

# San Ace 60L

## 9CRLB type

### Long Life Fan

#### Features

##### High Airflow

This fan delivers a maximum airflow of 2.4 m<sup>3</sup>/min, achieving a 14% increase compared to our current model.<sup>(1)</sup>

##### High Static Pressure

This fan has a maximum static pressure of 1,500 Pa, delivering a 7% improvement over the current model.<sup>(1)</sup>

##### Long Service Life

The fan achieves 100,000 hours of continuous operation, which is equivalent to 11 years of usage.<sup>(2)</sup>

##### Energy Saving

Power consumption has been reduced by 13%<sup>(3)</sup> from the current model.<sup>(1)</sup>

##### Contribution to SDGs

This fan uses a lead-free brass material and is RoHS Directive-compliant.<sup>(4)</sup> Using eco-friendly resources and technologies, it is certified as an Eco Product.<sup>(5)</sup>

(1) Current model: 60 × 60 × 76 mm San Ace 60L 9CRLA type Long Life Fan

(2) Expected life is calculated under conditions of 90% survival rate for continuous operation at rated voltage, 60°C (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)

(3) Comparison with our current model at equivalent performance

(4) The RoHS (Restriction of Hazardous Substances) Directive restricts the use of certain hazardous substances in electrical and electronic equipment distributed within the European Union.

(5) Eco Products are eco-friendly products designed to reduce the environmental impact of the product and its packaging materials. Our products are assessed against our own eco-design requirements set for all processes from design to manufacturing, and only those meeting the requirements qualify as Eco Products.



## 60 × 60 × 76 mm

#### Specifications

The models listed below **have a pulse sensor with PWM control.**

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		Max. static pressure		SPL [dB(A)]	Operating temperature [°C]	Expected life [h]
						Inlet	Outlet	[m <sup>3</sup> /min]	[CFM]	[Pa]	[inchH <sub>2</sub> O]			
9CRLB0612P0G001	12	10.8 to 13.2	100	3.6	43.2	19700	18300	2.4	84.8	1500	6.00	75	-20 to +70	100000/60°C (135000/40°C)
			20	0.28	3.36	5300	4800	0.64	22.6	110	0.44	43		

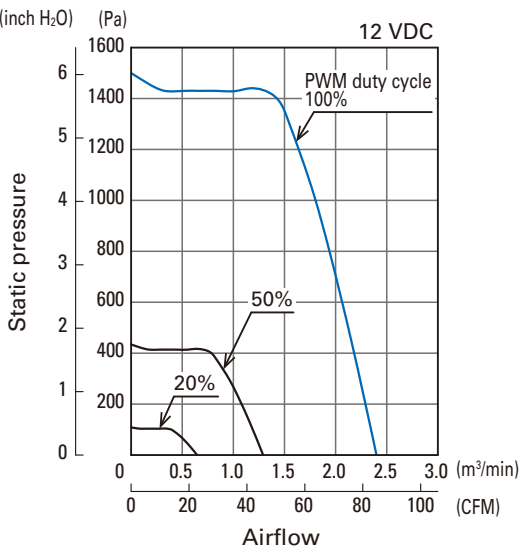
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

#### Common Specifications

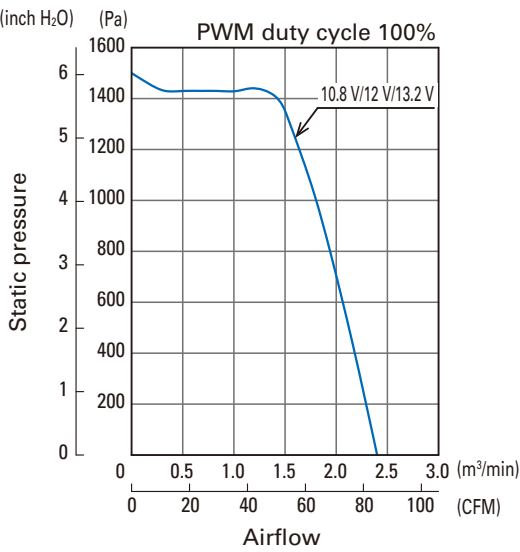
- ☐ Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- ☐ Expected life ..... Refer to specifications  
(L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)  
Expected life at 40°C is for reference only.
- ☐ Motor protection function ..... Locked rotor burnout protection, Reverse polarity protection
- ☐ Dielectric strength ..... 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
- ☐ Insulation resistance ..... 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
- ☐ Sound pressure level (SPL) ..... A-weighted 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 ..... Inlet ⊕Red ⊖Black [Sensor] Yellow [Control] Brown  
Outlet ⊕Orange ⊖Gray [Sensor] Purple [Control] White
- ☐ Mass ..... 280 g

Airflow - Static Pressure Characteristics

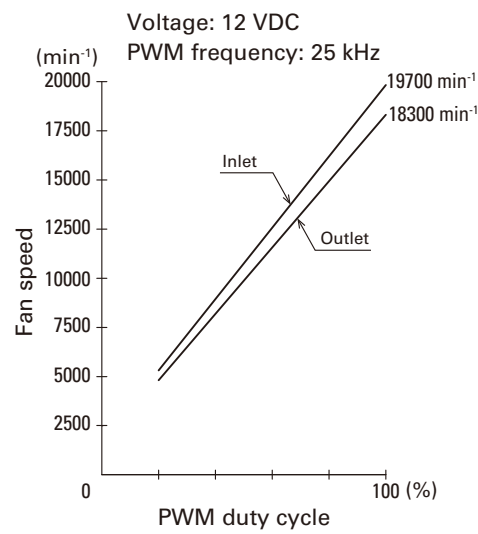
PWM duty cycle



Operating voltage range

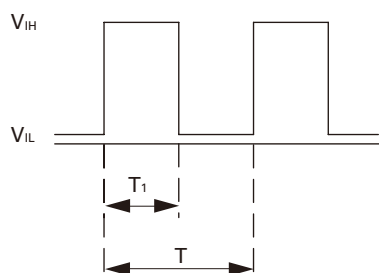


PWM Duty - Speed Characteristics Example



## PWM Input Signal Example

Input signal waveform



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

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

Current source ( $I_{\text{source}}$ ) = 2.0 mA max. (when control voltage is 0 V)

