

# San Ace 60 L CRL type

## Long Life Counter Rotating Fan



### Features

#### Long Life

The San Ace 60 CRL type has an expected life of 130,000 hours (approximately 15 years), about 3.3 times that of our conventional counter rotating fan,\* making this fan ideal for equipment that must operate without maintenance for extended periods.

\* : Specification of Model No. 9CRL0612P0G001.  
Our conventional counter rotating fan is 60 x 60 x 76 mm "San Ace 60" CRA type, Model No. 9CRA0612P0G001.

## 60×60×76mm

### Specifications

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM Duty Cycle <sup>Note</sup> [%]	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]
			100			Inlet	Outlet							
9CRL0612P0G001	12	10.8 to 13.2	100	2.3	27.6	16,500	13,000	2.0	70.6	1000	4.0	66	-20 to +70	130,000/60°C
			0			0.22	2.7	3,600	2,800	0.43	15.1			

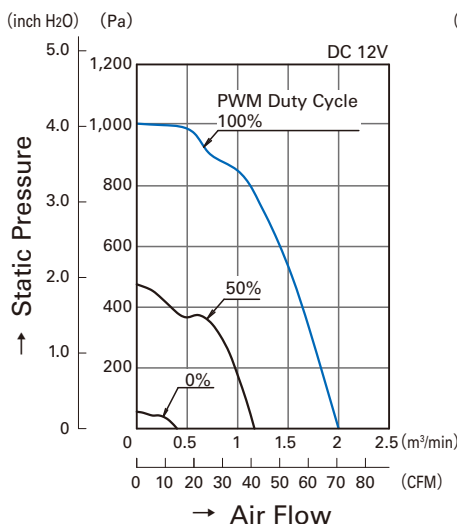
Note : PWM Frequency : 25kHz

### Common Specifications

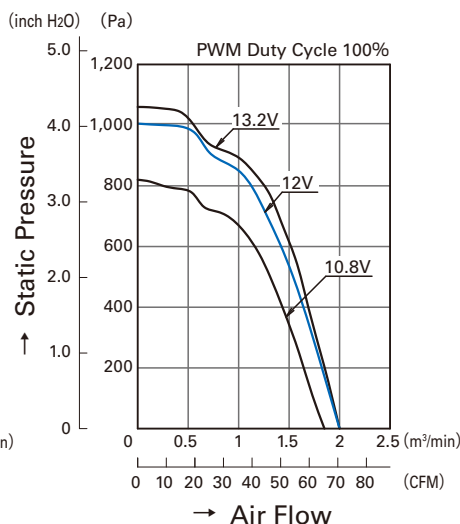
- Material ..... Frame:Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Life Expectancy ..... Varies for each model  
(L10: Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)
- Motor Protection System ..... Current blocking function and Reverse polarity protection
- Dielectric Strength ..... 50/60 Hz, 500VAC, 1 minute (between lead conductor and frame)
- Sound Pressure Level (SPL) ..... Expressed as the value at 1m from air inlet side
- Operating Temperature ..... Varies for each model (Non-condensing)
- Storage Temperature ..... -30°C to +70°C (Non-Condensing)
- Lead Wire ..... Inlet : ⊕Red ⊖Black Sensor: Yellow Control: Brown  
Outlet : ⊕Orange ⊖Gray Sensor: Purple Control: White
- Mass ..... Approx. 300g

