

# San Ace 40 W

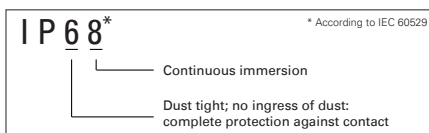
## Splash Proof Fan

SANYO DENKI EUROPE SA. is pleased to introduce its new **San Ace 40 9WL** DC fan, measuring 40mm square by 28mm thick models. This cooling fan delivers IP68 rated water and dust resistance, long lifespan and high air flow.



### Product Features

#### 1 Splash Proof and Dust Resistant



#### 2 High Reliability

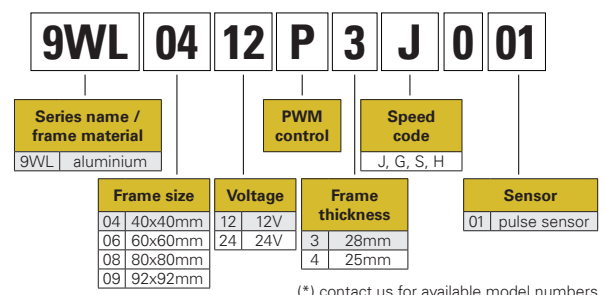
expected life time 150,000 hours at 60°C (around 17 years)

#### 3 High Air Flow & High Static Pressure

max. air flow: 0.63m<sup>3</sup>/min - max. static pressure: 400Pa

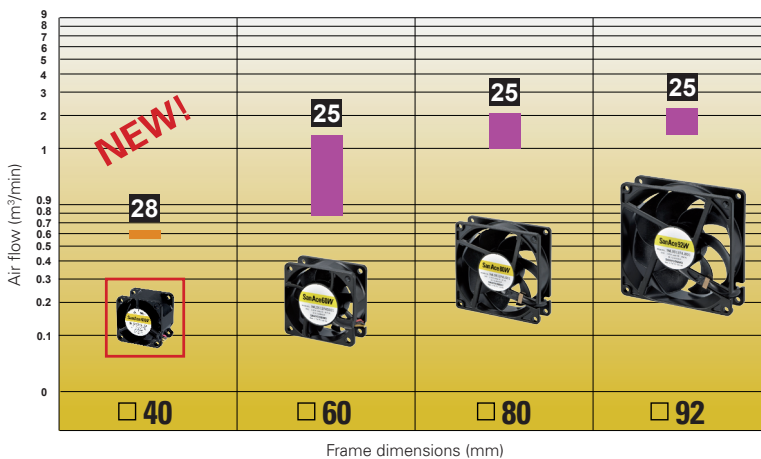
#### 4 PWM Speed Control Function

### How to read Model Number\*

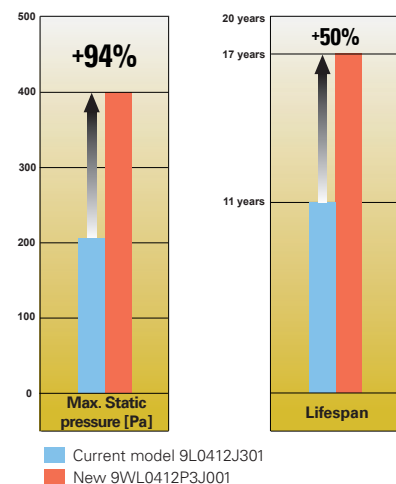


(\* ) contact us for available model numbers

### WL Product Range



### Performance Comparison



### Main Specifications 9WL serie

- Size ..... 4 sizes: 40, 60, 80 & 92mm square in various thicknesses
- Air flow ..... from 0.56 to 2.2m<sup>3</sup>/min - 19.7 to 77.7CFM
- Static pressure ..... from 41.6 to 400Pa
- Rated voltage ..... 12 or 24VDC depending on models
- Expected life time ..... 150,000 to 180,000 hours at 60°C
- Standard sensor ..... pulse sensor; without sensor & lock sensor (in option)

### Target Applications

- Communication relay stations
- All outdoor IT/Telecom applications
- PV inverters
- LED lights
- Industrial inverters
- FA servo amplifiers ...

For further information on **San Ace IP68** DC fans, please contact us at **+33 1 48 63 26 61** or email us at **info@sanyodenki.eu**.

NEW PRODUCT INFORMATION

# San Ace W<sub>9WL</sub> type IP68 Splash Proof Fan

SANYO DENKI EUROPE SA. is pleased to introduce its **San Ace WL type** DC serie, with 60, 80 and 92mm square by 25mm thick models. These cooling fans deliver IP68 rated water and dust resistance, long lifespan and high air flow.



## Product Features

### 1 Splash Proof and Dust Resistant



### 2 High Reliability

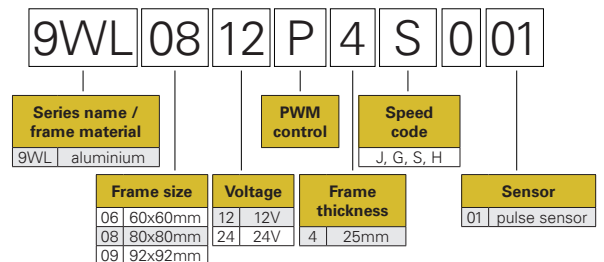
expected life time 180,000 hours at 60°C (around 20 years)

### 3 High Air Flow & High Static Pressure

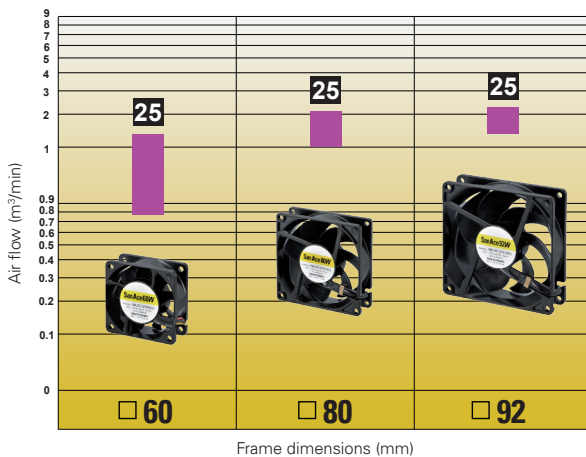
max. air flow: 2.20m<sup>3</sup>/min - max. static pressure: 300Pa

### 4 PWM Speed Control Function

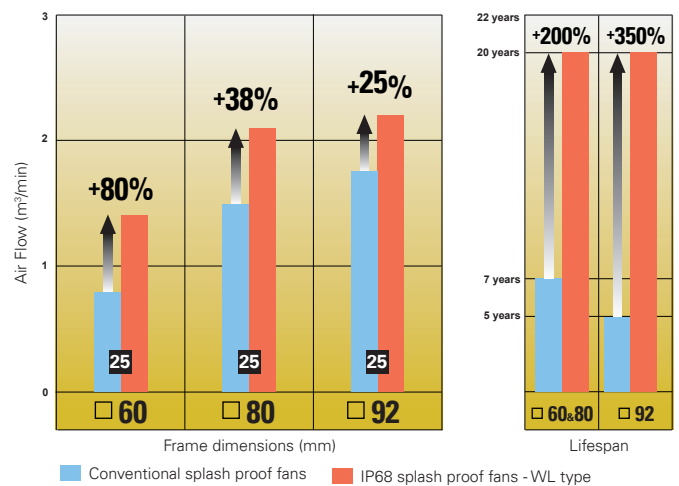
## How to read Model Number



## WL Product Range



## Performance Comparison



## Main Specifications

- Size ..... 3 sizes: 60,80 & 92mm square by 25mm thickness
- Air flow ..... from 0.78 to 2.2m<sup>3</sup>/min - 27.5 to 77.7CFM
- Static pressure ..... from 41.6 to 300Pa
- Rated voltage ..... 12 or 24VDC depending on models
- Expected life time ..... 180,000 hours at 60°C
- Standard sensor ..... pulse sensor; without sensor & lock sensor (in option)

## Target Applications

- PV inverters
- Quick chargers for electric vehicles
- LED panels
- Outdoor power equipments
- Communication base stations
- Heat exchangers...

For further information on **San Ace IP68** DC fans, please contact us at **+33 1 48 63 26 61** or email us at **info@sanyodenki.eu**.

# San Ace 40 W

## Splash Proof Fan

### Features

#### Splash Proof and Dust Resistant

IP68 protection rating water and dust resistance.

#### Longest-Lasting Lifespan

This fan has an expected lifespan of 150,000 hours (approximately 17 years), about 1.5 times that of our conventional long life fan,<sup>\*1</sup> making them ideal for equipment that must operate without maintenance for extended periods.

#### High Airflow and High Static Pressure

Maximum airflow increased by approximately 2.8 times and maximum static pressure increased by approximately 6 times compared with our conventional splash proof fan.<sup>\*2</sup>

\*1: Specification of Model No. 9WL0412P3J001. Our conventional long life fan is 40 x 40 x 28 mm "San Ace 40L", Model No. 9L0412J301.

\*2: Specification of Model No. 9WL0412P3J001. Our conventional splash proof fan is 40 x 40 x 20 mm "San Ace 40W", Model No. 9WP0412H6001.



## 40×40×28mm

### Specifications

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

Model No.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle (Note1, 2) [%]	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]
9WL0412P3J001	12	10.8 to 13.2	100	0.52	6.24	17,500	0.63 22.2	400 1.61	51	-20 to +70	150,000 / 60 °C
			20	0.06	0.72	3,600	0.13 4.6	16.9 0.07	20		
9WL0412P3G001			100	0.40	4.80	15,500	0.56 19.7	310 1.24	47		
			20	0.06	0.72	3,300	0.12 4.2	14.0 0.06	18		
9WL0424P3J001	24	21.6 to 26.4	100	0.26	6.24	17,500	0.63 22.2	400 1.61	51		
			20	0.04	0.96	4,000	0.14 5.1	20.9 0.08	22		
9WL0424P3G001			100	0.20	4.80	15,500	0.56 19.7	310 1.24	47		
			20	0.04	0.96	3,000	0.11 3.8	11.6 0.05	16		

Note1: PWM frequency: 25 kHz

Note2: Fans do not rotate when PWM duty cycle is 0%.