Current sink ( $I_{\text{sink}}$ ) = 2.0 mA max. (when control voltage is 5.25 V)

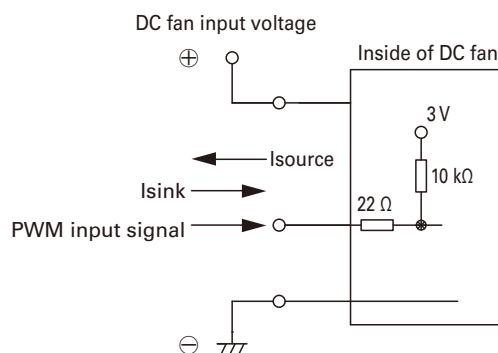
When the PWM control terminal is open, the fan speed is the same as the speed at 100% PWM duty cycle.

The PWM signal can be used with open collector or drain input.

Note that when using an open collector or drain input, or inputting a different voltage or frequency, the speed relative to the PWM duty cycle may differ from this specification.

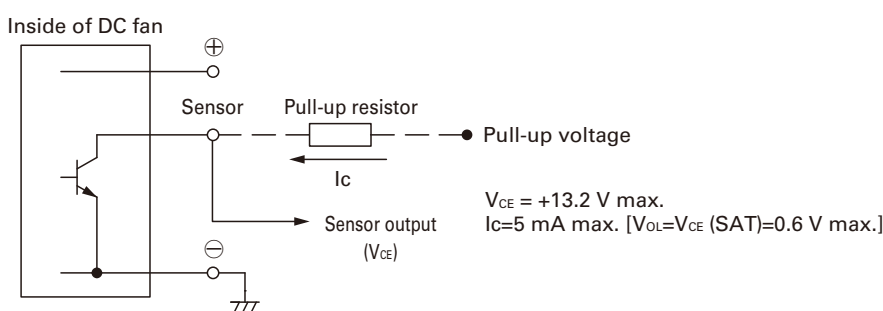
If PWM frequency is below 6 KHz, fan might malfunction.

## Example of Connection Schematic



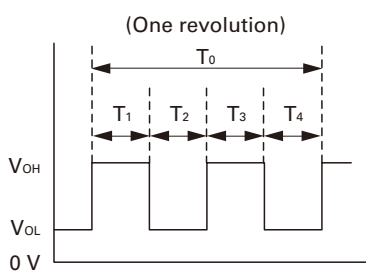
## Specifications for Pulse Sensors

Output circuit: Open collector



Output waveform (Need pull-up resistor)

In case of steady running

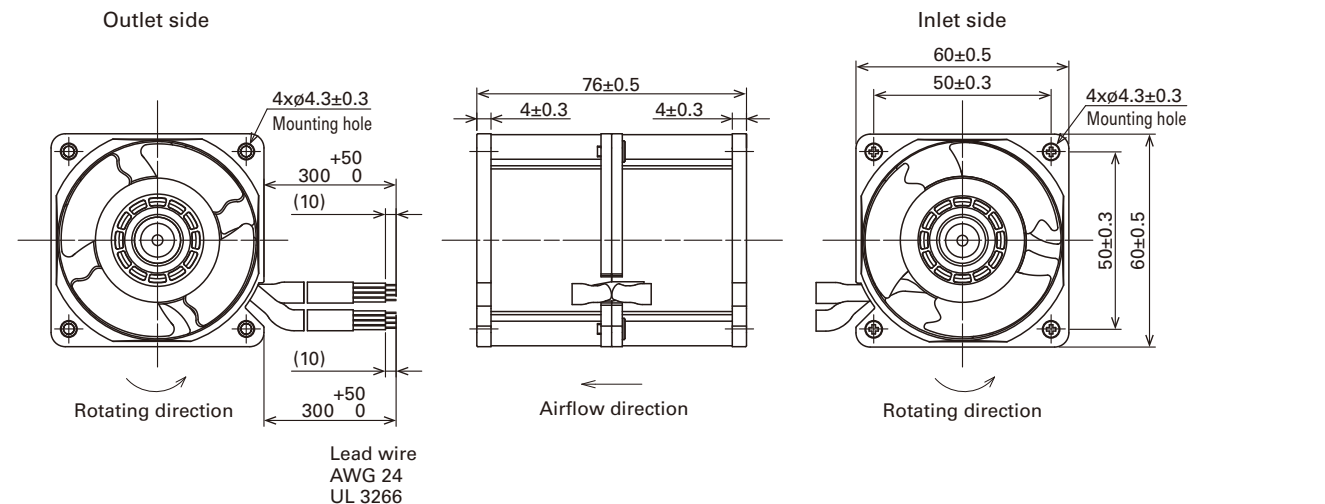


$$T_{1 \text{ to } 4} \approx (1/4) T_0$$

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

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

## ■ Dimensions (unit: mm)



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



## Options

Finger guards

Model no.: 109-139E, 109-139H

## Resin finger guards

Model no.: 109-1003G

## Resin filter kits

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)

## 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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