### Air Flow - Static Pressure Characteristics

#### • PWM Duty Cycle

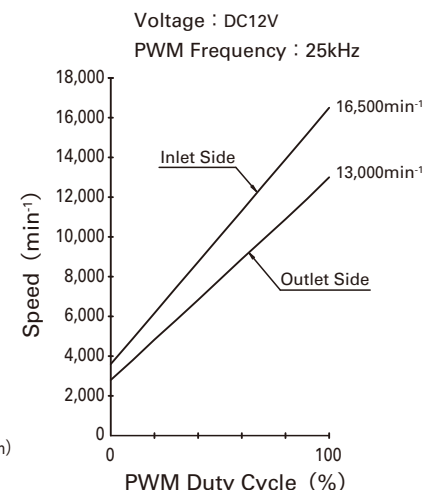


#### • Operating Voltage Range



### PWM Duty -

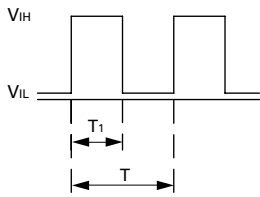
#### Speed Characteristics Example



## PWM Input Signal Example

## Example of Connection Schematic

### Input Signal Waveform



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

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

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

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

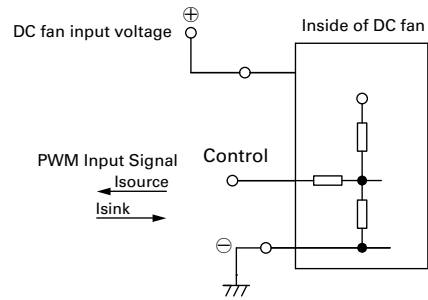
Source Current : 5mA Max. at control voltage 0V

Sink Current : 5mA Max. at control voltage 5.25V

Control Terminal Voltage : 5.25V 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.



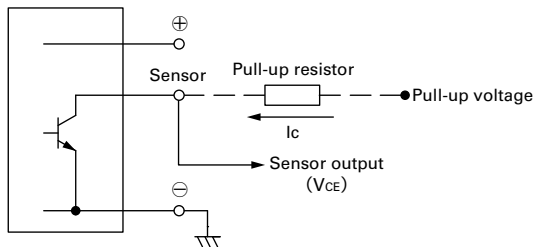
## Specifications for Pulse Sensors

Output circuit : Open collector

$V_{CE} = +13.8V$  MAX.

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

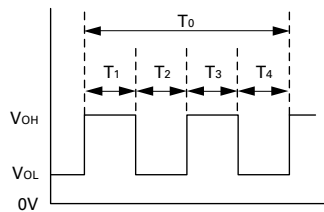
Inside of DC fan



Output Waveform (Need pull-up resistor)

In case of steady running

(One revolution)

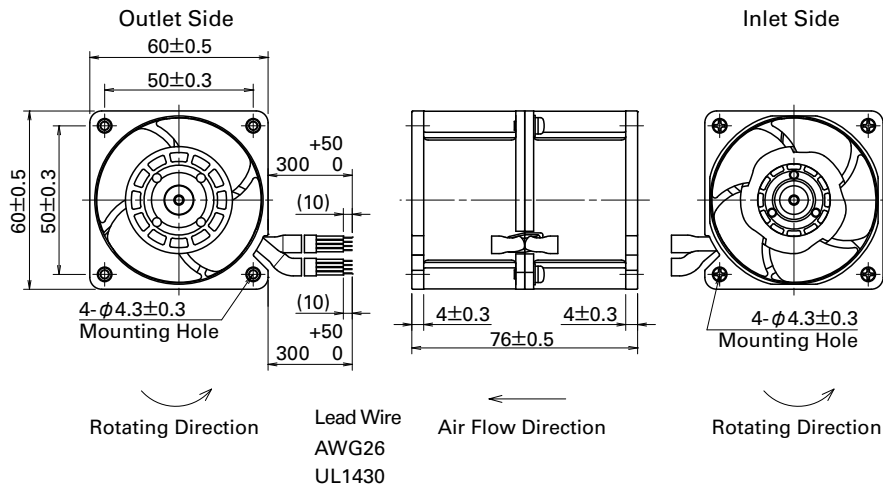


$$T_{1-4} \doteq (1/4) T_0$$

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

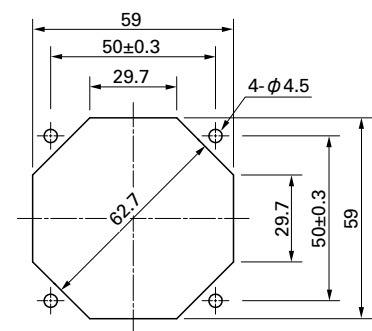
$$N = \text{Fan speed (min}^{-1}\text{)}$$

## Dimensions (unit : mm)



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

Inlet Side, Outlet Side



## Notice

- The products shown in the 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.

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