Available options: Without Sensor Pulse Sensor

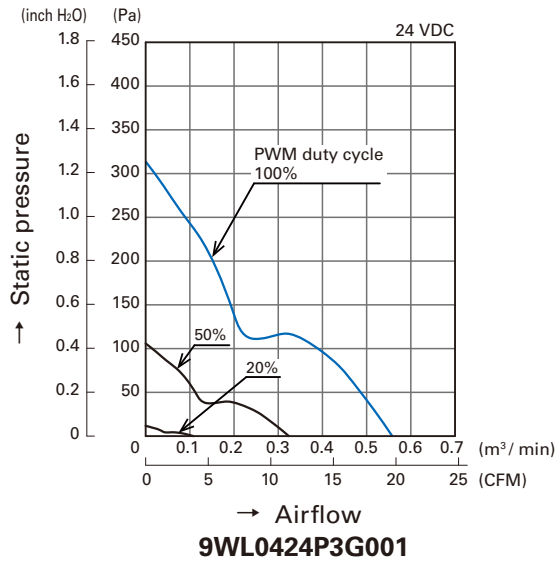
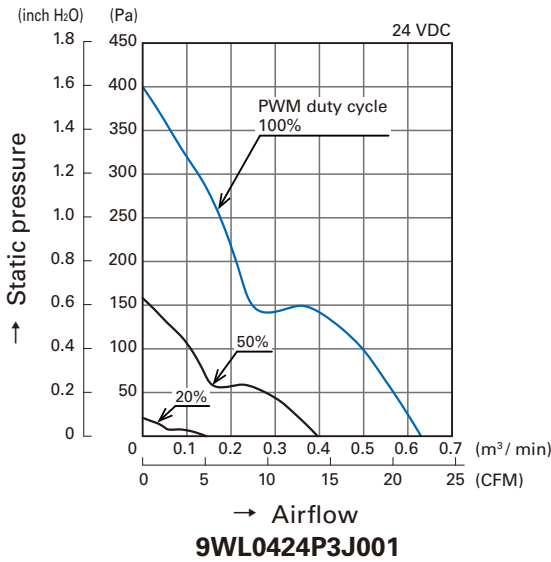
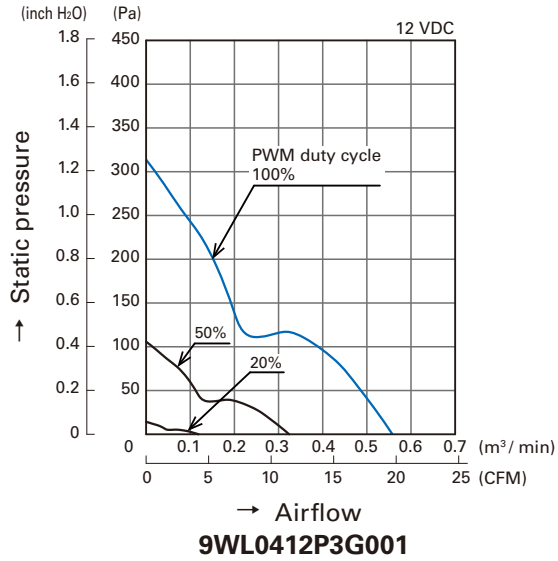
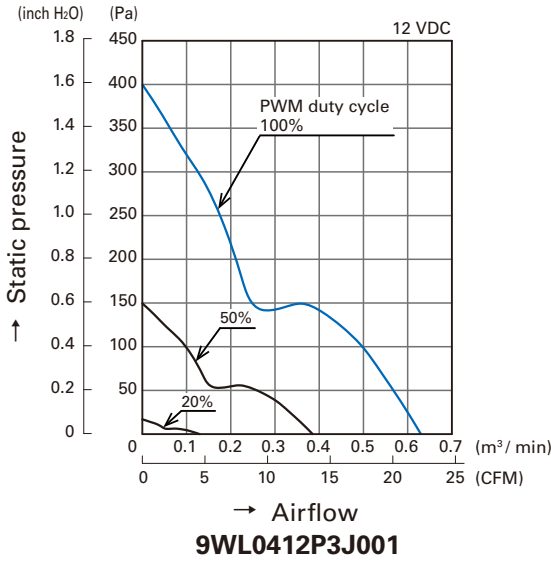
### Common Specifications

- Material ..... Frame: Aluminum (Black coating), 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. 70 g

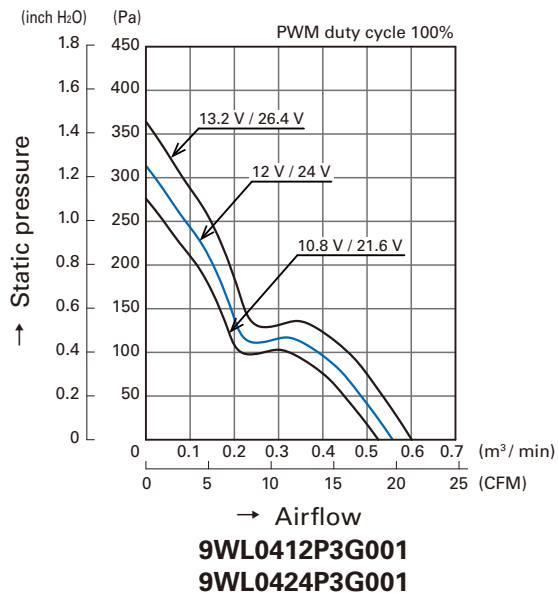
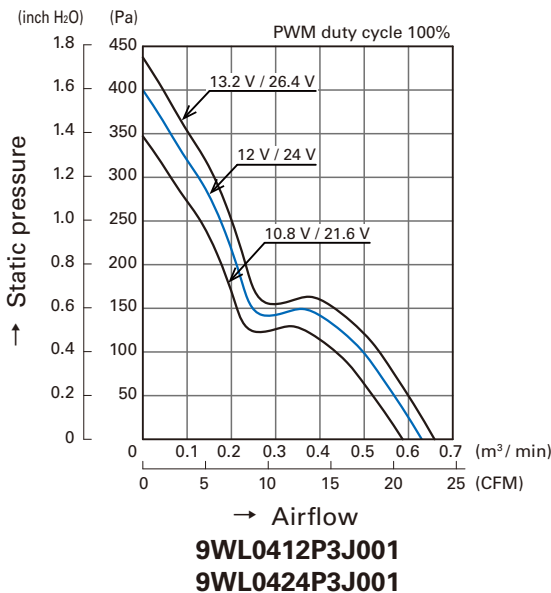
# San Ace 40 W

## Airflow - Static Pressure Characteristics

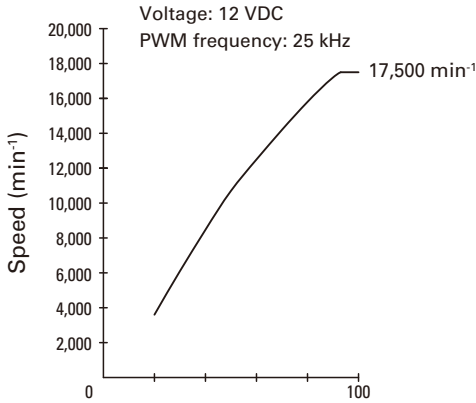
### PWM duty cycle



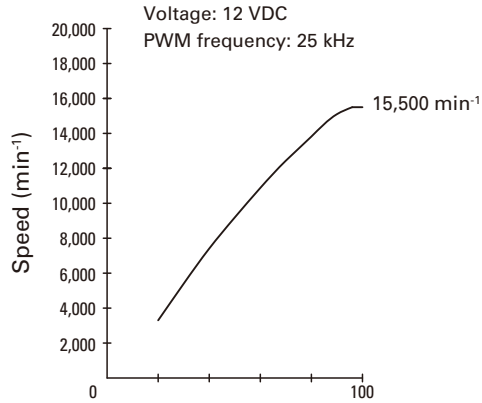
### Operating voltage range



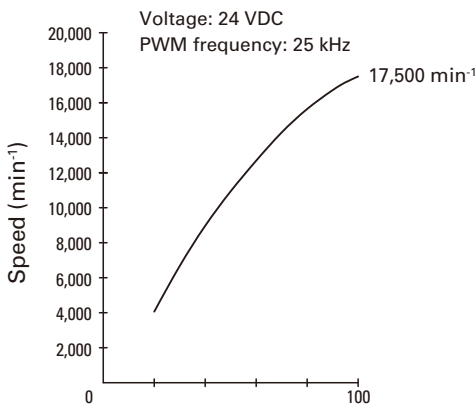
**PWM Duty - Speed Characteristics Example**



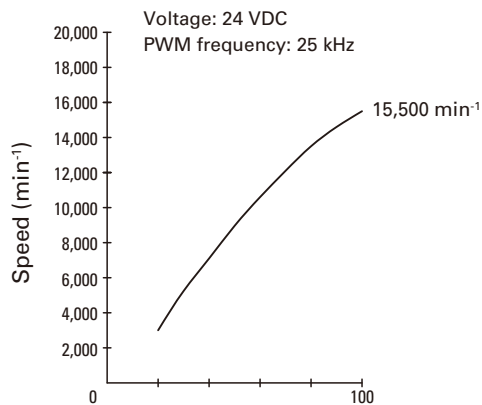
**9WL0412P3J001**



**9WL0412P3G001**



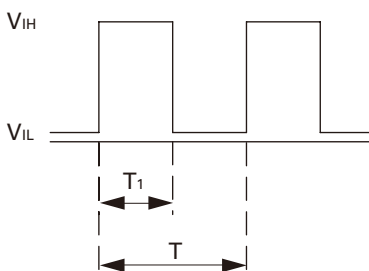
**9WL0424P3J001**



**9WL0424P3G001**

**PWM Input Signal Example**

Input signal waveform



**Rated voltage 12 V fan**

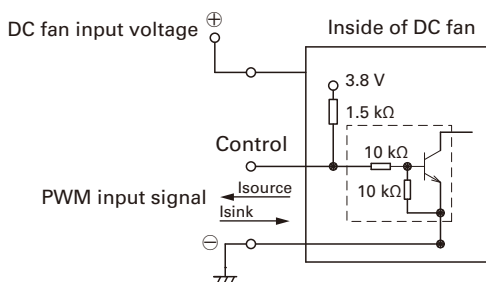
$V_{IH}=2.8\text{ V to }3.8\text{ V}$   $V_{IL}=0\text{ V to }0.4\text{ V}$   
 $\text{PWM duty cycle (\%)} = \frac{T_1}{T} \times 100$   $\text{PWM frequency } 25\text{ (kHz)} = \frac{1}{T}$   
 Source current ( $I_{\text{source}}$ ): 3 mA max. at control voltage 0 V  
 Sink current ( $I_{\text{sink}}$ ): 1 mA max. at control voltage 3.8 V  
 Control terminal voltage: 3.95 V max. (Open circuit)

