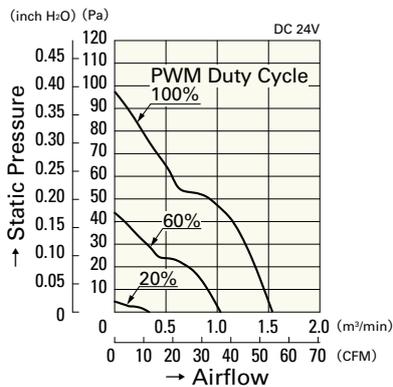
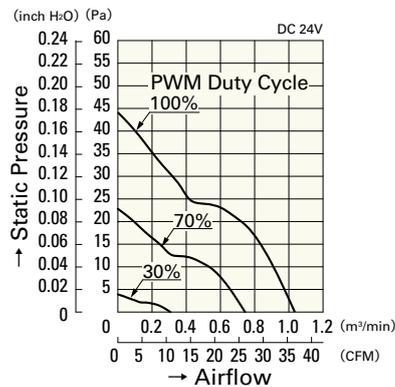


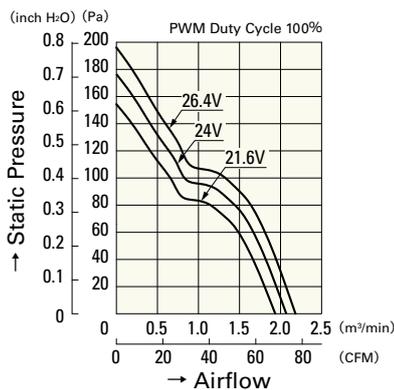
9WL0824P4J001



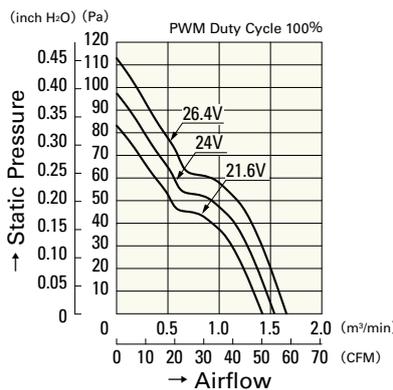
9WL0824P4G001



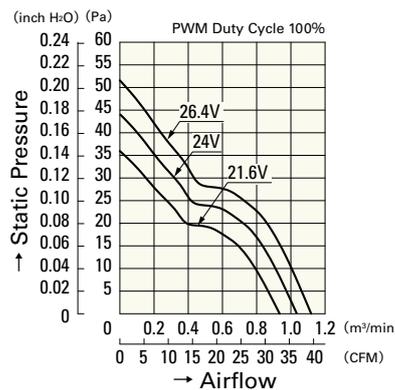
9WL0824P4H001



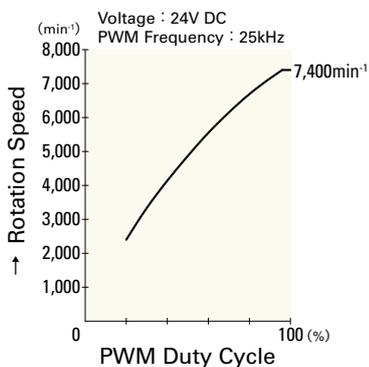
9WL0824P4J001



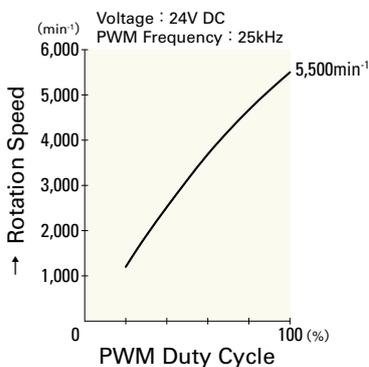
9WL0824P4G001



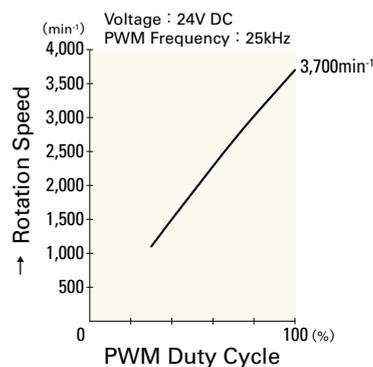
9WL0824P4H001



9WL0824P4J001



9WL0824P4G001



9WL0824P4H001

80 mm sq.

San Ace 80W



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

80×80×25mm (Mass : 130g) **IP 68** **9WP** type

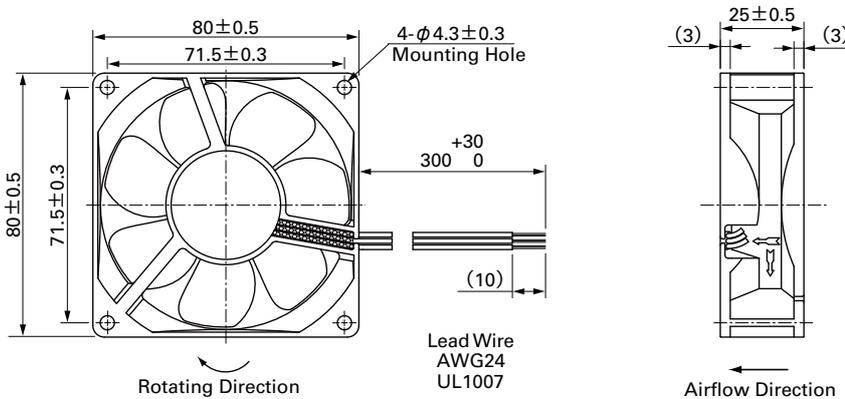
Specifications

The following nos. **have pulse sensors and ribs**. For ribless, append "1" to the model no.

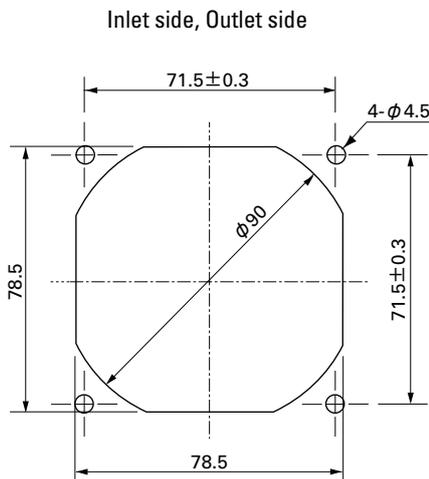
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WP0812G401	12	10.8 to 13.2	0.38	4.56	4,500	1.50 53	80.4 0.323	40	-20 to +60	40,000/60°C
9WP0812H401		10.2 to 13.8	0.13	1.56	2,900	1.03 36.4	35.3 0.142	29		60,000/60°C
9WP0824S401	24	20.4 to 27.6	0.1	2.4	3,400	1.20 42.4	48.0 0.193	34	-20 to +70	40,000/60°C
9WP0824H401			0.07	1.68	2,900	1.03 36.4	35.3 0.142	29		60,000/60°C
9WP0848S401	48	40.8 to 55.2	0.06	2.88	3,400	1.20 42.4	48.0 0.193	34		40,000/60°C

Models without sensors, or with lock sensors, or PWM control function are available as options. Please refer to the index (p. 482).

Dimensions (unit: mm) (With ribs)



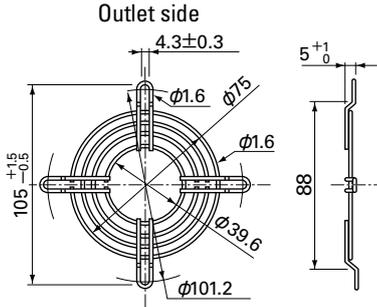
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

Finger Guards

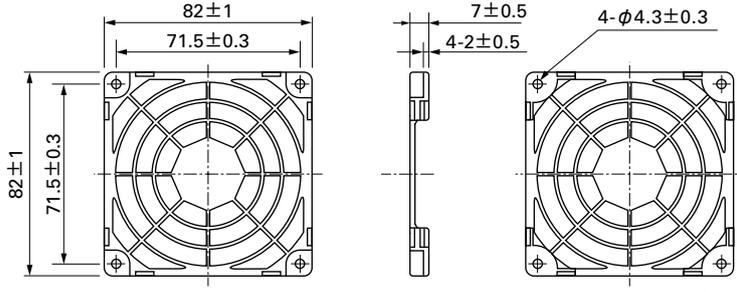
Model : 109-049C Surface treatment : Nickel-chrome plating (silver) Color : Silver



Mass : 17g

Resin Finger Guards

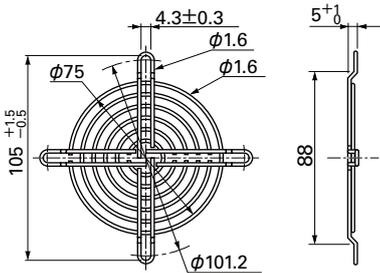
Model : 109-1002G



Mass : 10g

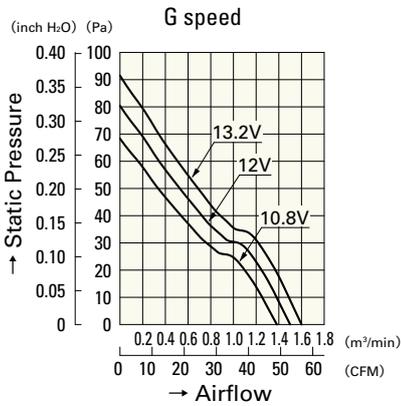
Model : 109-049E Surface treatment : Nickel-chrome plating (silver) Color : Silver
 : 109-049H : Cation electropainting (black)

Inlet side, Outlet side

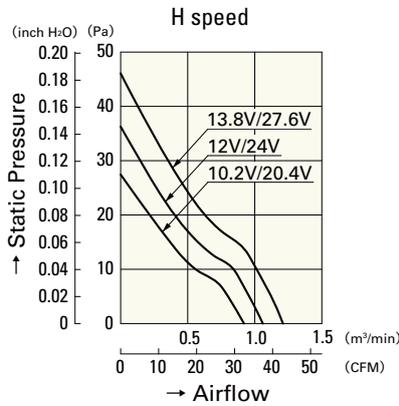


Mass : 21g

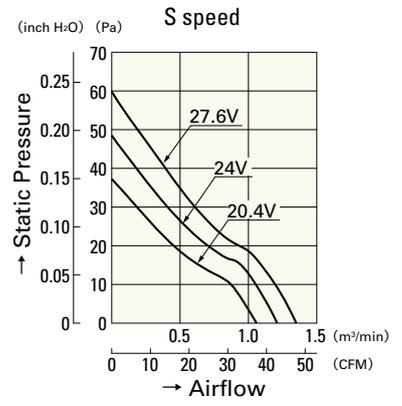
Airflow - Static Pressure Characteristics



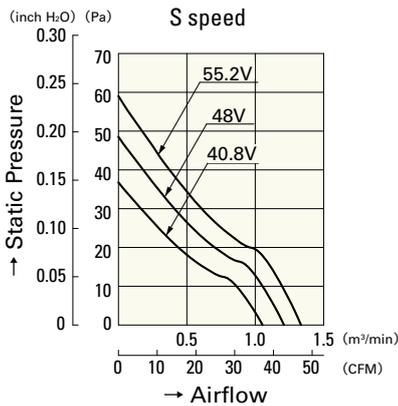
9WP0812G401



9WP0812H401
9WP0824H401



9WP0824S401



9WP0848S401

80mm sq.

San Ace 80WS



General Specifications

- Material..... Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

80×80×25mm (Mass : 120g) **IP 54** **9WS type**

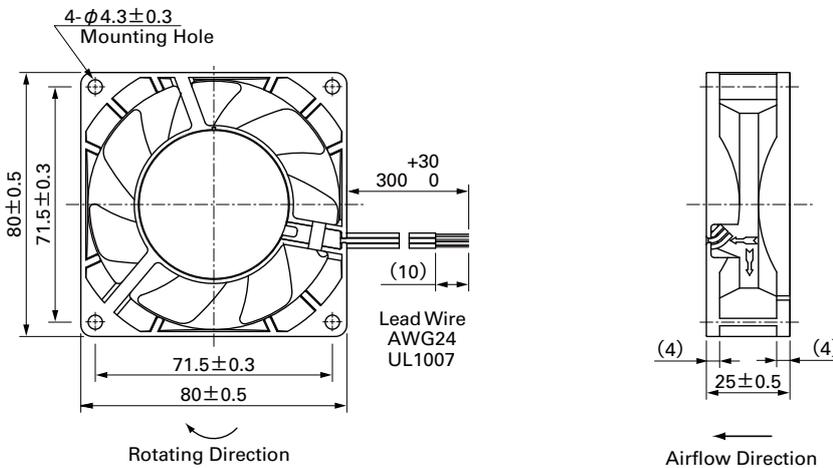
Specifications

The following nos. **have pulse sensors and ribs**. For ribless, append "1" to the model no.

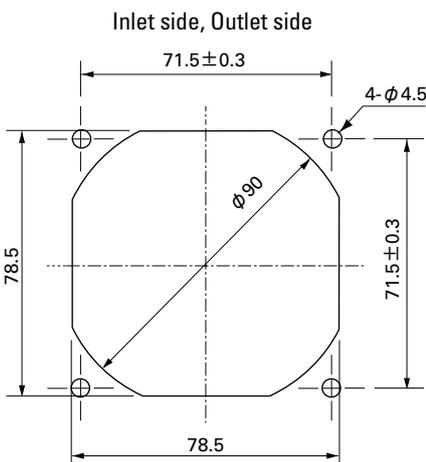
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]	
9WS0812H401	12	10.2 to 13.8	0.16	1.92	3,100	0.94	33.2	45.1	0.181	- 20 to + 70	40,000/60°C
9WS0812F401			0.13	1.56	2,700	0.83	29.3	34.3	0.138		
9WS0812M401			0.1	1.2	2,200	0.65	23.0	23.5	0.094		
9WS0824H401	24	20.4 to 27.6	0.09	2.16	3,100	0.94	33.2	45.1	0.181	- 20 to + 70	40,000/60°C
9WS0824F401			0.07	1.68	2,700	0.83	29.3	34.3	0.138		
9WS0824M401			0.05	1.2	2,200	0.65	23.0	23.5	0.094		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 482).

Dimensions (unit: mm) (With ribs)



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



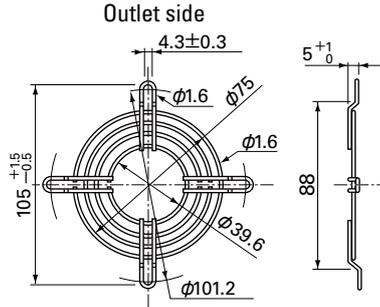
Options (unit: mm)

Finger Guards

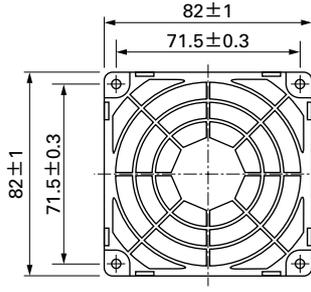
Model : 109-049C Surface treatment : Nickel-chrome plating (silver) Color

Resin Finger Guards

Model : 109-1002G

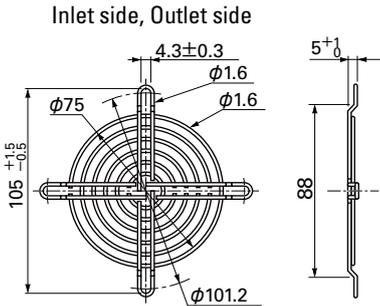


Mass : 17g



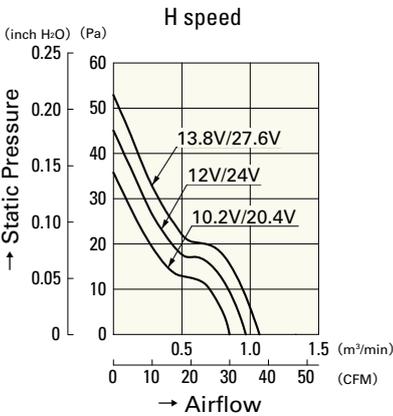
Mass : 10g

Model : 109-049E Surface treatment : Nickel-chrome plating (silver) Color
 : 109-049H : Cation electropainting (black)

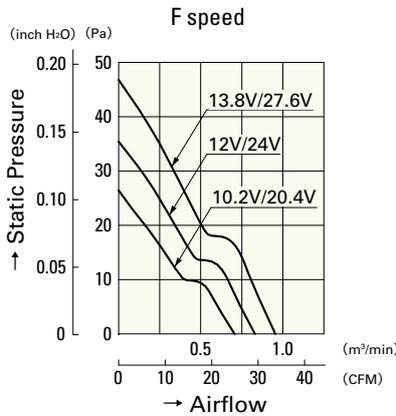


Mass : 21g

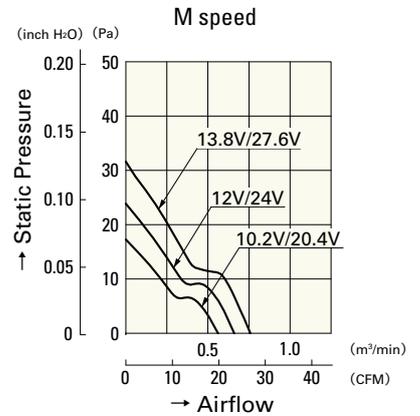
Airflow - Static Pressure Characteristics



9WS0812H401
9WS0824H401



9WS0812F401
9WS0824F401



9WS0812M401
9WS0824M401

80mm sq.

San Ace 80W



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10: Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

80×80×38mm (Mass : 235g) **IP 68** **9WV**type

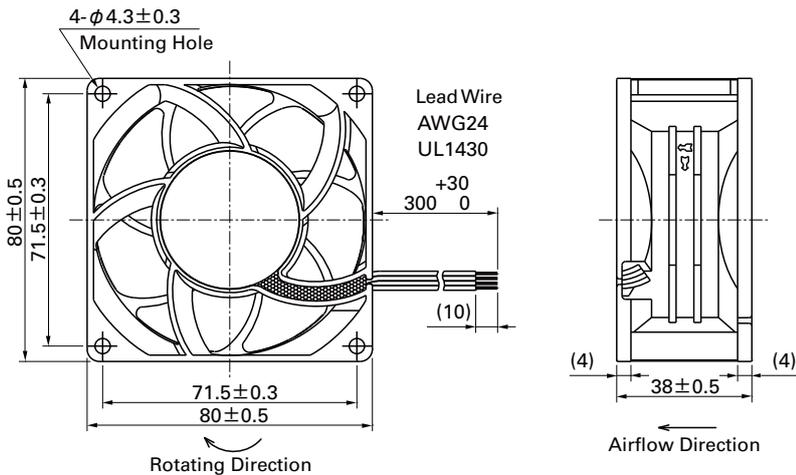
Specifications The following nos. **have PWM controls, pulse sensors, and ribs.** For ribless, append "1" to the model no.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle* [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life ^{nom} [h]
9WV0812P1M001	12	10.2 to 13.8	100	0.75	9	6,000	2.29 80.9	169 0.68	51	-20 to +70	40,000/60°C (70,000/40°C)
			0	0.09	1.08	1,700	0.65 23	13.6 0.05	19		
9WV0848P1H001	48	40.8 to 52.8	100	0.75	36	9,700	3.7 131	440 1.77	63	-20 to +70	40,000/60°C (70,000/40°C)
			0	0.15	7.2	4,500	1.72 60.7	94.7 0.38	43		

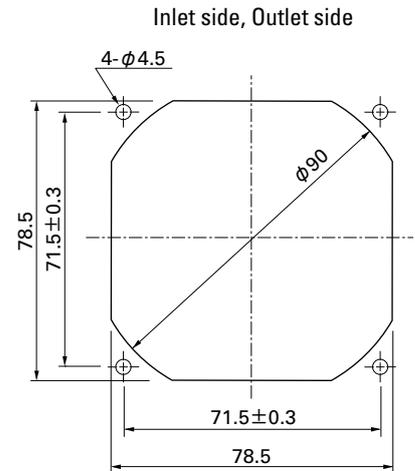
Note: Expected life at 40°C ambient is just reference value.

※PWM Frequency : 25kHz

Dimensions (unit: mm) (With ribs)



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

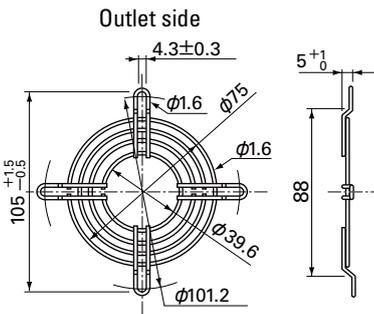


Options (unit: mm)

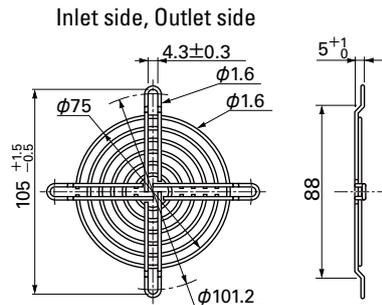
Finger Guards

Model : 109-049C Surface treatment : Nickel-chrome plating (silver) Color

Model : 109-049E Surface treatment : Nickel-chrome plating (silver) Color
: 109-049H : Cation electropainting (black)



Mass : 17g

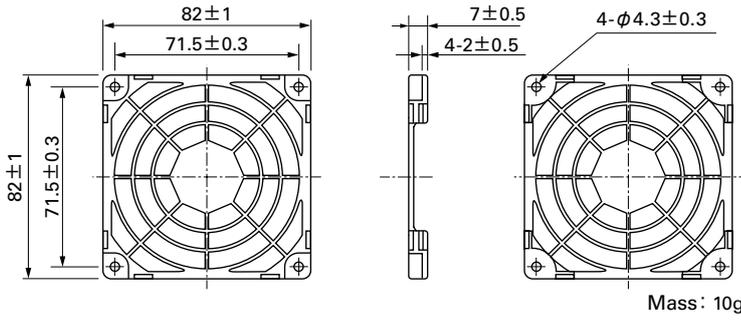


Mass : 21g

Options (unit: mm)

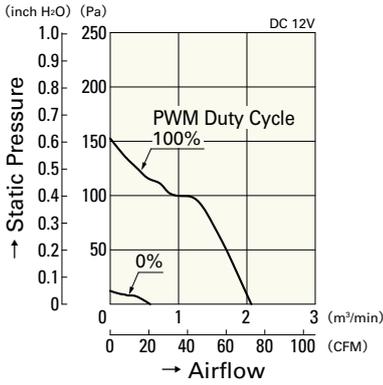
Resin Finger Guards

Model : 109-1002G

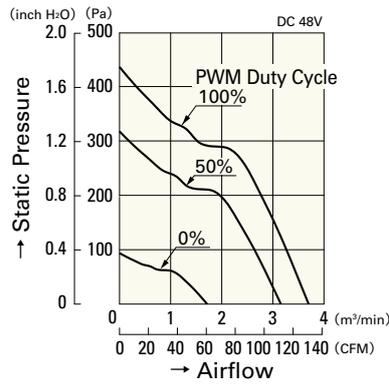


Airflow - Static Pressure Characteristics

PWM Duty Cycle

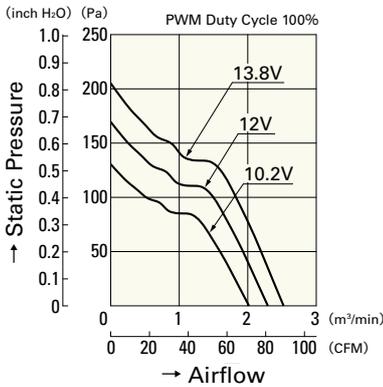


9WV0812P1M001

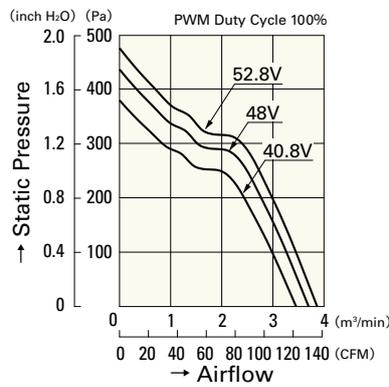


9WV0848P1H001

Operating Voltage Range

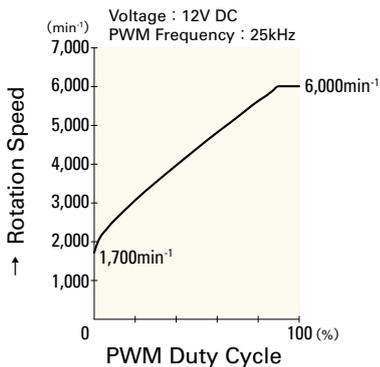


9WV0812P1M001

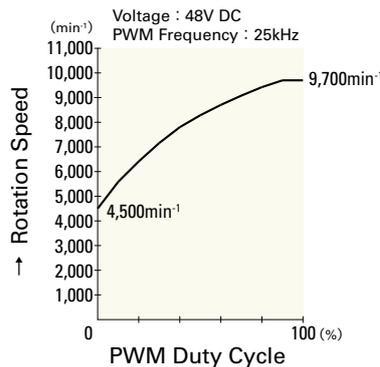


9WV0848P1H001

PWM Duty - Speed Characteristics Example



9WV0812P1M001



9WV0848P1H001

92mm sq.

San Ace 92W



General 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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

92×92×25mm (Mass : 170g)

IP 68

9WL type

High Airflow Long Life Fan



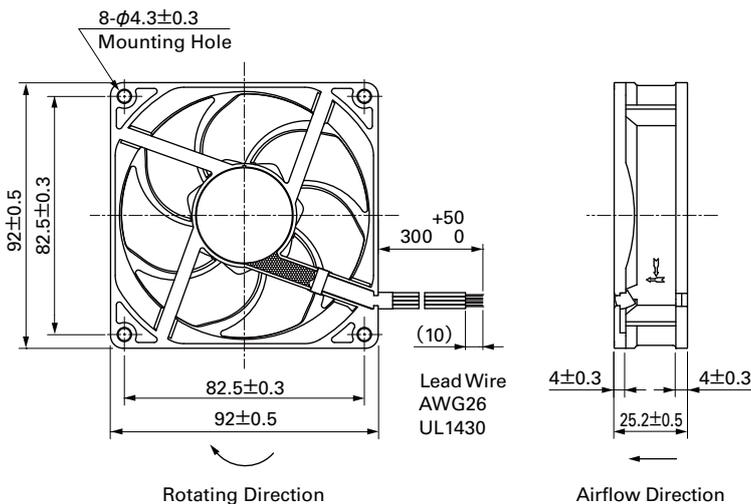
Specifications The following nos. have PWM controls and pulse sensors.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^(Note 1) [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature Range [°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	180,000/60°C		
			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				

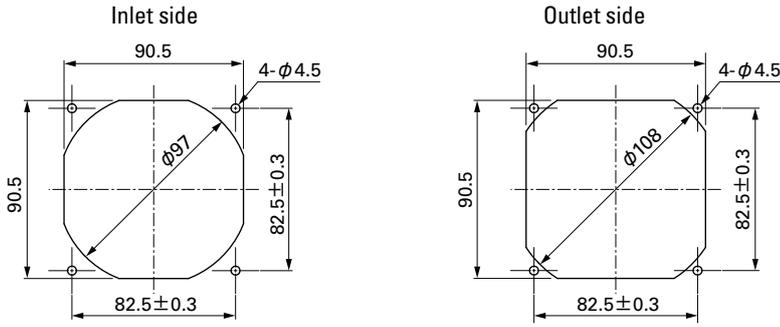
Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



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

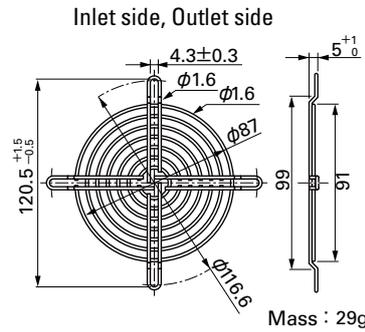
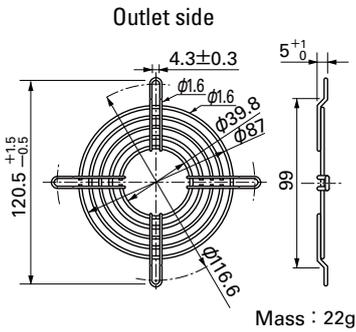


Options (unit: mm)

Finger Guards

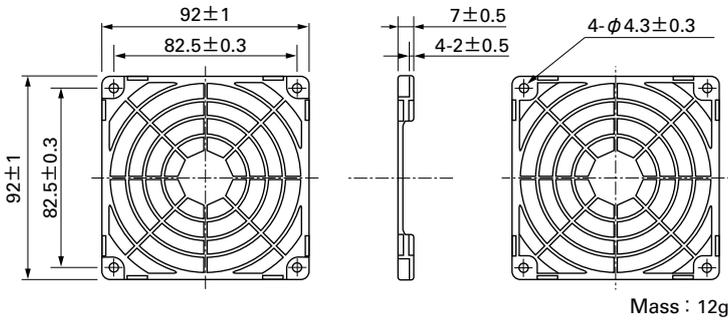
Model : 109-099C Color Surface treatment : Nickel-chrome plating (silver)

Model : 109-099E Color Surface treatment : Nickel-chrome plating (silver)
: 109-099H Color Surface treatment : Cation electropainting (black)



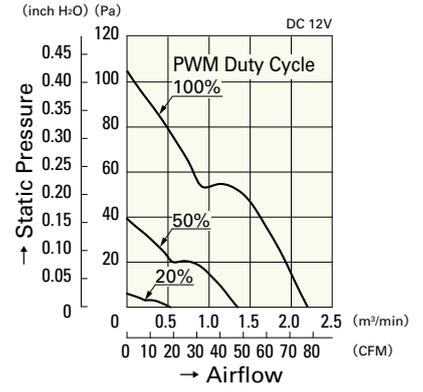
Resin Finger Guards

Model : 109-1001G



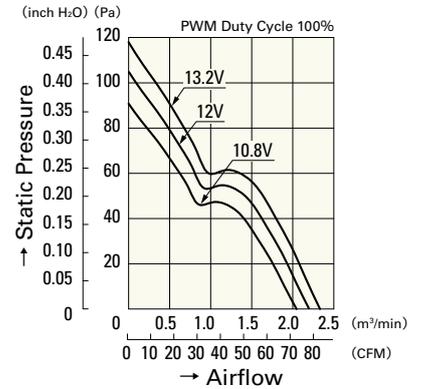
Airflow - Static Pressure Characteristics

PWM Duty Cycle



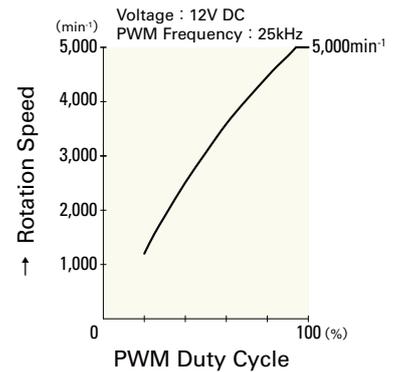
9WL0912P4J001

Operating Voltage Range



9WL0912P4J001

PWM Duty - Speed Characteristics Example



9WL0912P4J001

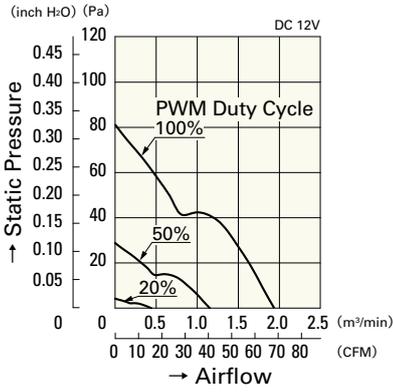
92mm sq.

San Ace 92W

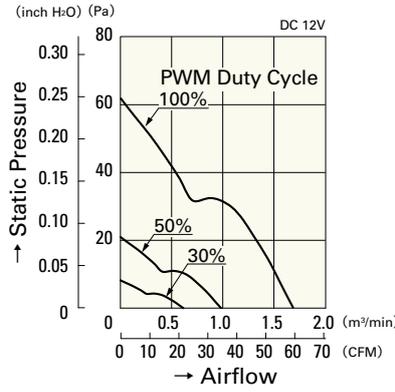
92×92×25mm [Mass : 170g]

Airflow - Static Pressure Characteristics

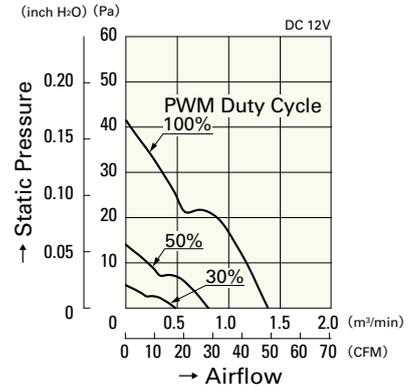
PWM Duty Cycle



9WL0912P4G001

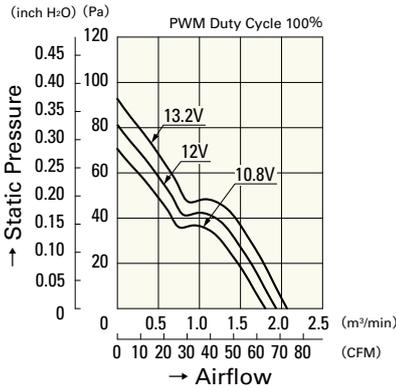


9WL0912P4S001

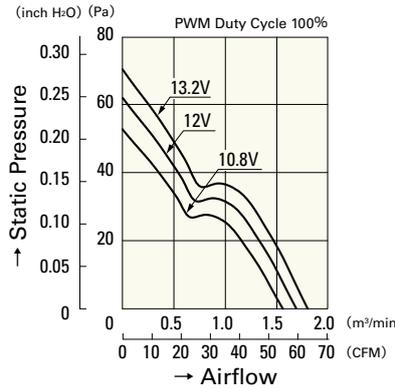


9WL0912P4H001

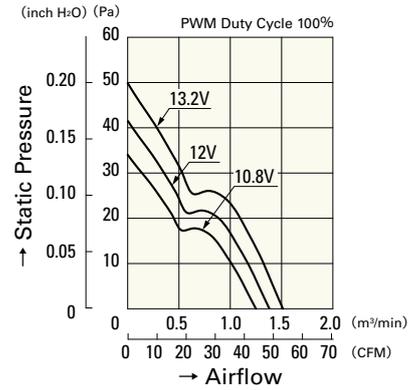
Operating Voltage Range



9WL0912P4G001

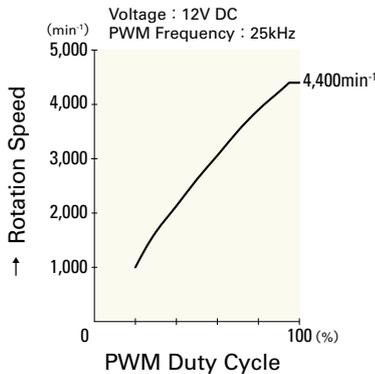


9WL0912P4S001

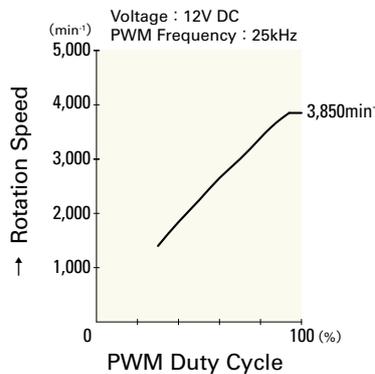


9WL0912P4H001

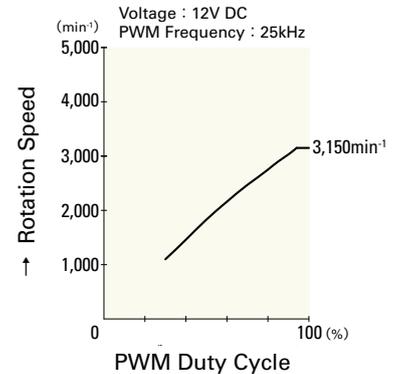
PWM Duty - Speed Characteristics Example



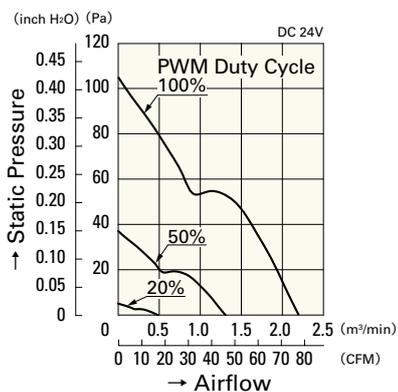
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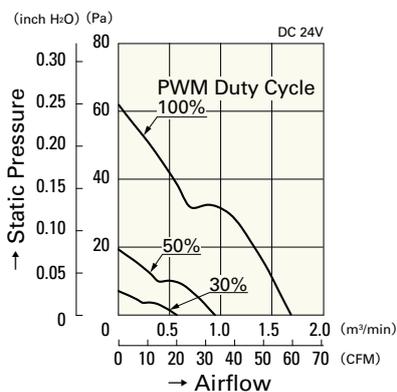
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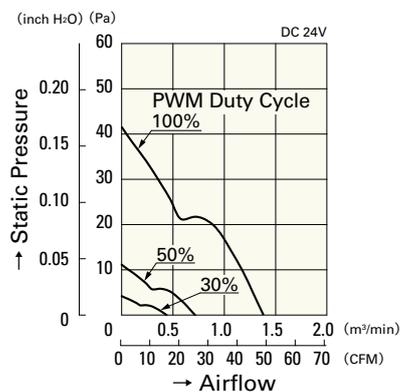
9WL0912P4H001



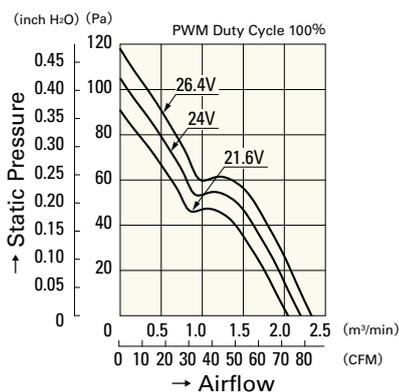
9WL0924P4J001



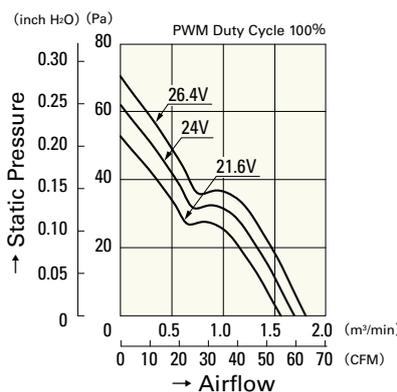
9WL0924P4S001



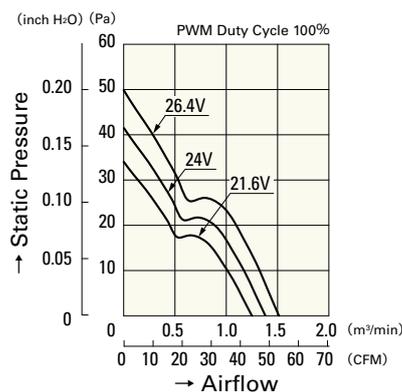
9WL0924P4H001



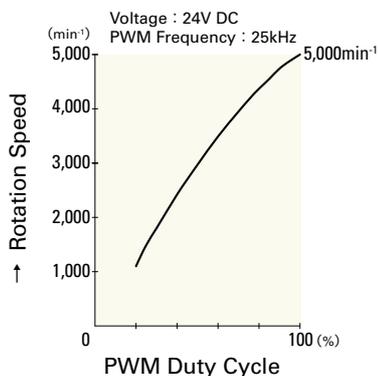
9WL0924P4J001



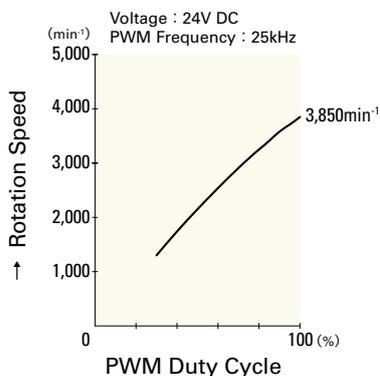
9WL0924P4S001



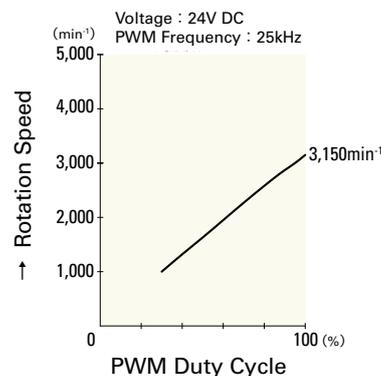
9WL0924P4H001



9WL0924P4J001



9WL0924P4S001



9WL0924P4H001

92mm sq.

San Ace 92WS



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

92×92×25mm (Mass : 150g) **IP 54** **9WS** type

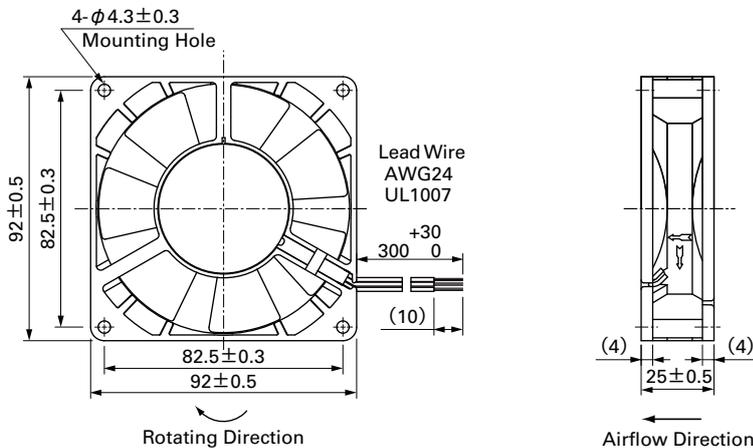
Specifications

The following nos. have pulse sensors and ribs.

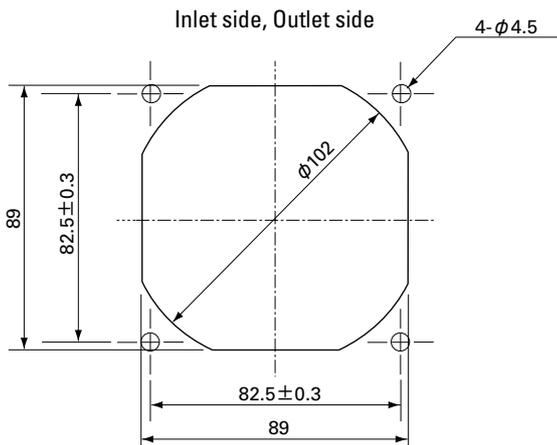
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WS0912H401	12	10.2 to 13.8	0.17	2.04	2,850	1.38 48.7	45.1 0.181	33	- 20 to + 70	40,000/60°C
9WS0912F401			0.13	1.56	2,450	1.18 41.7	32.3 0.130	30		
9WS0912M401			0.1	1.2	2,100	1.01 35.7	23.5 0.094	27		
9WS0912L401			0.06	0.72	1,700	0.8 28.2	16.7 0.067	23		
9WS0924H401	24	20.4 to 27.6	0.1	2.4	2,850	1.38 48.7	45.1 0.181	33		
9WS0924F401			0.07	1.68	2,450	1.18 41.7	32.3 0.130	30		
9WS0924M401			0.06	1.44	2,100	1.01 35.7	23.5 0.094	27		
9WS0924L401			0.05	1.2	1,700	0.8 28.2	16.7 0.067	23		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 482).

Dimensions (unit: mm)



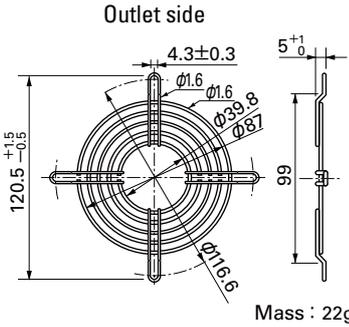
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

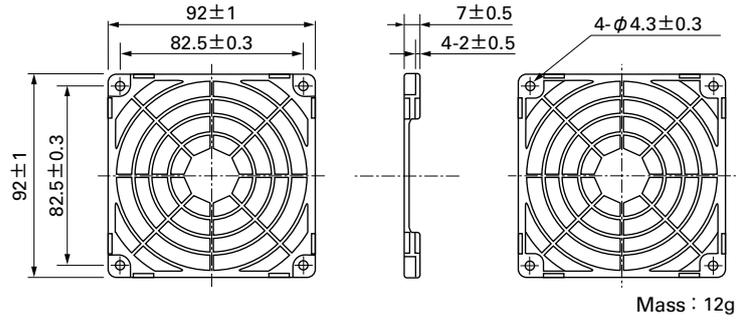
Finger Guards

Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)



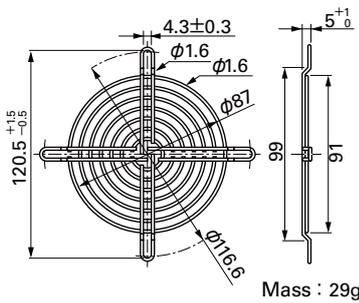
Resin Finger Guards

Model : 109-1001G

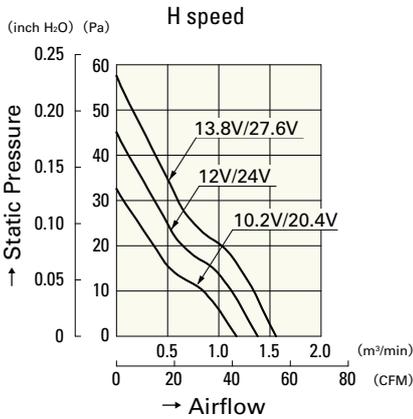


Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)
: 109-099H : Cation electropainting (black)

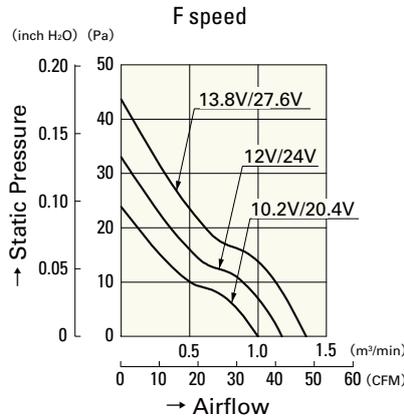
Inlet side, Outlet side



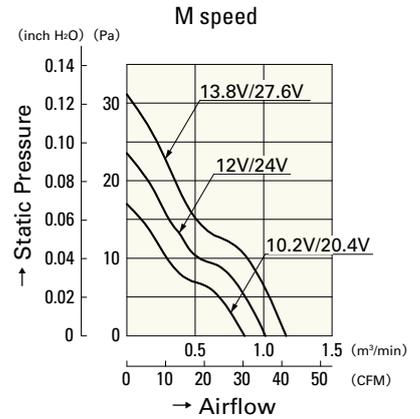
Airflow - Static Pressure Characteristics



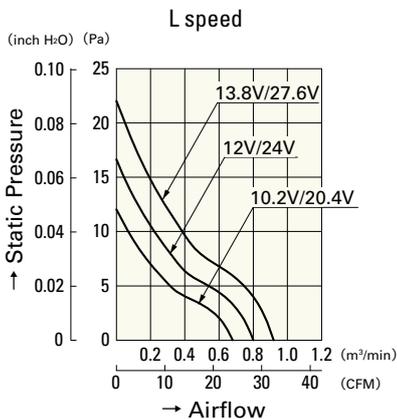
9WS0912H401
9WS0924H401



9WS0912F401
9WS0924F401



9WS0912M401
9WS0924M401



9WS0912L401
9WS0924L401

92mm sq.

San Ace 92W



Model no. 9WP0912S401, 9WP0912F401, 9WP0924S401 are not certified.

General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-0)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

92×92×25mm (Mass : 120g) **IP 68** **9WP** type

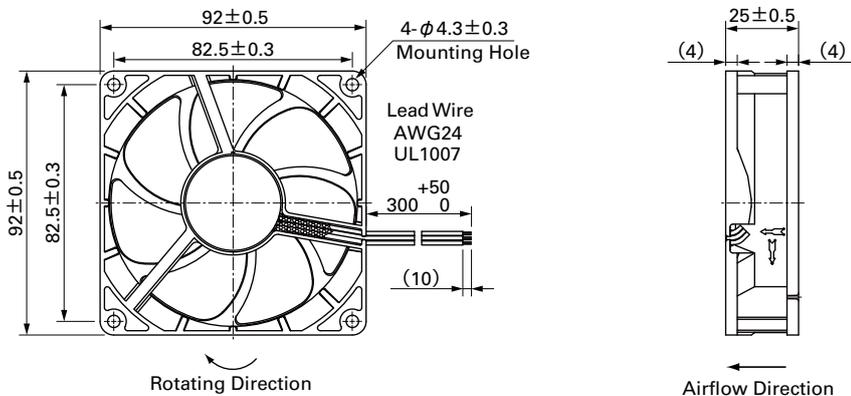
Specifications

The following nos. have pulse sensors and ribs.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WP0912S401	12	6 to 13.8	0.27	3.24	3,550	1.66 58.6	56.1 0.225	39	-20 to +70	40,000/60°C
9WP0912F401			0.14	1.68	2,650	1.24 43.8	32.2 0.129	30		
9WP0924G401	24	12 to 27.6	0.19	4.56	3,900	1.76 62.2	66.5 0.267	43		
9WP0924S401			0.15	3.6	3,550	1.66 58.6	56.1 0.225	39		
9WP0924H401			0.1	2.4	3,150	1.45 51.2	44 0.177	33		
9WP0924F401			0.08	1.92	2,650	1.24 43.8	32.2 0.129	30		
9WP0924B401			0.05	1.20	2,000	0.90 31.8	18.0 0.072	23	-10 to +70	

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 482).

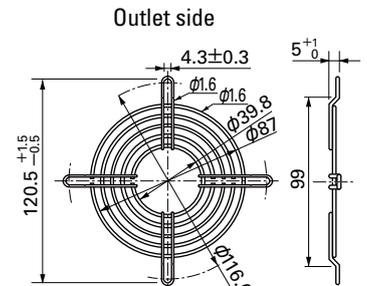
Dimensions (unit: mm)



Options (unit: mm)

Finger Guards

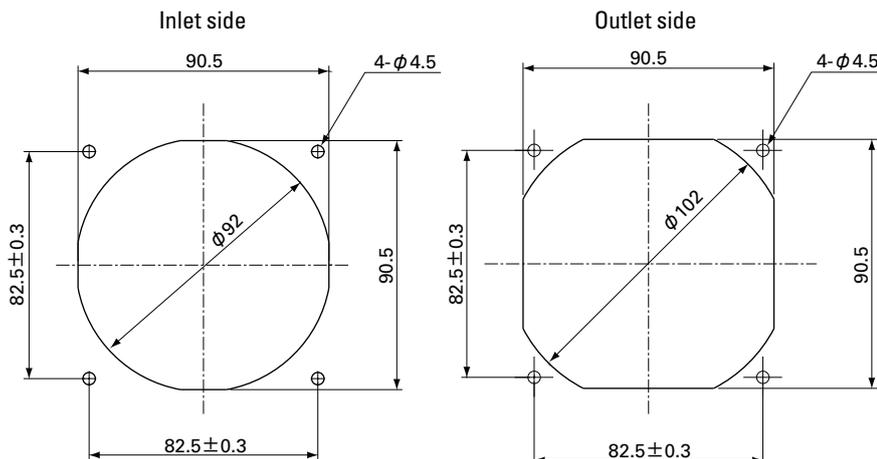
Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)



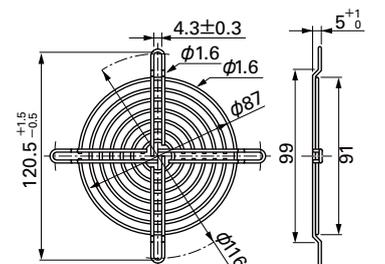
Mass : 22g

Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)
: 109-099H : Cation electroplating (black)

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



Inlet side, Outlet side

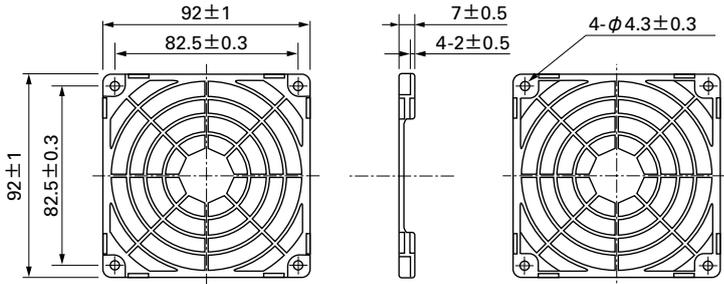


Mass : 29g

Options (unit: mm)

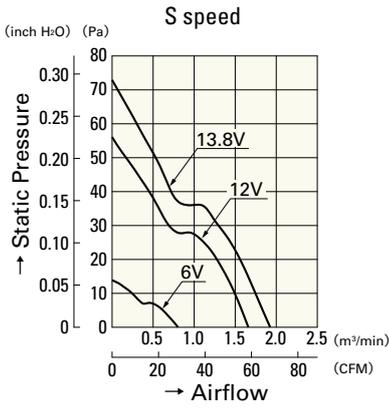
Resin Finger Guards

Model : 109-1001G

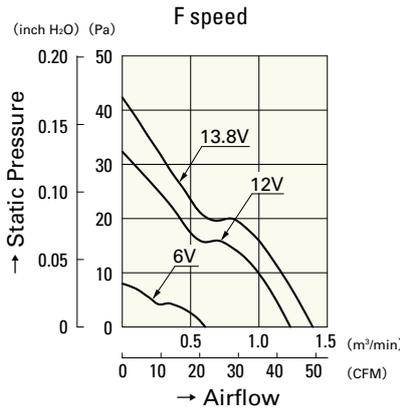


Mass : 12g

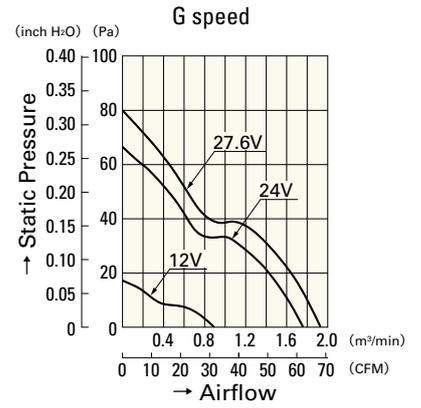
Airflow - Static Pressure Characteristics



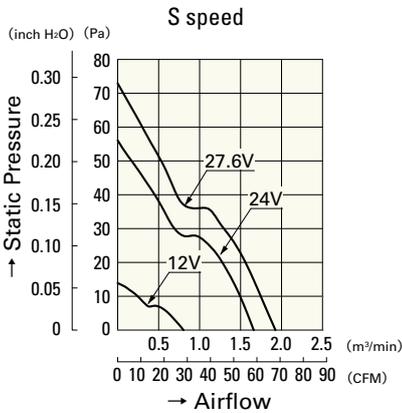
9WP0912S401



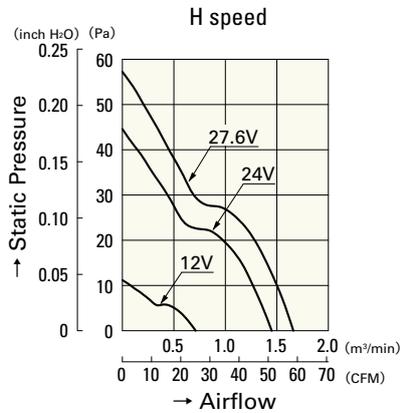
9WP0912F401



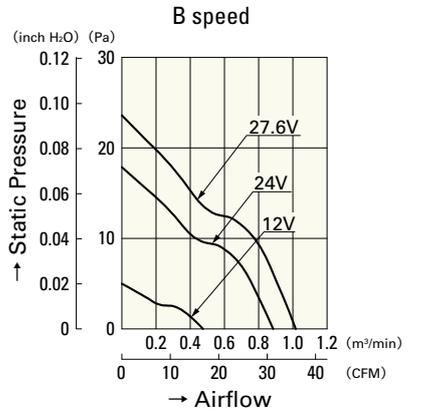
9WP0924G401



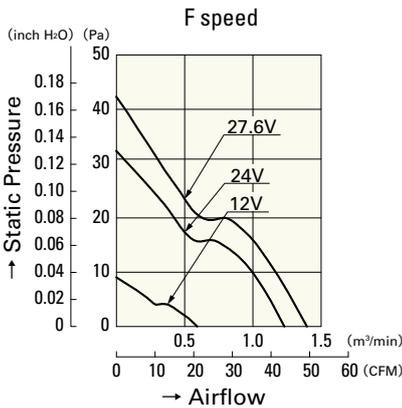
9WP0924S401



9WP0924H401



9WP0924B401



9WP0924F401

92mm sq.

San Ace 92W



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10: Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

92×92×38mm (Mass : 265g) **IP 68** **9WV** type

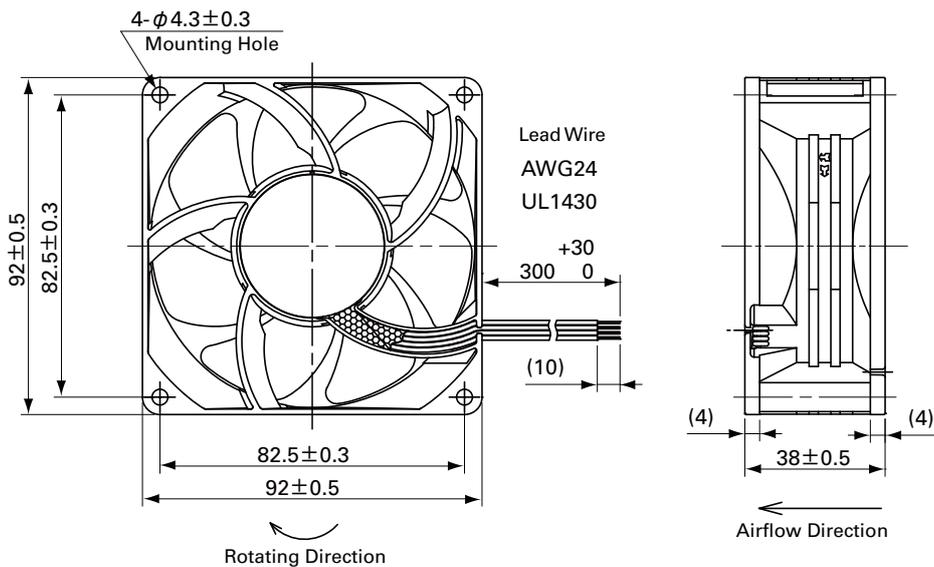
Specifications

The following nos. have PWM controls, pulse sensors, and ribs.

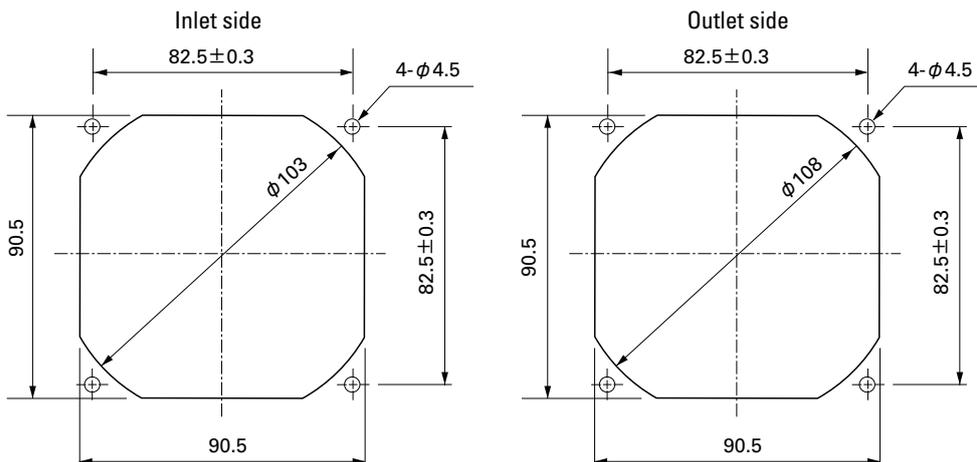
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle* [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WV0948P1H001	48	40.8 to 52.8	100 0	0.82 0.14	39.4 6.7	8,500 4,000	5.05 178 2.37 83.7	385 1.55 85.2 0.34	64 45	-20 to +70	30,000/60°C

*PWM Frequency : 25kHz

Dimensions (unit: mm)



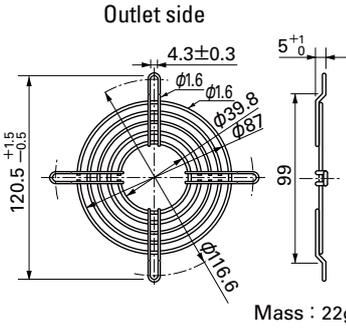
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

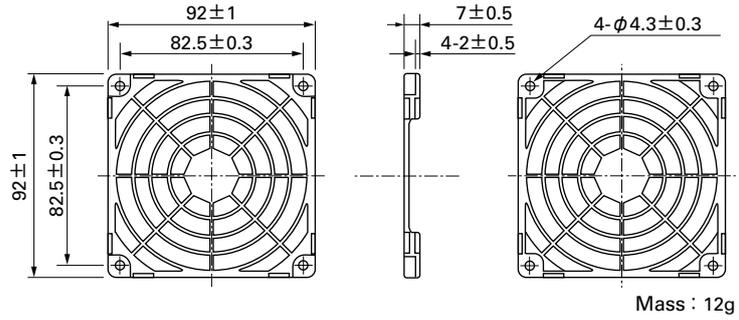
Finger Guards

Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)



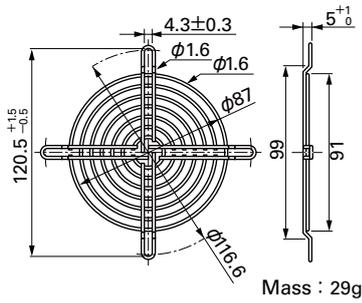
Resin Finger Guards

Model : 109-1001G



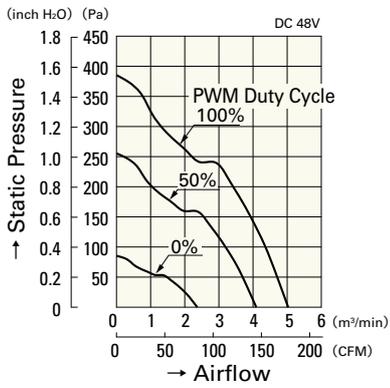
Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)
 : 109-099H : Cation electropainting (black)

Inlet side, Outlet side



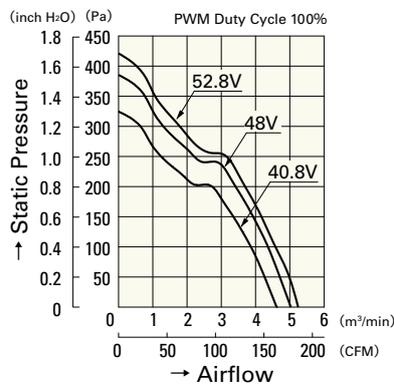
Airflow - Static Pressure Characteristics

PWM Duty Cycle



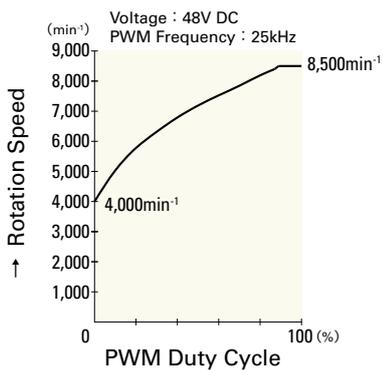
9WV0948P1H001

Operating Voltage Range



9WV0948P1H001

PWM Duty - Speed Characteristics Example



9WV0948P1H001

120mm sq.

San Ace 120W



General Specifications

- Material Frame: Aluminum,
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10: Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

120×120×38mm (Mass : 440g) **IP 68** **9WV type**

Specifications The following nos. have PWM controls and pulse sensors.

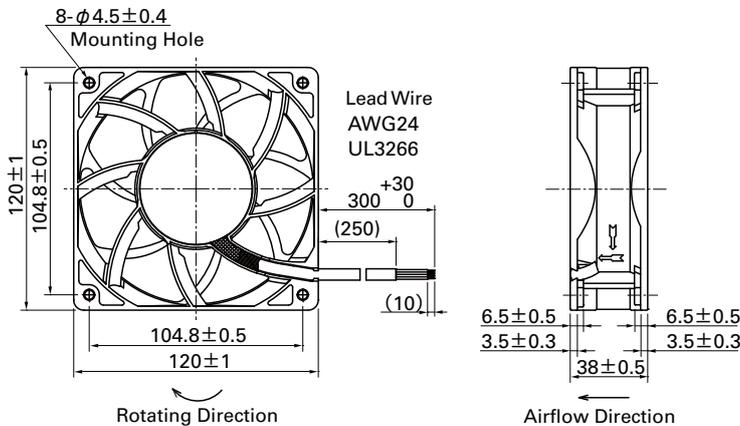
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle* [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WV1212P1J001	12	10.2 to 13.8	100 0	3 0.2	36 2.4	6,400 1,500	6.35 224.0 1.49 52.6	360 1.45 19.8 0.080	64 33	-20 to +70	60,000/60°C
9WV1224P1J601	24	20.4 to 27.6	100 0	1.5 0.12	36 2.88	6,400 1,500	6.35 224.0 1.49 52.6	360 1.450 26.1 0.105	64 33		
9WV1224P1H001 ^(Note)			100	0.80	19.2	5,200	5.16 182	237 0.95	58		
9WV1248P1J001	48	40.8 to 55.2	100 0	0.65 0.06	31.2 2.88	6,400 1,500	6.35 224.0 1.49 52.6	360 1.45 26.1 0.105	64 33		

Note: Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Models without sensors, or with pulse sensors (no PWM control function), or lock sensors are available as options. Please refer to the index (p. 483).

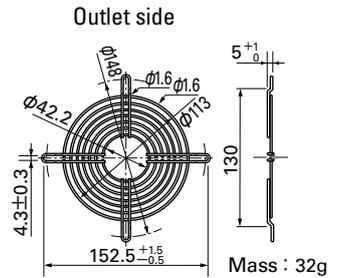
Dimensions (unit: mm)



Options (unit: mm)

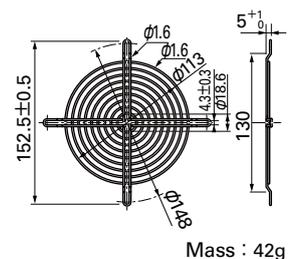
Finger Guards

Model : 109-019C Surface treatment : Nickel-chrome plating (silver)
: 109-019H : Cation electropainting (black)

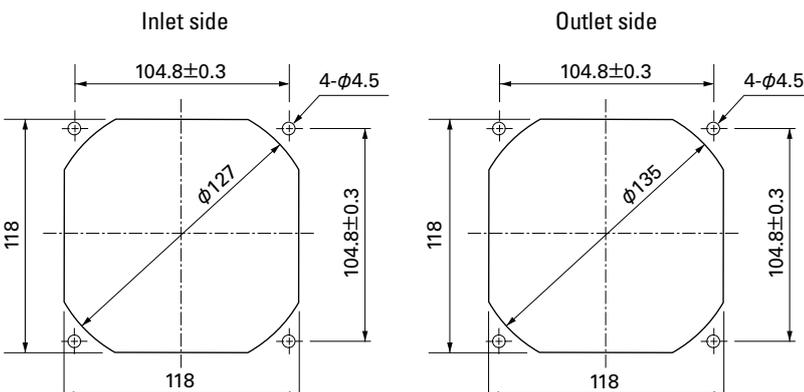


Model : 109-019E Surface treatment : Nickel-chrome plating (silver)
: 109-019K : Cation electropainting (black)

Inlet side, Outlet side



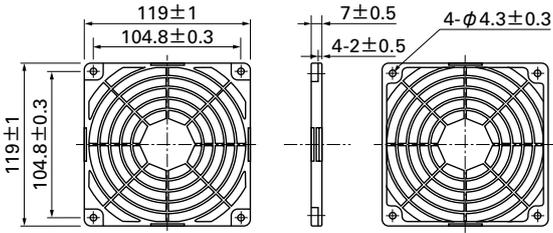
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

Resin Finger Guards

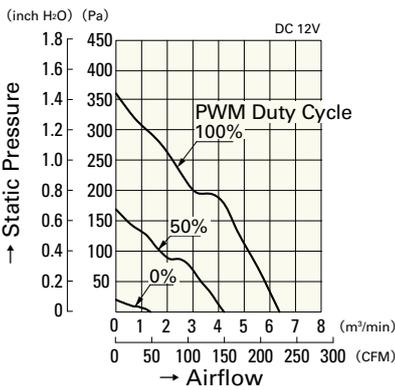
Model : 109-1000G



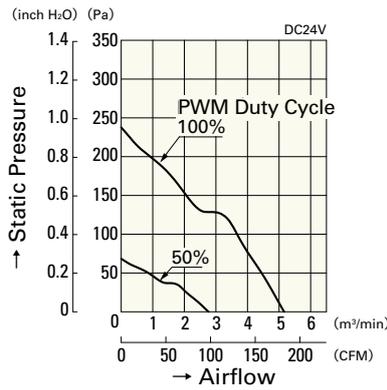
Mass : 23g

Airflow - Static Pressure Characteristics

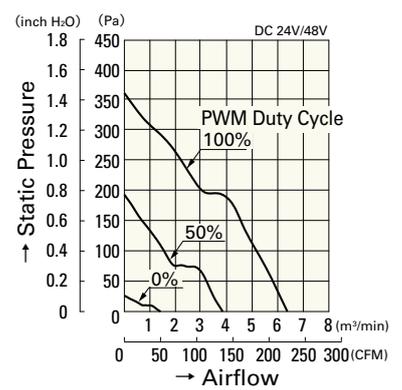
PWM Duty Cycle



9WV1212P1J001

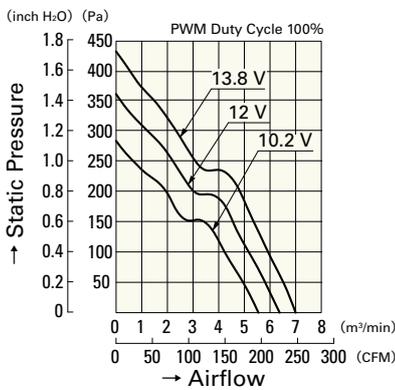


9WV1224P1H001

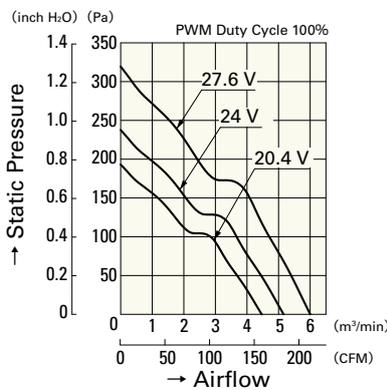


9WV1224P1J601
9WV1248P1J001

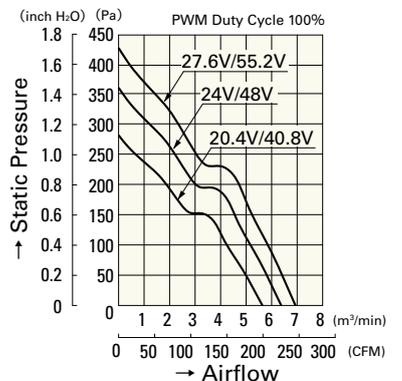
Operating Voltage Range



9WV1212P1J001

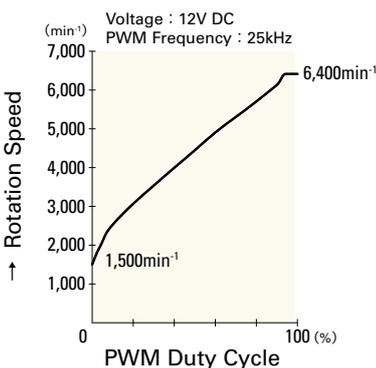


9WV1224P1H001

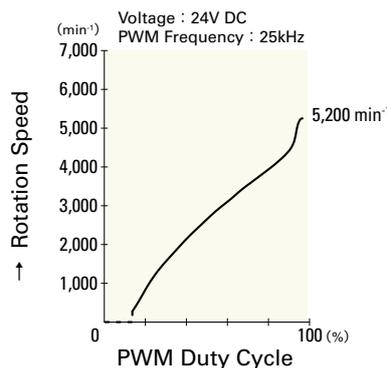


9WV1224P1J601
9WV1248P1J001

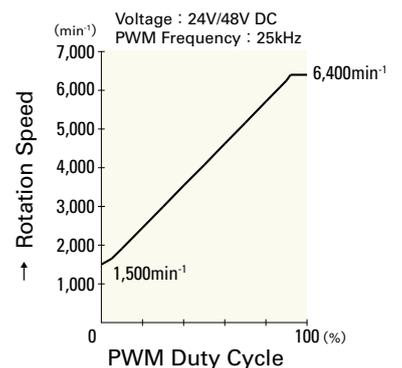
PWM Duty - Speed Characteristics Example



9WV1212P1J001



9WV1224P1H001



9WV1224P1J601
9WV1248P1J001

120mm sq.

San Ace 120W



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

120×120×38mm (Mass : 360g) **IP 68** **9WP** type

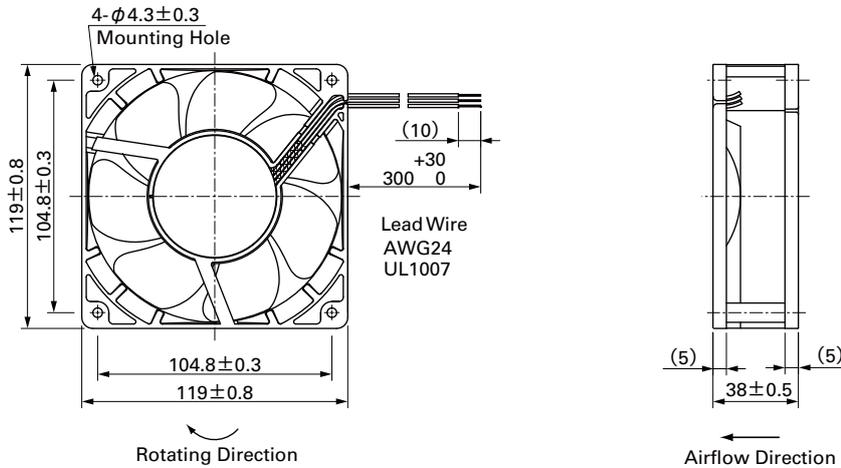
Specifications

The following nos. **have pulse sensors and ribs.** For ribless, append "1" to the model no.

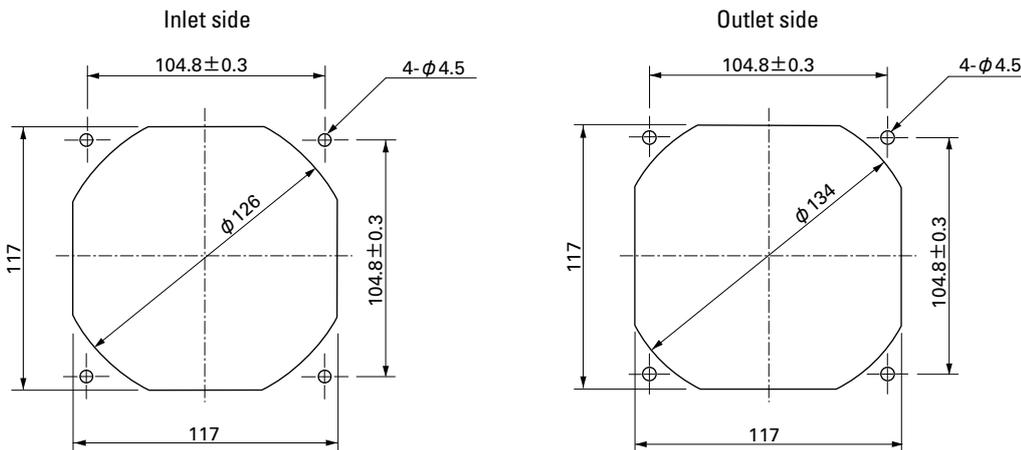
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WP1212H101	12	7.0 to 13.8	0.38	4.56	2,600	2.80 99	70.4 0.283	39	- 20 to + 70	40,000/60°C
9WP1224H101	24	14.0 to 27.6	0.22	5.28	2,600	2.80 99	70.4 0.283	39		
9WP1248H101	48	40.8 to 55.2	0.11	5.28	2,600	2.80 99	70.4 0.283	39		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 482).

Dimensions (unit: mm) (With ribs)



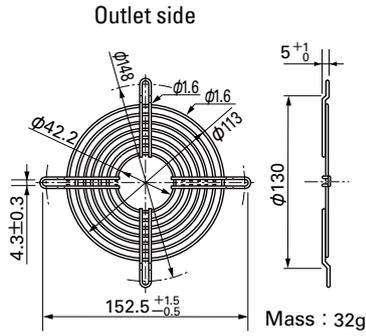
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

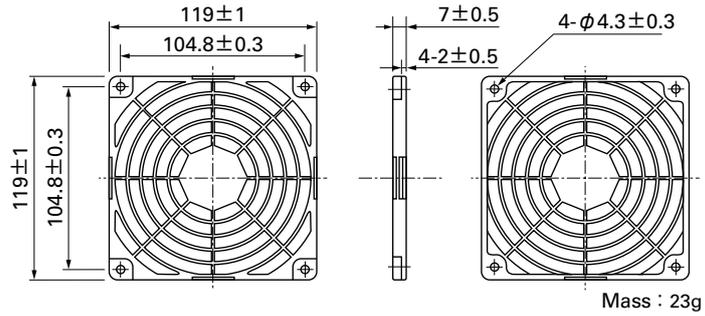
Finger Guards

Model : 109-019C Surface treatment : Nickel-chrome plating (silver) Color (silver)
 : 109-019H : Cation electropainting (black)



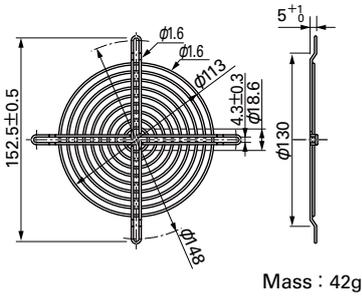
Resin Finger Guards

Model : 109-1000G

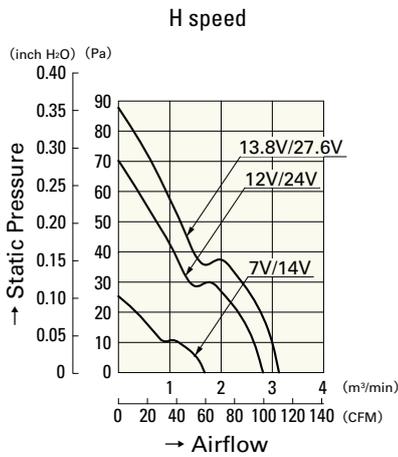


Model : 109-019E Surface treatment : Nickel-chrome plating (silver) Color (silver)
 : 109-019K : Cation electropainting (black)

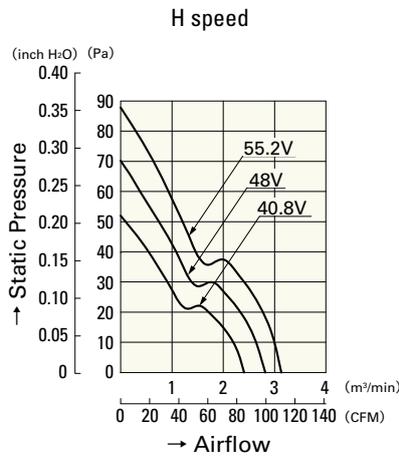
Inlet side, Outlet side



Airflow - Static Pressure Characteristics



9WP1212H101
9WP1224H101



9WP1248H101

120mm sq.

San Ace 120W



General Specifications

- Material Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

120×120×38mm [Mass : 410g] **IP 55** **9WG type**

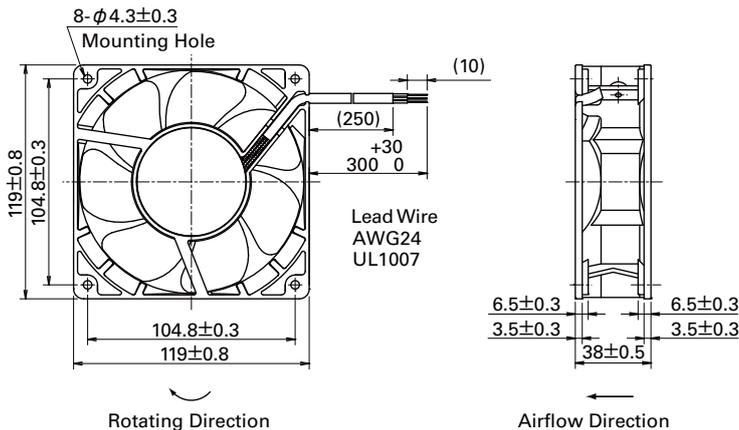
Specifications

The following nos. have pulse sensors.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]	
9WG1212G101-E	12	10.2 to 13.8	0.98	11.76	3,600	3.88 137	135 0.542	49	- 20 to + 70	80,000/60°C	
9WG1212E101-E			0.61	7.32	3,100	3.34 118	100 0.402	46		100,000/60°C	
9WG1212H101-E		7 to 13.8	0.38	4.56	2,600	2.80 99	70.4 0.283	39		80,000/60°C	
9WG1212F101-E			0.28	3.36	2,280	2.45 87	54.2 0.218	36		100,000/60°C	
9WG1212M101-E			0.21	2.52	1,950	2.10 74	39.6 0.159	32		80,000/60°C	
9WG1224G101-E	24	20.4 to 27.6	0.50	12	3,600	3.88 137	135 0.542	49		- 20 to + 70	80,000/60°C
9WG1224E101-E			0.34	8.16	3,100	3.34 118	100 0.402	46			100,000/60°C
9WG1224H101-E		14 to 27.6	0.22	5.28	2,600	2.80 99	70.4 0.283	39			80,000/60°C
9WG1224F101-E			0.16	3.84	2,280	2.45 87	54.2 0.218	36			100,000/60°C
9WG1224M101-E			0.11	2.64	1,950	2.10 74	39.6 0.159	32			80,000/60°C
9WG1248G101-E	48	40.8 to 55.2	0.25	12	3,600	3.88 137	135 0.542	49	- 20 to + 70		80,000/60°C
9WG1248E101-E			0.17	8.16	3,100	3.34 118	100 0.402	46			100,000/60°C
9WG1248H101-E			0.11	5.28	2,600	2.80 99	70.4 0.283	39			80,000/60°C
9WG1248F101-E			0.09	4.32	2,280	2.45 87	54.2 0.218	36			100,000/60°C
9WG1248M101-E			0.07	3.36	1,950	2.10 74	39.6 0.159	32			80,000/60°C

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 481).

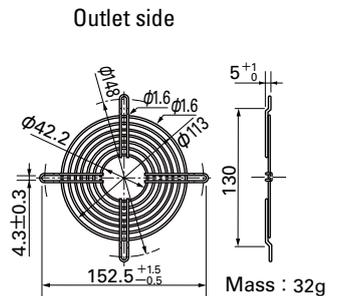
Dimensions (unit: mm)



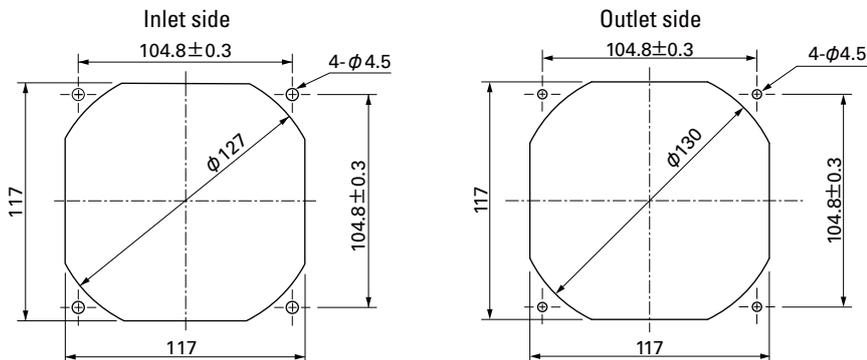
Options (unit: mm)

Finger Guards

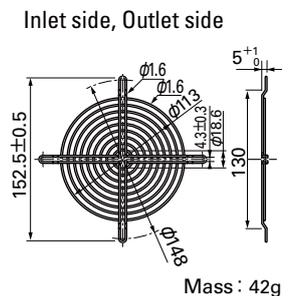
Model : 109-019C Surface treatment : Nickel-chrome plating (silver) Color (silver)
 : 109-019H : Cation electropainting (black)



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



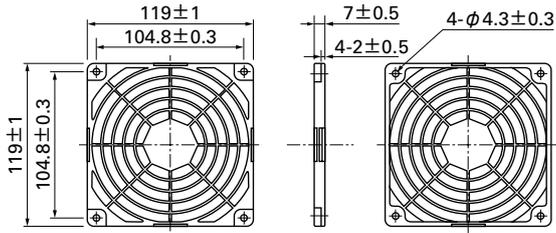
Model : 109-019E Surface treatment : Nickel-chrome plating (silver) Color (silver)
 : 109-019K : Cation electropainting (black)



Options (unit: mm)

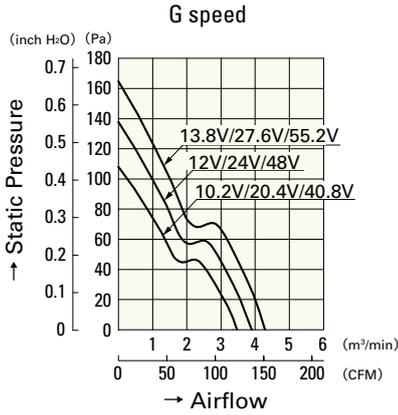
Resin Finger Guards

Model : 109-1000G

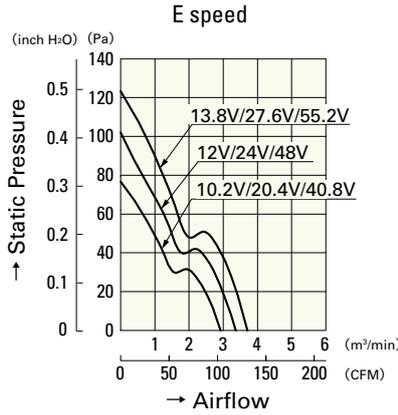


Mass : 23g

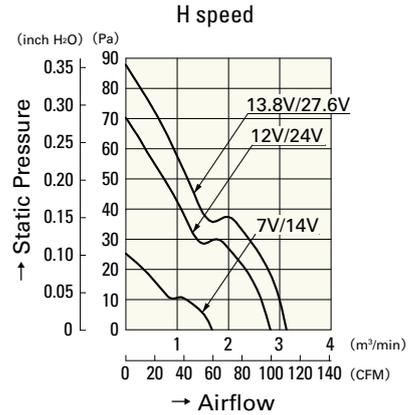
Airflow - Static Pressure Characteristics



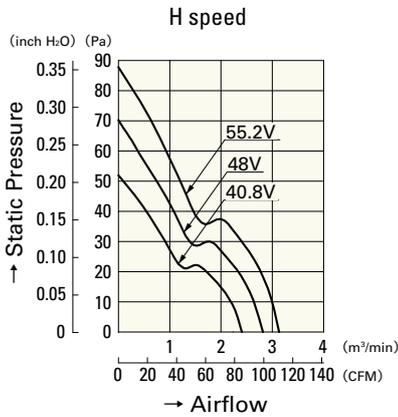
9WG1212G101-E
9WG1224G101-E
9WG1248G101-E



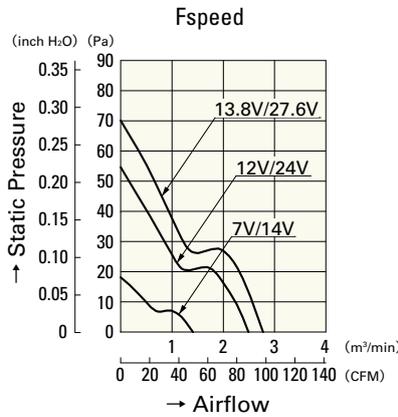
9WG1212E101-E
9WG1224E101-E
9WG1248E101-E



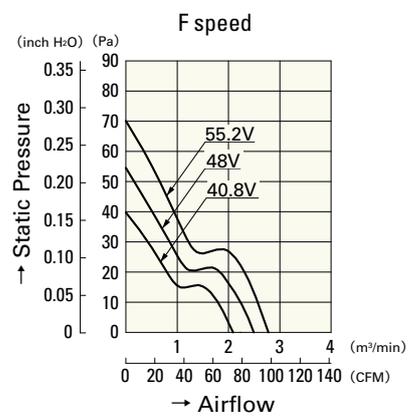
9WG1212H101-E
9WG1224H101-E



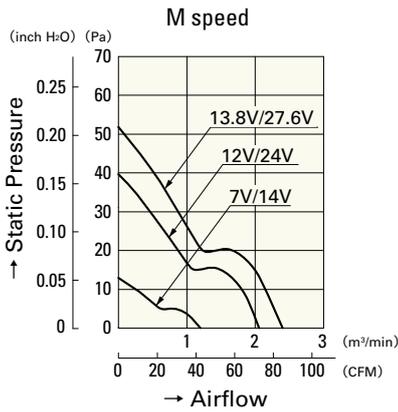
9WG1248H101-E



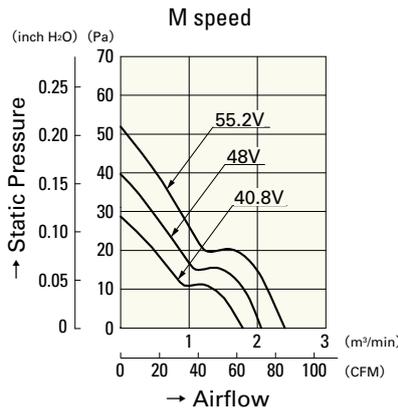
9WG1212F101-E
9WG1224F101-E



9WG1248F101-E



9WG1212M101-E
9WG1224M101-E



9WG1248M101-E

120mm sq.

