

# San Ace 140W 9WL type

## Splash Proof Fan

### Features

#### High Airflow and High Static Pressure

This fan delivers a maximum airflow of 8.0 m<sup>3</sup>/min and maximum static pressure of 516 Pa.<sup>(1)</sup>

Compared with the current model<sup>(2)</sup>, the maximum airflow has been increased to 1.7 times and maximum static pressure has been increased to 5.2 times.

#### Water and Dust Resistance

Superior IP68-rated<sup>(3)</sup> water and dust protection ensures stable fan operation even in harsh environments.

#### High Energy Efficiency and Low Noise

Power consumption has been reduced by approximately 18%<sup>(4)</sup> compared with the current model<sup>(2)</sup>.

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

(1) The values are for 9WL14□□P1A001 models, where □'s are wildcard characters.

(2) Current model: *San Ace 140W* 9W type 140 × 140 × 38 mm Splash Proof Fan (model no. 109W14□□H101-U).

(3) Based on the testing method standardized by International Electrotechnical Commission (IEC) in IEC 60529.

(4) The values are for 9WL14□□P1M001 models, where □'s are wildcard characters.



## 140 × 140 × 38 mm

### Specifications

The models listed below **have pulse sensors with PWM control function.**

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] [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating temperature [°C]	Expected life [h]
9WL1412P1A001	12	10.2 to 13.8	100	3.72	44.64	6900	8.0 282	516 2.07	68	-20 to +70	10000/60°C
			20	0.27	3.24	2300	2.66 93	80 0.32	39		
9WL1412P1H001			100	1.70	20.40	5200	6.0 212	300 1.20	62		
			20	0.27	3.24	2300	2.66 93	80 0.32	39		
9WL1412P1M001			100	0.60	7.20	3300	3.7 130	170 0.68	46		
			20	0.16	1.92	1300	1.45 51	26 0.10	29		
9WL1424P1A001	24	20.4 to 27.6	100	1.86	44.64	6900	8.0 282	516 2.07	68		
			20	0.17	4.08	2300	2.66 93	80 0.32	39		
9WL1424P1H001			100	0.85	20.40	5200	6.0 212	300 1.20	62		
			20	0.16	3.84	2300	2.66 93	80 0.32	39		
9WL1424P1M001			100	0.30	7.20	3300	3.7 130	170 0.68	46		
			20	0.11	2.64	1300	1.45 51	26 0.10	29		
9WL1448P1A001	48	40.8 to 55.2	100	0.92	44.16	6900	8.0 282	516 2.07	68		
			20	0.11	5.28	2300	2.66 93	80 0.32	39		
9WL1448P1H001			100	0.42	20.16	5200	6.0 212	300 1.20	62		
			20	0.11	5.28	2300	2.66 93	80 0.32	39		
9WL1448P1M001			100	0.15	7.20	3300	3.7 130	170 0.68	46		
			20	0.09	4.32	1300	1.45 51	26 0.10	29		

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

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

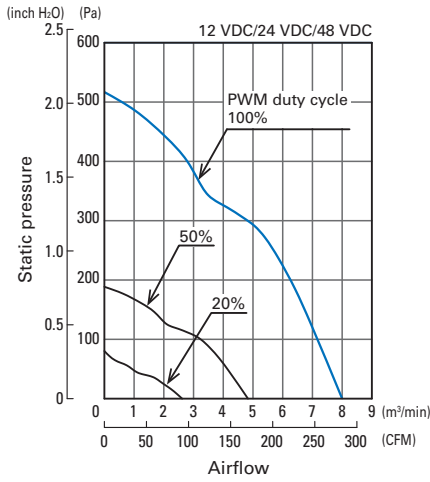
### Common Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ..... See the table below.  
(L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage)
- Motor protection system ..... Current blocking function and reverse polarity protection
- Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- Sound pressure level (SPL) ..... At 1 m away from the air inlet
- 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. 740 g

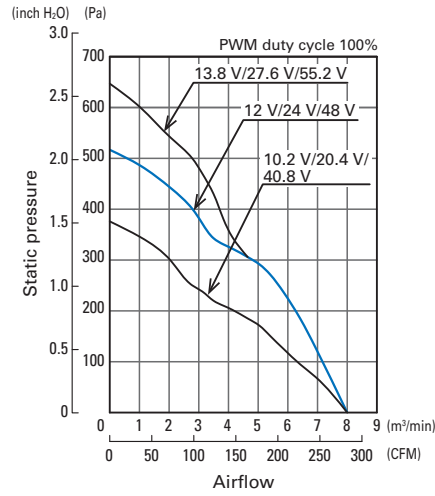
## Airflow - Static Pressure Characteristics