**Rated voltage 24 V fan**

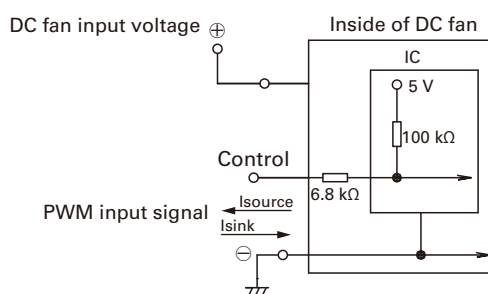
$V_{IH}=4.75\text{ V to }5.25\text{ V}$   $V_{IL}=0\text{ V to }0.4\text{ V}$   
 $\text{PWM duty cycle (\%)} = \frac{T_1}{T} \times 100$   $\text{PWM frequency } 25\text{ (kHz)} = \frac{1}{T}$   
 Source current ( $I_{\text{source}}$ ): 1 mA max. at control voltage 0 V  
 Sink current ( $I_{\text{sink}}$ ): 1 mA max. at control voltage 5.25 V  
 Control terminal voltage: 5.3 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**



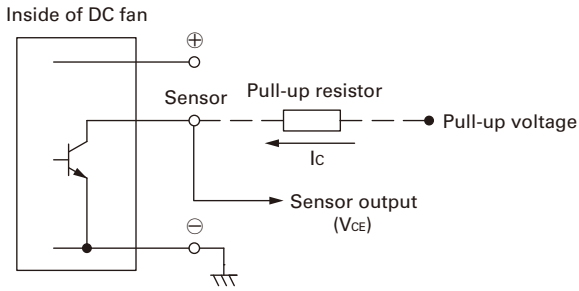
**9WL0412P3J001**  
**9WL0412P3G001**



**9WL0424P3J001**  
**9WL0424P3G001**

## Specifications for Pulse Sensors

Output circuit: Open collector



### Rated voltage 12 V fan

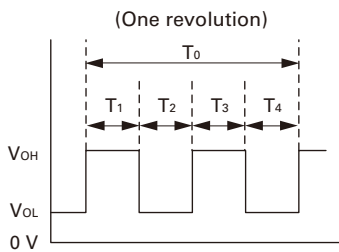
$V_{CE} = +13.8 \text{ V max.}$   
 $I_c = 5 \text{ mA max. [} V_{CE} \text{ (SAT)} = 0.6 \text{ V max.]}$

### Rated voltage 24 V fan

$V_{CE} = +27.6 \text{ V max.}$   
 $I_c = 5 \text{ mA max. [} V_{CE} \text{ (SAT)} = 0.8 \text{ V max.]}$

Output waveform (Need pull-up resistor)

In case of steady running



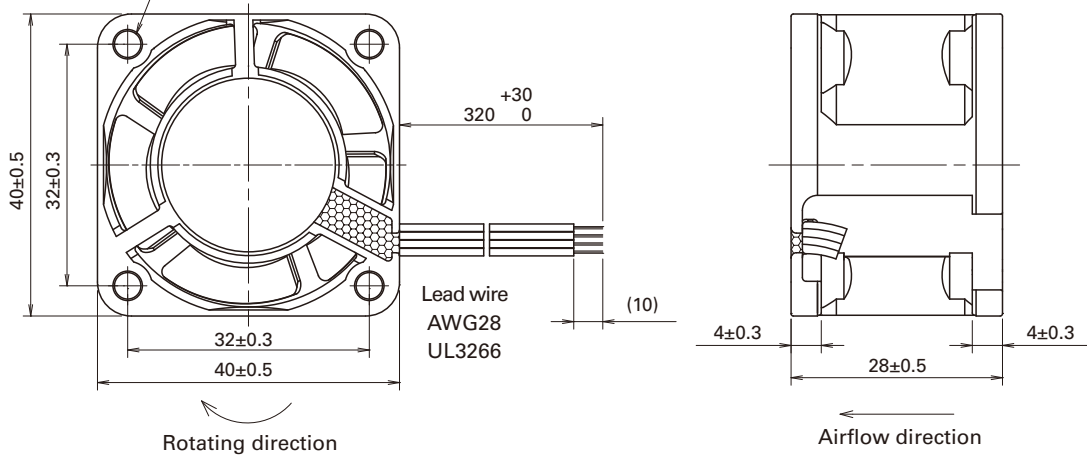
$$T_{1\sim 4} \doteq (1/4) T_0$$

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

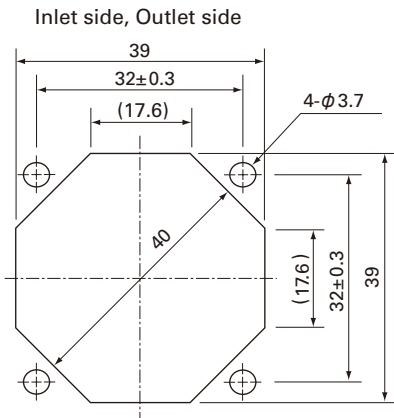
$$N = \text{Fan speed (min}^{-1}\text{)}$$

## Dimensions (unit: mm)

8- $\phi 3.5 \pm 0.3$   
 Mounting Hole



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



### Notice

- Please read the "Safety Instructions" on our website once you have decided on a product for use.
- 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.

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

<http://www.sanyodenki.com>

The names of companies and/or their products specified in this catalog are the trade names, and/or trademarks and/or registered trademarks of such respective companies. "San Ace" is a trademark of SANYO DENKI CO., LTD.

Specifications are subject to change without notice.

CATALOG No. C1052B001 '15.6

# San Ace 60W 9WL type

## Splash Proof Fan

### Features

#### Splash Proof and Dust Resistant

IP68<sup>\*1</sup> protection rating water and dust resistance.

#### Longest-Lasting Lifespan

These fans have an expected lifespan of 180,000 hours (approximately 20 years), about 3 times that of our conventional splash proof fan,<sup>\*2</sup> making them ideal for equipment that must operate without maintenance for extended periods.

#### High Air Flow and High Static Pressure

Maximum air flow increased by approximately 1.7 times and maximum static pressure increased by approximately 3.4 times compared with our conventional splash proof fan.<sup>\*3</sup>

#### Low Power Consumption

The power consumption is approximately 19% lower than that of our conventional splash proof fan.<sup>\*4</sup>



\*1: Based on testing procedure for IEC (International Electrotechnical Commission) specification IEC 60529.

\*2: Specification of Model No. 9WL0612P4S001. Our conventional splash proof fan is 60 x 60 x 25 mm "San Ace 60W", Model No. 9WP0612D401.

\*3: Specification of Model No. 9WL0612P4S001. Our conventional splash proof fan is 60 x 60 x 25 mm "San Ace 60W", Model No. 9WP0612G401.

\*4: Specification of Model No. 9WL0612P4H001. At equivalent air flow performance. Our conventional splash proof fan is 60 x 60 x 25 mm "San Ace 60W", Model No. 9WP0612G401.

## 60×60×25mm

### Specifications

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

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM Duty Cycle [Nos.1,2][%]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min] [CFM]	MAX. Static Pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WL0612P4S001	12	10.8 to 13.2	100	0.67	8.04	11,000	1.40 49.4	300 1.204	53	-20 to +70	180,000
			20	0.06	0.72	2,900	0.36 12.7	20.8 0.083	20		
9WL0612P4J001			100	0.39	4.68	8,650	1.10 38.8	182 0.730	47		
			20	0.03	0.36	1,150	0.13 4.8	3.3 0.013	14		
9WL0612P4H001			100	0.17	2.04	6,150	0.78 27.5	97 0.389	36		
			20	0.03	0.36	1,350	0.17 6.0	4.7 0.018	14		
9WL0624P4S001	24	21.6 to 26.4	100	0.34	8.16	11,000	1.40 49.4	300 1.204	53		
			20	0.03	0.72	2,900	0.36 12.7	20.8 0.083	20		
9WL0624P4J001			100	0.19	4.56	8,650	1.10 38.8	182 0.730	47		
			20	0.02	0.48	2,200	0.28 9.8	12.0 0.048	17		
9WL0624P4H001			100	0.08	1.92	6,150	0.78 27.5	97 0.389	36		
			20	0.02	0.48	1,300	0.16 5.6	4.3 0.017	14		

Note1: PWM Frequency: 25 kHz

Note2: Fans do not rotate when PWM duty cycle is 0%.