San Ace 120WS



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

120×120×38mm (Mass : 260g) **IP 54** **9WS type**

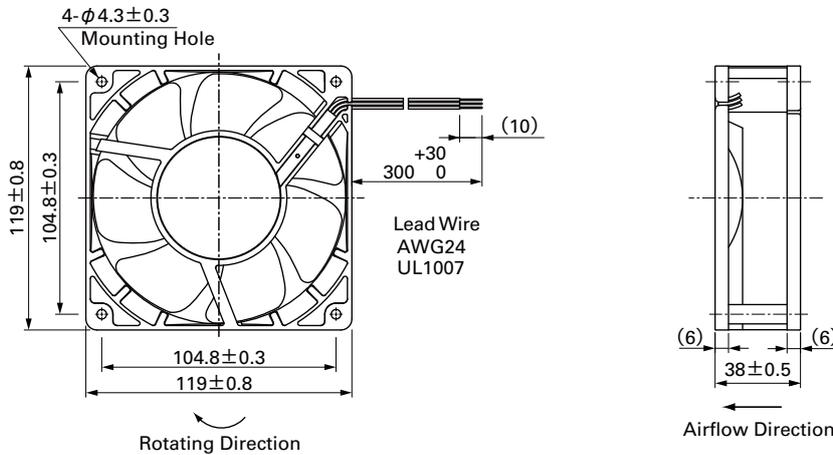
Specifications

The following nos. **have pulse sensors and ribs**. For ribless, append "1" to the model no.

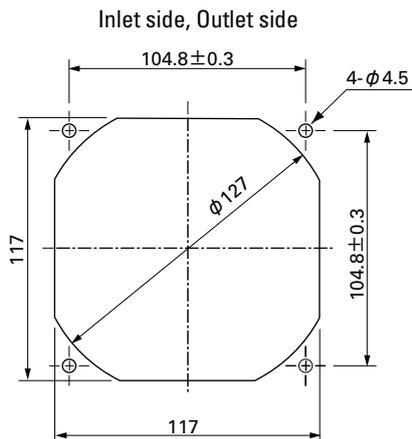
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WS1212H101	12	6 to 13.2	0.47	5.64	2,600	2.9 102.4	67.62 0.272	39	- 20 to + 60	40,000/60°C
9WS1212M101		6 to 13.8	0.23	2.76	1,950	2.2 77.7	42.14 0.169	32	- 20 to + 70	
9WS1224H101	24	12 to 26.4	0.23	5.52	2,600	2.9 102.4	67.62 0.272	39	- 20 to + 60	
9WS1224M101		12 to 27.6	0.13	3.12	1,950	2.2 77.7	42.14 0.169	32	- 20 to + 70	
9WS1248H101	48	40.8 to 52.8	0.13	6.24	2,600	2.9 102.4	67.62 0.272	39	- 20 to + 60	
9WS1248M101		40.8 to 55.2	0.07	3.36	1,950	2.2 77.7	42.14 0.169	32	- 20 to + 70	

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 482).

Dimensions (unit: mm) (With ribs)



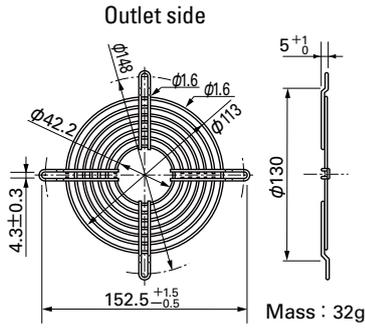
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

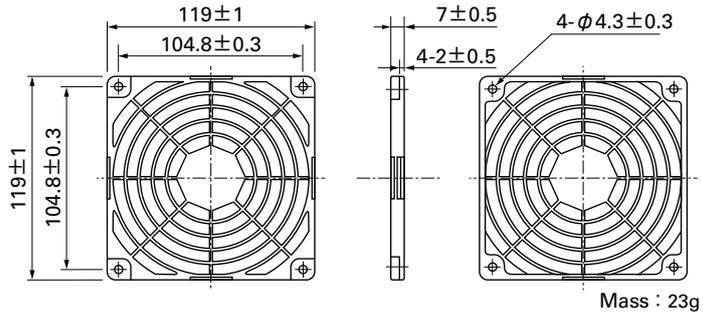
Finger Guards

Model : 109-019C Surface treatment : Nickel-chrome plating (silver) Color : 109-019H : Cation electropainting (black)



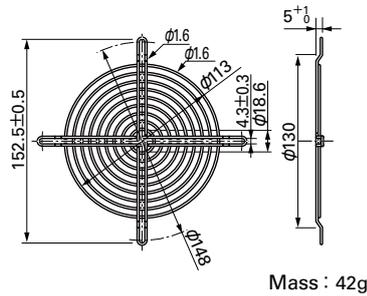
Resin Finger Guards

Model : 109-1000G

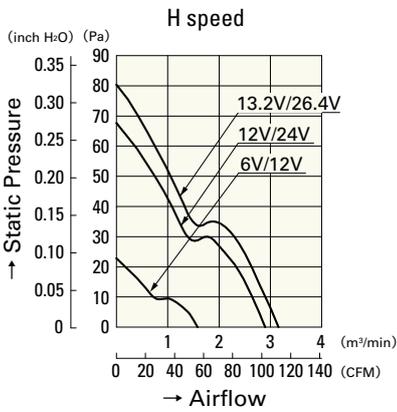


Model : 109-019E Surface treatment : Nickel-chrome plating (silver) Color : 109-019K : Cation electropainting (black)

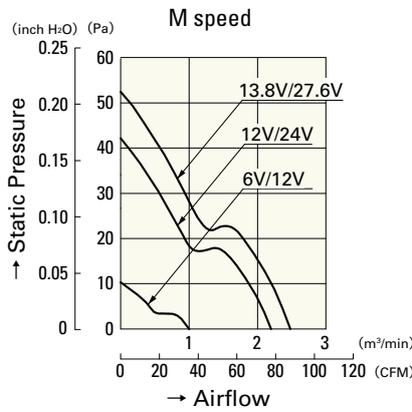
Inlet side, Outlet side



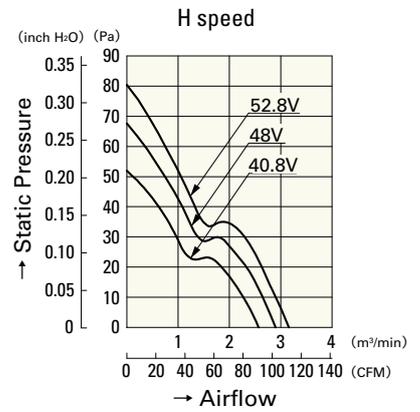
Airflow - Static Pressure Characteristics



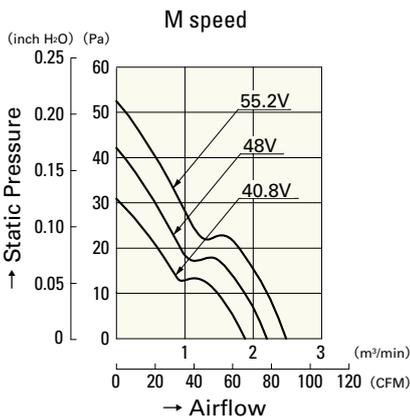
9WS1212H101
9WS1224H101



9WS1212M101
9WS1224M101



9WS1248H101



9WS1248M101

140mm sq.

San Ace 140W



General Specifications

- Material Frame: Aluminum,
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

140×140×38mm (Mass : 650g) **IP 68** **9W type**

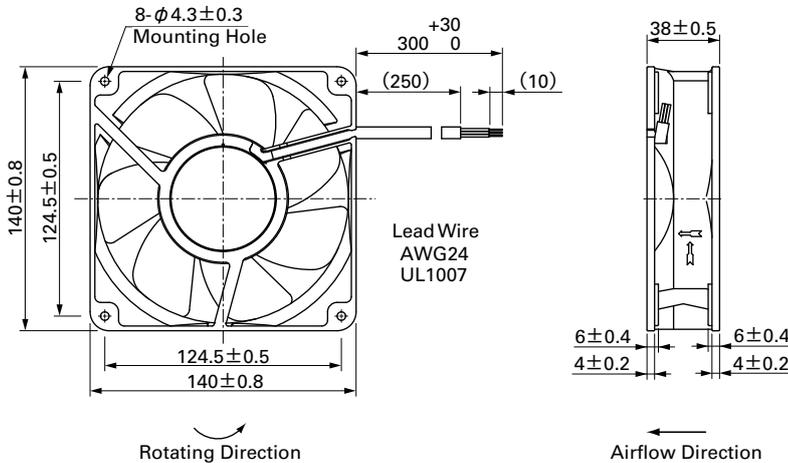
Specifications

The following nos. have pulse sensors.

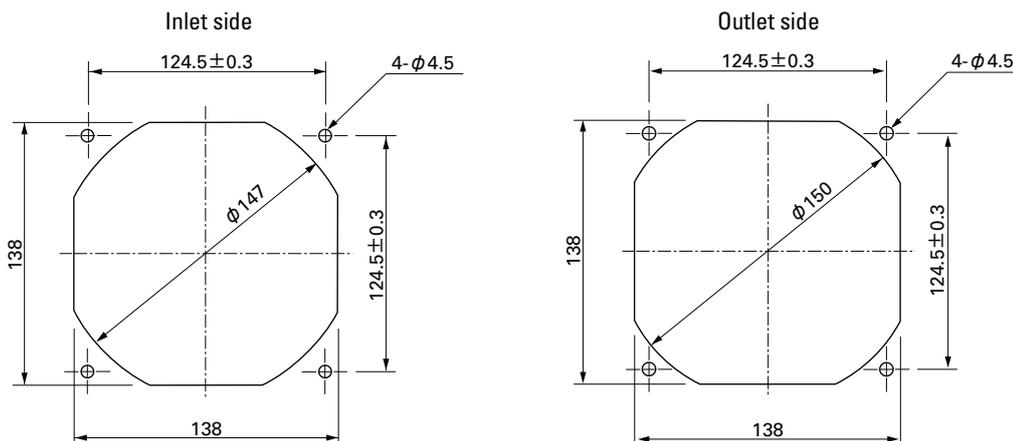
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109W1412H101-U	12	10.2 to 13.8	0.73	8.76	2,600	4.5 159	98 0.394	46	- 20 to + 70	100,000/60°C
109W1412M101-U			0.3	3.6	1,900	3.3 117	52 0.209	38		
109W1424H101-U	24	20.4 to 27.6	0.37	8.88	2,600	4.5 159	98 0.394	46		
109W1424M101-U			0.16	3.84	1,900	3.3 117	52 0.209	38		
109W1448H101-U	48	40.8 to 55.2	0.2	9.6	2,600	4.6 159	98 0.394	46		
109W1448M101-U			0.09	4.32	1,900	3.3 117	52 0.209	38		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 469).

Dimensions (unit: mm)



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



Options (unit: mm)

Finger Guards

Model : 109-719

Surface treatment : Nickel-chrome plating

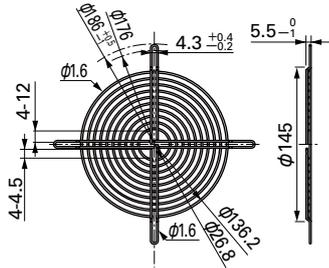
Color (silver)

Model : 109-719H

Surface treatment : Cation electropainting

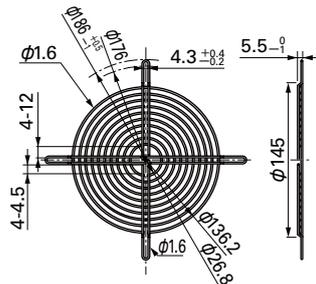
Color (black)

Inlet side, Outlet side



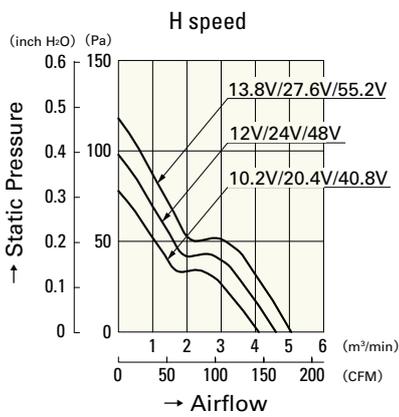
Mass : 51g

Inlet side, Outlet side



Mass : 51g

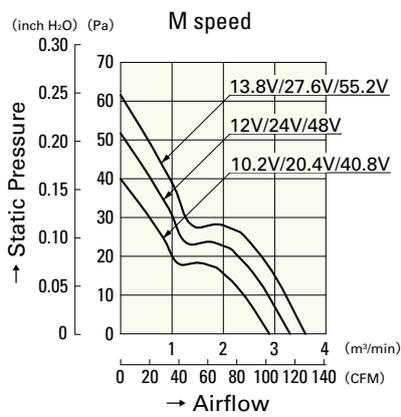
Airflow - Static Pressure Characteristics



109W1412H101-U

109W1424H101-U

109W1448H101-U



109W1412M101-U

109W1424M101-U

109W1448M101-U

DC

Splash Proof Fan 140mm

140mm sq.

San Ace 140W



General Specifications

- Material Frame: Aluminum,
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

140×140×51mm (Mass : 700g) **IP 68** **9WB type**

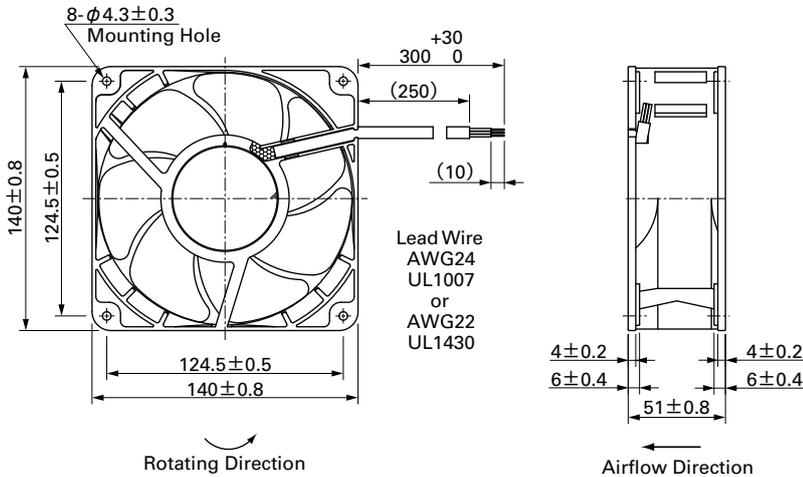
Specifications

The following nos. have pulse sensors.

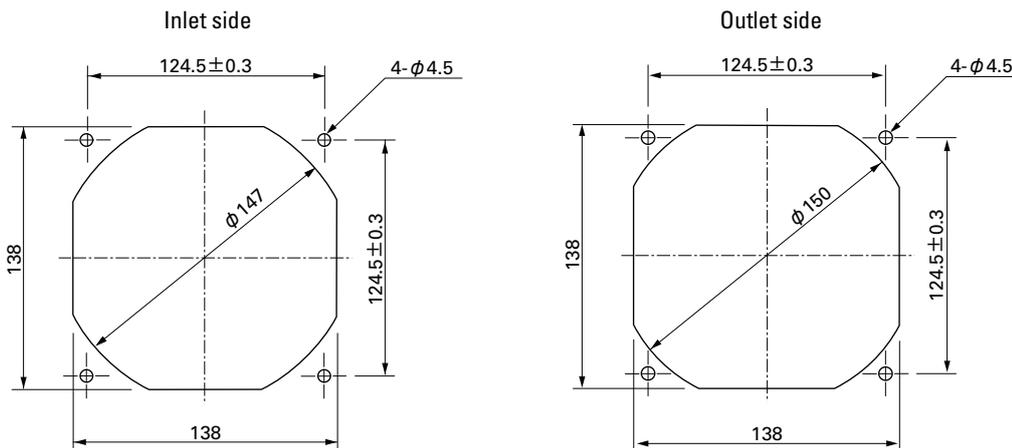
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WB1412S501	12	10.2 to 13.8	2.7	32.4	4,200	8.1 286.2	240 0.96	57	- 20 to + 70	60,000/60°C
9WB1412H501			1.25	15	3,100	5.9 208.5	130 0.52	49		100,000/60°C
9WB1412M501			0.46	5.52	2,050	3.9 138	63 0.25	39		100,000/60°C
9WB1424H501	24	20.4 to 27.6	0.6	14.4	3,100	5.9 208.5	130 0.52	49		60,000/60°C
9WB1424M501			0.22	5.28	2,050	3.9 138	63 0.25	39		100,000/60°C
9WB1448S501	48	40.8 to 55.2	0.71	34.08	4,200	8.1 286.2	240 0.96	57		60,000/60°C
9WB1448H501			0.27	12.96	3,100	5.9 208.5	130 0.52	49	100,000/60°C	

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 480).

Dimensions (unit: mm)



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



Options (unit: mm)

Finger Guards

Model : 109-719

Surface treatment : Nickel-chrome plating

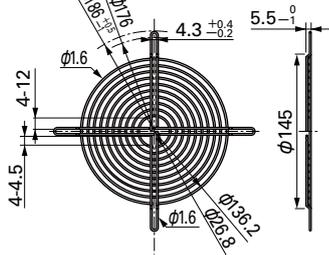
Color (silver)

Model : 109-719H

Surface treatment : Cation electropainting

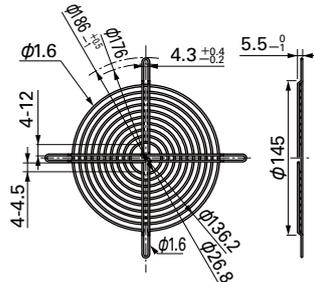
Color (black)

Inlet side, Outlet side



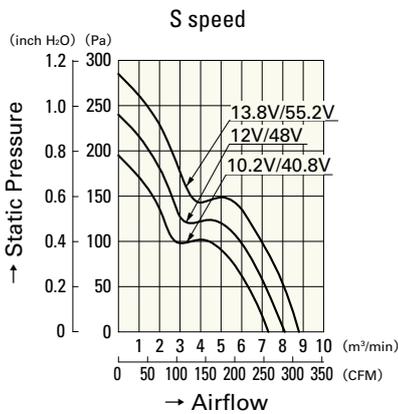
Mass : 51g

Inlet side, Outlet side

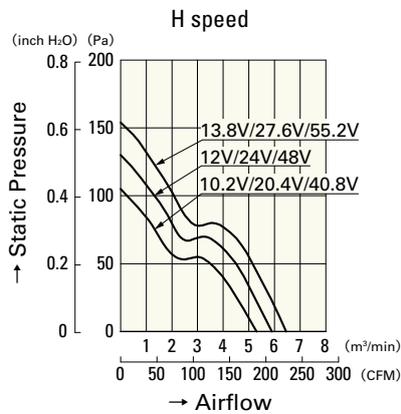


Mass : 51g

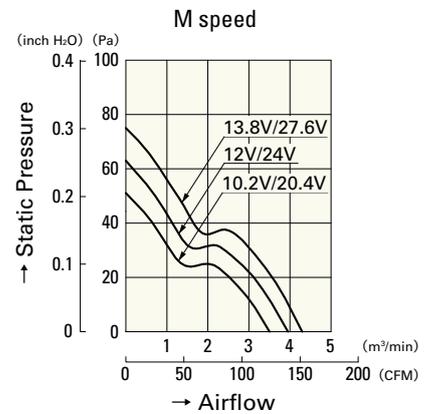
Airflow - Static Pressure Characteristics



9WB1412S501
9WB1448S501



9WB1412H501
9WB1424H501
9WB1448H501



9WB1412M501
9WB1424M501

φ172_{mm}

San Ace 172W



General Specifications

- Material Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10: Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

φ172mm × 150mm × 51mm (Mass : 860g) **IP 68** **9WG type** **Sidecut type**

Specifications

The following nos. have PWM controls and pulse sensors.

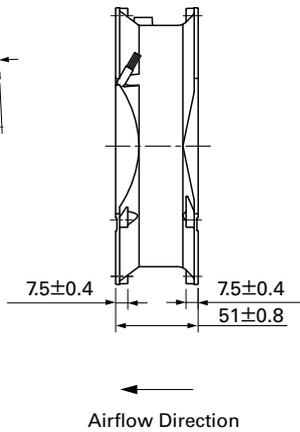
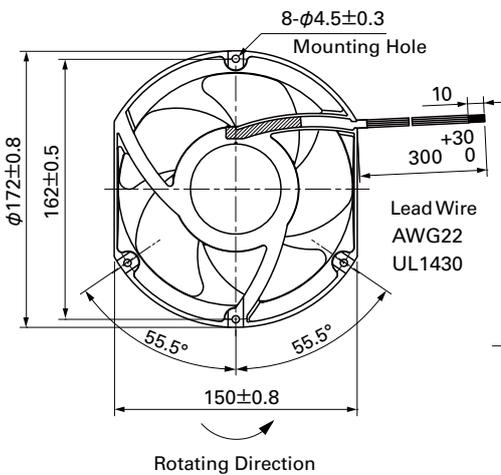
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle* [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life ^{nom} [h]
9WG5748P5G001	48	40.8 to 55.2	100	2.91	140.0	8,600	15.46 546	1,000 4.02	78	-20 to +70	40,000/60°C (70,000/40°C)
			0	0.21	10.1	2,000	3.59 127	75.1 0.30	40		
9WG5748P5H001			100	1.62	78.0	6,500	11.60 410	770 3.09	71		
			0	0.21	10.1	2,000	3.59 127	75.1 0.30	40		

Note: Expected life at 40°C ambient is just reference value.

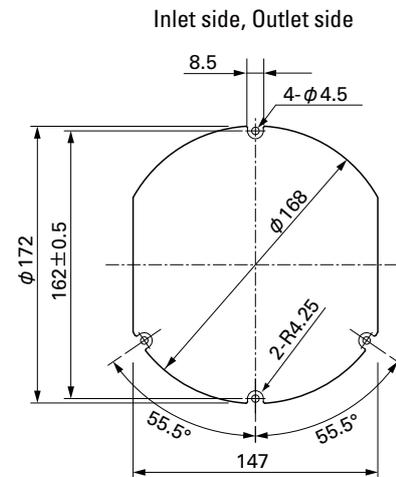
※PWM Frequency : 25kHz

Models with pulse sensors (no PWM control function) are available as an option. Please refer to the index (p. 481).

Dimensions (unit: mm)



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

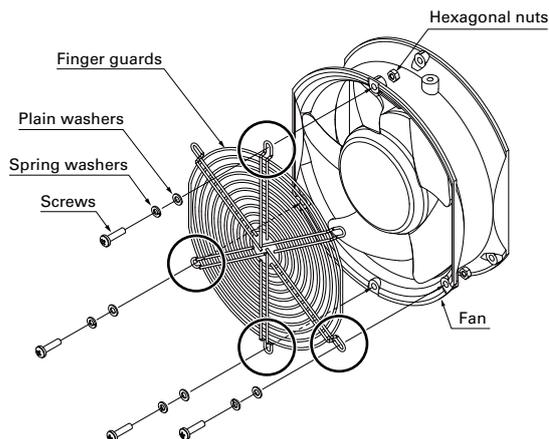
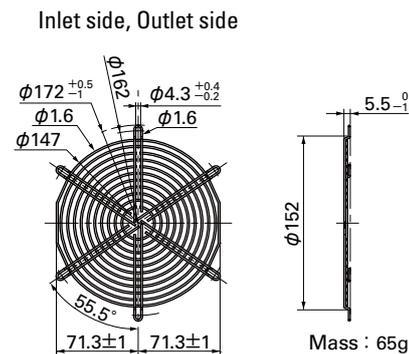


Options (unit: mm)

Finger Guards

Model : 109-319J Surface treatment : Nickel-chrome plating (silver) Color

For the finger guard Model: 109-319J, fix the finger guard to four holes as shown in the diagram.



Options (unit: mm)

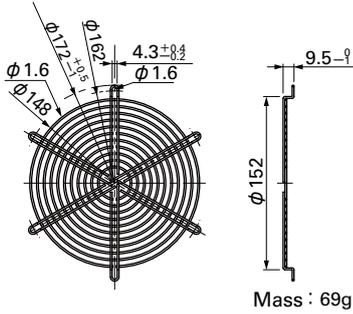
Finger Guards

Model : 109-319E Surface treatment : Nickel-chrome plating (silver) Color : 109-319H : Cation electropainting (black)

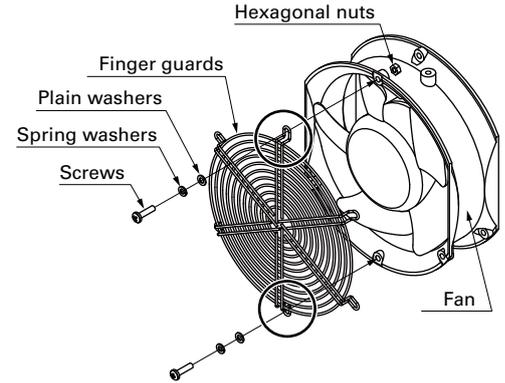
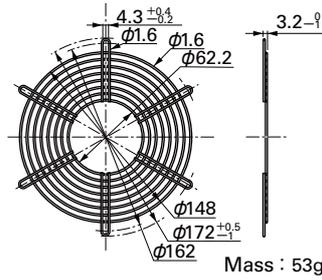
Model : 109-320 Surface treatment : Nickel-chrome plating (silver) Color : (silver)

For the finger guard Model: 109-319E, 109-319H, 109-320, fix the finger guard to two holes as shown in the diagram. Do not fix it to any other holes.

Inlet side, Outlet side

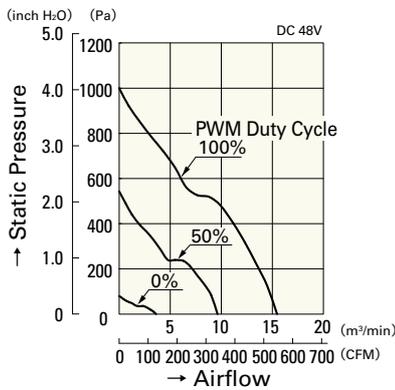


Outlet side

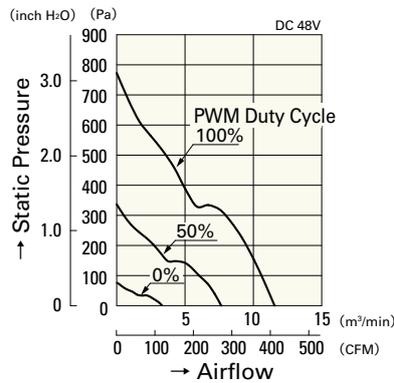


Airflow - Static Pressure Characteristics

PWM Duty Cycle

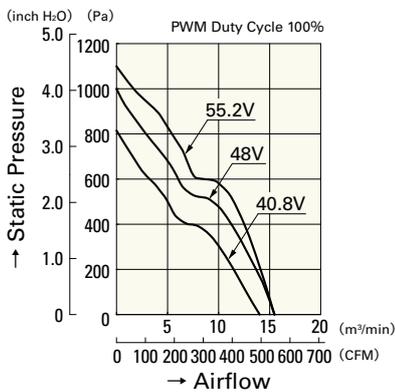


9WG5748P5G001

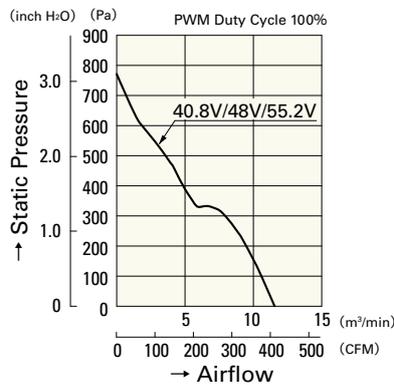


9WG5748P5H001

Operating Voltage Range

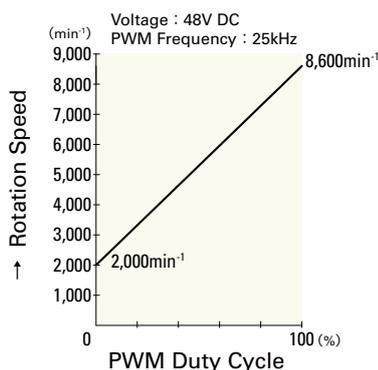


9WG5748P5G001

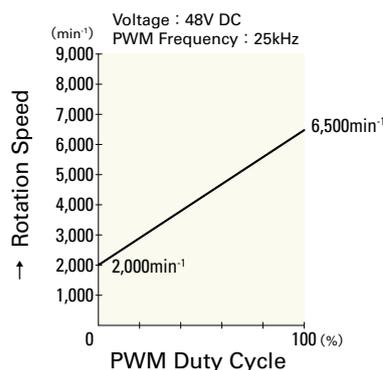


9WG5748P5H001

PWM Duty - Speed Characteristics Example



9WG5748P5G001



9WG5748P5H001

φ172mm

San Ace 172W



General Specifications

- Material Frame: Aluminum,
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

φ172mm × 150mm × 51mm (Mass : 860g) **IP 68** **9WE type** **Sidecut type**

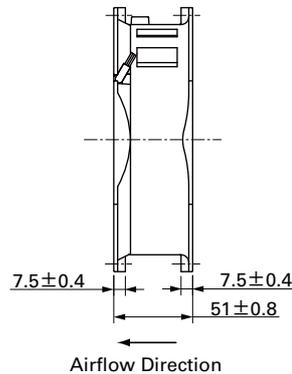
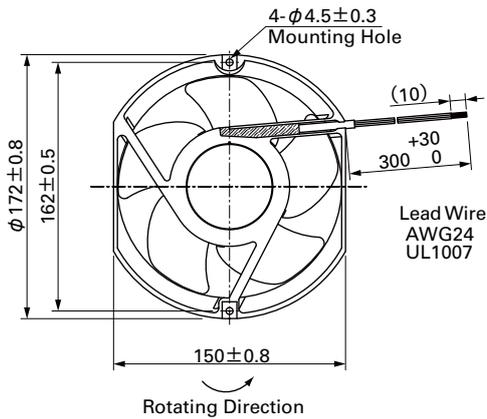
Specifications

The following nos. have pulse sensors.

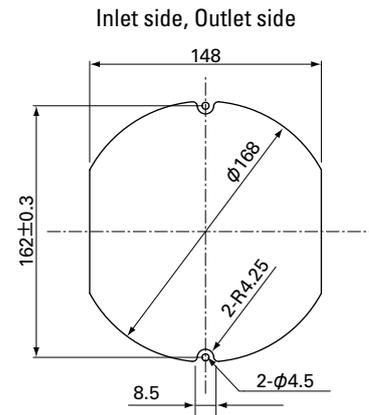
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WE5724K501	24	20.4 to 27.6	1.3	31.2	4,100	8.5 300	243 0.976	60	- 20 to + 60	40,000/60°C
9WE5748K501	48	40.8 to 55.2	0.7	33.6	4,100	8.5 300	243 0.976	60		40,000/60°C

Models without sensors, or with lock sensors, or PWM control function are available as options. Please refer to the index (p. 481).

Dimensions (unit: mm)



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

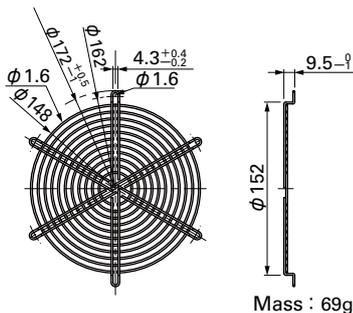


Options (unit: mm)

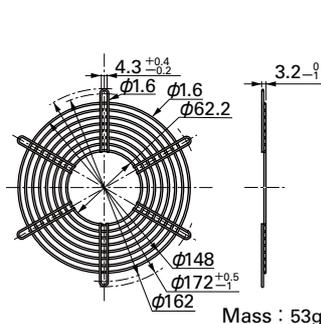
Finger Guards

Model : 109-319E Surface treatment : Nickel-chrome plating (silver) Color : silver
 Model : 109-319H Surface treatment : Nickel-chrome plating (silver) Color : silver
 : 109-319H Surface treatment : Cation electropainting (black) Color : black

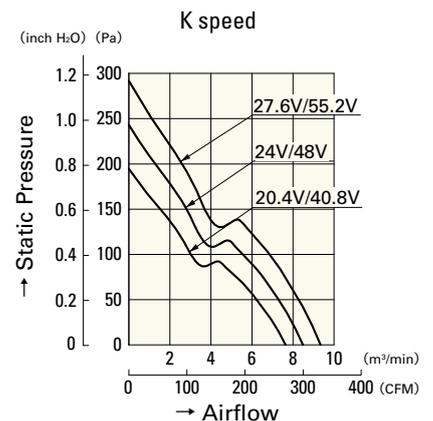
Inlet side, Outlet side



Outlet side



Airflow - Static Pressure Characteristics



9WE5724K501
9WE5748K501

φ172mm

San Ace 172W



DC
Splash Proof Fan 172mm

General Specifications

- Material Frame: Aluminum,
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

φ172mm×51mm (Mass : 890g) **IP 68** **9WE_{type}** **Round type**

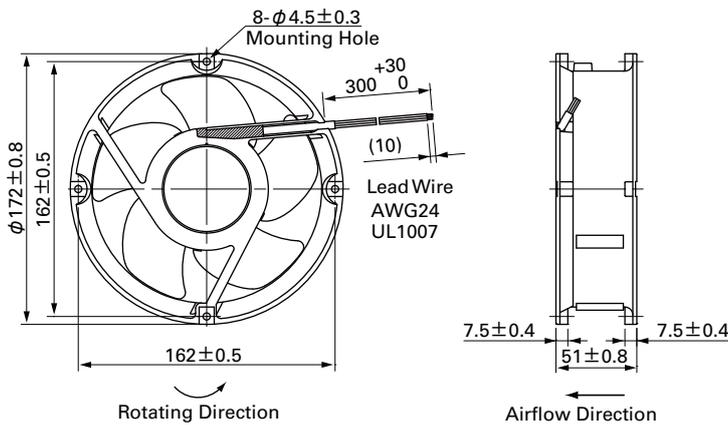
Specifications

The following nos. have pulse sensors.

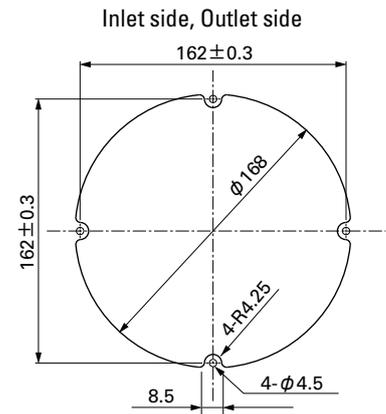
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WE1724K501	24	20.4 to 27.6	1.3	31.2	4,100	8.5 300.1	243 0.97	55	- 20 to + 60	40,000/60°C

Models without sensors are available as an option. Please refer to the index (p. 480).

Dimensions (unit: mm)



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

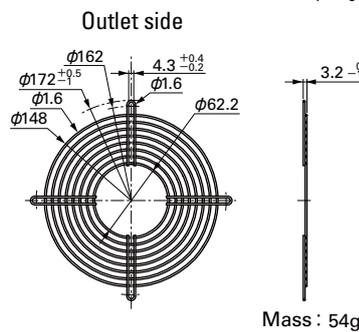
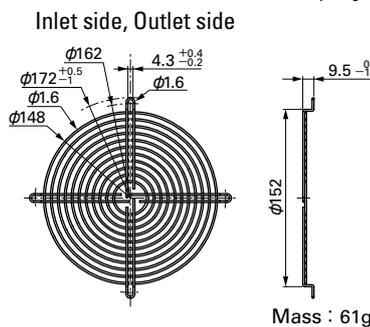


Options (unit: mm)

Finger Guards

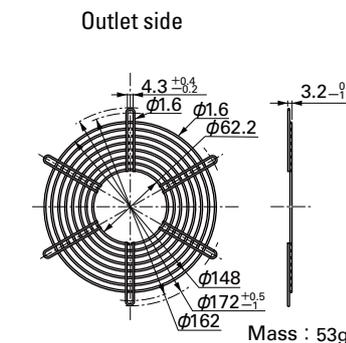
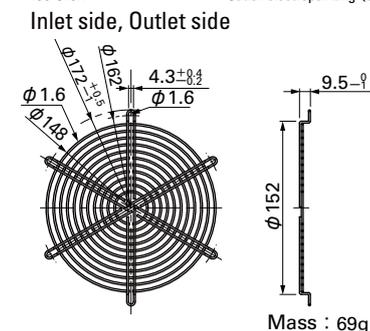
Model : 109-1066 Surface treatment : Nickel-chrome plating (silver) Color (silver)

Model : 109-1068 Surface treatment : Nickel-chrome plating (silver) Color (silver)

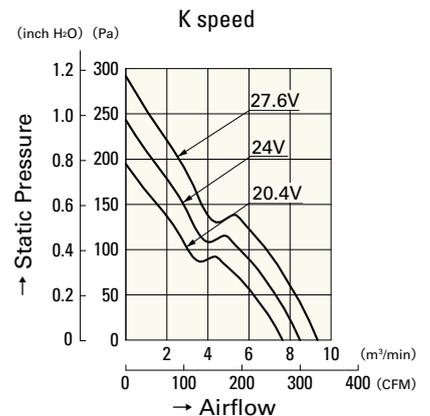


Model : 109-319E Surface treatment : Nickel-chrome plating (silver) Color (silver)
: 109-319H : Cation electropainting (black)

Model : 109-320 Surface treatment : Nickel-chrome plating (silver) Color (silver)



Airflow - Static Pressure Characteristics



9WE1724K501

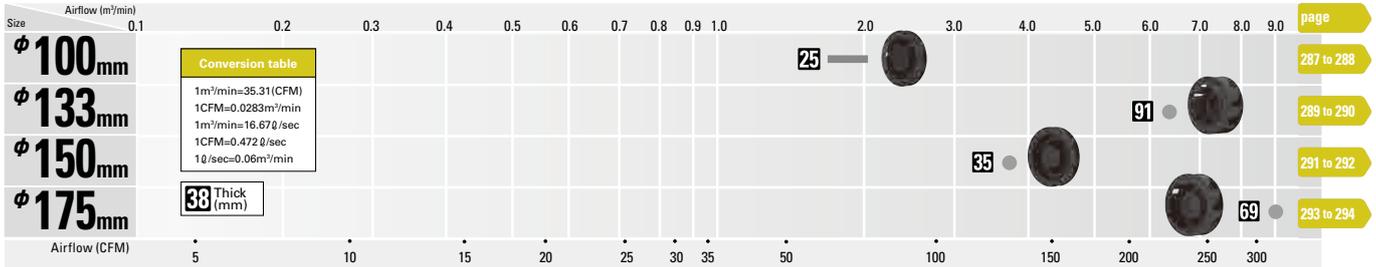
Splash Proof Centrifugal Fan

Centrifugal fans of IP54 waterproof capability.

Related product

Splash Proof Fan ⇒ p. 238 Centrifugal Fan ⇒ p. 364
Oil Proof Fan ⇒ p. 296

Domain Diagram



Part Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9W1T	M	48	P	4	H	01
Type name / frame material 9W1T / Aluminum	Size M : φ100mm J : φ133mm N : φ150mm G : φ175mm	Voltage 24 : 24V 48 : 48V	PWM control function P	Frame thickness 0 : 69mm thick MIN 1 : 35mm thick 4 : 25mm thick	Speed code H,G etc	Individual customer's spec 2 or 3 digits

Ingress protection ratings (IP code)

■ IP Codes used by SANYO DENKI express the level of protection that internal electrical components (for fans: electrical components and motor coils) have against solid objects, water, and access to hazardous parts. San Ace Splash Proof Centrifugal fans feature high protection levels.

Definition of Ingress Protection (IP Code)

Ingress Protection (IP Code) is defined in IEC (International Electrotechnical Commission) 60529*
DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP Code). *IEC 60529:2001

I P X X

Second digit: Protection against water
First digit: Protection against solid objects and access to hazardous parts

First digit	Definition
0	No protection
1	Protection against solid objects > 50 mm
2	Protection against solid objects > 12.5 mm
3	Protection against solid objects > 2.5 mm
4	Protection against solid objects > 1 mm
5	Protection against a level of dust that could hinder operation or impair safety
6	Complete protection against dust

Second digit	Definition
0	No protection
1	Protection against dripping water
2	Protection against water spray up to 15°
3	Protection against spraying water
4	Protection against splashing water
5	Protection against low pressure water jets
6	Protection against high pressure water jets
7	Protection against temporary immersion in water
8	Protection against submersion in water

φ 100mm

San Ace 100W



General Specifications

- Material Motor case: Aluminum (Black coating),
Impeller: Plastics (Flammability: UL94V-0)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

φ 100mm × 25mm (Mass : 160g) **IP 54** **9W type**

Specifications When our inlet nozzle [Option (Model : 109-1080)] is mounted. The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle* [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life ^(h_{50%}) [h]
9W1TM48P4G01	48	36 to 60	100 ^{Note1)}	0.36	17.28	7,400	2.03 71.7	708 2.84	65	-20 to +70	40,000/60°C (70,000/40°C)
9W1TM48P4H01			100	0.22	10.56	6,400	1.77 62.5	560 2.25	60		
			0	0.04	1.92	2,000	0.51 18.0	48 0.19	34		

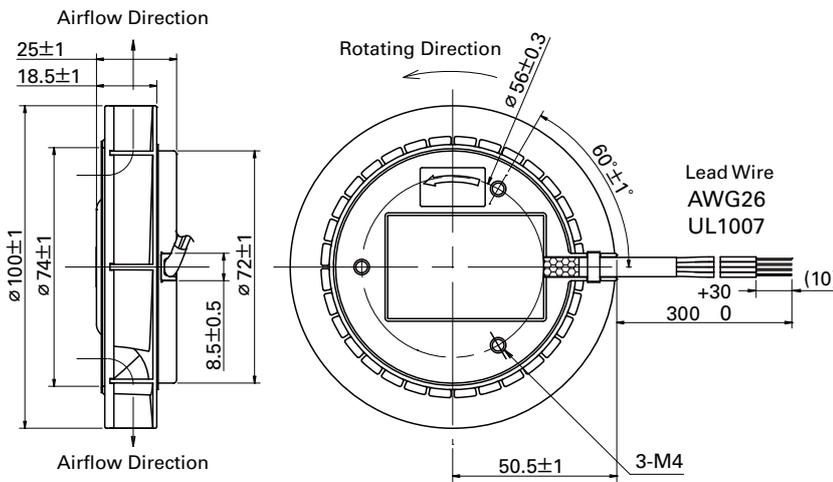
Note 1: Fan does not rotate when PWM duty cycle is 0%.

Note 2: Expected life at 40°C ambient is just reference value.

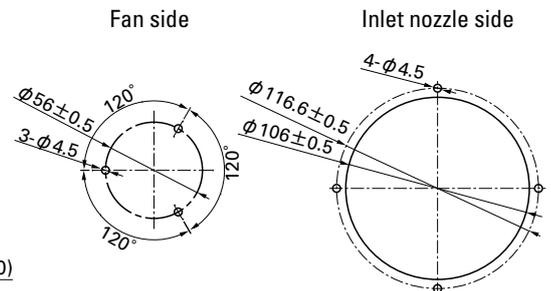
Max input is 9W1TM48P4G01 : 22W, 9W1TM48P4H01 : 14W at rated voltage.

※ PWM Frequency : 25kHz

Dimensions (unit: mm)



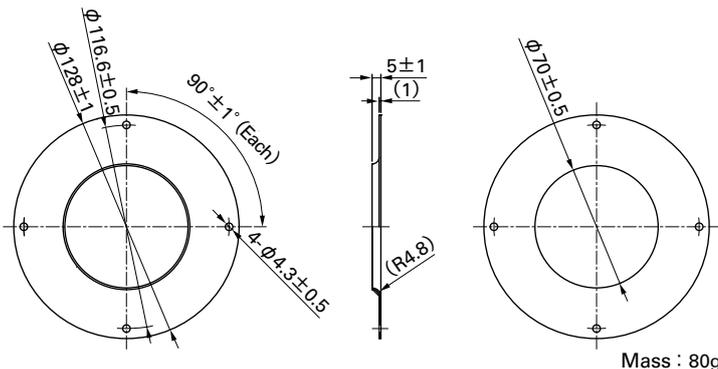
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

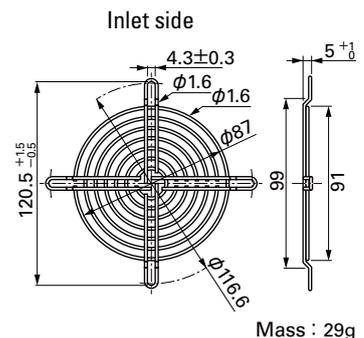
Inlet Nozzle

Model : 109-1080



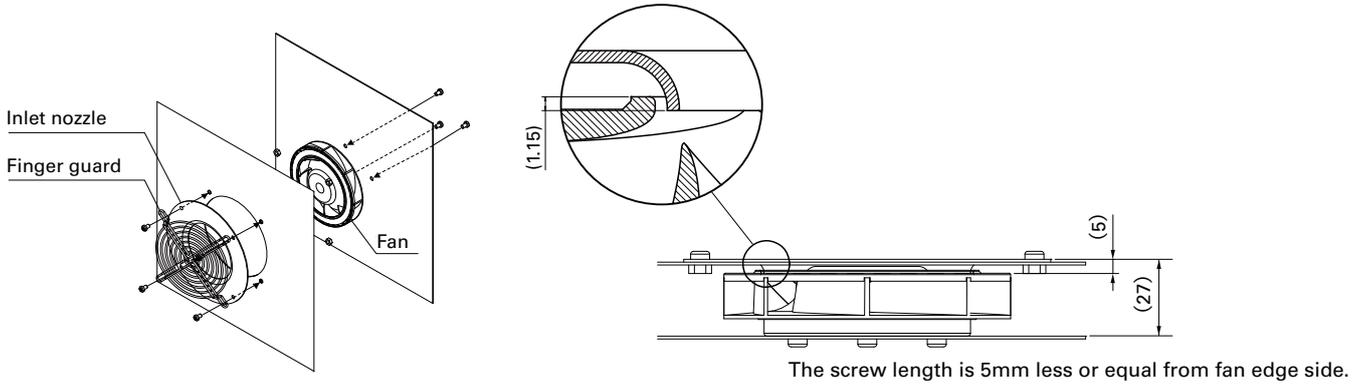
Finger Guards

Model : 109-099E Surface treatment : Nickel-chrome plating (silver)
: 109-099H : Cation electropainting (black)



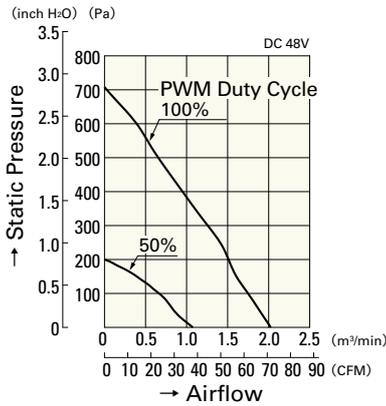
Inlet nozzle : Nozzle mounted in fan inlet side to adjust the flow of introduced air

Reference Diagram for Mounting

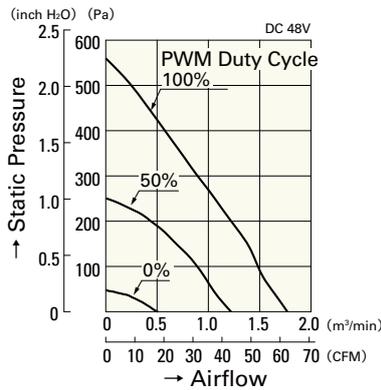


Airflow - Static Pressure Characteristics

PWM Duty Cycle

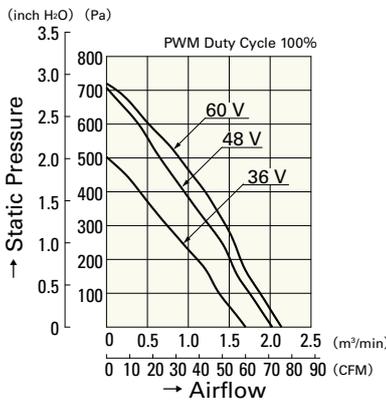


9W1TM48P4G01

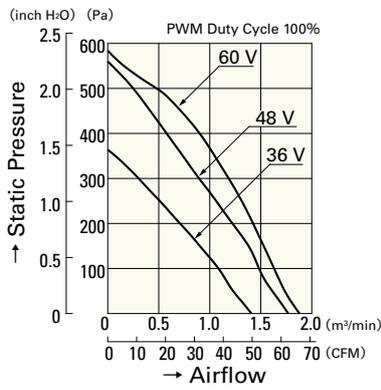


9W1TM48P4H01

Operating Voltage Range

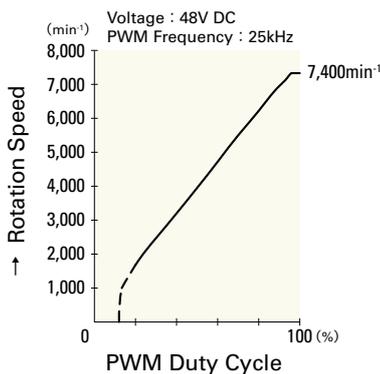


9W1TM48P4G01

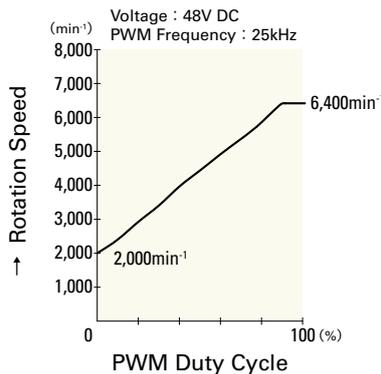


9W1TM48P4H01

PWM Duty - Speed Characteristics Example



9W1TM48P4G01



9W1TM48P4H01

φ133mm

San Ace 133W



General Specifications

- Material..... Motor case: Aluminum (Black coating),
Impeller: Plastics (Flammability: UL94V-0)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

φ133mm×91mm (Mass : 720g) **IP 54 9W type**

Specifications

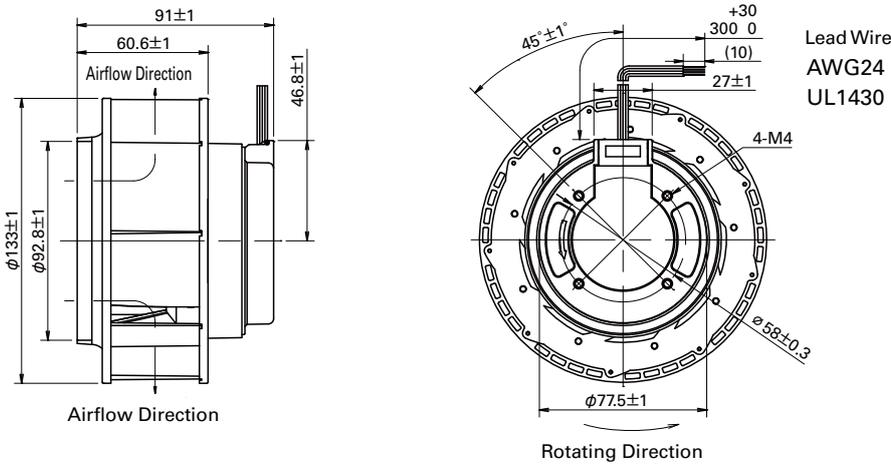
When our inletnozzle [Option (Model : 109-1069)] is mounted. The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Note1)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life ^{Note2)} [h]
9W1TJ24P0H61	24	20.4 to 27.6	100	1.2	28.8	4,150	6.39 225	395 1.59	61	-20 to +70	40,000/60°C (70,000/40°C)
9W1TJ48P0H61	48	36 to 60	100	0.55	26.4	4,150	6.39 225	395 1.59	61		

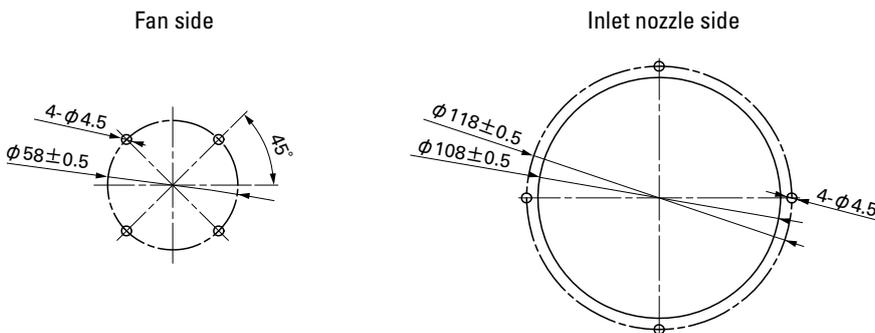
Note 1: Fan does not rotate when PWM duty cycle is 0%.
Note 2: Expected life at 40°C ambient is just reference value.
Max input is 45W at rated voltage.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



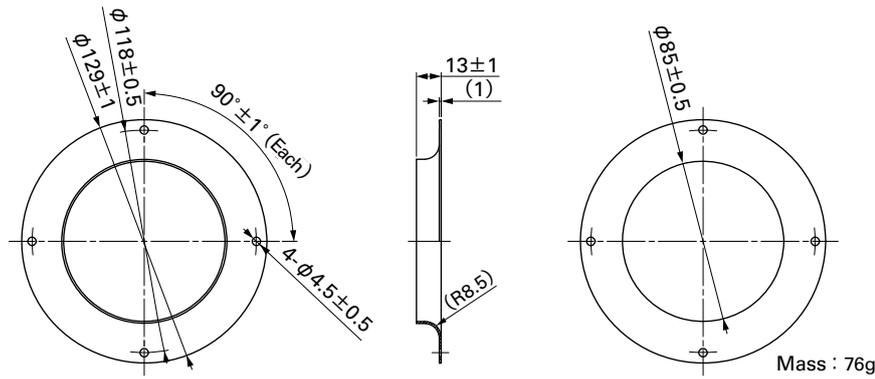
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

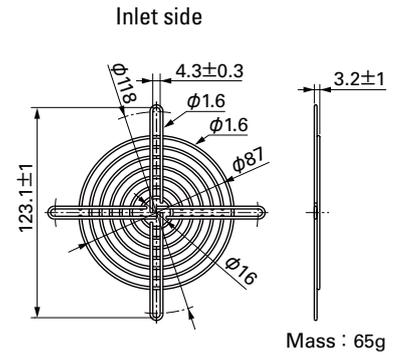
Inlet Nozzle

Model: 109-1069 Material: Steel sheet Surface treatment: Electro nickel plating (silver)
 : 109-1069H : Steel sheet : Cation electropainting (black)



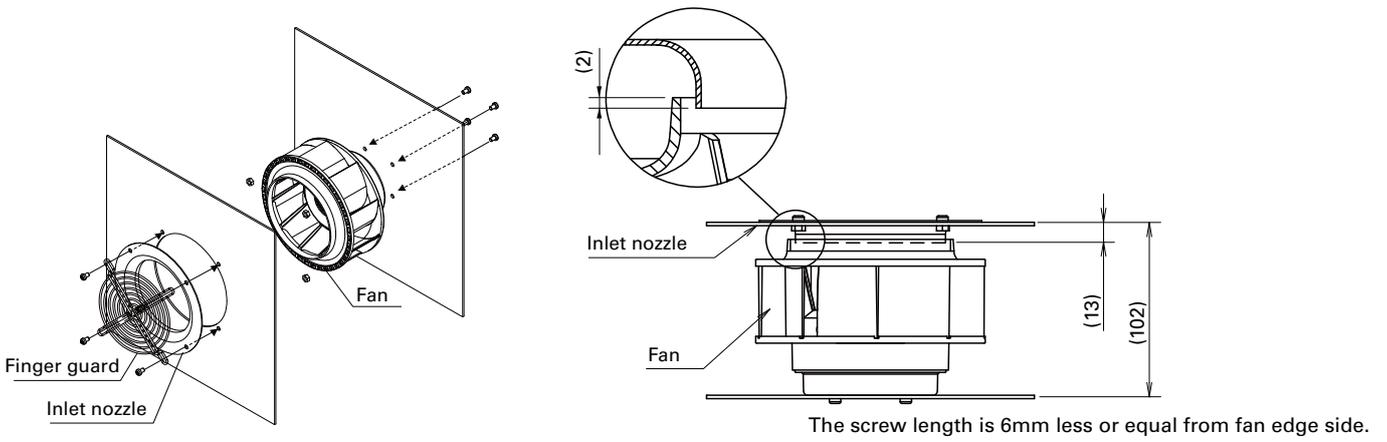
Finger Guards

Color
 Model: 109-1112 Surface treatment: Nickel-chrome plating (silver)



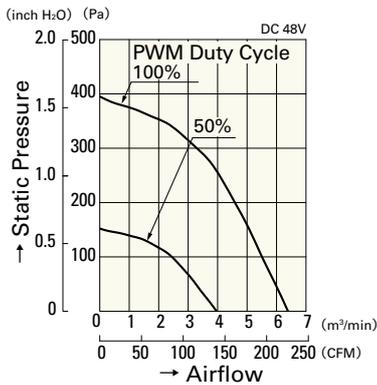
Inlet nozzle : Nozzle mounted in fan inlet side to adjust the flow of introduced air

Reference Diagram for Mounting



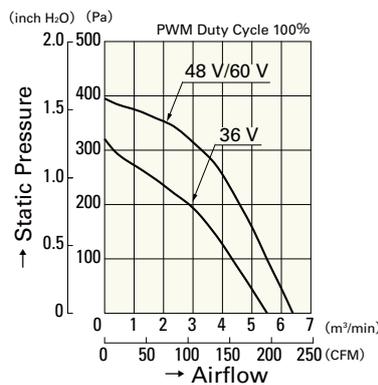
Airflow - Static Pressure Characteristics

PWM Duty Cycle



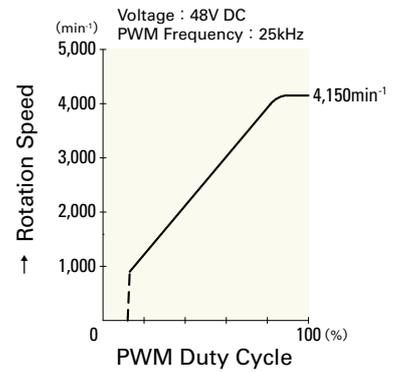
9W1TJ48P0H61

Operating Voltage Range

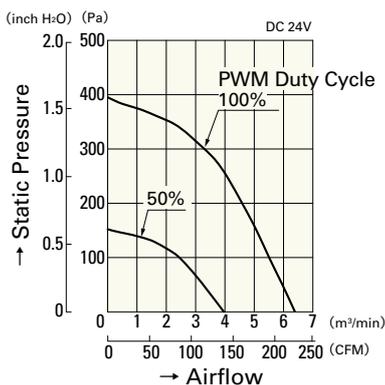


9W1TJ48P0H61

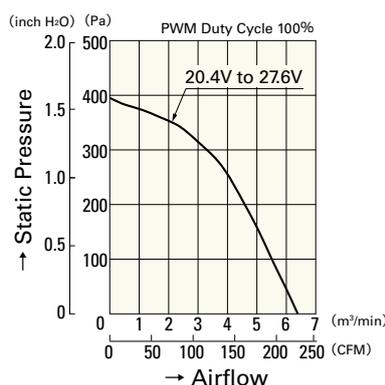
PWM Duty Speed Characteristics Example



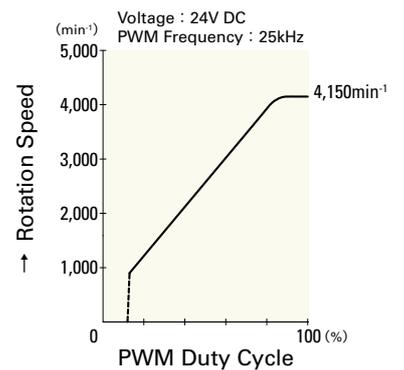
9W1TJ48P0H61



9W1TJ24P0H61



9W1TJ24P0H61



9W1TJ24P0H61

φ 150_{mm}

San Ace 150W



General Specifications

- Material..... Motor case: Aluminum (Black coating),
Impeller: Plastics (Flammability: UL94V-0)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature ... -30°C to +70°C (Non-condensing)

φ 150mm × 35mm (Mass : 330g) **IP 54 9W_{type}**

Specifications

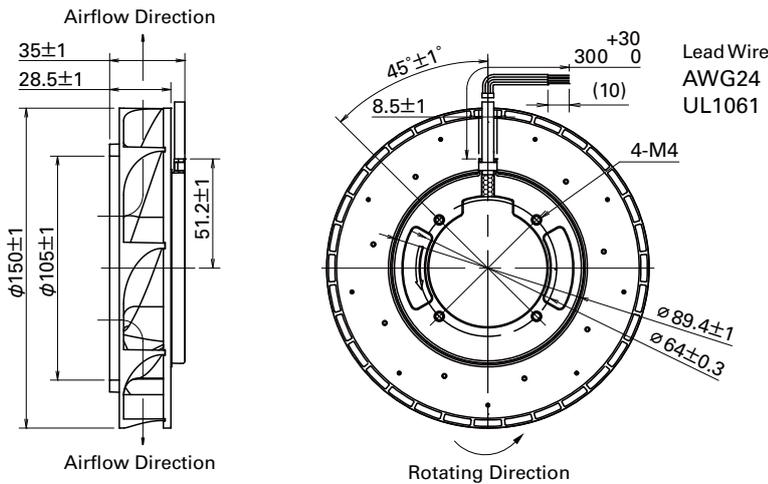
When our inletnozzle [Option (Model : 109-1081)] is mounted. The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^(Note1) [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life ^(Note2) [h]
9W1TN48P1H01	48	36.0 to 55.2	100	0.32	15.4	3,800	3.83 135	390 1.57	59	-20 to +70	40,000/60°C (70,000/40°C)

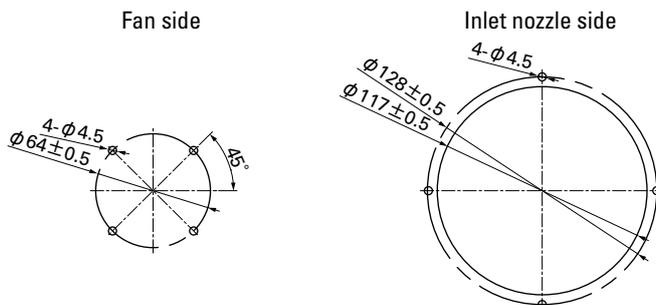
Note 1: Fan does not rotate when PWM duty cycle is 0%.
Note 2: Expected life at 40°C ambient is just reference value.
Max input is 22W at rated voltage.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



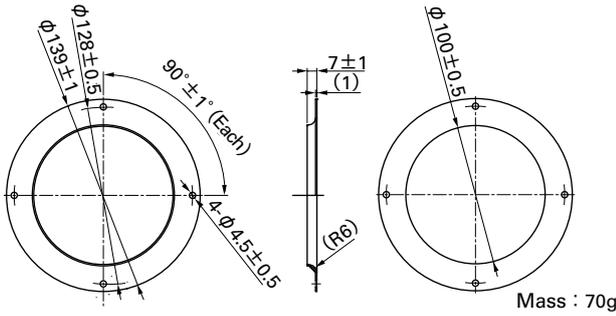
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

Inlet Nozzle

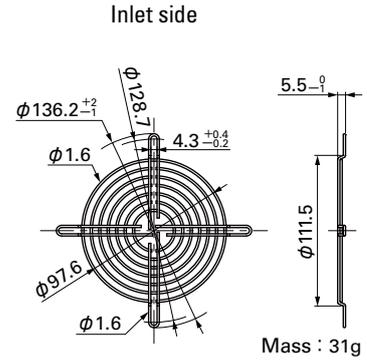
Model : 109-1081 Material : Steel sheet Surface treatment : Electro nickel plating (silver)
 : 109-1081H : Steel sheet : Cation electropainting (black)



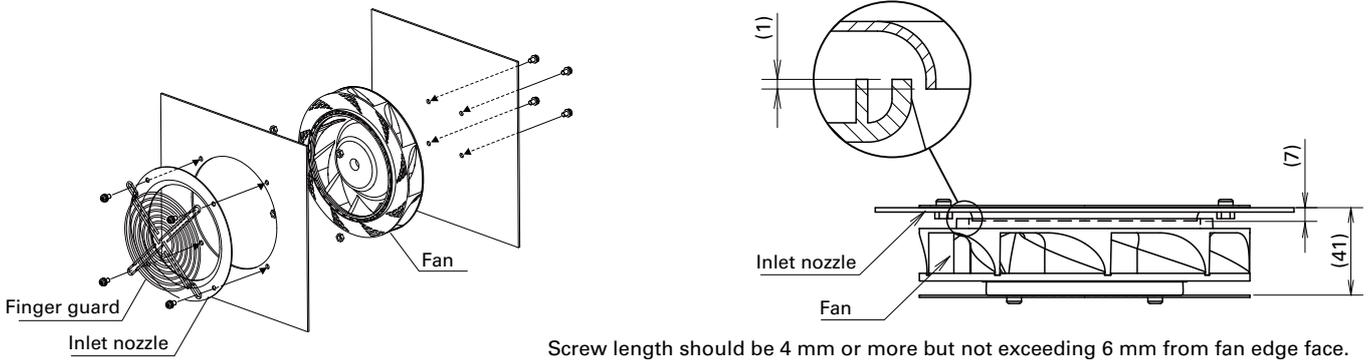
Inlet nozzle : Nozzle mounted in fan inlet side to adjust the flow of introduced air

Finger Guards

Model : 109-1104 Surface treatment : Nickel-chrome plating (silver) Color (silver)
 : 109-1104H : Cation electropainting (black)

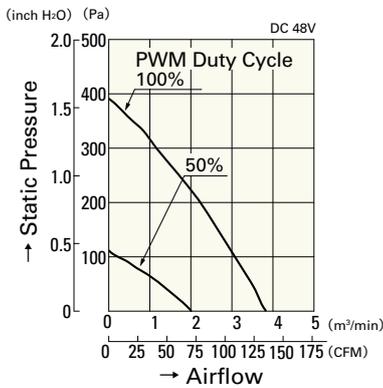


Reference Diagram for Mounting



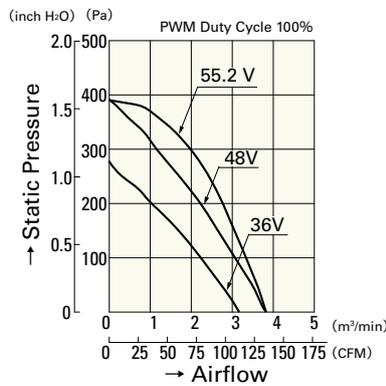
Airflow - Static Pressure Characteristics

PWM Duty Cycle



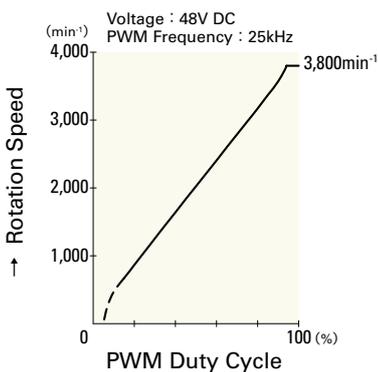
9W1TN48P1H01

Operating Voltage Range



9W1TN48P1H01

PWM Duty Speed Characteristics Example



9W1TN48P1H01

φ 175mm

San Ace 175W



General Specifications

- Material..... Motor case: Aluminum (Black coating),
Impeller: Plastics (Flammability: UL94V-0)
- Expected Life Refer to specifications (Indoor, L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

φ 175mm × 69mm (Mass : 760g) **IP 54** **9W** type

Specifications

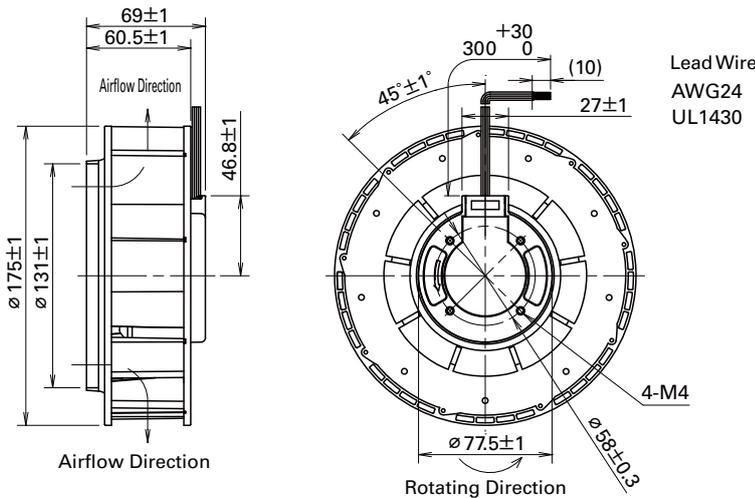
When inlet nozzle [Option (Model : 109-1073)] is mounted. The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^(Note1) [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life ^(Note2) [h]
9W1TG48P0H61	48	36 to 60	100	0.65	31.2	3,100	9.0 318	360 1.44	64	-20 to +70	40,000/60°C (70,000/40°C)

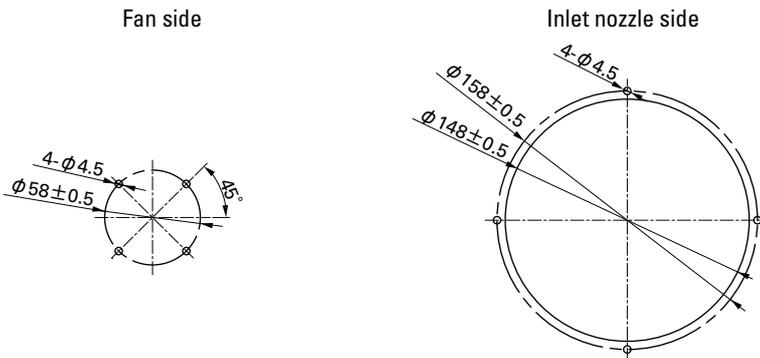
Note 1: Fan does not rotate when PWM duty cycle is 0%.
Note 2: Expected life at 40°C ambient is just reference value.
Max input is 60W at rated voltage.

*PWM Frequency : 25kHz

Dimensions (unit: mm)



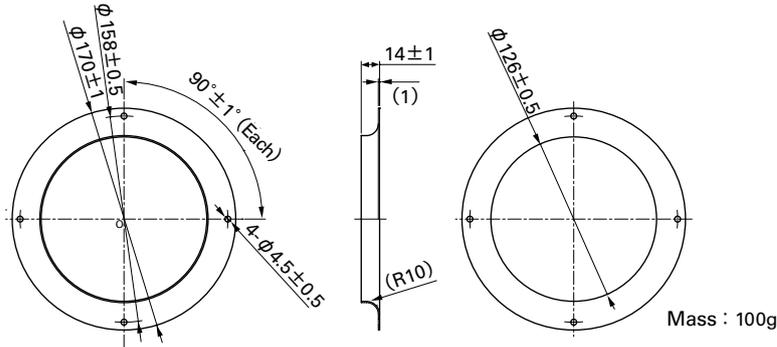
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

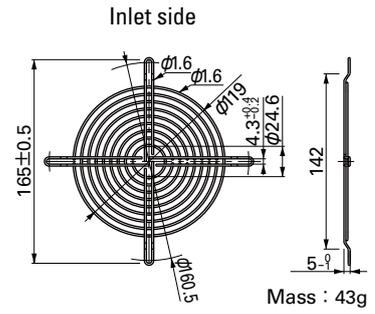
Inlet Nozzle

Model : 109-1073 Material : Steel sheet Surface treatment : Electro nickel plating (silver)
 : 109-1073H : Steel sheet : Cation electropainting (black)



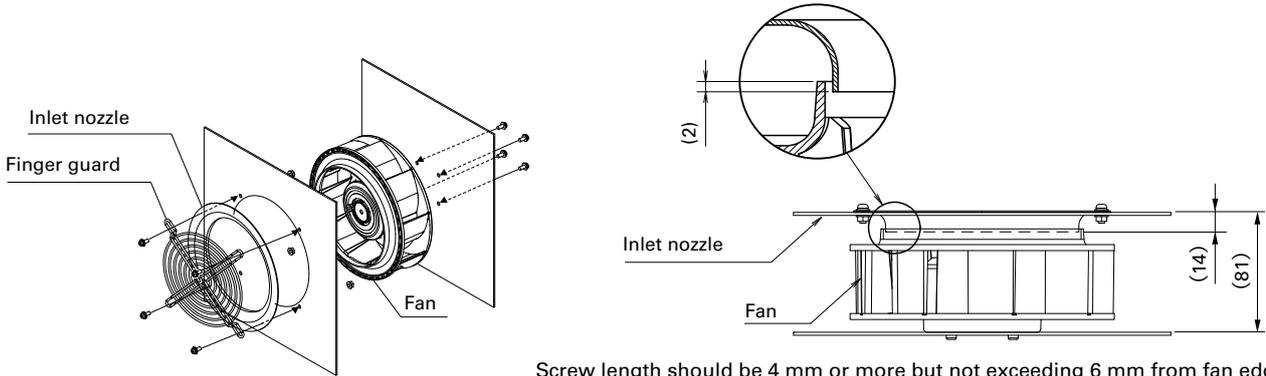
Finger Guards

Model : 109-722 Surface treatment : Nickel-chrome plating (silver) Color (silver)



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

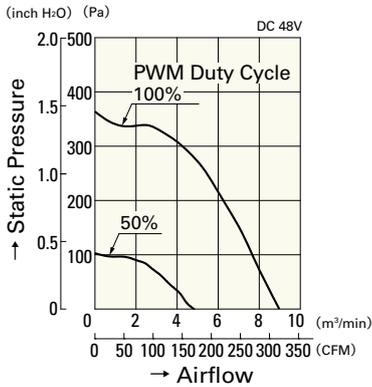
Reference Diagram for Mounting



Screw length should be 4 mm or more but not exceeding 6 mm from fan edge face. To prevent screw from loosening, use plain washer and spring washer.

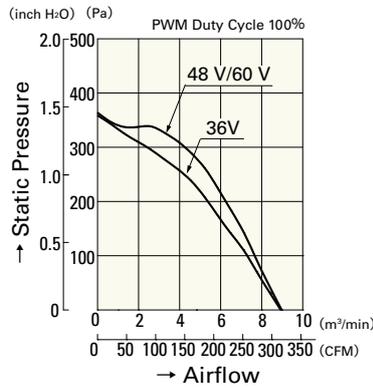
Airflow - Static Pressure Characteristics

PWM Duty Cycle



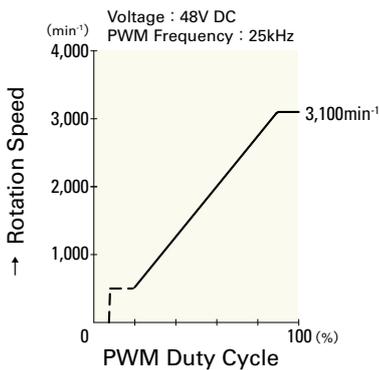
9W1TG48P0H61

Operating Voltage Range



9W1TG48P0H61

PWM Duty Speed Characteristics Example



9W1TG48P0H61

Oil Proof Fan

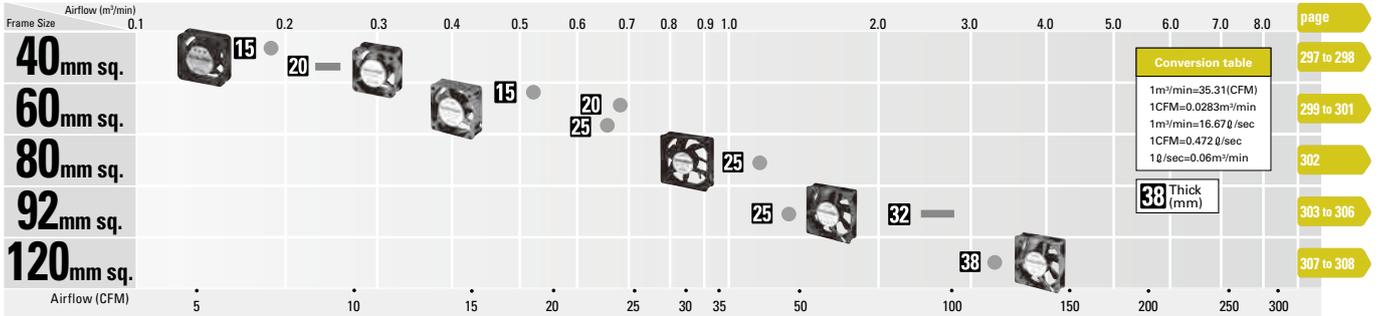
Cooling fan capable of operating in an oil-mist environment.

Related product

Splash Proof Fan ⇒ p. 238

Splash Proof Centrifugal Fan ⇒ p. 286

Domain Diagram



Part Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9WF

Type name /
frame material
9WF / Plastics

12

Frame size
04 : 40×40mm
06 : 60×60mm
08 : 80×80mm
09 : 92×92mm
12 : 120×120mm

24

Voltage
24 : 24V

H

Speed code
H

1

Frame thickness
1 : 38mm thick
2 : 32mm thick
4 : 25mm thick
6 : 20mm thick
7 : 15mm thick

01

Sensor specifications
01 : With a pulse sensor
02 : Without a sensor
D01 : With a lock sensor

Frame form
Nil : Ribbed frame

40 mm sq.

San Ace 40WF



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0)
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

The product can be used in an oil mist environment*

*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

40×40×15 mm (Mass : 35g) **9WF** type

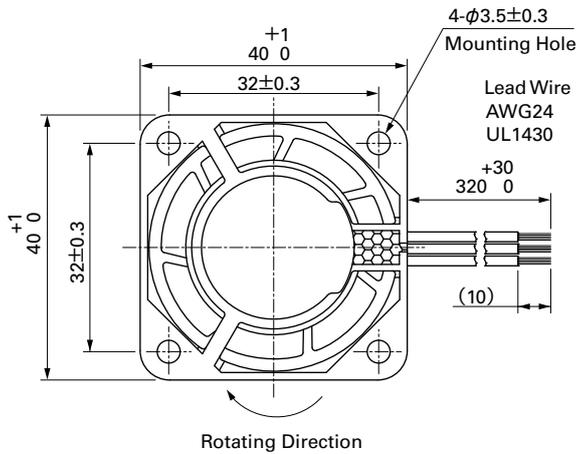
Specifications

The following nos. have pulse sensors and ribs.

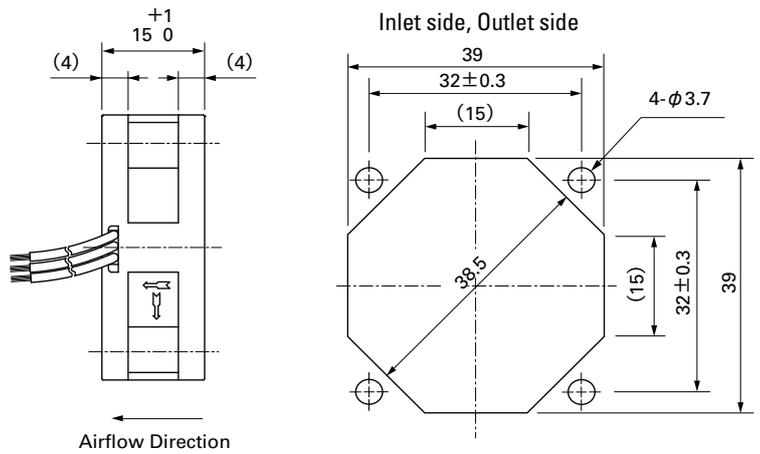
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WF0424H701	24	20.4 to 27.6	0.085	2.04	11,300	0.195 6.9	80 0.32	38	-20 to +70	40,000/60°C

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 481).

Dimensions (unit: mm)



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

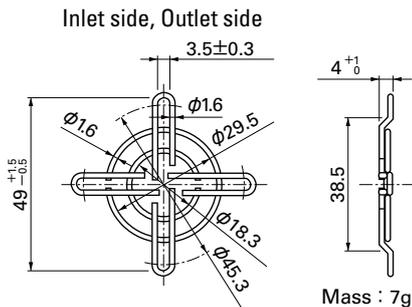


Options (unit: mm)

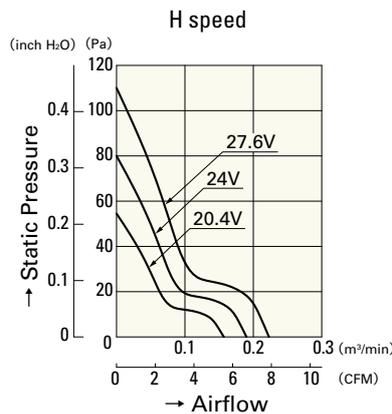
Finger Guards

Model : 109-059 Surface treatment : Nickel-chrome plating (silver)
: 109-059H : Cation electropainting (black)

Color



Airflow - Static Pressure Characteristics



9WF0424H701

40mm sq.

San Ace 40WF



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0), 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)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

The product can be used in an oil mist environment*

*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

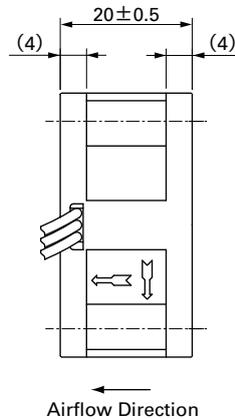
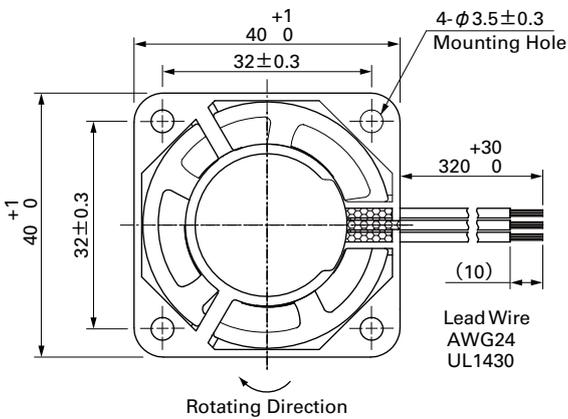
40×40×20mm (Mass : 50g) 9WF type

Specifications The following nos. have pulse sensors and ribs.

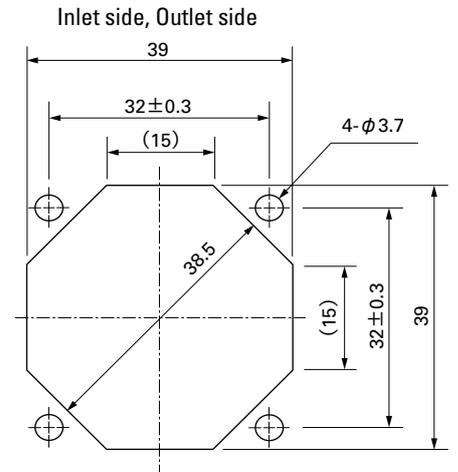
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WF0424H601	24	20.4 to 27.6	0.11	2.64	13,100	0.26 9.2	90 0.361	42	-20 to +70	40,000/60°C
9WF0424F601			0.076	1.82	11,000	0.22 7.77	62.8 0.252	37		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 481).

Dimensions (unit: mm)



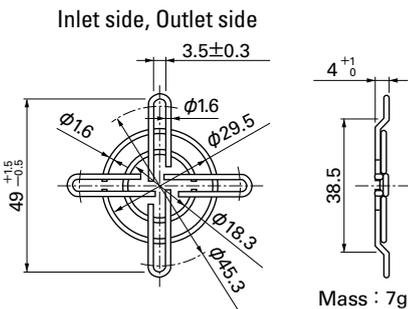
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



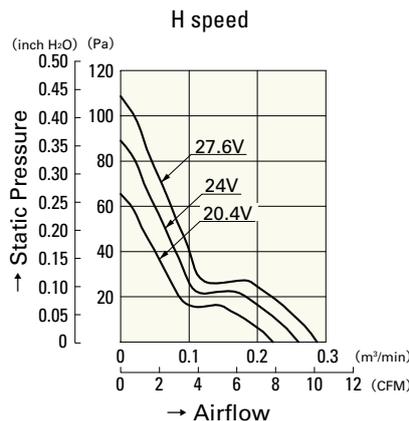
Options (unit: mm)

Finger Guards

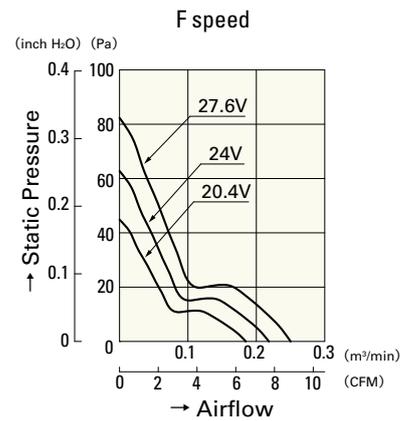
Model : 109-059 Surface treatment : Nickel-chrome plating (silver)
: 109-059H : Cation electroplating (black)



Airflow - Static Pressure Characteristics



9WF0424H601



9WF0424F601

60mm sq.