• PWM duty cycle

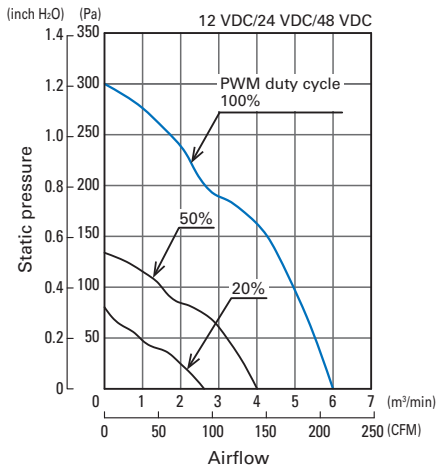
• Operating voltage range



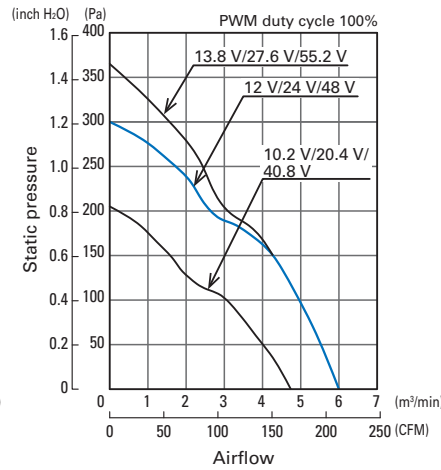
**9WL1412P1A001**  
**9WL1424P1A001**  
**9WL1448P1A001**



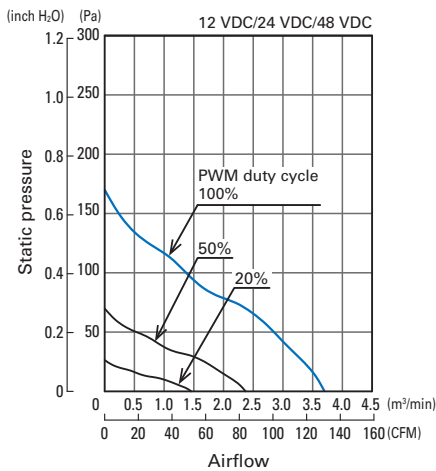
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**9WL1424P1A001**  
**9WL1448P1A001**



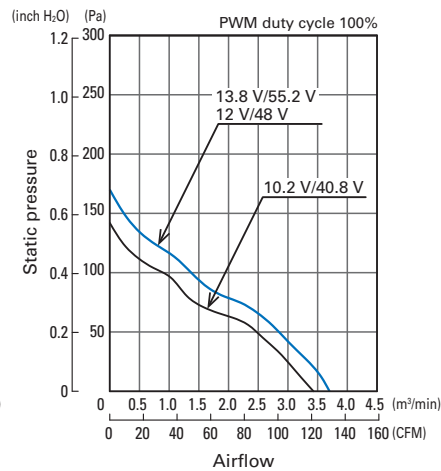
**9WL1412P1H001**  
**9WL1424P1H001**  
**9WL1448P1H001**



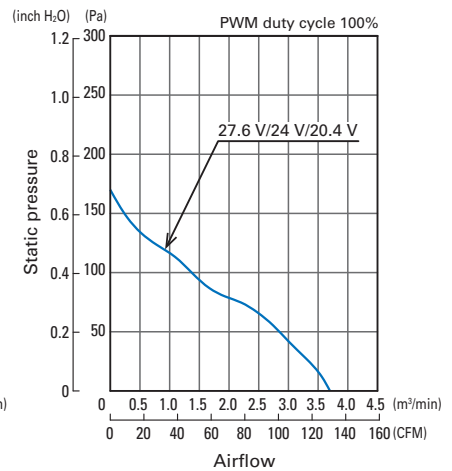
**9WL1412P1H001**  
**9WL1424P1H001**  
**9WL1448P1H001**