Available options: **Without Sensor** **Pulse Sensor**

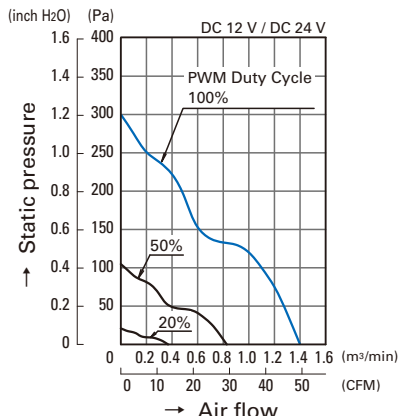
Please inquire as the availability of these functions depends on the model: **Lock Sensor**

### Common Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastics (Flammability: UL94V-1)
- 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. 120 g

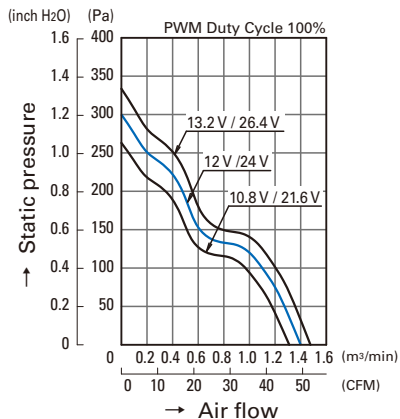
## Air Flow - Static Pressure Characteristics

### • PWM Duty Cycle



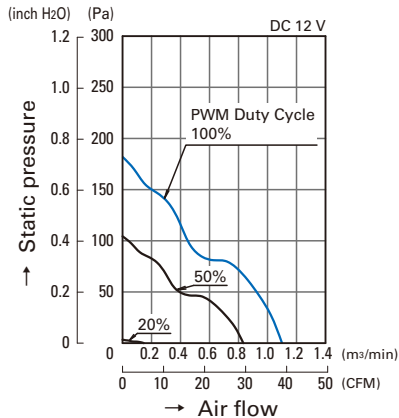
**9WL0612P4S001**  
**9WL0624P4S001**

### • Operating Voltage Range

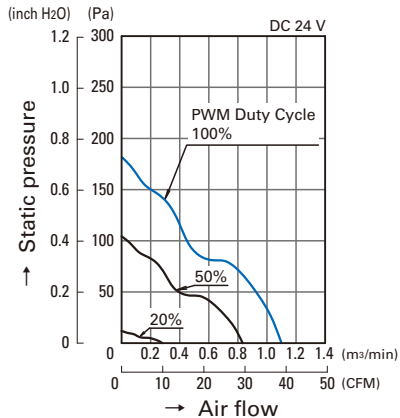


**9WL0612P4S001**  
**9WL0624P4S001**

### • PWM Duty Cycle

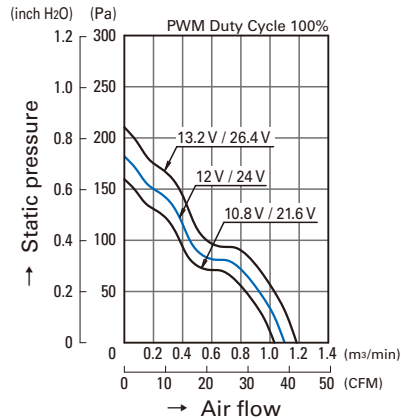


**9WL0612P4J001**



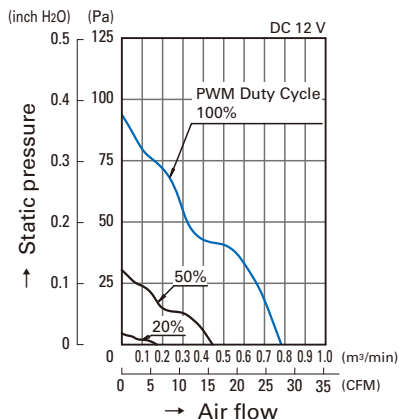
**9WL0624P4J001**

### • Operating Voltage Range

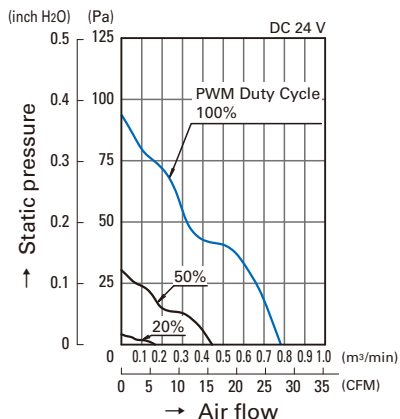


**9WL0612P4J001**  
**9WL0624P4J001**

### • PWM Duty Cycle

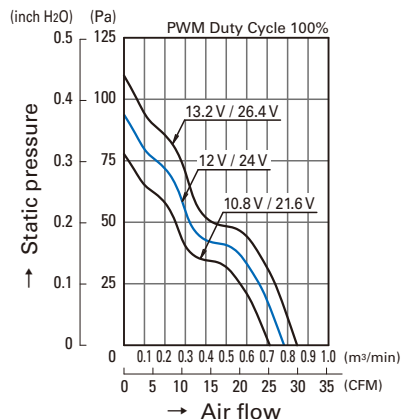


**9WL0612P4H001**



**9WL0624P4H001**

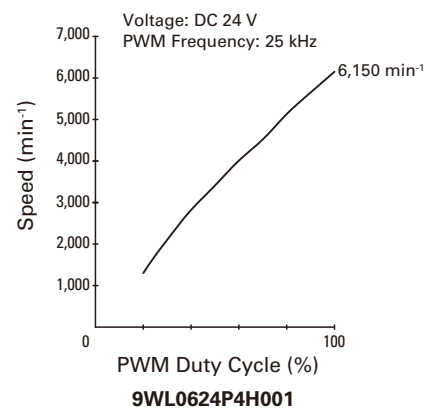
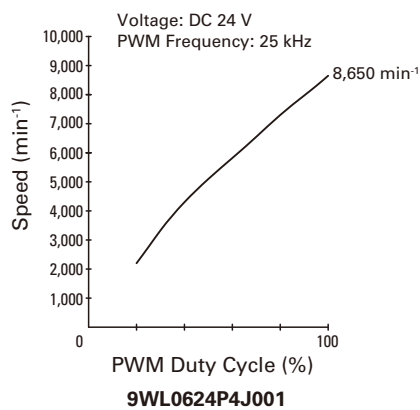
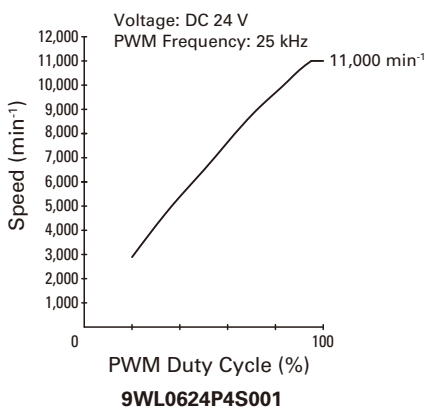
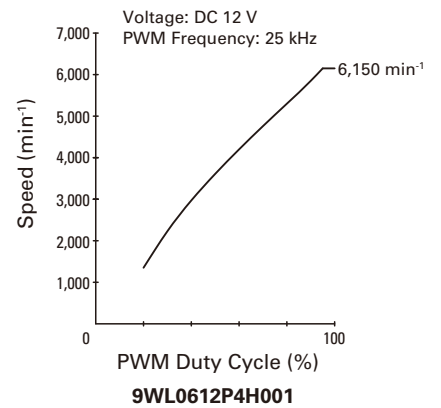
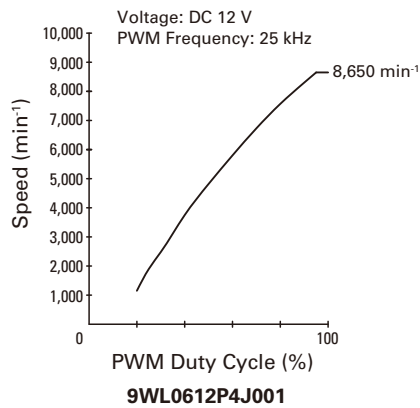
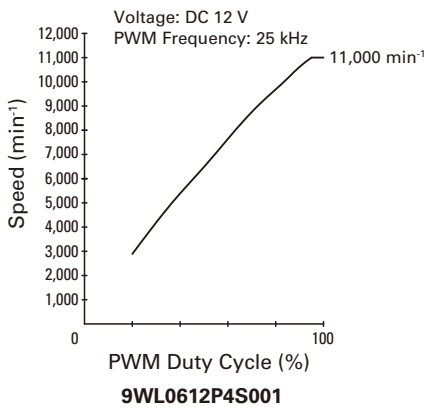
### • Operating Voltage Range



**9WL0612P4H001**  
**9WL0624P4H001**

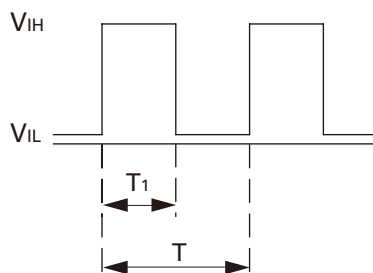


**PWM Duty - Speed Characteristics Example**



**PWM Input Signal Example**

Input Signal Waveform



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

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

$$\text{PWM Duty Cycle (\%)} = \frac{T_1}{T} \times 100$$

$$\text{PWM Frequency } 25\text{ (kHz)} = \frac{1}{T}$$

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

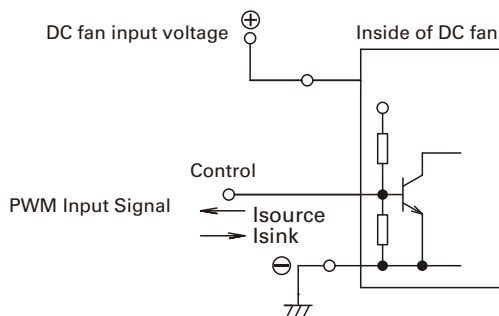
Sink Current ( $I_{sink}$ ) : 1 mA Max. at control voltage 5.25 V

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%.

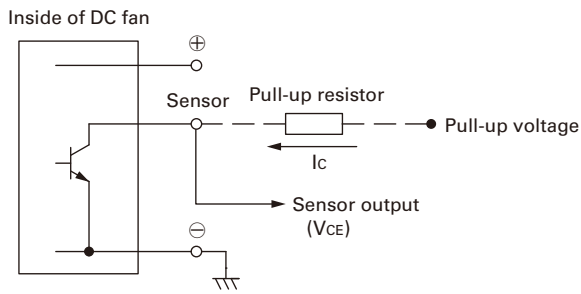
Either TTL input, open collector or open drain can be used for PWM control input signal.

**Example of Connection Schematic**



## Specifications for Pulse Sensors

Output circuit: Open collector



### Rated Voltage 12 V Fan

$V_{CE} = +13.8$  V MAX.  
 $I_c = 5$  mA MAX. [ $V_{OL} = V_{CE}(\text{SAT}) = 0.6$  V MAX.]

### Rated Voltage 24 V Fan Model No.: 9WL0624P4S001

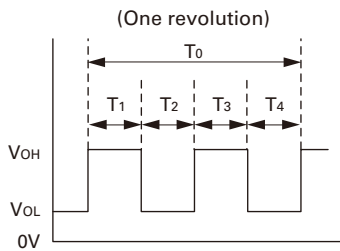
$V_{CE} = +30$  V MAX.  
 $I_c = 10$  mA MAX. [ $V_{OL} = V_{CE}(\text{SAT}) = 0.6$  V MAX.]