San Ace 60WF



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0), 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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

The product can be used in an oil mist environment*

*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

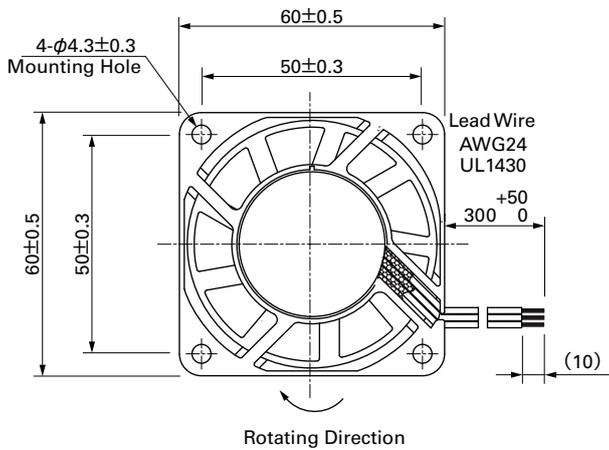
60×60×15mm (Mass : 62g) **9WF**type

Specifications The following nos. have pulse sensors and ribs.

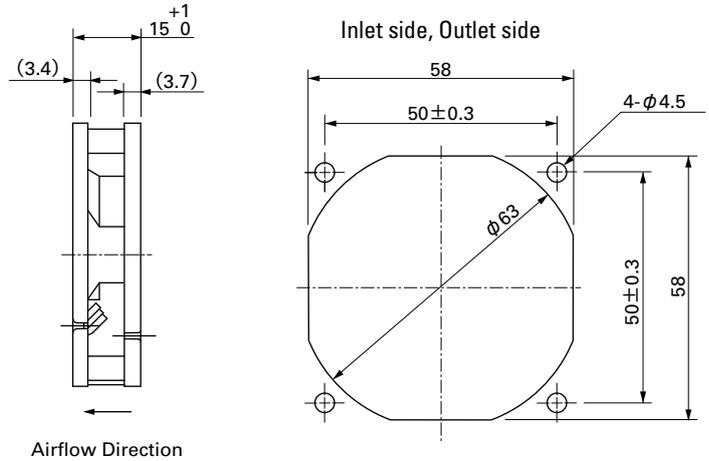
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WF0624H701	24	20.4 to 27.6	0.12	2.88	6,800	0.52 18.3	95 0.38	44	- 20 to + 70	40,000/60°C

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 481).

Dimensions (unit: mm)



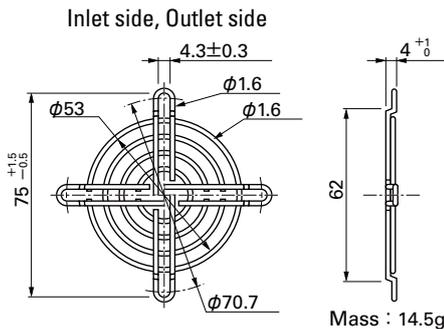
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



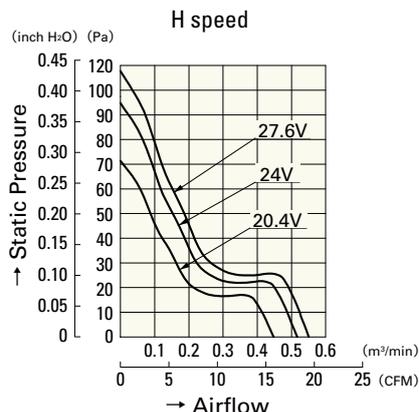
Options (unit: mm)

Finger Guards

Model : 109-139E Surface treatment : Nickel-chrome plating (silver) Color : 109-139H : Cation electropainting (black)



Airflow - Static Pressure Characteristics



9WF0624H701

60mm sq.

San Ace 60WF



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0), 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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

The product can be used in an oil mist environment*

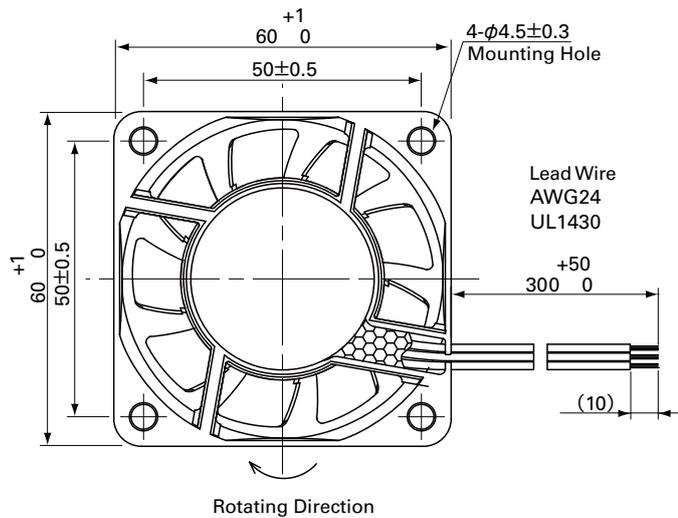
*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

60×60×20mm (Mass : 80g) 9WF type

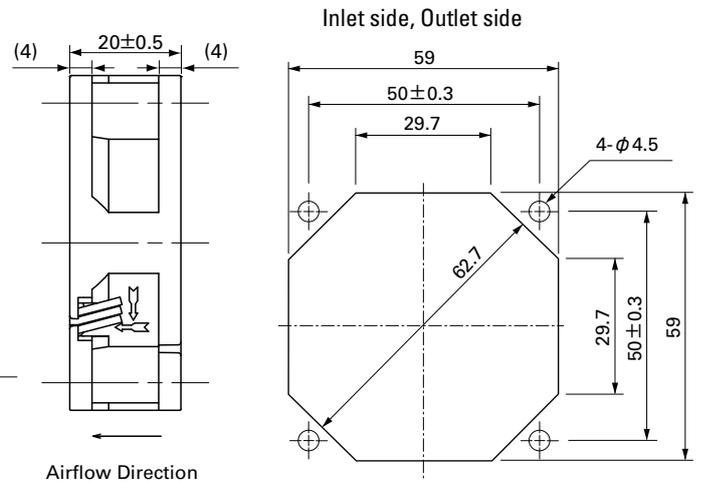
Specifications The following nos. have pulse sensors and ribs.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WF0624H601	24	12 to 27.6	0.15	3.6	6,600	0.69 24.3	114 0.45	42	-20 to +70	40,000/60°C

Dimensions (unit: mm)



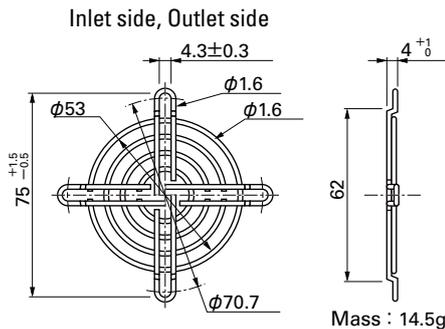
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



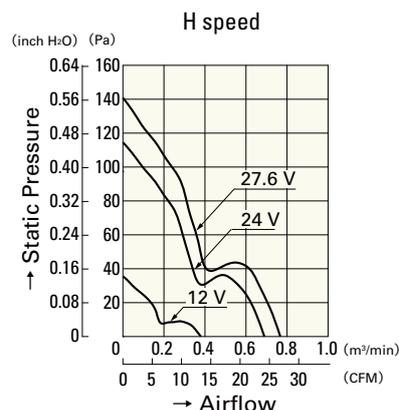
Options (unit: mm)

Finger Guards

Model : 109-139E Surface treatment : Nickel-chrome plating (silver) Color : 109-139H : Cation electropainting (black)



Airflow - Static Pressure Characteristics



9WF0624H601

60mm sq.

San Ace 60WF



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

The product can be used in an oil mist environment*

*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

60×60×25mm (Mass : 110g) **9WF type**

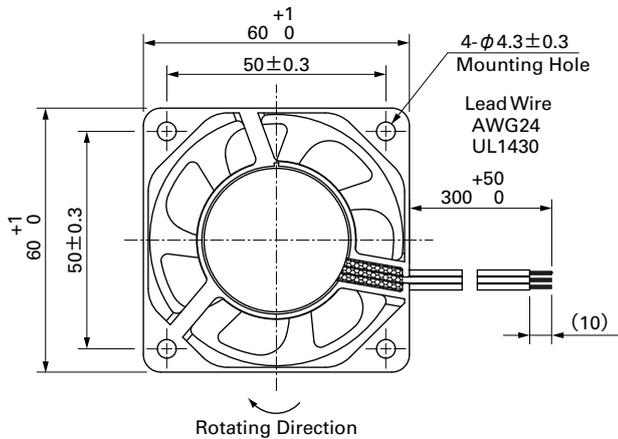
Specifications

The following nos. **have pulse sensors and ribs.**

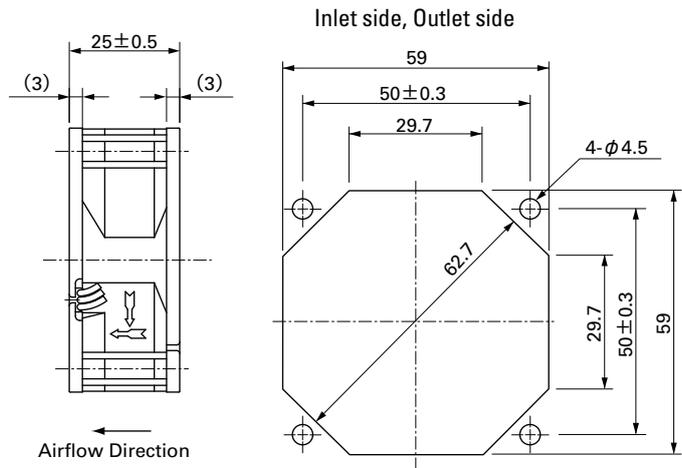
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WF0624H401	24	20.4 to 27.6	0.15	3.6	6,500	0.67 23.6	97 0.38	41	- 20 to + 70	40,000/60°C

Models without sensors are available as an option. Please refer to the index (p. 481).

Dimensions (unit: mm)



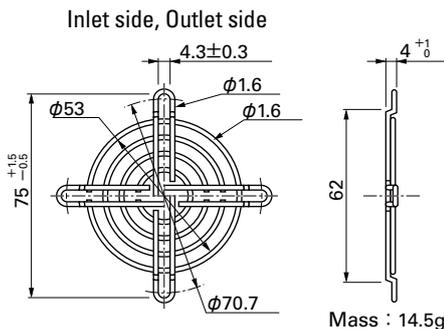
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



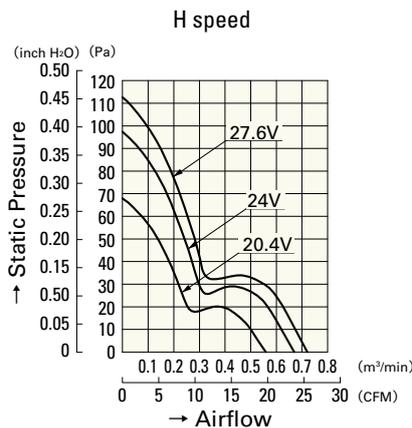
Options (unit: mm)

Finger Guards

Model : 109-139E Surface treatment : Nickel-chrome plating (silver)
: 109-139H : Cation electropainting (black)



Airflow - Static Pressure Characteristics



9WF0624H401

80mm sq.

San Ace 80WF



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0), 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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

The product can be used in an oil mist environment*

*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

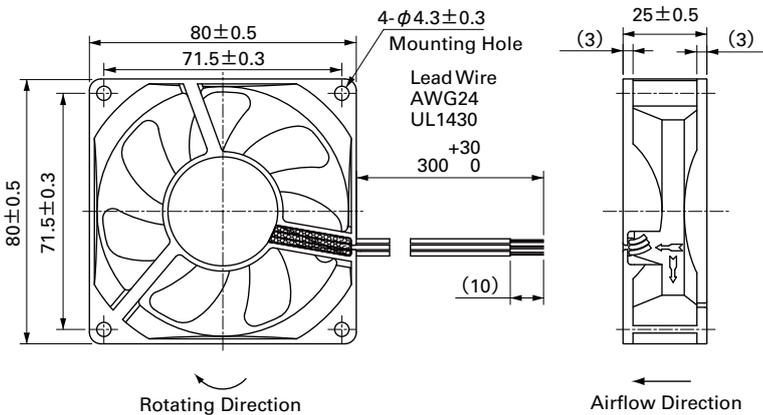
80×80×25mm (Mass : 130g) 9WF type

Specifications The following nos. have pulse sensors and ribs.

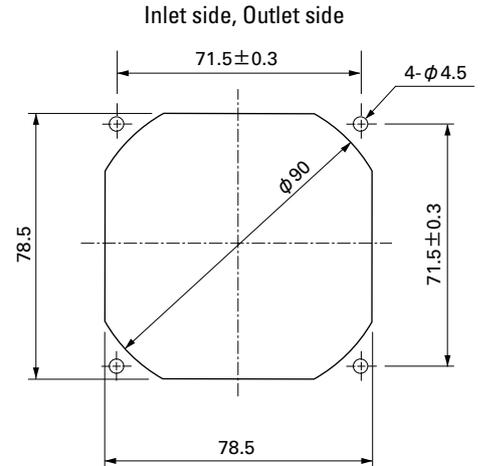
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WF0824S401	24	20.4 to 27.6	0.16	3.84	4,000	1.2 42.4	58 0.23	38	-20 to +70	40,000/60°C

Models without sensors are available as an option. Please refer to the index (p. 481).

Dimensions (unit: mm)



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

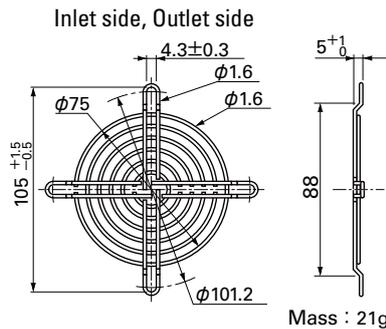
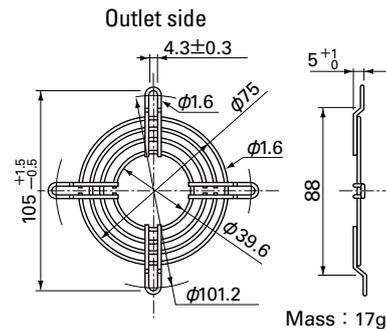


Options (unit: mm)

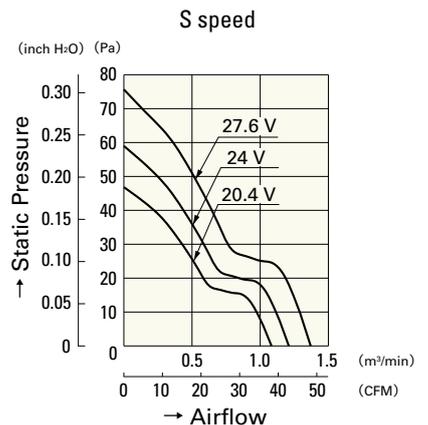
Finger Guards

Model : 109-049C Surface treatment : Nickel-chrome plating (silver) Color

Model : 109-049E Surface treatment : Nickel-chrome plating (silver) Color
: 109-049H : Cation electropainting (black)



Airflow - Static Pressure Characteristics



9WF0824S401

92mm sq.

San Ace 92WF



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

The product can be used in an oil mist environment*

*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

92×92×25mm (Mass : 120g) **9WF**type

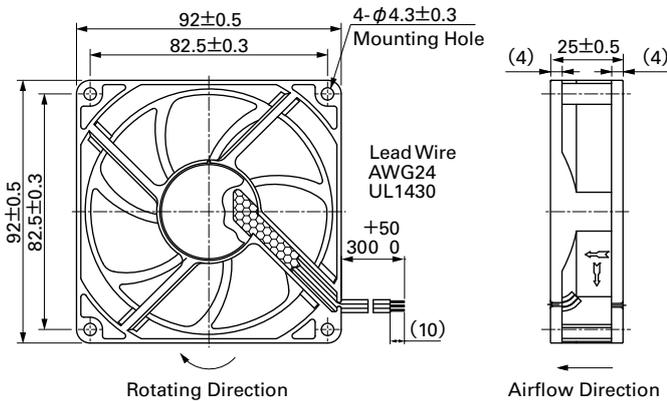
Specifications

The following nos. **have pulse sensors and ribs.**

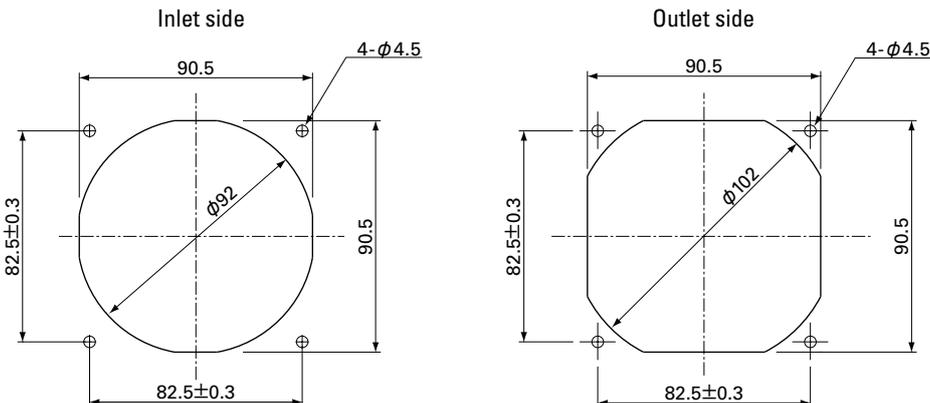
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WF0924H401	24	20.4 to 27.6	0.13	3.12	3,900	1.45 51.2	66 0.26	42.5	-20 to +70	40,000/60°C

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 481).

Dimensions (unit: mm)



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

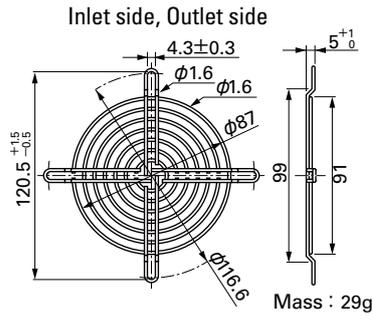
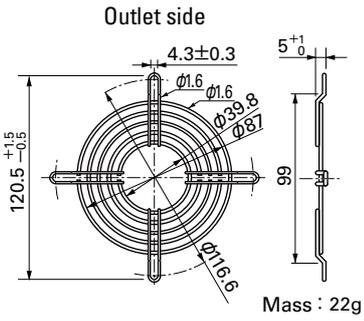


Options (unit: mm)

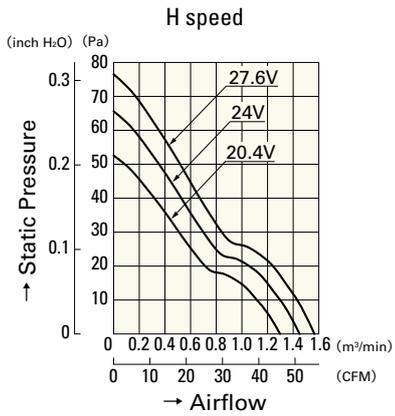
Finger Guards

Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color

Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color
: 109-099H : Cation electropainting (black)



Airflow - Static Pressure Characteristics



9WF0924H401

DC

Oil Proof Fan 92mm

92mm sq.

San Ace 92WF



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

The product can be used in an oil mist environment*

*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

92×92×32mm (Mass : 185g) **9WF**type

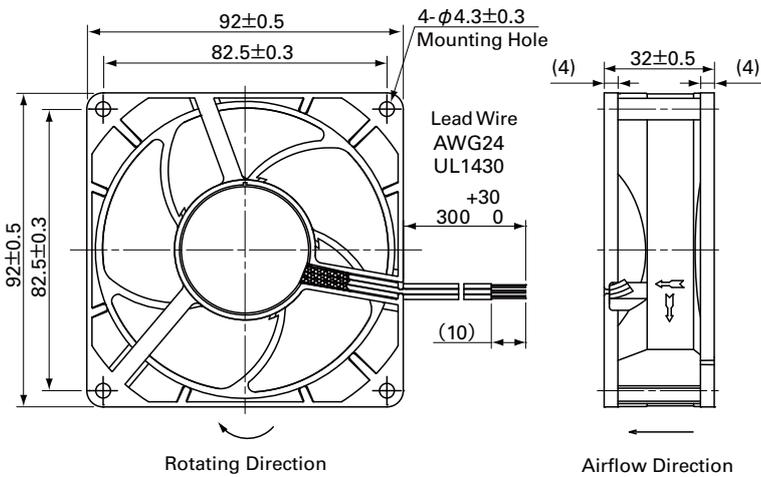
Specifications

The following nos. **have pulse sensors and ribs.**

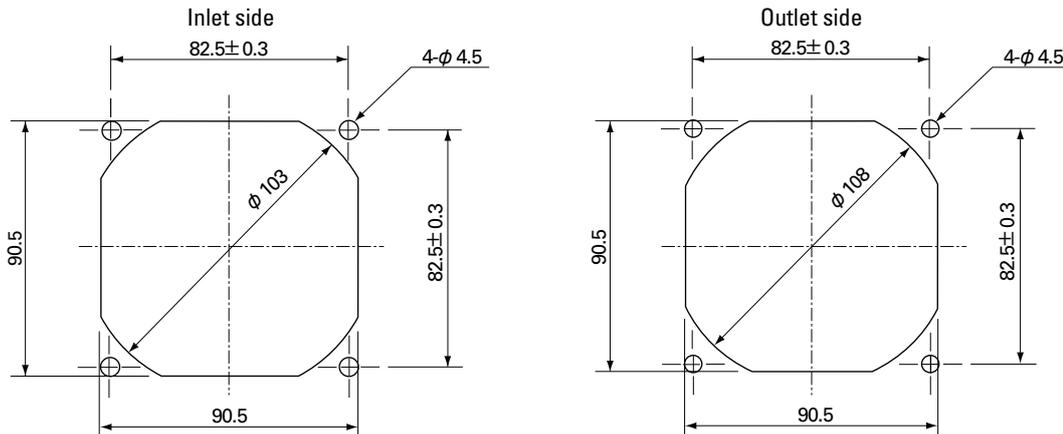
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WF0924S201	24	20.4 to 27.6	0.5	12	7,300	2.8 98.9	255 1.02	58	-20 to +70	40,000/60°C
9WF0924H201			0.35	8.4	6,500	2.45 86.5	200 0.8	56		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 481).

Dimensions (unit: mm)



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

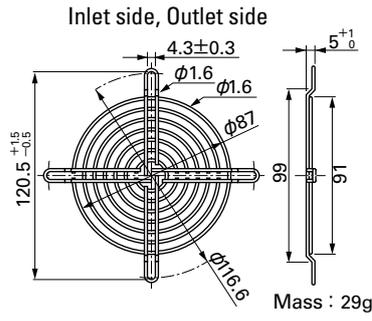
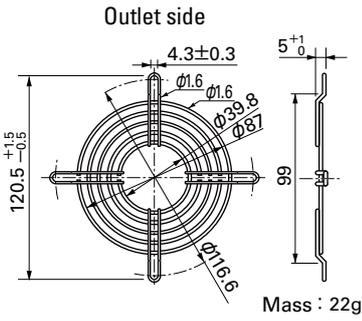


Options (unit: mm)

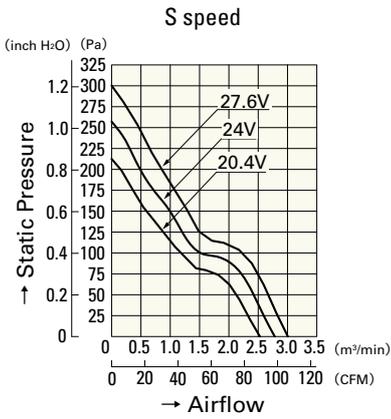
Finger Guards

Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color

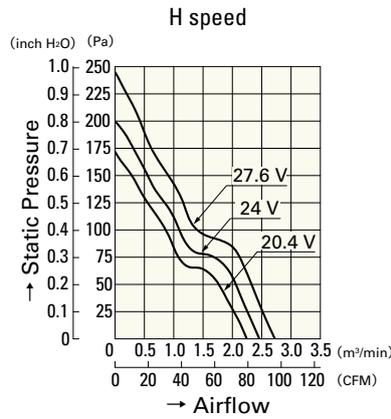
Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color
 : 109-099H : Cation electropainting (black)



Airflow - Static Pressure Characteristics



9WF0924S201



9WF0924H201

120mm sq.

San Ace 120WF



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

The product can be used in an oil mist environment*

*Environment where machining oil mist is scattered.
Usage of this product requires an evaluation with the oil that will be used.

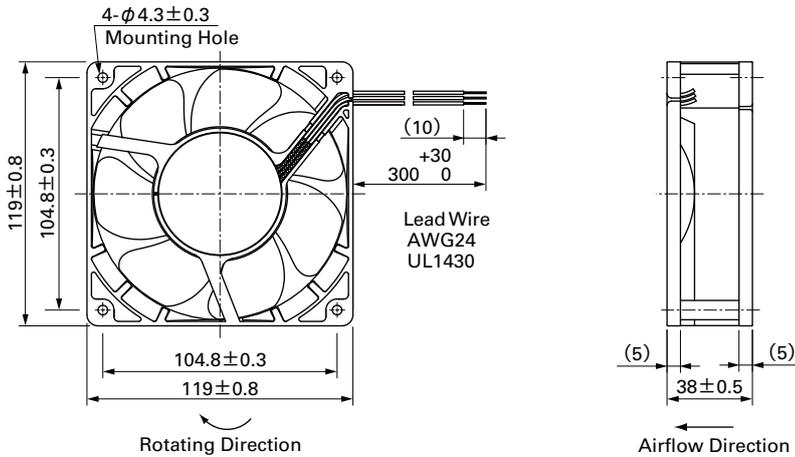
120×120×38mm (Mass : 355g) **9WF type**

Specifications The following nos. have pulse sensors and ribs.

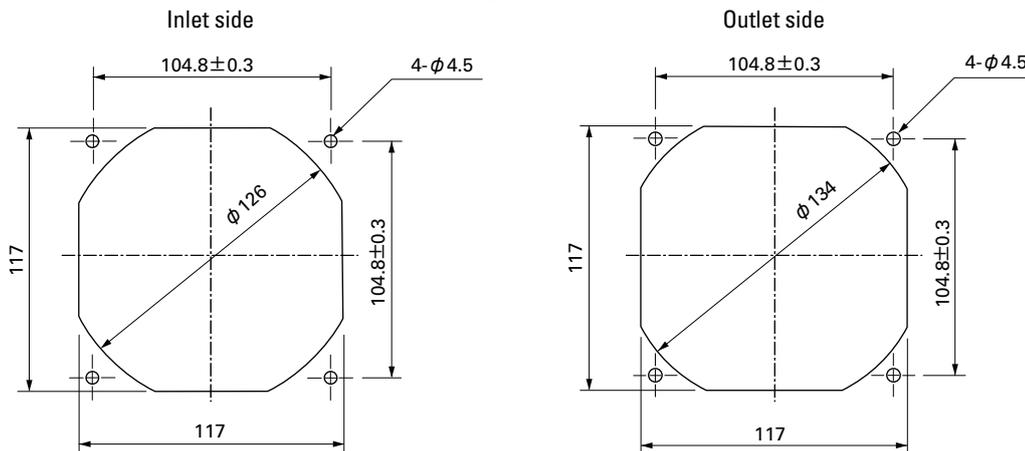
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9WF1224H101	24	20.4 to 27.6	0.32	7.68	3,100	3.34 118	100 0.40	46	- 20 to + 70	40,000/60°C

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 481).

Dimensions (unit: mm)



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



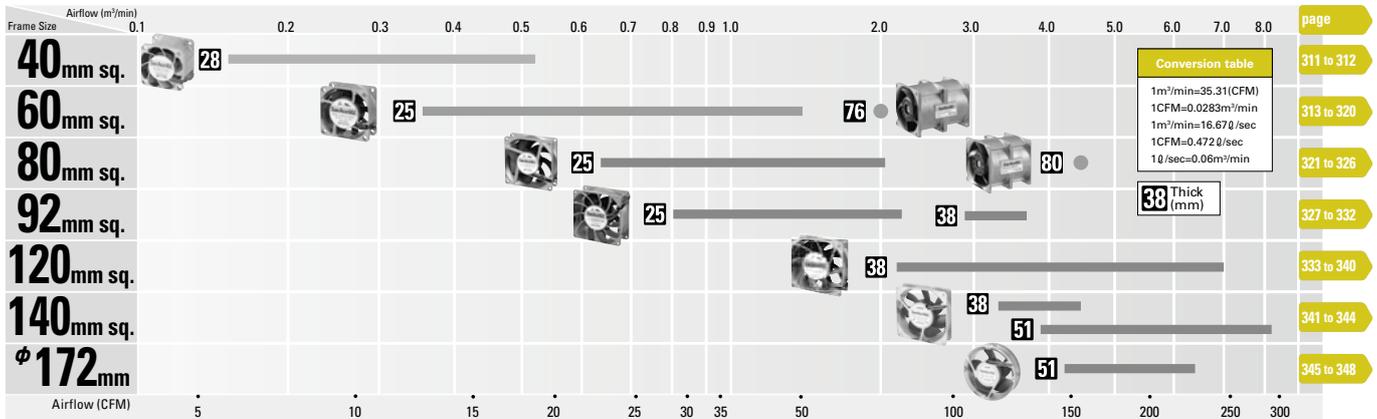
Long Life Fan

Cooling fan with Max. 200,000 hours of expected life.

Related product

Splash Proof, Long Life Fan ⇒ pp. 243, 249, 259

Domain Diagram



Part Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

109L	12	12	H	1	01
Type name / frame material	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications
109L / Aluminum 9LB / Aluminum 9GL / Aluminum 9L / Aluminum 9LG / Aluminum	04 : 40×40mm 06 : 60×60mm 08 : 80×80mm 09 : 92×92mm 12 : 120×120mm 14 : 140×140mm 17 : φ172mm 57 : φ172mm×150mm (sidecut)	12 : 12V 24 : 24V 48 : 48V etc	E, F, G, H, J, L, M, S etc	1 : 38mm thick 3 : 28mm thick 4 : 25mm thick 5 : 51mm thick	01 : With a pulse sensor 02 : Without a sensor D01 : With a lock sensor

Fans with PWM control function

Example :

9LG	06	12	P	4	S	001
Type name / frame material	Frame size	Voltage	PWM control function	Frame thickness	Speed code	Individual customer's spec
9LG / Aluminum	06 : 60×60mm	12 : 12V		4 : 25mm thick		2 or 3 digits

40mm sq.

San Ace 40L



General Specifications

- Material Frame: Aluminum, 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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

40×40×28mm (Mass : 55g) **9L type**

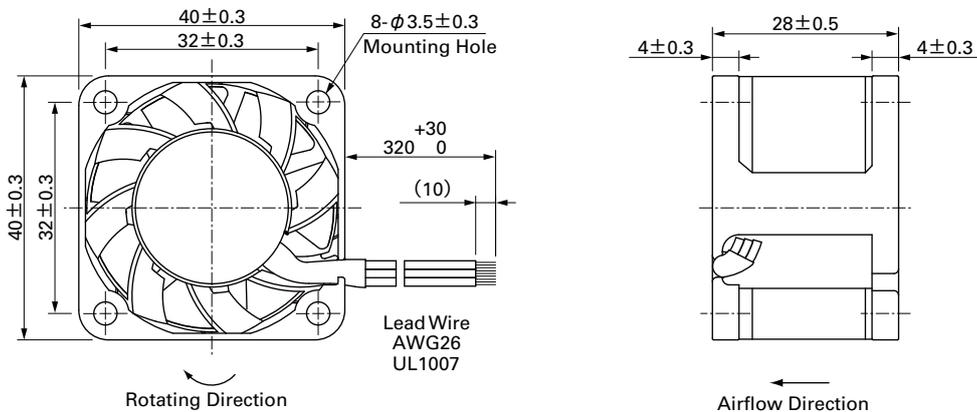
Specifications

The following nos. **have pulse sensors.**

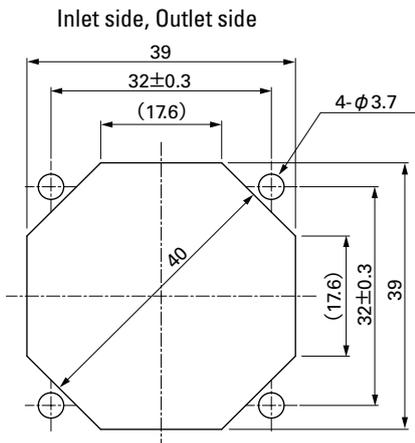
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9L0412J301	12	10.2 to 13.8	0.31	3.72	11,700	0.52 18.4	206 0.827	48	-20 to +70	100,000/60°C
9L0412H301			0.15	1.80	8,400	0.37 13.1	106 0.426	40		
9L0412M301			0.045	0.54	4,000	0.16 5.65	24 0.096	19		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 478).

Dimensions (unit: mm)



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



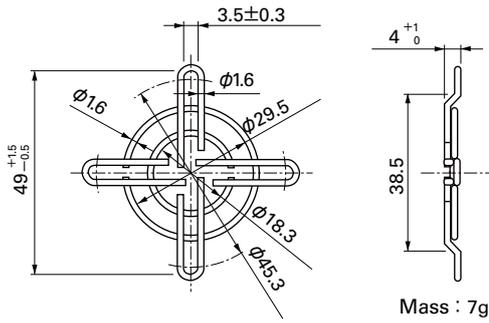
Options (unit: mm)

Finger Guards

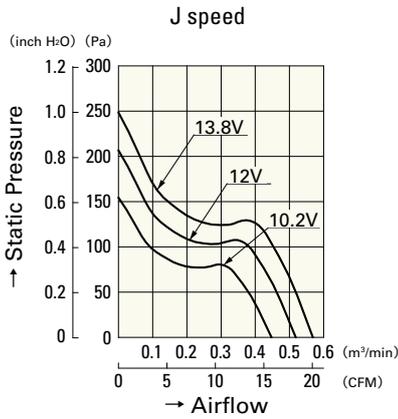
Model : 109-059 Surface treatment : Nickel-chrome plating (silver)
 : 109-059H : Cation electropainting (black)

Color

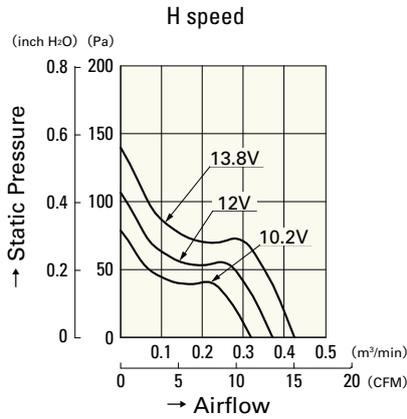
Inlet side, Outlet side



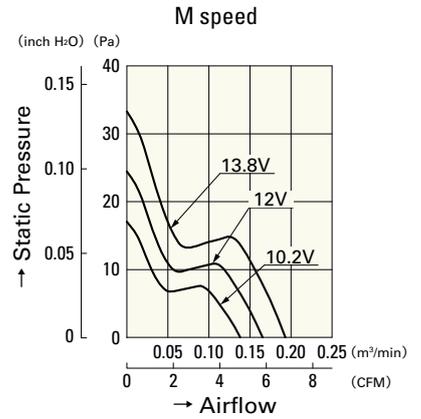
Airflow - Static Pressure Characteristics



9L0412J301



9L0412H301



9L0412M301

DC

Long Life Fan 40mm

60mm sq.

San Ace 60L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

60×60×25mm (Mass : 100g) **9LG type** **High Airflow**

Specifications

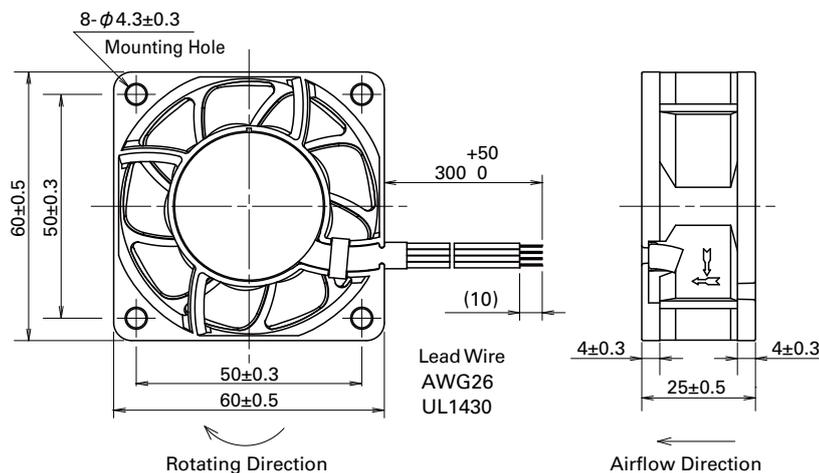
The following nos. have PWM controls and pulse sensors.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Note1)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]		
9LG0612P4S001	12	10.8 to 13.2	100	0.67	8.04	11,000	1.40 49.4	300 1.204	53	-20 to +70	180,000/60°C		
			20	0.06	0.72	2,900	0.36 12.7	20.8 0.083	20				
9LG0612P4J001			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				
9LG0612P4H001			100	0.17	2.04	6,150	0.78 27.5	97 0.389	35				
			20	0.03	0.36	1,350	0.17 6.0	4.7 0.018	14				
9LG0612P4M001			100	0.09	1.08	4,200	0.53 18.7	45 0.180	24				
			20	0.03	0.36	900	0.11 3.8	2.0 0.008	14				
9LG0624P4S001			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
9LG0624P4J001					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
9LG0624P4H001	100	0.08			1.92	6,150	0.78 27.5	97 0.389	35				
	20	0.02			0.48	1,300	0.16 5.6	4.3 0.017	14				
9LG0624P4M001	100	0.04			0.96	4,200	0.53 18.7	45 0.180	24				
	20	0.01			0.24	800	0.10 3.5	1.6 0.006	14				
9LG0648P4S001	48	36 to 72			100	0.18	8.64	11,000	1.40 49.4	305 1.224	53		
					20	0.02	0.96	2,900	0.36 12.7	20.8 0.083	20		
9LG0648P4J001					100	0.10	4.80	8,650	1.10 38.8	182 0.730	47		
					20	0.02	0.96	2,100	0.26 9.1	10.7 0.042	17		
9LG0648P4H001			100	0.06	2.88	6,150	0.78 27.5	97 0.389	35				
			20	0.02	0.96	1,000	0.12 4.2	2.5 0.010	14				
9LG0648P4M001			100	0.04	1.92	4,200	0.53 18.7	45 0.180	24				
			20	0.02	0.96	650	0.08 2.8	1.0 0.004	14				

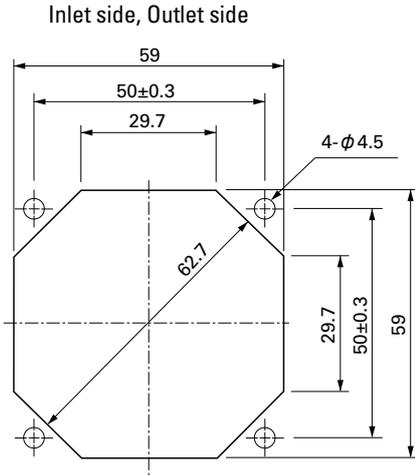
Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



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



Options (unit: mm)

Finger Guards

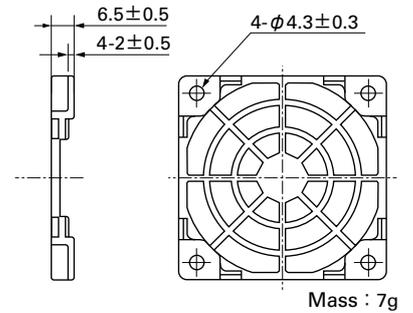
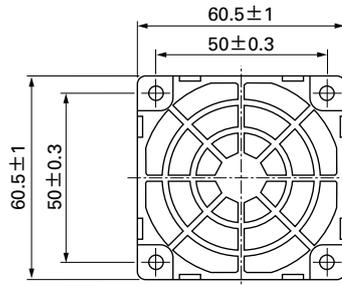
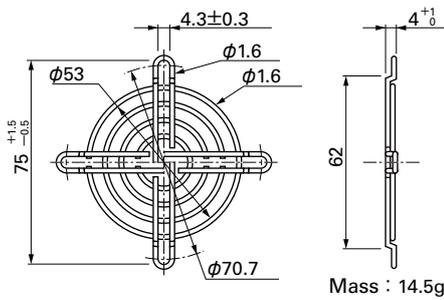
Model : 109-139E Surface treatment : Nickel-chrome plating (silver)
 : 109-139H : Cation electropainting (black)

Color

Resin Finger Guards

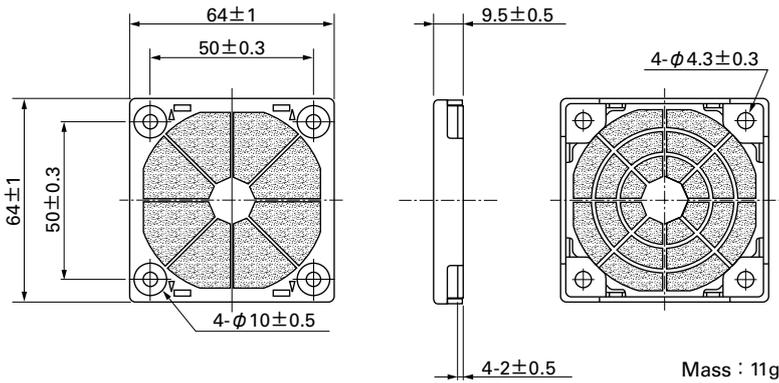
Model : 109-1003G

Inlet side, Outlet side



Resin Filter Kits

Model : 109-1003F13 (13PPI), 109-1003F20 (20PPI)
 : 109-1003F30 (30PPI), 109-1003F40 (40PPI)



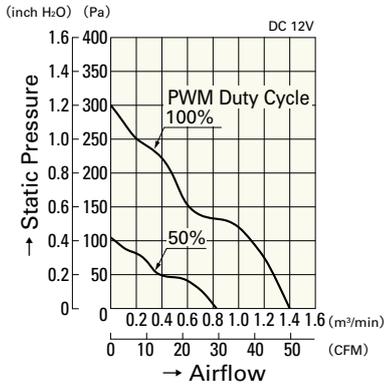
60mm sq.

San Ace 60L

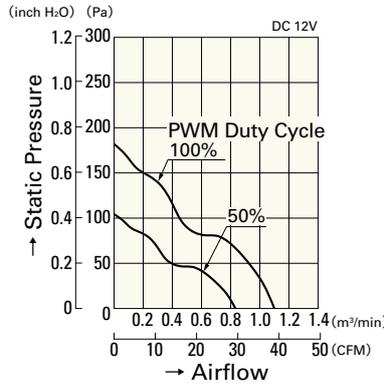
60×60×25mm [Mass : 100g]

Airflow - Static Pressure Characteristics

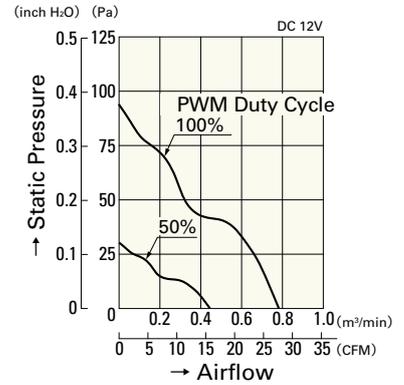
PWM Duty Cycle



9LG0612P4S001

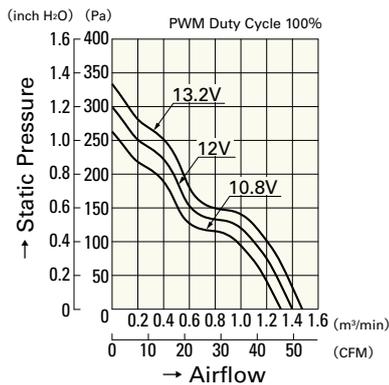


9LG0612P4J001

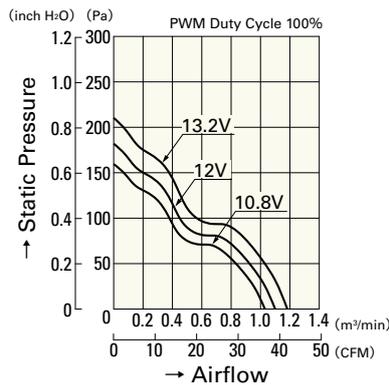


9LG0612P4H001

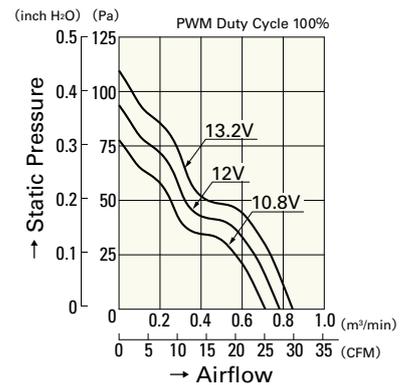
Operating Voltage Range



9LG0612P4S001

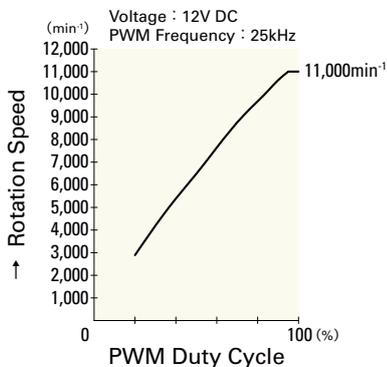


9LG0612P4J001

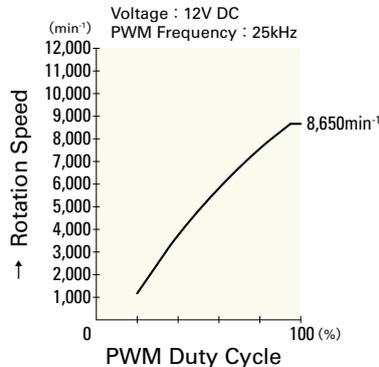


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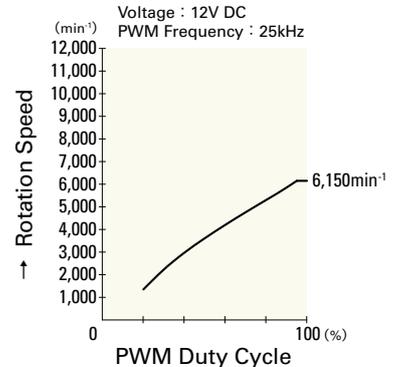
PWM Duty - Speed Characteristics Example



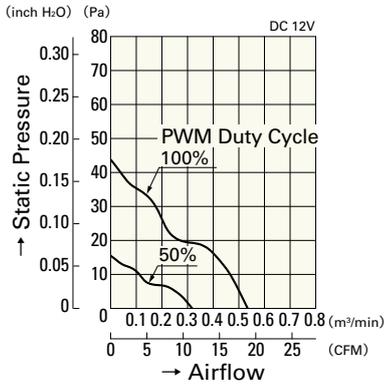
9LG0612P4S001



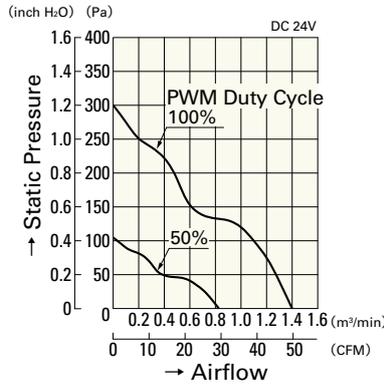
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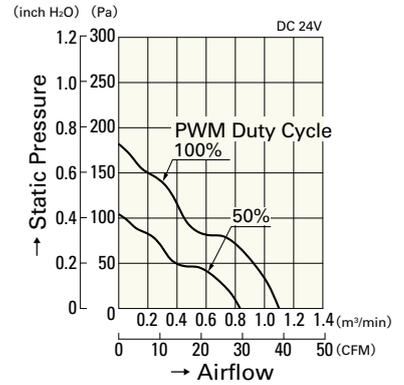
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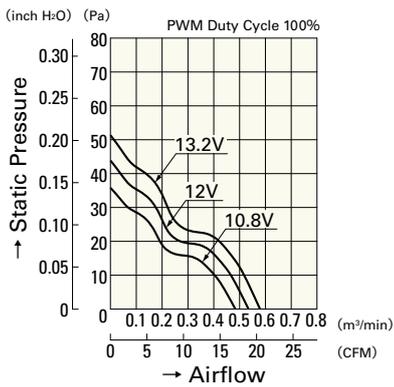
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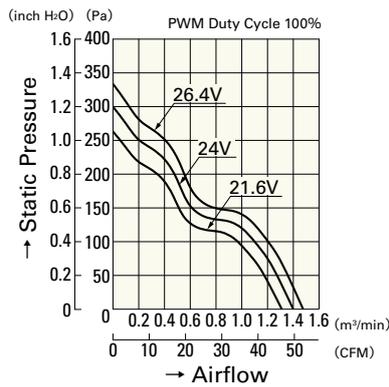
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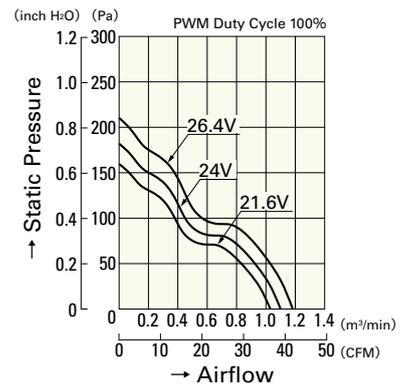
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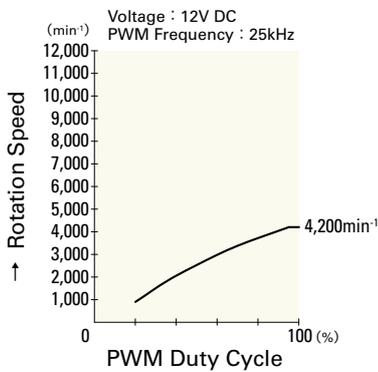
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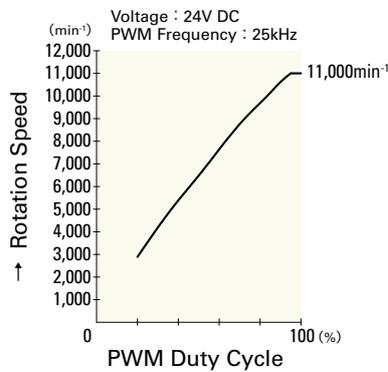
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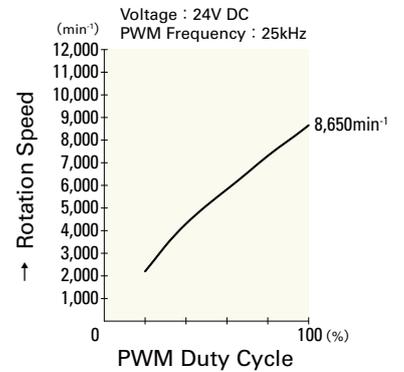
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9LG0612P4M001



9LG0624P4S001



9LG0624P4J001

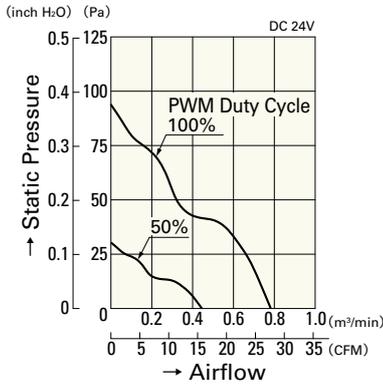
60mm sq.

San Ace 60L

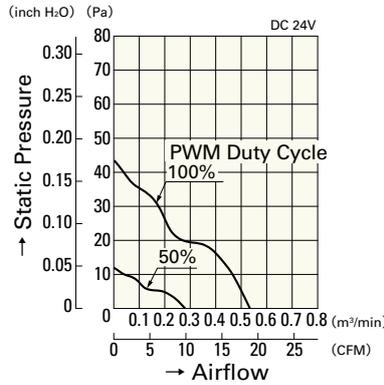
60×60×25mm [Mass : 100g]

Airflow - Static Pressure Characteristics

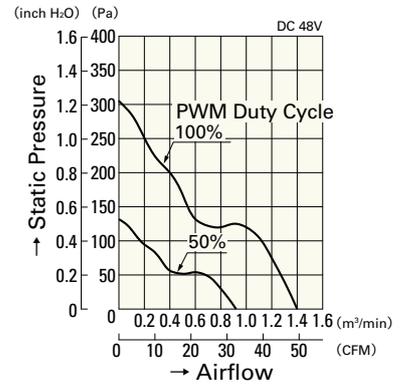
PWM Duty Cycle



9LG0624P4H001

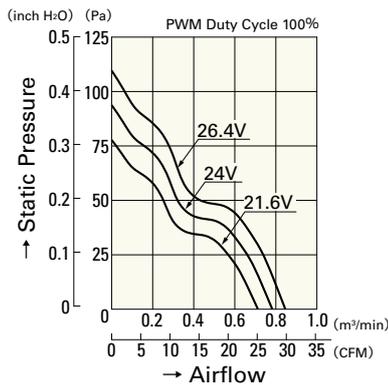


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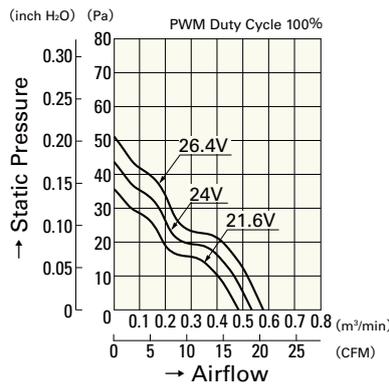


9LG0648P4S001

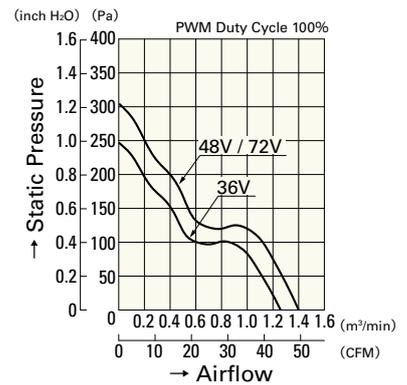
Operating Voltage Range



9LG0624P4H001

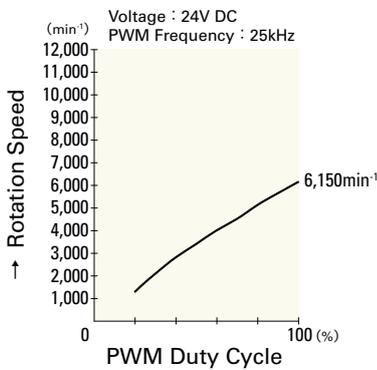


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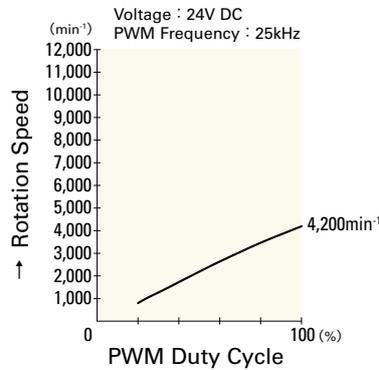


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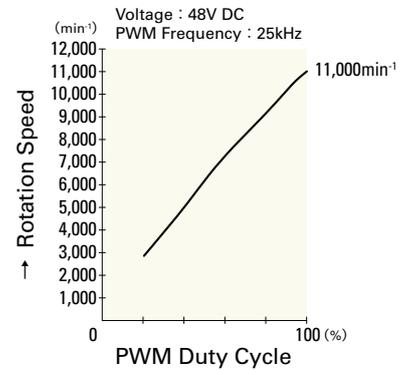
PWM Duty - Speed Characteristics Example



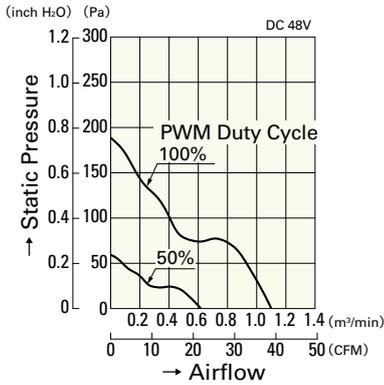
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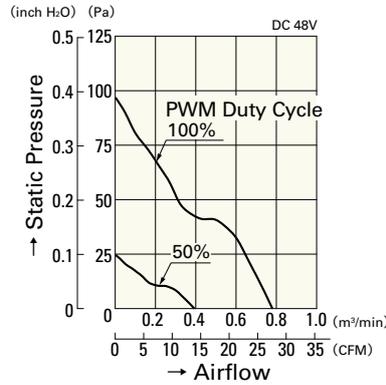
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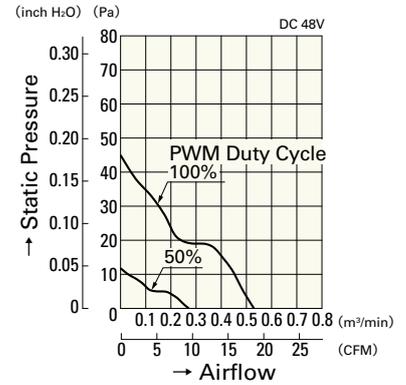
9LG0648P4S001



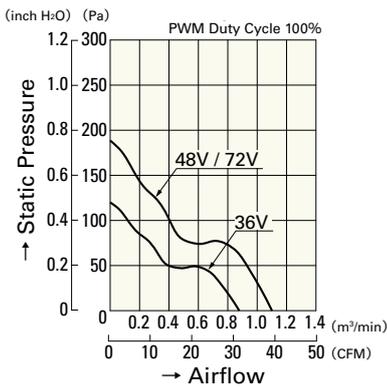
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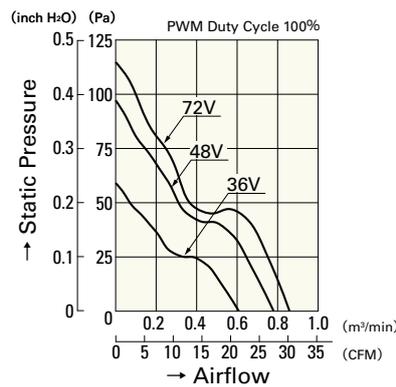
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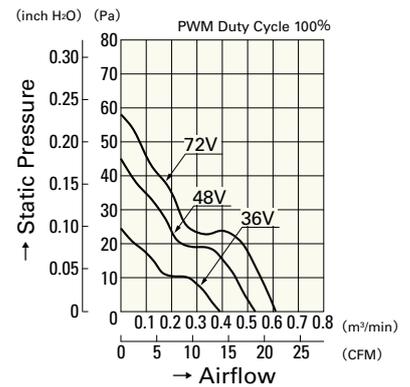
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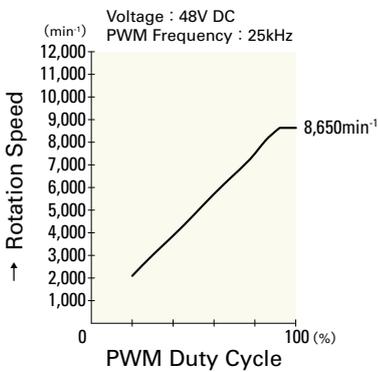
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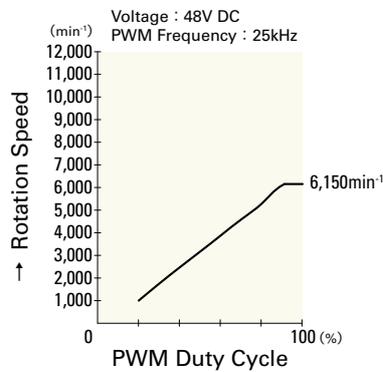
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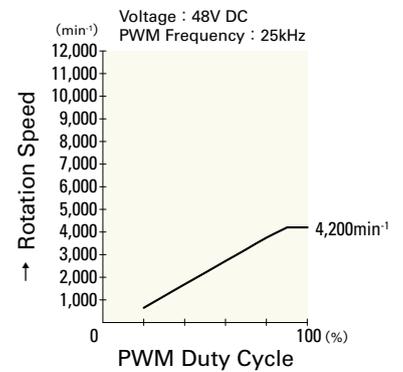
9LG0648P4M001



9LG0648P4J001



9LG0648P4H001



9LG0648P4M001

60mm sq.

San Ace 60L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire Inlet ⊕red ⊖black (Sensor) yellow (Control) brown
Outlet ⊕orange ⊖gray (Sensor) purple (Control) white
- Storage Temperature -30°C to +70°C (Non-condensing)

60×60×76mm (Mass : 300g) **9CRL type** **Counter Rotating**

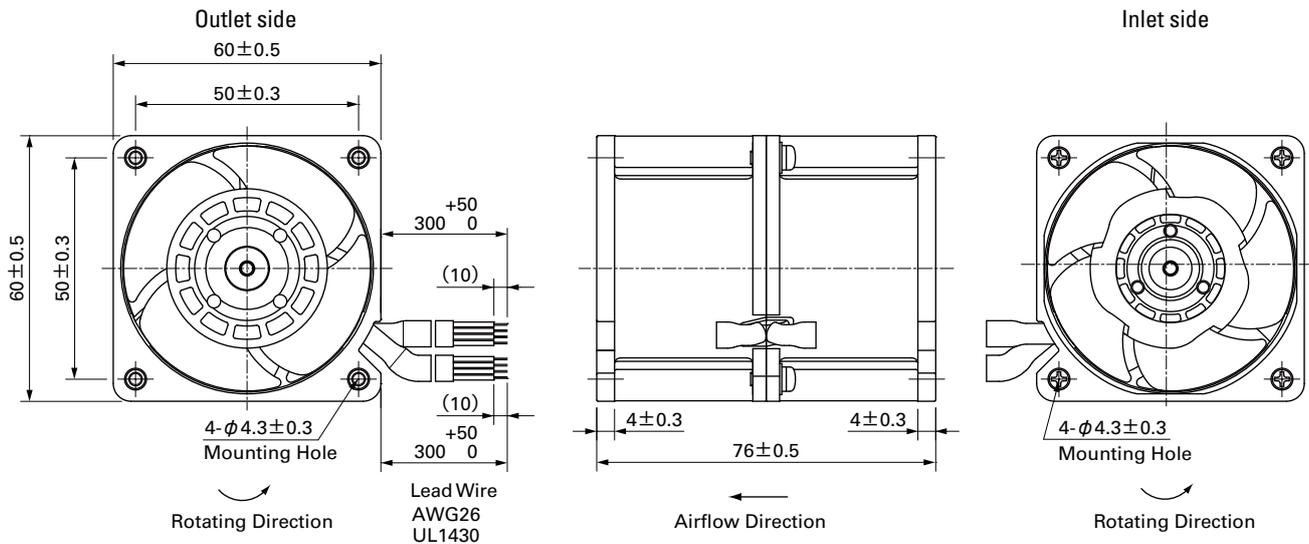
Specifications

The following nos. have PWM controls and pulse sensors.

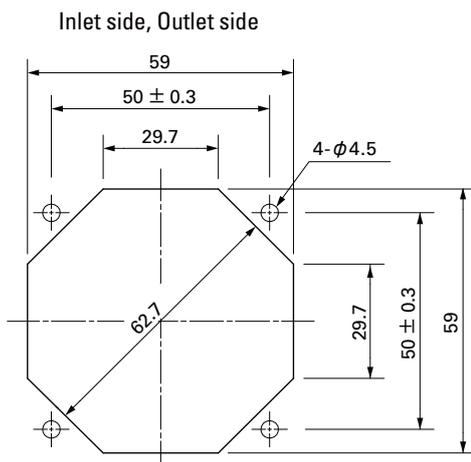
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle* [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]		Max. Airflow [m ³ /min] [CFM]		Max. Static Pressure [Pa] [inchH ₂ O]		SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
						Inlet	Outlet							
9CRL0612P0G001	12	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	47.6	0.19	32		

*PWM Frequency : 25kHz

Dimensions (unit: mm)



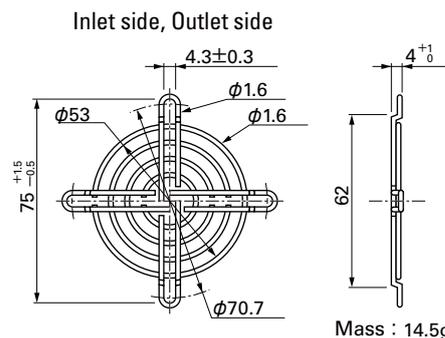
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

Finger Guards

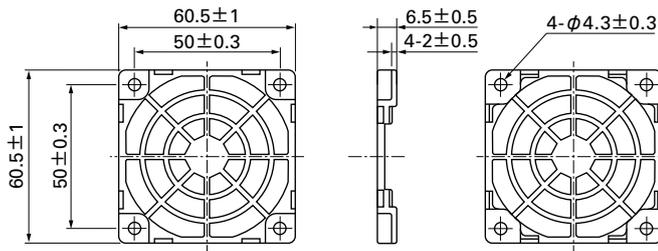
Model : 109-139E Surface treatment : Nickel-chrome plating (silver)
: 109-139H : Cation electropainting (black)



Options (unit: mm)

Resin Finger Guards

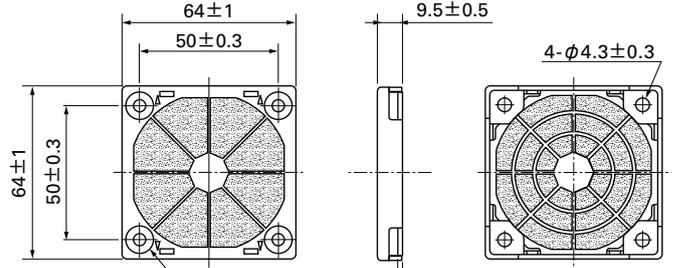
Model : 109-1003G



Mass : 7g

Resin Filter Kits

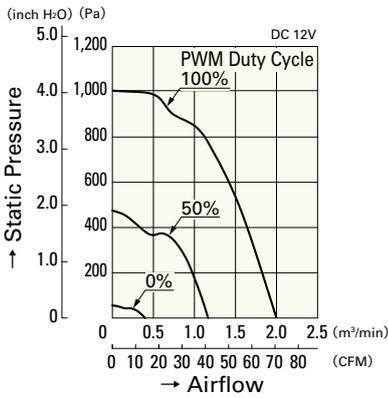
Model : 109-1003F13 (13PPI), 109-1003F20 (20PPI)
: 109-1003F30 (30PPI), 109-1003F40 (40PPI)



Mass : 11g

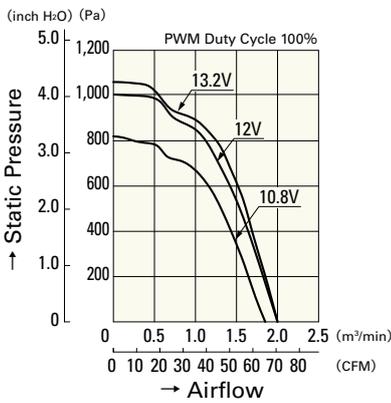
Airflow - Static Pressure Characteristics

PWM Duty Cycle



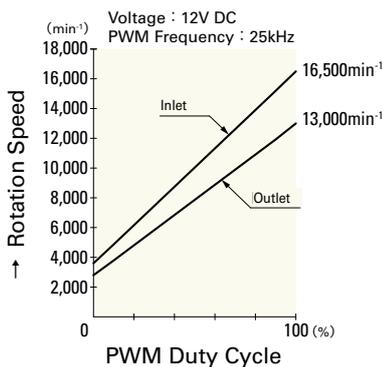
9CRL0612P0G001

Operating Voltage Range



9CRL0612P0G001

PWM Duty - Speed Characteristics Example



9CRL0612P0G001

80mm sq.

San Ace 80L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

80×80×25mm (Mass : 130g) **9LG type** **High Airflow**

Specifications

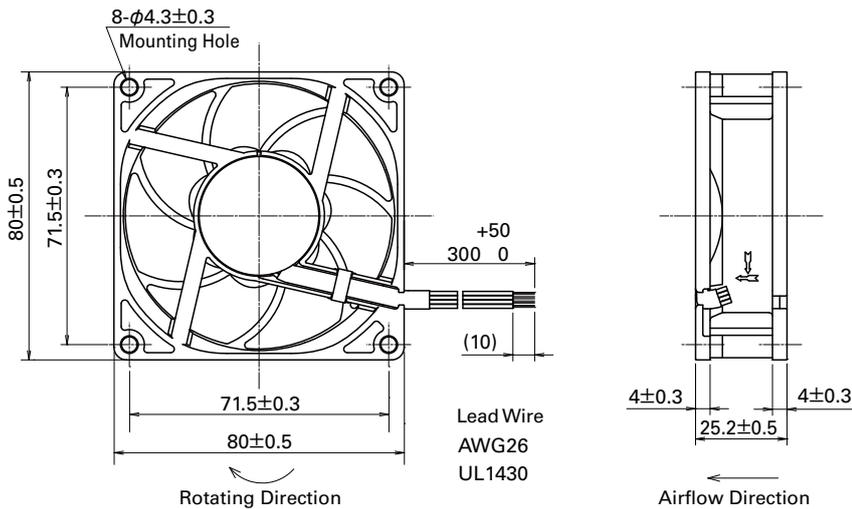
The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Note)1)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9LG0812P4J001	12	10.8 to 13.2	100	0.6	7.2	7,400	2.07 73.0	177 0.71	49	-20 to +70	180,000/60°C
			20	0.06	0.72	1,800	0.50 17.6	10.4 0.04	16		
9LG0812P4G001			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		
9LG0812P4H001			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		
9LG0824P4J001	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		
9LG0824P4G001			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		
9LG0824P4H001			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		

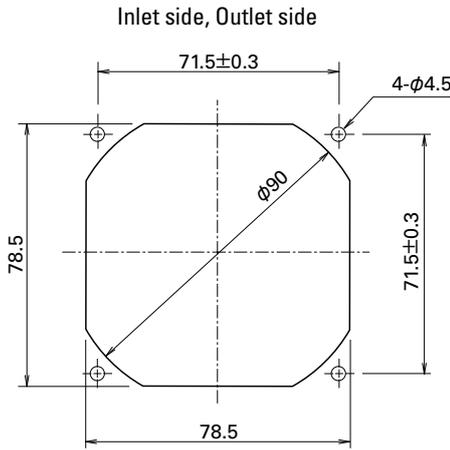
Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



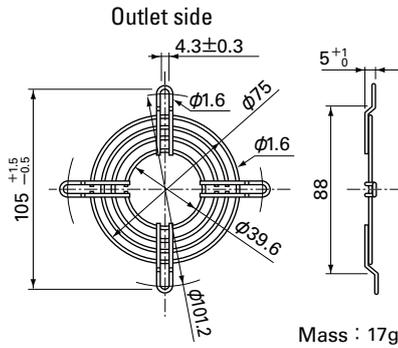
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

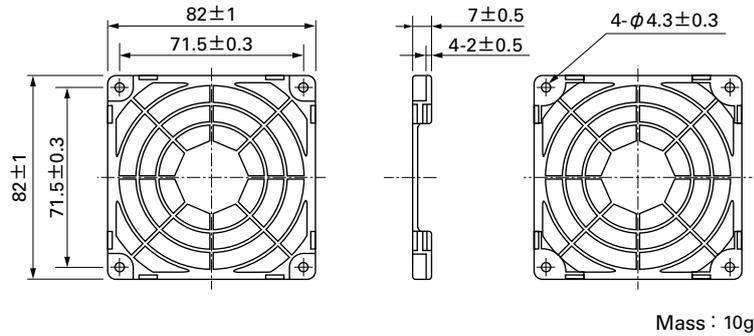
Finger Guards

Model : 109-049C Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)

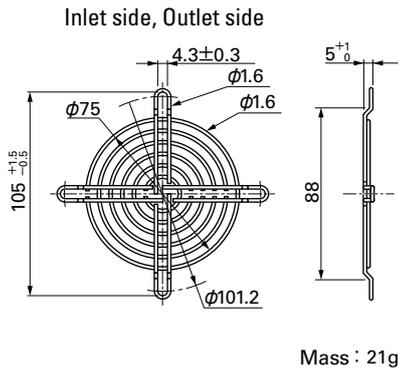


Resin Finger Guards

Model : 109-1002G

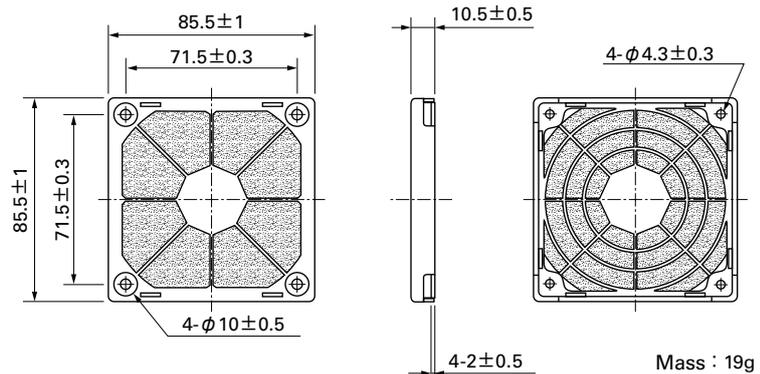


Model : 109-049E Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)
: 109-049H : Cation electropainting (black)



Resin Filter Kits

Model : 109-1002F13 (13PPI), 109-1002F20 (20PPI)
: 109-1002F30 (30PPI), 109-1002F40 (40PPI)



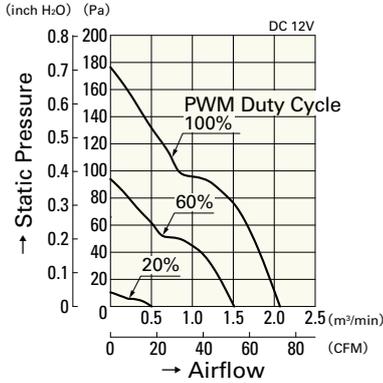
80mm sq.

San Ace 80L

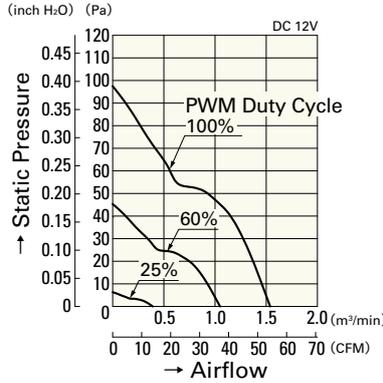
80×80×25mm [Mass : 130g]

Airflow - Static Pressure Characteristics

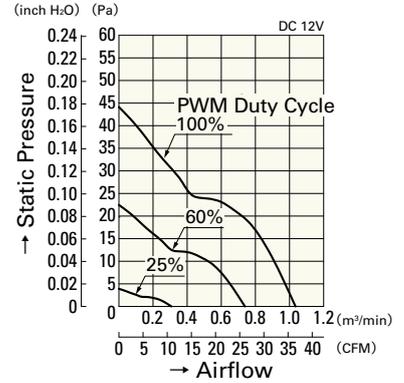
PWM Duty Cycle



9LG0812P4J001

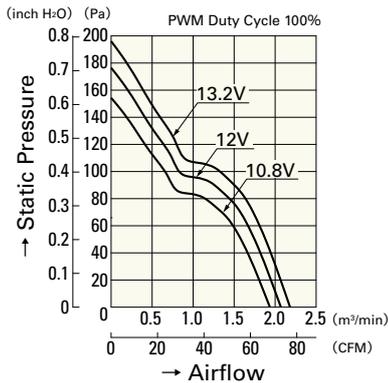


9LG0812P4G001

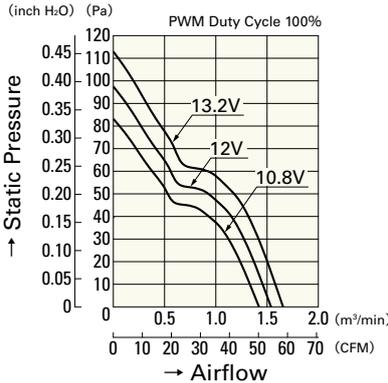


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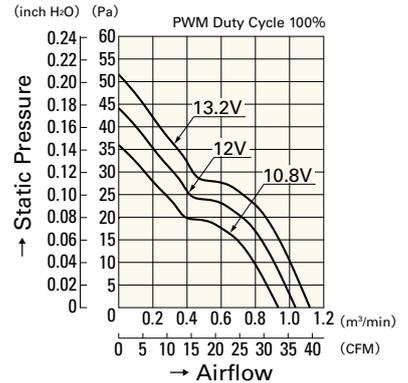
Operating Voltage Range



9LG0812P4J001

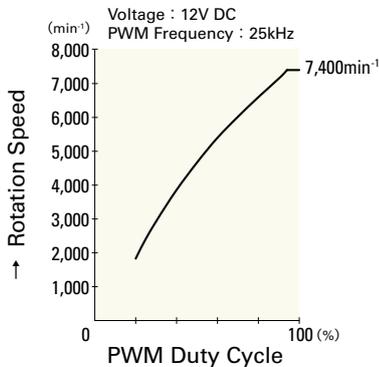


9LG0812P4G001

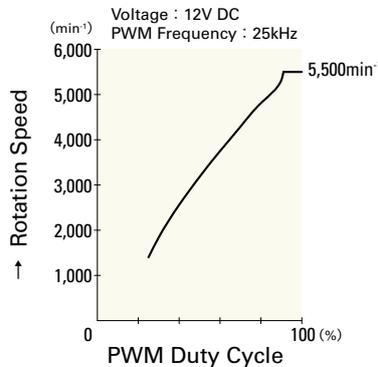


9LG0812P4H001

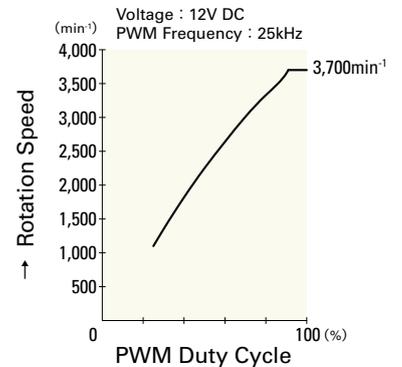
PWM Duty - Speed Characteristics Example



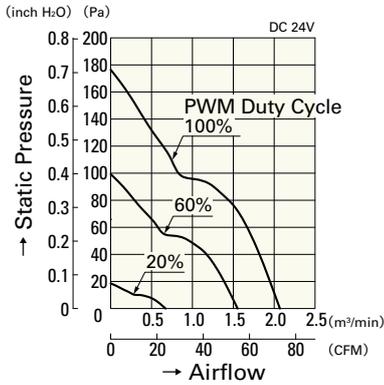
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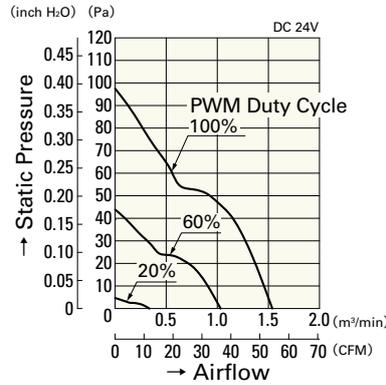
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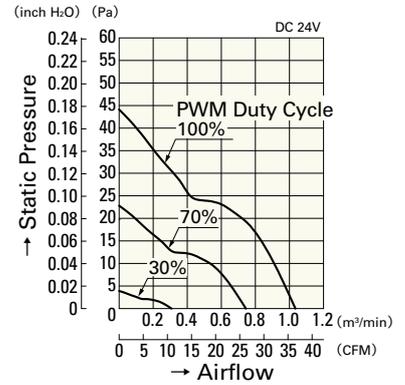
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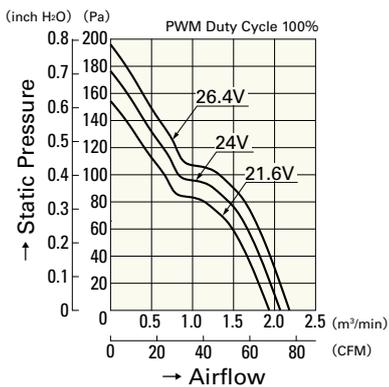
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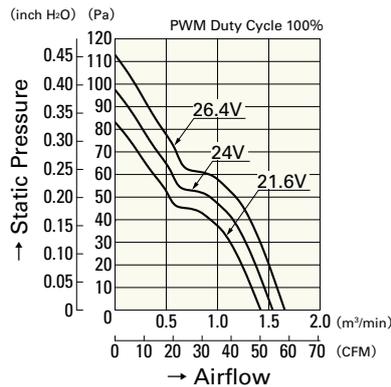
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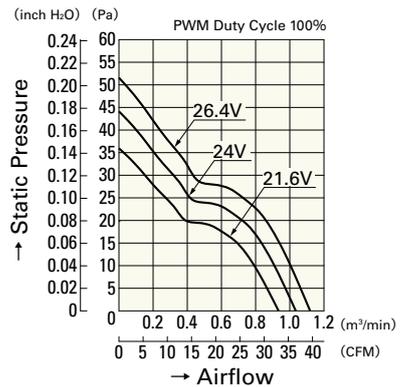
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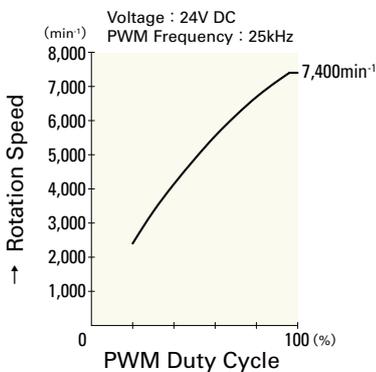
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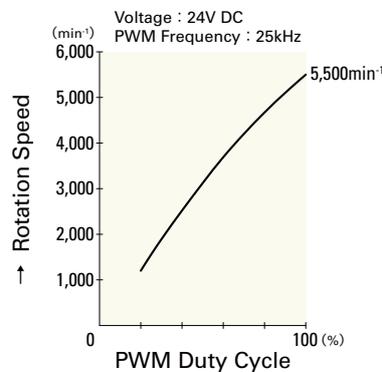
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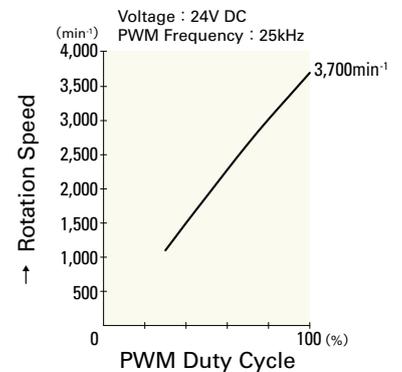
9LG0824P4H001



9LG0824P4J001



9LG0824P4G001



9LG0824P4H001

80 mm sq.

San Ace 80L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire Inlet ⊕red ⊖black (Sensor) yellow (Control) brown
Outlet ⊕orange ⊖gray (Sensor) purple (Control) white
- Storage Temperature -30°C to +70°C (Non-condensing)

80×80×80 mm (Mass : 490g) **9CRL type** **Counter Rotating**



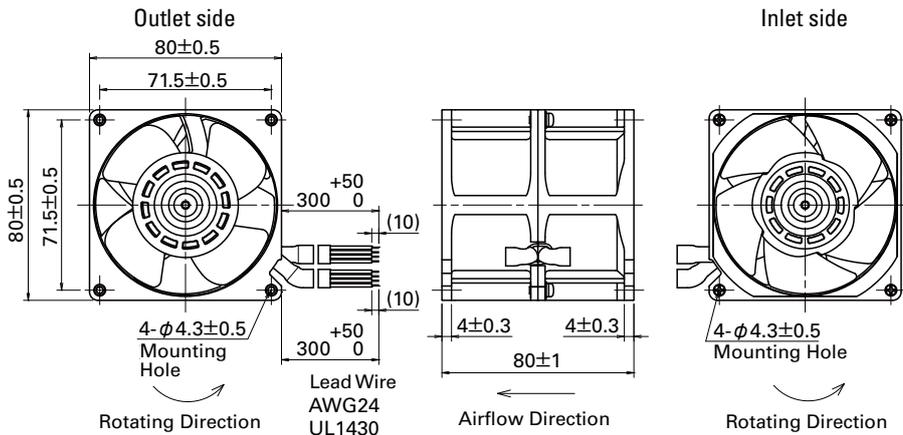
Specifications

The following nos. have PWM controls and pulse sensors.

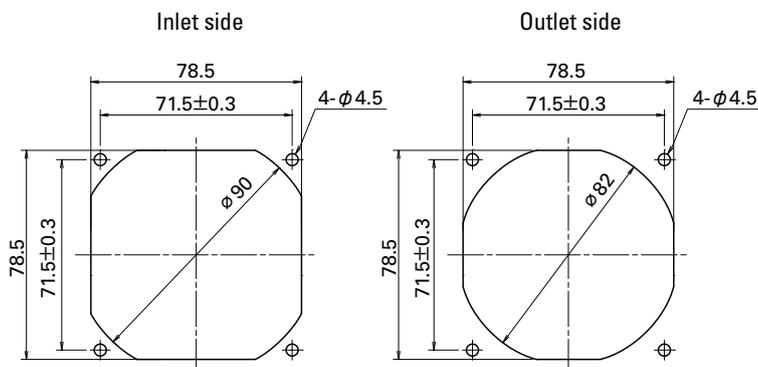
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle※ [%]	Rated Current [A]		Rated Input [W]		Rated Speed [min ⁻¹]		Max. Airflow [m ³ /min] [CFM]		Max. Static Pressure [Pa] [inchH ₂ O]		SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
								Inlet	Outlet							
9CRL0812P8G001	12	10.8 to 13.2	100	5.3	63.6	12,000	11,300	4.5	158.9	1,150	4.62	76	-20 to +70	130,000/60°C		
			0	0.2	2.4	2,000	1,900	0.74	26.1	31.9	0.13	30				

※PWM Frequency : 25kHz

Dimensions (unit: mm)



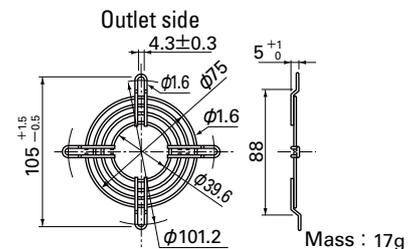
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



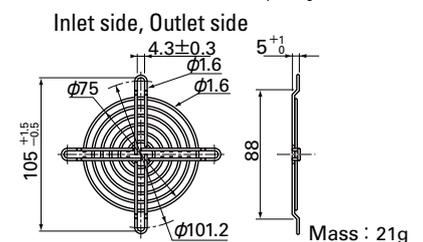
Options (unit: mm)

Finger Guards

Model : 109-049C Surface treatment : Nickel-chrome plating (silver) Color : Silver



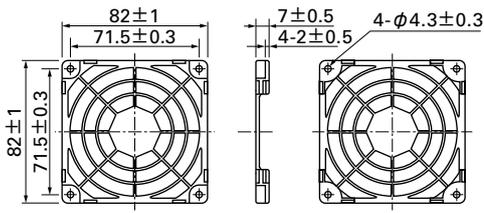
Model : 109-049E Surface treatment : Nickel-chrome plating (silver) Color : Silver
: 109-049H Surface treatment : Cation electropainting (black) Color : Black



Options (unit: mm)

Resin Finger Guards

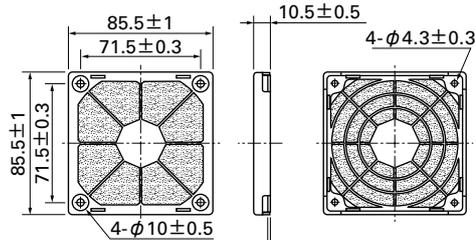
Model : 109-1002G



Mass : 10g

Resin Filter Kits

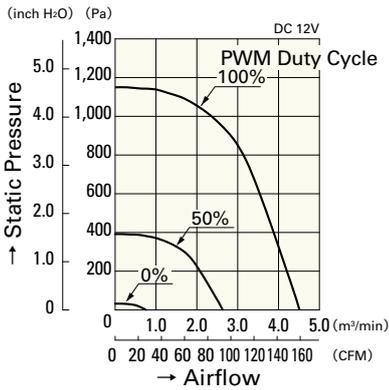
Model : 109-1002F13 (13PPI), 109-1002F20 (20PPI)
: 109-1002F30 (30PPI), 109-1002F40 (40PPI)



Mass : 19g

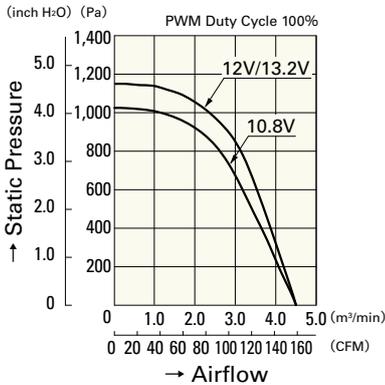
Airflow - Static Pressure Characteristics

PWM Duty Cycle



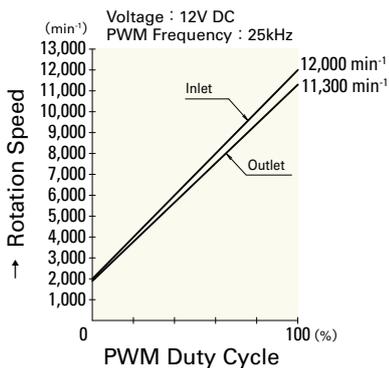
9CRL0812P8G001

Operating Voltage Range



9CRL0812P8G001

PWM Duty - Speed Characteristics Example



9CRL0812P8G001

DC
Long Life Fan 80mm

92mm sq.