**9WL1412P1M001**  
**9WL1424P1M001**  
**9WL1448P1M001**

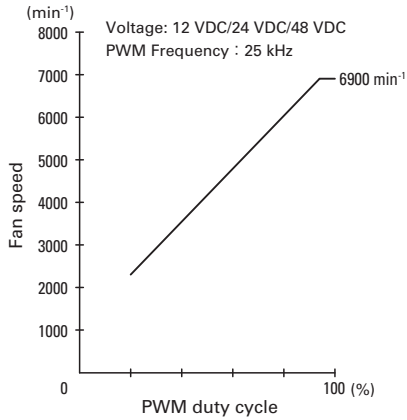


**9WL1412P1M001**  
**9WL1424P1M001**  
**9WL1448P1M001**

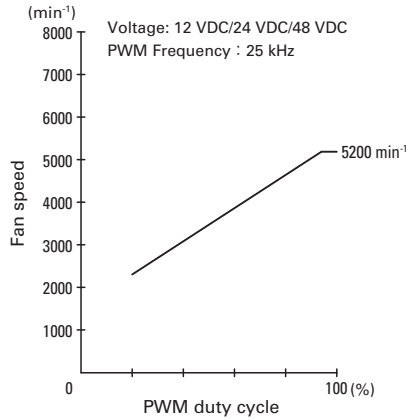


**9WL1424P1M001**

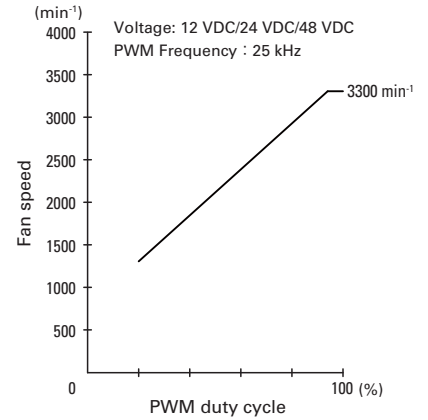
**PWM Duty - Speed Characteristics Example**



**9WL1412P1A001**  
**9WL1424P1A001**  
**9WL1448P1A001**



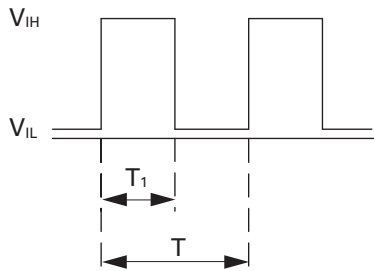
**9WL1412P1H001**  
**9WL1424P1H001**  
**9WL1448P1H001**



**9WL1412P1M001**  
**9WL1424P1M001**  
**9WL1448P1M001**

**PWM Input Signal Example**

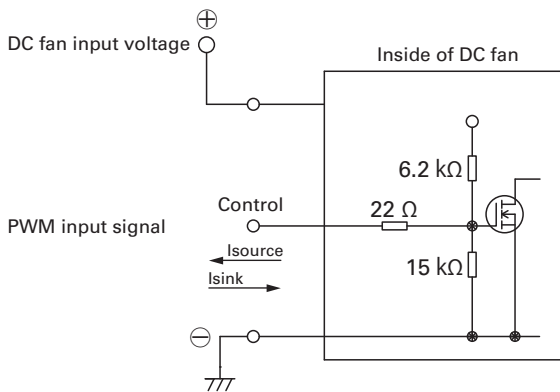
Input signal waveform



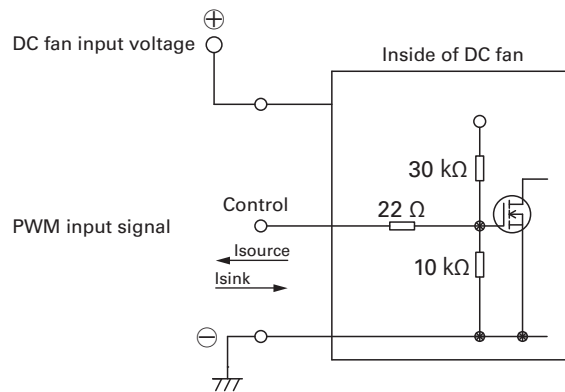
$V_{IH} = 4.75 \text{ to } 5.25 \text{ V}$     $V_{IL} = 0 \text{ to } 0.4 \text{ V}$   
 $\text{PWM duty cycle (\%)} = \frac{T_1}{T} \times 100$     $\text{PWM frequency } 25 \text{ (kHz)} = \frac{1}{T}$   
 Current source ( $I_{source}$ ) = 1 mA max. (when control voltage is 0 V)  
 Current sink ( $I_{sink}$ ) = 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**



**Rated voltage 12V fan**

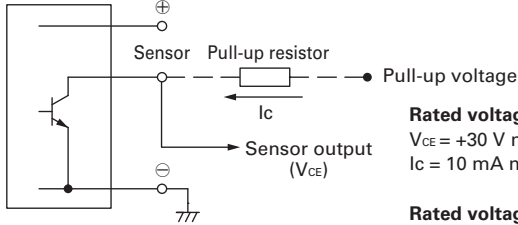


**Rated voltage 24 V/48V fan**

## Specifications for Pulse Sensors

Output circuit: Open collector

Inside of DC fan



**Rated voltage 12 V/24 V fan**

$V_{CE} = +30 \text{ V max.}$

$I_C = 10 \text{ mA max.}$  [ $V_{OL} = V_{CE} (\text{SAT}) = 0.6 \text{ V max.}$ ]