### Rated Voltage 24 V Fan Model No.: 9WL0624P4J001, 9WL0624P4H001

$V_{CE} = +27.6$  V MAX.  
 $I_c = 5$  mA MAX. [ $V_{OL} = V_{CE}(\text{SAT}) = 0.8$  V MAX.]

Output Waveform (Need pull-up resistor)

In case of steady running

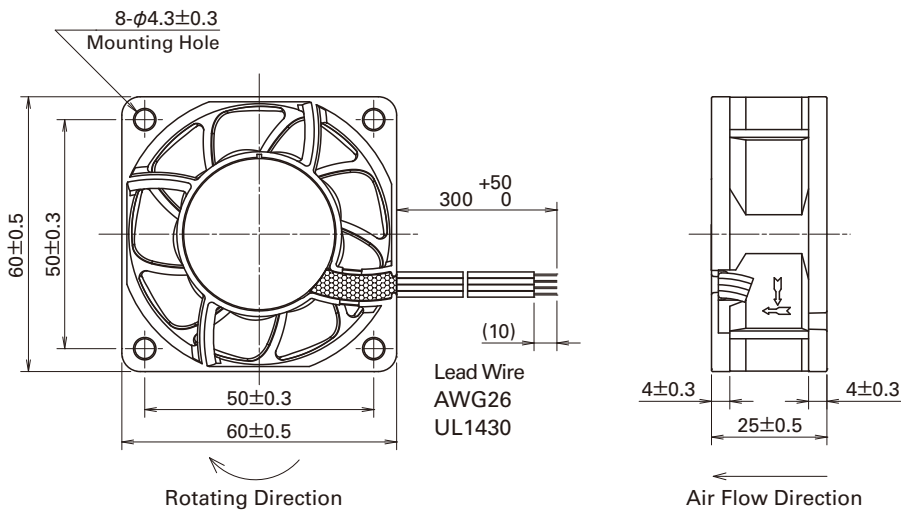


$$T_{1\sim 4} \approx (1/4) T_0$$

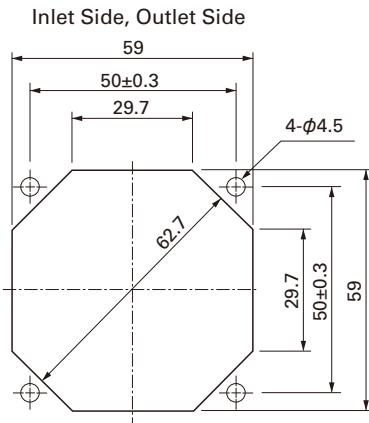
$$T_{1\sim 4} \approx (1/4) T_0 = 60/4N \text{ (sec)}$$

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

## Dimensions (unit : mm)



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



- 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.

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

<http://www.sanyodenki.com>

The names of companies and/or their products specified in this catalog are the trade names, and/or trademarks and/or registered trademarks of such respective companies. "San Ace" is a trademark of SANYO DENKI CO., LTD.

Specifications are subject to change without notice.

CATALOG No. C1034B001 '14.2

# San Ace 80 W 9WL type

## Splash Proof Fan

### Features

#### Splash Proof and Dust Resistant

IP68<sup>\*1</sup> protection rating water and dust resistance.

#### Longest-Lasting Lifespan

These fans have an expected lifespan of 180,000 hours (approximately 20 years), about 3 times that of our conventional splash proof fan,<sup>\*2</sup> making them ideal for equipment that must operate without maintenance for extended periods.

#### High Air Flow and High Static Pressure

Maximum air flow increased by approximately 1.3 times and maximum static pressure increased by approximately 2.2 times compared with our conventional splash proof fan.<sup>\*3</sup>

#### Low Power Consumption

The power consumption is approximately 21% lower than that of our conventional splash proof fan.<sup>\*4</sup>

\*1: Based on testing procedure for IEC (International Electrotechnical Commission) specification IEC 60529.

\*2: Specification of Model No. 9WL0812P4J001. Our conventional splash proof fan is 80 x 80 x 25 mm "San Ace 80W", Model No. 9WP0812H401.

\*3: Specification of Model No. 9WL0812P4J001. Our conventional splash proof fan is 80 x 80 x 25 mm "San Ace 80W", Model No. 9WP0812G401.

\*4: Specification of Model No. 9WL0812P4G001. At equivalent air flow performance. Our conventional splash proof fan is 80 x 80 x 25 mm "San Ace 80W", Model No. 9WP0812G401.



## 80×80×25mm

### Specifications

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

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM Duty Cycle (Note1,2) [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min] [CFM]	MAX. Static Pressure [Pa] [inchHzO]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WL0812P4J001	12	10.8 to 13.2	100	0.6	7.2	7,400	2.07 73.0	177 0.71	49	-20 to +70	180,000
			20	0.06	0.72	1,800	0.50 17.6	10.4 0.04	16		
9WL0812P4G001			100	0.30	3.60	5,500	1.54 54.3	98 0.39	43		
			25	0.05	0.60	1,400	0.39 13.7	6.3 0.02	14		
9WL0812P4H001			100	0.12	1.44	3,700	1.03 36.3	44 0.17	31		
			25	0.04	0.48	1,100	0.30 10.5	3.9 0.01	13		
9WL0824P4J001	24	21.6 to 26.4	100	0.28	6.72	7,400	2.07 73.0	177 0.71	49		
			20	0.05	1.20	2,400	0.67 23.6	18.6 0.07	22		
9WL0824P4G001			100	0.14	3.36	5,500	1.54 54.3	98 0.39	43		
			20	0.02	0.48	1,200	0.33 11.6	4.6 0.01	13		
9WL0824P4H001			100	0.05	1.2	3,700	1.03 36.3	44 0.17	31		
			30	0.02	0.48	1,100	0.30 10.5	3.9 0.01	13		

Note1: PWM Frequency : 25kHz

Note2: Fans do not rotate when PWM duty cycle is 0%.

Available options: **Without Sensor** **Pulse Sensor**

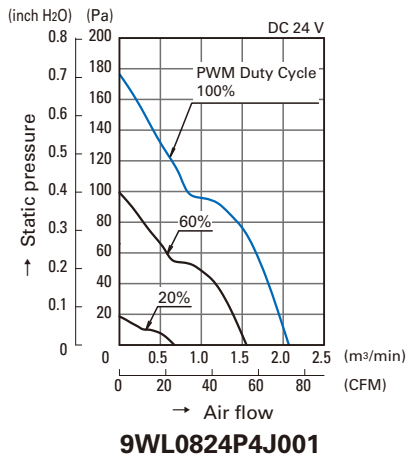
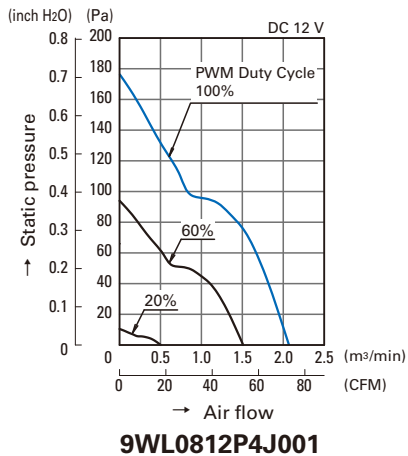
Please inquire as the availability of these functions depends on the model: **Lock Sensor**

### Common Specifications

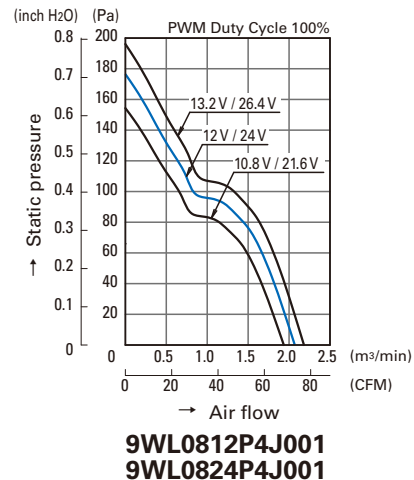
- Material ..... Frame: Aluminum (Black coating), Impeller: Plastics (Flammability: UL94V-1)
- Expected Life ..... Refer to specifications  
(L10: Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- Motor Protection System ..... Current blocking function and reverse 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. 150 g

## Air Flow - Static Pressure Characteristics

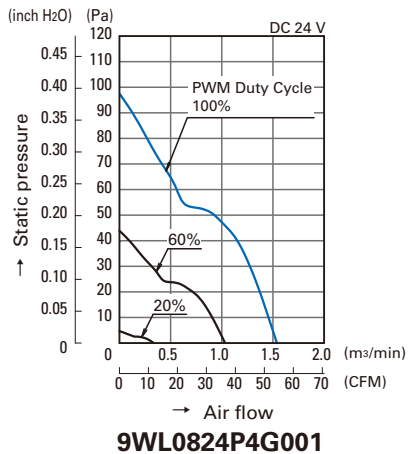
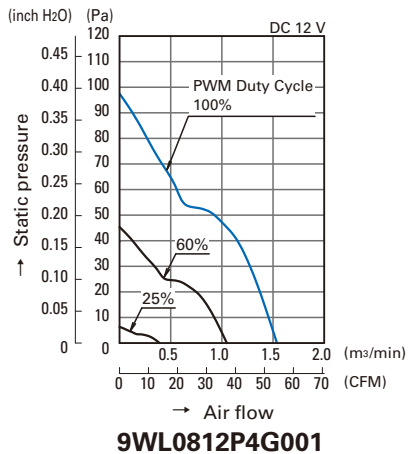
### • PWM Duty Cycle