San Ace 92L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

92×92×25mm (Mass : 150g) **9LG type** **High Airflow**

Specifications

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

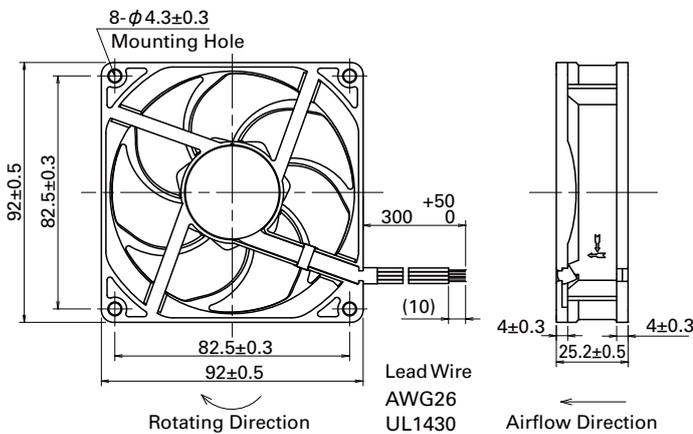
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Note 1)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9LG0912P4J001	12	10.8 to 13.2	100	0.42	5.04	5,000	2.20 77.7	105 0.42	44	-20 to +70	180,000/60°C
9LG0912P4G001			100	0.30	3.60	4,400	1.93 68.2	81 0.33	40		
9LG0912P4S001			100	0.22	2.64	3,850	1.69 59.7	62.1 0.25	37		
9LG0912P4H001			100	0.15	1.80	3,150	1.38 48.7	41.6 0.17	32		
9LG0924P4J001	24	21.6 to 26.4	100	0.21	5.04	5,000	2.20 77.7	105 0.42	44		
9LG0924P4G001			100	0.15	3.60	4,400	1.93 68.2	81 0.33	40		
9LG0924P4S001			100	0.11	2.64	3,850	1.69 59.7	62.1 0.25	37		
9LG0924P4H001			100	0.07	1.68	3,150	1.38 48.7	41.6 0.17	32		

Note : Fan does not rotate when PWM duty cycle is 0%.

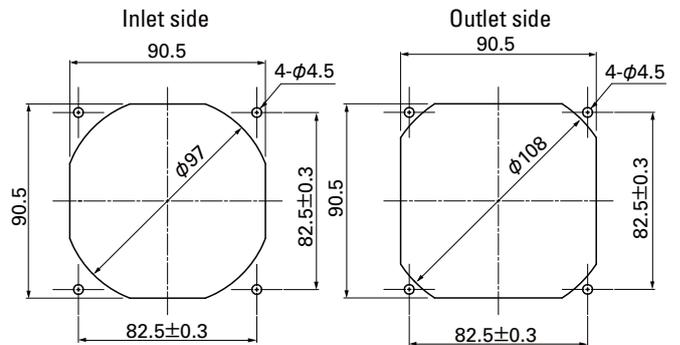
※PWM Frequency : 25kHz

Models with lock sensors are available as an option. Please refer to the index (p. 479).

Dimensions (unit: mm)



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

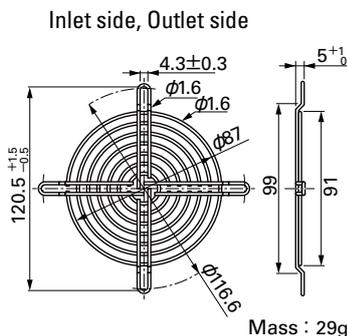
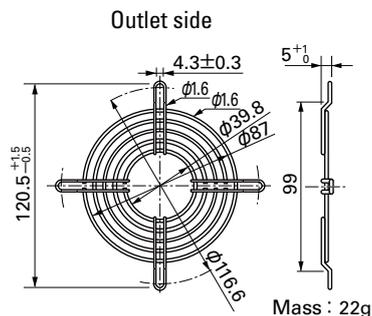


Options (unit: mm)

Finger Guards

Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color

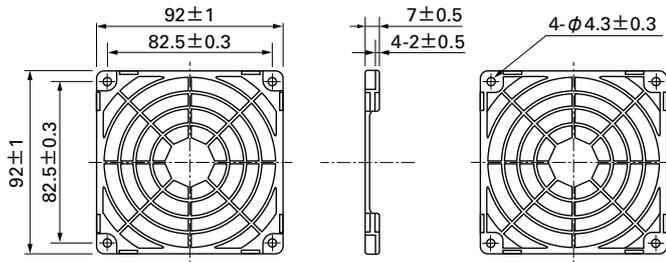
Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color
: 109-099H : Cation electropainting (black)



Options (unit: mm)

Resin Finger Guards

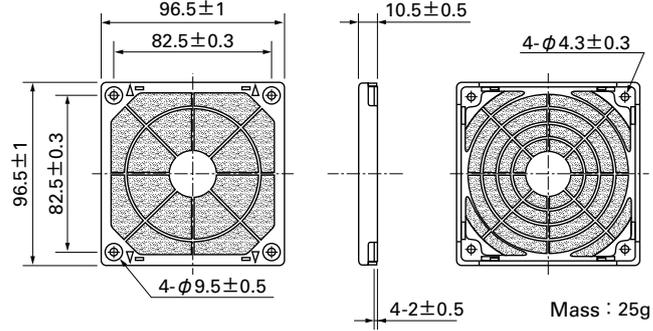
Model : 109-1001G



Mass : 12g

Resin Filter Kits

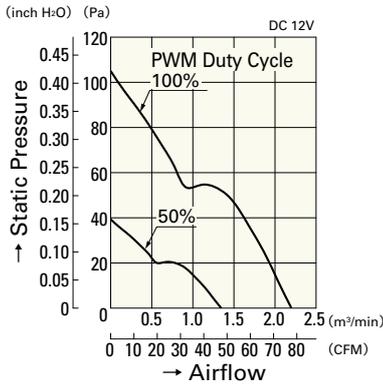
Model : 109-1001F13 (13PPI), 109-1001F20 (20PPI)
: 109-1001F30 (30PPI), 109-1001F40 (40PPI)



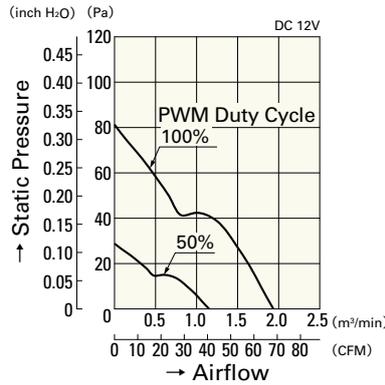
Mass : 25g

Airflow - Static Pressure Characteristics

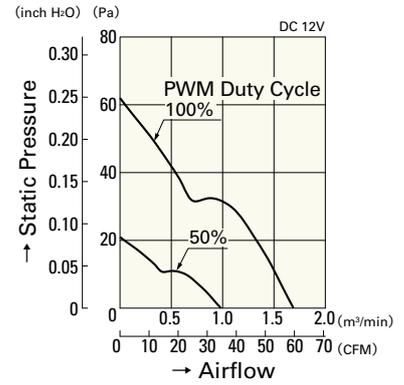
PWM Duty Cycle



9LG0912P4J001

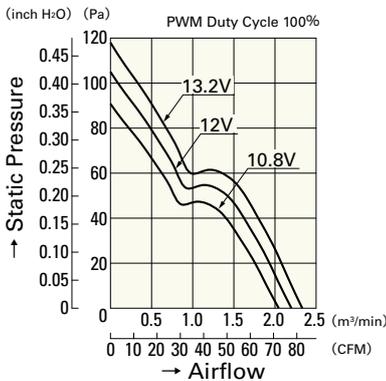


9LG0912P4G001

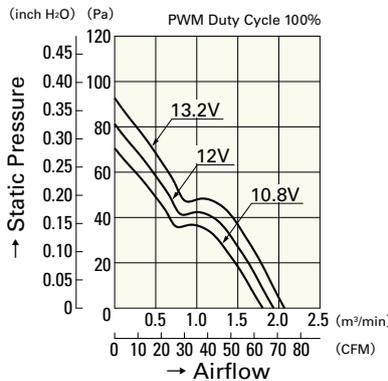


9LG0912P4S001

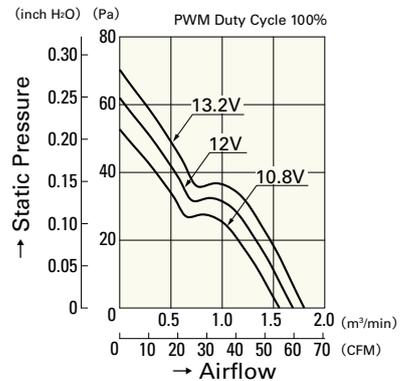
Operating Voltage Range



9LG0912P4J001

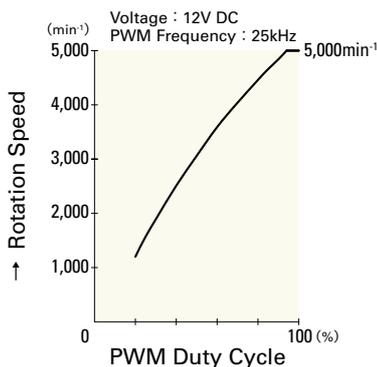


9LG0912P4G001

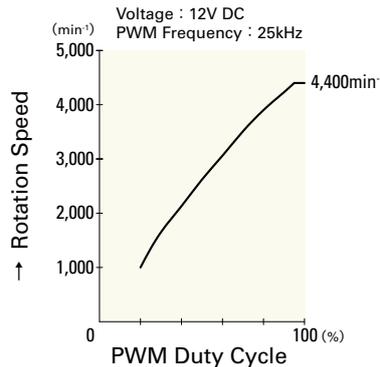


9LG0912P4S001

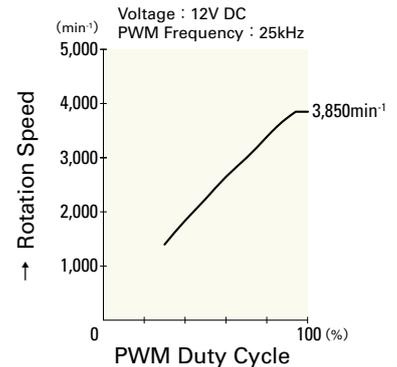
PWM Duty - Speed Characteristics Example



9LG0912P4J001



9LG0912P4G001



9LG0912P4S001

DC
Long Life Fan 92mm

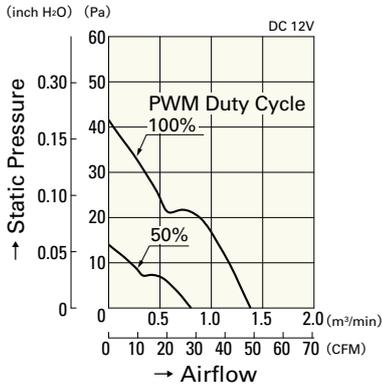
92mm sq.

San Ace 92L

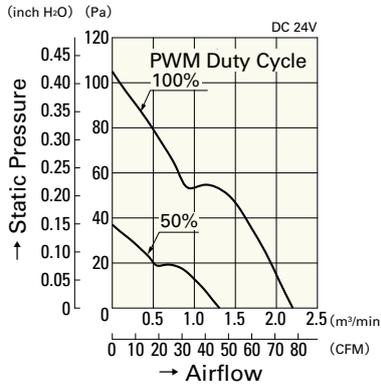
92×92×25mm [Mass : 150g]

Airflow - Static Pressure Characteristics

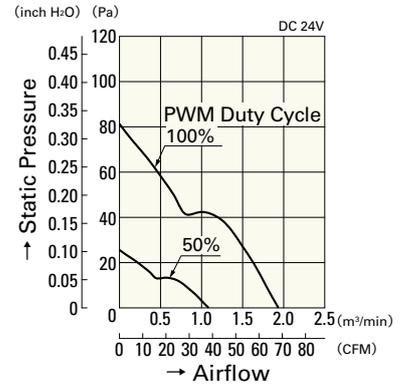
PWM Duty Cycle



9LG0912P4H001

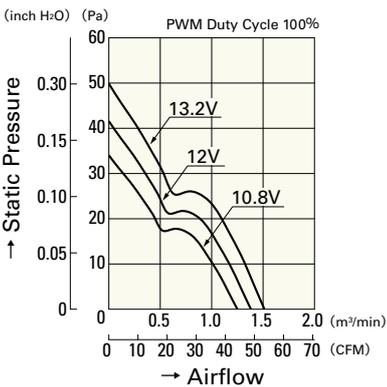


9LG0924P4J001

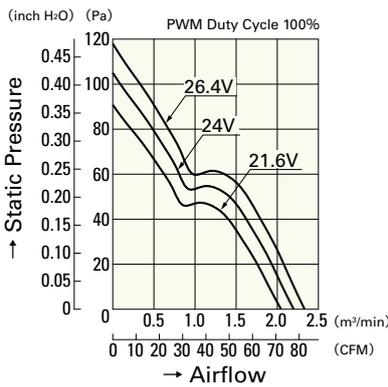


9LG0924P4G001

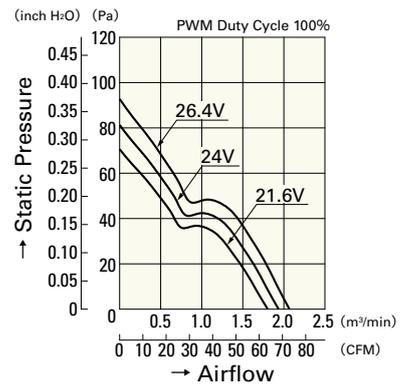
Operating Voltage Range



9LG0912P4H001

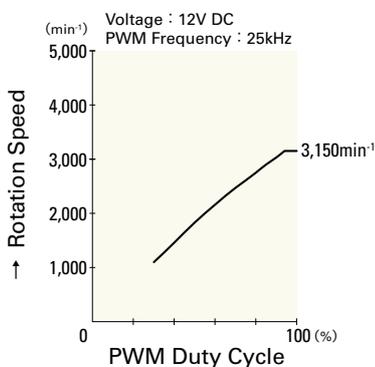


9LG0924P4J001

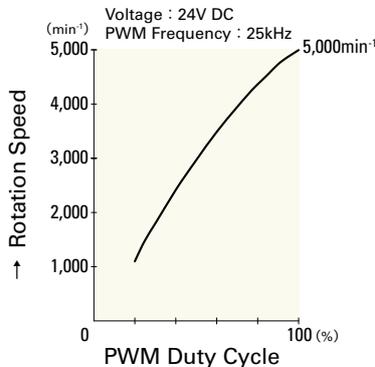


9LG0924P4G001

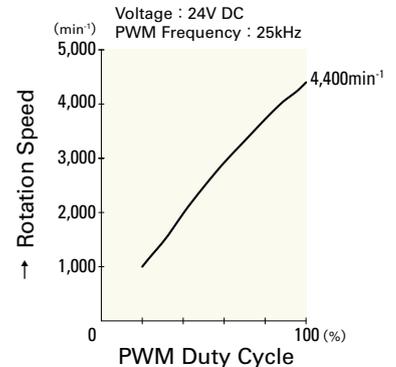
PWM Duty - Speed Characteristics Example



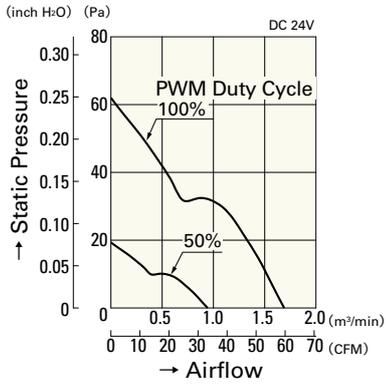
9LG0912P4H001



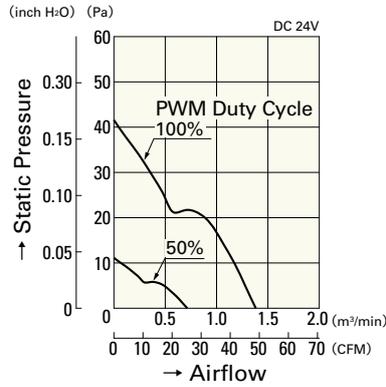
9LG0924P4J001



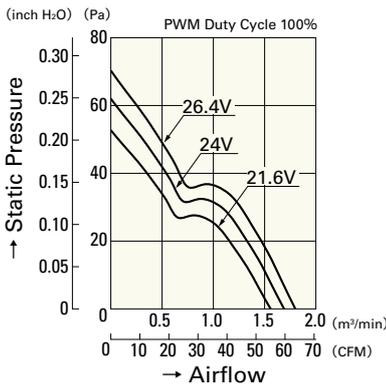
9LG0924P4G001



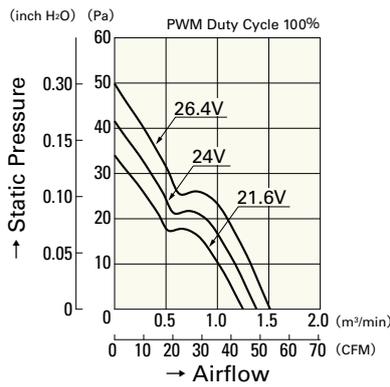
9LG0924P4S001



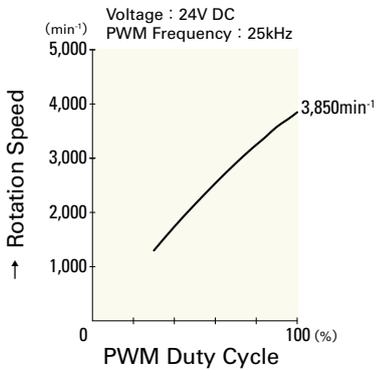
9LG0924P4H001



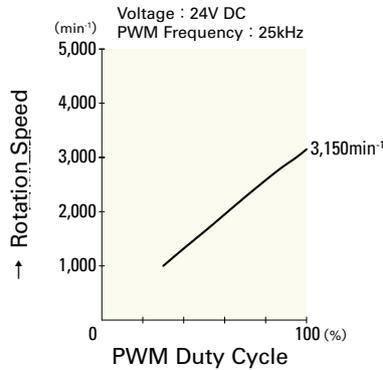
9LG0924P4S001



9LG0924P4H001



9LG0924P4S001



9LG0924P4H001

92mm sq.

San Ace 92L



General Specifications

- Material Frame: Aluminum, 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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

92×92×38mm (Mass : 270g) **9LG type High Airflow**

Specifications

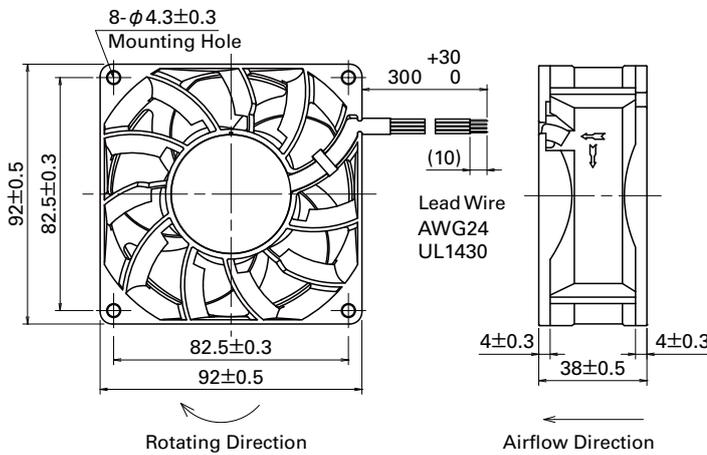
The following nos. have PWM controls and pulse sensors.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Note1} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9LG0912P1H001	12	10.2 to 13.8	100	2.0	24.0	9,000	3.70 130.6	430 1.72	61	-20 to +70	180,000/60°C
			20	0.18	2.16	2,700	1.11 39.1	38.7 0.15	30		
9LG0912P1F001			100	1.0	12.0	7,000	2.90 102.4	263 1.05	55		
			20	0.11	1.32	2,000	0.83 29.3	21.5 0.08	22		
9LG0924P1H001	24	20.4 to 27.6	100	0.9	21.6	9,000	3.70 130.6	430 1.72	61		
			20	0.08	1.92	2,700	1.11 39.1	38.7 0.15	30		
9LG0924P1F001			100	0.5	12.0	7,000	2.90 102.4	263 1.05	55		
			20	0.06	1.44	2,000	0.83 29.3	21.5 0.08	22		

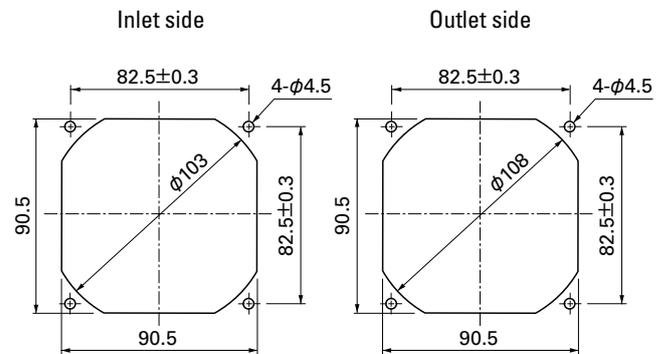
Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



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

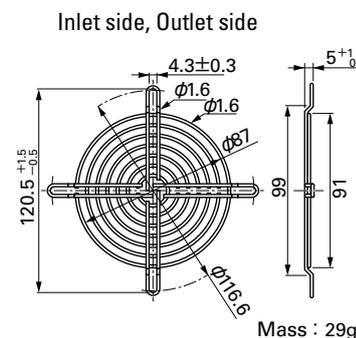
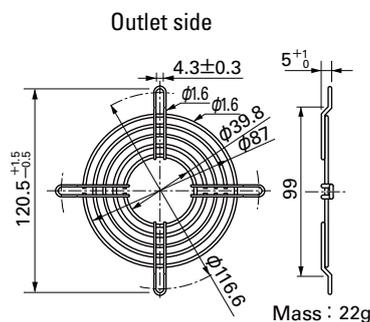


Options (unit: mm)

Finger Guards

Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color

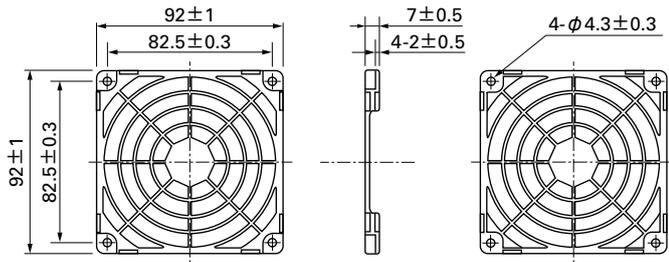
Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color
: 109-099H : Cation electropainting (black)



Options (unit: mm)

Resin Finger Guards

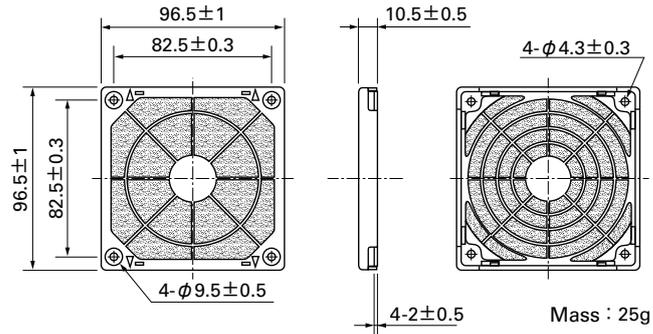
Model : 109-1001G



Mass : 12g

Resin Filter Kits

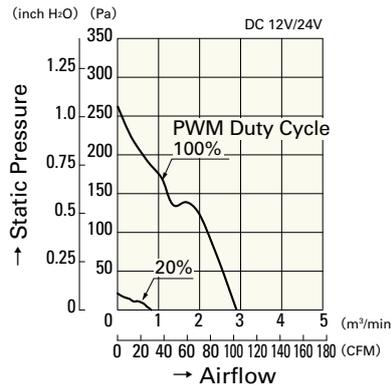
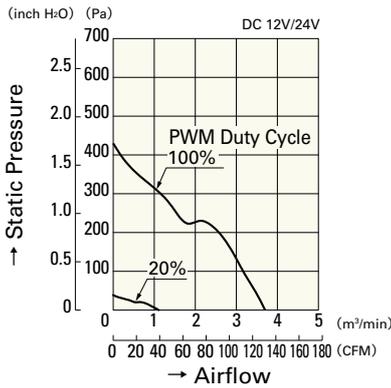
Model : 109-1001F13 (13PPI), 109-1001F20 (20PPI)
: 109-1001F30 (30PPI), 109-1001F40 (40PPI)



Mass : 25g

Airflow - Static Pressure Characteristics

PWM Duty Cycle



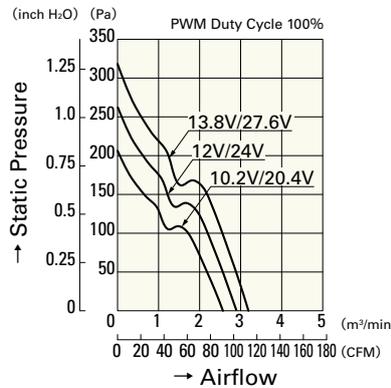
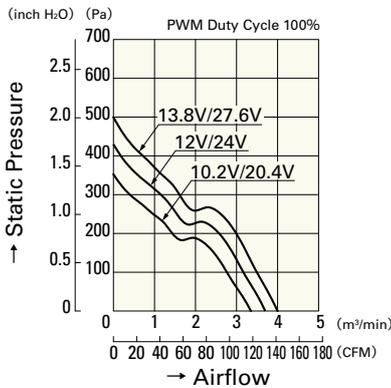
9LG0912P1H001

9LG0924P1H001

9LG0912P1F001

9LG0924P1F001

Operating Voltage Range



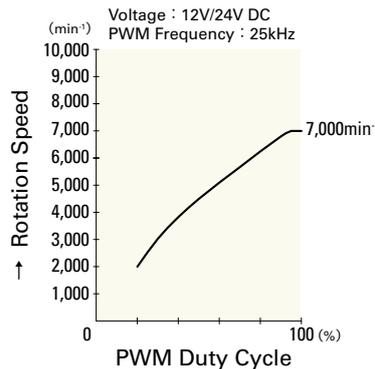
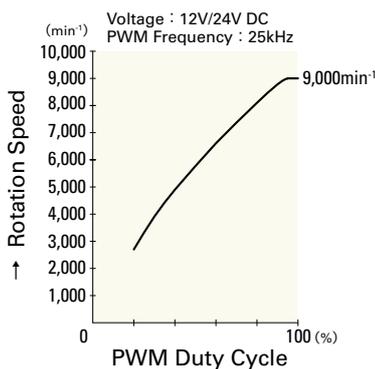
9LG0912P1H001

9LG0924P1H001

9LG0912P1F001

9LG0924P1F001

PWM Duty - Speed Characteristics Example



9LG0912P1H001

9LG0924P1H001

9LG0912P1F001

9LG0924P1F001

DC
Long Life Fan 92mm

120mm sq.

San Ace 120L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

120×120×38mm [Mass : 420g] **9LG type** **High Airflow**



Specifications

The following nos. have PWM controls and pulse sensors.

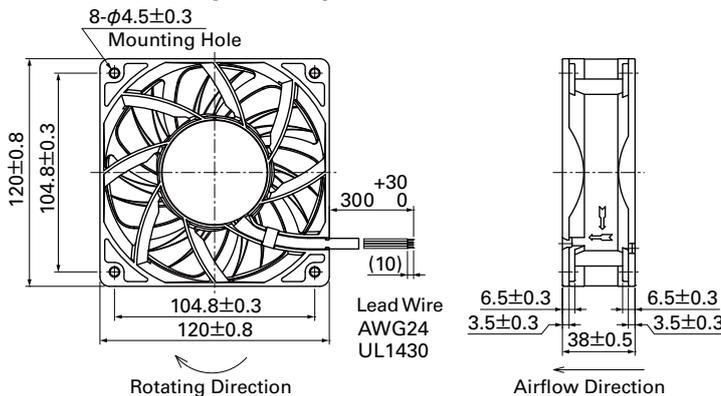
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Model#} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9LG1212P1G001	12	8.0 to 13.8	100	3.2	38.4	6,550	7.00 247.1	370 1.48	62	-20 to +70	180,000/60°C
			20	0.24	2.88	2,000	2.13 75.2	34.4 0.13	36		
9LG1212P1S001			100	2.2	26.4	5,600	6.00 211.8	270 1.08	58		
			20	0.24	2.88	2,000	2.13 75.2	34.4 0.13	36		
9LG1212P1H001			100	1.4	16.8	4,700	5.00 176.5	190 0.76	54		
			20	0.24	2.88	2,000	2.13 75.2	34.4 0.13	36		
9LG1224P1G001	24	15 to 30	100	1.6	38.4	6,550	7.00 247.1	370 1.48	62		
			20	0.12	2.88	2,000	2.13 75.2	34.4 0.13	36		
9LG1224P1S001			100	1.1	26.4	5,600	6.00 211.8	270 1.08	58		
			20	0.12	2.88	2,000	2.13 75.2	34.4 0.13	36		
9LG1224P1H001			100	0.7	16.8	4,700	5.00 176.5	190 0.76	54		
			20	0.12	2.88	2,000	2.13 75.2	34.4 0.13	36		
9LG1248P1G001	48	36 to 60	100	0.8	38.4	6,550	7.00 247.1	370 1.48	62		
			20	0.08	3.84	2,000	2.13 75.2	34.4 0.13	36		
9LG1248P1S001			100	0.55	26.4	5,600	6.00 211.8	270 1.08	58		
			20	0.08	3.84	2,000	2.13 75.2	34.4 0.13	36		
9LG1248P1H001			100	0.35	16.8	4,700	5.00 176.5	190 0.76	54		
			20	0.08	3.84	2,000	2.13 75.2	34.4 0.13	36		

Note : Fan does not rotate when PWM duty cycle is 0%.

*PWM Frequency : 25kHz

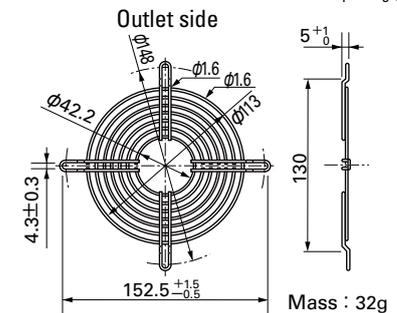
Models with lock sensors are available as an option. Please refer to the index (p. 479).

Dimensions (unit: mm)

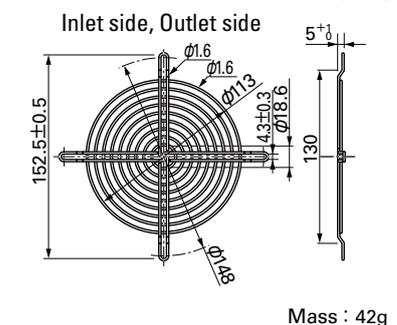


Options (unit: mm)

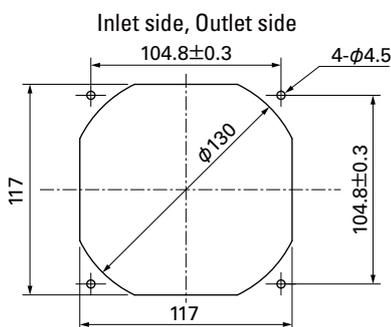
Finger Guards
 Model : 109-019C Surface treatment : Nickel-chrome plating (silver) Color
 : 109-019H : Cation electropainting (black)



Model : 109-019E Surface treatment : Nickel-chrome plating (silver) Color
 : 109-019K : Cation electropainting (black)



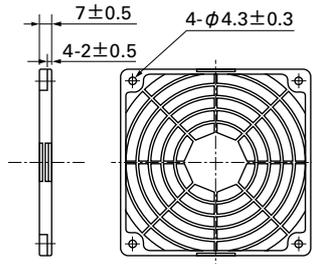
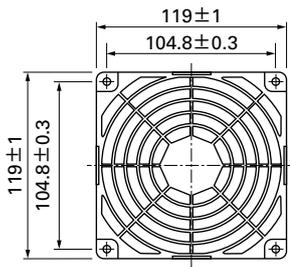
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

Resin Finger Guards

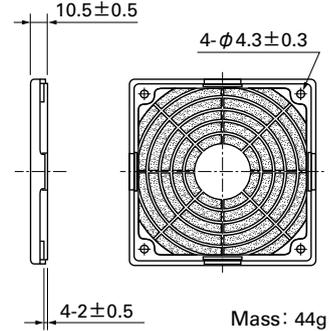
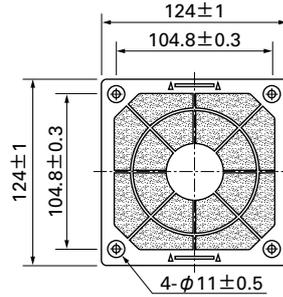
Model : 109-1000G



Mass : 23g

Resin Filter Kits

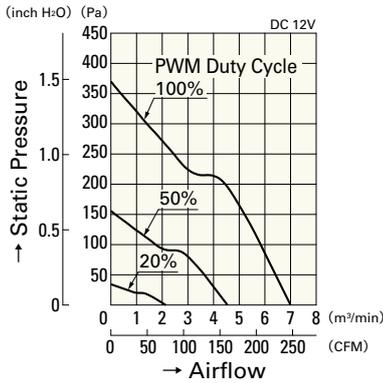
Model : 109-1000F13 (13PPI), 109-1000F20 (20PPI)
: 109-1000F30 (30PPI), 109-1000F40 (40PPI)



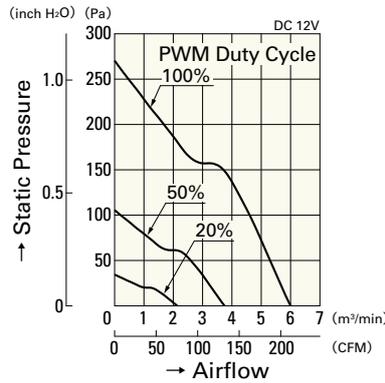
Mass : 44g

Airflow - Static Pressure Characteristics

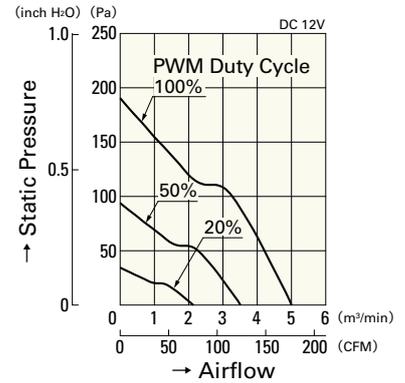
PWM Duty Cycle



9LG1212P1G001

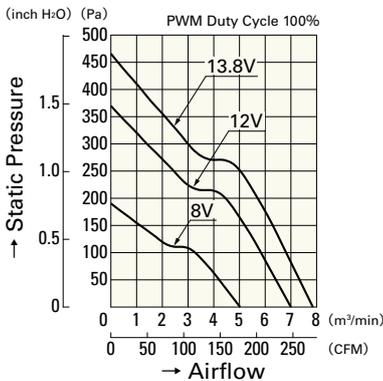


9LG1212P1S001

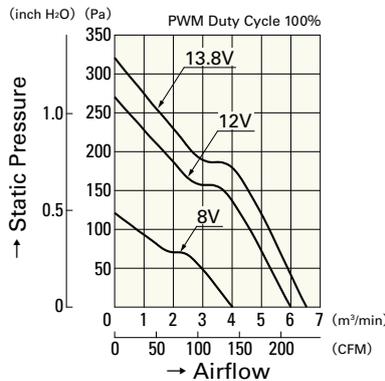


9LG1212P1H001

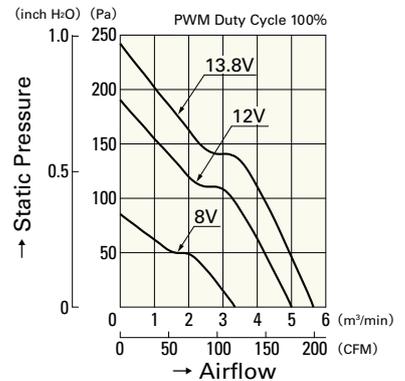
Operating Voltage Range



9LG1212P1G001

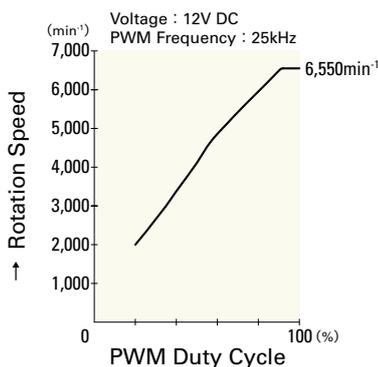


9LG1212P1S001

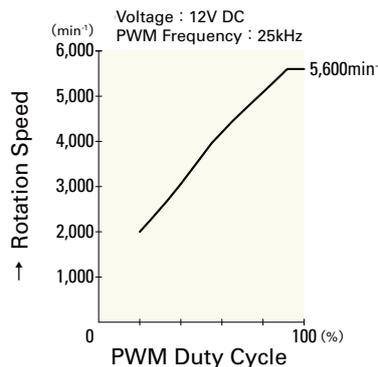


9LG1212P1H001

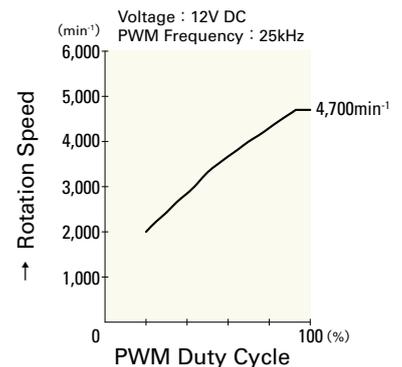
PWM Duty - Speed Characteristics Example



9LG1212P1G001



9LG1212P1S001



9LG1212P1H001

DC

Long Life Fan 120mm

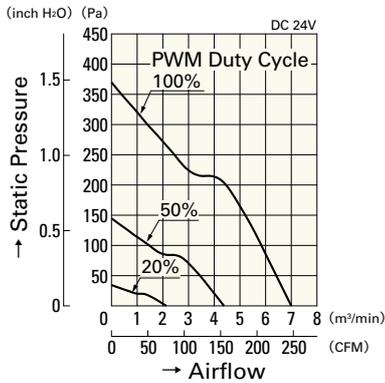
120mm sq.

San Ace 120L

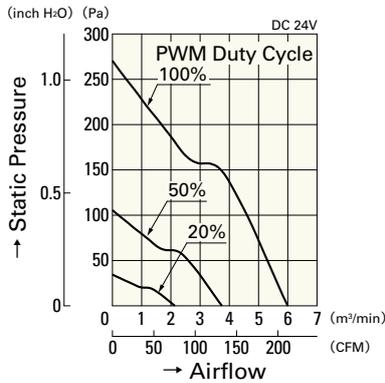
120×120×38mm [Mass : 420g]

Airflow - Static Pressure Characteristics

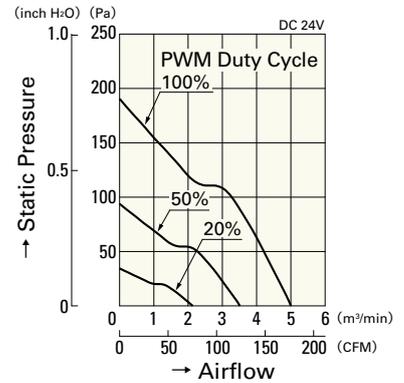
PWM Duty Cycle



9LG1224P1G001

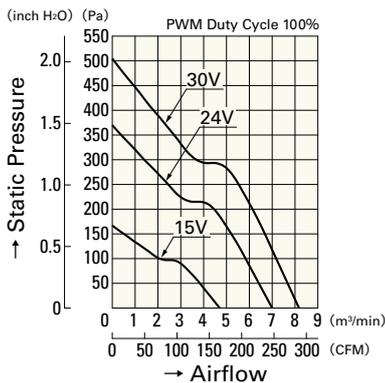


9LG1224P1S001

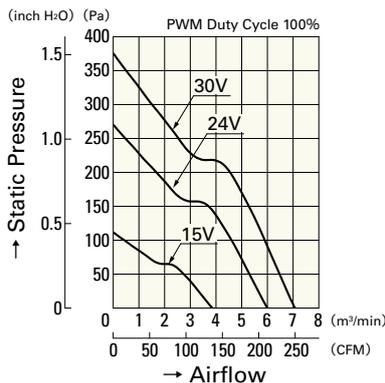


9LG1224P1H001

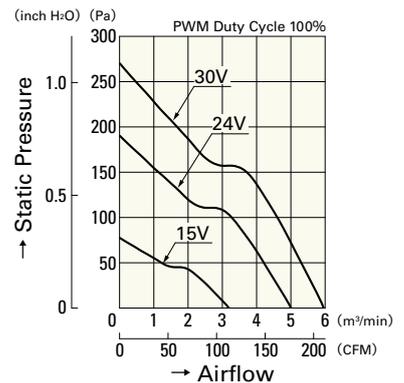
Operating Voltage Range



9LG1224P1G001

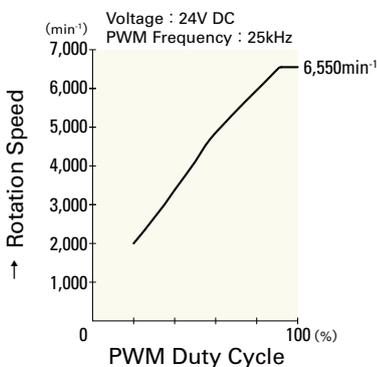


9LG1224P1S001

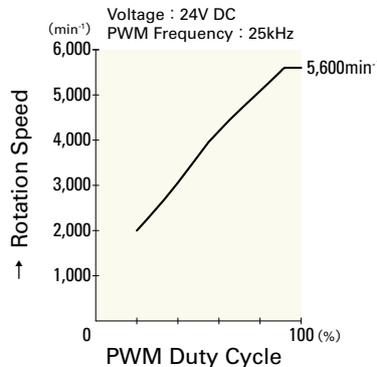


9LG1224P1H001

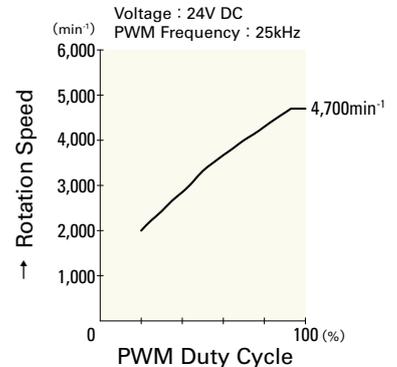
PWM Duty - Speed Characteristics Example



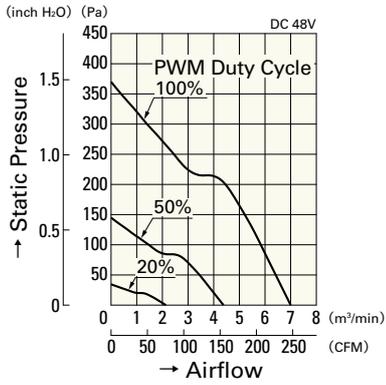
9LG1224P1G001



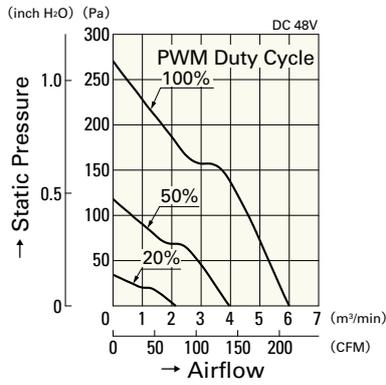
9LG1224P1S001



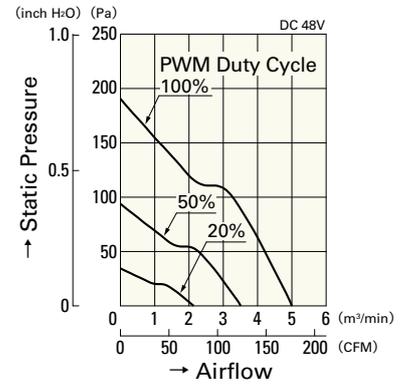
9LG1224P1H001



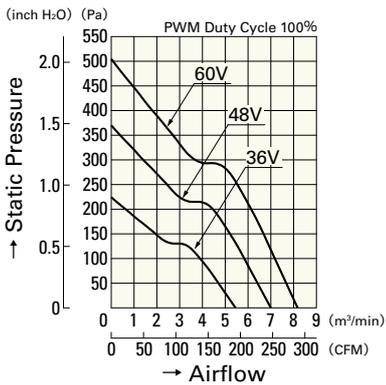
9LG1248P1G001



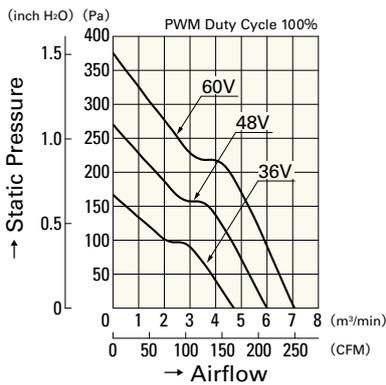
9LG1248P1S001



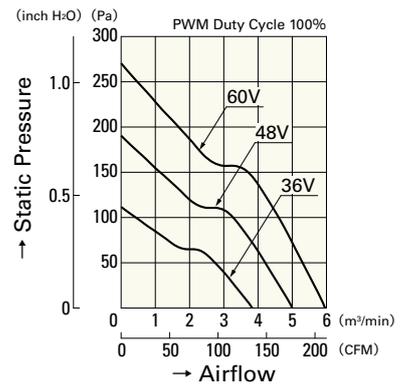
9LG1248P1H001



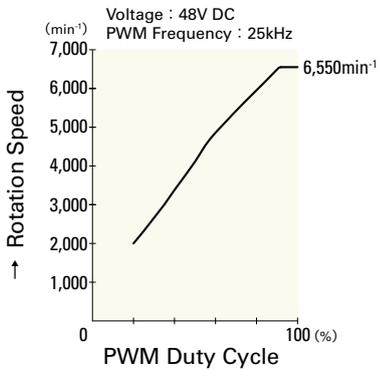
9LG1248P1G001



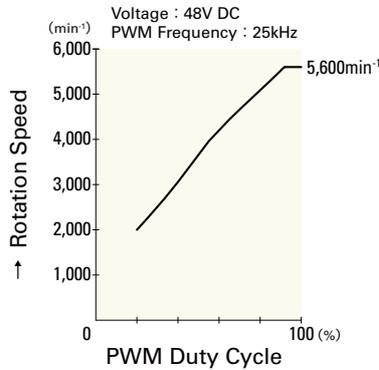
9LG1248P1S001



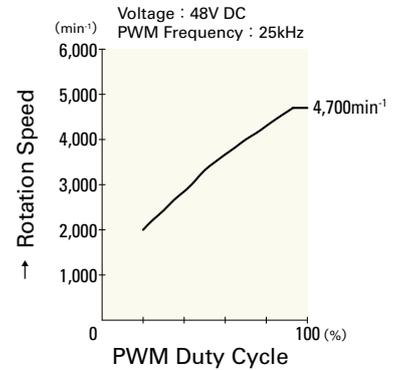
9LG1248P1H001



9LG1248P1G001



9LG1248P1S001



9LG1248P1H001

120mm sq.

San Ace 120L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

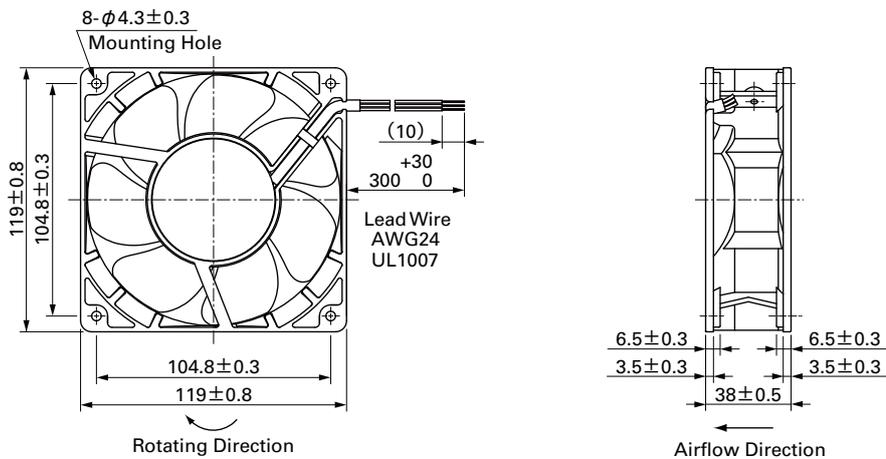
120×120×38mm (Mass : 370g) **9GL type**

Specifications The following nos. have pulse sensors.

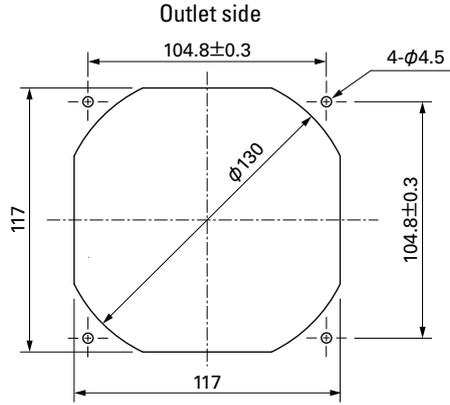
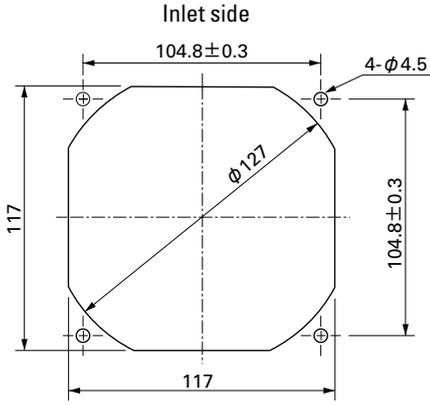
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9GL1212G101	12	10.2 to 13.8	0.98	11.8	3,600	3.88 137	135 0.542	49	- 20 to + 70	80,000/60°C
9GL1212E101			0.61	7.32	3,100	3.34 118	100 0.402	46		
9GL1212H101		7 to 13.8	0.38	4.56	2,600	2.80 99	70.4 0.283	39		100,000/60°C
9GL1212F101			0.28	3.36	2,280	2.45 87	54.2 0.218	36		
9GL1212M101			0.21	2.52	1,950	2.10 74	39.6 0.159	32		
9GL1224G101	24	20.4 to 27.6	0.50	12.0	3,600	3.88 137	135 0.542	49		80,000/60°C
9GL1224E101			0.34	8.16	3,100	3.34 118	100 0.402	46		
9GL1224H101		14 to 27.6	0.22	5.28	2,600	2.80 99	70.4 0.283	39		100,000/60°C
9GL1224F101			0.16	3.84	2,280	2.45 87	54.2 0.218	36		
9GL1224M101			0.11	2.64	1,950	2.10 74	39.6 0.159	32		
9GL1248G101	48	40.8 to 55.2	0.25	12.0	3,600	3.88 137	135 0.542	49	80,000/60°C	
9GL1248E101			0.17	8.16	3,100	3.34 118	100 0.402	46		
9GL1248H101			0.11	5.28	2,600	2.80 99	70.4 0.283	39		
9GL1248F101			0.09	4.32	2,280	2.45 87	54.2 0.218	36		
9GL1248M101			0.07	3.36	1,950	2.10 74	39.6 0.159	32		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 476).

Dimensions (unit: mm)



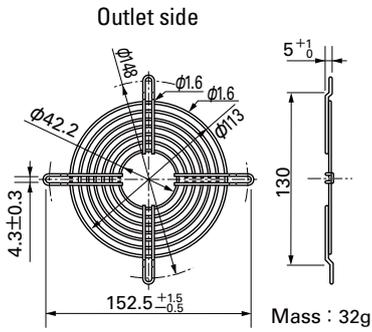
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

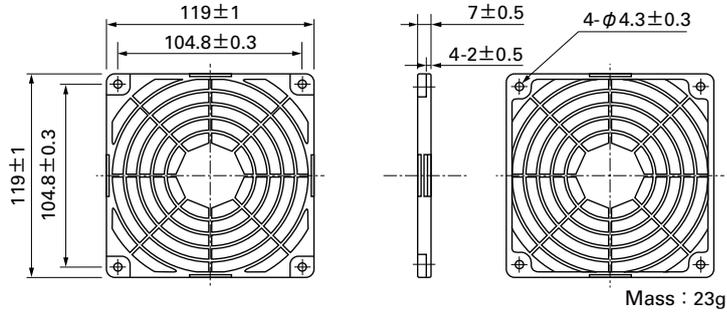
Finger Guards

Model : 109-019C Surface treatment : Nickel-chrome plating (silver) Color
 : 109-019H : Cation electropainting (black)

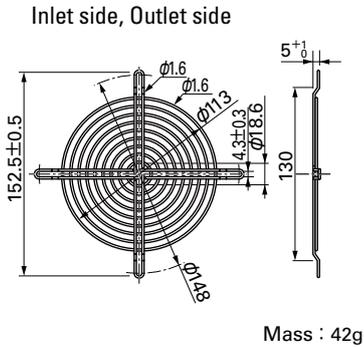


Resin Finger Guards

Model : 109-1000G

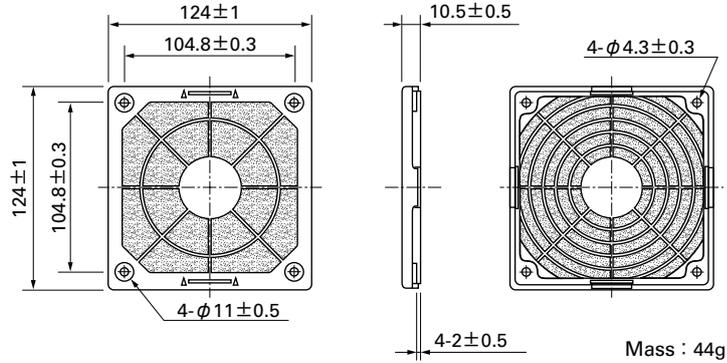


Model : 109-019E Surface treatment : Nickel-chrome plating (silver) Color
 : 109-019K : Cation electropainting (black)



Resin Filter Kits

Model : 109-1000F13 (13PPI), 109-1000F20 (20PPI)
 : 109-1000F30 (30PPI), 109-1000F40 (40PPI)

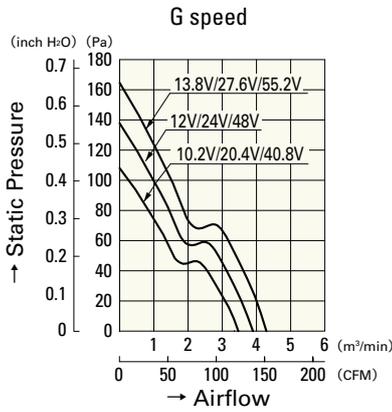


120mm sq.

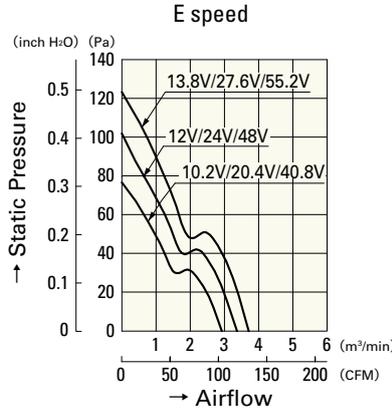
San Ace 120L

120×120×38mm (Mass : 370g)

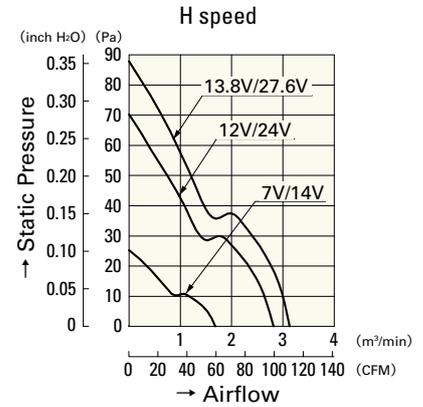
Airflow - Static Pressure Characteristics



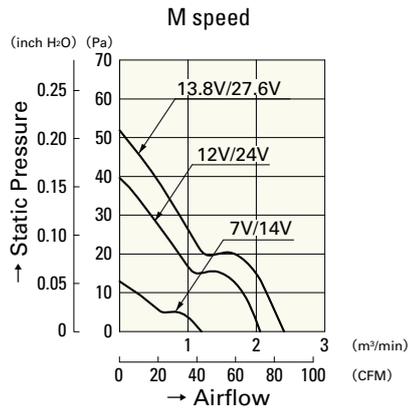
9GL1212G101
9GL1224G101
9GL1248G101



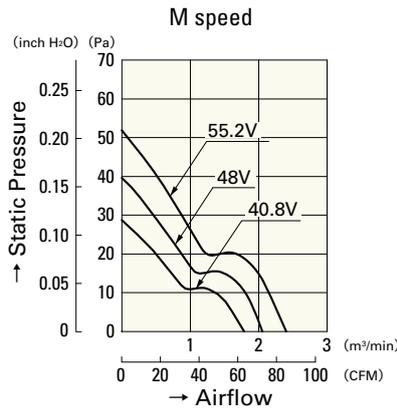
9GL1212E101
9GL1224E101
9GL1248E101



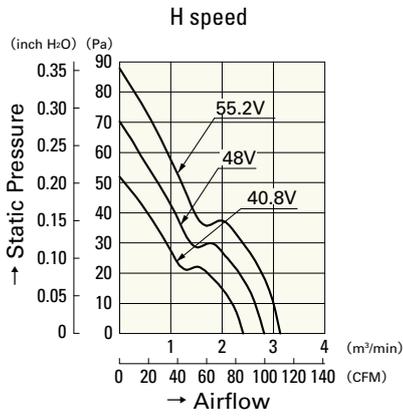
9GL1212H101
9GL1224H101



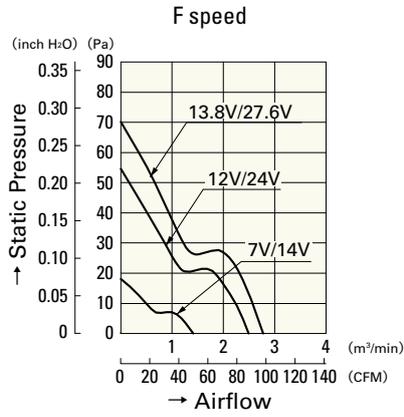
9GL1212M101
9GL1224M101



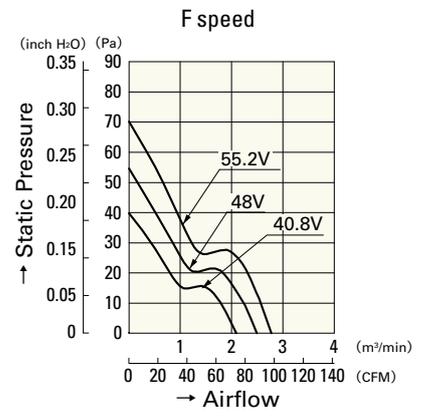
9GL1248M101



9GL1248H101



9GL1212F101
9GL1224F101



9GL1248F101

140mm sq.

San Ace 140L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

140×140×38mm (Mass : 600g) **9L type**

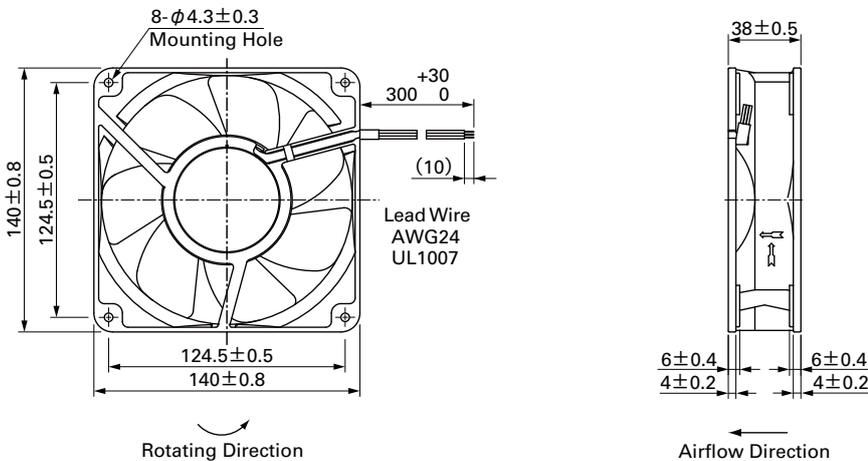
Specifications

The following nos. have pulse sensors.

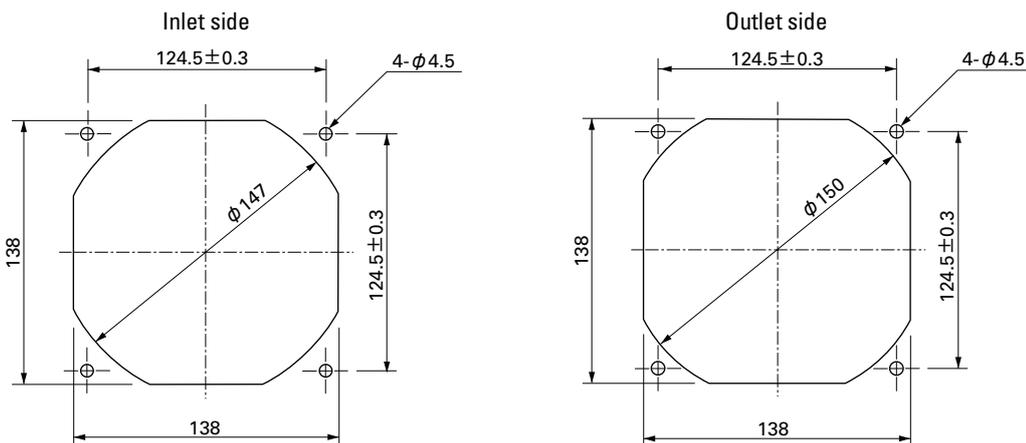
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109L1412H101	12	10.2 to 13.8	0.73	8.76	2,600	4.6 159	98 0.394	46	- 20 to + 70	100,000/60°C
109L1412M101			0.3	3.6	1,900	3.3 117	52 0.209	38		
109L1424H101	24	20.4 to 27.6	0.37	8.88	2,600	4.6 159	98 0.394	46		
109L1424M101			0.16	3.84	1,900	3.3 117	52 0.209	38		
109L1448H101	48	40.8 to 55.2	0.2	9.6	2,600	4.6 159	98 0.394	46		
109L1448M101			0.09	4.32	1,900	3.3 117	52 0.209	38		

Models without sensors or with lock sensors are available as options. Please refer to the index (pp. 466).

Dimensions (unit: mm)



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



140mm sq.

San Ace 140L



Model no. 9LB1424B501, 9LB1448F501 are not certified.

General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

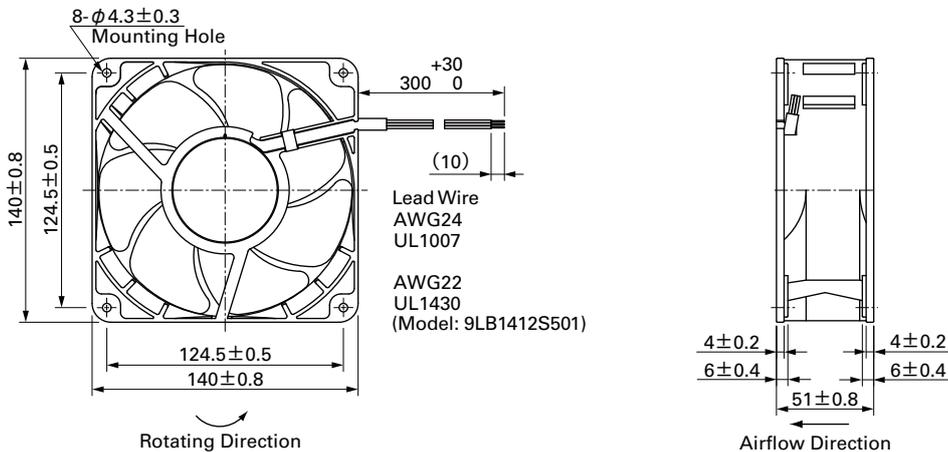
140×140×51mm (Mass : 610g) **9LB type**

Specifications The following nos. have pulse sensors.

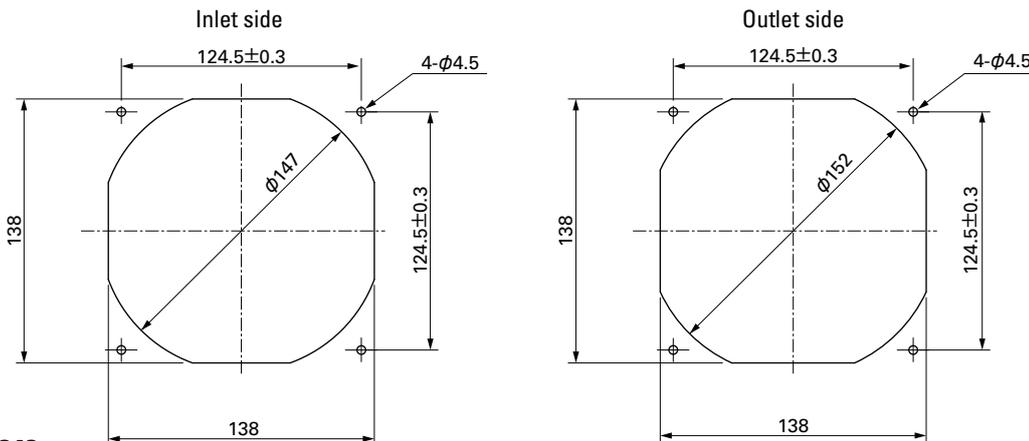
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9LB1412S501	12	10.2 to 13.8	2.7	32.4	4,200	8.1 286.2	240 0.96	57	- 20 to + 70	60,000/60°C
9LB1412H501			1.25	15.0	3,100	5.9 208.5	130 0.52	49		100,000/60°C
9LB1412M501			0.46	5.52	2,050	3.9 138	63 0.25	39		60,000/60°C
9LB1424S501	24	20.4 to 27.6	1.38	33.12	4,200	8.1 286.2	240 0.96	57		60,000/60°C
9LB1424B501			0.97	23.3	3,700	7.1 251	186 0.75	55		100,000/60°C
9LB1424H501			0.60	14.4	3,100	5.9 208.5	130 0.52	49		60,000/60°C
9LB1424M501			0.22	5.28	2,050	3.9 138	63 0.25	39		100,000/60°C
9LB1448S501	48	40.8 to 55.2	0.71	34.08	4,200	8.1 286.2	240 0.96	57		60,000/60°C
9LB1448H501			0.27	12.96	3,100	5.9 208.5	130 0.52	49		100,000/60°C
9LB1448F501			0.18	8.6	2,550	4.8 169	91 0.37	44		100,000/60°C
9LB1448M501			0.12	5.76	2,050	3.9 138	63 0.25	39		

Models without sensors or with lock sensors are available as options. Please refer to the index (pp. 478 to 479).

Dimensions (unit: mm)



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



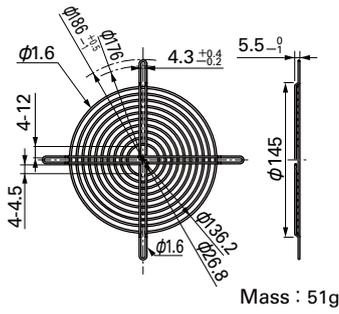
Options (unit: mm)

Finger Guards

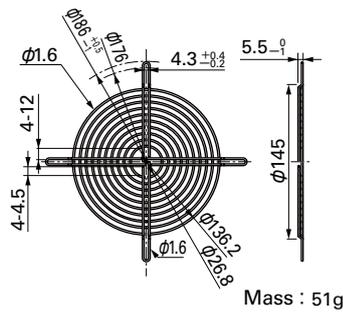
Model : 109-719 Surface treatment : Nickel-chrome plating (silver) Color

Model : 109-719H Surface treatment : Cation electropainting (black) Color

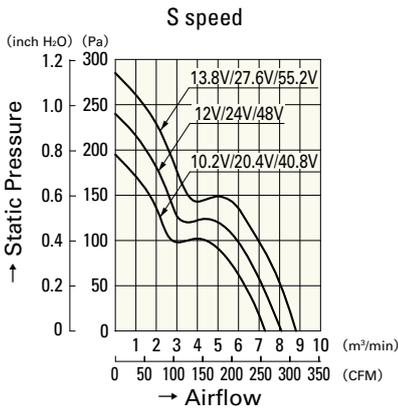
Inlet side, Outlet side



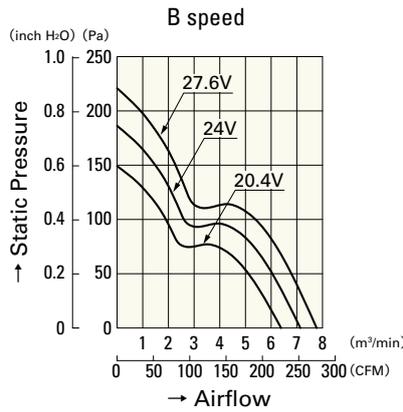
Inlet side, Outlet side



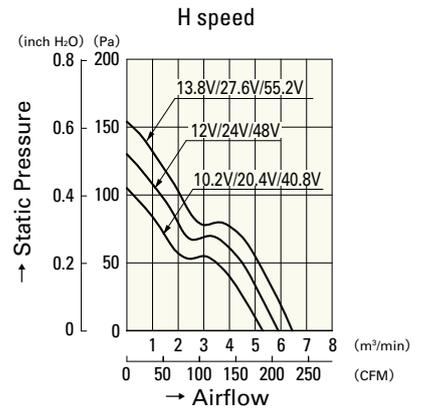
Airflow - Static Pressure Characteristics



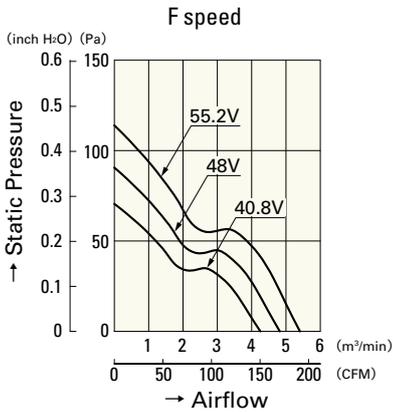
- 9LB1412S501**
- 9LB1424S501**
- 9LB1448S501**



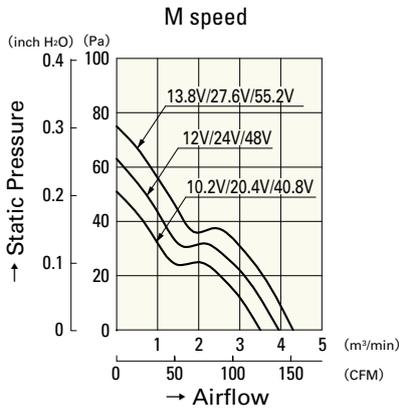
- 9LB1424B501**



- 9LB1412H501**
- 9LB1424H501**
- 9LB1448H501**



- 9LB1448F501**



- 9LB1412M501**
- 9LB1424M501**
- 9LB1448M501**

DC
Long Life Fan 140mm

φ 172mm

San Ace 172L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

φ 172mm × 150mm × 51mm (Mass : 760g) **9L type** **Sidecut type**

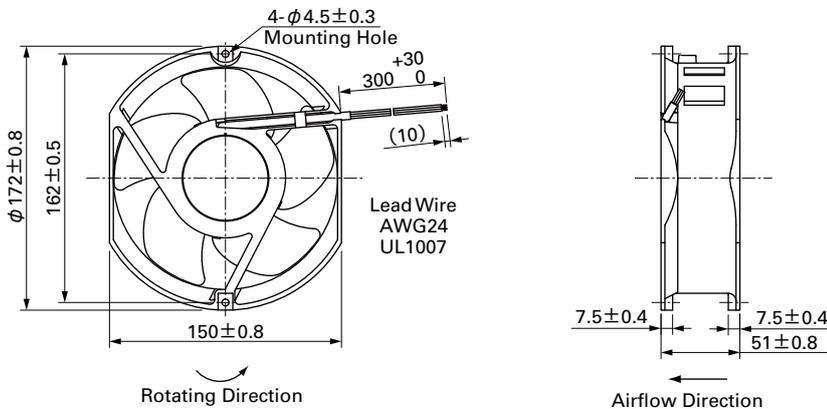
Specifications

The following nos. have pulse sensors.

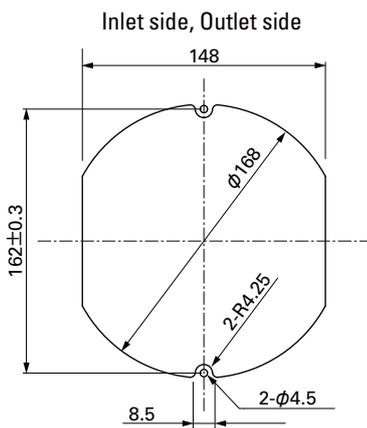
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109L5712H501	12	10.2 to 13.8	1.2	14.4	3,050	6.4 226	137.2 0.551	52	- 20 to + 70	100,000/60°C
109L5712M501			0.48	5.76	2,000	4.2 148	67.6 0.271	41		
109L5724H501	24	20.4 to 27.6	0.58	13.92	3,050	6.4 226	137.2 0.551	52		
109L5724M501			0.2	4.80	2,000	4.2 148	67.6 0.271	41		
109L5748H501	48	40.8 to 55.2	0.28	13.44	3,050	6.4 226	137.2 0.551	52		
109L5748M501			0.11	5.28	2,000	4.2 148	67.6 0.271	41		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 466).

Dimensions (unit: mm)



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



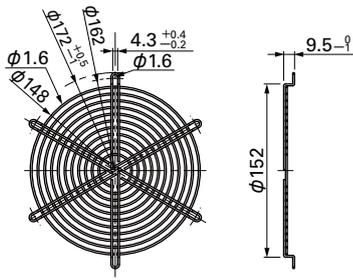
Options (unit: mm)

Finger Guards

Model : 109-319E Surface treatment : Nickel-chrome plating (silver) Color : 109-319H Cation electropainting (black)

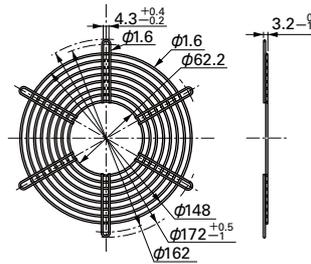
Model : 109-320 Surface treatment : Nickel-chrome plating (silver) Color

Inlet side, Outlet side



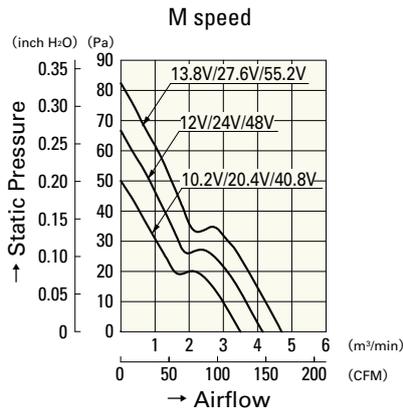
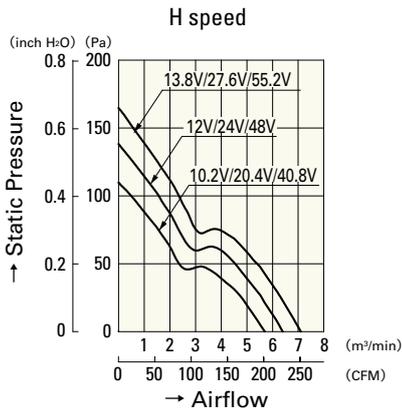
Mass : 69g

Outlet side



Mass : 53g

Airflow - Static Pressure Characteristics



109L5712H501

109L5724H501

109L5748H501

109L5712M501

109L5724M501

109L5748M501

DC

Long Life Fan 172mm

φ 172_{mm}

San Ace 172L



General Specifications

- Material Frame: Aluminum,
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)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

φ 172mm × 51mm (Mass : 780g) **9L type** **Round type**

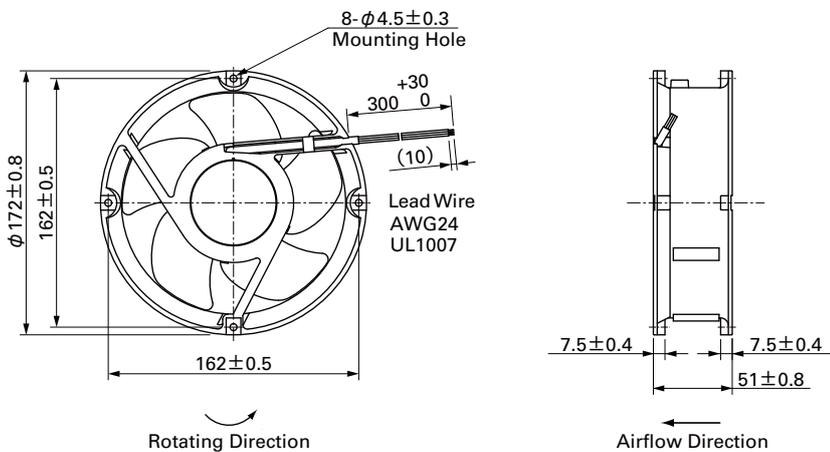
Specifications

The following nos. have pulse sensors.

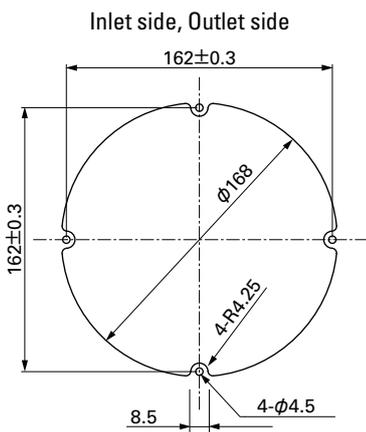
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109L1712H501	12	10.2 to 13.8	1.2	14.4	3,050	6.4 226	137.2 0.551	47	- 20 to + 70	100,000/60°C
109L1712M501			0.48	5.76	2,000	4.2 148	67.6 0.271	36		
109L1724H501	24	20.4 to 27.6	0.58	13.92	3,050	6.4 226	137.2 0.551	47		
109L1724M501			0.2	4.80	2,000	4.2 148	67.6 0.271	36		
109L1748H501	48	40.8 to 55.2	0.28	13.44	3,050	6.4 226	137.2 0.551	47		
109L1748M501			0.11	5.28	2,000	4.2 148	67.6 0.271	36		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 466).

Dimensions (unit: mm)



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



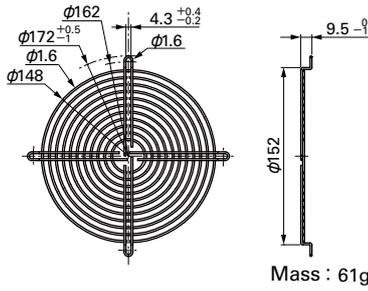
Options (unit: mm)

Finger Guards

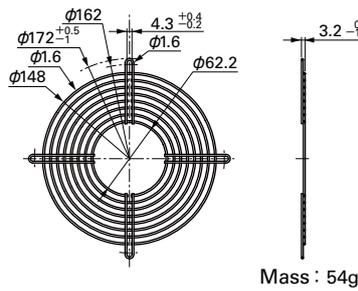
Model : 109-1066 Surface treatment : Nickel-chrome plating (silver) Color

Model : 109-1068 Surface treatment : Nickel-chrome plating (silver) Color

Inlet side, Outlet side



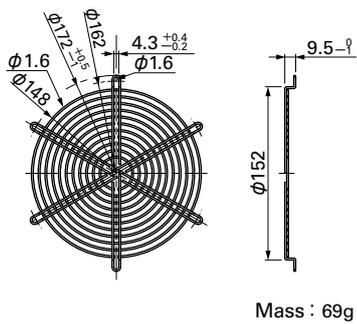
Outlet side



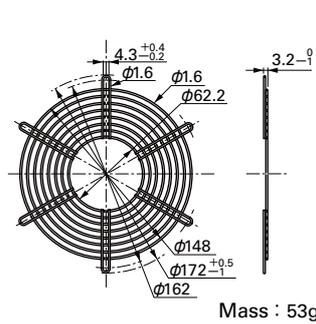
Model : 109-319E Surface treatment : Nickel-chrome plating (silver) Color
: 109-319H : Cation electropainting (black)

Model : 109-320 Surface treatment : Nickel-chrome plating (silver) Color

Inlet side, Outlet side

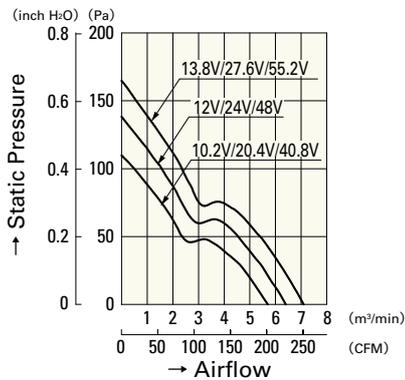


Outlet side

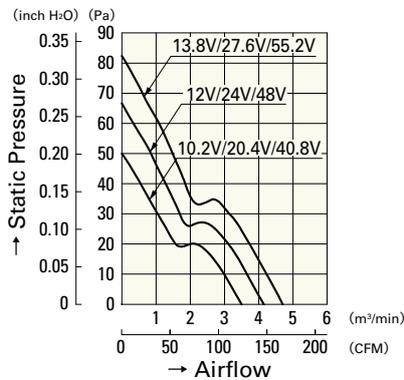


Airflow - Static Pressure Characteristics

H speed



M speed



109L1712H501

109L1724H501

109L1748H501

109L1712M501

109L1724M501

109L1748M501

40mm sq.

San Ace 40T



General Specifications

- Material Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10:Survival rate:90% at 85°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -40°C to +85°C (Non-condensing)

40×40×28mm (Mass : 55g) **9GT** type

Specifications

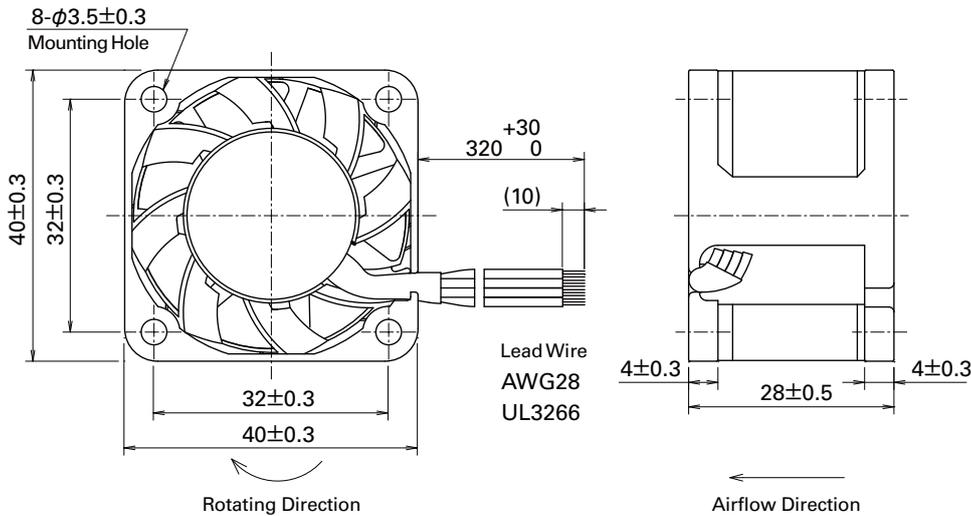
The following nos. have PWM controls and pulse sensors.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Note1)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9GT0412P3J001	12	10.2 to 13.8	100	0.31	3.72	11,700	0.52 18.4	206 0.827	48	-40 to +85	40,000/85°C
			30	0.08	0.96	4,100	0.18 6.36	25.2 0.100	21		
9GT0424P3J001	24	20.4 to 27.6	100	0.15	3.60	11,700	0.52 18.4	206 0.827	48		
			30	0.05	1.20	4,100	0.18 6.36	25.2 0.100	21		

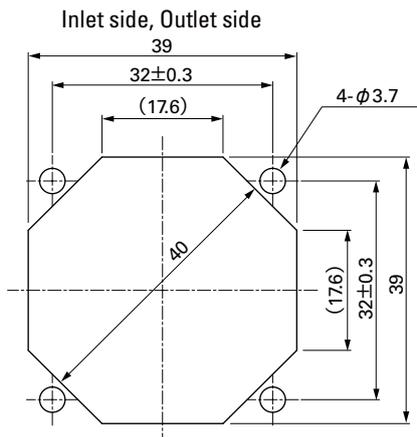
Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



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



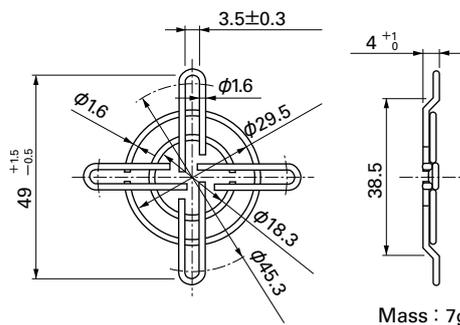
Options (unit: mm)

Finger Guards

Model : 109-059 Surface treatment : Nickel-chrome plating (silver)
: 109-059H : Cation electropainting (black)

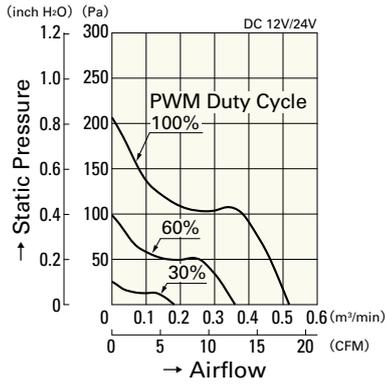
Color

Inlet side, Outlet side



Airflow - Static Pressure Characteristics

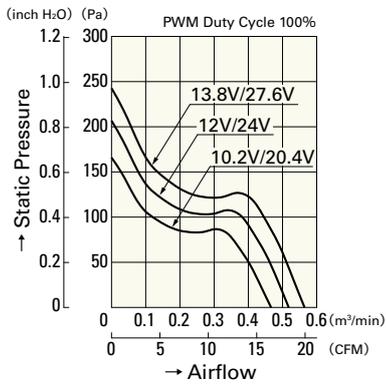
PWM Duty Cycle



9GT0412P3J001

9GT0424P3J001

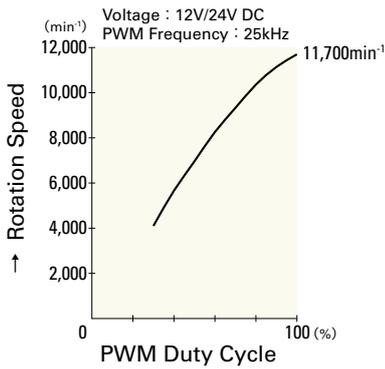
Operating Voltage Range



9GT0412P3J001

9GT0424P3J001

PWM Duty - Speed Characteristics Example



9GT0412P3J001

9GT0424P3J001

DC

Wide Temperature Range Fan 40mm

60mm sq.