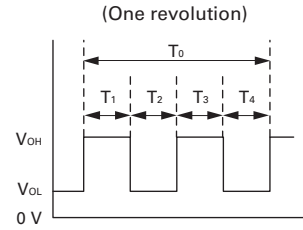
**Rated voltage 48 V fan**

$V_{CE} = +60 \text{ V max.}$

$I_C = 10 \text{ mA max.}$  [ $V_{OL} = V_{CE} (\text{SAT}) = 0.6 \text{ V max.}$ ]

Output waveform (Need pull-up resistor)

In case of steady running

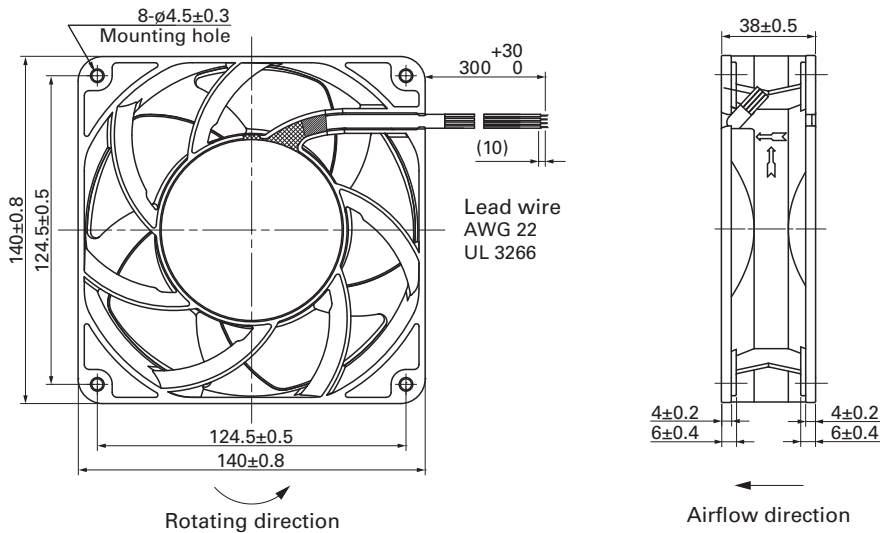


$T_{1 \text{ to } 4} \doteq (1/4) T_0$

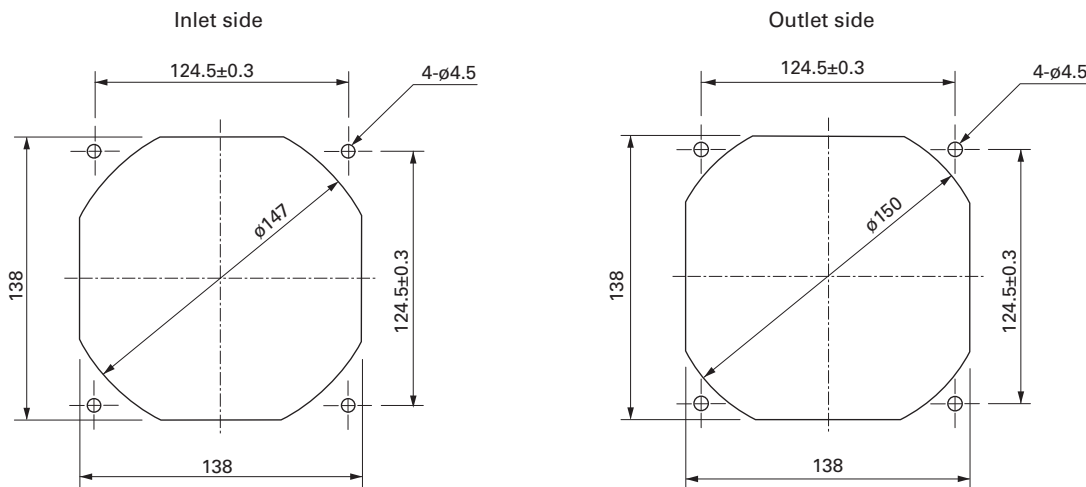
$T_{1 \text{ to } 4} \doteq (1/4) T_0 = 60/4N \text{ (s)}$

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

## 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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CATALOG No. C1080B001 '18.1