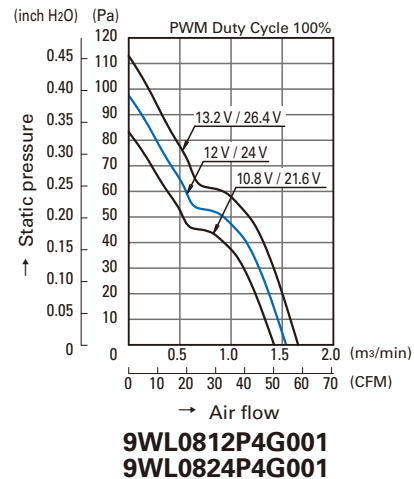
### • Operating Voltage Range



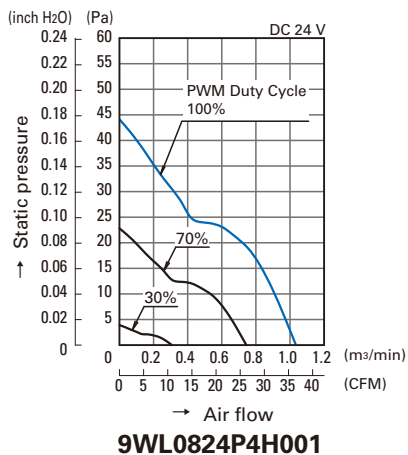
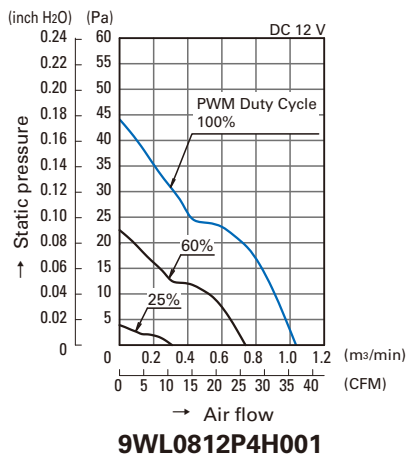
### • PWM Duty Cycle



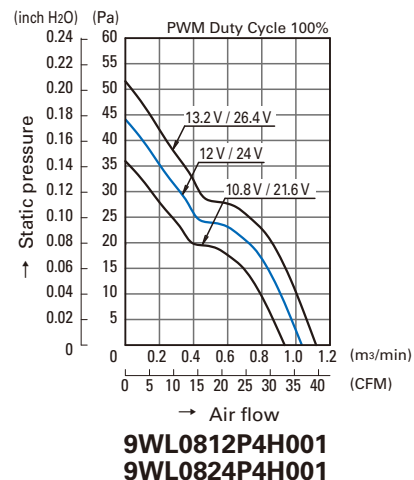
### • Operating Voltage Range



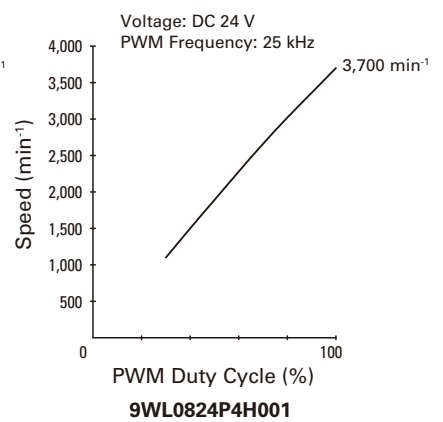
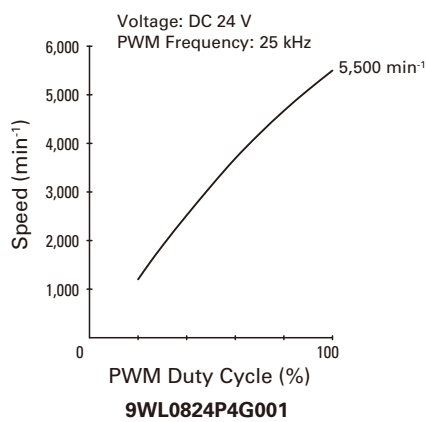
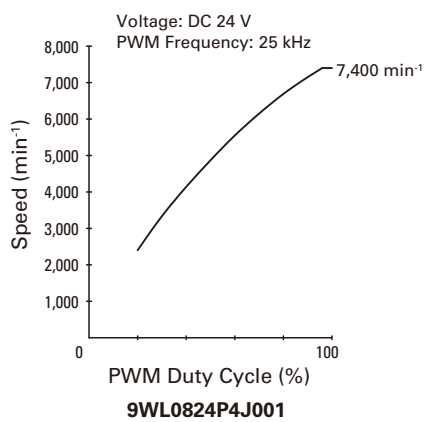
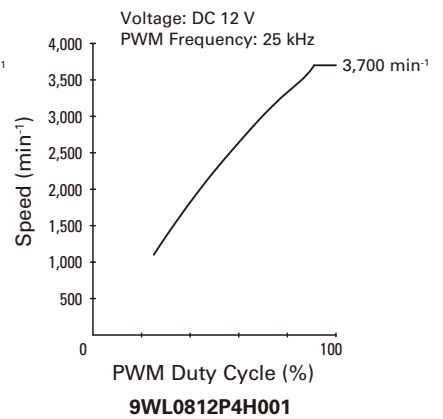
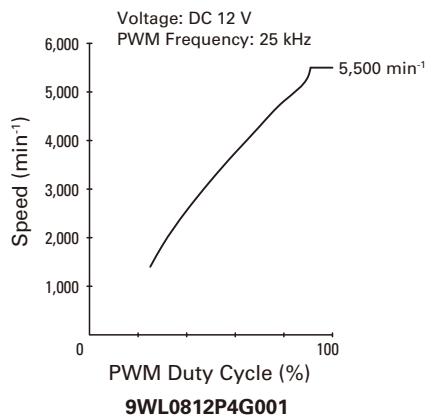
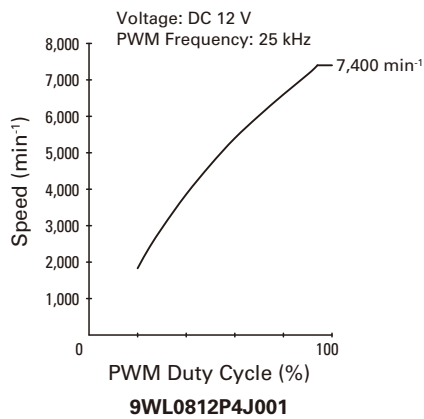
### • PWM Duty Cycle



### • Operating Voltage Range

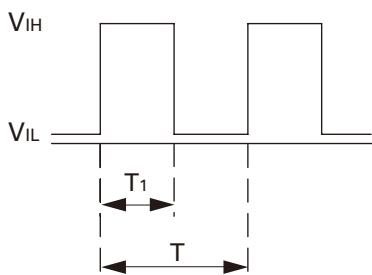


**PWM Duty - Speed Characteristics Example**



**PWM Input Signal Example**

Input Signal Waveform



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

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

$$\text{PWM Duty Cycle (\%)} = \frac{T_1}{T} \times 100$$

$$\text{PWM Frequency } 25\text{ (kHz)} = \frac{1}{T}$$

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

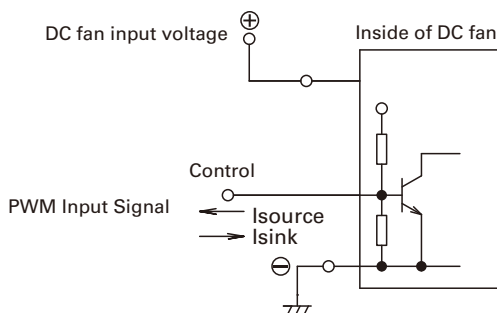
Sink Current ( $I_{sink}$ ): 1 mA Max. at control voltage 5.25 V

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%.

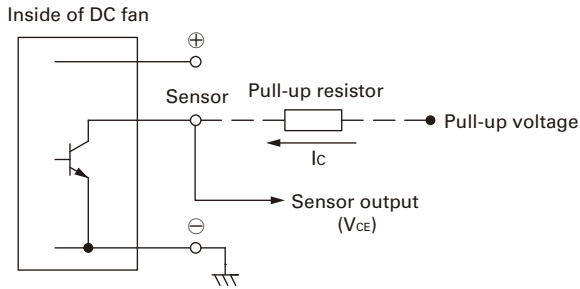
Either TTL input, open collector or open drain can be used for PWM control input signal.

**Example of Connection Schematic**



## Specifications for Pulse Sensors

Output circuit: Open collector



### Rated Voltage 12 V Fan

$V_{CE} = +13.8$  V MAX.  
 $I_C = 5$  mA MAX. [ $V_{CE(SAT)} = 0.6$  V MAX.]

### Rated Voltage 24 V Fan Model No.: 9WL0824P4J001

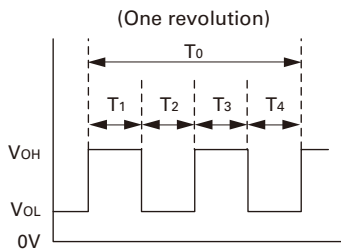
$V_{CE} = +30$  V MAX.  
 $I_C = 10$  mA MAX. [ $V_{CE(SAT)} = 0.6$  V MAX.]

### Rated Voltage 24 V Fan Model No.: 9WL0824P4G001, 9WL0824P4H001

$V_{CE} = +27.6$  V MAX.  
 $I_C = 5$  mA MAX. [ $V_{CE(SAT)} = 0.8$  V MAX.]

Output Waveform (Need pull-up resistor)

In case of steady running

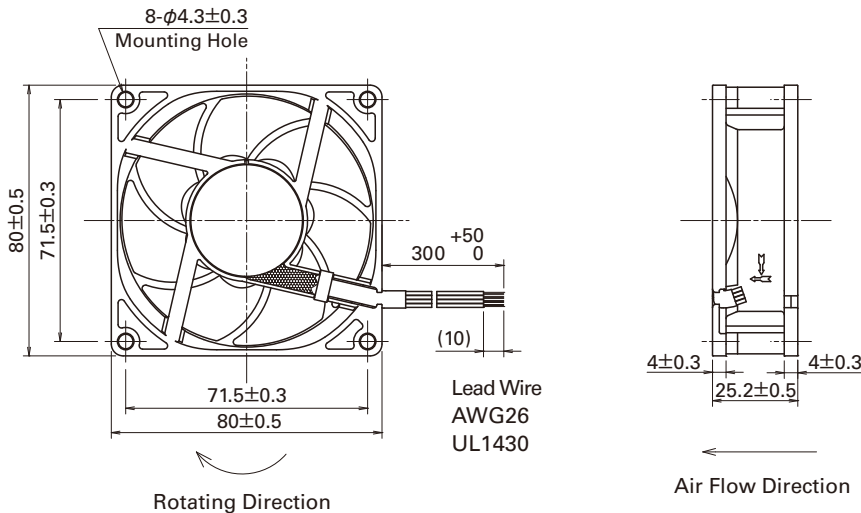


$$T_1 \sim T_4 \approx (1/4) T_0$$

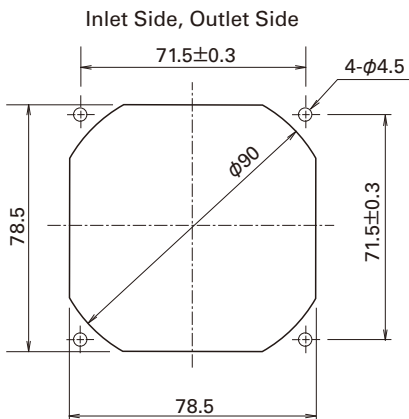
$$T_1 \sim T_4 \approx (1/4) T_0 = 60/4N \text{ (sec)}$$

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

## Dimensions (unit : mm)



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



- 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.