San Ace 60T



General Specifications

- Material Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10:Survival rate:90% at 85°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -40°C to +85°C (Non-condensing)

60×60×25mm (Mass : 100g) 9GT type

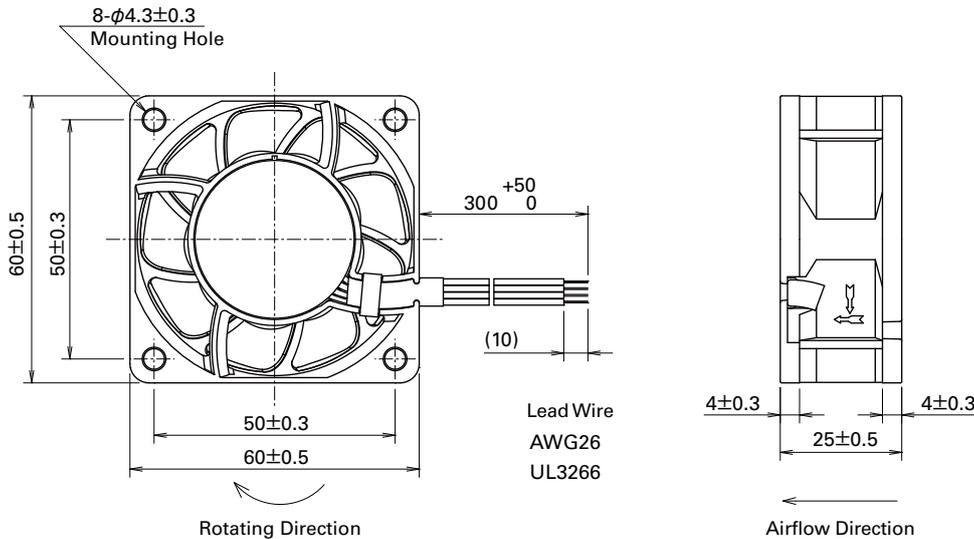
Specifications The following nos. have PWM controls and pulse sensors.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle [※] [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9GT0612P4G001	12	10.2 to 13.8	100	0.56	6.72	10,000	1.26 44.5	243 0.97	52	-40 to +85	40,000/85°C
			30	0.11	1.32	4,100	0.52 18.3	42.8 0.17	25		
9GT0624P4G001	24	20.4 to 27.6	100	0.28	6.72	10,000	1.26 44.5	243 0.97	52		
			30	0.06	1.44	4,100	0.52 18.3	42.8 0.17	25		

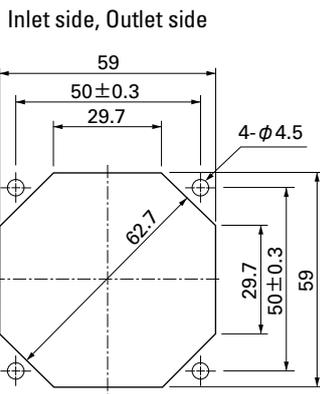
Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



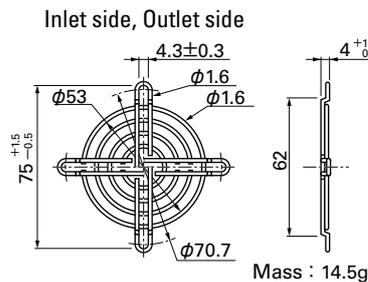
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

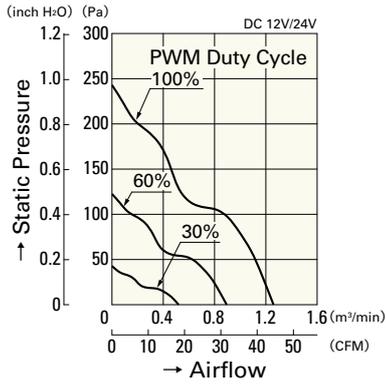
Finger Guards

Model : 109-139E Surface treatment : Nickel-chrome plating (silver)
: 109-139H : Cation electropainting (black)



Airflow - Static Pressure Characteristics

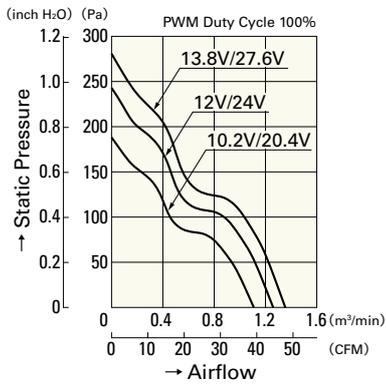
PWM Duty Cycle



9GT0612P4G001

9GT0624P4G001

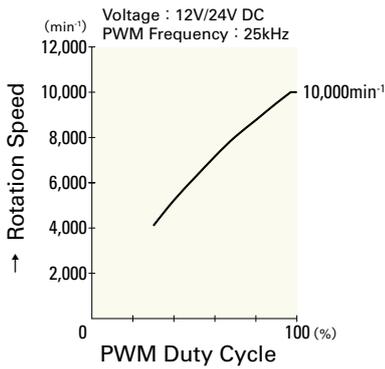
Operating Voltage Range



9GT0612P4G001

9GT0624P4G001

PWM Duty - Speed Characteristics Example



9GT0612P4G001

9GT0624P4G001

DC

Wide Temperature Range Fan 60mm

80mm sq.

San Ace 80T



General Specifications

- Material Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10:Survival rate:90% at 85°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -40°C to +85°C (Non-condensing)

80×80×25mm (Mass : 130g) **9GT** type

Specifications

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

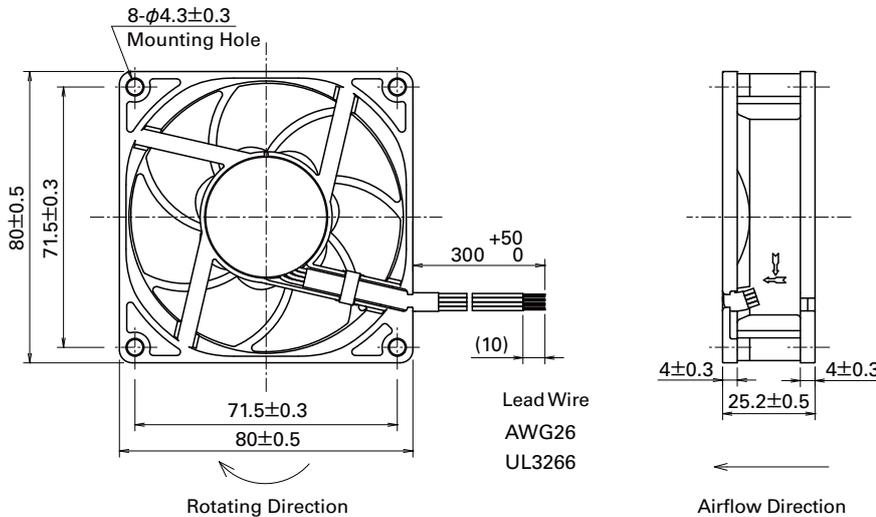
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle [※] [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9GT0812P4S001	12	10.2 to 13.8	100	0.46	5.52	6,700	1.86 65.7	143 0.57	46	-40 to +85	40,000/85°C
			30	0.09	1.08	2,650	0.73 25.7	22.3 0.08	26		
9GT0824P4S001	24	20.4 to 27.6	100	0.22	5.28	6,700	1.86 65.7	143 0.57	46		
			30	0.05	1.20	2,650	0.73 25.7	22.3 0.08	26		

Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Models without sensors are available as an option. Please refer to the index (p. 476).

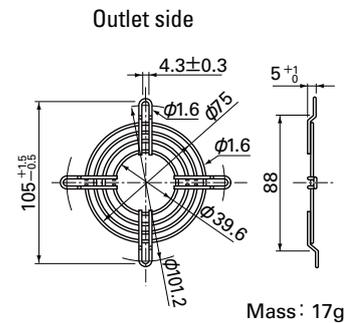
Dimensions (unit: mm)



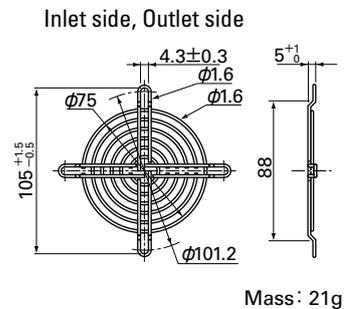
Options (unit: mm)

Finger Guards

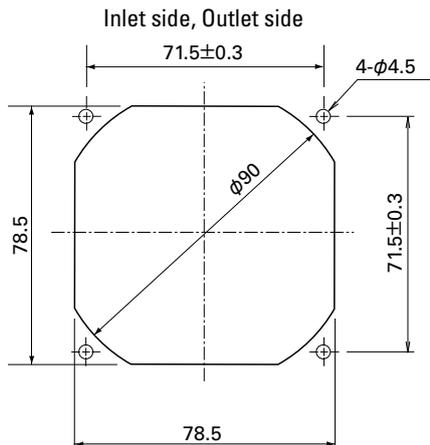
Model : 109-049C Surface treatment : Nickel-chrome plating (silver) Color



Model : 109-049E Surface treatment : Nickel-chrome plating (silver) Color
: 109-049H : Cation electropainting (black)

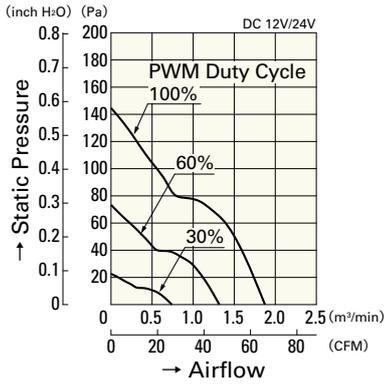


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Airflow - Static Pressure Characteristics

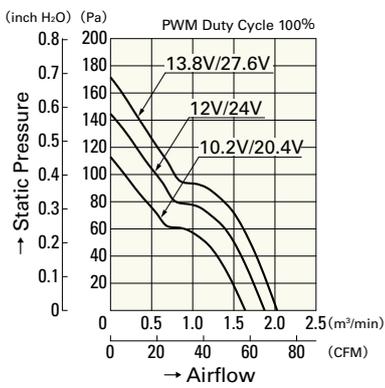
PWM Duty Cycle



9GT0812P4S001

9GT0824P4S001

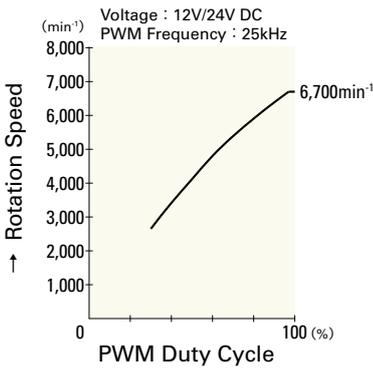
Operating Voltage Range



9GT0812P4S001

9GT0824P4S001

PWM Duty - Speed Characteristics Example



9GT0812P4S001

9GT0824P4S001

DC

Wide Temperature Range Fan 80mm

92mm sq.

San Ace 92T



General Specifications

- Material Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10:Survival rate:90% at 85°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -40°C to +85°C (Non-condensing)

92×92×25mm (Mass : 150g) **9GT type**

Specifications

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

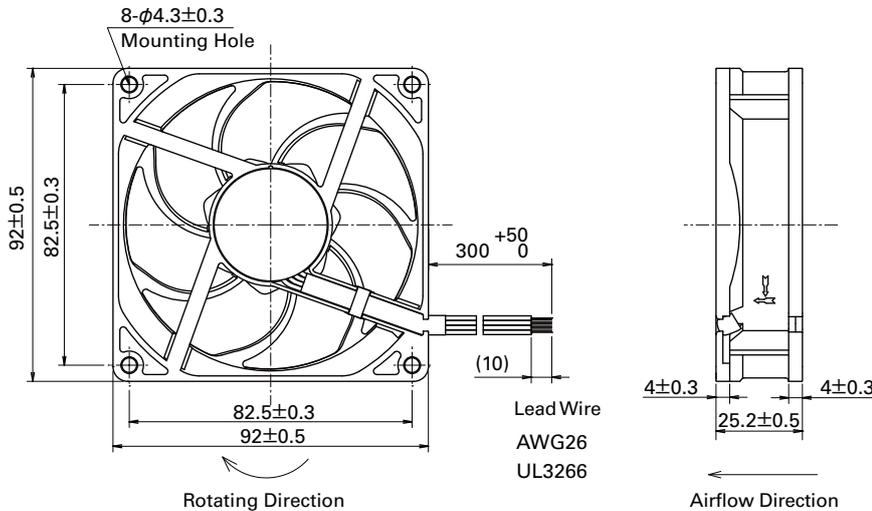
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle [※] [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [InchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9GT0912P4J001	12	10.2 to 13.8	100	0.42	5.04	5,000	2.20 77.7	105 0.42	44	-40 to +85	40,000/85°C
			30	0.07	0.84	1,850	0.81 28.7	14.3 0.05	18		
9GT0924P4J001	24	20.4 to 27.6	100	0.21	5.04	5,000	2.20 77.7	105 0.42	44		
			30	0.05	1.20	1,850	0.81 28.7	14.3 0.05	18		

Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Models without sensors are available as an option. Please refer to the index (p. 476).

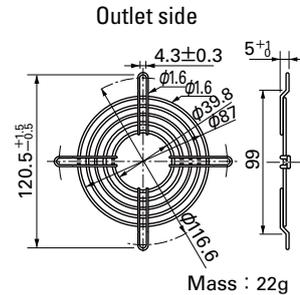
Dimensions (unit: mm)



Options (unit: mm)

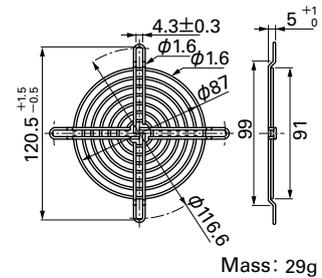
Finger Guards

Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color

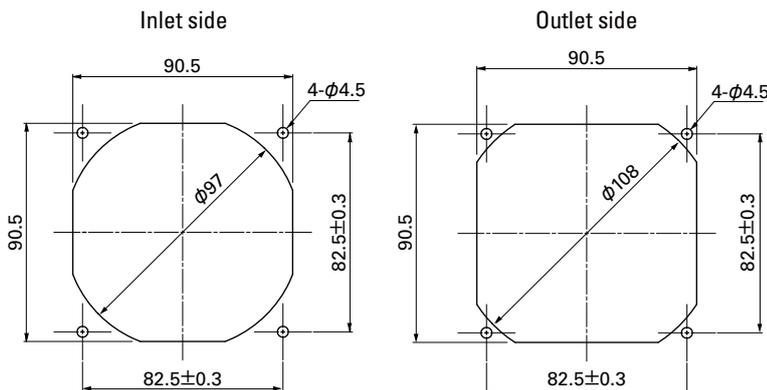


Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color
: 109-099H : Cation electropainting (black)

Inlet side, Outlet side

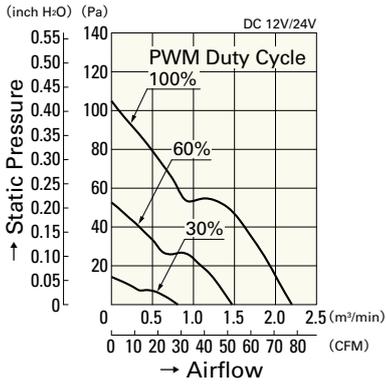


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Airflow - Static Pressure Characteristics

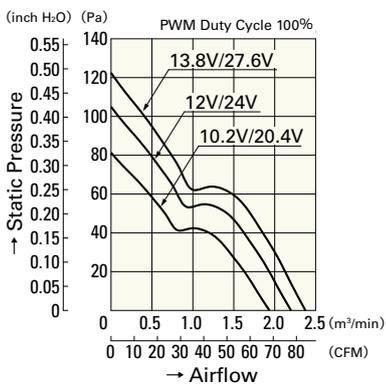
PWM Duty Cycle



9GT0912P4J001

9GT0924P4J001

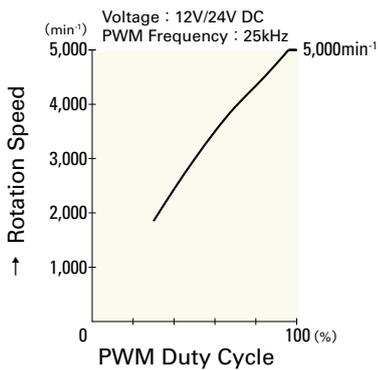
Operating Voltage Range



9GT0912P4J001

9GT0924P4J001

PWM Duty - Speed Characteristics Example



9GT0912P4J001

9GT0924P4J001

DC

Wide Temperature Range Fan 92mm

92mm sq.

San Ace 92T



General Specifications

- Material Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10:Survival rate:90% at 85°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -40°C to +85°C (Non-condensing)

92×92×38mm (Mass : 270g) **9GT type**

Specifications

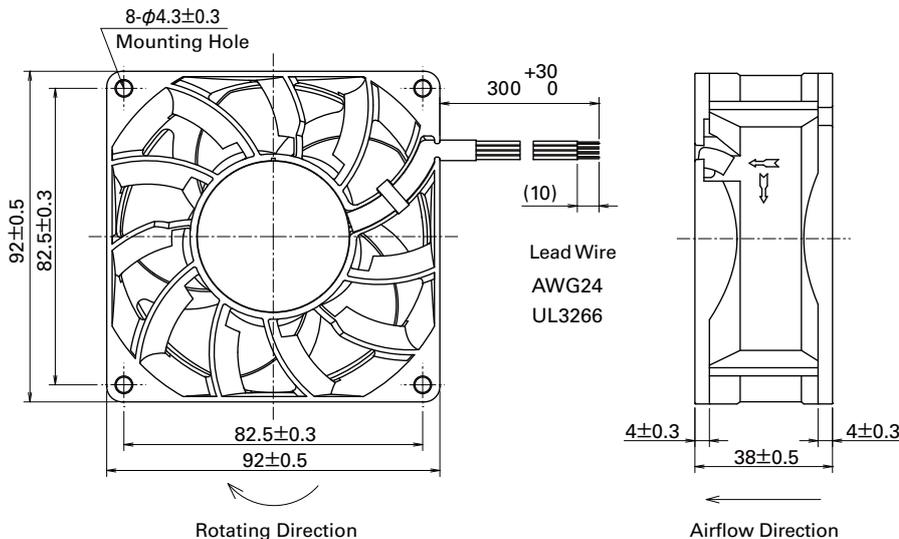
The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle [※] [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [InchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9GT0912P1M001	12	10.2 to 13.8	100	1.50	18.0	8,100	3.30 116.6	315 1.26	58	-40 to +85	40,000/85°C
			30	0.30	3.6	3,750	1.50 53.0	72.0 0.29	37		
9GT0924P1M001	24	20.4 to 27.6	100	0.75	18.0	8,100	3.30 116.6	315 1.26	58		
			30	0.15	3.6	3,750	1.50 53.0	72.0 0.29	37		

Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

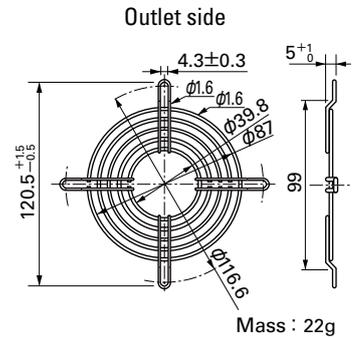
Dimensions (unit: mm)



Options (unit: mm)

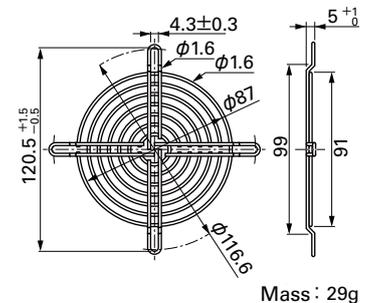
Finger Guards

Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)

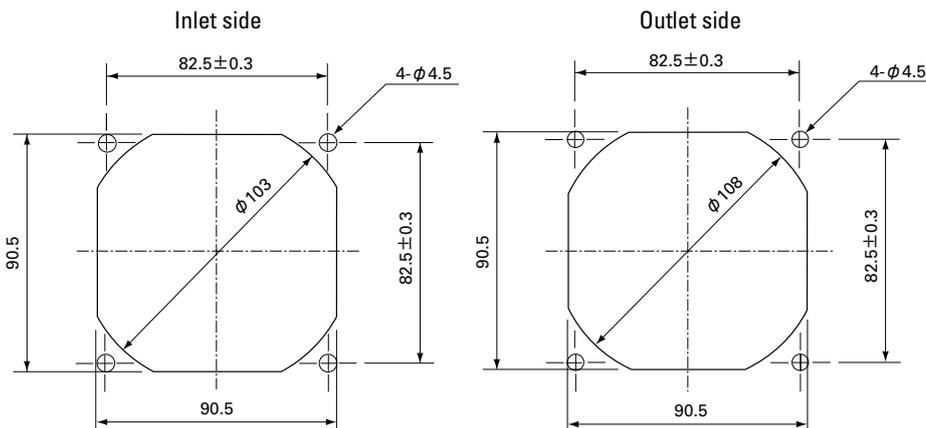


Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)
: 109-099H Surface treatment : Cation electroplating (black) Color : Cation electroplating (black)

Inlet side, Outlet side

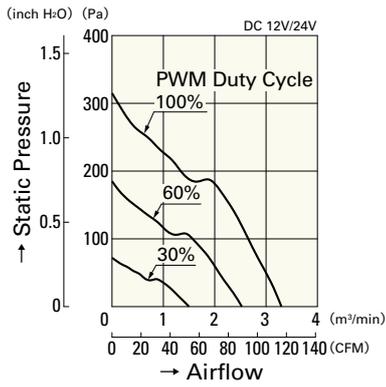


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Airflow - Static Pressure Characteristics

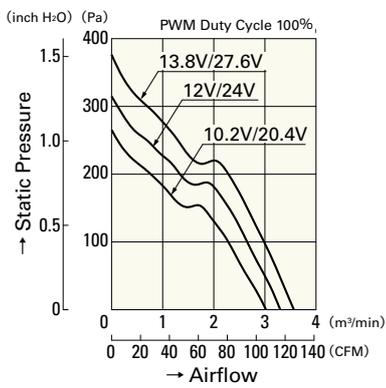
PWM Duty Cycle



9GT0912P1M001

9GT0924P1M001

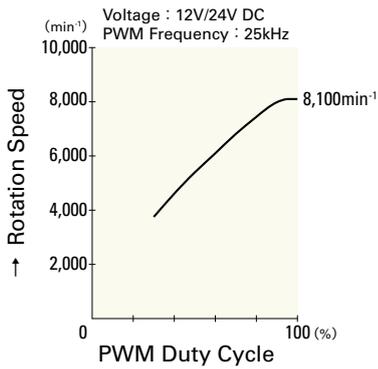
Operating Voltage Range



9GT0912P1M001

9GT0924P1M001

PWM Duty - Speed Characteristics Example



9GT0912P1M001

9GT0924P1M001

DC

Wide Temperature Range Fan 92mm

120mm sq.

San Ace 120T



General Specifications

- Material Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10:Survival rate:90% at 85°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -40°C to +85°C (Non-condensing)

120×120×38mm [Mass : 420g] **9GT type**

Specifications

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

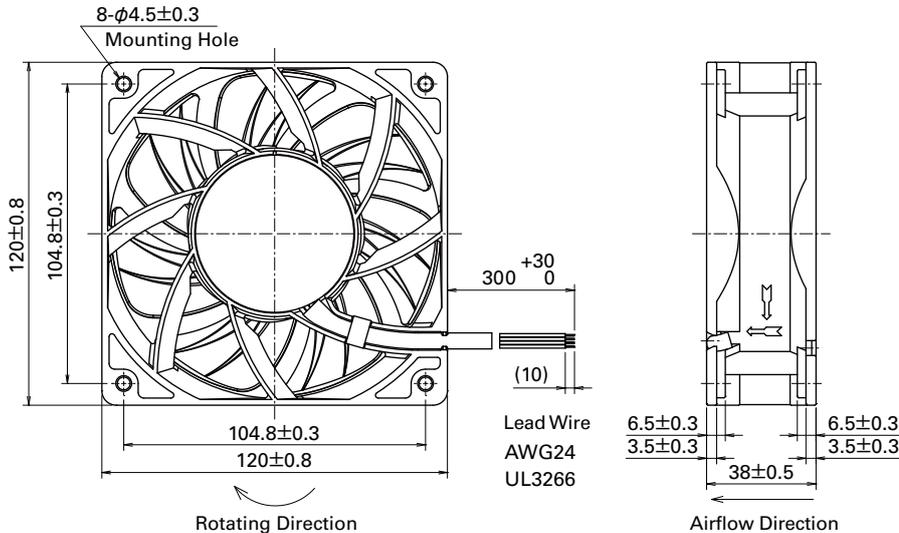
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Note①} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [InchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9GT1212P1S001	12	9.0 to 13.8	100	2.2	26.4	5,600	6.00 211.8	270 1.08	58	-40 to +85	40,000/85°C
			35	0.48	5.76	2,900	3.00 106.0	85.6 0.34	41		
9GT1224P1S001	24	18.0 to 27.6	100	1.1	26.4	5,600	6.00 211.8	270 1.08	58		
			35	0.24	5.76	2,900	3.00 106.0	85.6 0.34	41		

Note : Fan does not rotate when PWM duty cycle is 0%.

※PWM Frequency : 25kHz

Models without sensors are available as an option. Please refer to the index (p. 476).

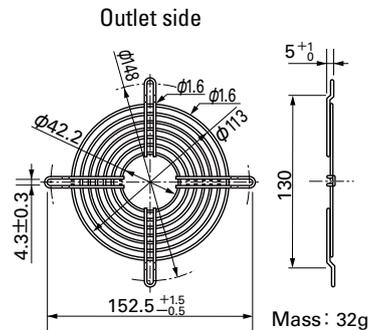
Dimensions (unit: mm)



Options (unit: mm)

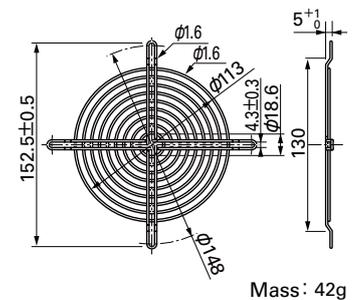
Finger Guards

Model : 109-019C Surface treatment : Nickel-chrome plating (silver)
: 109-019H : Cation electropainting (black)

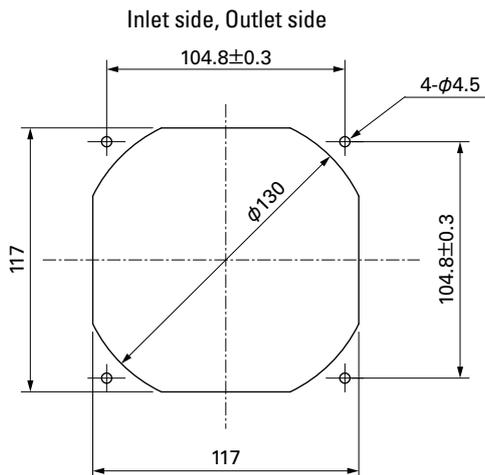


Model : 109-019E Surface treatment : Nickel-chrome plating (silver)
: 109-019K : Cation electropainting (black)

Inlet side, Outlet side

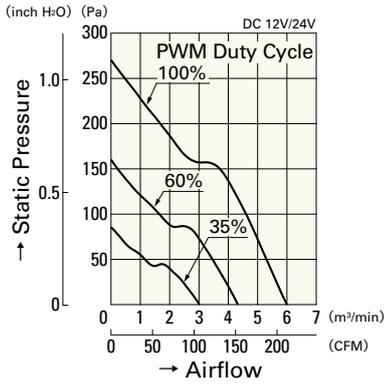


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Airflow - Static Pressure Characteristics

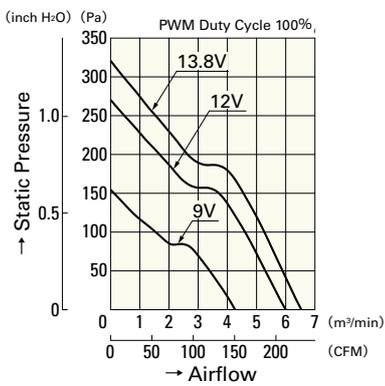
PWM Duty Cycle



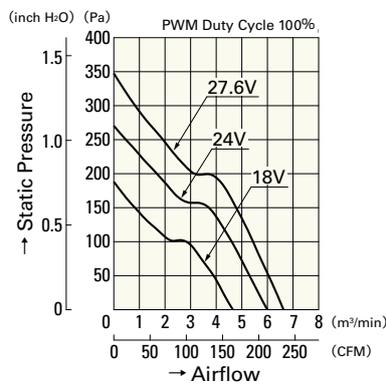
9GT1212P1S001

9GT1224P1S001

Operating Voltage Range

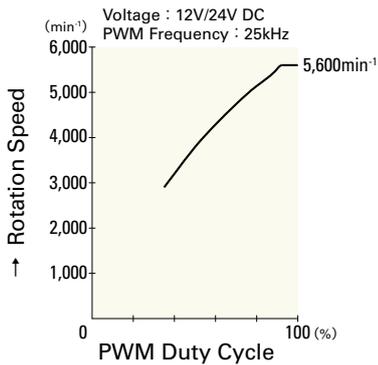


9GT1212P1S001



9GT1224P1S001

PWM Duty - Speed Characteristics Example



9GT1212P1S001

9GT1224P1S001

DC

Wide Temperature Range Fan 120mm

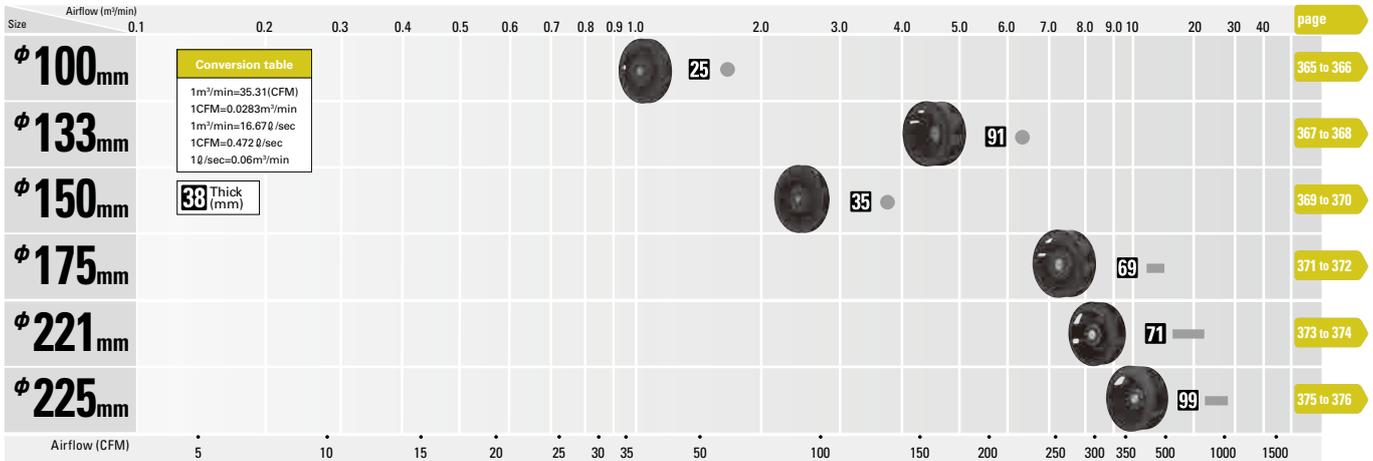
Centrifugal Fan

Cooling fan blows air in a centrifugal course. It features high static pressure.

Related product

Splash Proof Centrifugal Fan ⇒ p. 285

Domain Diagram



Part Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

9T	M	48	P	4	H	01
Type name / frame material 9T / Aluminum	Size M: φ 100mm J: φ 133mm N: φ 150mm G: φ 175mm P: φ 221mm S: φ 225mm	Voltage 24: 24V 48: 48V	PWM control function P	Frame thickness 0: 69mm thick MIN 1: 35mm thick 4: 25mm thick	Speed code H, G etc	Individual customer's spec 2 or 3 digits

φ 100_{mm}

San Ace C100



General Specifications

- Material Motor case: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

φ 100mm × 25mm (Mass : 150g) **9TM type**

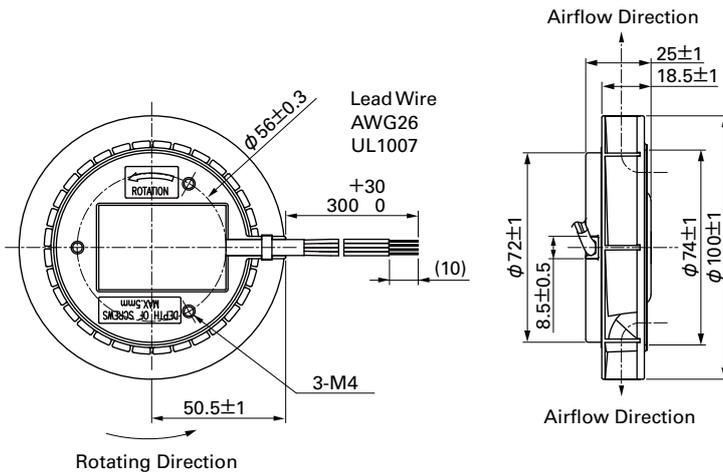
Specifications When our inlet nozzle [Option (Model NO. : 109-1080)] is mounted. The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle* [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9TM48P4H01	48	36 to 60	100	0.22	10.56	6,400	1.77 62.5	560 2.25	60	-20 to +70	40,000/60°C
			0	0.04	1.92	2,000	0.51 18.0	48 0.19	34		

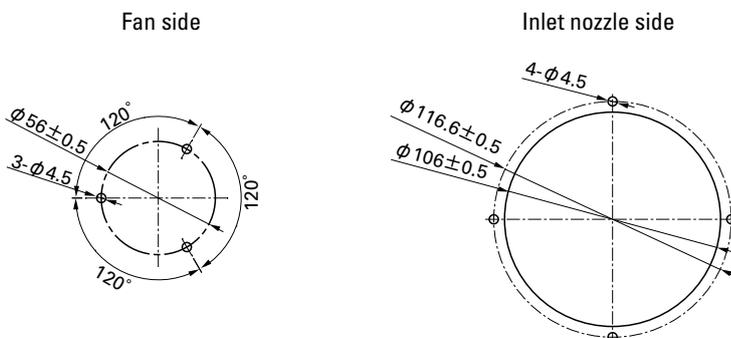
Note : Max input is 14W at rated voltage.

※ PWM Frequency : 25kHz

Dimensions (unit: mm)



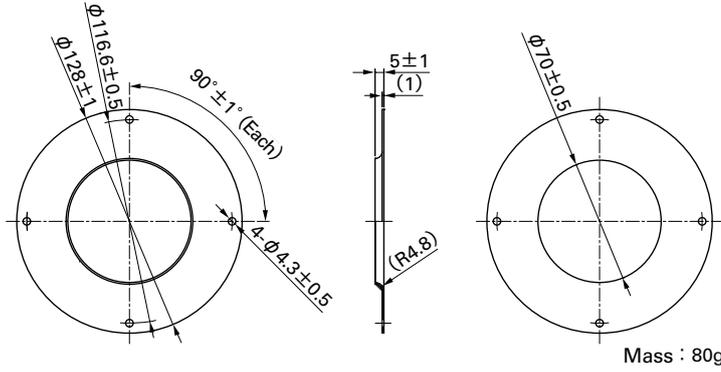
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

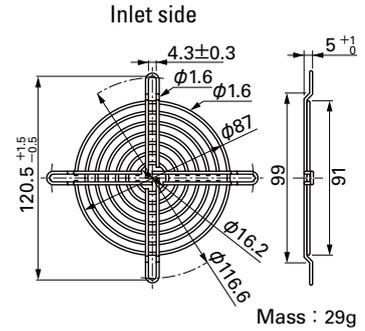
Inlet Nozzle

Model : 109-1080 Material: Steel sheet Surface treatment: Electro nickel plating (silver) Color



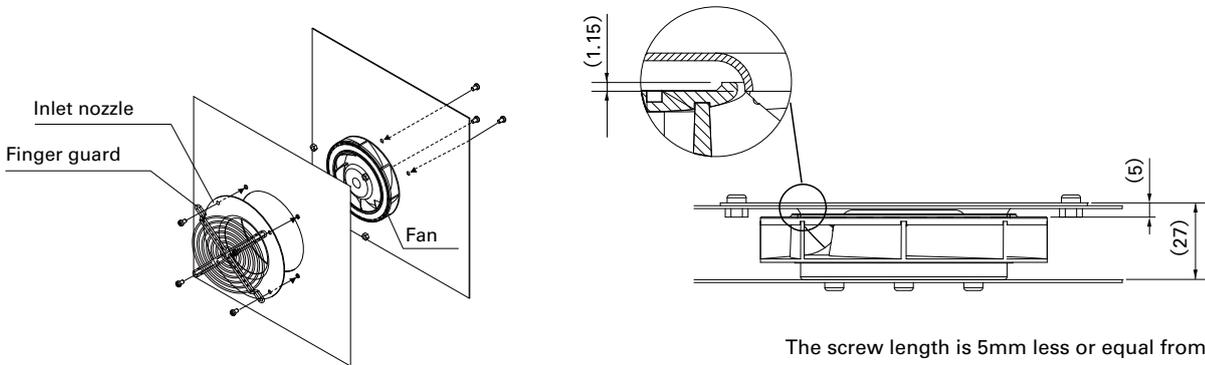
Finger Guards

Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color : 109-099H : Cation electropainting (black)



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

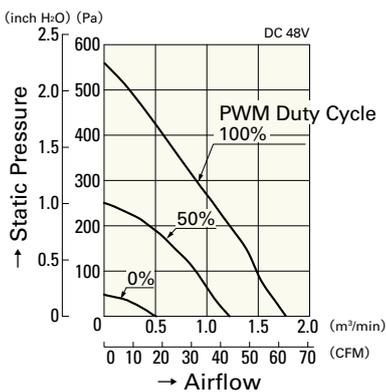
Reference Diagram for Mounting



The screw length is 5mm less or equal from fan edge side.

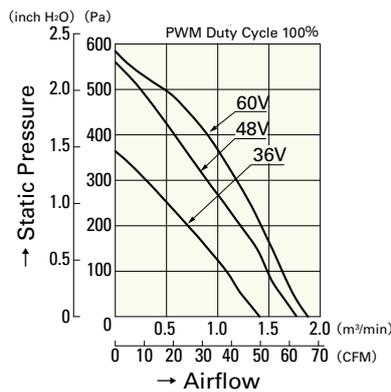
Airflow - Static Pressure Characteristics

PWM Duty Cycle



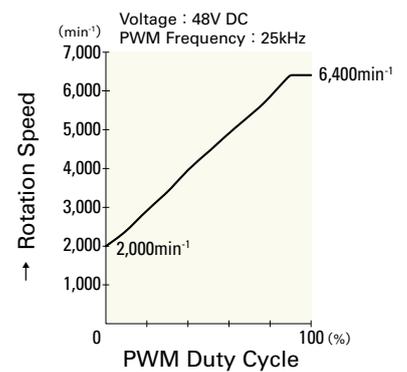
9TM48P4H01

Operating Voltage Range



9TM48P4H01

PWM Duty - Speed Characteristics Example



9TM48P4H01

φ133mm

San Ace C133



General Specifications

- Material..... Motor case: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

φ133mm×91mm (Mass : 660g) **9TJ type**

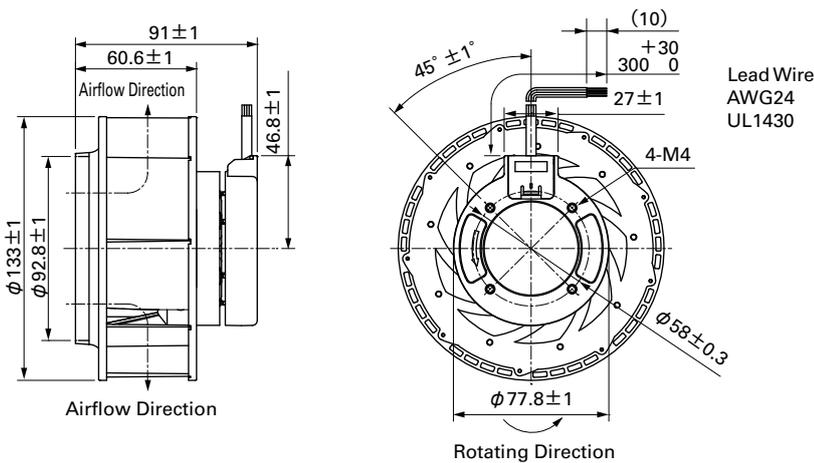
Specifications When our inletnozzle [Option (Model : 109-1069)] is mounted. The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Note①} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9TJ24P0H61	24	20.4 to 27.6	100	1.2	28.8	4,150	6.39 226	395 1.59	61	-20 to +70	40,000/60°C
9TJ48P0H01	48	36 to 72	100	0.55	26.4	4,150	6.39 226	395 1.59	61		

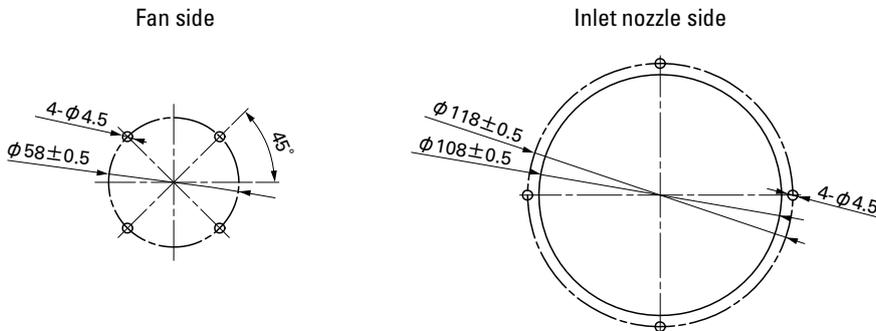
Note : Fan does not rotate when PWM duty cycle is 0%.

*PWM Frequency : 25kHz

Dimensions (unit: mm)



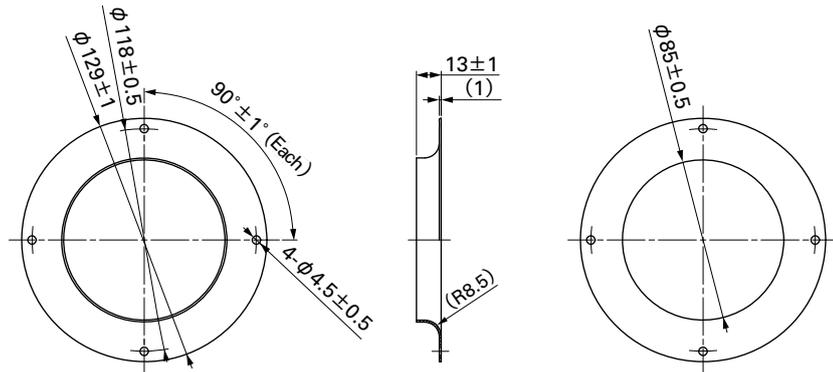
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

Inlet Nozzle

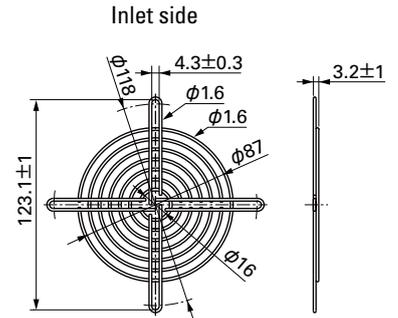
Model : 109-1069 Material : Steel sheet Surface treatment : Electro nickel plating Color (silver)
 : 109-1069H : Steel sheet : Cation electropainting (black)



Mass : 76g

Finger Guards

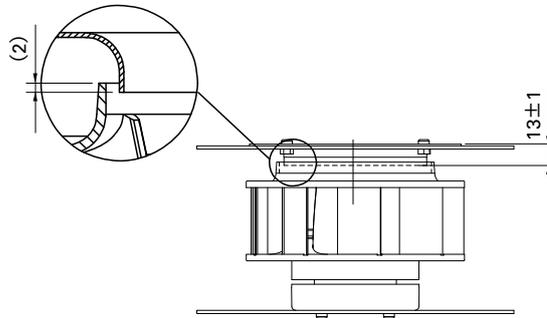
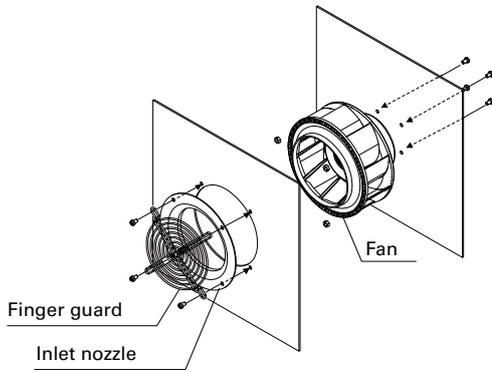
Model : 109-1112 Surface treatment : Nickel-chrome plating (silver) Color (silver)



Mass : 65g

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

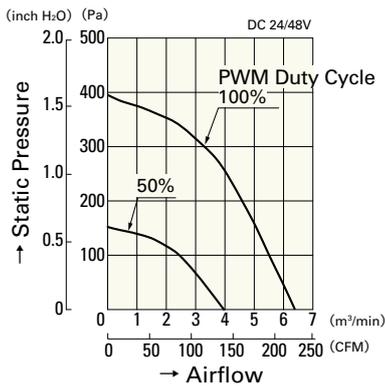
Reference Diagram for Mounting



The screw length is 6mm less or equal from fan edge side.

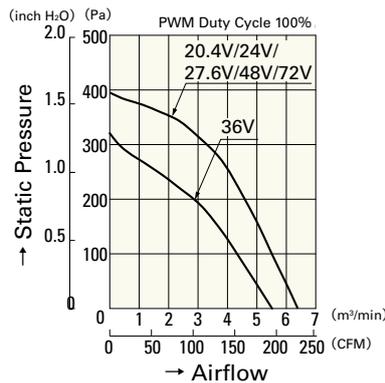
Airflow - Static Pressure Characteristics

PWM Duty Cycle



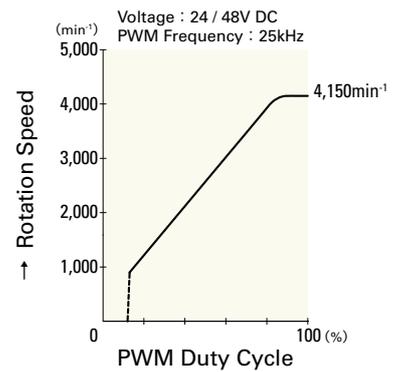
9TJ24P0H61
9TJ48P0H01

Operating Voltage Range



9TJ24P0H61
9TJ48P0H01

PWM Duty Speed Characteristics Example



9TJ24P0H61
9TJ48P0H01

φ 150mm

San Ace C150



General Specifications

- Material Motor case: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

φ 150mm × 35mm (Mass : 330g) **9TN type**

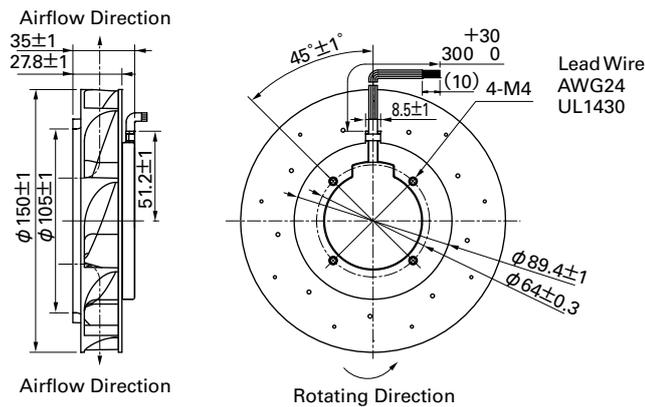
Specifications When our inletnozzle[Option(Model : 109-1081)]is mounted. The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Max(Freq)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9TN24P1H01	24	20.4 to 27.6	100	0.62	14.9	3,800	3.83 135	410 1.65	59	-20 to +70	40,000/60°C
9TN48P1H01	48	36.0 to 55.2	100	0.32	15.4	3,800	3.83 135	390 1.57	59		

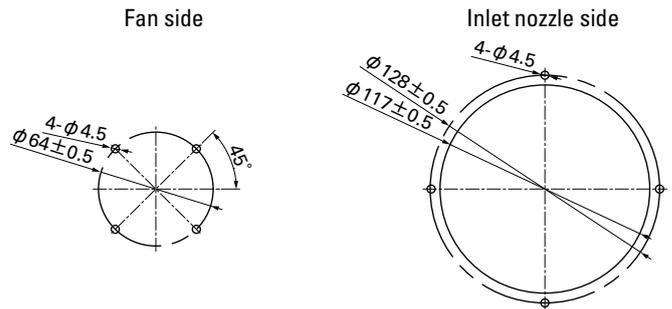
Note 1 : Fan does not rotate when PWM duty cycle is 0% .
Note 2 : Max input is 9TN24P1H01 : 21.4W, 9TN48P1H01 : 22W.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



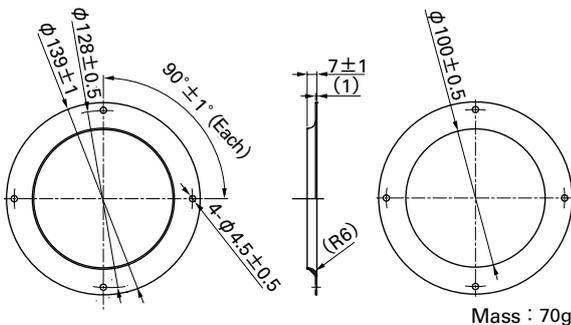
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

Inlet Nozzle

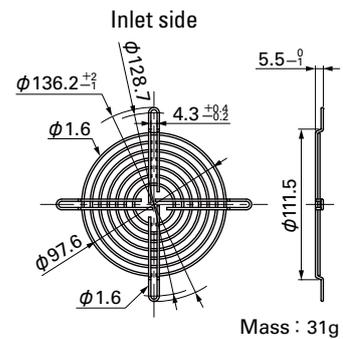
Model : 109-1081 Material : Steel sheet Surface treatment : Electro nickel plating (silver) Color : Steel sheet
: 109-1081H : Steel sheet : Cation electropainting (black)



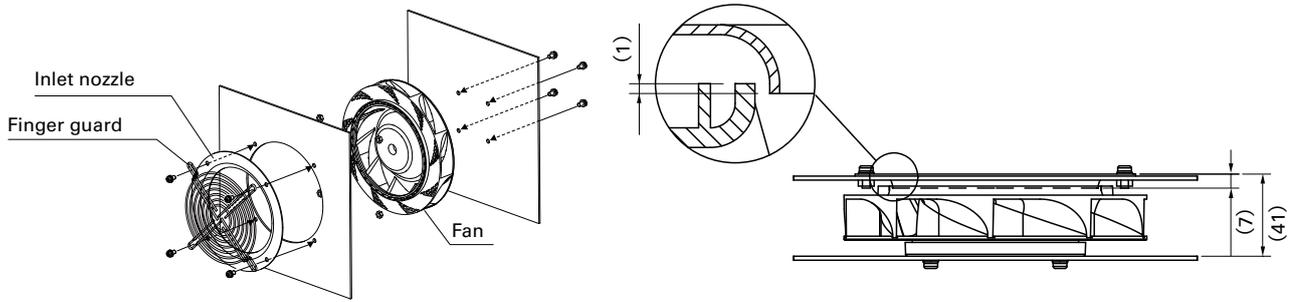
Inlet nozzle : Nozzle mounted in fan inlet side to adjust the flow of introduced air

Finger Guards

Model : 109-1104 Surface treatment : Nickel-chrome plating (silver) Color : 109-1104H : Cation electropainting (black)



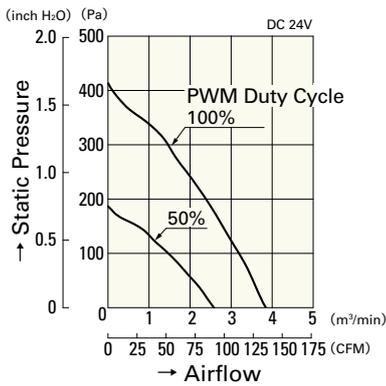
Reference Diagram for Mounting



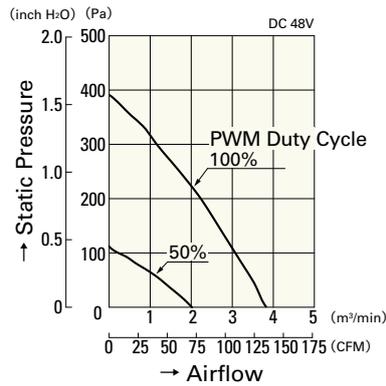
Screw length should be 4 mm or more but not exceeding 6 mm from fan edge face.

Airflow - Static Pressure Characteristics

PWM Duty Cycle

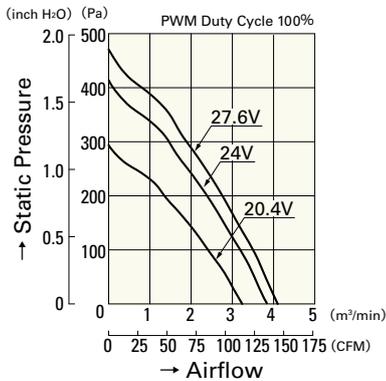


9TN24P1H01

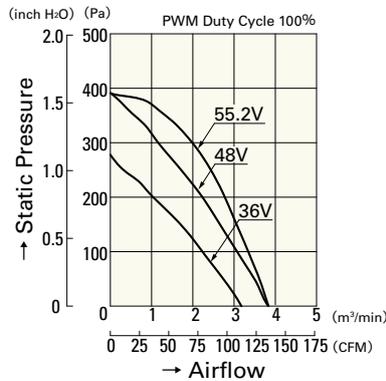


9TN48P1H01

Operating Voltage Range

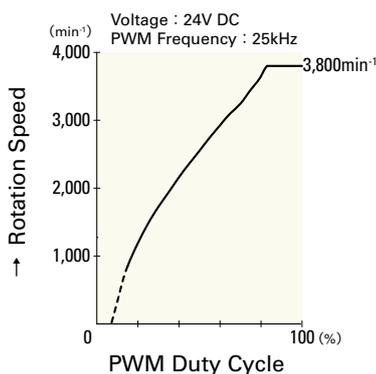


9TN24P1H01

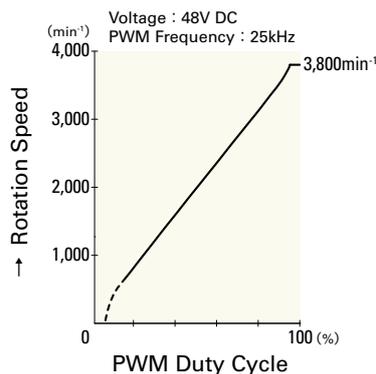


9TN48P1H01

PWM Duty - Speed Characteristics Example



9TN24P1H01



9TN48P1H01

φ 175mm

San Ace C175



General Specifications

- Material Motor case: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

φ 175mm × 69mm (Mass : 750g) **9TG type**

Specifications

When inlet nozzle [Option (Model : 109-1073)] is mounted. The following nos. **have PWM controls and pulse sensors.**

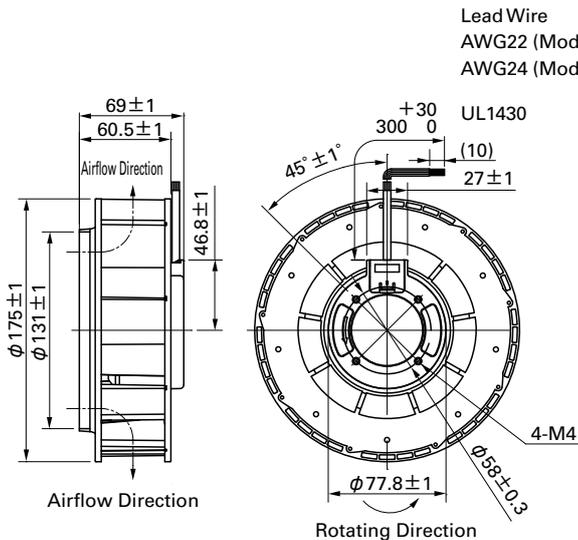
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{*)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9TG24P0G01	24	20.4 to 27.6	100	3.9	93.6	4,700	14.0 494.7	885 3.55	73	-20 to +60	40,000/60°C
9TG24P0S01				2.35	56.40	3,900	11.6 409.8	609 2.45	69	-20 to +70	
9TG48P0G01	48	36 to 55.2		1.95	93.6	4,700	14.0 494.7	885 3.55	73		

Note 1 : Fan does not rotate when PWM duty cycle is 0% .
Note 2 : Max input is 130 W at rated voltage.

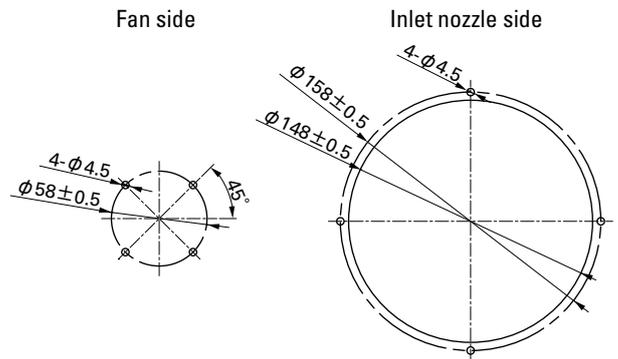
*)PWM Frequency : 25kHz

Models without sensors or with pulse sensors (no PWM function) are available as options. Please refer to the index (p. 480).

Dimensions (unit: mm)



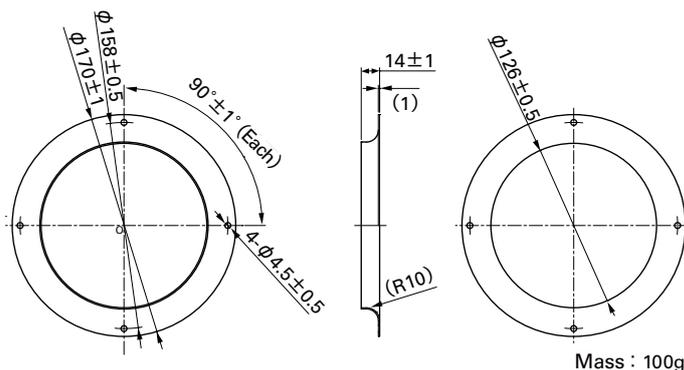
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

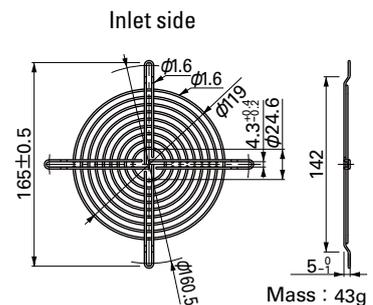
Inlet Nozzle

Model : 109-1073 Material : Steel sheet Surface treatment : Electro nickel plating (silver) Color : (silver)
: 109-1073H : Steel sheet : Cation electropainting (black)



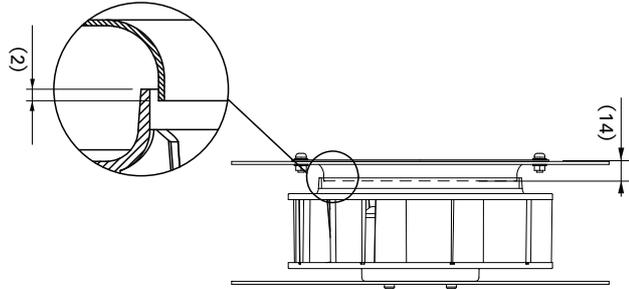
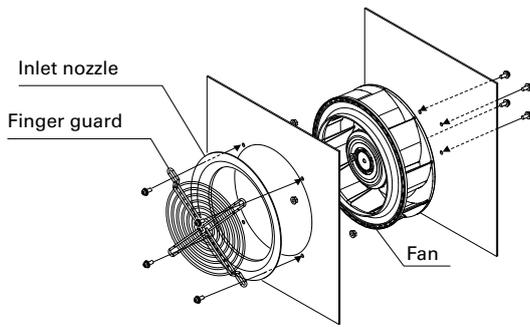
Finger Guards

Model : 109-722 Surface treatment : Nickel-chrome plating (silver) Color : (silver)



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

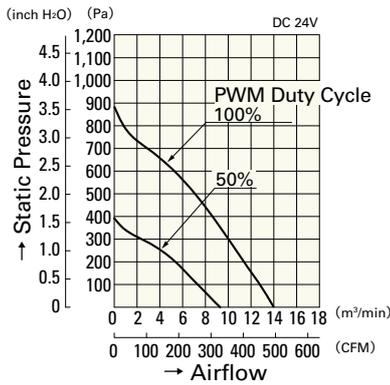
Reference Diagram for Mounting



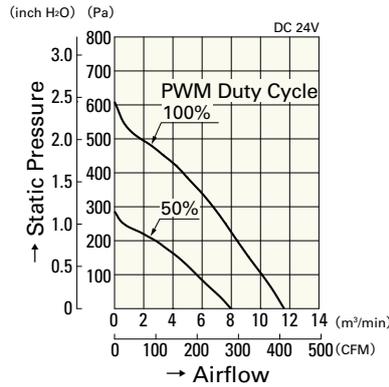
Screw length should be 4 mm or more but not exceeding 6 mm from fan edge face. To prevent screw from losing, use plain washer and spring washer.

Airflow - Static Pressure Characteristics

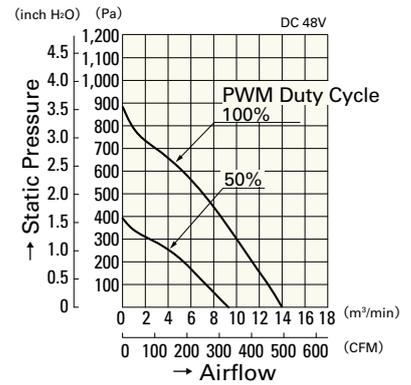
PWM Duty Cycle



9TG24P0G01

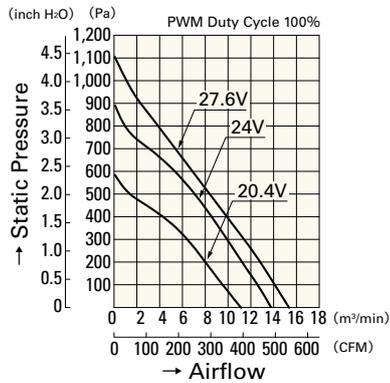


9TG24P0S01

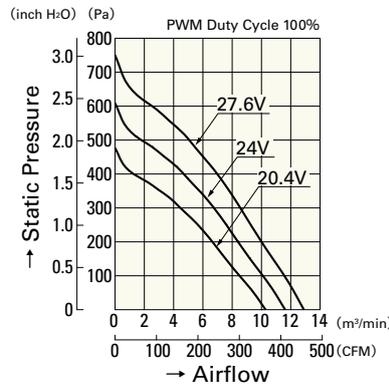


9TG48P0G01

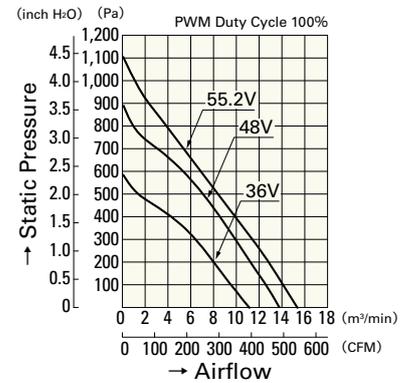
Operating Voltage Range



9TG24P0G01

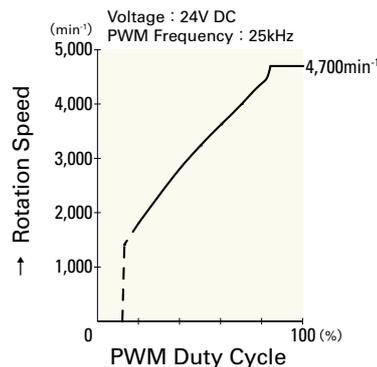


9TG24P0S01

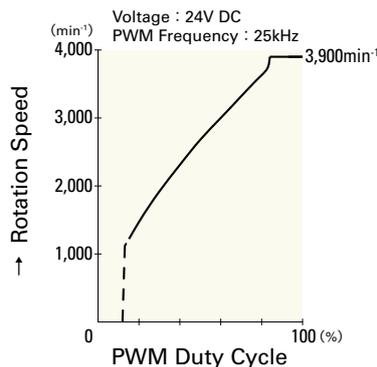


9TG48P0G01

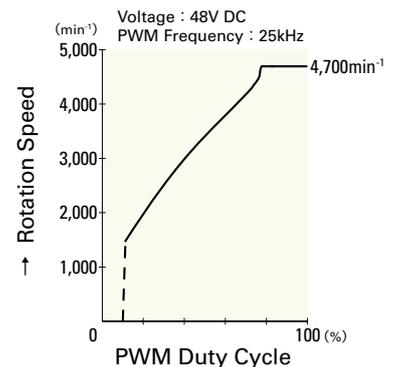
PWM Duty - Speed Characteristics Example



9TG24P0G01



9TG24P0S01



9TG48P0G01

ϕ **221**mm

San Ace C221



General Specifications

- Material..... Motor case: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

ϕ **221**mm×**71**mm (Mass : 1,050g) **9TP** type

Specifications

When inlet nozzle [Option (Model : 109-1135)] is mounted. The following nos. **have PWM controls and pulse sensors.**

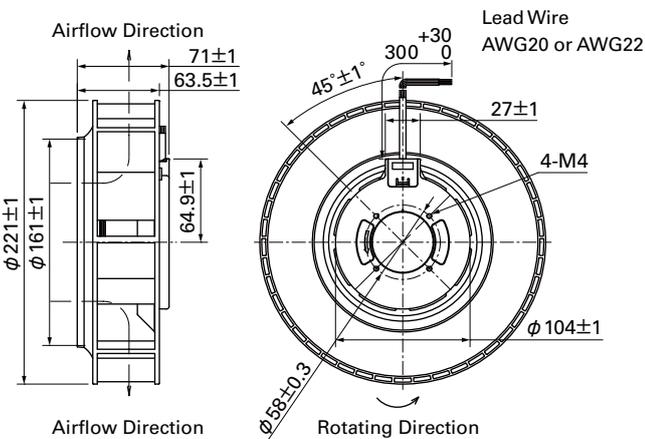
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{*)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9TP24P0H001	24	16 to 36	100	3.2	76.8	3,050	17.6 622	530 2.13	71	-20 to +70	40,000/60°C (70,000/40°C)
			15	0.4	9.6	1,000	5.75 203	57.4 0.23	53		
9TP48P0G001	48	36 to 72	100	2.75	132	3,650	21 742	760 3.05	74	-20 to +60	
			15	0.2	9.6	1,000	5.75 203	57.4 0.23	53		
9TP48P0H001	48	36 to 72	100	1.6	76.8	3,050	17.6 622	530 2.13	71	-20 to +70	
			15	0.2	9.6	1,000	5.75 203	57.4 0.23	53		

Note 1 : Fan does not rotate when PWM duty cycle is 0%.

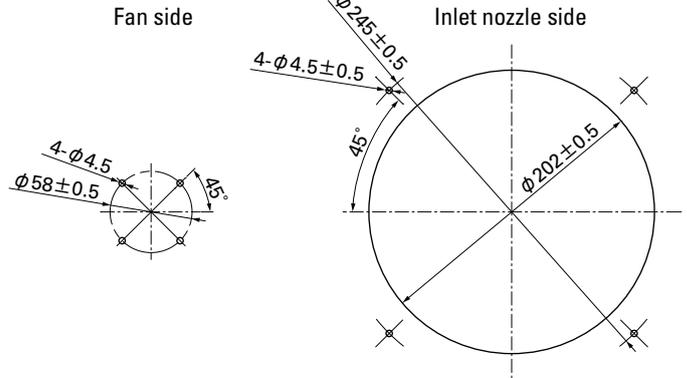
※PWM Frequency : 25kHz

Note 2 : Max input is 9TP48P0G001: 280 W, 9TP24P0H001 / 9TP48P0H001: 160 W at rated voltage.

Dimensions (unit: mm)



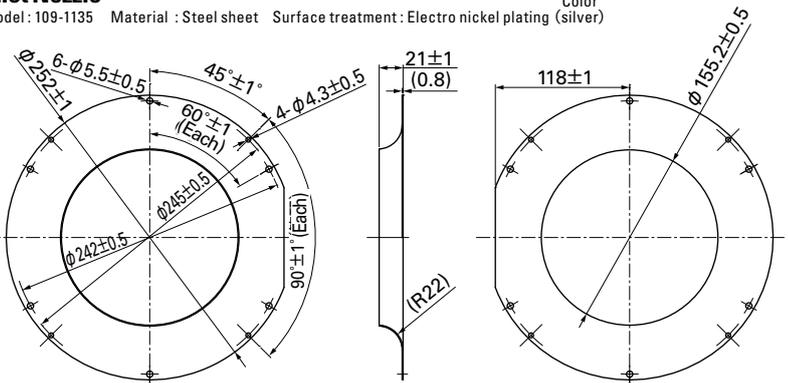
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

Inlet Nozzle

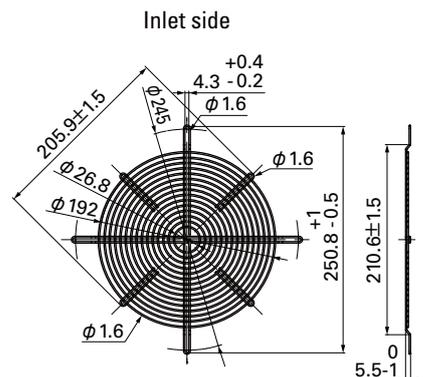
Model : 109-1135 Material : Steel sheet Surface treatment : Electro nickel plating Color (silver)



Mass: 230g

Finger Guards

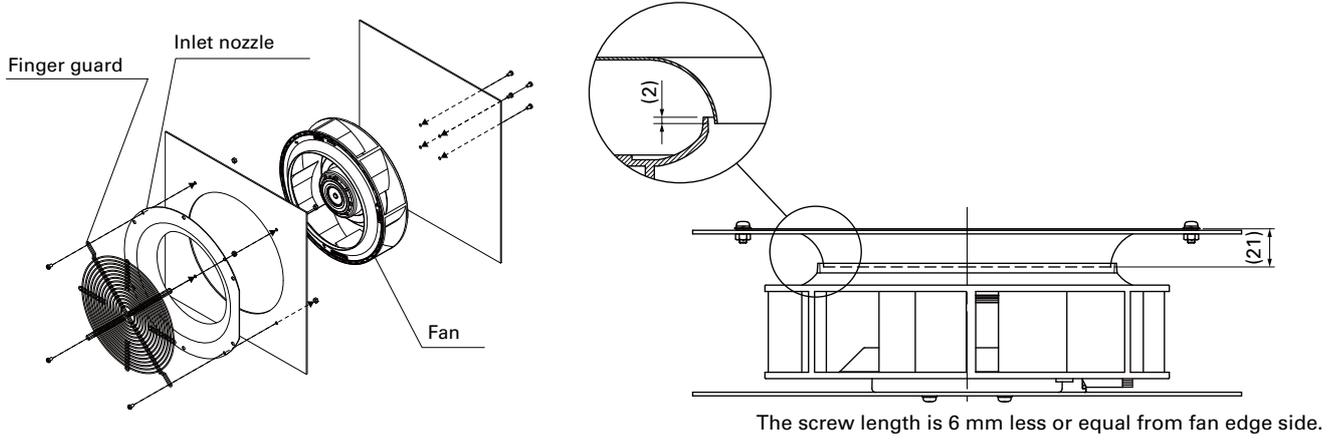
Model : 109-1138 Surface treatment : Nickel-chrome plating Color (silver)



Mass: 105g

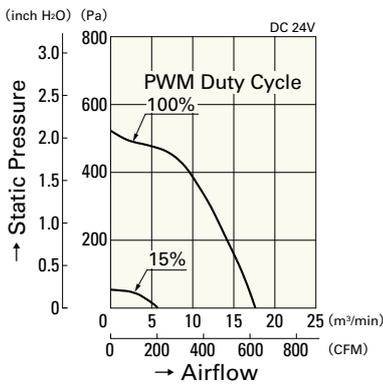
Inlet nozzle : Nozzle mounted in fan inlet side to adjust the flow of introduced air

Reference Diagram for Mounting

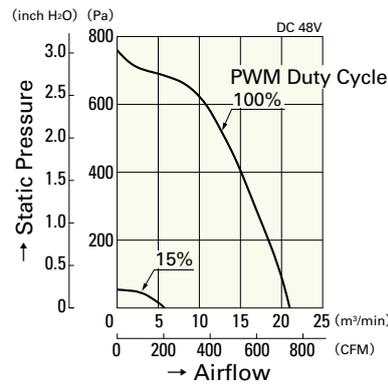


Airflow - Static Pressure Characteristics

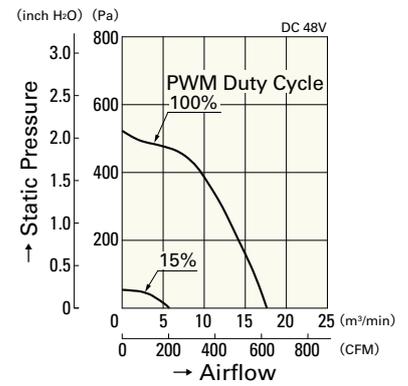
PWM Duty Cycle



9TP24P0H001

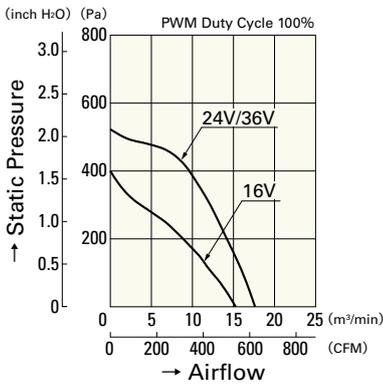


9TP48P0G001

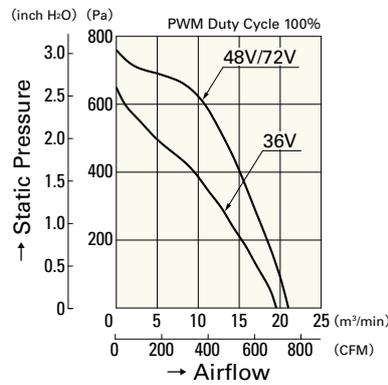


9TP48P0H001

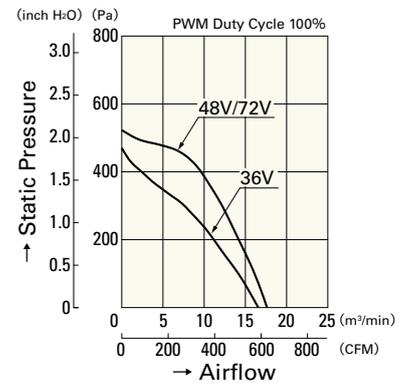
Operating Voltage Range



9TP24P0H001

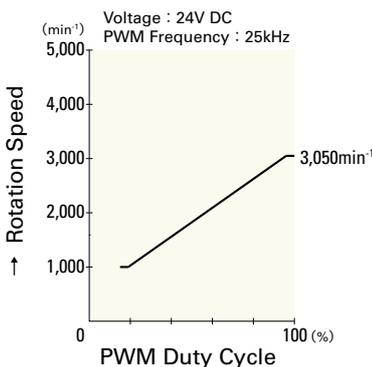


9TP48P0G001

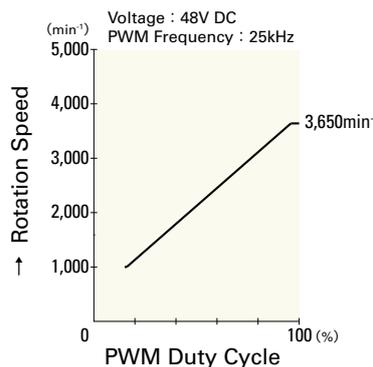


9TP48P0H001

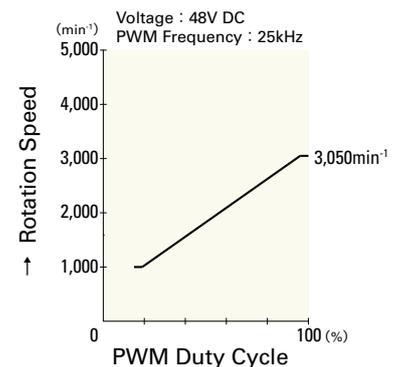
PWM Duty - Speed Characteristics Example



9TP24P0H001



9TP48P0G001



9TP48P0H001

φ 225mm

San Ace C225



General Specifications

- Material Motor case: Aluminum,
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

φ225mm×99mm (Mass : 1,220g) **9TS type**

Specifications

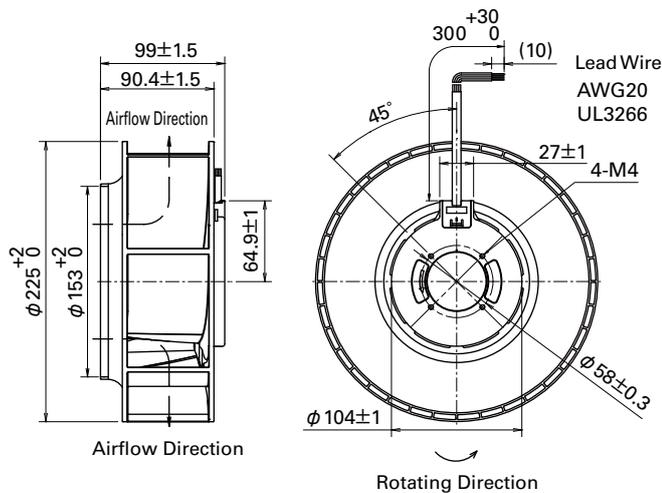
When inlet nozzle [Option (Model : 109-1134)] is mounted. The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle _{Max(10%)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9TS48P0G001	48	36 to 72	100	3.65	175.2	3,550	28.1 992	861 3.46	74.5	-20 to +60	40,000/60°C (70,000/40°C)
			15	0.24	11.5	1,000	7.85 277	68.5 0.28	52.0		
9TS48P0H001			100	2.08	99.8	2,900	22.7 802	590 2.37	70.5	-20 to +70	
			15	0.24	11.5	1,000	7.85 277	68.5 0.28	52.0		

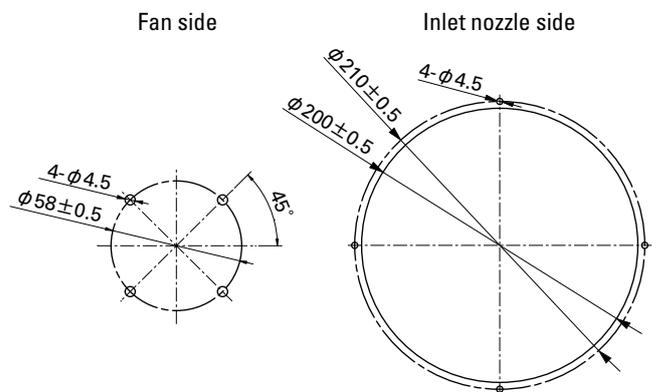
Note 1 : Fan does not rotate when PWM duty cycle is 0% .
Note 2 : Max input is 380 W at rated voltage.

※PWM Frequency : 25kHz

Dimensions (unit: mm)



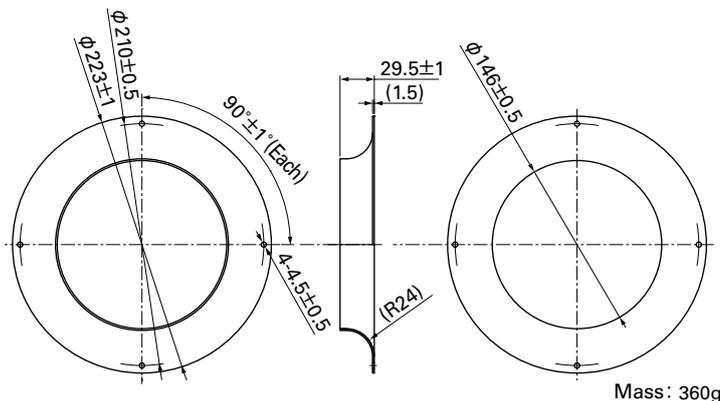
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



Options (unit: mm)

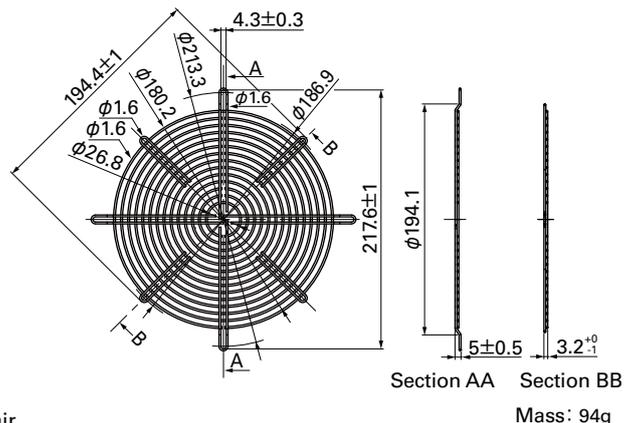
Inlet Nozzle

Model : 109-1134 Material : Steel sheet Surface treatment : Electro nickel plating (silver) Color : (silver)



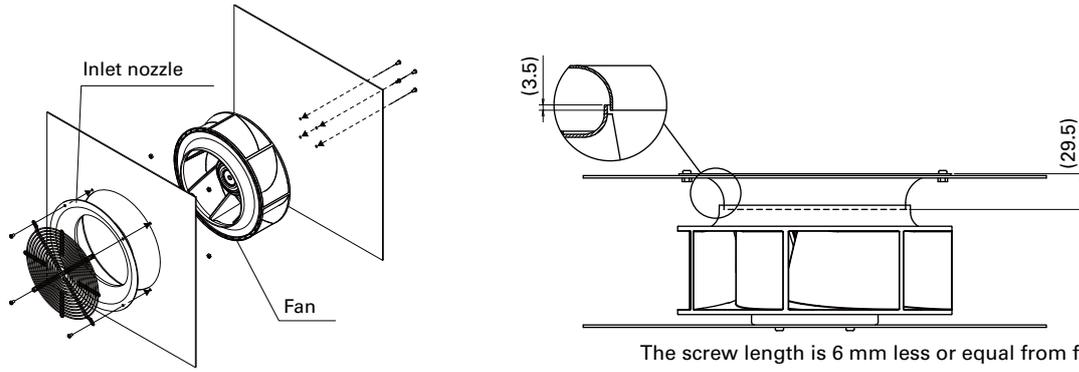
Finger Guards

Model : 109-1137 Surface treatment : Nickel-chrome plating (silver) Color : (silver)



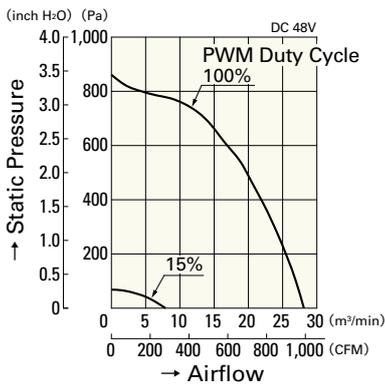
Inlet nozzle : Nozzle mounted in fan inlet side to adjust the flow of introduced air

Reference Diagram for Mounting

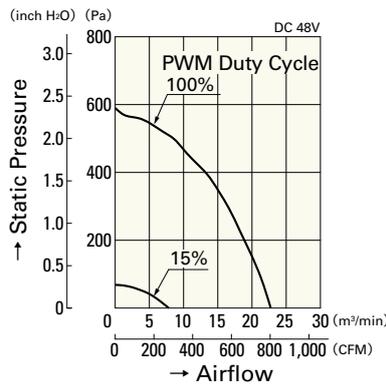


Airflow - Static Pressure Characteristics

PWM Duty Cycle

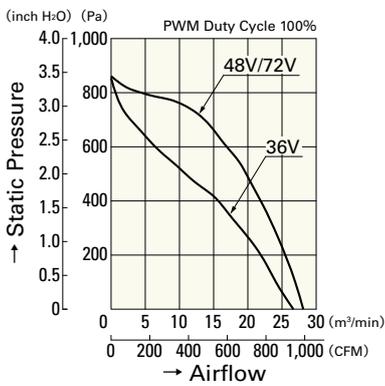


9TS48P0G001

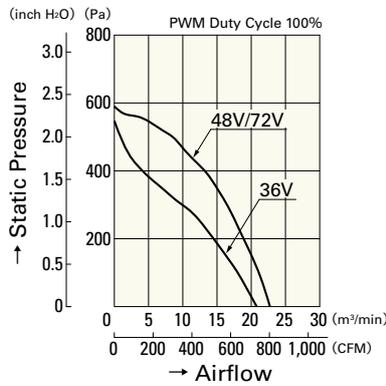


9TS48P0H001

Operating Voltage Range

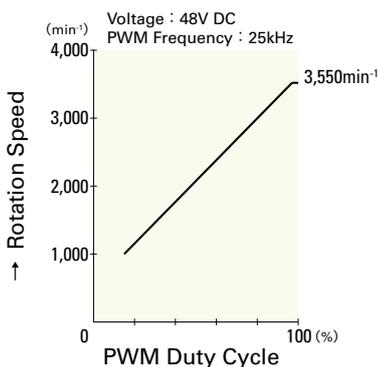


9TS48P0G001

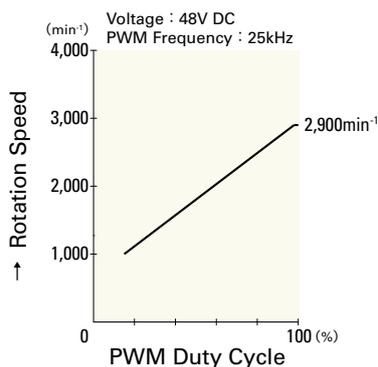


9TS48P0H001

PWM Duty - Speed Characteristics Example



9TS48P0G001

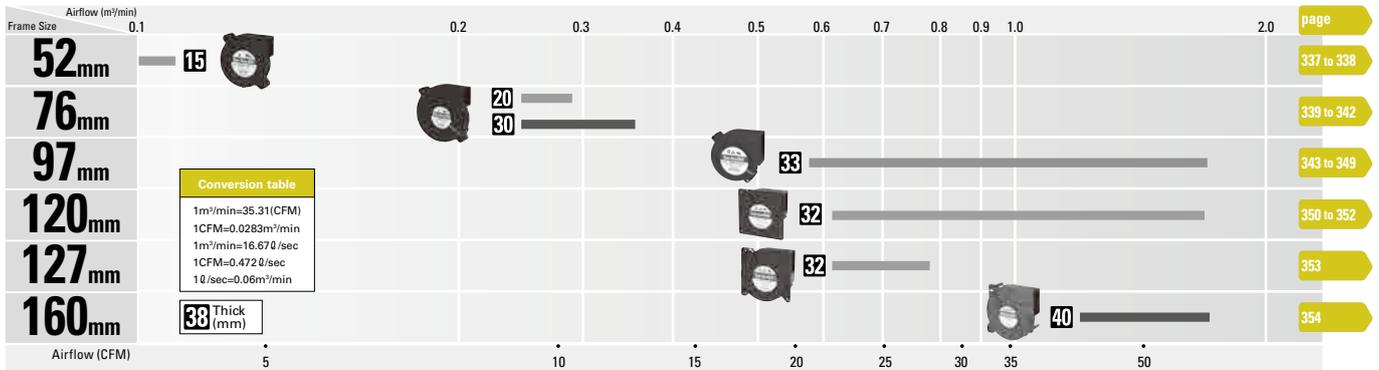


9TS48P0H001

Blower

Cooling fan specialized for high static pressure

Domain Diagram



Part Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

109B	C	12	H	C	2	-1
Type name / frame material 109B / Plastics 9B / Plastics	Frame size C : 52mm F : 120mm D : 76mm J : 127mm M : 97mm G : 160mm	Voltage 12 : 12V 24 : 24V etc	Speed code F,G,H,K,M,S etc	Sensor specifications A : Without a sensor C : With a pulse sensor D : With a lock sensor	Frame thickness 1 : 40mm thick 2 : 30mm thick, 32mm thick, 33mm thick 7 : 15mm thick 6 : 20mm thick	Individual customer's spec

9B	MB	12	G	2	01	-1
Type name / frame material 9B / Plastics	Frame size MB : 97mm FB : 120mm	Voltage 12 : 12V 24 : 24V	Speed code G / S / H etc	Frame thickness 2 : 32mm thick / 33mm thick	Sensor specifications 01 : With a pulse sensor 02 : Without a sensor	Individual customer's spec

Fans with PWM control function

Example :

9B	MB	12	P	2	G	01
Type name / frame material 9B / Plastics	Frame size MB : 97mm FB : 120mm	Voltage 12 : 12V	PWM control function	Frame thickness 2 : 32mm thick / 33mm thick	Speed code	Individual customer's spec 2 or 3 digits

52mm**San Ace B52****General Specifications**

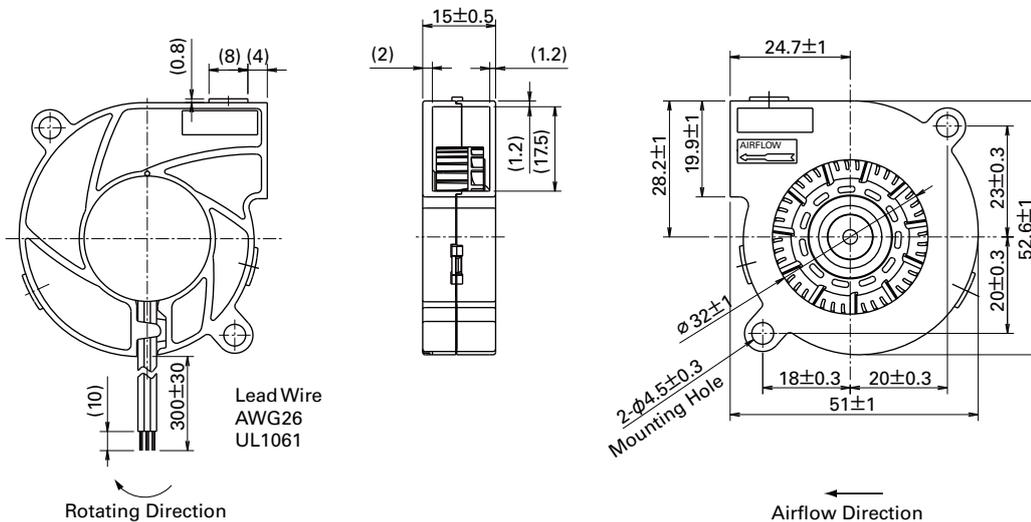
- Material Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-0)
- Expected Life Refer to specifications (L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

52mm × 15mm [Mass : 33g] **9BC type****Specifications** The following nos. **have pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]		Max. Static Pressure [Pa] [inchH ₂ O]		SPL [dB(A)]	Operating Temperature [°C]	Expected Life ¹⁾ [h]
109BC12GC7-1	12	6 to 13.8	0.12	1.44	6,200	0.125	4.4	215	0.86	43	-20 to +70	40,000/60°C (70,000/40°C)
109BC12HC7-1			0.10	1.20	5,600	0.112	4.0	165	0.66	40		
109BC12FC7-1			0.08	0.96	5,100	0.101	3.6	130	0.52	38		
109BC12MC7-1			0.06	0.72	4,600	0.091	3.2	100	0.40	35		
109BC24GC7-1	24	12 to 27.6	0.07	1.68	6,200	0.125	4.4	215	0.86	43		
109BC24HC7-1			0.05	1.20	5,600	0.112	4.0	165	0.66	40		
109BC24FC7-1			0.04	0.96	5,100	0.101	3.6	130	0.52	38		

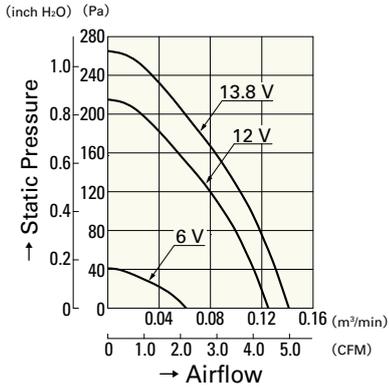
Note: Expected life at 40°C ambient is just reference value.

