electropainting (black)

Mass: 360 g

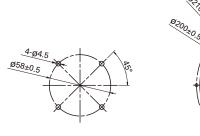


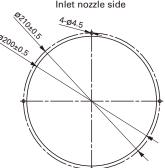
Inlet nozzle: Nozzle mounted in fan inlet side to adjust the flow of introduced air

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

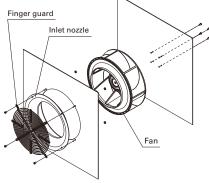
Fan side

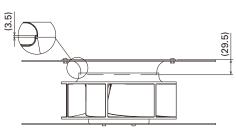
Inlet nozzle side





## Referance Diagram for Mounting





Bolt length: 6 mm max.

#### **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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