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

<http://www.sanyodenki.com>

The names of companies and/or their products specified in this catalog are the trade names, and/or trademarks and/or registered trademarks of such respective companies. "San Ace" is a trademark of SANYO DENKI CO., LTD.

Specifications are subject to change without notice.

CATALOG No. C1035B001 '14.2

# San Ace 92W 9WL type

## Splash Proof Fan

### Features

#### Splash Proof and Dust Resistant

IP68<sup>\*1</sup> protection rating water and dust resistance.

#### Longest-Lasting Lifespan

These fans have an expected lifespan of 180,000 hours (approximately 20 years), about 4.5 times that of our conventional splash proof fan,<sup>\*2</sup> making them ideal for equipment that must operate without maintenance for extended periods.

#### High Air Flow and High Static Pressure

Maximum air flow increased by approximately 1.2 times and maximum static pressure increased by approximately 1.5 times compared with our conventional splash proof fan.<sup>\*2</sup>

#### Low Power Consumption

The power consumption is approximately 21% lower than that of our conventional splash proof fan.<sup>\*3</sup>



\*1: Based on testing procedure for IEC (International Electrotechnical Commission) specification IEC 60529.

\*2: Specification of Model No. 9WL0924PJ001. Our conventional splash proof fan is 92 x 92 x 25 mm "San Ace 92W", Model No. 9WP0924G401.

\*3: Specification of Model No. 9WL0912P4G001. At equivalent air flow performance. Our conventional splash proof fan is 92 x 92 x 25 mm "San Ace 92W", Model No. 9WP0924G401.

## 92x92x25mm

### Specifications

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

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM Duty Cycle <small>(Nom.±2)</small> [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min <sup>-1</sup> ]	Max. Air Flow [m <sup>3</sup> /min] [CFM]	MAX. Static Pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WL0912P4J001	12	10.8 to 13.2	100	0.42	5.04	5,000	2.2 77.7	105 0.42	44	-20 to +70	180,000
			20	0.04	0.48	1,200	0.52 18.4	6.04 0.024	11		
9WL0912P4G001			100	0.30	3.60	4,400	1.93 68.2	81 0.33	40		
			20	0.04	0.48	1,000	0.43 15.1	4.18 0.016	8		
9WL0912P4S001			100	0.22	2.64	3,850	1.69 59.7	62.1 0.25	37		
			30	0.04	0.48	1,400	0.61 21.5	8.21 0.032	13		
9WL0912P4H001	100	0.15	1.80	3,150	1.38 48.7	41.6 0.17	32				
	30	0.04	0.48	1,100	0.48 16.9	5.07 0.020	9				
9WL0924P4J001	24	21.6 to 26.4	100	0.21	5.04	5,000	2.2 77.7	105 0.42	44		
			20	0.02	0.48	1,100	0.48 16.9	5.07 0.020	9		
9WL0924P4S001			100	0.11	2.64	3,850	1.69 59.7	62.1 0.25	37		
			30	0.02	0.48	1,300	0.57 20.1	7.08 0.028	12		
9WL0924P4H001			100	0.07	1.68	3,150	1.38 48.7	41.6 0.17	32		
			30	0.02	0.48	1,000	0.43 15.1	4.18 0.016	8		

Note1: PWM Frequency: 25 kHz

Note2: Fans do not rotate when PWM duty cycle is 0%.

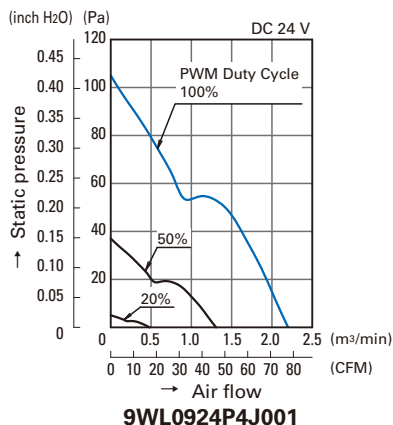
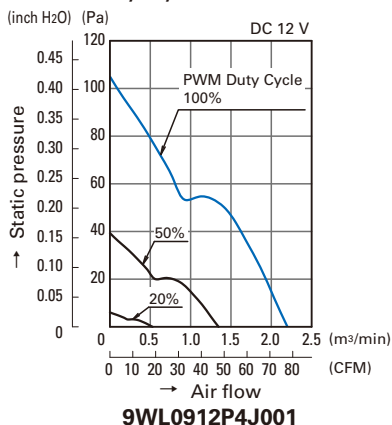
Available options: Without Sensor Pulse Sensor Lock Sensor

### Common Specifications

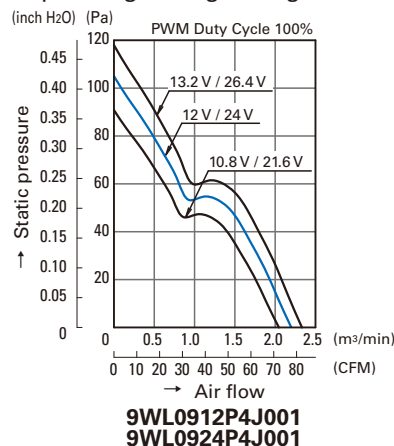
- Material ..... Frame: Aluminum (Black coating), Impeller: Plastics (Flammability: UL94V-1)
- Expected Life ..... Refer to specifications  
(L10: Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- Motor Protection System ..... Current blocking function and reverse 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. 170 g

## Air Flow - Static Pressure Characteristics

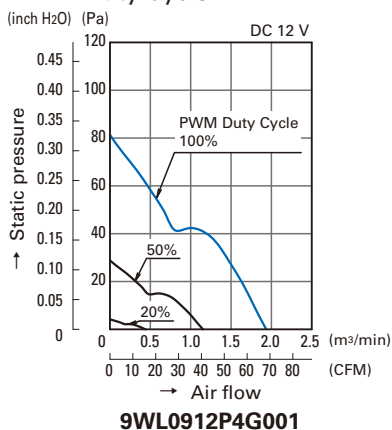
### • PWM Duty Cycle



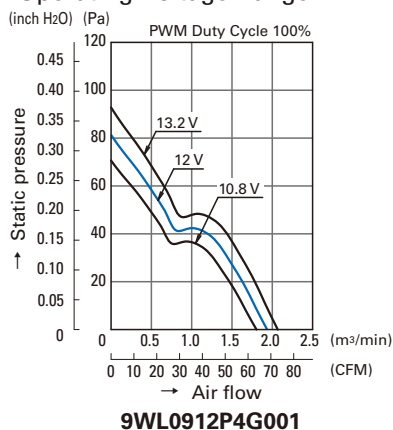
### • Operating Voltage Range



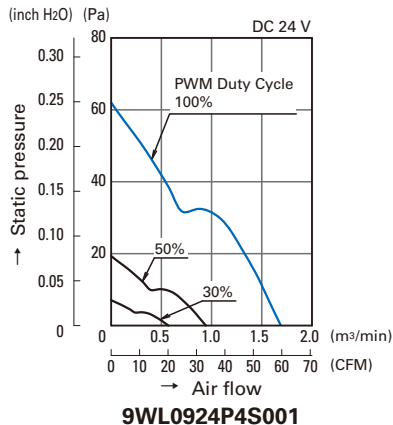
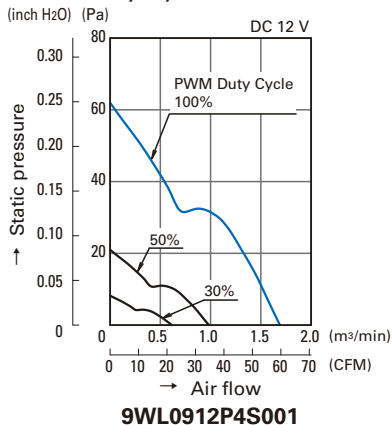
### • PWM Duty Cycle