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 465).

Dimensions (unit: mm)

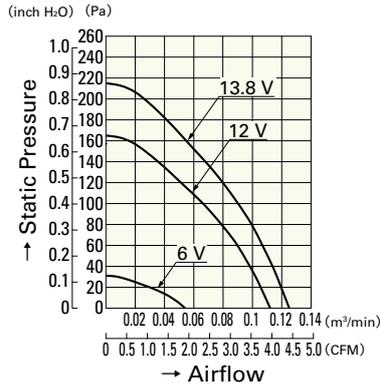
Airflow - Static Pressure Characteristics

G speed



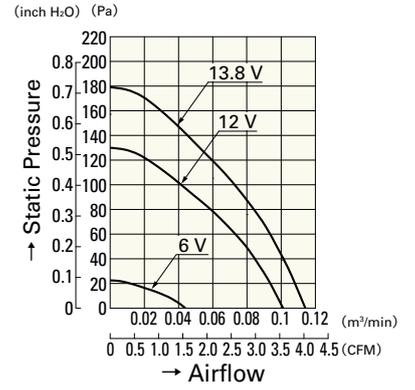
109BC12GC7-1

H speed



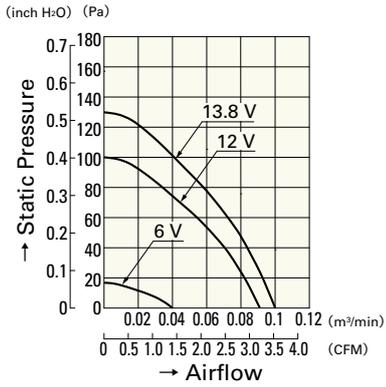
109BC12HC7-1

F speed



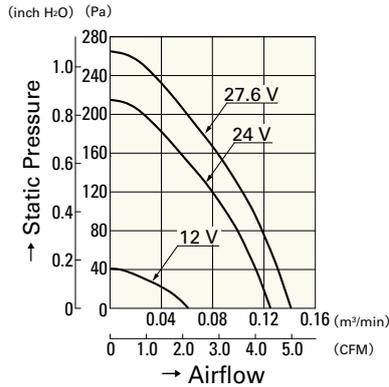
109BC12FC7-1

M speed



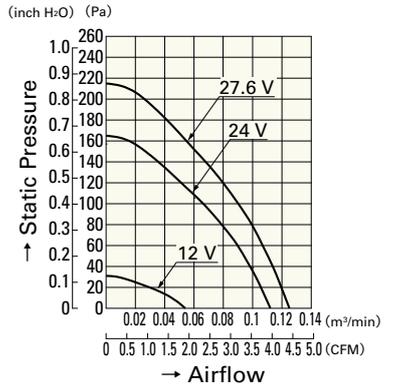
109BC12MC7-1

G speed



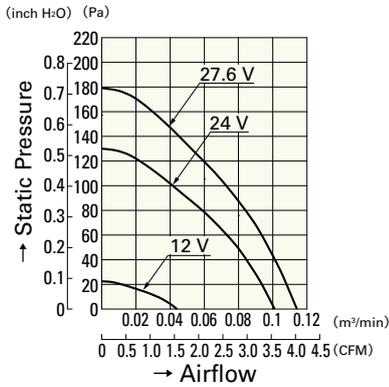
109BC24GC7-1

H speed



109BC24HC7-1

F speed



109BC24FC7-1

DC

Blower 52mm

76mm**San Ace B76****General Specifications**

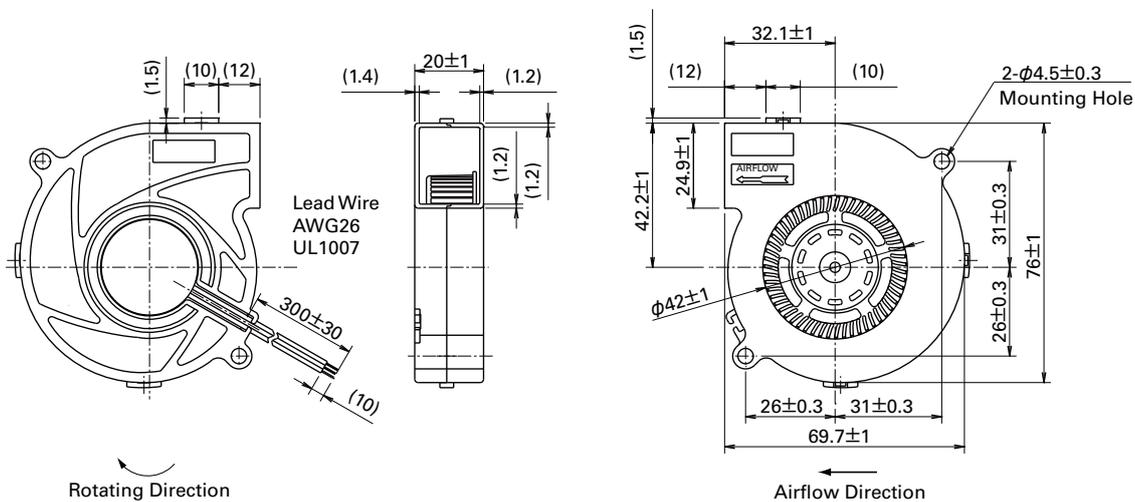
- Material Frame: Plastics (Flammability: UL94V-0),
Impeller: Plastics (Flammability: UL94V-0)
- Expected Life Refer to specifications (L10:Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

76mm×20mm (Mass : 58g) **9BD type****Specifications** The following nos. **have pulse sensors.**

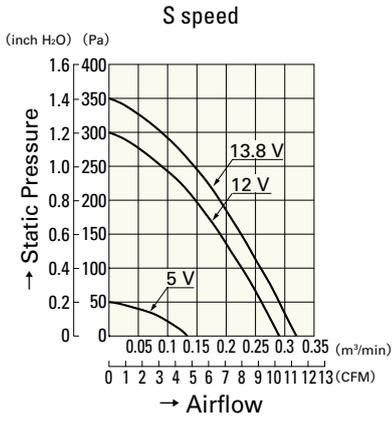
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life ^{ref)} [h]
9BD12SC6-1	12	5 to 13.8	0.28	3.36	4,500	0.29 10.2	300 1.20	43	-20 to +70	40,000/60°C (70,000/40°C)
9BD12HC6-1			0.21	2.52	4,200	0.27 9.5	230 0.92	41		
9BD12FC6-1		0.18	2.16	3,900	0.25 8.8	200 0.80	39			
9BD24SC6-1	24	10 to 27.6	0.14	3.36	4,500	0.29 10.2	300 1.20	43		
9BD24HC6-1			0.12	2.88	4,200	0.27 9.5	230 0.92	41		
9BD24FC6-1			0.10	2.4	3,900	0.25 8.8	200 0.80	39		

Note: Expected life at 40°C ambient is just reference value.

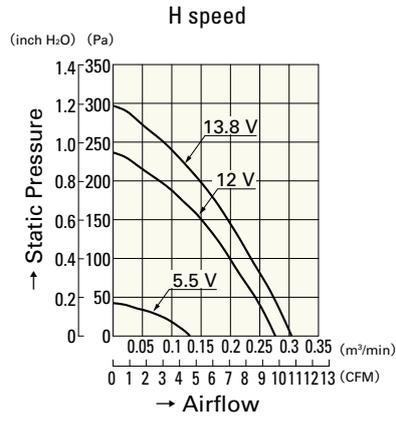
Models without sensors, or with lock sensors, or PWM control function are available as options. Please refer to the index (p. 470).

Dimensions (unit: mm)

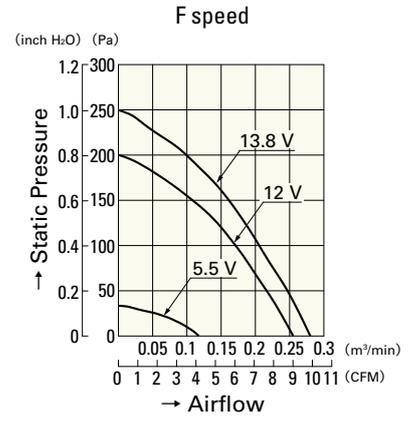
Airflow - Static Pressure Characteristics



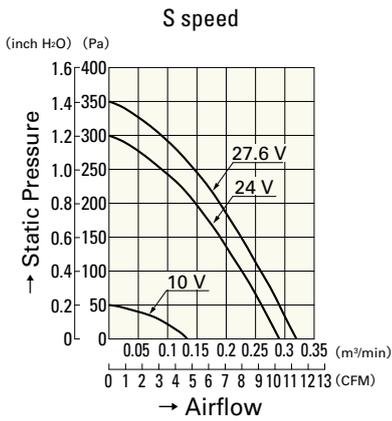
9BD12SC6-1



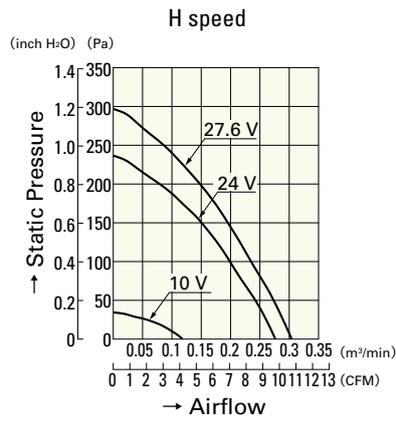
9BD12HC6-1



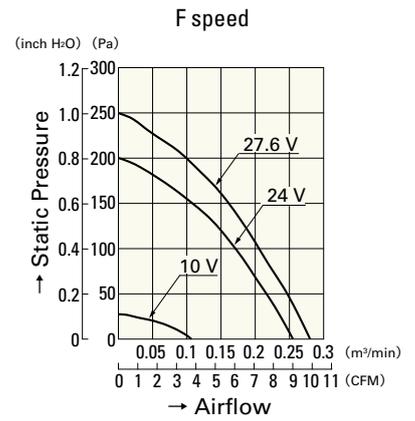
9BD12FC6-1



9BD24SC6-1



9BD24HC6-1



9BD24FC6-1

76_{mm}

San Ace B76



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

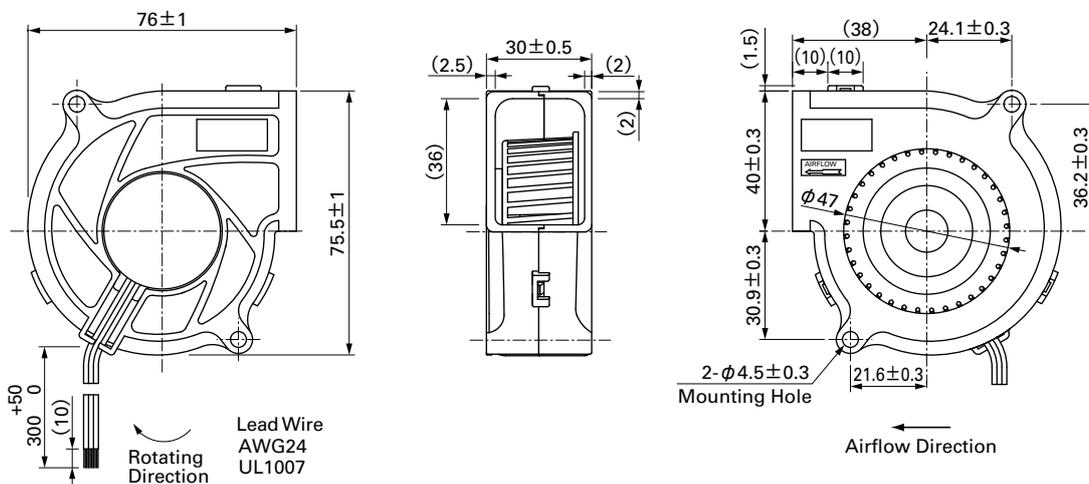
76mm×30mm (Mass : 100g) **9BD type**

Specifications The following nos. have pulse sensors.

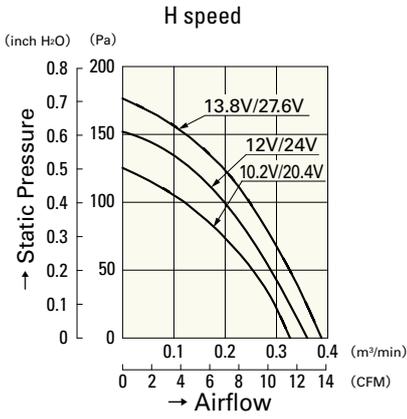
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109BD12HC2	12	10.2 to 13.8	0.37	4.44	3,000	0.36 12.7	151.9 0.610	41.5	-20 to +60	40,000/60°C
109BD12FC2			0.27	3.24	2,600	0.31 10.9	98 0.394	37		
109BD12MC2			0.14	1.68	2,100	0.25 8.8	58.8 0.236	32.5		
109BD24HC2	24	20.4 to 27.6	0.17	4.08	3,000	0.36 12.7	151.9 0.610	41.5	-20 to +60	
109BD24FC2			0.14	3.36	2,600	0.31 10.9	98 0.394	37	-20 to +70	
109BD24MC2			0.10	2.40	2,100	0.25 8.8	58.8 0.236	32.5	-20 to +70	

Models without sensors, or with lock sensors, or PWM control function are available as options. Please refer to the index (p. 465).

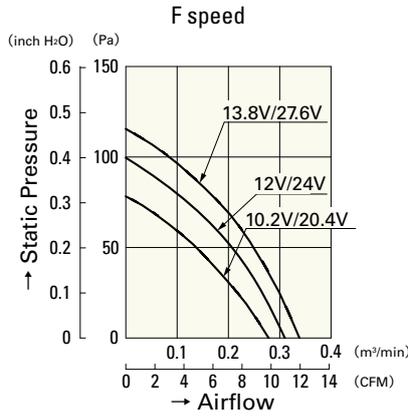
Dimensions (unit: mm)



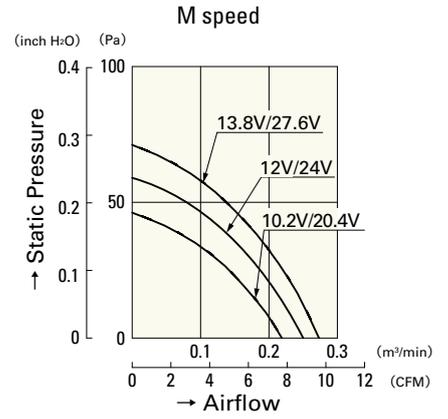
Airflow - Static Pressure Characteristics



109BD12HC2
109BD24HC2



109BD12FC2
109BD24FC2



109BD12MC2
109BD24MC2

97 mm

San Ace B97



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

97 mm × 33 mm (Mass : 175g) **9BM type**

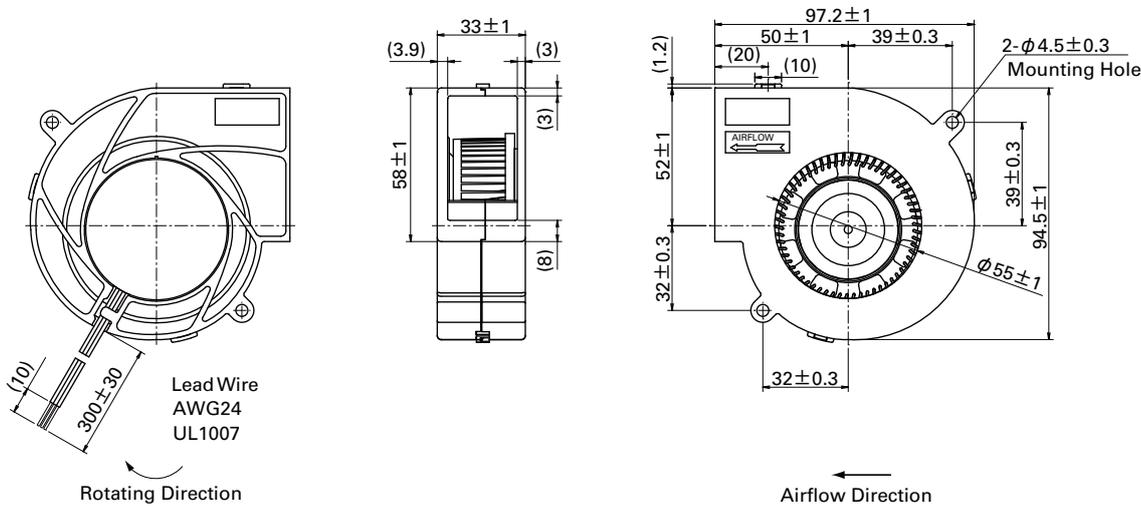
Specifications The following nos. have pulse sensors.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life ^{Typ} [h]
109BM12GC2-1	12	7 to 13.8	0.60	7.20	3,800	0.82 28.9	281 1.129	51.5	-20 to +70	40,000/60°C (70,000/40°C)
109BM12HC2-1			0.40	4.80	3,300	0.71 25.1	204 0.819	48.5		
109BM12MC2-1			0.26	3.12	2,700	0.58 20.5	119 0.478	43.5		
109BM24GC2-1	24	12 to 27.6	0.31	7.44	3,800	0.82 28.9	281 1.129	51.5		
109BM24HC2-1			0.26	6.24	3,300	0.71 25.1	204 0.819	48.5		
109BM24MC2-1			0.15	3.60	2,700	0.58 20.5	119 0.478	43.5		

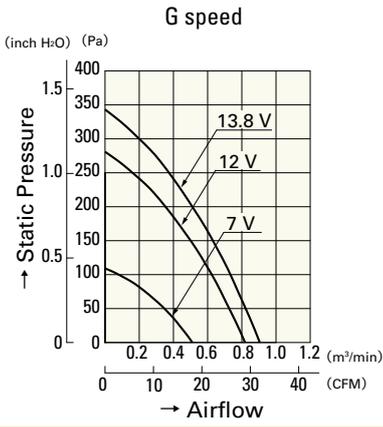
Note: Expected life at 40°C ambient is just reference value.

Models without sensors or with PWM control function are available as options. Please refer to the index (p. 465).

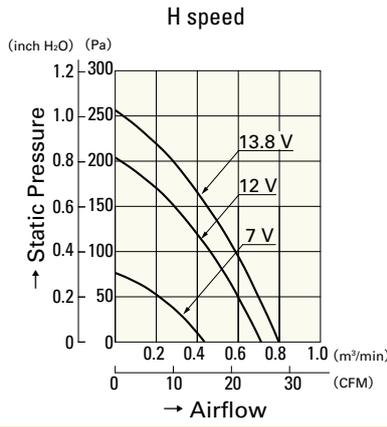
Dimensions (unit: mm)



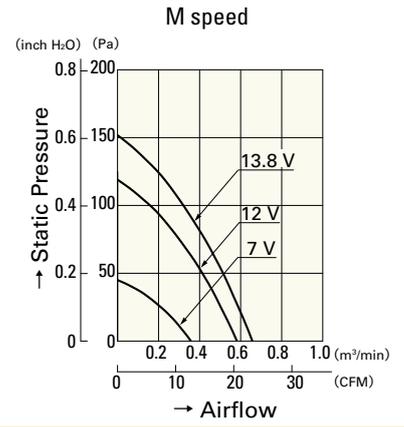
Airflow - Static Pressure Characteristics



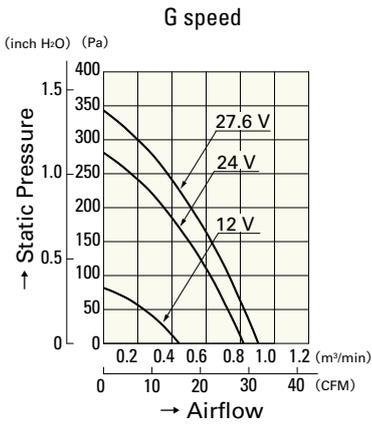
109BM12GC2-1



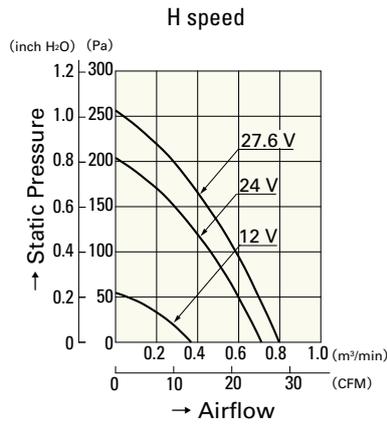
109BM12HC2-1



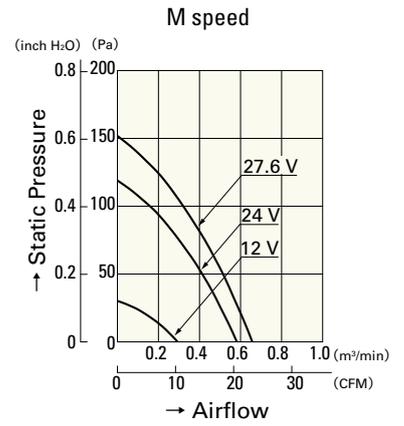
109BM12MC2-1



109BM24GC2-1



109BM24HC2-1



109BM24MC2-1

DC

Blower 97mm

97 mm

San Ace B97



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
(For models without PWM control function, there is no
speed control wiring.)
- Storage Temperature ... -30°C to +70°C (Non-condensing)

97 mm × 33 mm (Mass : 190g) **9BMB type**

Specifications The following nos. have PWM controls and pulse sensors.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ^{Note1)} [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9BMB12P2K01	12	10.8 to 13.2	100	3.4	40.8	6,850	1.61 56.8	1,280 5.14	66	-20 to +70	40,000/60°C
9BMB12P2G01			100	1.8	21.6	5,750	1.34 47.3	760 3.050	61		
9BMB12P2S01		10.2 to 13.8	100	1.4	16.8	5,250	1.22 43.1	610 2.450	59		
9BMB12P2H01			100	1.1	13.2	4,850	1.11 39.2	490 1.968	57		
9BMB12P2F01			100	0.9	10.8	4,500	1.04 36.7	410 1.64	56		
9BMB24P2K01	24	21.6 to 26.4	100	1.62	38.88	6,850	1.61 56.8	1,280 5.14	66		
9BMB24P2G01			100	0.83	19.92	5,750	1.34 47.3	760 3.05	61		
9BMB24P2S01			100	0.7	16.8	5,250	1.22 43.1	610 2.450	59		
9BMB24P2H01			100	0.55	13.2	4,850	1.11 39.2	490 1.968	57		
9BMB24P2F01			100	0.45	10.8	4,500	1.04 36.7	410 1.640	56		

Note: Fan does not rotate when PWM duty cycle is 0%.

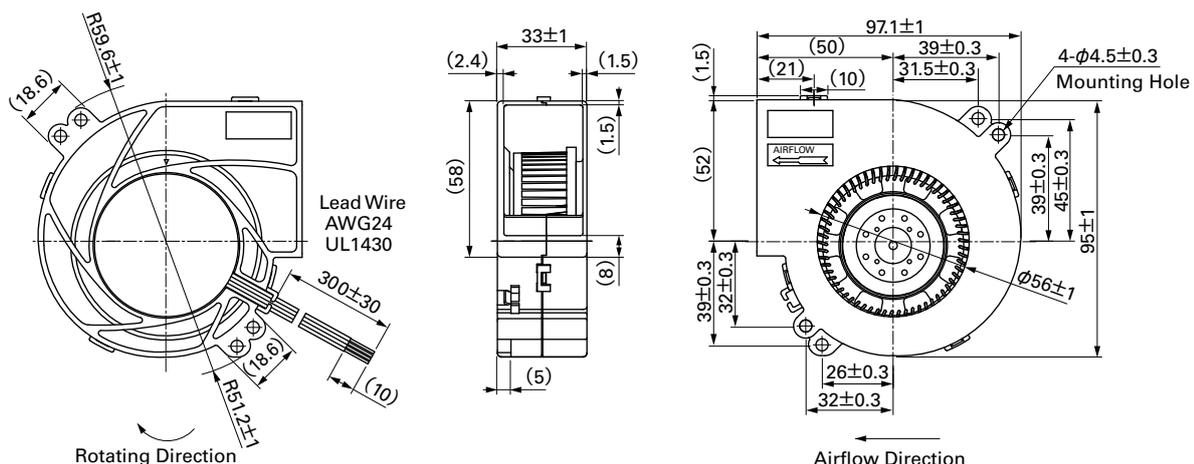
※PWM Frequency : 25kHz

The following nos. have pulse sensors.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9BMB12K201	12	7 to 13.2	3.4	40.8	6,850	1.61 56.8	1,280 5.14	66	-20 to +70	40,000/60°C
9BMB12G201			1.80	21.6	5,750	1.34 47.3	760 3.052	61		
9BMB12S201			1.40	16.8	5,250	1.22 43.1	610 2.450	59		
9BMB12H201			1.10	13.2	4,850	1.11 39.2	490 1.968	57		
9BMB12F201			0.90	10.8	4,500	1.04 36.7	410 1.647	56		
9BMB24K201	24	12 to 26.4	1.62	38.88	6,850	1.61 56.8	1,280 5.14	66		
9BMB24G201			0.83	19.9	5,750	1.34 47.3	760 3.052	61		
9BMB24S201			0.70	16.8	5,250	1.22 43.1	610 2.450	59		
9BMB24H201			0.55	13.2	4,850	1.11 39.2	490 1.968	57		
9BMB24F201			0.45	10.8	4,500	1.04 36.7	410 1.647	56		

Models without sensors or with lock sensors are available as options. Please refer to the index (p. 470 to 471).

Dimensions (unit: mm) (With PWM control function · With pulse sensor)

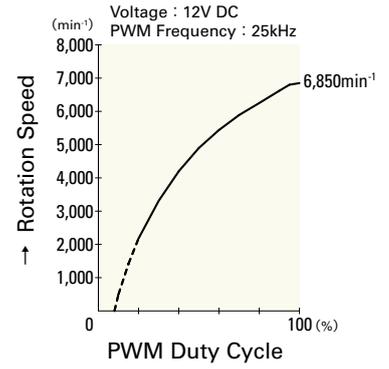
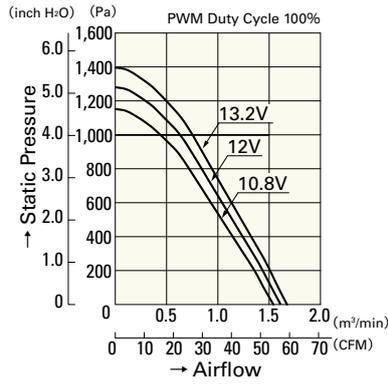
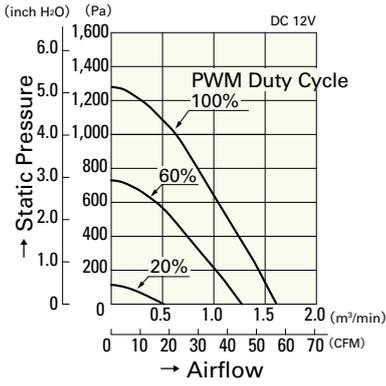


Airflow - Static Pressure Characteristics

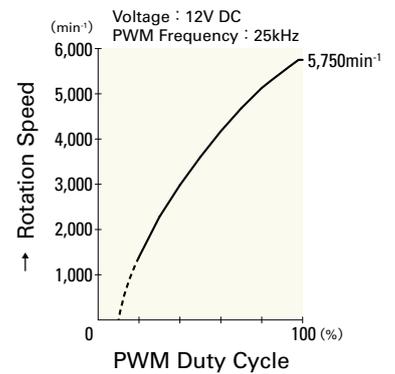
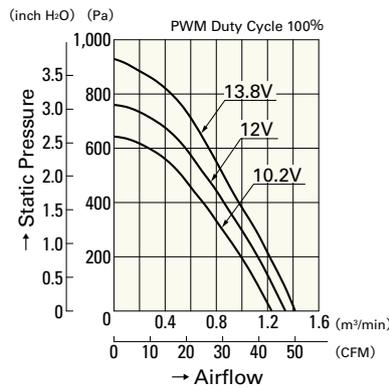
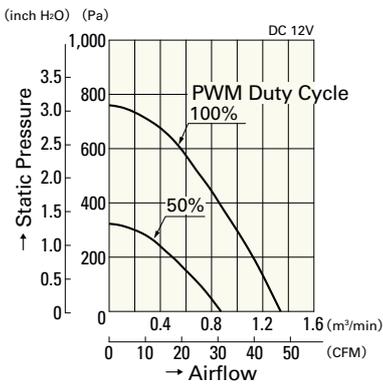
PWM Duty - Speed Characteristics Example

PWM Duty Cycle

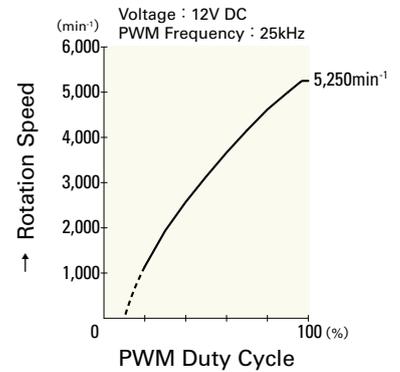
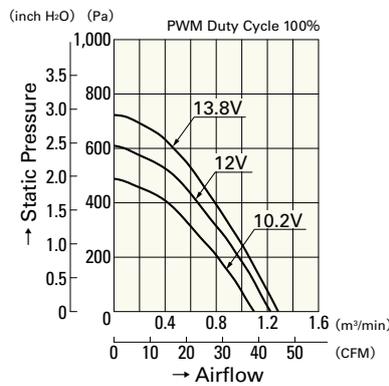
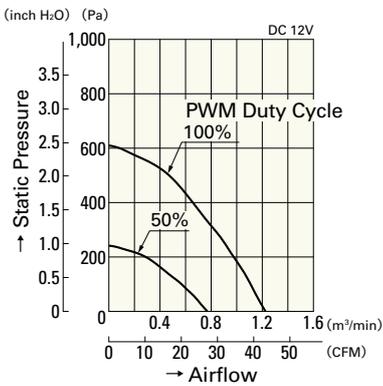
Operating Voltage Range



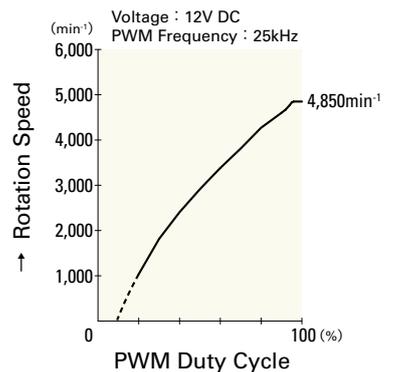
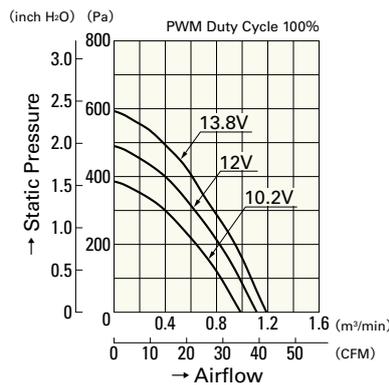
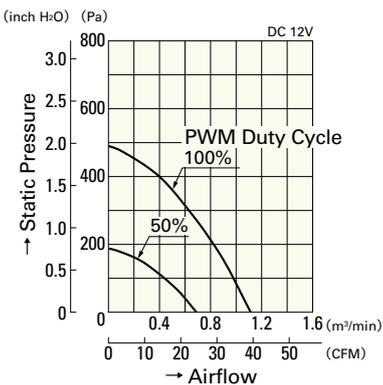
9BMB12P2K01



9BMB12P2G01



9BMB12P2S01



9BMB12P2H01

DC

Blower 97mm

97mm

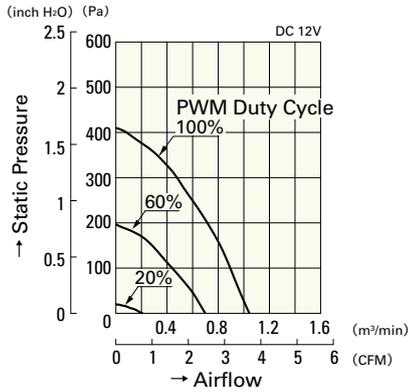
San Ace B97

97mm × 33mm [Mass : 190g]

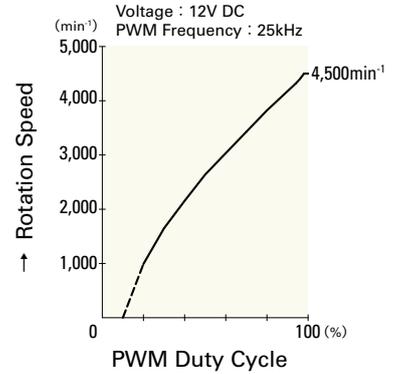
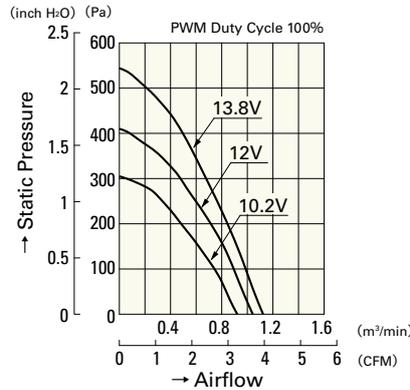
Airflow - Static Pressure Characteristics

PWM Duty - Speed Characteristics Example

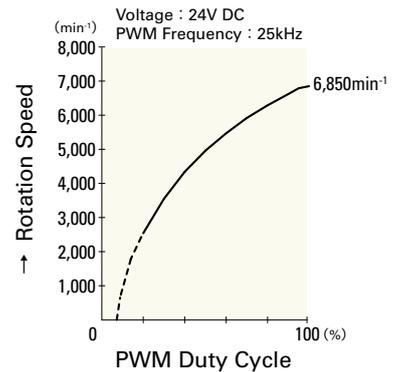
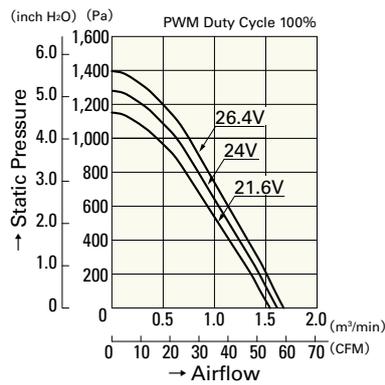
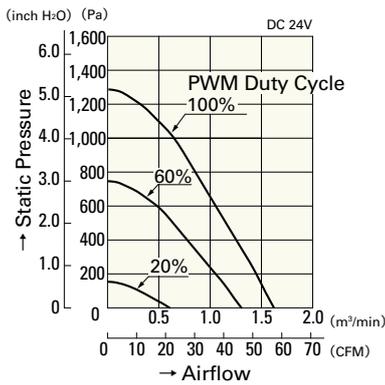
PWM Duty Cycle



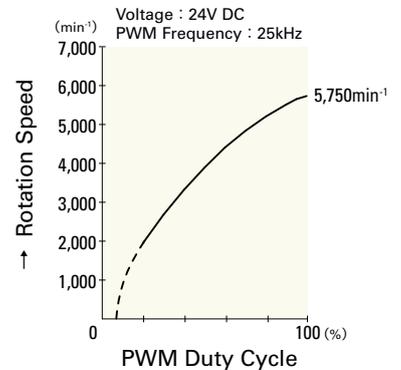
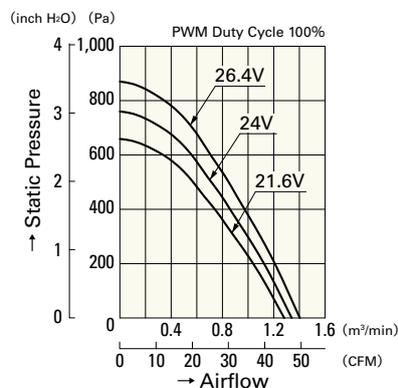
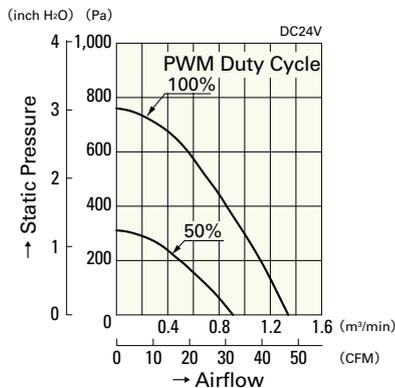
Operating Voltage Range



9BMB12P2F01



9BMB24P2K01



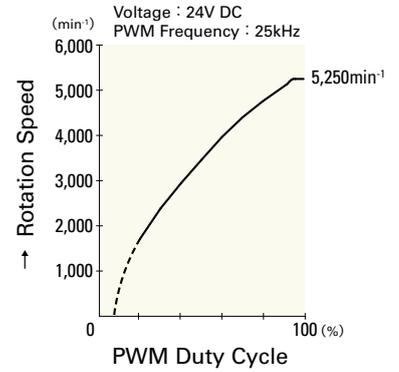
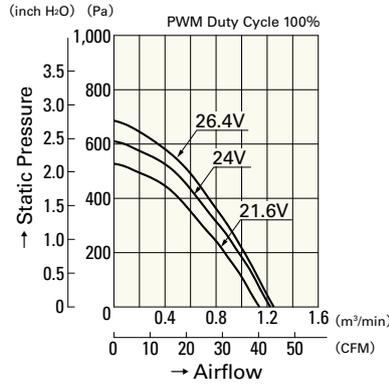
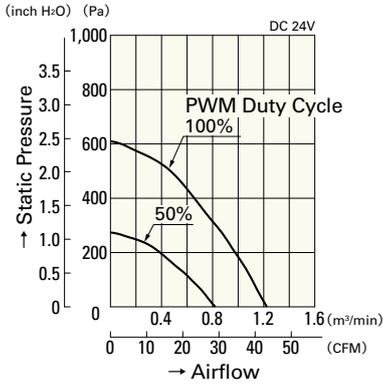
9BMB24P2G01

Airflow - Static Pressure Characteristics

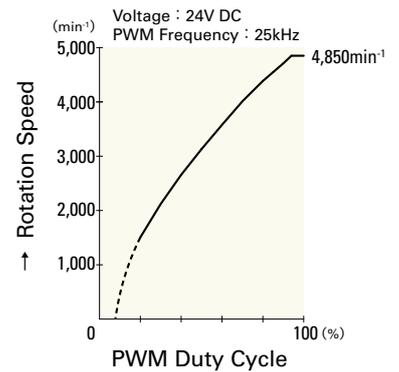
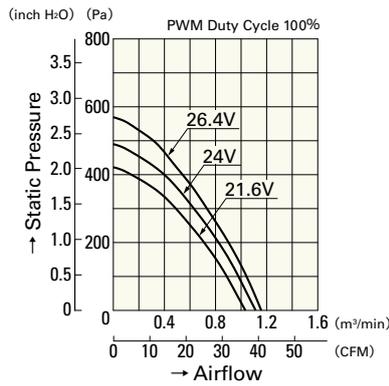
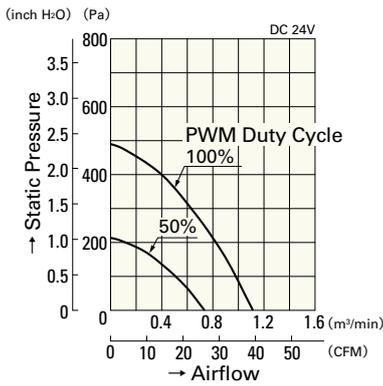
PWM Duty - Speed Characteristics Example

PWM Duty Cycle

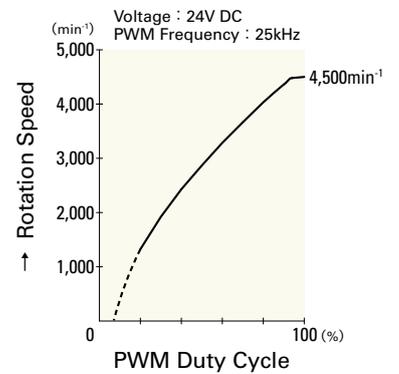
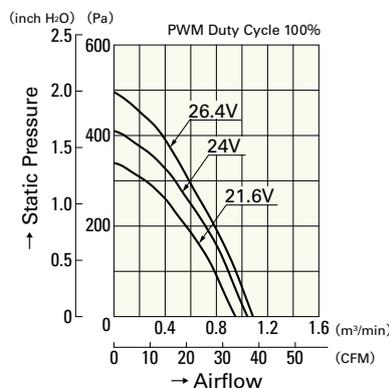
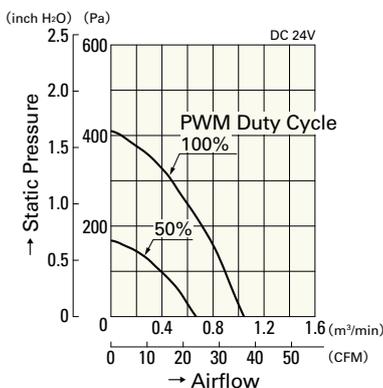
Operating Voltage Range



9BMB24P2S01



9BMB24P2H01



9BMB24P2F01

DC Blower 97mm

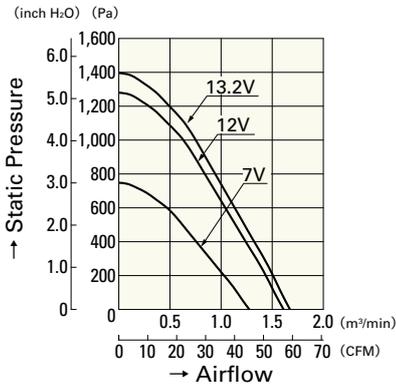
97mm

San Ace B97

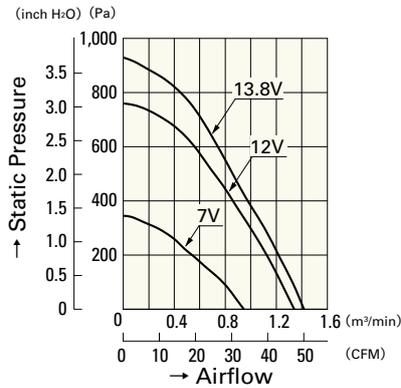
97mm × 33mm (Mass : 190g)

Airflow - Static Pressure Characteristics

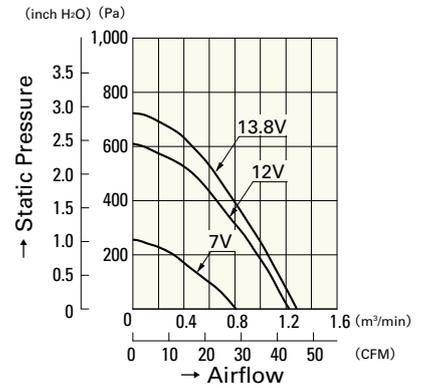
Operating Voltage Range



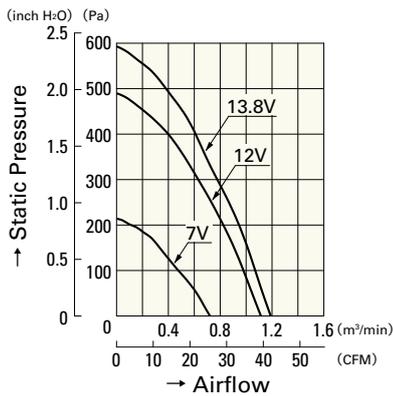
9BMB12K201



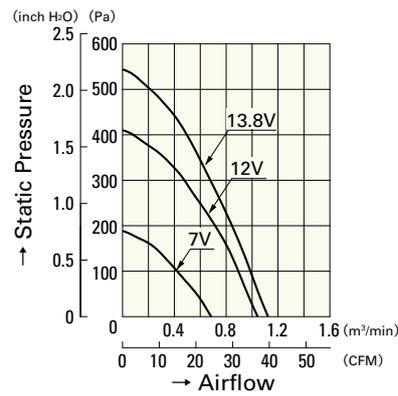
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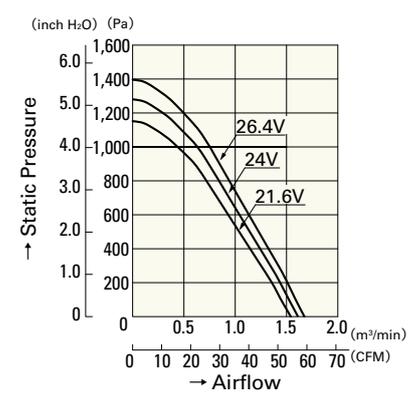
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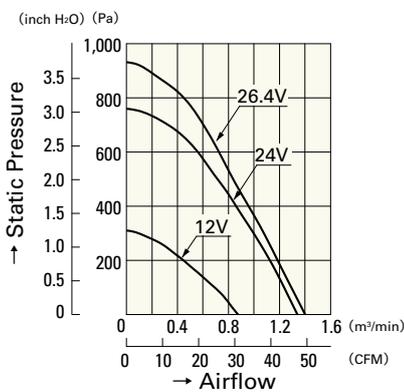
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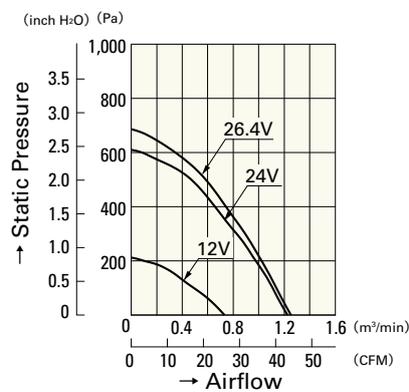
9BMB12F201



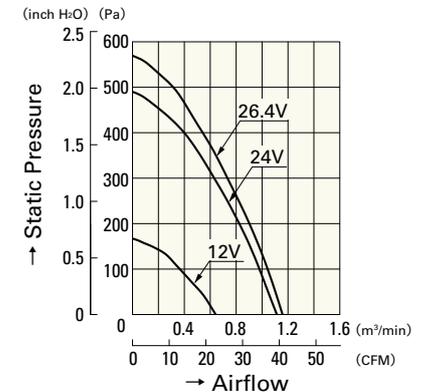
9BMB24K201



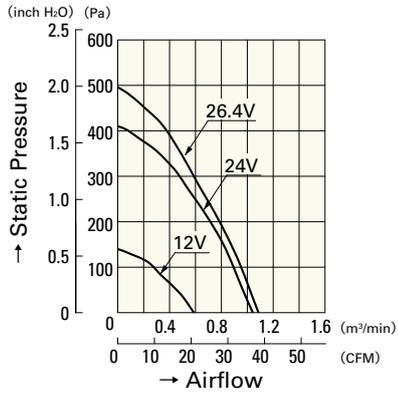
9BMB24G201



9BMB24S201



9BMB24H201



9BMB24F201

Blower 97mm DC

120mm**San Ace B120****General Specifications**

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black (Sensor) yellow (Control) brown
- Storage Temperature -30°C to +70°C (Non-condensing)

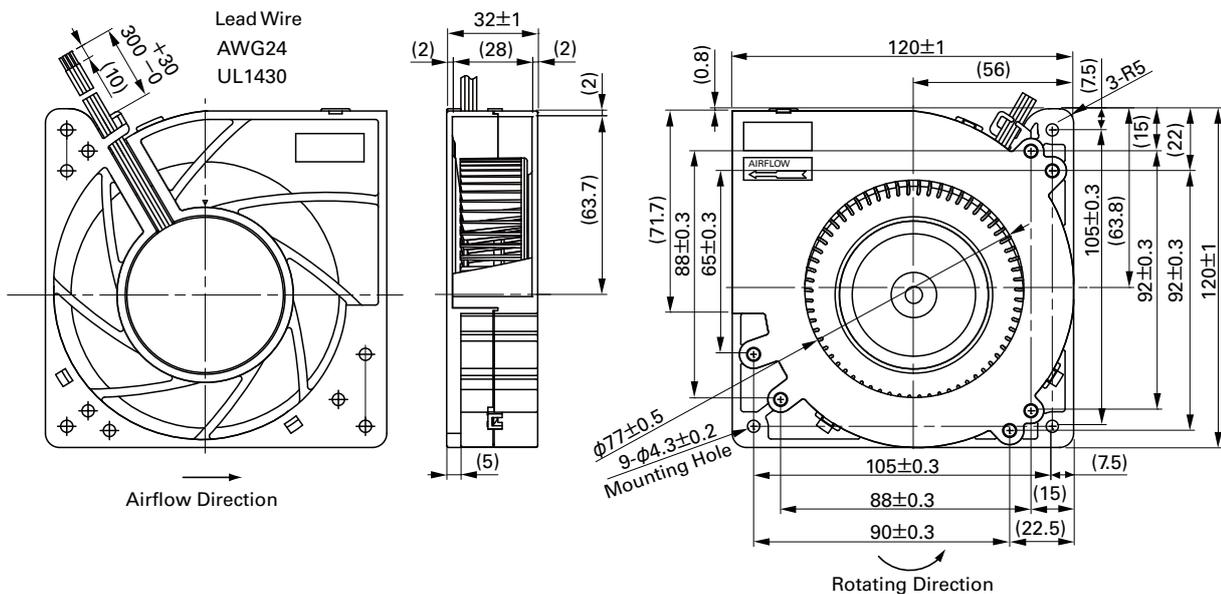
120mm×32mm (Mass : 340g) **9BFB type****Specifications** The following nos. **have PWM controls and pulse sensors.**

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	PWM duty cycle ¹⁾ [%]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [InchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life ²⁾ [h]
9BFB12P2H003	12	10.8 to 13.2	100	2.3	27.6	3,750	1.6 56.5	1,250 5.02	62	-20 to +70	40,000/60°C (70,000/40°C)
9BFB24P2H003	24	21.6 to 26.4	0	1.1	26.4	3,750	1.6 56.5	1,250 5.02	62		
			0	0.12	2.88	1,300	0.46 16.2	43 0.17	41		

Note 1 : 9BFB12P2H003, 9BFB24P2H003 does not rotate when PWM duty cycle is 0%.

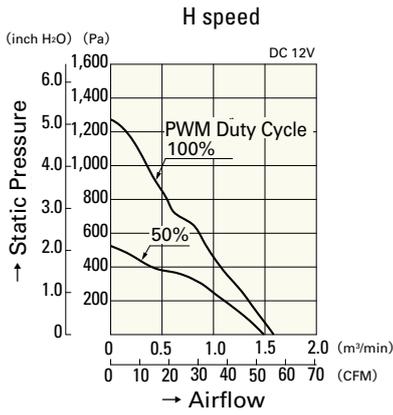
※PWM Frequency : 25kHz

Note 2 : Expected life at 40°C ambient is just reference value.

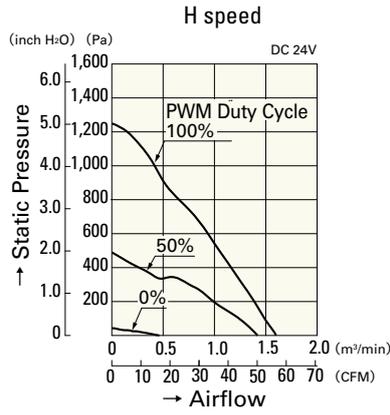
Dimensions (unit: mm)

Airflow - Static Pressure Characteristics

PWM Duty Cycle

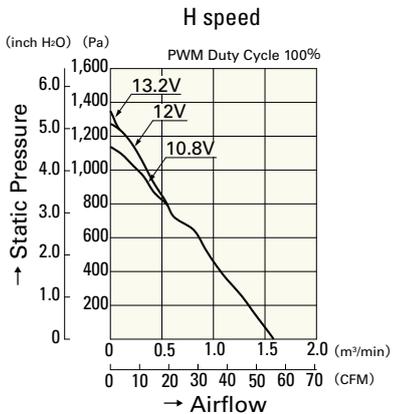


9BFB12P2H003

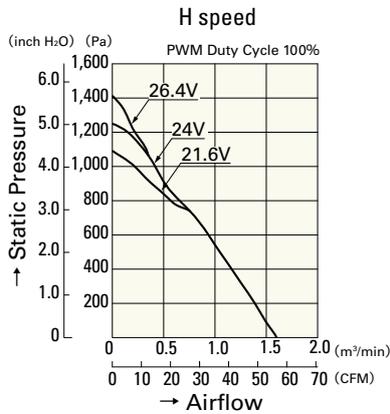


9BFB24P2H003

Operating Voltage Range

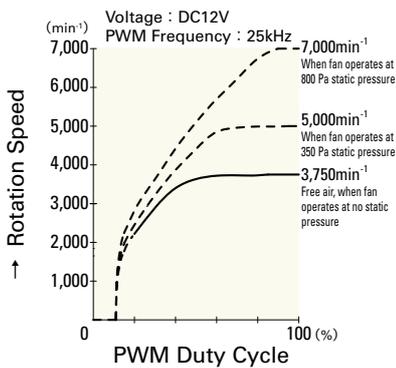


9BFB12P2H003

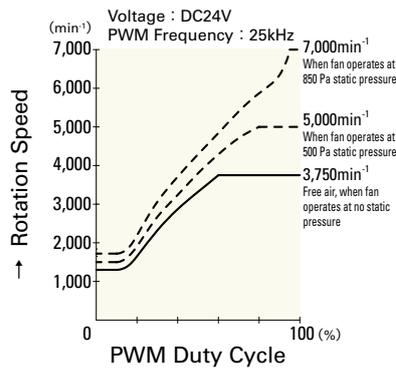


9BFB24P2H003

PWM Duty - Speed Characteristics Example



9BFB12P2H003



9BFB24P2H003

127mm

San Ace B127



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

127mm×32mm (Mass : 290g) **9BJ type**

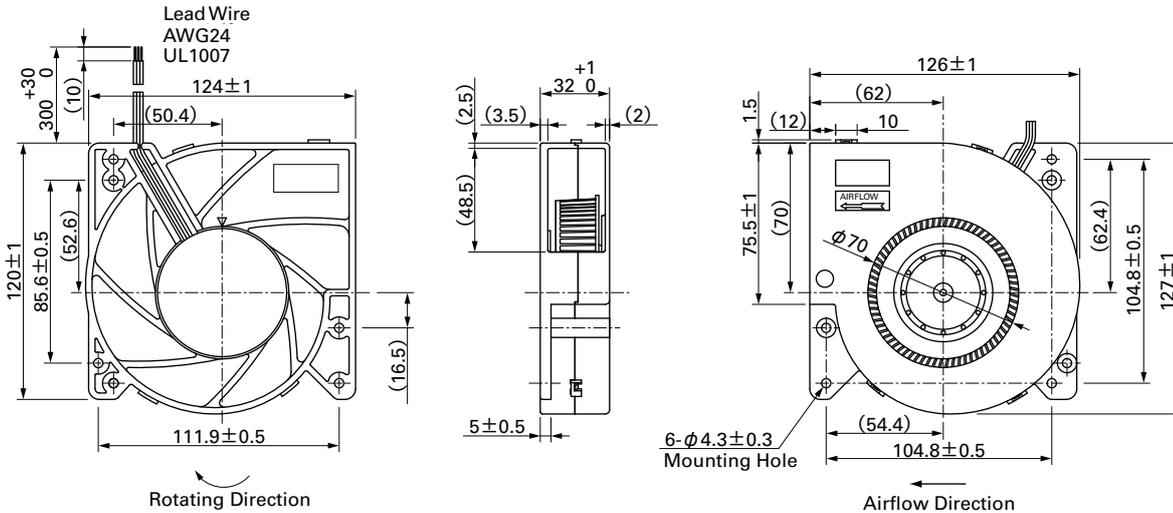
Specifications

The following nos. **have pulse sensors.**

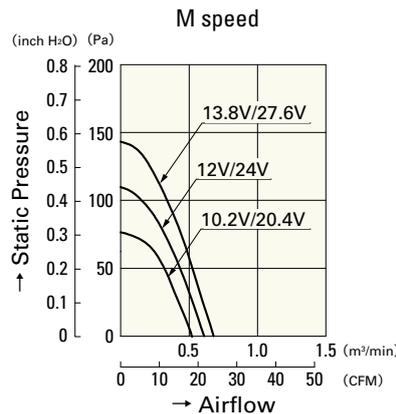
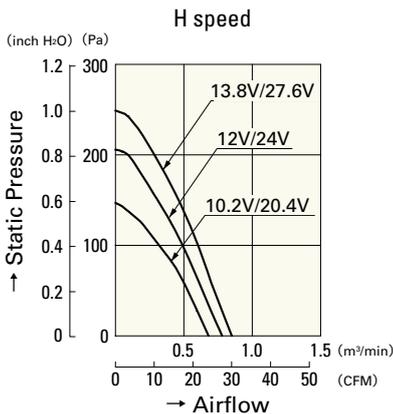
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]	
109BJ12HC2	12	10.2 to 13.8	0.52	6.24	2,400	0.78	27.5	205.8	0.826	46	40,000/60°C
109BJ12MC2			0.29	3.48	1,900	0.61	21.5	109.8	0.441	40	
109BJ24HC2	24	20.4 to 27.6	0.26	6.24	2,400	0.78	27.5	205.8	0.826	46	
109BJ24MC2			0.15	3.6	1,900	0.61	21.5	109.8	0.441	40	

Models without sensors are available as an option. Please refer to the index (p. 465).

Dimensions (unit: mm)



Airflow - Static Pressure Characteristics



109BJ12HC2
109BJ24HC2

109BJ12MC2
109BJ24MC2

160mm

San Ace B160



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0),
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)
- Lead Wire ⊕red ⊖black or blue (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)

160mm × 40mm (Mass : 580g) **9BG type**

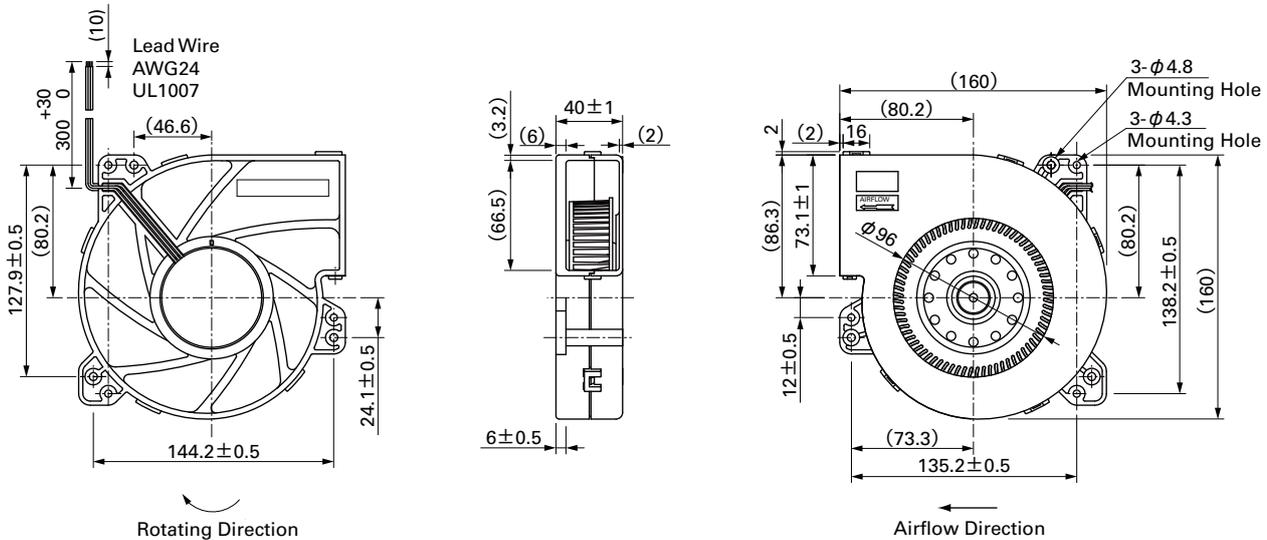
Specifications

The following nos. **have pulse sensors**.

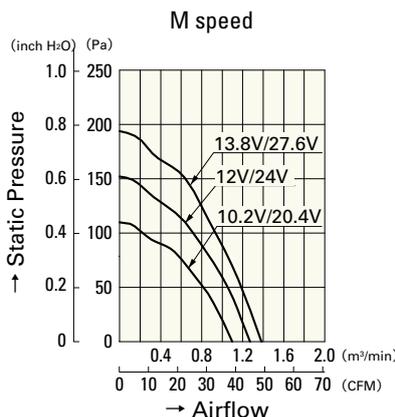
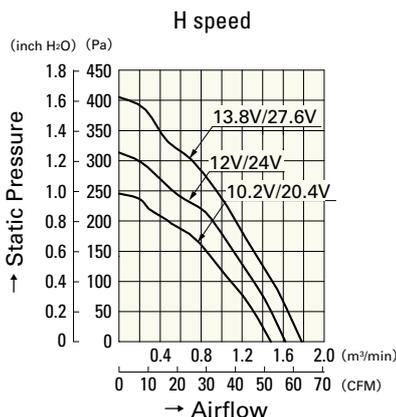
Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109BG12HC1	12	10.2 to 13.8	1.3	15.6	2,300	1.62 57.2	313.6 1.259	55	- 20 to + 60	40,000/60°C
109BG12MC1			0.64	7.68	1,800	1.26 44.5	156.8 0.629	50		
109BG24HC1	24	20.4 to 27.6	0.62	14.88	2,300	1.62 57.2	313.6 1.259	55		
109BG24MC1			0.31	7.44	1,800	1.26 44.5	156.8 0.629	50		

Models without sensors are available as an option. Please refer to the index (p. 465).

Dimensions (unit: mm)



Airflow - Static Pressure Characteristics



109BG12HC1
109BG24HC1

109BG12MC1
109BG24MC1

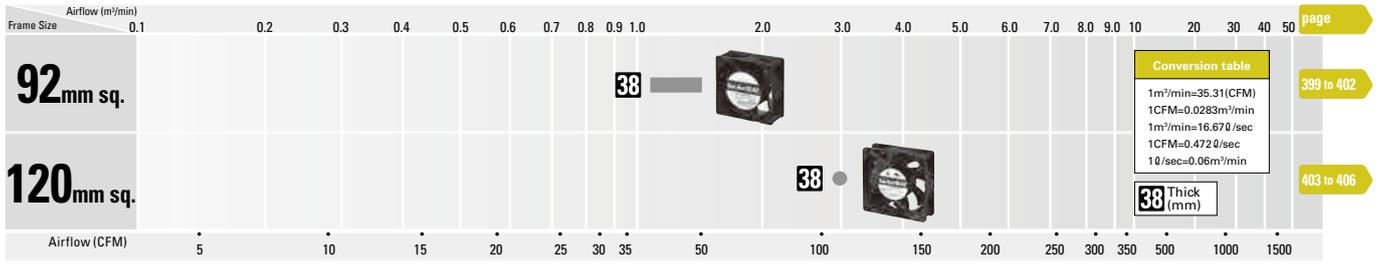
DC

Blower 127mm/160mm

ACDC Fan

This fan works while internally converting AC power into DC power, providing the superior performance of a DC fan with the flexibility of AC input.

Domain Diagram



92mm sq.

San Ace 92AD



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0), 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 Construction Brushless DC motor
 - Motor Protection System Burnout protection at locked rotor condition
 - Dielectric Strength 50/60 Hz, 1,500 VAC, 1 minute (between input terminal and frame, and between sensor output and frame)
 - Insulation Resistance 10MΩ or more at 500VDC megger (between lead conductor and frame)
 - Sound Pressure Level (SPL) ... Expressed as the value at 1m from air inlet side
 - Storage Temperature -30°C to +75°C (Non-condensing)
- * Do not weld directly onto AC input terminals.

92×92×38mm (Mass : 250g) **9AD type**

Specifications

The model no. below has **ribs and no sensors**. For models without ribs, append "1" to the model no.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Frequency ^(Note) [Hz]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9AD0901H12	100 to 240	90 to 264	50/60	0.08	4.5	3,850	1.50 53.0	90 0.36	40	-20 to +75	60,000/60°C
9AD0901M12				0.06	3.0	3,100	1.18 41.7	56 0.22	33		

Note: 50/60 Hz compatible.

The model no. below has **ribs and low-speed sensors**. For models without ribs, append "1" to the model no.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Frequency ^(Note) [Hz]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9AD0901H1H	100 to 240	90 to 264	50/60	0.08	4.5	3,850	1.50 53.0	90 0.36	40	-20 to +75	60,000/60°C
9AD0901M1H				0.06	3.0	3,100	1.18 41.7	56 0.22	33		

Note: 50/60 Hz compatible.

Overheating protection function

Protection Functions:

If the fan blades are restricted, an overcurrent occurs and leads to a rise in the fan coil temperature. This can result in reduced performance, damage, or a fire. To prevent this from occurring, SANYO DENKI's fans incorporate an overheating protection function.

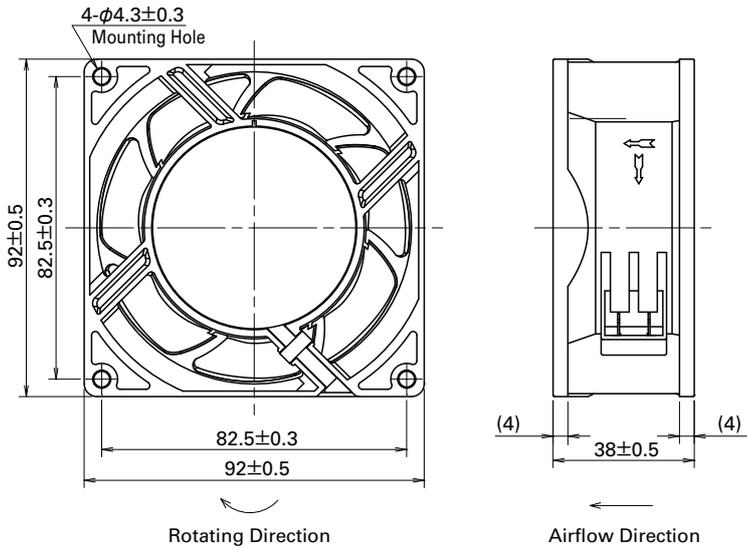
Burnout protection function at locked rotor condition

- Current cutoff system (ACDC fan only)

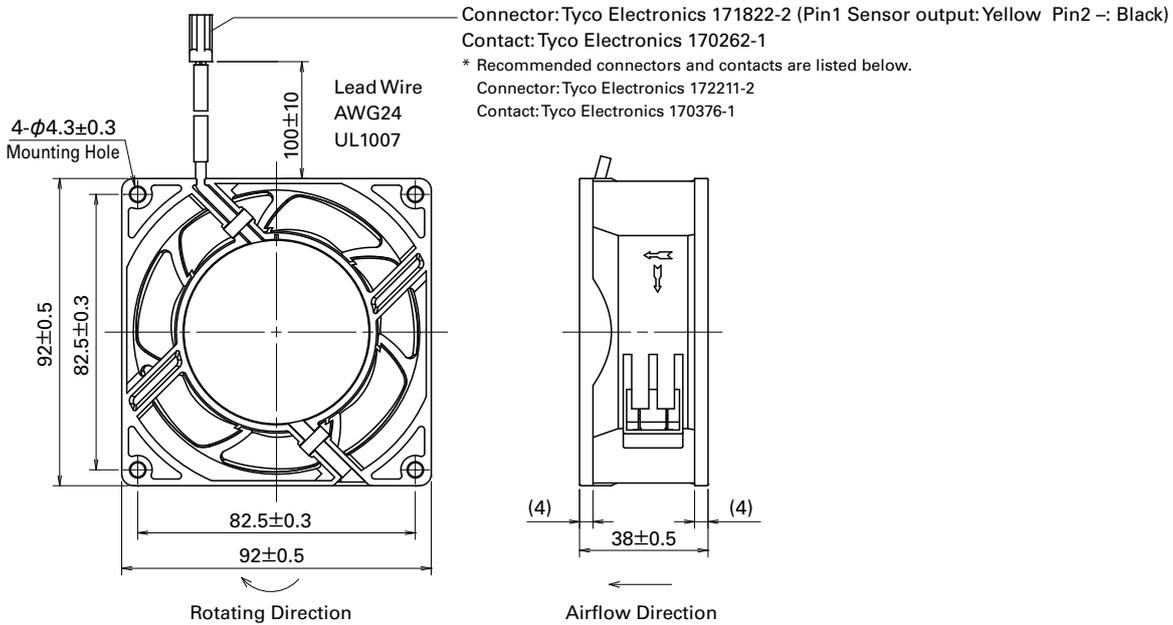
If the fan blades are restricted, the coil current is cut off at regular cycles to prevent overheating of the coil. When the hindrance is removed, the fan restarts automatically.

Dimensions (unit: mm) (With ribs)

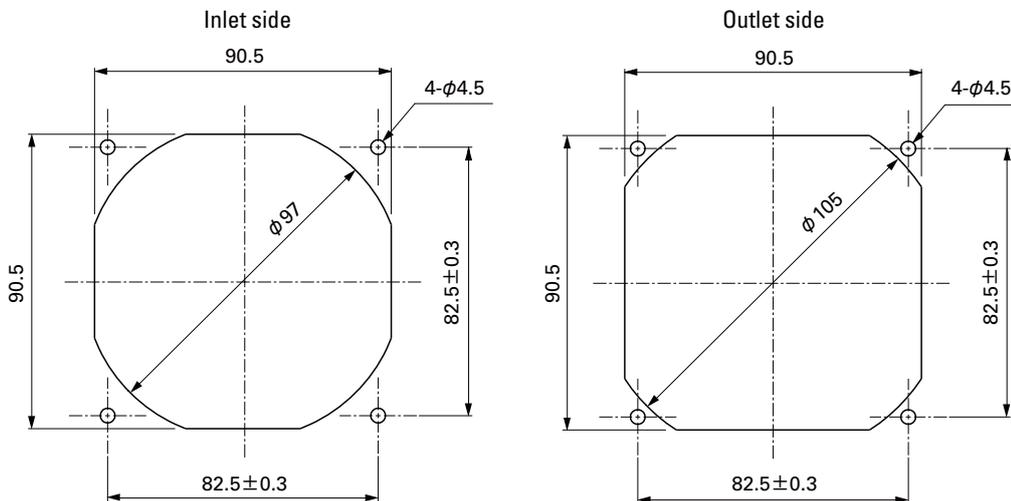
without Sensor



with Low-speed sensor



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



92 mm sq.

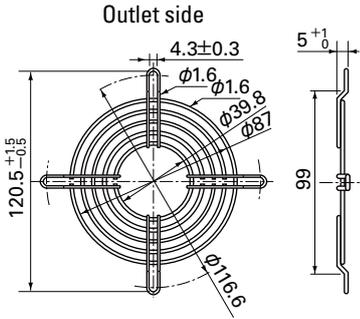
San Ace 92AD

92×92×38mm [Mass : 250g]

Options (unit: mm)

Finger Guards

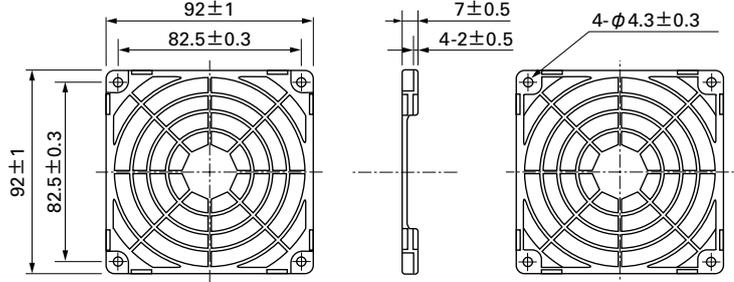
Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)



Mass : 22g

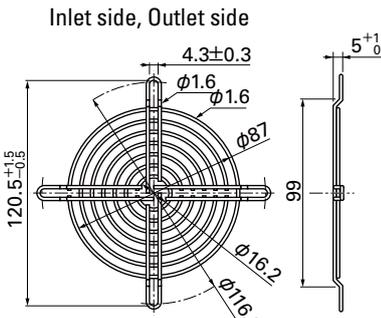
Resin Finger Guards

Model : 109-1001G



Mass : 12g

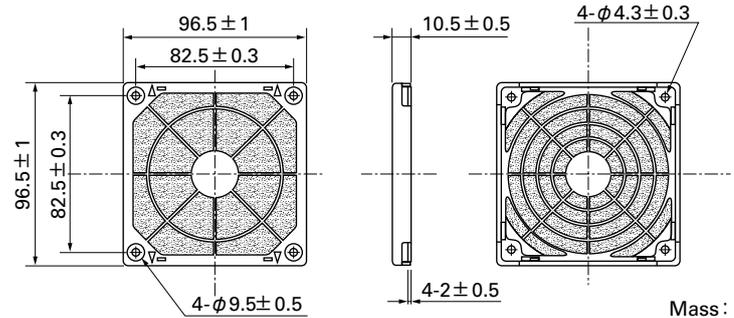
Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color : Nickel-chrome plating (silver)
Model : 109-099H Surface treatment : Cation electropainting (black) Color : Cation electropainting (black)



Mass : 29g

Resin Filter Kits

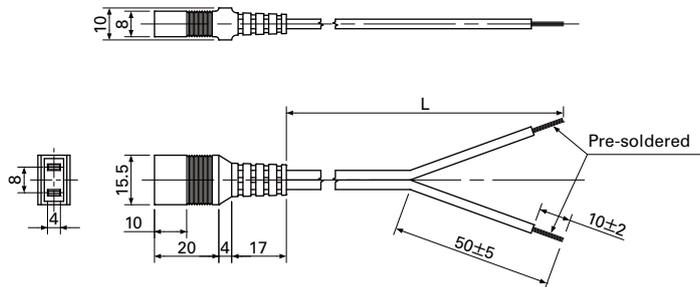
Model : 109-1001F13 (13PPI), 109-1001F20 (20PPI), 109-1001F30 (30PPI), 109-1001F40 (40PPI)



Mass : 25g

Plug Cord

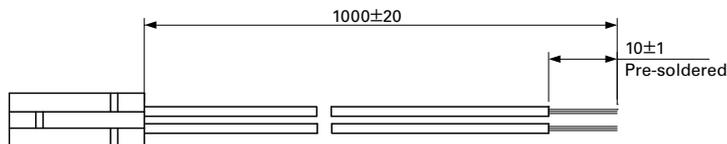
(Products compliant with Electrical Appliance and Material Safety Law, UL/CSA [c-UL] CERTIFIED)
UL FILE No. E43202
Model : 489-1635-L10/489-1635-L21



Model	Power cord length (L) [mm]	Mass [g]
489-1635-L10	1,000	38
489-1635-L21	2,100	74

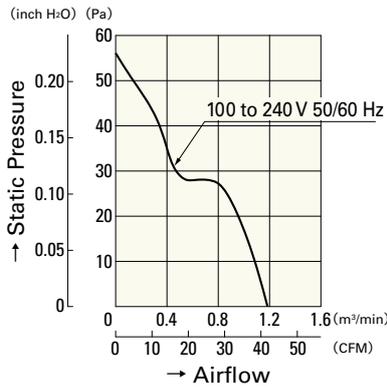
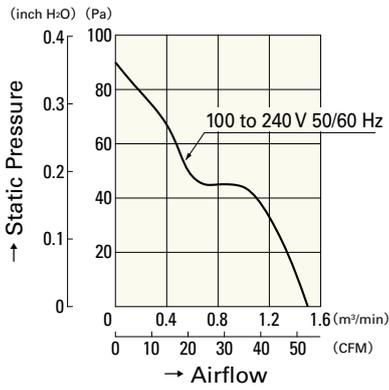
Wiring Harness for Sensor

Model : 489-1636



Mass : 9g

Airflow - Static Pressure Characteristics



9AD0901H12

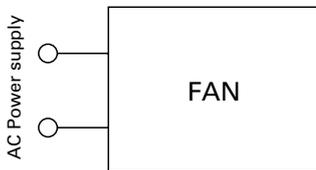
9AD0901H1H

9AD0901M12

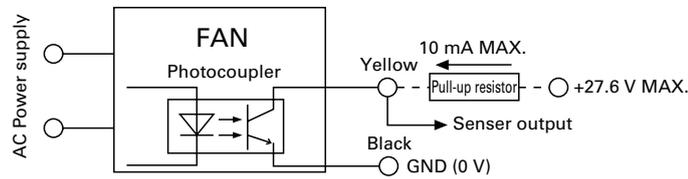
9AD0901M1H

Wiring Diagram

Standard



with Sensor

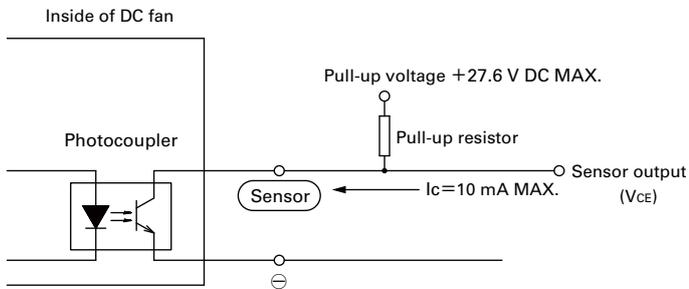


Specifications for Low-speed Sensors

Typical standard model: 9AD0901H1H

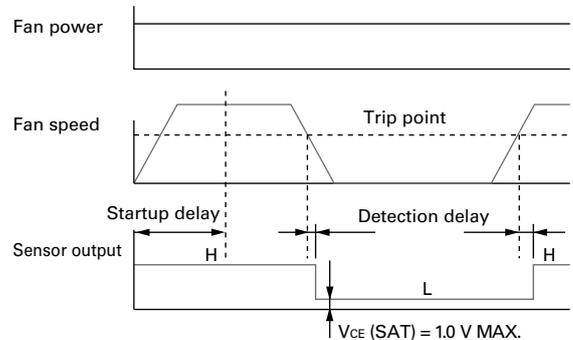
Output circuit: Open collector

$V_{CE} = +27.6 \text{ V DC MAX.}$
 $I_C = 10 \text{ mA MAX. [} V_{CE}(\text{SAT}) = 1.0 \text{ V MAX.]}$

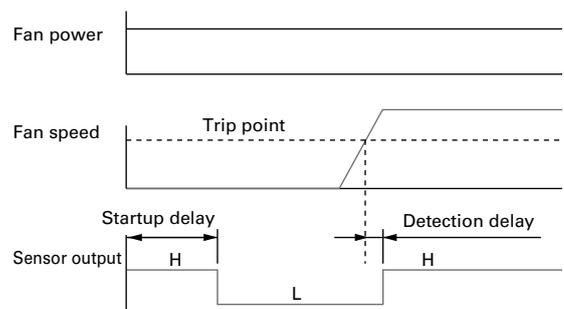


Sensor scheme

Example 1: when steady running



Example 2: when the rotor is locked when the fan motor is turned on and released after the start-up delay time.



9AD0901H1H

Startup delay: $18 \pm 3 \text{ sec.}$

Detection delay: 3 sec. MAX.

Trip point: $1,700 \text{ min}^{-1}$

9AD0901M1H

Startup delay: $36 \pm 3 \text{ sec.}$

Detection delay: 3 sec. MAX.

Trip point: 850 min^{-1}

120mm sq.

San Ace 120AD



General Specifications

- Material Frame: Plastics (Flammability: UL94V-0), 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 Construction Brushless DC motor
 - Motor Protection System Burnout protection at locked rotor condition
 - Dielectric Strength 50/60 Hz, 1,500 VAC, 1 minute (between input terminal and frame, and between sensor output and frame)
 - Insulation Resistance 10MΩ or more at 500VDC megger (between lead conductor and frame)
 - Sound Pressure Level (SPL) ... Expressed as the value at 1m from air inlet side
 - Storage Temperature -30°C to +75°C (Non-condensing)
- * Do not weld directly onto AC input terminals.

120×120×38mm [Mass : 290g] **9AD type** 

Specifications

The model no. below has **ribs and no sensors**. For models without ribs, append "1" to the model no.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Frequency ^(Note) [Hz]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9AD1201H12	100 to 240	90 to 264	50/60	0.08	4.4	3,250	3.0 106	84 0.34	42	-20 to +75	60,000/60°C

Note: 50/60 Hz compatible.

The model no. below has **ribs and low-speed sensors**. For models without ribs, append "1" to the model no.

Model No.	Rated Voltage [V]	Operating Voltage Range [V]	Frequency ^(Note) [Hz]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
9AD1201H1H	100 to 240	90 to 264	50/60	0.08	4.4	3,250	3.0 106	84 0.34	42	-20 to +75	60,000/60°C

Note: 50/60 Hz compatible.

Set Models

- The set models listed below can be ordered as a single order.

Set configuration items: Fan (without sensor), plug cord, finger guard, screws (with flat washer and spring washer), hex nuts, operation manual

Model Number to Order	Fan Model	Sensor Specifications	Plug Cord Model	Finger Guard Model	Mounting Screws
9U-9AD1201H12	9AD1201H12	Without sensorsensor	489-1635-L10 (Products compliant with Electrical Appliance and Material Safety Law, UL/CSA [c-UL] CERTIFIED)	109-019E	M4 screws (55 mm) x 4, Nuts x 4

Overheating protection function

Protection Functions:

If the fan blades are restricted, an overcurrent occurs and leads to a rise in the fan coil temperature. This can result in reduced performance, damage, or a fire. To prevent this from occurring, SANYO DENKI's fans incorporate an overheating protection function.

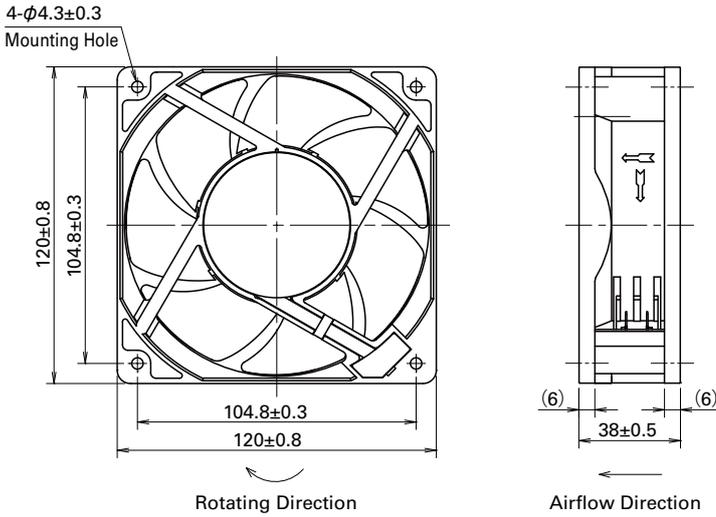
Burnout protection function at locked rotor condition

- Current cutoff system (ACDC fan only)

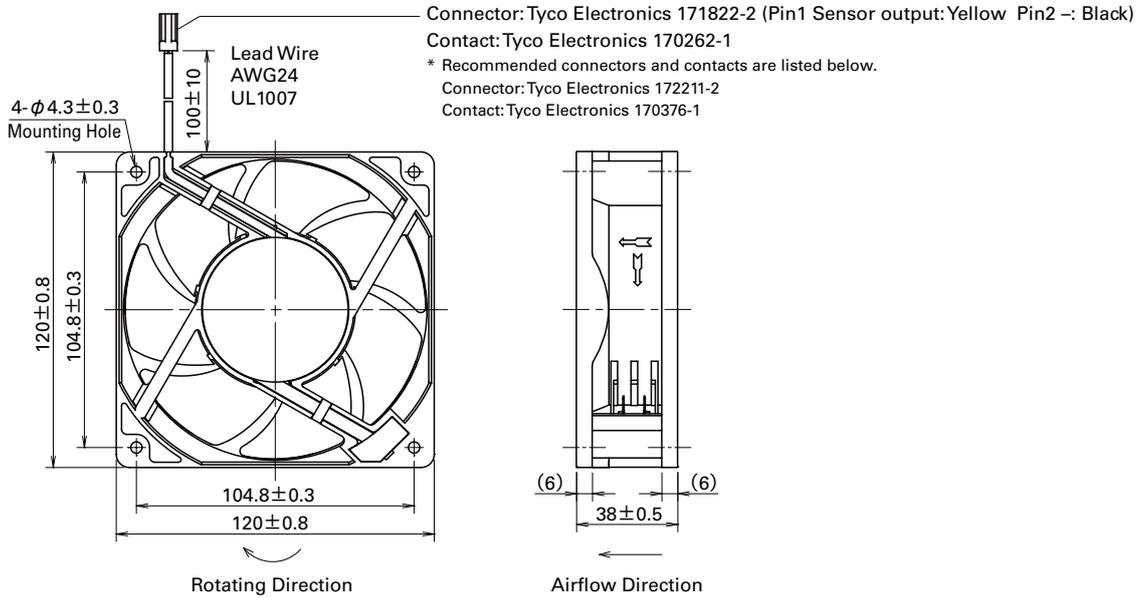
If the fan blades are restricted, the coil current is cut off at regular cycles to prevent overheating of the coil. When the hindrance is removed, the fan restarts automatically.

Dimensions (unit: mm) (With ribs)

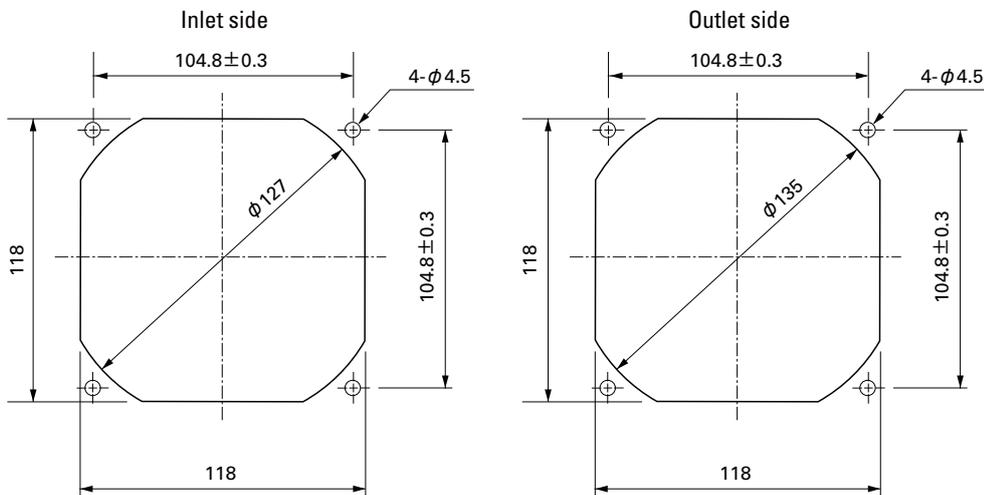
without Sensor



with Low-speed sensor



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



120 mm sq.

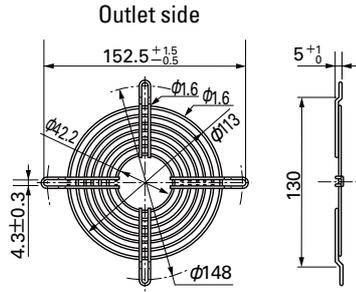
San Ace 120AD

120×120×38mm [Mass : 290g]

Options (unit: mm)

Finger Guards

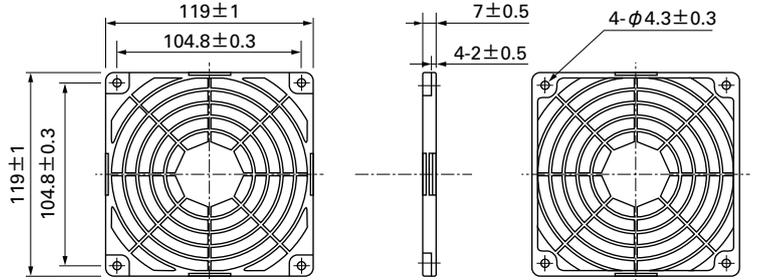
Model : 109-019C Surface treatment : Nickel-chrome plating (silver)
 : 109-019H : Cation electropainting (black)



Mass : 32g

Resin Finger Guards

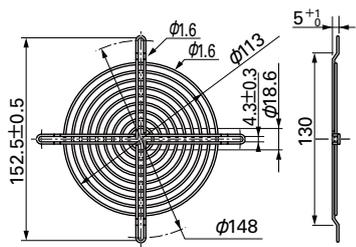
Model : 109-1000G



Mass : 23g

Model : 109-019E Surface treatment : Nickel-chrome plating (silver)
 : 109-019K : Cation electropainting (black)

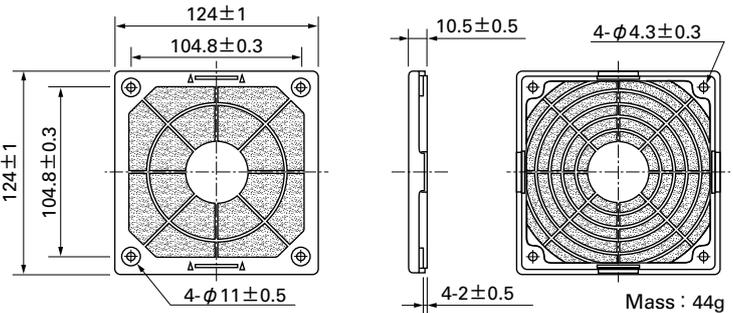
Inlet side, Outlet side



Mass : 42g

Resin Filter Kits

Model: 109-1000F13 (13PPI), 109-1000F20 (20PPI), 109-1000F30 (30PPI), 109-1000F40 (40PPI)



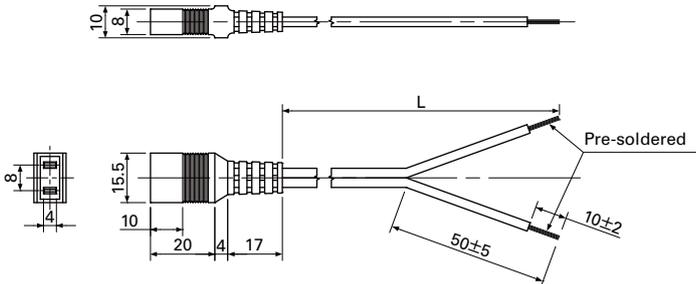
Mass : 44g

Plug Cord

(Products compliant with Electrical Appliance and Material Safety Law, UL/CSA [c-UL] CERTIFIED)

UL FILE No. E43202

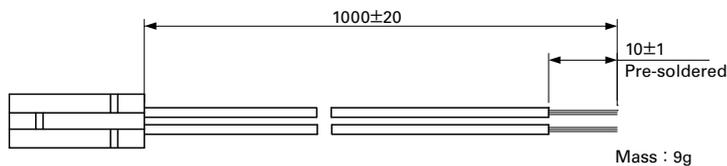
Model : 489-1635-L10/489-1635-L21



Model	Power cord length (L) [mm]	Mass [g]
489-1635-L10	1,000	38
489-1635-L21	2,100	74

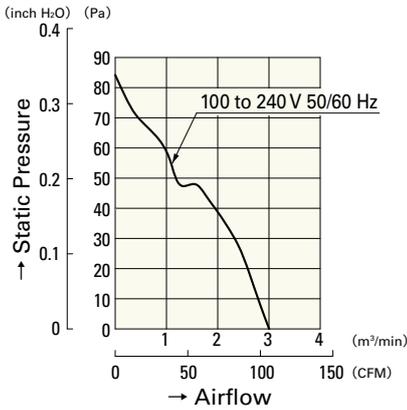
Wiring Harness for Sensor

Model: 489-1636



Mass : 9g

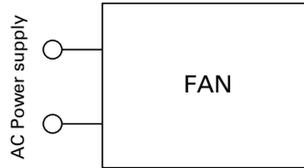
Airflow - Static Pressure Characteristics



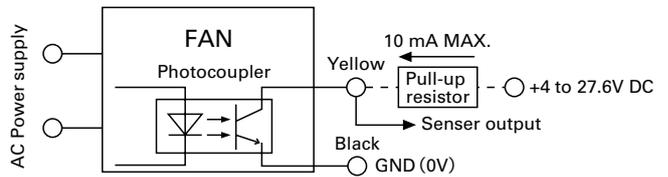
9AD1201H12
9AD1201H1H

Wiring Diagram

without Sensor



with Low-speed sensor

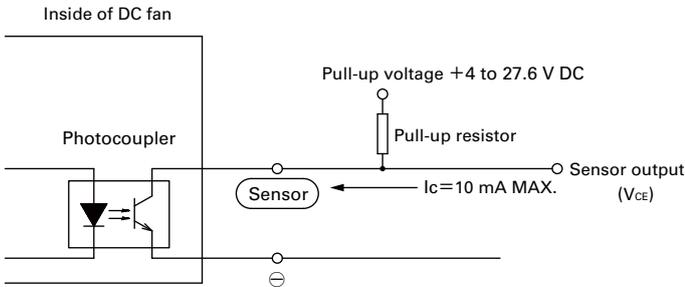


Specifications for Low-speed Sensors

Model No.: 9AD1201H1H

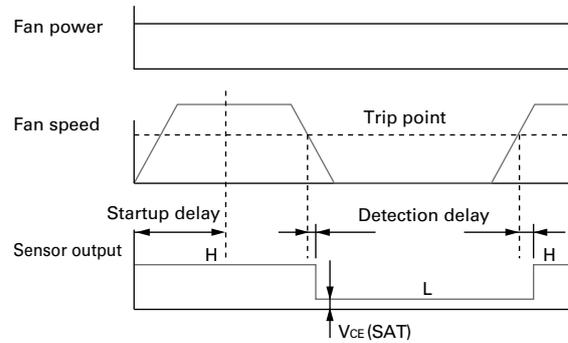
Output circuit: Open collector

$V_{CE} = +27.6 \text{ V DC MAX.}$
 $I_C = 10 \text{ mA MAX. [} V_{CE(SAT)} = 1.0 \text{ V MAX.]}$

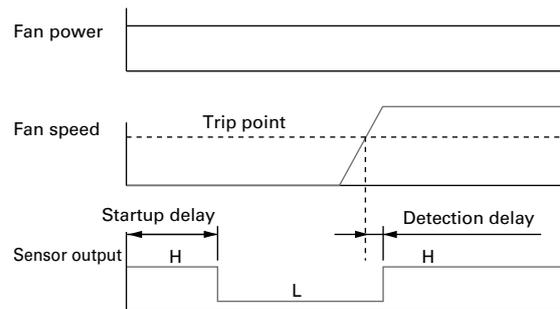


Sensor scheme

Example 1: when steady running



Example 2: when the rotor is locked when the fan motor is turned on and released after the start-up delay time.



Startup delay: $18 \pm 3 \text{ sec.}$
Detection delay: 3 sec. MAX.
Trip point: $1,700 \text{ min}^{-1}$

The Meaning of the Specifications

AC Fan											AC		
Model No.	① Voltage [V]	② Frequency [Hz]	③ Input [W]	④ Current [A]	⑤ Locked Rotor Current [A]	⑥ Rated Speed [min ⁻¹]	⑦ Max. Airflow [m ³ /min] [CFM]		⑧ Max. Static Pressure [Pa] [inchH ₂ O]		⑨ SPL [dB(A)]	⑩ Operating Temperature [°C]	⑪ Expected Life [h]
109-180	100	50/60	5/4	0.06/0.05	0.07/0.06	2,250/2,700	0.27/0.33	9.5/11.7	11.8/18.6	0.047/0.075	24/26	-30 to +70	25,000
109-183	115				0.06/0.05								

- ① Voltage This is the necessary voltage to drive the fan.
Single-phase 100VAC, 115VAC, 200VAC and 230VAC are also available.
- ② Frequency This is a frequency of alternating current(AC). The frequencies of 50Hz and 60Hz are existing in Japan.
Performance of AC fan varies depending on the frequency.
Example: Rated speed 2,250/2,700 = 50Hz → 2,250, 60Hz → 2,700
- ③ Input The input value during the fan's rated operation without load.
- ④ Current The current value during the fan's rated operation without load.
- ⑤ Locked Rotor Current This is a current when rotor of motor that applies rated voltage is locked.
- ⑥ Rated Speed The rotating speed during the fan's rated operation without load.
- ⑦ Max. Airflow The maximum air volume that the fan can output during rated operation (according to the company's dual-chamber device).
The volume of air generated by the fan in a given time period.
- ⑧ Max. Static Pressure The maximum static pressure value that the fan can output during rated operation (according to the company's dual-chamber device).
The static pressure is the fan's force to propel air by overcoming the resistance of the device that uses the fan when it propels air.
- ⑨ SPL "SPL" is Sound Pressure Level. The noise level during the fan's rated operation.
Please refer to the technical material section for the method used to measure the noise level.
- ⑩ Operating Temperature Range The temperature range over which fan operation is guaranteed (Non- condensing)
- ⑪ Expected Life The fan's expected operating life when the fan operates continuously at the rated voltage at a temperature of 60°C and at relative humidity of 90%.
Please refer to the technical material section for the expected operating life.

AC Fan Common Specifications

- Material** Frame:Aluminum,Impeller:Plastics
- Expected Life** Varies for each model
(L10:Survival rate:90% at 60°C ,rated voltage,and continuously run in a free air state)
- Motor Construction** Shaded coil motor (60mm sq. 80mm sq. 92mm sq. 120mm sq.)
Capacitor motor (160mm sq. φ 172mm)
- Motor Protection System** Burnout protection at locked rotor condition
- Dielectric Strength** 50/60Hz 1500VAC 1minute
(between input terminal and frame or between lead conductor and frame *For details, refer to the appropriate page.)
- Insulation Resistance** 10M Ω or more at 500VDC megger
- Sound Pressure Level(SPL)** Expressed as the value at 1m from air inlet side
- Operating Voltage Range** Voltage of each model ± 10%
- Storage Temperature** -30°C to +70°C (Non-condensing)
- Lead Wire** For details, refer to the appropriate page.

Overheating protection function AC

Protection Functions
If the fan blades are restricted, an overcurrent occurs and leads to a rise in the fan coil temperature. This can result in reduced performance, damage, or a fire. To prevent this from occurring, SANYO DENKI's fans incorporate an overheating protection function.

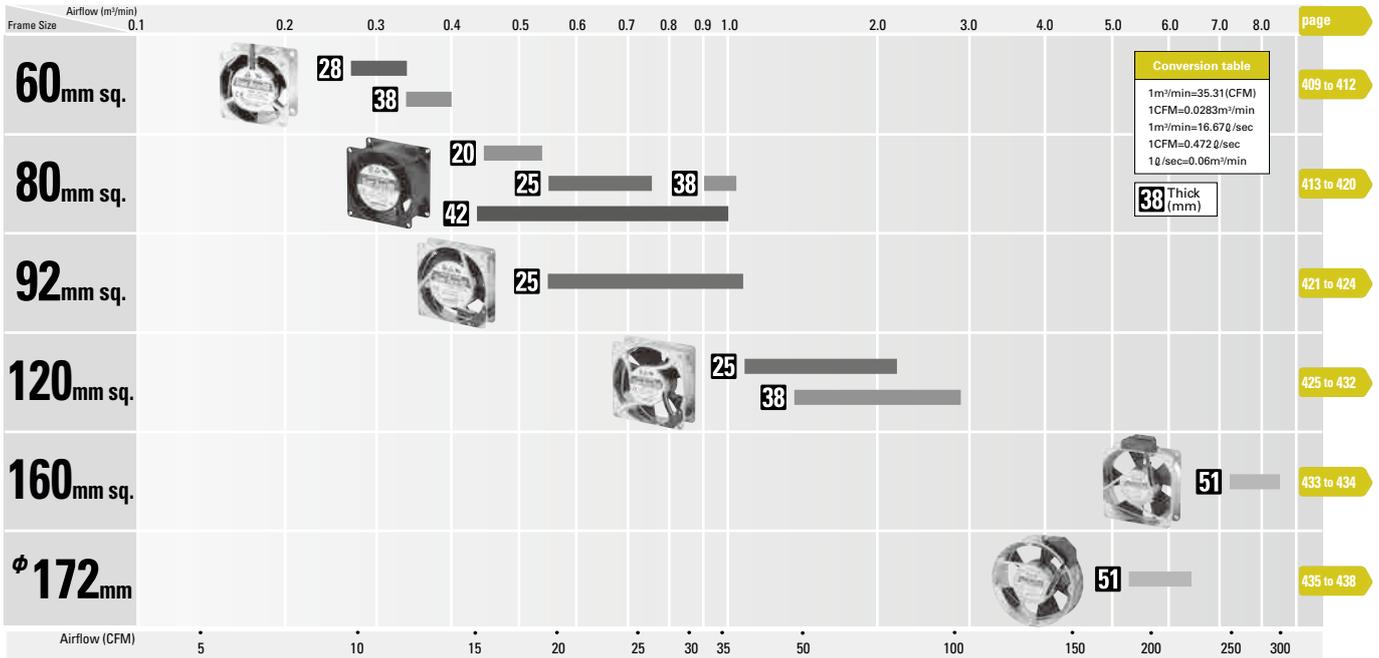
Burnout protection function at locked rotor condition

- Impedance protection (60mm sq. 80mm sq. 92mm sq. 120mm sq.)
This system is used for shading coil-type fans. When the blades are restricted, the current is reduced by the impedance of the coil itself to prevent a temperature rise in the coil. However, if the applied voltage exceeds the specification range, an overcurrent can occur and result in overheating, and so care needs to be taken.
- Thermal protection (160mm sq. φ 172mm)
This system is used for condenser phase-type fans. A temperature sensor is incorporated in the coil so that if the temperature exceeds the specification temperature, the current is cut off to prevent overheating of the coil.

AC Fan

The cooling fan operates at 100V to 230V AC.

Domain Diagram



60mm sq.

San Ace 60



General Specifications

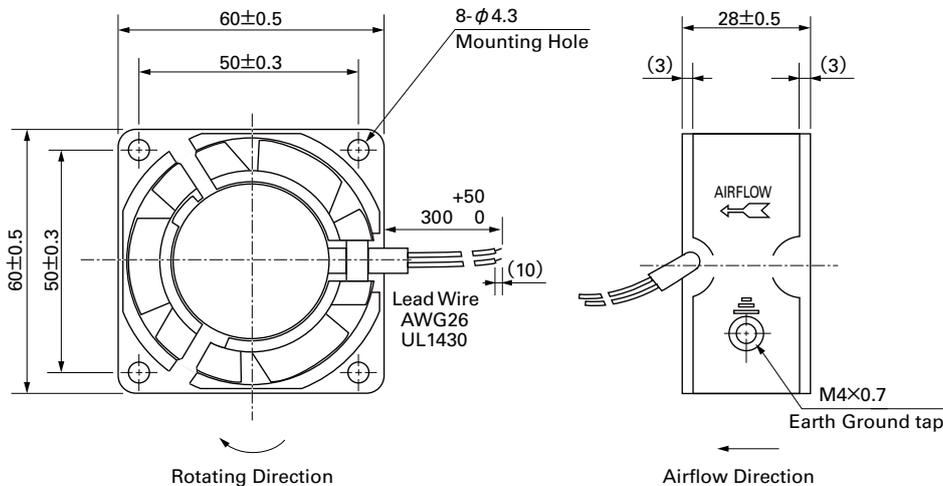
- Material Frame: Aluminum,
Impeller:Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10: Survival rate: 90% at 60°C ,
rated voltage, and continuously run in a free air state)
- Dielectric Strength50/60Hz 1,500VAC 1minute (between lead conductor and frame)
- Lead Wire Black, 2pcs
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range Voltage of each model ± 10%

60×60×28mm [Mass : 120g]

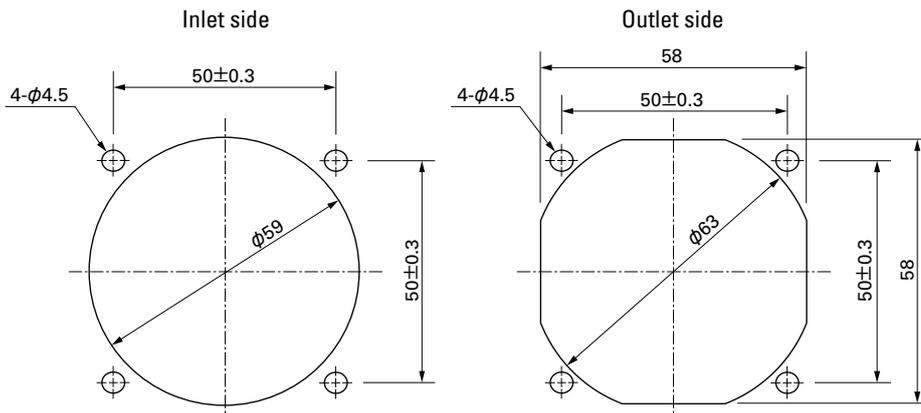
Specifications

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109-180	100	50/60	5/4	0.06/0.05	0.07/0.06	2,250/2,700	0.27/0.33 9.5/11.7	11.8/18.6 0.047/0.075	24/26	-30 to +70	25,000/60°C
109-183	115				0.06/0.05						

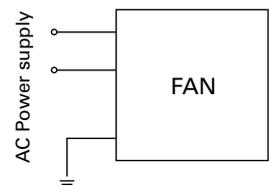
Dimensions (unit: mm)



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



Wiring Diagram

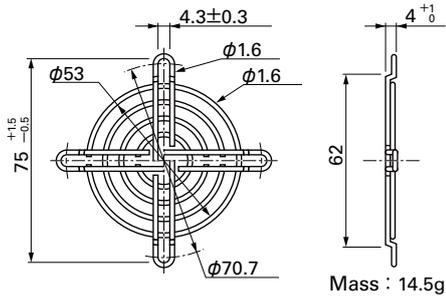


Options (unit: mm)

Finger Guards

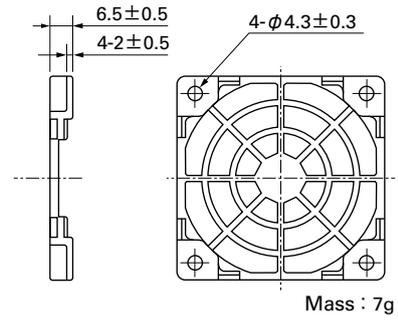
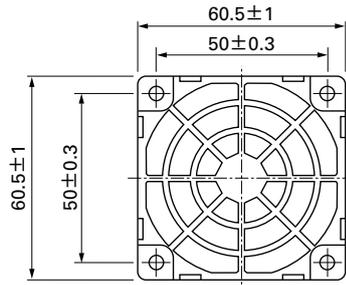
Model : 109-139E Surface treatment : Nickel-chrome plating (silver) Color (silver)
 : 109-139H : Cation electropainting (black)

Inlet side, Outlet side



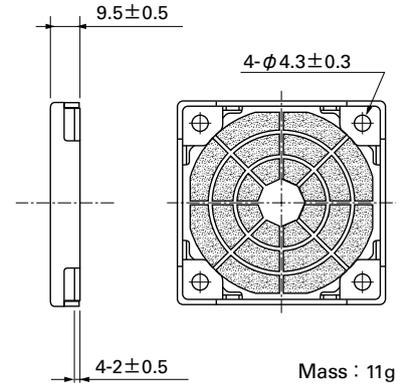
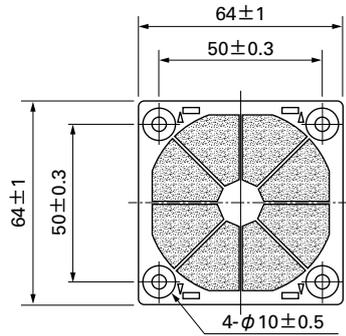
Resin Finger Guards

Model : 109-1003G

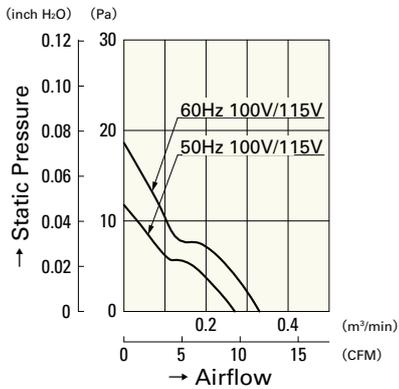


Resin Filter Kits

Model : 109-1003F13 (13PPI), 109-1003F20 (20PPI)
 : 109-1003F30 (30PPI), 109-1003F40 (40PPI)



Airflow - Static Pressure Characteristics



109-180

109-183

AC

AC Fan 60mm

60mm sq.

San Ace 60



General Specifications

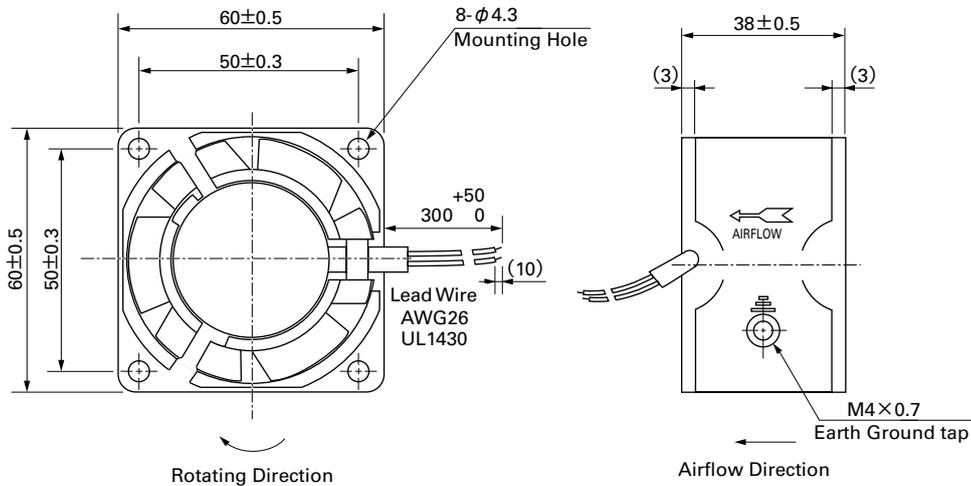
- Material Frame: Aluminum, Impeller:Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10: Survival rate: 90% at 60°C , rated voltage, and continuously run in a free air state)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between lead conductor and frame)
- Lead Wire Black, 2pcs
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range Voltage of each model ± 10%

60×60×38mm [Mass : 170g]

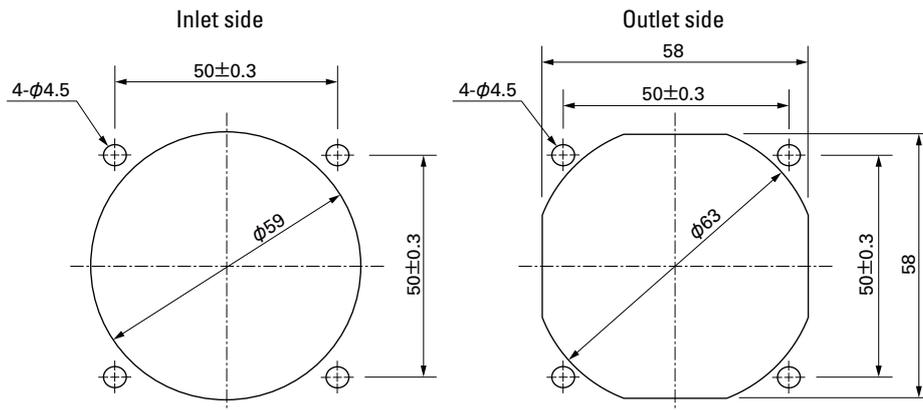
Specifications

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109-130	100	50/60	6/5	0.08/0.07	0.08/0.07	2,600/3,150	0.33/0.4 11.7/14.1	16.3/23.3 0.065/0.094	28/30	-30 to +60	25,000/60°C
109-133	115			0.07/0.06	0.07/0.06						

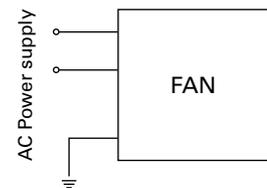
Dimensions (unit: mm)



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



Wiring Diagram

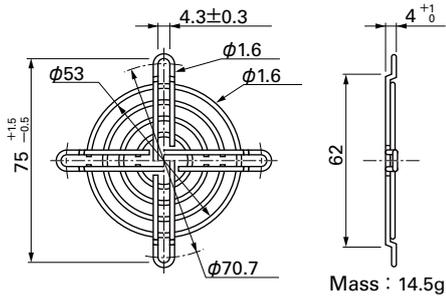


Options (unit: mm)

Finger Guards

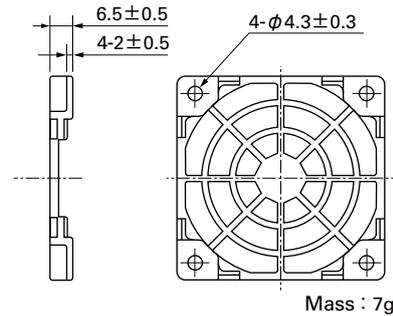
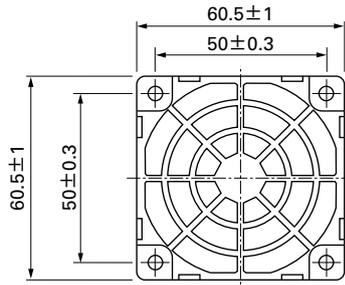
Model : 109-139E Surface treatment : Nickel-chrome plating (silver) Color
 : 109-139H : Cation electropainting (black)

Inlet side, Outlet side



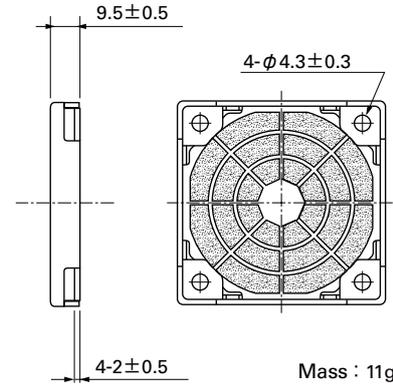
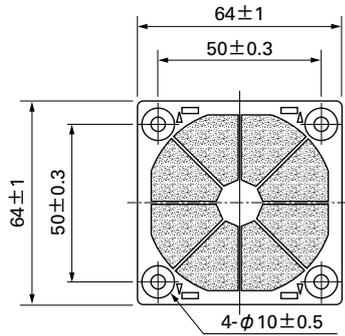
Resin Finger Guards

Model : 109-1003G

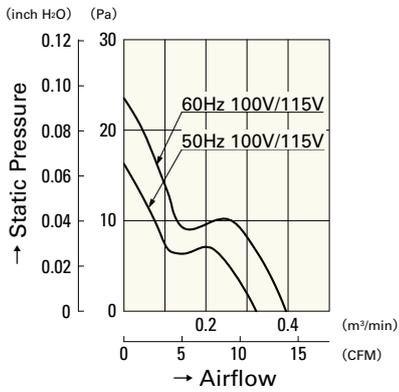


Resin Filter Kits

Model : 109-1003F13 (13PPI), 109-1003F20 (20PPI)
 : 109-1003F30 (30PPI), 109-1003F40 (40PPI)



Airflow - Static Pressure Characteristics



109-130

109-133

80 mm sq.

San Ace 80



General Specifications

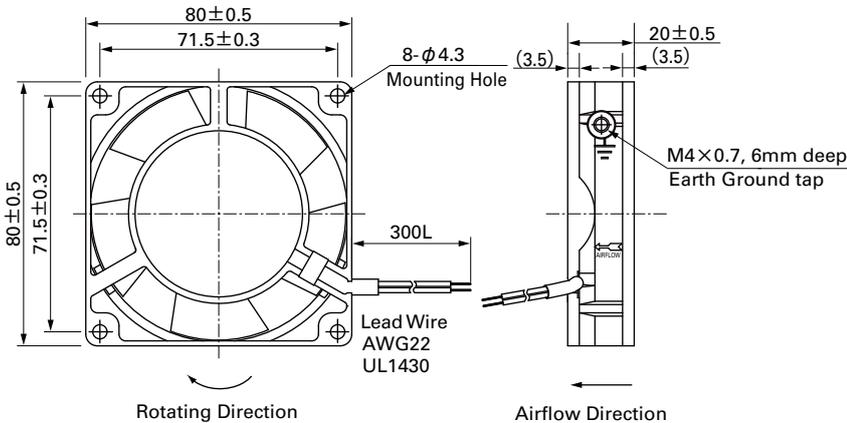
- Material Frame: Aluminum,
Impeller:Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10:Survival rate: 90% at 60°C ,
rated voltage,and continuously run in a free air state)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between lead conductor and frame)
- Lead Wire Black, 2pcs
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range Voltage of each model ± 10%

80×80×20mm [Mass : 180g]

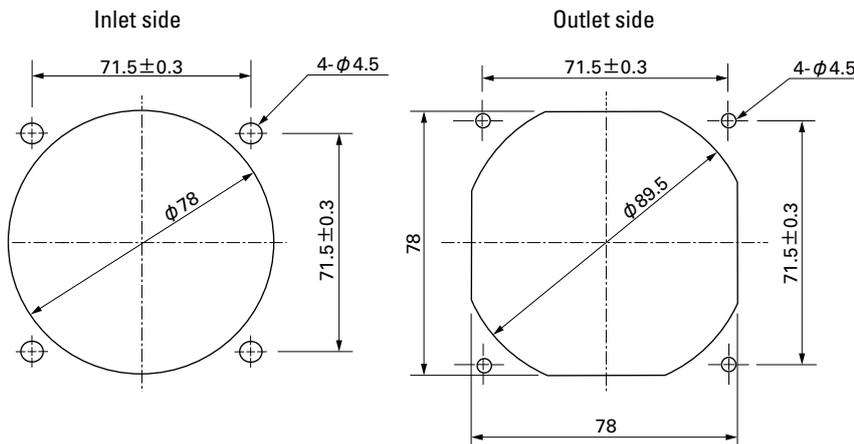
Specifications

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] (CFM)	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109-210	100	50/60	6/5	0.07/0.06	0.07/0.06	2,500/3,000	0.44/0.53 15.5/18.7	23.5/31.4 0.094/0.126	26/31	-30 to +60	25,000/60°C
109-213	115			0.06/0.05	0.06/0.05						

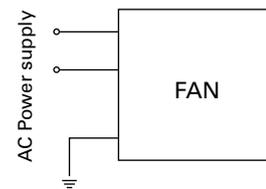
Dimensions (unit: mm)



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



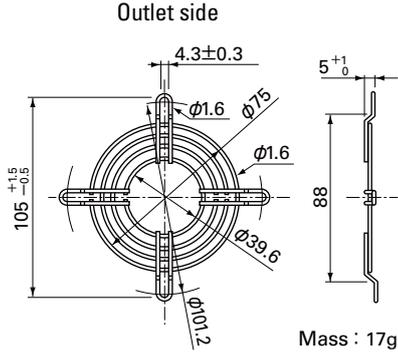
Wiring Diagram



Options (unit: mm)

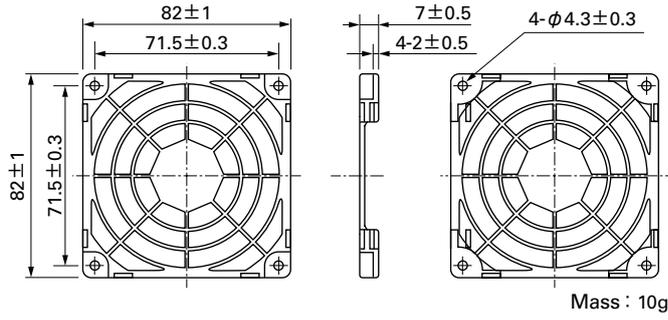
Finger Guards

Model : 109-049C Color : Nickel-chrome plating (silver)
 Surface treatment : Nickel-chrome plating (silver)



Resin Finger Guards

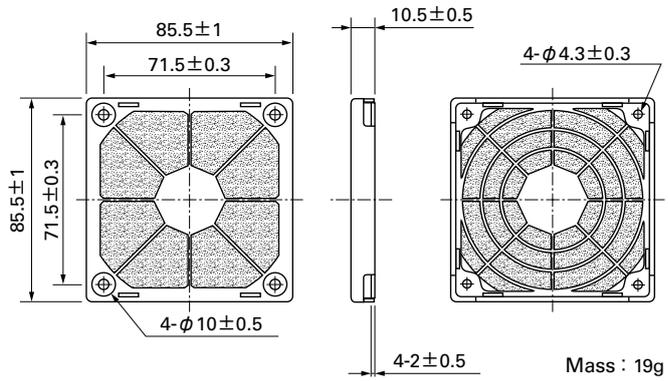
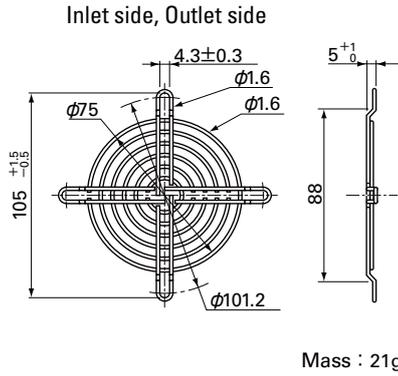
Model : 109-1002G



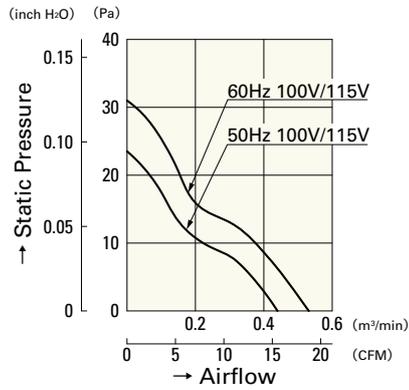
Model : 109-049E Color : Nickel-chrome plating (silver)
 Surface treatment : Nickel-chrome plating (silver)
 : 109-049H : Cation electropainting (black)

Resin Filter Kits

Model : 109-1002F13 (13PPI), 109-1002F20 (20PPI)
 : 109-1002F30 (30PPI), 109-1002F40 (40PPI)



Airflow - Static Pressure Characteristics



109-210

109-213

80 mm sq.

San Ace 80



General Specifications

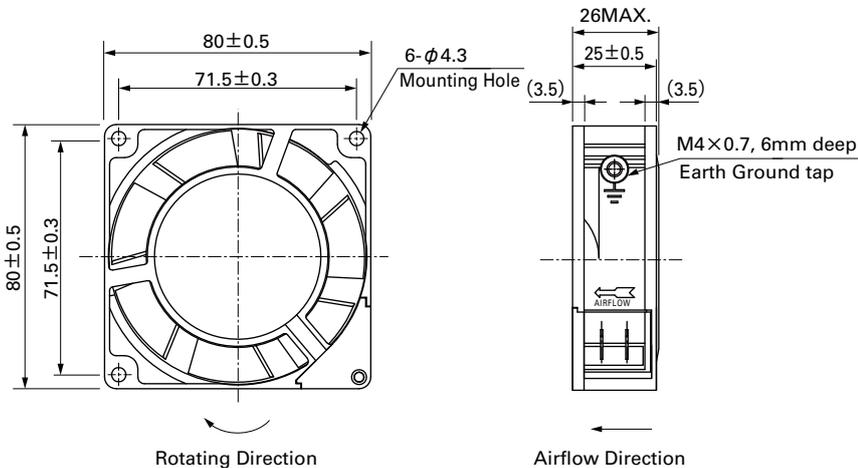
- Material Frame: Aluminum,
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10: Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between input terminal and frame)
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range Voltage of each model ± 10%

80×80×25mm (Mass : 270g)

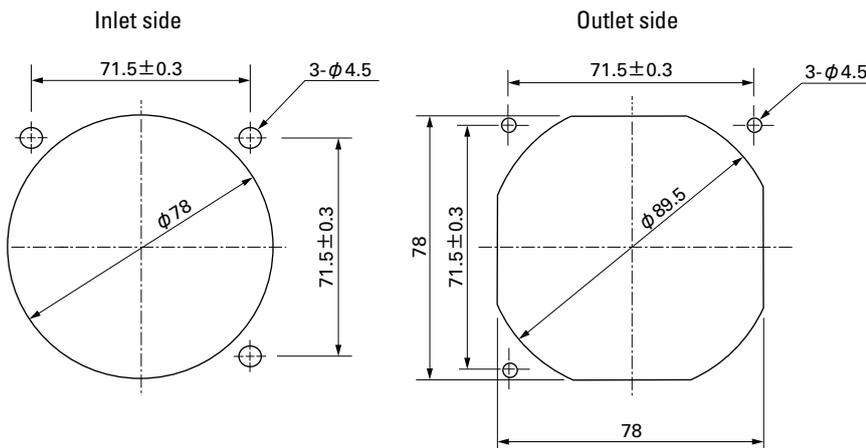
Specifications

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109S050	100	50/60	9/7	0.12/0.1	0.13/0.11	2,650/3,100	0.63/0.76 22.3/26.9	27.5/38.3 0.110/0.154	30/33	-30 to +60	25,000/60°C
109S053	115			0.1 /0.08	0.11/0.09						
109S051	200			0.06/0.05	0.06/0.05						
109S054	230			0.05/0.04	0.05/0.04						
109S030	100			0.12/0.1	0.13/0.11	2,350/2,700	0.55/0.63 19.4/22.3	21.6/28.4 0.087/0.114	28/30		
109S033	115			0.1 /0.08	0.11/0.09						
109S031	200			0.06/0.05	0.06/0.05						
109S034	230			0.05/0.04	0.05/0.04						

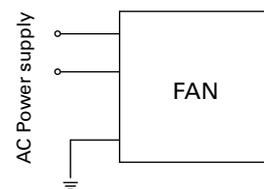
Dimensions (unit: mm)



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



Wiring Diagram



80 mm sq.

San Ace 80



General Specifications

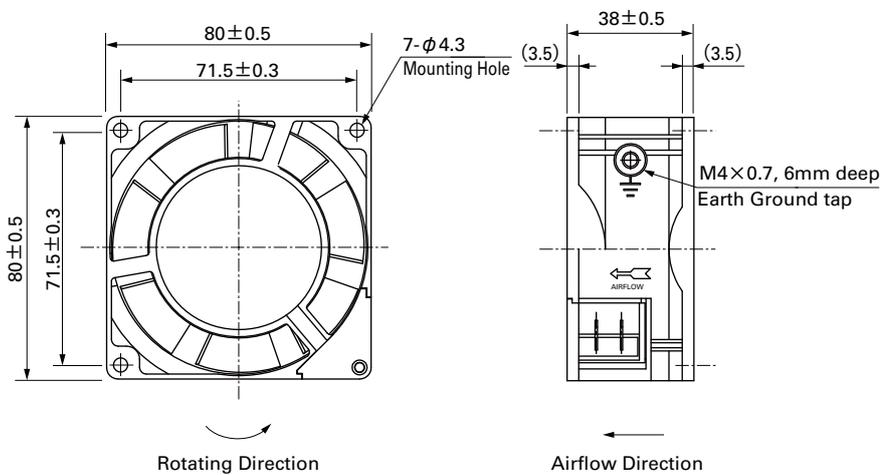
- Material Frame: Aluminum,
Impeller:Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10:Survival rate: 90% at 60°C ,
rated voltage,and continuously run in a free air state)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between input terminal and frame)
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range Voltage of each model ± 10%

80×80×38mm [Mass : 400g]

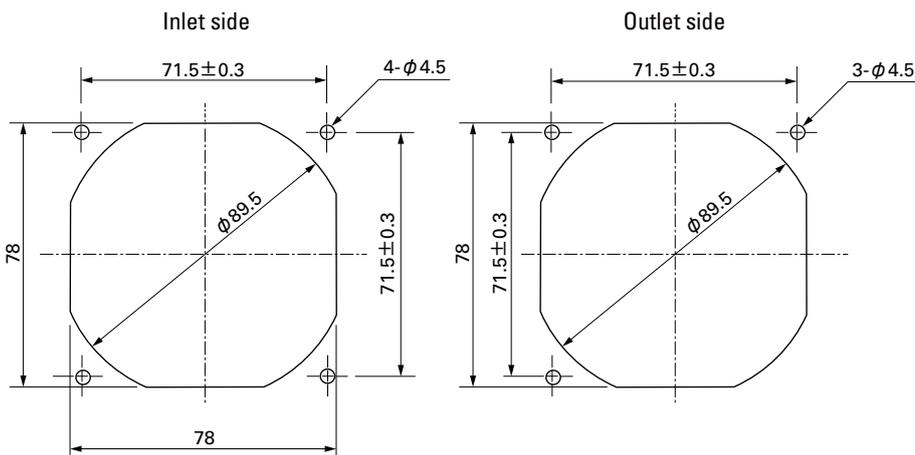
Specifications

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109-150	100	50/60	9/8	0.13/0.11	0.17/0.15	2,700/3,150	0.9/1.05 31.8/37.1	31.4/44.1 0.126/0.177	35/39	-30 to +60	25,000/60°C
109-153	115			0.11/0.1	0.14/0.12						
109-151	200			0.07/0.06	0.09/0.08						
109-154	230			0.06/0.05	0.08/0.07						

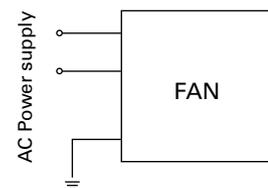
Dimensions (unit: mm)



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



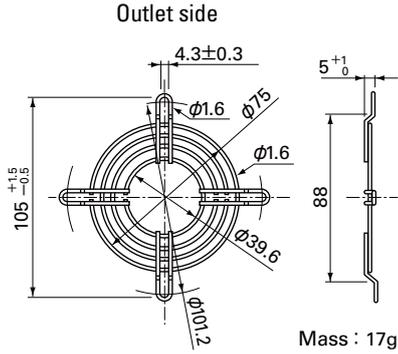
Wiring Diagram



Options (unit: mm)

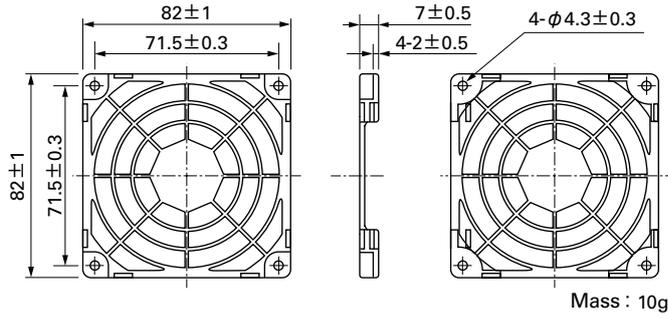
Finger Guards

Model : 109-049C Color Surface treatment : Nickel-chrome plating (silver)



Resin Finger Guards

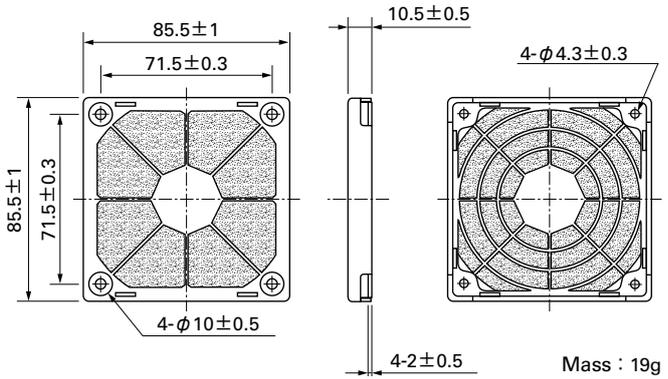
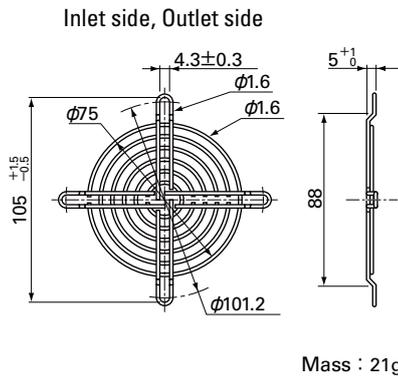
Model : 109-1002G



Model : 109-049E Color Surface treatment : Nickel-chrome plating (silver)
: 109-049H : Cation electropainting (black)

Resin Filter Kits

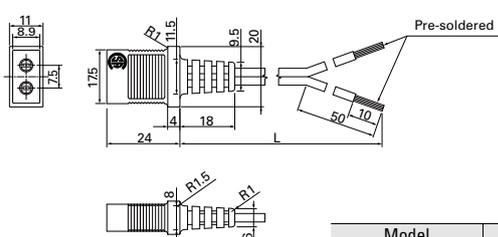
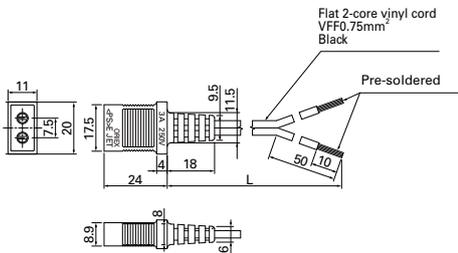
Model : 109-1002F13 (13PPI), 109-1002F20 (20PPI)
: 109-1002F30 (30PPI), 109-1002F40 (40PPI)



Plug Cord

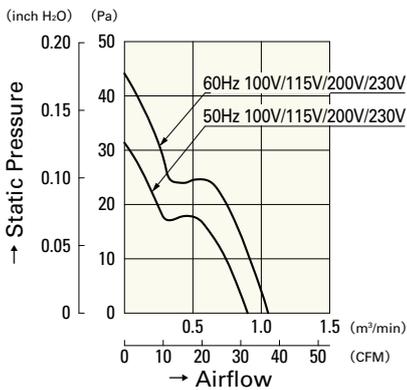
(Products compliant with Electrical Appliance and Material Safety Law)
Model : 489-016-L10/489-016-L21

(UL/CSA CERTIFIED)
UL FILE No.E50197 CSA FILE No.LR67048
Model : 489-047-L10/489-047-L21



Model	Power cord length (L) [mm]	Mass [g]
489-016-L10	1,000	34
489-016-L21	2,100	64
489-047-L10	1,000	38
489-047-L21	2,100	71

Airflow - Static Pressure Characteristics



109-150
109-153
109-151
109-154

80 mm sq.

San Ace 80



General Specifications

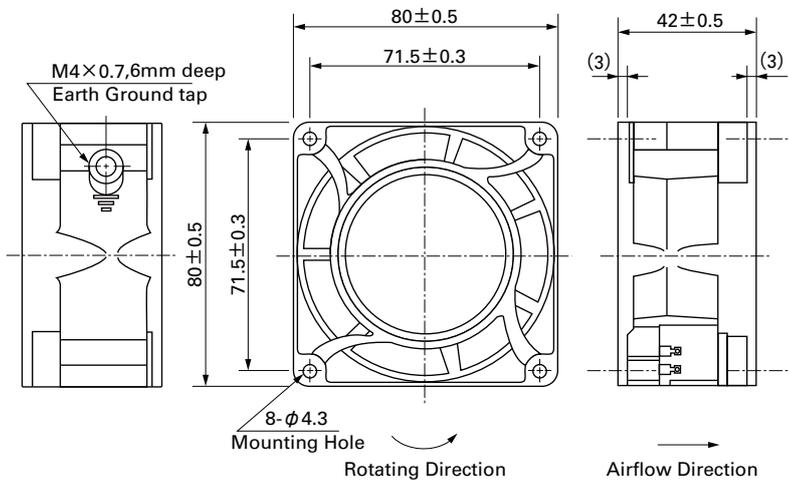
- Material Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10: Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between input terminal and frame)
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range Voltage of each model ±10%

80×80×42mm [Mass : 410g]

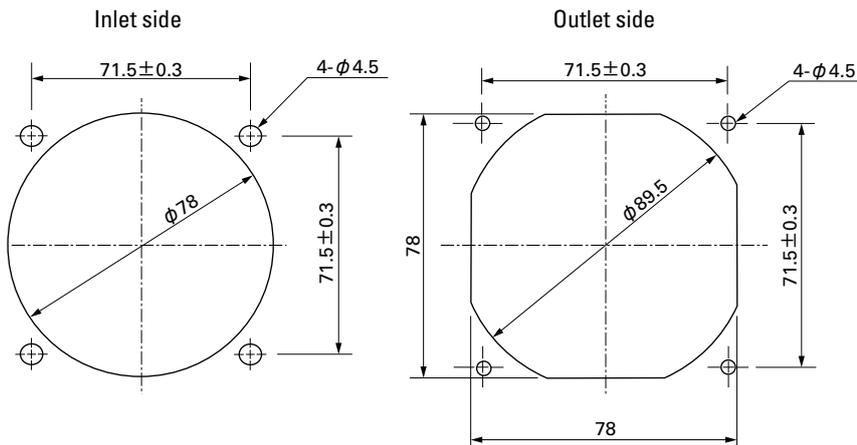
Specifications *represents low-speed.

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109-040UL	100	50/60	10/9	0.13/0.11	0.16/0.14	2,650/3,100	0.85/1.0 30.0/35.3	24.5/35.3 0.098/0.142	40/44	-30 to +60	25,000/60°C
109-043UL	115			0.11/0.1	0.14/0.12						
109-041UL	200			0.07/0.06	0.08/0.07						
109-044UL	230			0.06/0.05	0.07/0.06						
109-047UL *	100		4/3.5	0.05/0.05	0.05/0.05	1,500/1,500	0.43/0.43 15.2/15.2	8.8/8.8 0.035/0.035	24/24		
109-033UL *	115	0.04/0.04		0.04/0.04							

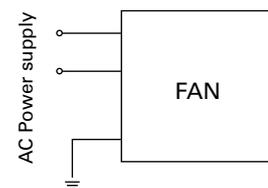
Dimensions (unit: mm)



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



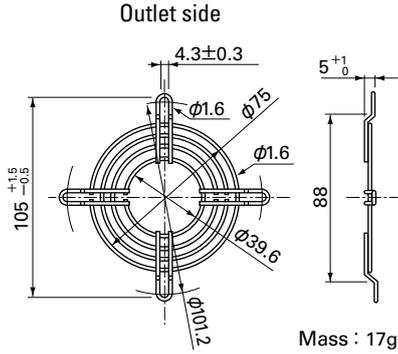
Wiring Diagram



Options (unit: mm)

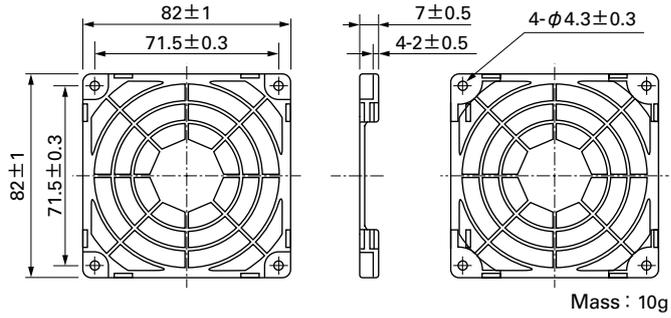
Finger Guards

Model : 109-049C Color : Nickel-chrome plating (silver)
Surface treatment : Nickel-chrome plating (silver)



Resin Finger Guards

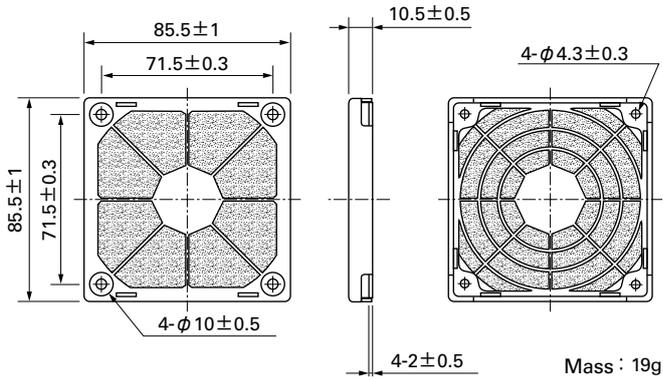
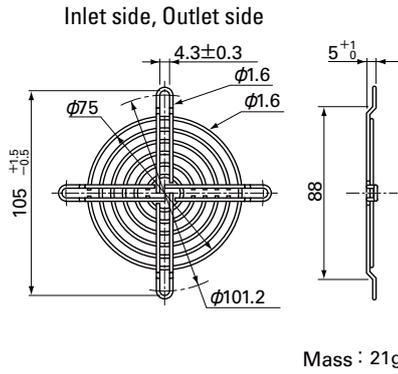
Model : 109-1002G



Model : 109-049E Color : Nickel-chrome plating (silver)
Surface treatment : Nickel-chrome plating (silver)
Model : 109-049H Color : Cation electropainting (black)
Surface treatment : Cation electropainting (black)

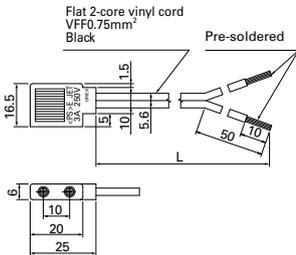
Resin Filter Kits

Model : 109-1002F13 (13PPI), 109-1002F20 (20PPI)
Model : 109-1002F30 (30PPI), 109-1002F40 (40PPI)



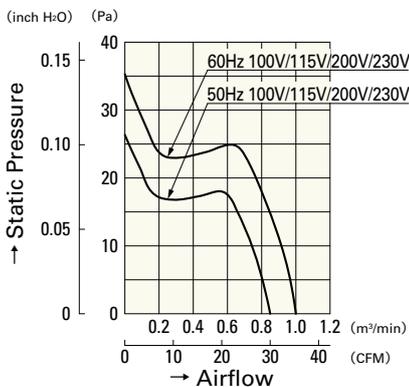
Plug Cord

(Products compliant with Electrical Appliance and Material Safety Law)
Model : 489-008-L10/489-008-L21/489-008-L35

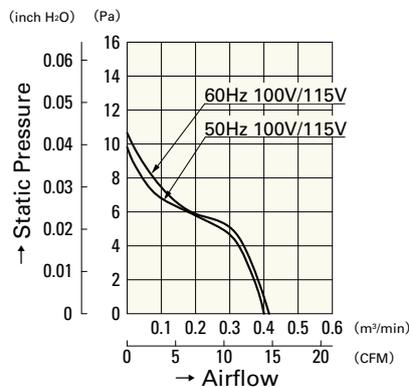


Model	Power cord length (L) [mm]	Mass [g]
489-008-L10	1,000	30
489-008-L21	2,100	61
489-008-L35	3,500	99

Airflow - Static Pressure Characteristics



109-040UL
109-043UL
109-041UL
109-044UL



109-047UL
109-033UL

92 mm sq.**San Ace 92**

Only standard fans (without sensors) have acquired CSA certification.

General Specifications

- Material..... Frame: Aluminum, 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)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between input terminal and frame)
- Dielectric Strength (With Sensor) ... Between AC input and DC input(Sensor output)
 - : 50/60Hz 1,000VAC 1minute
 - Between AC input and G
 - : 50/60Hz 1,500VAC 1minute,
 - Between G and DC input(Sensor output)
 - : 50/60Hz 1,000VAC 1minute
- Sensor-Purpose Lead Wire ... ⊕ brown ⊖ black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range ... Voltage of each model ±10%

92×92×25mm (Mass : 290g / 310g (with Sensor))

Specifications Standard ※ represents low-speed.

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109S091	100	50/60	8/7	0.1 /0.09	0.13/0.12	2,700/3,100	0.95/1.1 33.6/38.9	39.2/49.0 0.157/0.197	35/38	-30 to +60	25,000/60°C
109S093	115			0.09/0.08	0.11/0.1						
109S092	200		11/10	0.07/0.06	0.08/0.08						
109S094	230		10/9	0.06/0.05	0.07/0.07						
109S095	100		8/7	0.1 /0.09	0.11/0.1	2,400/2,800	0.84/0.98 29.7/34.6	31.4/40.2 0.126/0.161	32/35		
109S096 ※	100	50/60	7/6	0.09/0.08	0.09/0.08	1,500/1,700	0.55/0.65 19.4/23	12.5/16.3 0.050/0.065	24/27	-30 to +60	25,000/60°C
109S193 ※	115			0.08/0.07	0.08/0.07						
109S192 ※	200		8/7	0.06/0.05	0.06/0.05						
109S194 ※	230			0.05/0.04	0.05/0.04						

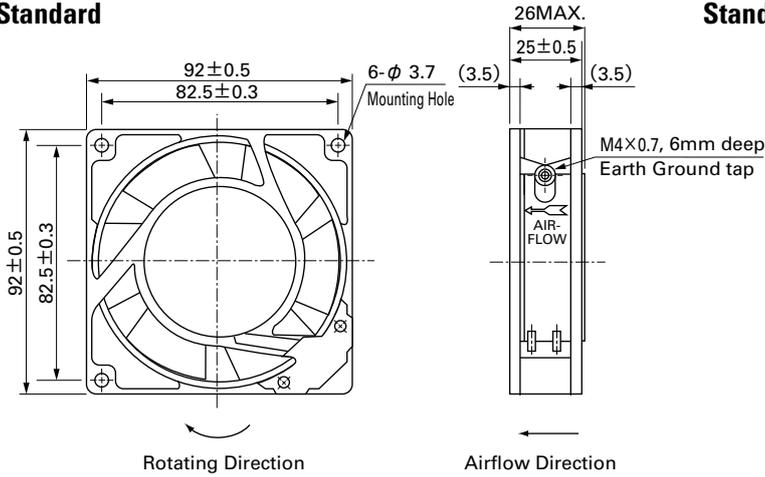
with Sensor ※ represents low-speed.

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109S491	100	50/60	8/7	0.1 /0.09	0.13/0.12	2,700/3,100	0.95/1.1 33.6/38.9	39.2/49.0 0.157/0.197	35/38	-10 to +60	25,000/60°C
109S493	115			0.09/0.08	0.11/0.1						
109S492	200		11/10	0.07/0.06	0.08/0.08						
109S494	230		10/9	0.06/0.05	0.07/0.07						
109S495	100		8/7	0.1 /0.09	0.11/0.1	2,400/2,800	0.84/0.98 29.7/34.6	31.4/40.2 0.126/0.161	32/35		
109S496 ※	100	50/60	7/6	0.09/0.08	0.09/0.08	1,500/1,700	0.55/0.65 19.4/23	12.5/16.3 0.050/0.065	24/27	-10 to +60	25,000/60°C
	115			0.08/0.07	0.08/0.07						
	200		8/7	0.06/0.05	0.06/0.05						
	230			0.05/0.04	0.05/0.04						

Two types of power supplies, 5V (ITEM-20) and 12V (ITEM-30), are available in fans with sensor attached.

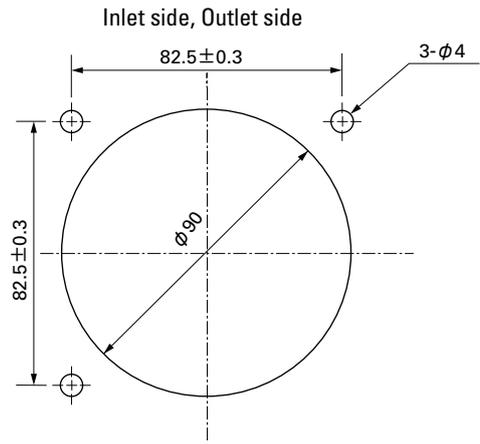
Dimensions (unit: mm)

Standard

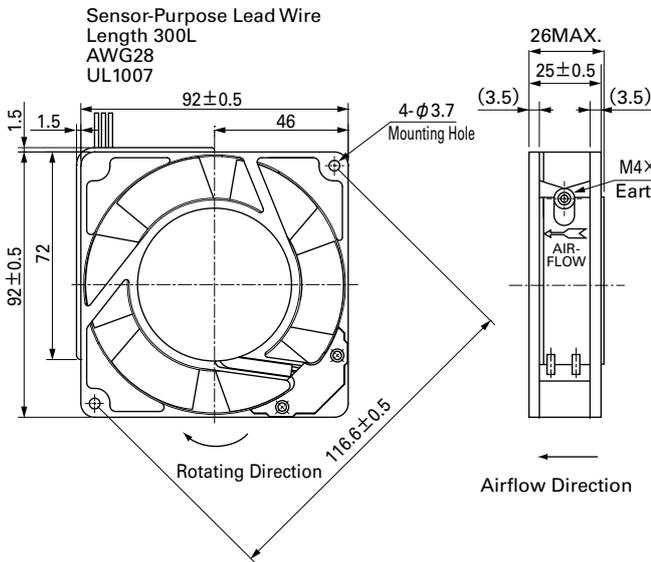


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

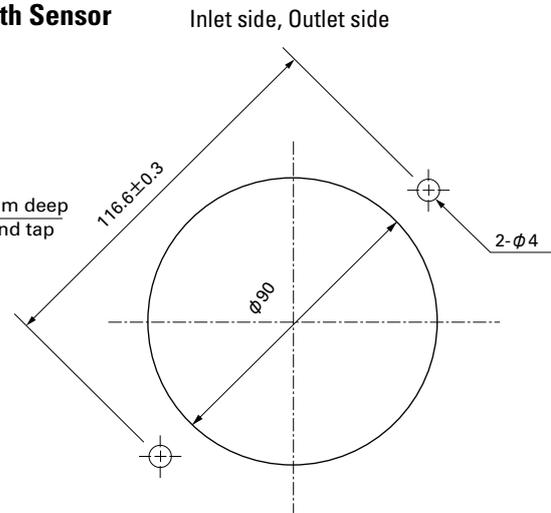
Standard



with Sensor



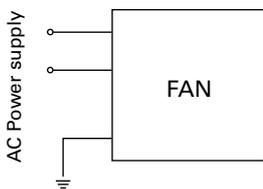
with Sensor



AC
AC Fan 92mm

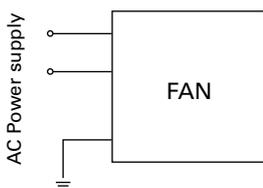
Wiring Diagram

Standard

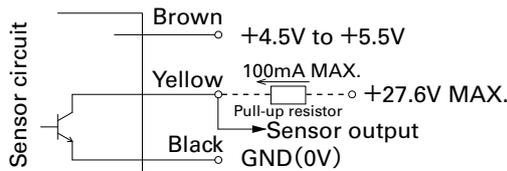


with Sensor

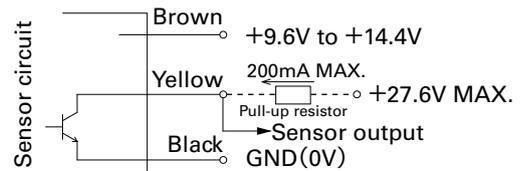
(For fan power supply)



5V (ITEM-20)



12V (ITEM-30)



GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

92 mm sq.

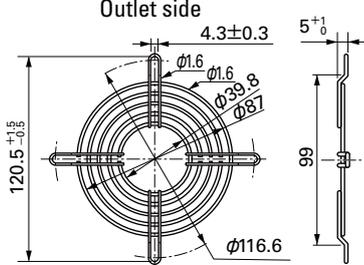
San Ace 92

92×92×25mm [Mass : 290g / 310g (with Sensor)]

Options (unit: mm)

Finger Guards

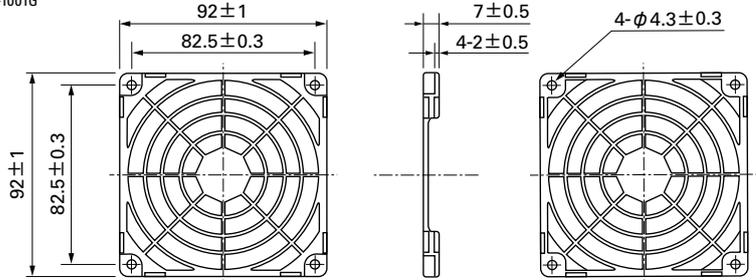
Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color



Mass : 22g

Resin Finger Guards

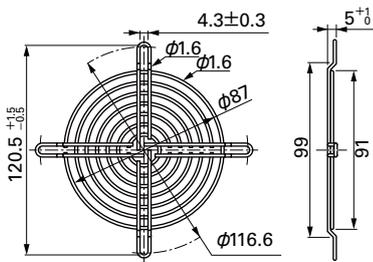
Model : 109-1001G



Mass : 12g

Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color
: 109-099H : Cation electroplating (black)

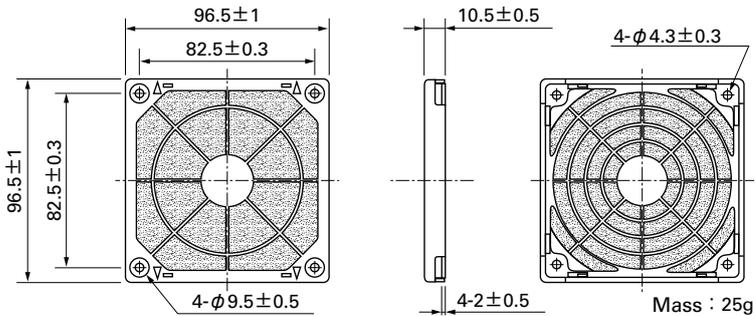
Inlet side, Outlet side



Mass : 29g

Resin Filter Kits

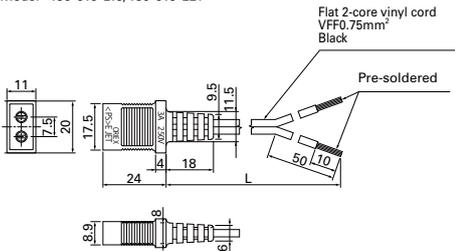
Model : 109-1001F13 (13PPI), 109-1001F20 (20PPI)
: 109-1001F30 (30PPI), 109-1001F40 (40PPI)



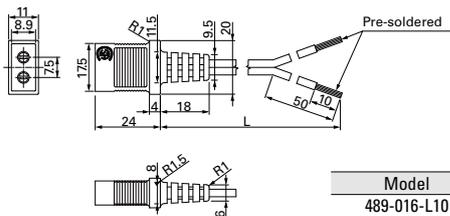
Mass : 25g

Plug Cord

(Products compliant with Electrical Appliance and Material Safety Law)
Model : 489-016-L10/489-016-L21



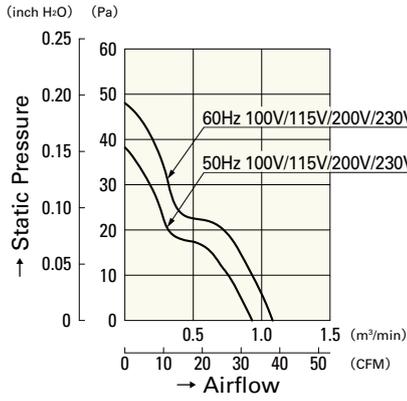
(UL/CSA CERTIFIED)
UL FILE No.E50197 CSA FILE No.LR67048
Model : 489-047-L10/489-047-L21



Model	Power cord length (L) [mm]	Mass [g]
489-016-L10	1,000	34
489-016-L21	2,100	64
489-047-L10	1,000	38
489-047-L21	2,100	71

Airflow - Static Pressure Characteristics

Standard

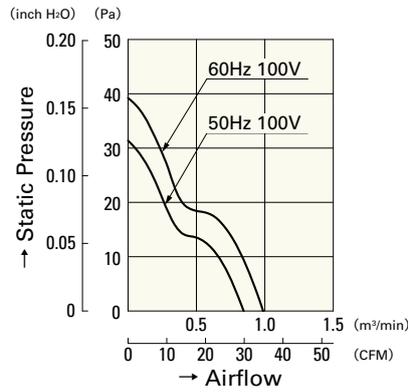


109S091

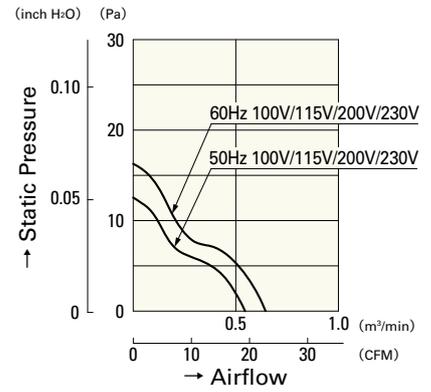
109S093

109S092

109S094



109S095



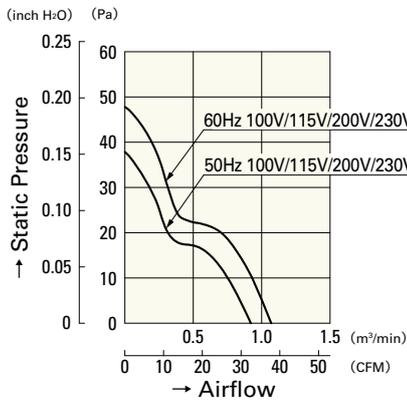
109S096

109S193

109S192

109S194

with Sensor

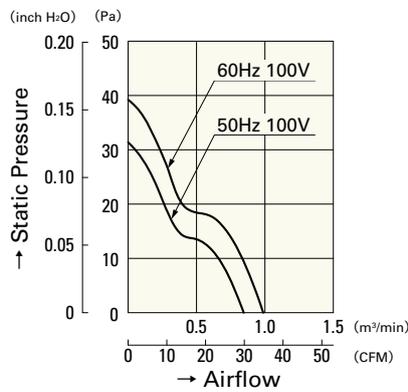


109S491

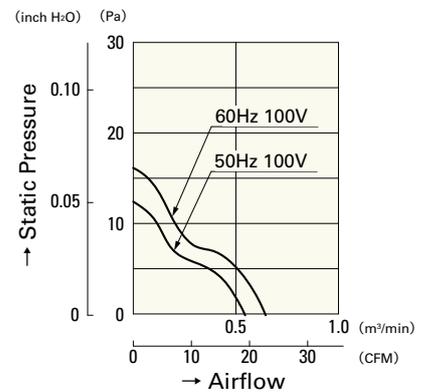
109S493

109S492

109S494



109S495



109S496

120mm sq.**San Ace 120**

Only standard fans (without sensors) have acquired CSA certification.

General Specifications

- Material Frame: Aluminum,
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)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between input terminal and frame)
- Dielectric Strength (With Sensor) ... Between AC input and DC input(Sensor output)
: 50/60Hz 1,000VAC 1minute
Between AC input and G
: 50/60Hz 1,500VAC 1minute,
Between G and DC input(Sensor output)
: 50/60Hz 1,000VAC 1minute
- Sensor-Purpose Lead Wire ... ⊕ brown ⊖ black (Sensor) yellow
- Storage Temperature -30°C to+70°C (Non-condensing)
- Operating Voltage Range ... Voltage of each model ±10%

120×120×25mm [Mass : 370g /390g (with Sensor)]

Specifications Standard ※ represents low-speed.

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchHzO]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109S085	100	50/60	13.5/12	0.16/0.14	0.19/0.17	2,500/2,900	1.95/2.3 68.9/81.3	48 /51.9 0.193/0.216	38/41	-30 to +60	25,000/60°C
109S084	115			0.14/0.12	0.16/0.15						
109S088	200			0.08/0.07	0.1 /0.09						
109S087	230			0.07/0.06	0.08/0.07						
109S081	100			0.11	0.11/0.1						
109S083	115	9.5/8.5	0.07	0.1	0.1 /0.09	2,200/2,350	1.7 /1.8 60.1/63.6	29.4/26.5 0.118/0.106	34/35	-30 to +60	25,000/60°C
109S082	200			0.07	0.07/0.06						
109S089	230			0.06	0.06/0.05						
109S086 ※	100			12/10	0.14/0.12						

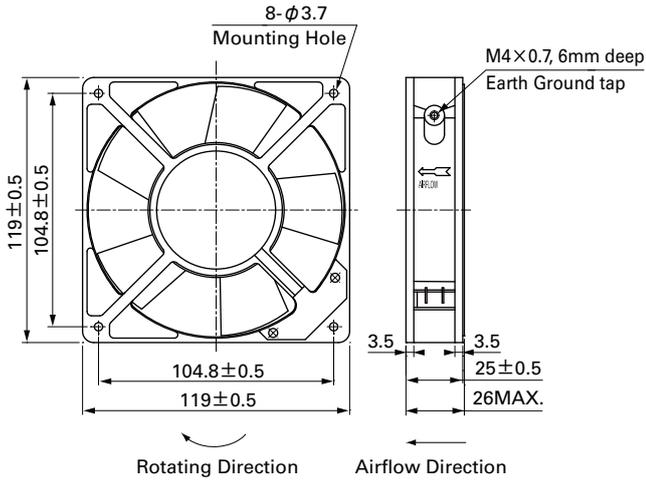
with Sensor ※ represents low-speed.

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchHzO]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109S485	100	50/60	13.5/12	0.16/0.14	0.19/0.17	2,500/2,900	1.95/2.3 68.9/81.3	48 /51.9 0.193/0.216	38/41	-10 to +60	25,000/60°C
109S484	115			0.14/0.12	0.16/0.15						
109S488	200			0.08/0.07	0.1 /0.09						
109S487	230			0.07/0.06	0.08/0.07						
109S486 ※	100			12/10	0.14/0.12						

Two types of power supplies, 5V (ITEM-20) and 12V (ITEM-30), are available in fans with sensor attached.

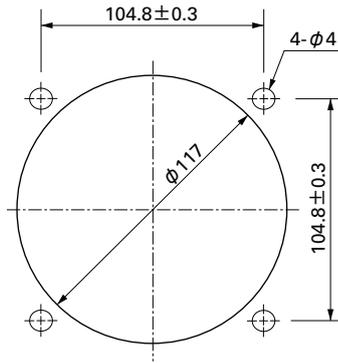
■ Dimensions (unit: mm)

Standard

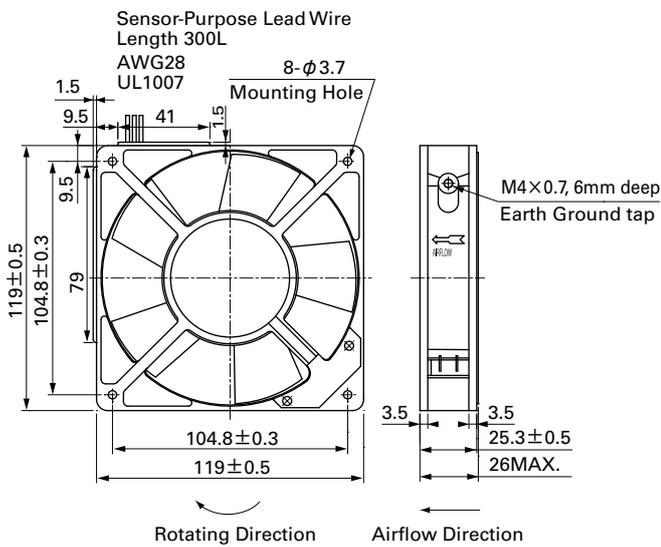


■ Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side

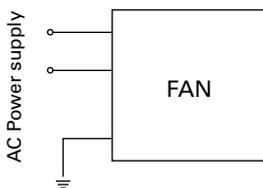


with Sensor



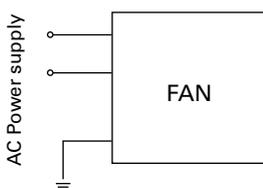
■ Wiring Diagram

Standard

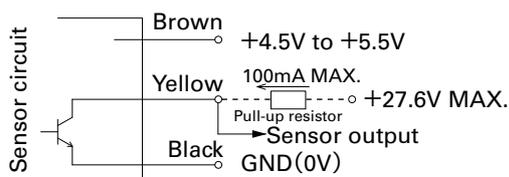


with Sensor

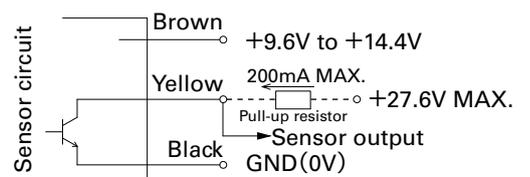
(For fan power supply)



5V (ITEM-20)



12V (ITEM-30)



GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

120 mm sq.

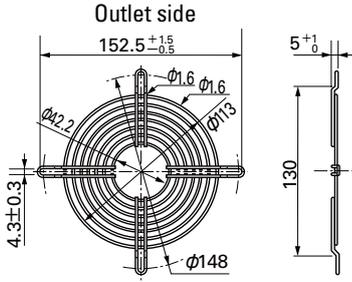
San Ace 120

120×120×25 mm [Mass : 370g / 390g (with Sensor)]

Options (unit: mm)

Finger Guards

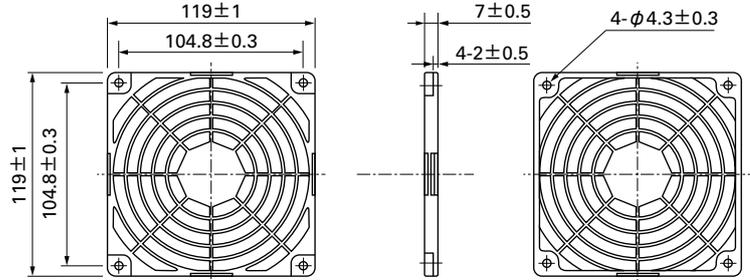
Model : 109-019C Surface treatment : Nickel-chrome plating (silver) Color
 : 109-019H : Cation electropainting (black)



Mass : 32g

Resin Finger Guards

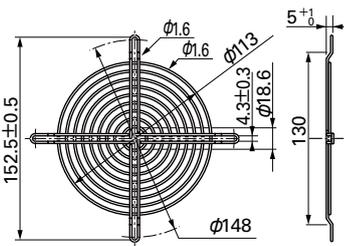
Model : 109-1000G



Mass : 23g

Model : 109-019E Surface treatment : Nickel-chrome plating (silver) Color
 : 109-019K : Cation electropainting (black)

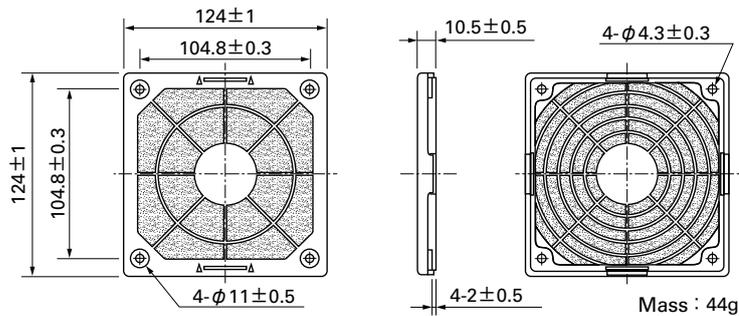
Inlet side, Outlet side



Mass : 42g

Resin Filter Kits

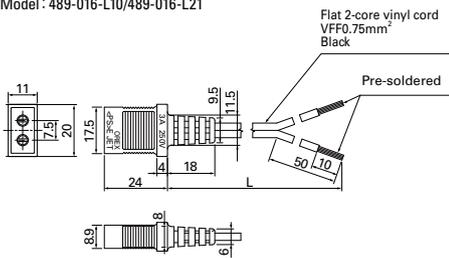
Model : 109-1000F13 (13PPI), 109-1000F20 (20PPI)
 : 109-1000F30 (30PPI), 109-1000F40 (40PPI)



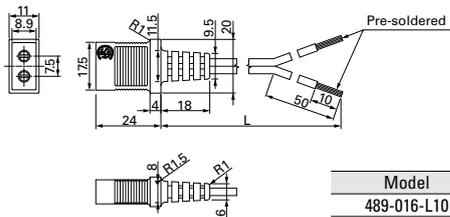
Mass : 44g

Plug Cord

(Products compliant with Electrical Appliance and Material Safety Law)
 Model : 489-016-L10/489-016-L21



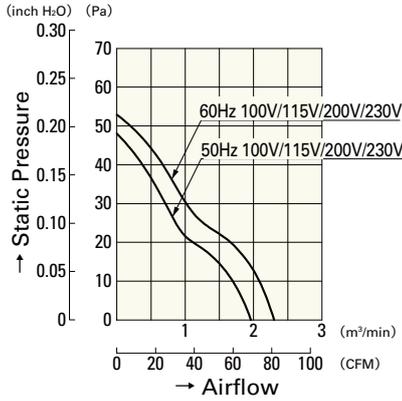
(UL/CSA CERTIFIED)
 UL FILE No.E50197 CSA FILE No.LR67048
 Model : 489-047-L10/489-047-L21



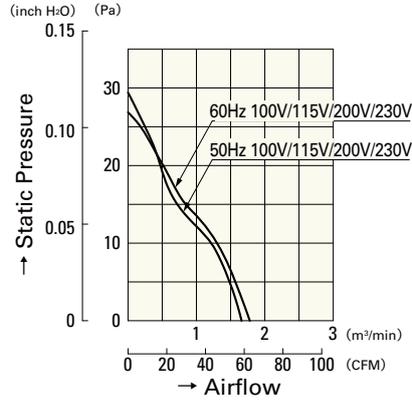
Model	Power cord length (L) (mm)	Mass [g]
489-016-L10	1,000	34
489-016-L21	2,100	64
489-047-L10	1,000	38
489-047-L21	2,100	71

Airflow - Static Pressure Characteristics

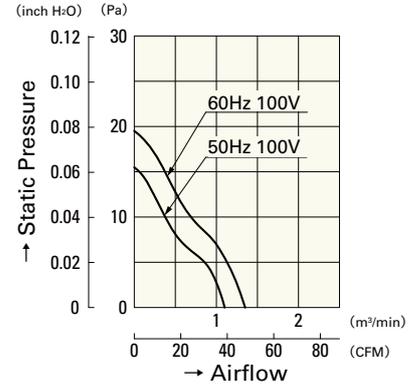
Standard



109S085
109S084
109S088
109S087

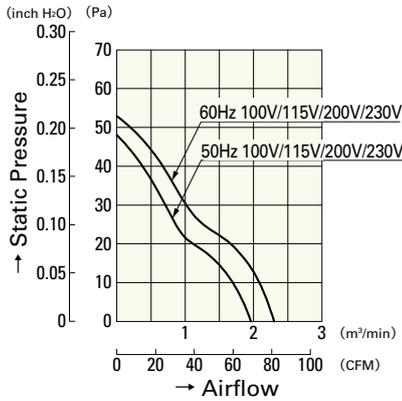


109S081
109S083
109S082
109S089

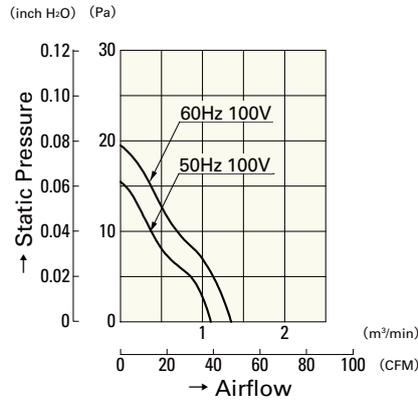


109S086

with Sensor



109S485
109S484
109S488
109S487



109S486

120mm sq.

San Ace 120



Certifications vary by model no. Please refer to p. 435.

General Specifications

- Material..... Frame: Aluminum,
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)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between input terminal and frame)
- Dielectric Strength (With Sensor) ... Between AC input and DC input(Sensor output)
: 50/60Hz 1,000VAC 1minute
Between AC input and G
: 50/60Hz 1,500VAC 1minute,
Between G and DC input(Sensor output)
: 50/60Hz 1,000VAC 1minute
- Sensor-Purpose Lead Wire ... ⊕ brown ⊖ black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range ... Voltage of each model ±10%

120×120×38mm [Mass : 550g / 580g (with Sensor)]

Specifications Standard

 ※ represents low-speed.