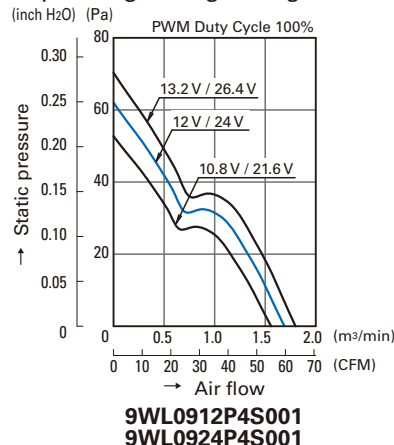
### • Operating Voltage Range



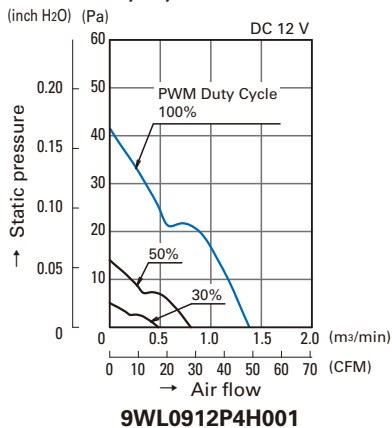
### • PWM Duty Cycle



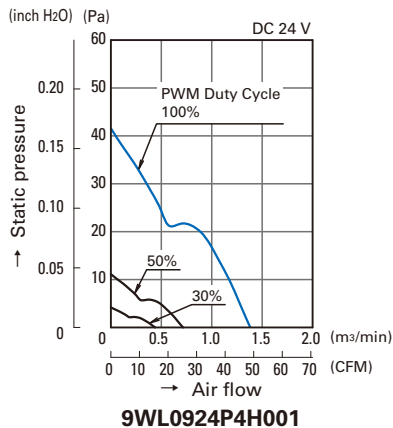
### • Operating Voltage Range



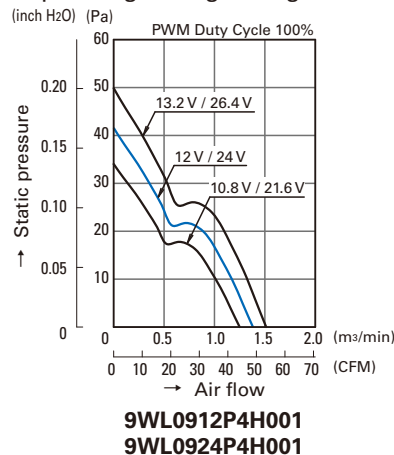
### • PWM Duty Cycle



### • Operating Voltage Range

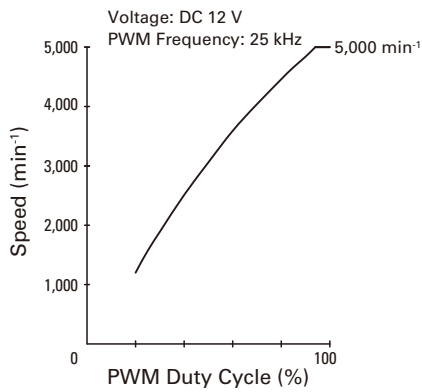


### • Operating Voltage Range

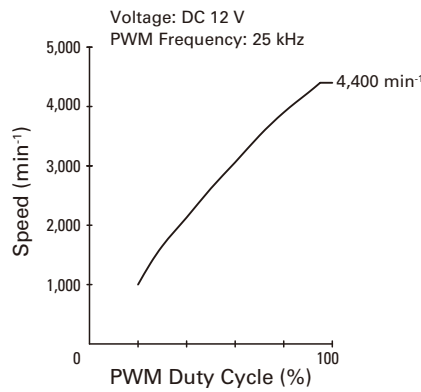




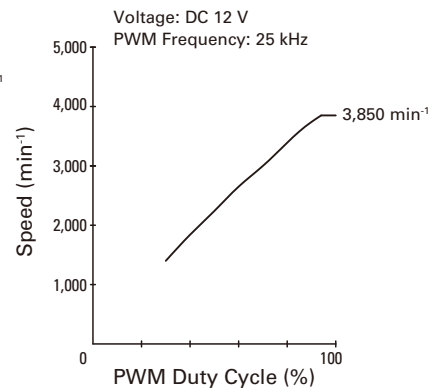
**PWM Duty - Speed Characteristics Example**



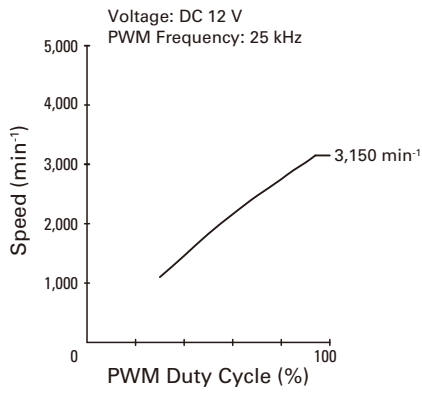
**9WL0912P4J001**



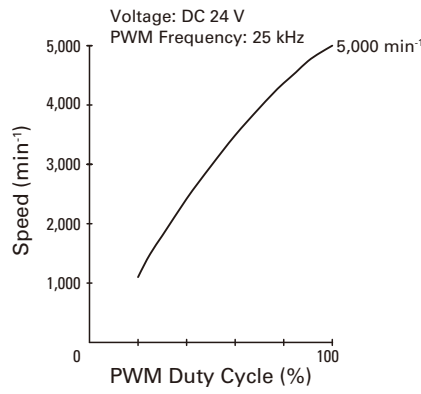
**9WL0912P4G001**



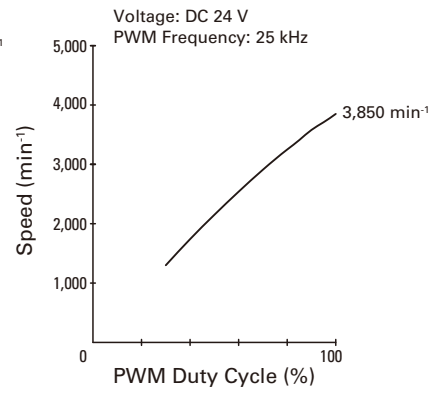
**9WL0912P4S001**



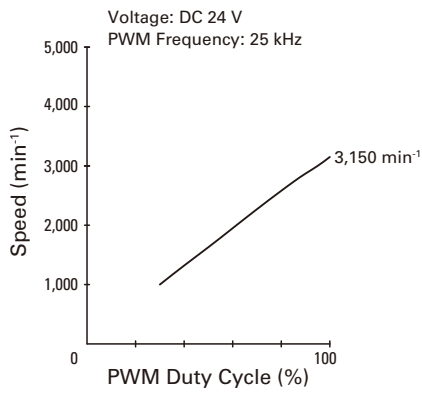
**9WL0912P4H001**



**9WL0924P4J001**



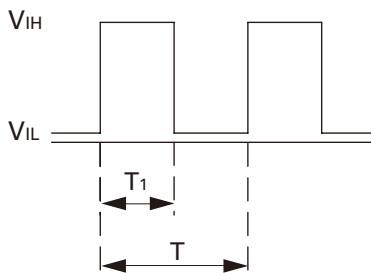
**9WL0924P4S001**



**9WL0924P4H001**

**PWM Input Signal Example**

Input Signal Waveform



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

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

$$\text{PWM Duty Cycle (\%)} = \frac{T_1}{T} \times 100$$

$$\text{PWM Frequency } 25\text{ (kHz)} = \frac{1}{T}$$

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

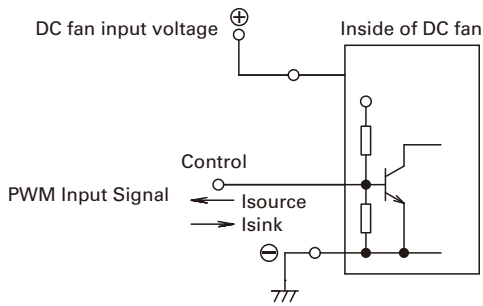
Sink Current ( $I_{sink}$ ) : 1 mA Max. at control voltage 5.25 V

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%.

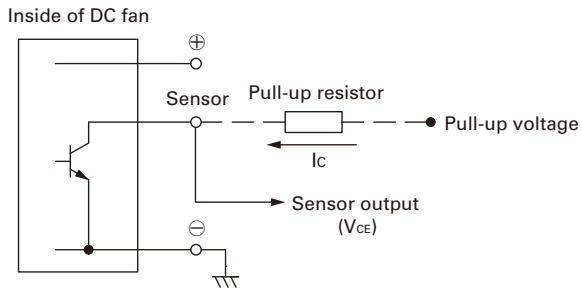
Either TTL input, open collector or open drain can be used for PWM control input signal.

## Example of Connection Schematic



## Specifications for Pulse Sensors

Output circuit: Open collector



### Rated Voltage 12 V Fan

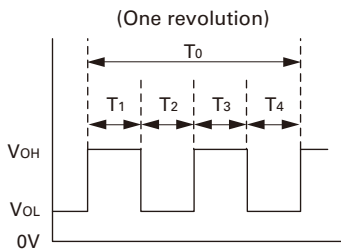
$V_{CE} = +13.8 \text{ V MAX.}$   
 $I_c = 5 \text{ mA MAX. [} V_{CE}(\text{SAT}) = 0.6 \text{ V MAX.]}$

### Rated Voltage 24 V Fan

$V_{CE} = +27.6 \text{ V MAX.}$   
 $I_c = 5 \text{ mA MAX. [} V_{CE}(\text{SAT}) = 0.8 \text{ V MAX.]}$

Output Waveform (Need pull-up resistor)

In case of steady running

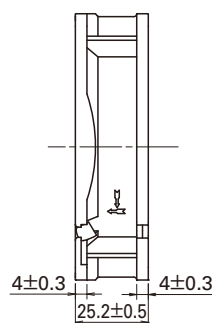
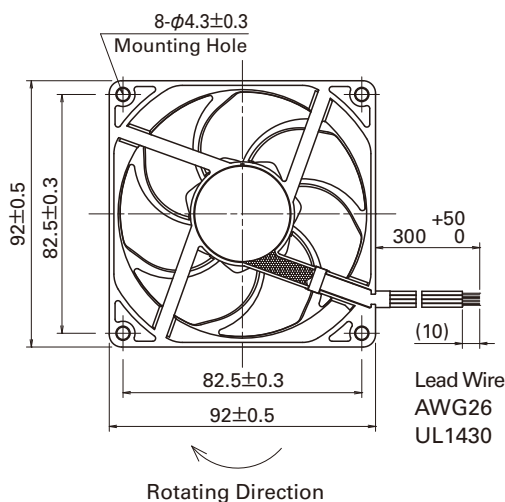


$$T_{1\sim 4} \doteq (1/4) T_0$$

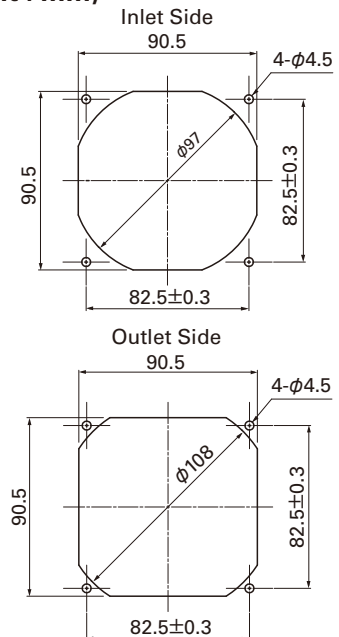
$$T_{1\sim 4} \doteq (1/4) T_0 = 60/4N \text{ (sec)}$$

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

## Dimensions (unit : mm)



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



- 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.

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

<http://www.sanyodenki.com>

The names of companies and/or their products specified in this catalog are the trade names, and/or trademarks and/or registered trademarks of such respective companies. "San Ace" is a trademark of SANYO DENKI CO.,LTD.

Specifications are subject to change without notice.

CATALOG No. C1036B001 '14.2