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109S075UL	100	50/60	18/16	0.24/0.21	0.32/0.28	2,700/3,100	2.5 /2.9 88.3/102.5	57.9/68.7 0.233/0.276	42/45	-30 to +60	25,000/60°C
109S074UL	115			0.21/0.18	0.27/0.24						
109S078UL	200			0.12/0.1	0.16/0.14						
109S072UL	230			0.11/0.09	0.14/0.13						
109S005	100		14/12	0.18/0.16	0.25/0.22	2,700/3,100	2.35/2.7 83 / 95.4	55.9/65.7 0.224/0.264	40/43		
109S005UL	100			0.16/0.14	0.21/0.18						
109S024	120			0.09/0.08	0.13/0.11						
109S024UL	115			0.08/0.07	0.11/0.09						
109S008	200		14/12	0.18/0.16	0.23/0.21	2,450/2,700	2.15/2.35 76 / 83	44.1/49.0 0.177/0.197	38/40		
109S008UL	200			0.16/0.14	0.16/0.15						
109S025	230			0.13/0.11	0.16/0.15						
109S025UL	230			0.13/0.11	0.16/0.15						
109S029UL	100		14/12	0.18/0.16	0.23/0.21	2,450/2,700	2.15/2.35 76 / 83	44.1/49.0 0.177/0.197	38/40		
109S013	100			0.16/0.14	0.16/0.15						
109S013UL	100			0.13/0.11	0.16/0.15						
109S006 ※	115			0.13/0.11	0.13/0.11						
109S006UL※	115	7/6	0.1 /0.09	0.1 /0.09	1,650/1,700	1.45/1.5 51.2/ 53	17.6/17.6 0.071/0.071	28/28			
109S010 ※	200		0.13/0.11	0.13/0.11							
109S010	200		0.05/0.04	0.05/0.04							
109S010UL※	240		0.05/0.04	0.05/0.04							
109S010UL※	240	11/11	0.06/0.05	0.06/0.05	1,800/1,950	1.58/1.68 55.8/ 59.3	20.6/21.6 0.083/0.087	30/32			
109S010UL※	240		0.06/0.05	0.06/0.05							
109S010UL※	240		0.06/0.05	0.06/0.05							
109S010UL※	240		0.06/0.05	0.06/0.05							

with Sensor

 ※ represents low-speed.

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109S405UL	100	50/60	14/12	0.18/0.16	0.25/0.22	2,700/3,100	2.35/2.7 83/95.4	55.9/65.7 0.224/0.264	40/43	-10 to +60	25,000/60°C
109S424UL	115			0.16/0.14	0.21/0.18						
109S408UL	200			0.09/0.08	0.13/0.11						
109S425UL	230			0.08/0.07	0.11/0.09						
109S429UL	100		7/6	0.18/0.16	0.23/0.21	2,450/2,700	2.15/2.35 76/83	44.1/49.0 0.177/0.197	38/40		
109S406UL※	100			0.09/0.08	0.1 /0.09						
109S475UL	100			0.09/0.08	0.1 /0.09						
109S475UL	100			0.09/0.08	0.1 /0.09						
109S474UL	115		18/16	0.24/0.21	0.32/0.28	2,700/3,100	2.5 /2.9 88.3/102.4	57.9/68.7 0.233/0.276	42/45		
109S474UL	115			0.21/0.18	0.27/0.24						
109S478UL	200			0.12/0.1	0.16/0.14						
109S472UL	230			0.11/0.09	0.14/0.13						

Two types of power supplies, 5V (ITEM-20) and 12V (ITEM-30), are available in fans with sensor attached.

Set Models

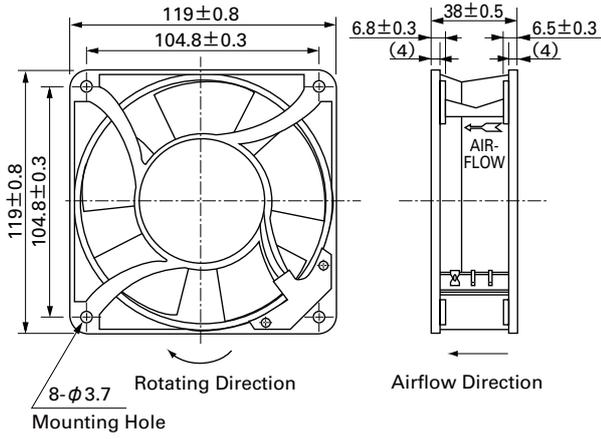
- The set models listed below can be ordered as a single order.

Set configuration items: Fan (without sensor), plug cord, finger guard, screws (with flat washer and spring washer), hex nuts, operation manual

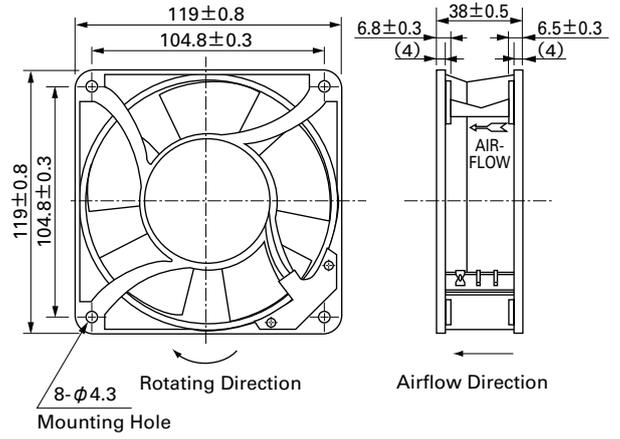
Model Number to Order	Fan Model	Sensor Specifications	Plug Cord Model	Finger Guard Model	Mounting Screws
9U-109S075UL-9	109S075UL-9 (performs the same as the 109S075UL, but only the mounting hole sizes are different)	Without sensor	489-037-L10 (Products compliant with Electrical Appliance and Material Safety Law)	109-019E	M4 screws (55 mm) x 4, Nuts x 4
9U-109S078UL-9	109S078UL-9(performs the same as the 109S078UL, but only the mounting hole sizes are different)				

Dimensions (unit: mm)

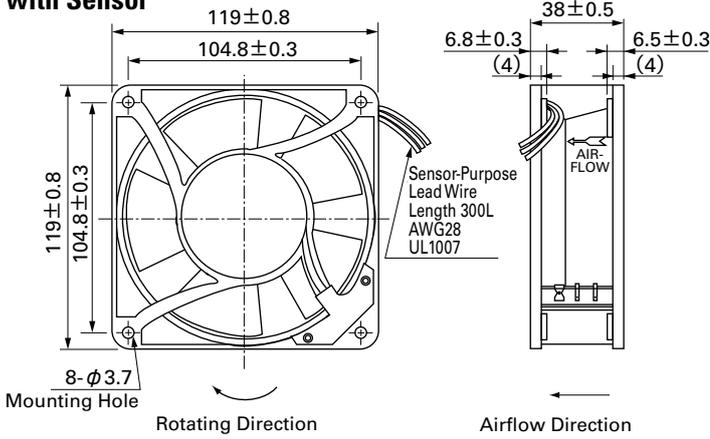
Standard



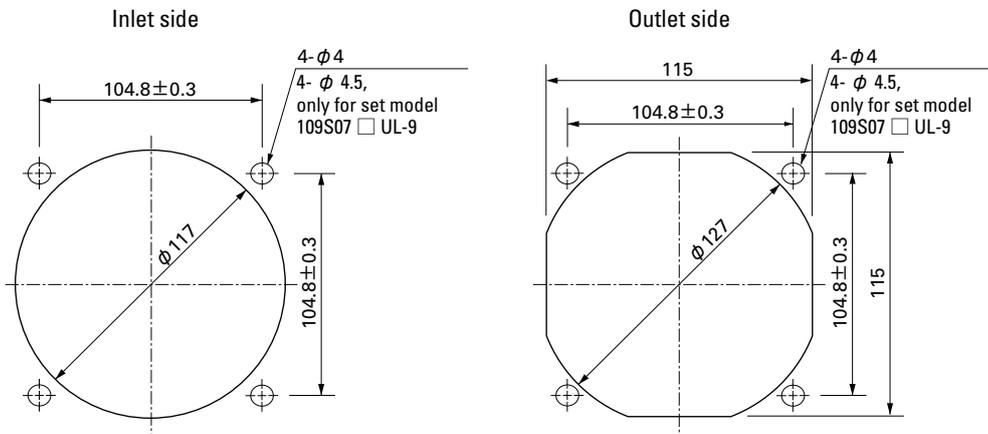
Set Model 109S07 □ UL-9



with Sensor

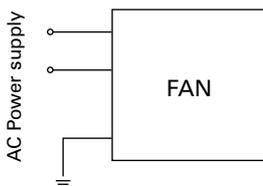


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



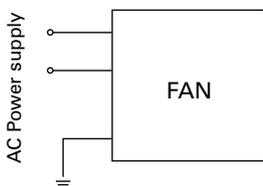
Wiring Diagram

Standard

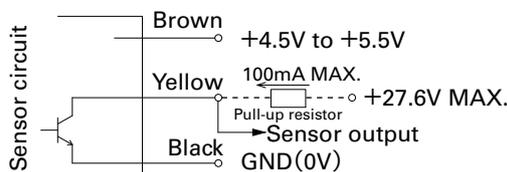


with Sensor

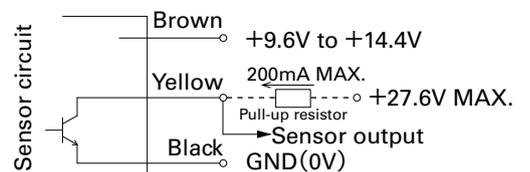
(For fan power supply)



5V (ITEM-20)



12V (ITEM-30)



GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

120 mm sq.

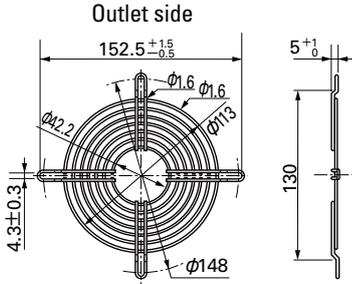
San Ace 120

120×120×38mm [Mass : 550g / 580g (with Sensor)]

Options (unit: mm)

Finger Guards

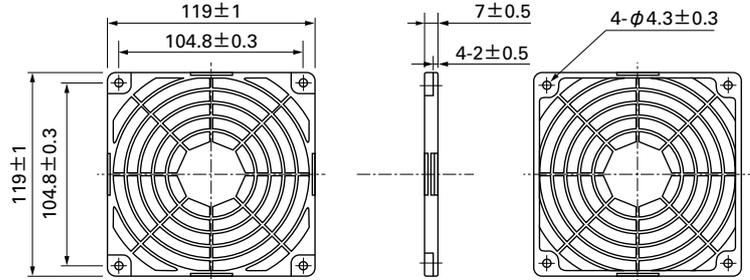
Model : 109-019C Surface treatment : Nickel-chrome plating (silver) Color
 : 109-019H : Cation electropainting (black)



Mass : 32g

Resin Finger Guards

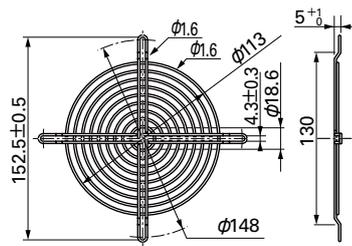
Model : 109-1000G



Mass : 23g

Model : 109-019E Surface treatment : Nickel-chrome plating (silver) Color
 : 109-019K : Cation electropainting (black)

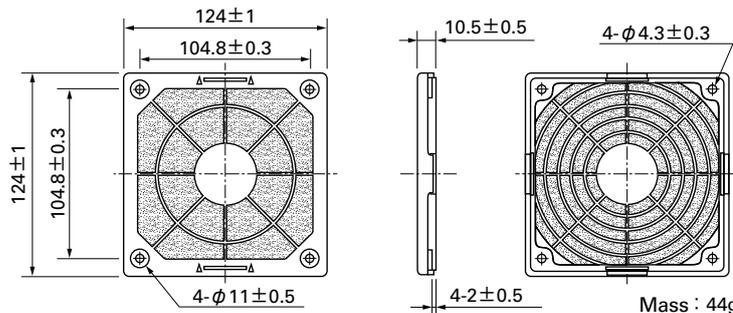
Inlet side, Outlet side



Mass : 42g

Resin Filter Kits

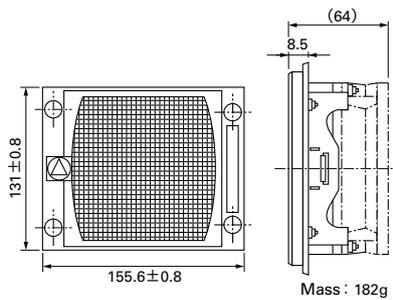
Model : 109-1000F13 (13PPI), 109-1000F20 (20PPI), 109-1000F30 (30PPI), 109-1000F40 (40PPI)



Mass : 44g

Filter Kits

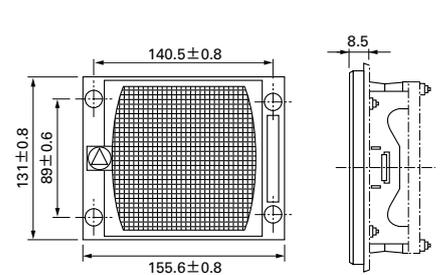
Model : 109-018 Applicable models : AC Fan 120×120×38mm



Mass : 182g

Screen Kits

Model : 109-020 Applicable models : AC Fan 120×120×38mm



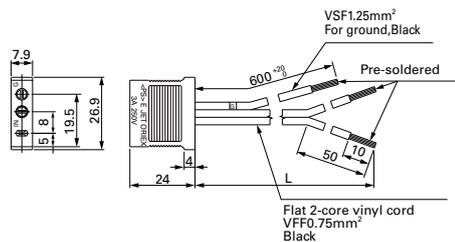
Mass : 135g

Neither filterkit nor screenkit can be installed on fans with sensor.

Plug Cord

Exclusive for fans without UL at the end of the model number.

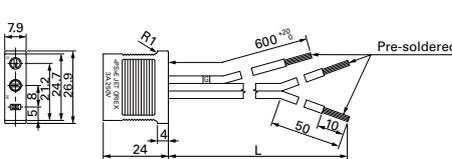
(Products compliant with Electrical Appliance and Material Safety Law)
 Model : 489-006-L10/489-006-L21/489-006-L35



Model	Power cord length (L) [mm]	Mass [g]
489-006-L10	1,000	47
489-006-L21	2,100	76
489-006-L35	3,500	114

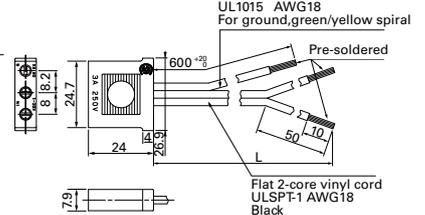
Exclusive for fans with UL at the end of the model number.

(Products compliant with Electrical Appliance and Material Safety Law)
 Model : 489-037-L10/489-037-L21/489-037-L35



(UL/CSA CERTIFIED)

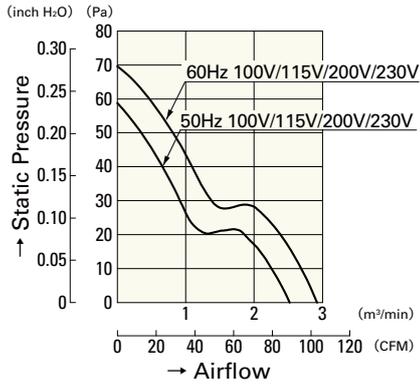
UL FILE No.E50197 CSA FILE No.LR67048
 Model : 489-007-L10/489-007-L21



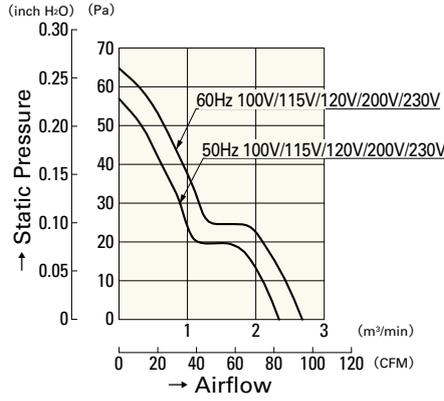
Model	Power cord length (L) [mm]	Mass [g]
489-037-L10	1,000	46
489-037-L21	2,100	76
489-037-L35	3,500	114
489-007-L10	1,000	48
489-007-L21	2,100	80

Airflow - Static Pressure Characteristics

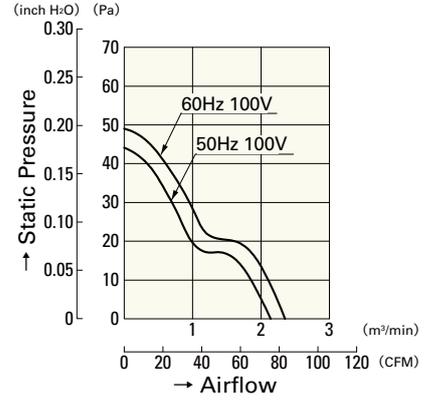
Standard



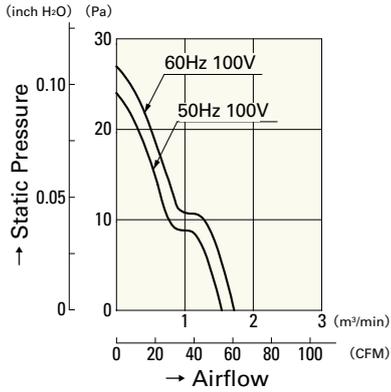
109S075UL **109S074UL**
109S078UL **109S072UL**



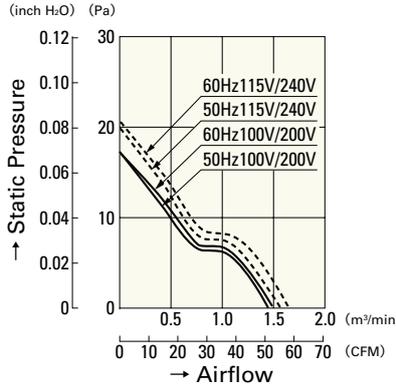
109S005 **109S005UL**
109S024 **109S024UL**
109S008 **109S008UL**
109S025 **109S025UL**



109S029UL

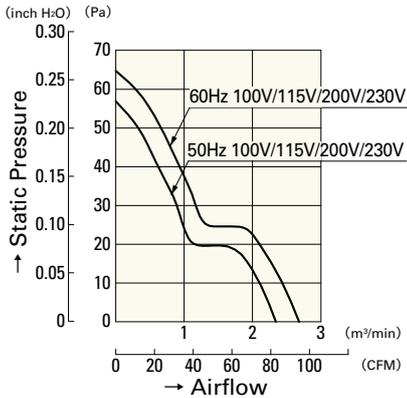


109S013
109S013UL

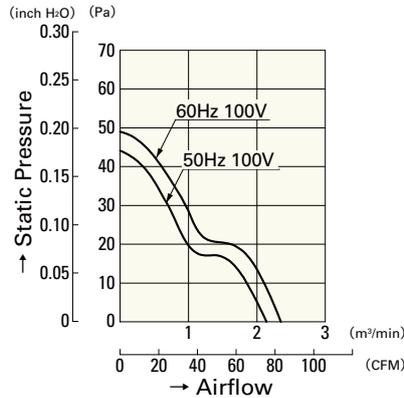


109S006 **109S006UL**
109S010 **109S010UL**

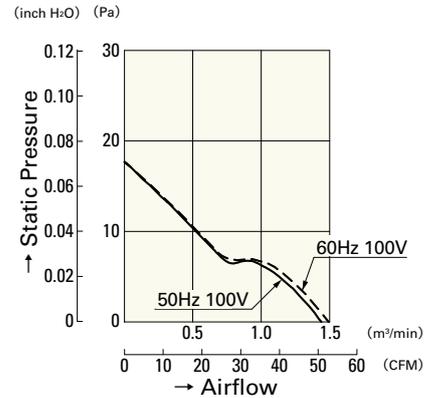
with Sensor



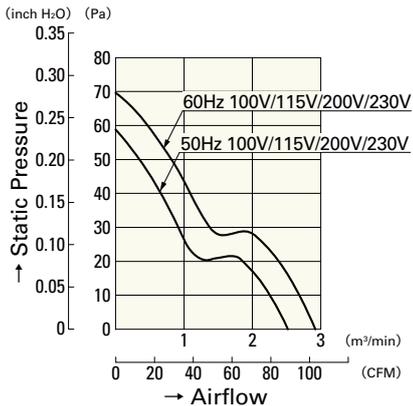
109S405UL **109S424UL**
109S408UL **109S425UL**



109S429UL



109S406UL



109S475UL **109S474UL**
109S478UL **109S472UL**

160mm sq.

San Ace160



Only standard fans (without sensors) have acquired CSA certification.

General Specifications

- Material..... Frame: Aluminum, 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)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between input terminal and frame)
- Dielectric Strength (With Sensor) ... Between AC input and DC input(Sensor output) : 50/60Hz 1,000VAC 1minute
Between AC input and G : 50/60Hz 1,500VAC 1minute,
Between G and DC input(Sensor output) : 50/60Hz 1,000VAC 1minute
- Sensor-Purpose Lead Wire ... ⊕ brown ⊖ black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range ... Voltage of each model ±10%

160×160×51mm (Mass : 1,100g / 1,100g (with Sensor))

Specifications Standard

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchHzO]	SPL [dB(A)]	Operating Temperature Range [°C]	Expected Life [h]
109-601	100	50/60	37.5/33	0.43/0.35	0.72/0.70	2,850/3,350	7.2/8.5 254.4/300.4	156.8/166.6 0.630/0.669	56/60	-30 to +60	25,000/60°C
109-604	115			0.39/0.31	0.62/0.61						
109-602	200			0.23/0.18	0.36/0.35						
109-603	230			0.21/0.16	0.32/0.31						

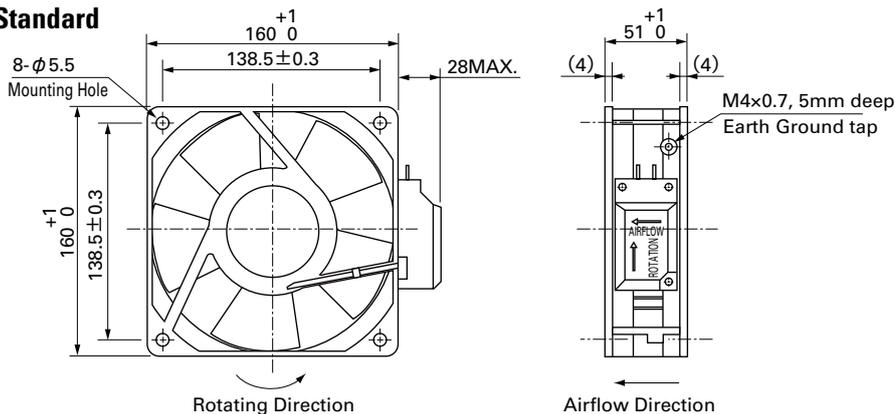
with Sensor

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchHzO]	SPL [dB(A)]	Operating Temperature Range [°C]	Expected Life [h]
109-641	100	50/60	37.5/33	0.43/0.35	0.72/0.70	2,850/3,350	7.2/8.5 254.4/300.4	156.8/166.6 0.630/0.669	56/60	-10 to +60	25,000/60°C
109-644	115			0.39/0.31	0.62/0.61						
109-642	200			0.23/0.18	0.36/0.35						
109-643	230			0.21/0.16	0.32/0.31						

Two types of power supplies, 5V (ITEM-20) and 12V (ITEM-30), are available in fans with sensor attached.

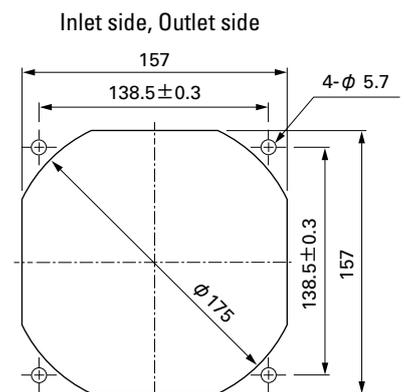
Dimensions (unit: mm)

Standard

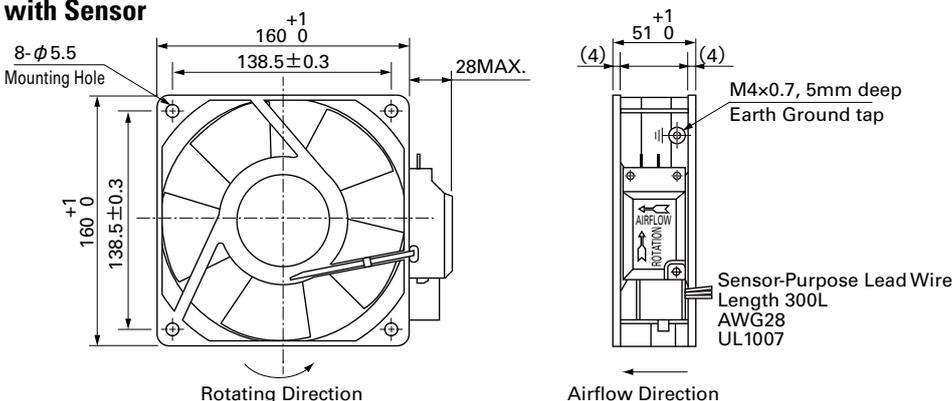


Reference Dimensions of

Mounting Holes and Vent Opening (unit: mm)

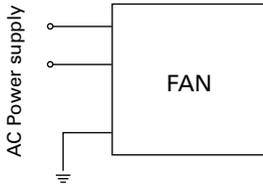


with Sensor

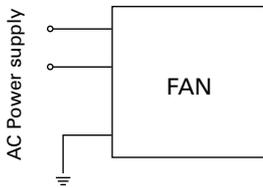


Wiring Diagram

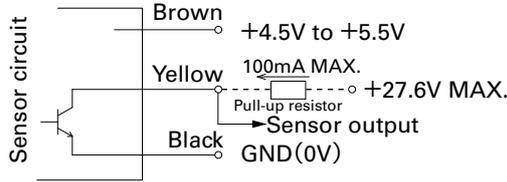
Standard



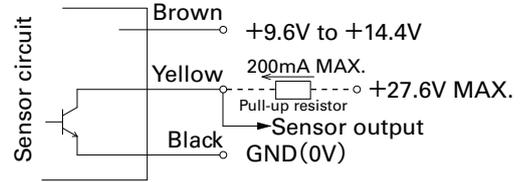
with Sensor (For fan power supply)



5V (ITEM-20)



12V (ITEM-30)



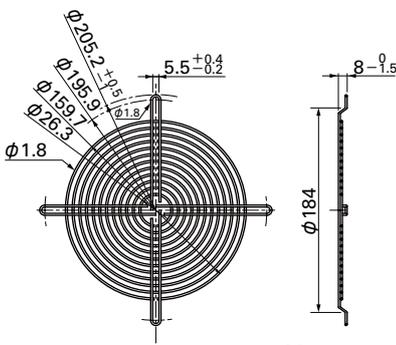
GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

Options (unit: mm)

Finger Guards

Model : 109-619E Surface treatment : Nickel-chrome plating (silver) Color

Inlet side, Outlet side

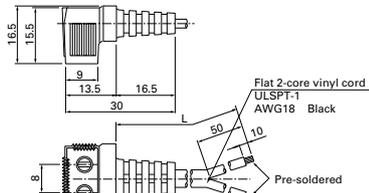


Mass : 85g

Plug Cord

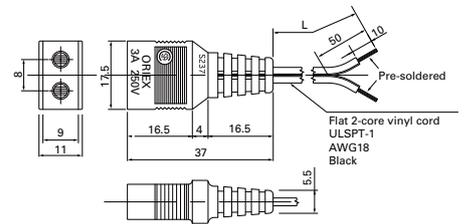
(UL/CSA CERTIFIED)
UL FILE No.E50197 CSA FILE No.LR67048
Model : 489-084-L10/489-084-L21

Flat 2-core vinyl cord
ULSPT-1
AWG18 Black



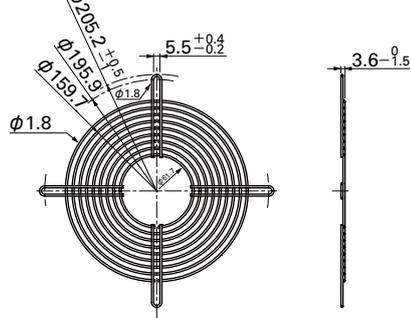
Model	Power cord length (L) [mm]	Mass [g]
489-084-L10	1,000	37
489-084-L21	2,100	70
489-086-L10	1,000	37
489-086-L21	2,100	70

(UL/CSA CERTIFIED)
UL FILE No.E50197 CSA FILE No.LR67048
Model : 489-086-L10/489-086-L21



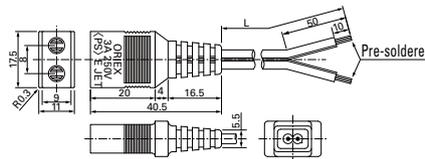
Model : 109-620 Surface treatment : Nickel-chrome plating (silver) Color

Outlet side



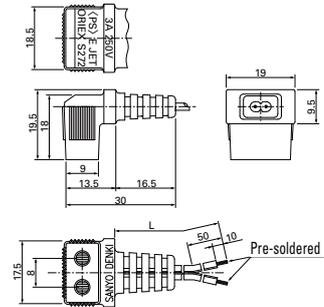
Mass : 74g

(Products compliant with Electrical Appliance and Material Safety Law)
Model : 489-1618-L10/489-1618-L21/489-1618-L28



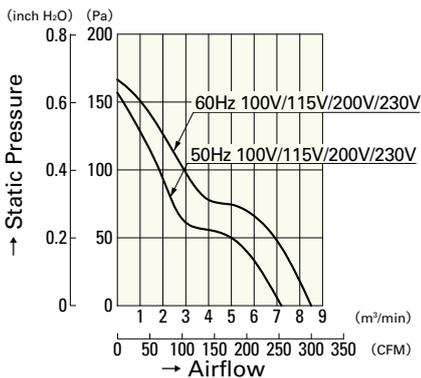
Model	Power cord length (L) [mm]	Mass [g]
489-1618-L10	1,000	34
489-1618-L21	2,100	63
489-1618-L28	2,800	83
489-1619-L10	1,000	34
489-1619-L21	2,100	64

(Products compliant with Electrical Appliance and Material Safety Law)
Model : 489-1619-L10/489-1619-L21

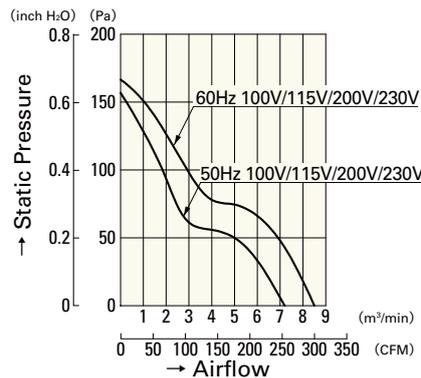


Airflow - Static Pressure Characteristics

Standard



with Sensor



109-601 109-604
109-602 109-603

109-641 109-644
109-642 109-643

φ172mm

San Ace 172



General Specifications

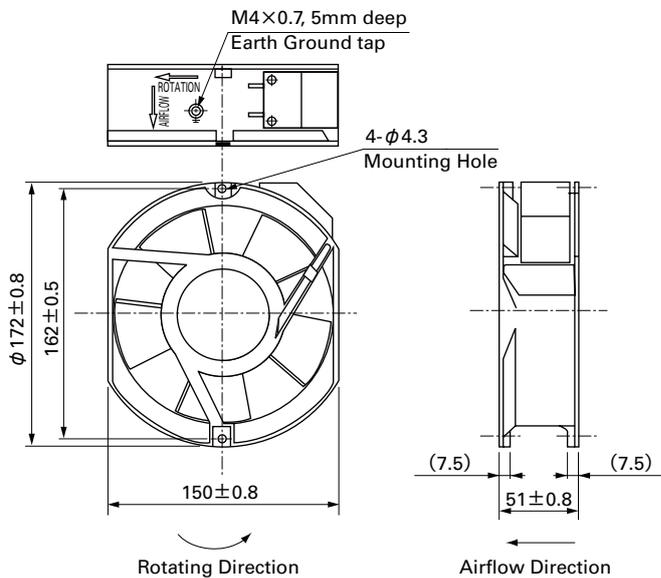
- Material Frame: Aluminum,
Impeller: Plastics (Flammability: UL94V-1)
- Expected Life Refer to specifications (L10:Survival rate: 90% at 60°C ,
rated voltage,and continuously run in a free air state)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between input terminal and frame)
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range ... Voltage of each model ±10%

φ172mm × 150mm × 51mm [Mass : 1,000g] **Sidecut type**

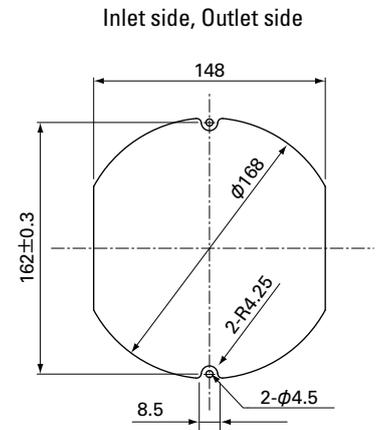
Specifications

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109S301	100	50/60	27/25	0.33/0.25	0.65/0.64	2,900/3,500	5.3/6.4 187.3/226.1	147/196 0.590/0.787	51/56	-30 to +60	25,000/60°C
109S304	115			0.29/0.22	0.55/0.54						
109S302	200			0.16/0.13	0.33/0.32						
109S303	230			0.14/0.11	0.28/0.27						

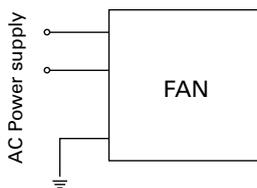
Dimensions (unit: mm)



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



Wiring Diagram

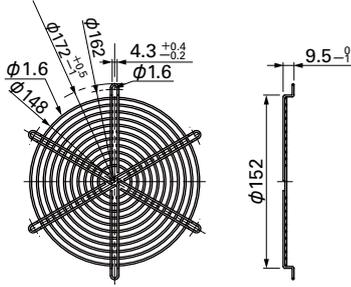


Options (unit: mm)

Finger Guards

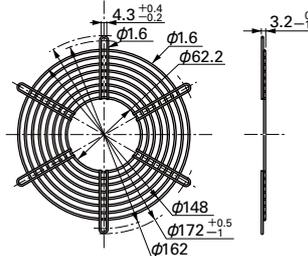
Model : 109-319E Surface treatment : Nickel-chrome plating (silver) Color
 : 109-319H : Cation electropainting (black)

Inlet side, Outlet side



Mass : 69g

Outlet side

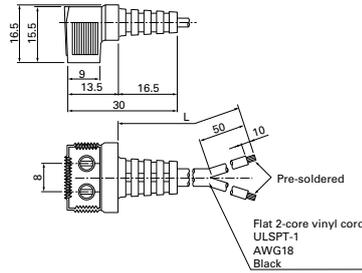
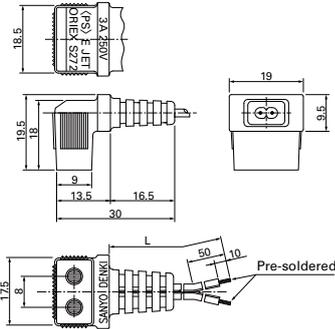


Mass : 53g

Plug Cord

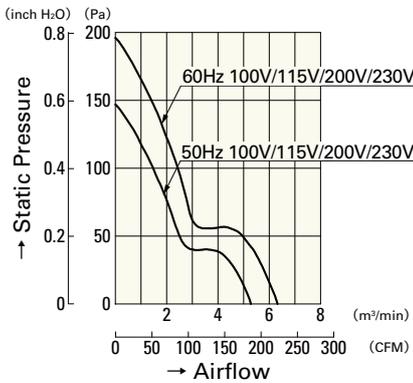
(Products compliant with Electrical Appliance and Material Safety Law)
 Model : 489-1619-L10/489-1619-L21

(UL/CSA CERTIFIED)
 UL FILE No.E50197 CSA FILE No.LR67048
 Model : 489-084-L10/489-084-L21



Model	Power cord length (L) [mm]	Mass [g]
489-1619-L10	1,000	34
489-1619-L21	2,100	64
489-084-L10	1,000	37
489-084-L21	2,100	70

Airflow - Static Pressure Characteristics



109S301	109S304
109S302	109S303

φ172mm

San Ace 172



General Specifications

- Material Frame: Aluminum,
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)
- Dielectric Strength 50/60Hz 1,500VAC 1minute (between input terminal and frame)
- Dielectric Strength (With Sensor) ... Between AC input and DC input(Sensor output)
: 50/60Hz 1,000VAC 1minute
Between AC input and G
: 50/60Hz 1,500VAC 1minute,
Between G and DC input(Sensor output)
: 50/60Hz 1,000VAC 1minute
- Sensor-Purpose Lead Wire ... ⊕ brown ⊖ black (Sensor) yellow
- Storage Temperature -30°C to +70°C (Non-condensing)
- Operating Voltage Range ... Voltage of each model ±10%

φ172mm × 51mm (Mass : 1,000g) **Round type**

Specifications Standard

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109-311	100	50/60	27/25	0.33/0.25	0.65/0.64	2,900/3,500	5.3/6.4 187.3/226.1	147/196 0.590/0.787	47/51	-30 to +60	25,000/60°C
109-314	115			0.29/0.22	0.55/0.54						
109-312	200			0.16/0.13	0.33/0.32						
109-313	230			0.14/0.11	0.28/0.27						

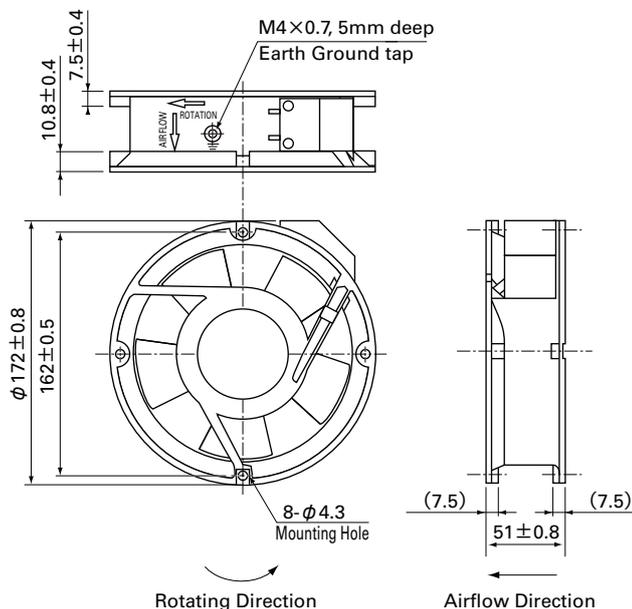
with Sensor

Model No.	Voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked Rotor Current [A]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Expected Life [h]
109-371	100	50/60	27/25	0.33/0.25	0.65/0.64	2,900/3,500	5.3/6.4 187.3/226.1	147/196 0.590/0.787	47/51	-10 to +60	25,000/60°C
109-374	115			0.29/0.22	0.55/0.54						
109-372	200			0.16/0.13	0.33/0.32						
109-373	230			0.14/0.11	0.28/0.27						

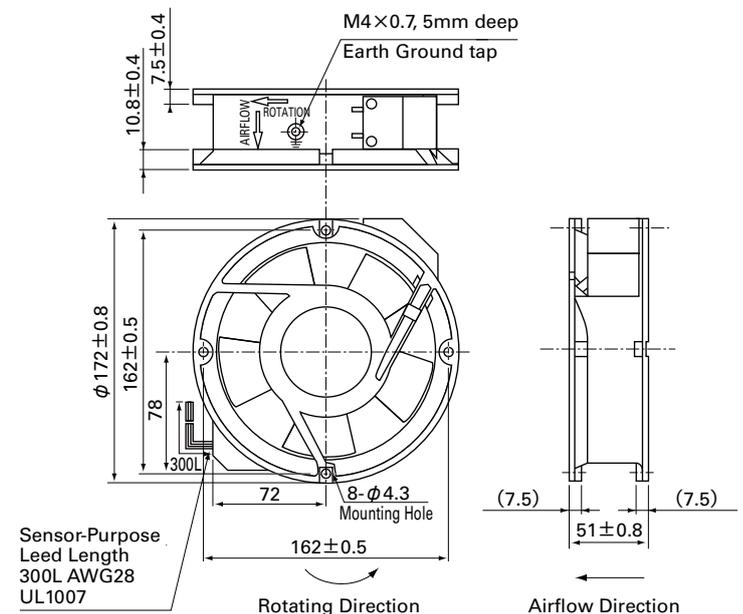
Two types of power supplies, 5V (the model No. with -20) and 12V (the model No. with -30), are available in fans with sensor attached.

Dimensions (unit: mm)

Standard



with Sensor

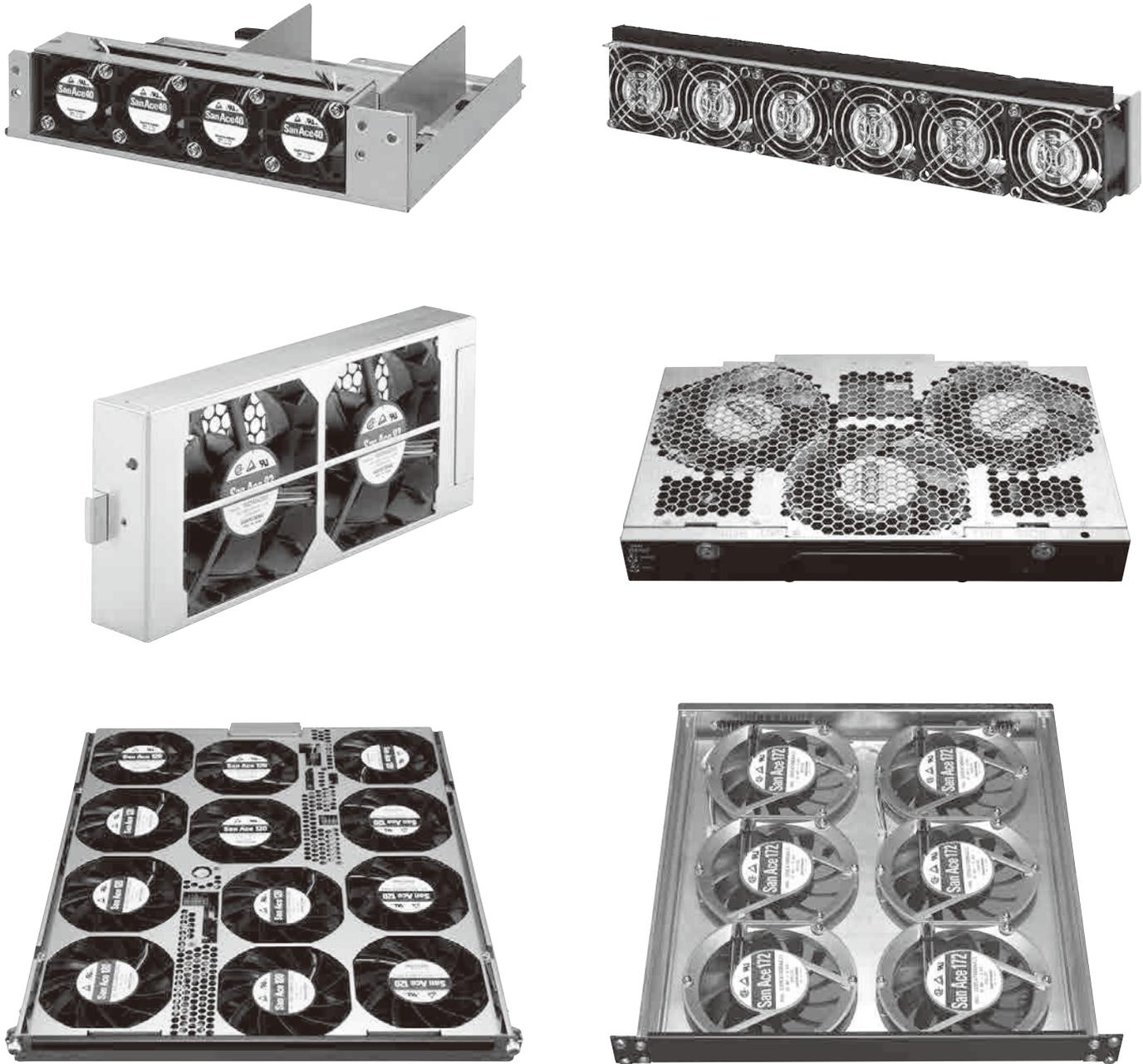


Cooling Fan Units CUSTOMIZED PRODUCTS

Features DC AC

We provide assembled fan units in accordance with the specification or requirements of the equipment. For use in communications equipment, servers, storage systems.

■ Example



Electrolytic Corrosion Proof Fans CUSTOMIZED PRODUCTS → p. 454

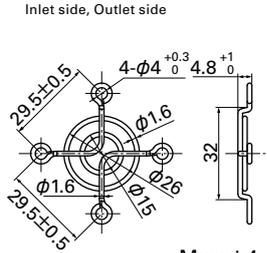
Features DC AC

This cooling fan prevents electrolytic corrosion of bearings even under conditions where electromagnetic noise is generated. Electrolytic corrosion of ball bearings is prevented by using ceramic balls in ball bearings. The ceramic material is an insulating material. Manufacturable to meet specifications of all San Ace series fans.

Dimensions (unit : mm)

36mm sq. type

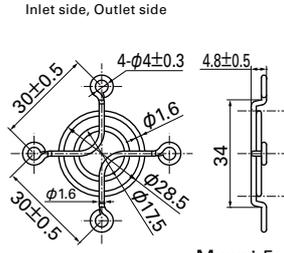
Model : 109-1050 Surface treatment : Nickel-chrome plating (silver) Color (silver)



Mass : 4g

38mm sq. type

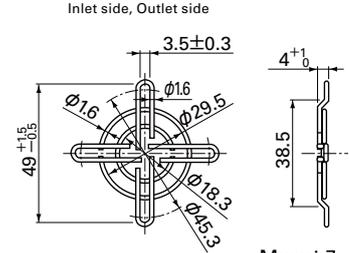
Model : 109-1065 Surface treatment : Nickel-chrome plating (silver) Color (silver)



Mass : 5g

40mm sq. type

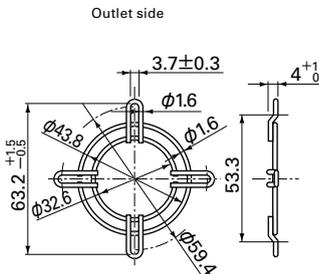
Model : 109-059 Surface treatment : Nickel-chrome plating (silver) Color (silver)
Model : 109-059H Surface treatment : Cation electropainting (black) Color (black)



Mass : 7g

52mm sq. type

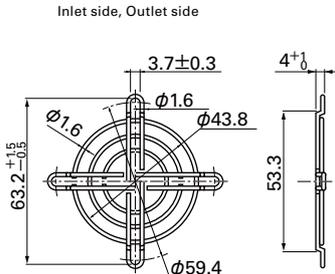
Model : 109-149 Surface treatment : Nickel-chrome plating (silver) Color (silver)



Mass : 7g

52mm sq. type

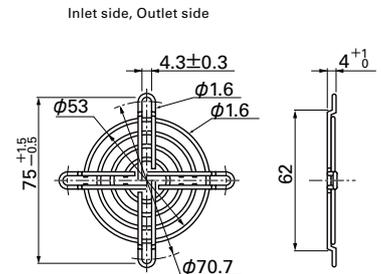
Model : 109-149E Surface treatment : Nickel-chrome plating (silver) Color (silver)



Mass : 9g

60mm sq. type

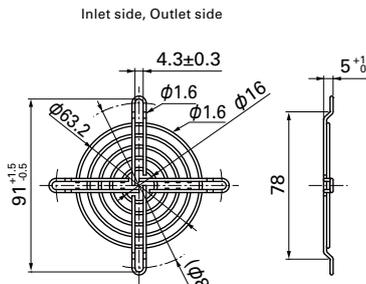
Model : 109-139E Surface treatment : Nickel-chrome plating (silver) Color (silver)
Model : 109-139H Surface treatment : Cation electropainting (black) Color (black)



Mass : 14.5g

70mm sq. type

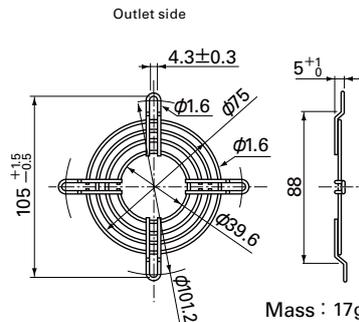
Model : 109-1128 Surface treatment : Nickel-chrome plating (silver) Color (silver)



Mass : 17g

80mm sq. type

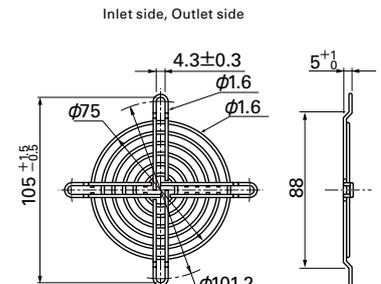
Model : 109-049C Surface treatment : Nickel-chrome plating (silver) Color (silver)



Mass : 17g

80mm sq. type

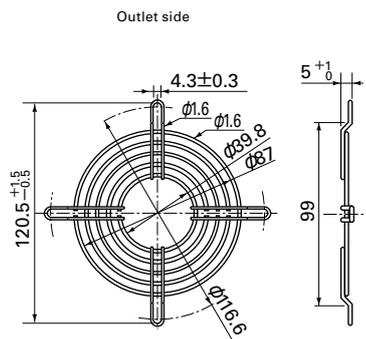
Model : 109-049E Surface treatment : Nickel-chrome plating (silver) Color (silver)
Model : 109-049H Surface treatment : Cation electropainting (black) Color (black)



Mass : 21g

92mm sq. type

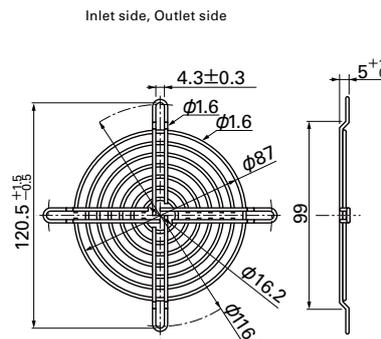
Model : 109-099C Surface treatment : Nickel-chrome plating (silver) Color (silver)



Mass : 22g

92mm sq., φ100mm type

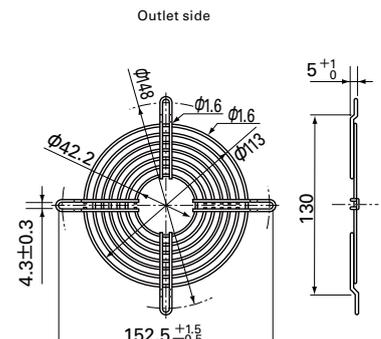
Model : 109-099E Surface treatment : Nickel-chrome plating (silver) Color (silver)
Model : 109-099H Surface treatment : Cation electropainting (black) Color (black)



Mass : 29g

120mm sq. type

Model : 109-019C Surface treatment : Nickel-chrome plating (silver) Color (silver)
Model : 109-019H Surface treatment : Cation electropainting (black) Color (black)

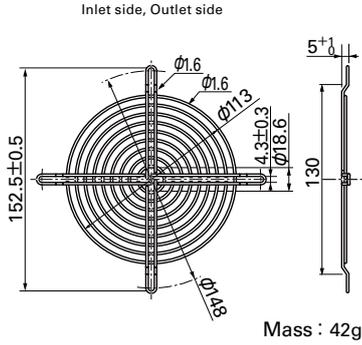


Mass : 32g

Dimensions (unit : mm)

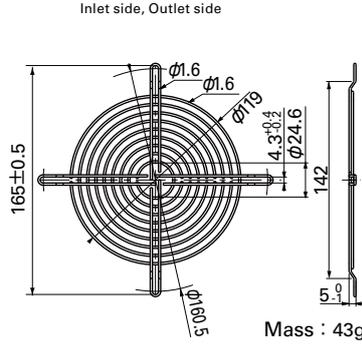
120mm sq. type

Model : 109-019E Surface treatment : Nickel-chrome plating Color (silver)
 : 109-019K : Cation electroplating (black)



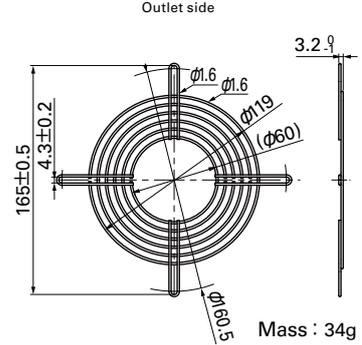
127mm sq., φ175mm type

Model : 109-722 Surface treatment : Nickel-chrome plating Color (silver)



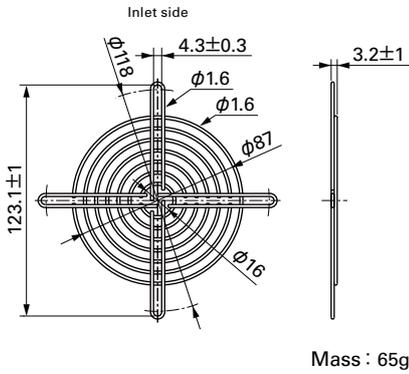
127mm sq. type

Model : 109-723 Surface treatment : Nickel-chrome plating Color (silver)



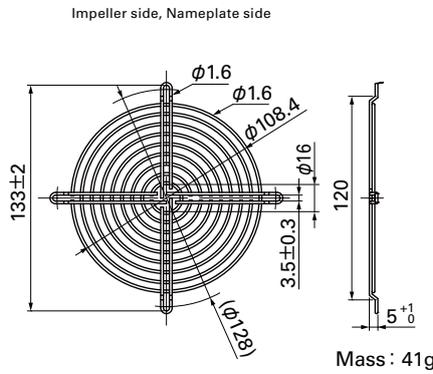
φ133mm type

Model : 109-1112 Surface treatment : Nickel-chrome plating Color (silver)



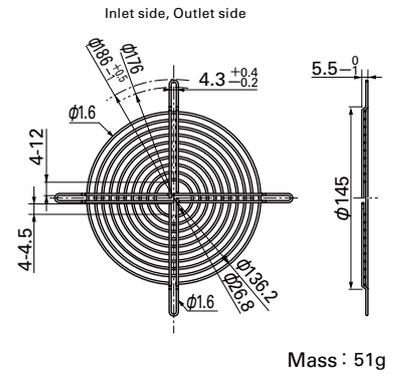
φ136mm sq. type

Model : 109-1139 Surface treatment : Nickel-chrome plating Color (silver)



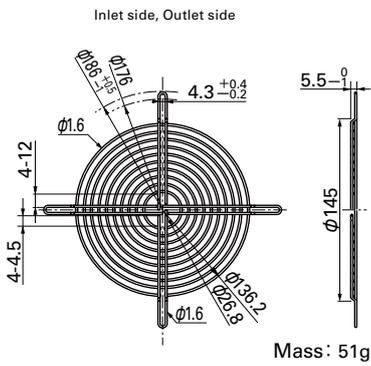
140mm sq. type

Model : 109-719 Surface treatment : Nickel-chrome plating Color (silver)



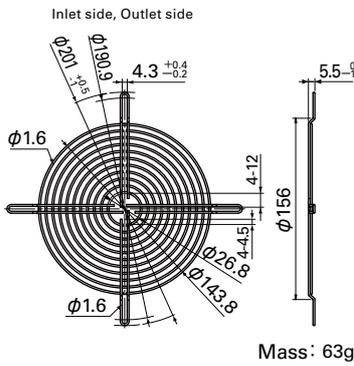
140mm sq. type

Model : 109-719H Surface treatment : Cation electroplating Color (black)



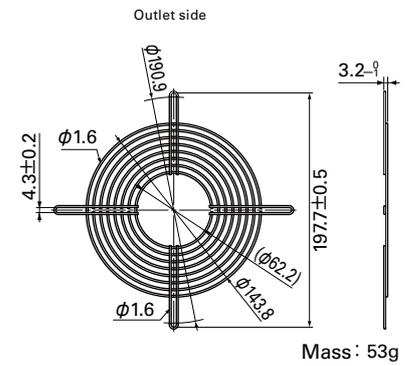
150mm sq. type

Model : 109-1051 Surface treatment : Nickel-chrome plating Color (silver)



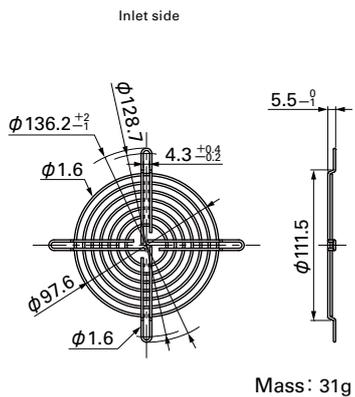
150mm sq. type

Model : 109-1052 Surface treatment : Nickel-chrome plating Color (silver)



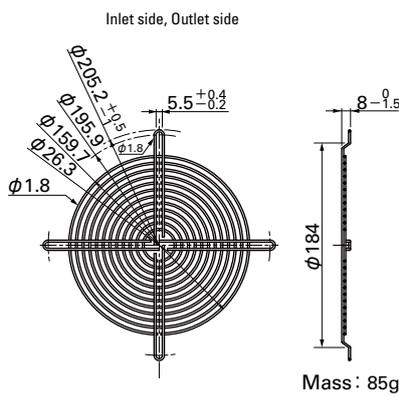
φ150mm type

Model : 109-1104 Surface treatment : Nickel-chrome plating Color (silver)
 : 109-1104H : Cation electroplating (black)



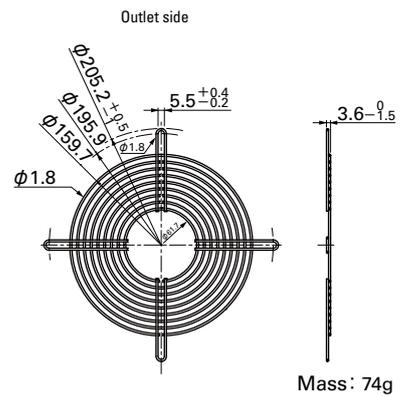
160mm sq. type

Model : 109-619E Surface treatment : Nickel-chrome plating Color (silver)
 Model : 109-619H : Cation electroplating (black)



160mm sq. type

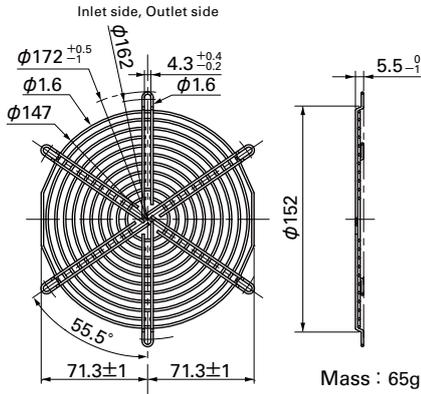
Model : 109-620 Surface treatment : Nickel-chrome plating Color (silver)



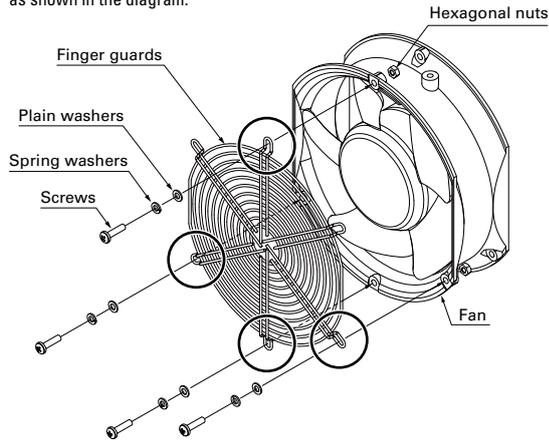
Dimensions (unit : mm)

φ172mm SideCut type

Model : 109-319J Surface treatment : Nickel-chrome plating (silver) Color (silver)
 Applicable Model: 9SG57**P5***/9GV57**H501
 9CR5748PG001/9WG5748P5*001

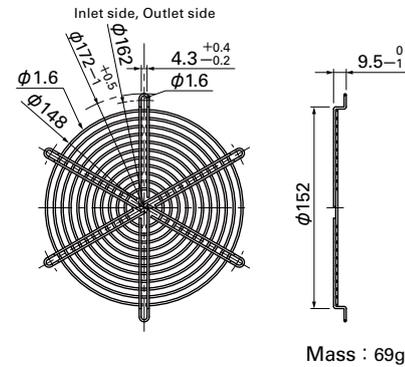


For the finger guard Model: 109-319J, fix the finger guard to four holes as shown in the diagram.



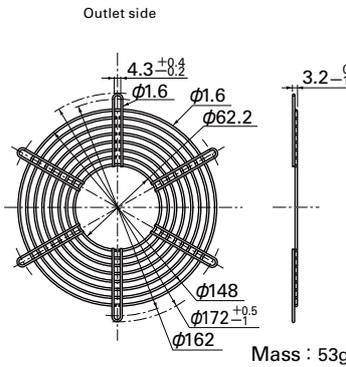
φ172mm SideCut, Round type

Model : 109-319E Surface treatment : Nickel-chrome plating (silver) Color (silver)
 : 109-319H : Cation electroplating (black)

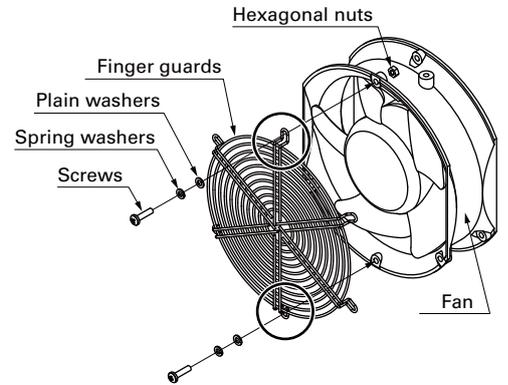


φ172mm SideCut, Round type

Model : 109-320 Surface treatment : Nickel-chrome plating (silver) Color (silver)

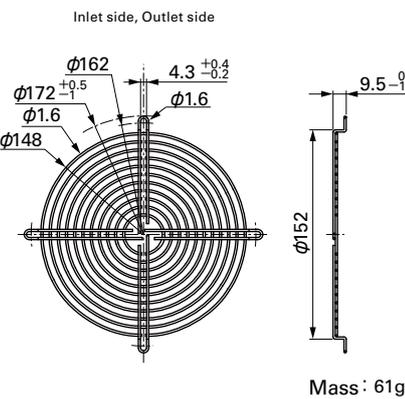


For the finger guard Model: 109-319E, 109-319H, 109-320, fix the finger guard to two holes as shown in the diagram. Do not fix it to any other holes.



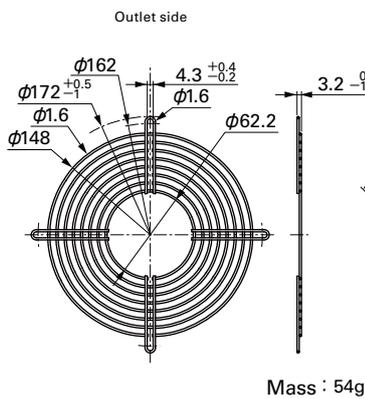
φ172mm Round type

Model : 109-1066 Surface treatment : Nickel-chrome plating (silver) Color (silver)



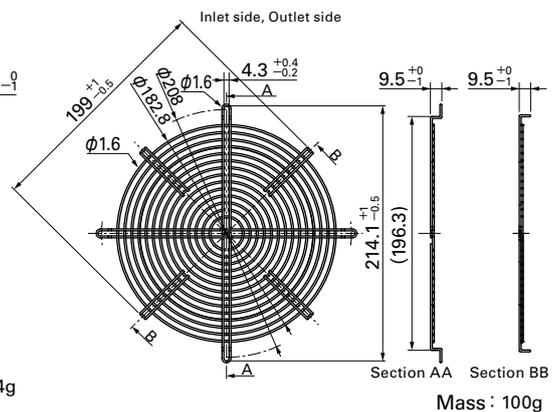
φ172mm Round type

Model : 109-1068 Surface treatment : Nickel-chrome plating (silver) Color (silver)



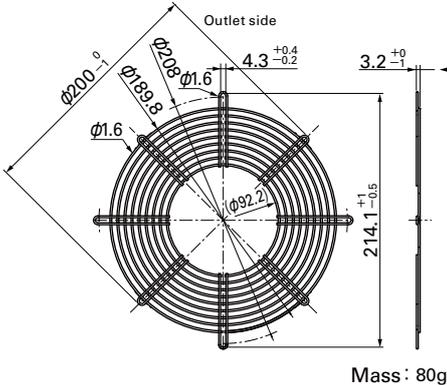
φ200mm type

Model : 109-1102 Surface treatment : Nickel-chrome plating (silver) Color (silver)
 Applicable Model: 9GV2048PG201



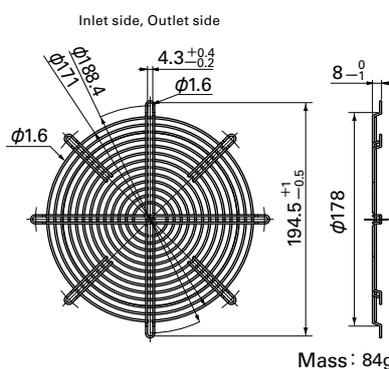
φ200mm type

Model : 109-1103 Surface treatment : Nickel-chrome plating (silver) Color (silver)
 Applicable Model: 9GV2048PG201



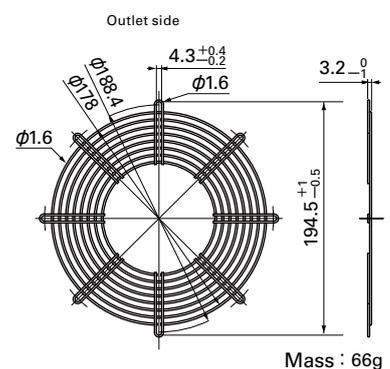
φ200mm type

Model : 109-720 Surface treatment : Nickel-chrome plating (silver) Color (silver)
 : 109-720H : Cation electroplating (black)
 Applicable Model: 109E2024***/9EC20**001



φ200mm type

Model : 109-721 Surface treatment : Nickel-chrome plating (silver) Color (silver)
 : 109-721H : Cation electroplating (black)
 Applicable Model: 109E2024***/9EC20**001



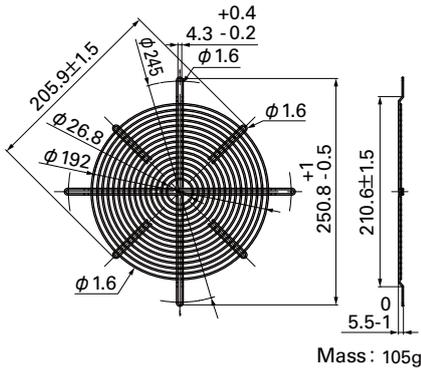
Option

Finger guards

DC AC

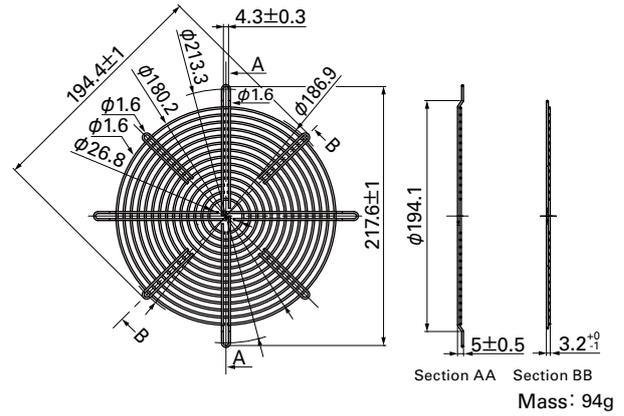
φ221mm type

Model : 109-1138 Surface treatment : Nickel-chrome plating Color (silver)



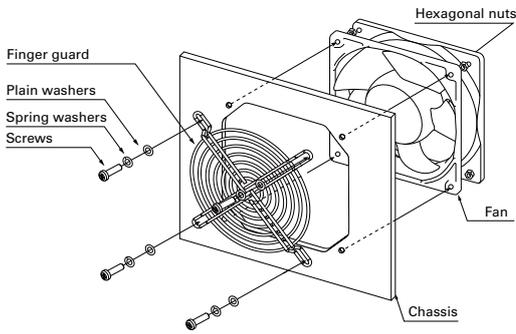
φ225mm type

Model : 109-1137 Surface treatment : Nickel-chrome plating Color (silver)

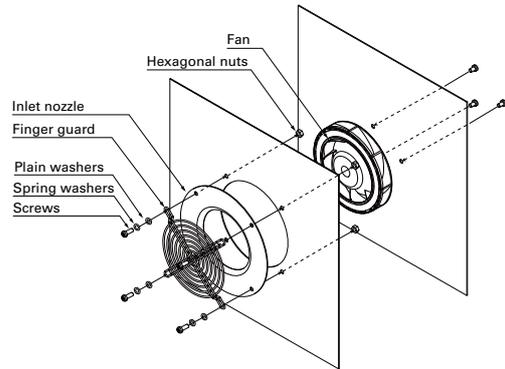


Mounting example

Axial fan



Centrifugal fan



Inlet nozzle for centrifugal fan and splash proof centrifugal fan

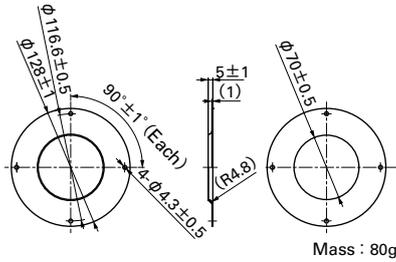
DC

Nozzle mounted in fan inlet side to adjust the flow of introduced air. Material: Steel sheet

Dimensions (unit : mm)

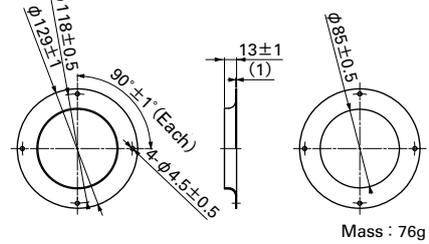
φ100mm type

Model : 109-1080 Surface treatment : Electro nickel plating Color (silver)



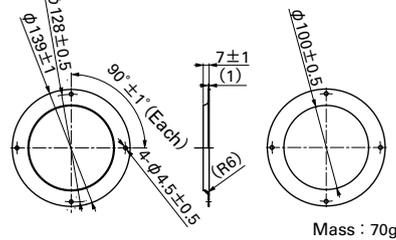
φ133mm type

Model : 109-1069 Surface treatment : Electro nickel plating Color (silver)
: 109-1069H : Cation electropainting (black)



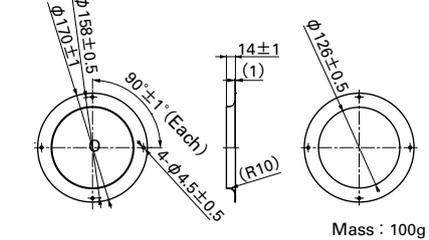
φ150mm type

Model : 109-1081 Surface treatment : Electro nickel plating Color (silver)
: 109-1081H : Cation electropainting (black)



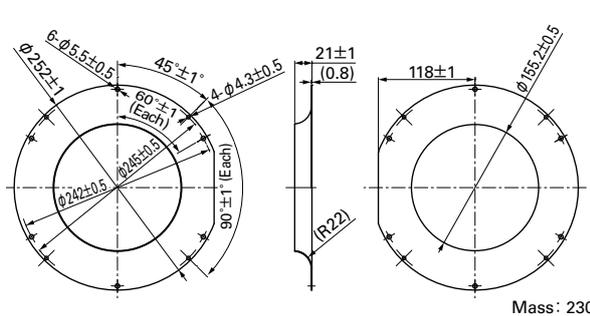
φ175mm type

Model : 109-1073 Surface treatment : Electro nickel plating Color (silver)
: 109-1073H : Cation electropainting (black)



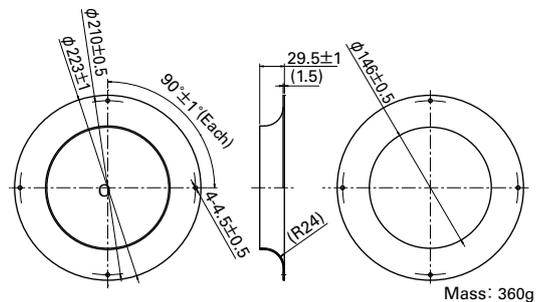
φ221mm type

Model : 109-1135 Surface treatment : Electro nickel plating Color (silver)



φ225mm type

Model : 109-1134 Surface treatment : Electro nickel plating Color (silver)

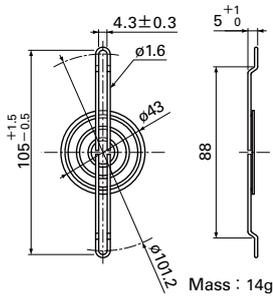


It is a metallic piece that protects materials from the adverse effects of electromagnetic noise sources. It provides electromagnetic shielding. It is attached to the casing of a device by means of the fan fixing screw(s). Ground the devices equipped with an EMC guard.

Dimensions (unit : mm)

80mm sq. type

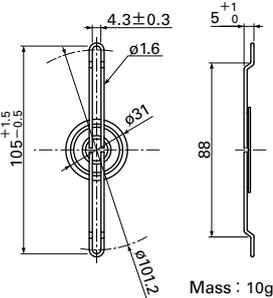
Model : 109-1038 Surface treatment : Nickel-chrome plating Color (silver)



Mass : 14g

80mm sq. type

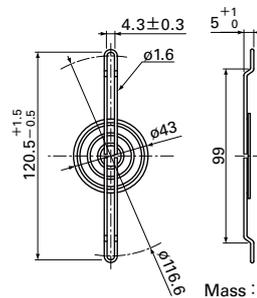
Model : 109-1039 Surface treatment : Nickel-chrome plating Color (silver)



Mass : 10g

92mm sq. type

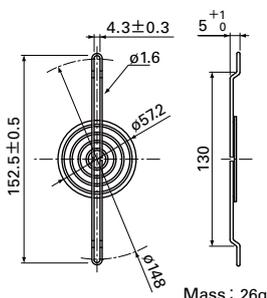
Model : 109-1040 Surface treatment : Nickel-chrome plating Color (silver)



Mass : 15g

120mm sq. type

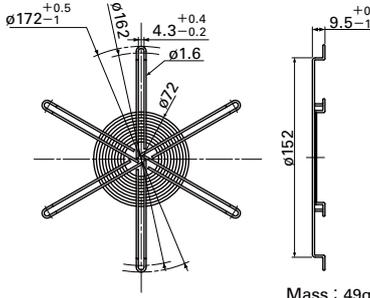
Model : 109-1037 Surface treatment : Nickel-chrome plating Color (silver)



Mass : 26g

φ172mm type

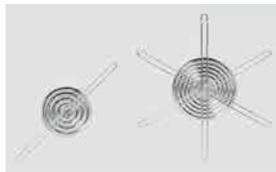
Model : 109-1036 Surface treatment : Nickel-chrome plating Color (silver)



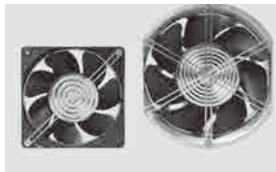
Mass : 49g

EMC guard

Dimensions of fans (mm)	Representative fans model numbers	EMC guards model numbers
80×80×15	109P08*	109-1039
	109P08*	109-1038
80×80×20	9GA08*	109-1039
	109L08* 9GV08*	109-1038
80×80×25	109R08* 9A08* 9GA08*	109-1039
	109P08* 9GA08*	109-1038
	9G08* 9GA08*	109-1039
80×80×32	9GV08* 9HV08*	109-1038
	109L09* 109P09*	109-1040
	9G09* 9GV09* 9GA09*	109-1040
120×120×25	9G12* 9GV12*	109-1037
	9GL12* 9LB12* 9G12* 9GV12* 9HV12*	109-1037
φ172×25	109E47*	109-1036
φ172×51	109L17* 9GV57* 109E17* 109E57* 9SG57*	109-1036



EMC guard



attached to a cooling fan

Resin finger guards

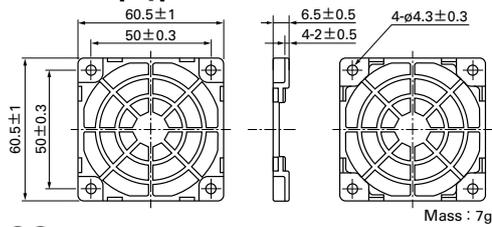
DC AC

Dimensions(unit : mm)

Material Frame : Resin (PPE+PS) UL File No.E82268 94V-0

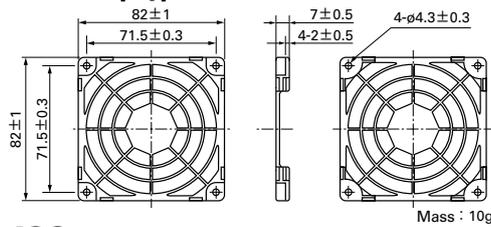
60mm sq. type

Model : 109-1003G



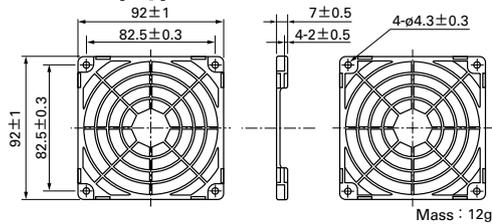
80mm sq. type

Model : 109-1002G



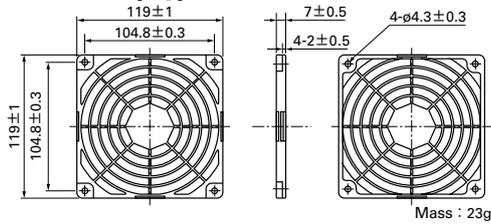
92mm sq. type

Model : 109-1001G



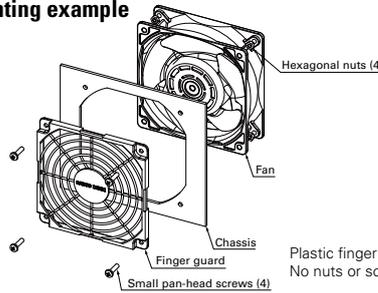
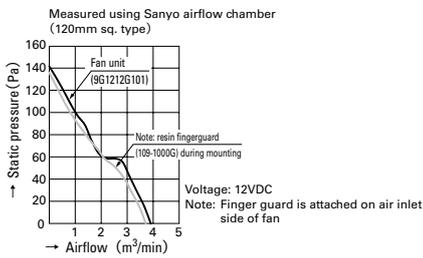
120mm sq. type

Model : 109-1000G



Airflow and Static Pressure Characteristics

Mounting example



Plastic finger guards are placed on both the intake and exhaust sides of the fan. No nuts or screws for use in attachment included.

Resin filter kits

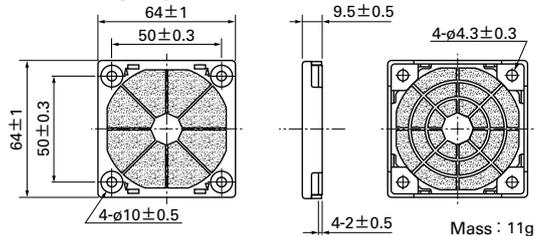
DC AC

Dimensions (unit : mm)

Material Guard, cover : Resin (PPE+PS) UL File No.E82268 94V-0
Filter : Polyurethane foam UL File No.E74916(S) 94HF-1

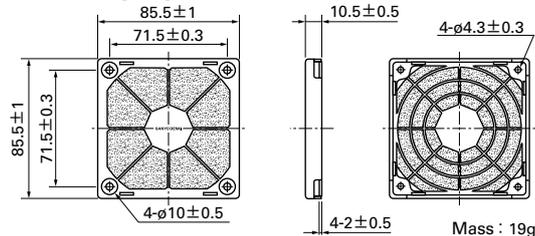
60mm sq. type

Model : 109-1003F13 (13PPI) 109-1003F20 (20PPI)
: 109-1003F30 (30PPI) 109-1003F40 (40PPI)



80mm sq. type

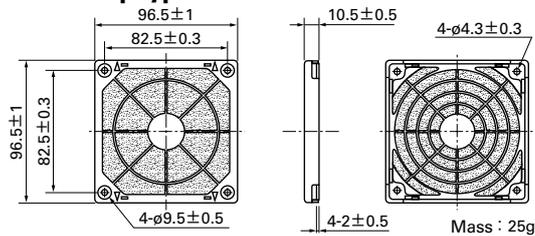
Model : 109-1002F13 (13PPI) 109-1002F20 (20PPI)
: 109-1002F30 (30PPI) 109-1002F40 (40PPI)



Replacement filter (5 sheets each)
60mm sq. type
109-1003M13 (13PPI)
109-1003M20 (20PPI)
109-1003M30 (30PPI)
109-1003M40 (40PPI)

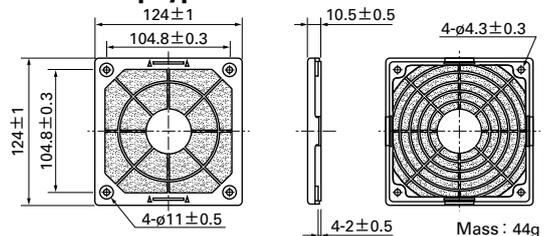
92mm sq. type

Model : 109-1001F13 (13PPI) 109-1001F20 (20PPI)
: 109-1001F30 (30PPI) 109-1001F40 (40PPI)



120mm sq. type

Model : 109-1000F13 (13PPI) 109-1000F20 (20PPI)
: 109-1000F30 (30PPI) 109-1000F40 (40PPI)



80mm sq. type
109-1002M13 (13PPI)
109-1002M20 (20PPI)
109-1002M30 (30PPI)
109-1002M40 (40PPI)

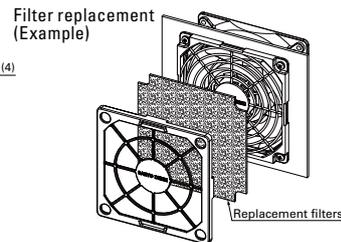
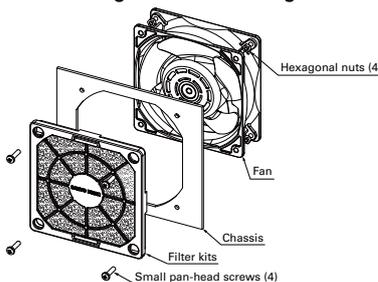
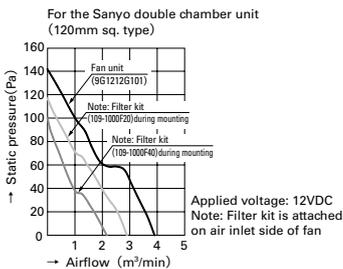
92mm sq. type
109-1001M13 (13PPI)
109-1001M20 (20PPI)
109-1001M30 (30PPI)
109-1001M40 (40PPI)

120mm sq. type
109-1000M13 (13PPI)
109-1000M20 (20PPI)
109-1000M30 (30PPI)
109-1000M40 (40PPI)

PPI Particles Per Inch : Indicates the number of holes per inch. Note that the higher the number, the finer the grain of the sponge.

Airflow and Static Pressure Characteristics

Reference Diagram For Mounting



● Replacement filters can be replaced by taking off the front part of the filter kit. There is no need to remove the screws.

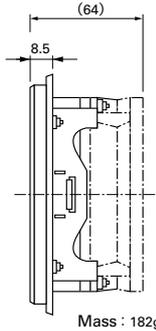
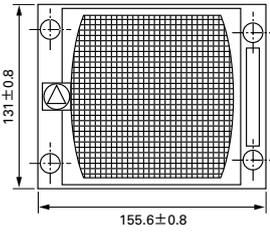
● Filter kit is one of the option to keep air in the chassis clean filtering dust in external atmosphere when pulling-air cooling is implemented. The filter kit is hooked up through mounting hole of fan frame with screw as well as finger guard. Some performances (airflow & static pressure) of the fan motor decreases when filter kit is hooked up. ● This Filter Kit is composed of 3 components, including a guard, a filter and a cover. It is delivered as a finished product at delivery, saving assembly time when mounting. It can be mounted by inserting a screw in the apertures of the cover. ● The filter and cover can be easily removed from the guard with one touch. There is no need for fan removal when undertaking maintenance. ● Operating temperature limit is between -10°C to +60°C (non condensing). ● The filter will deteriorate with age, and the level of deterioration will vary upon usage conditions. Please be aware that the filter has a greater tendency to deteriorate under high temperature and humidity. For long-term storage, please store under the temperature range of 10°C to 30°C, humidity range of 20% to 65%. Usage and storage period is approximately 2 years. ● Cooling ability decreases with filter contamination due to clogging. Filter replacement is recommended approximately every six months of usage. Please replace the filter if deterioration or clogging is seen at inspection. ● When replacing the filter, please use genuine SANYO DENKI filters. ● Do not water-wash the filter. ● Avoid use and storage under high temperature or humidity, direct sunlight or exposure to ultraviolet light, or in corrosive gas. ● No nuts or screws for use in attachment included.

Applicable models : AC Fan 120×120×38mm

Neither filter kit nor screen kit can be installed on ACDC fans and AC fans with sensor.
Please evaluate it by assembly filter kits on the device.

Dimensions (unit : mm)

Model : 109-018

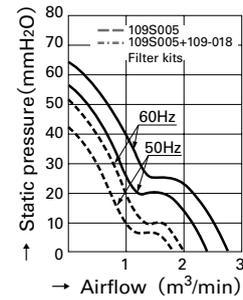


Material
Steel Wire Mesh : Stainless 16-mesh nets in 3 layers
Cover : Resin
Metal fittings : Steel (chromate-plated)

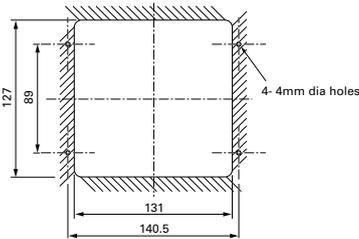
Mass : 182g

Airflow - Static Pressure Characteristics

(by SANYO airflow chamber)

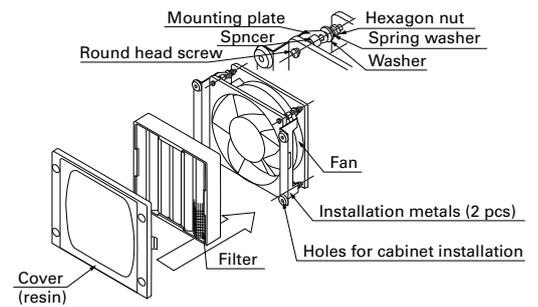


Reference Dimensions Of Mounting Holes (unit : mm)



The parts shown in the installation diagram (nuts, washers, and screws) are included.

Mounting Example

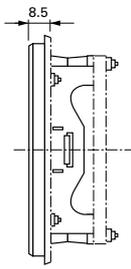
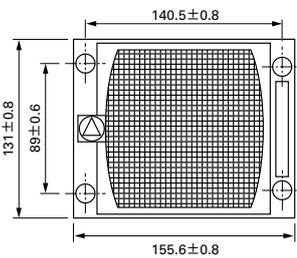


Applicable models : AC Fan 120×120×38mm

Neither filter kit nor screen kit can be installed on ACDC fans and AC fans with sensor.

Dimensions (unit : mm)

Model : 109-020

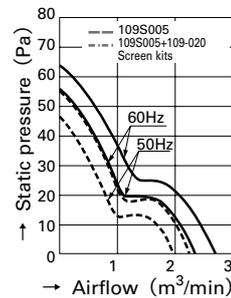


Material
Steel Wire Mesh : Stainless 16-mesh nets in 1 layers
Cover : Resin
Metal fittings : Steel (chromate-plated)

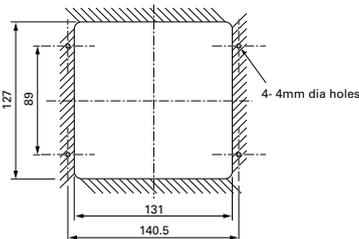
Mass : 135g

Airflow - Static Pressure Characteristics

(by SANYO airflow chamber)

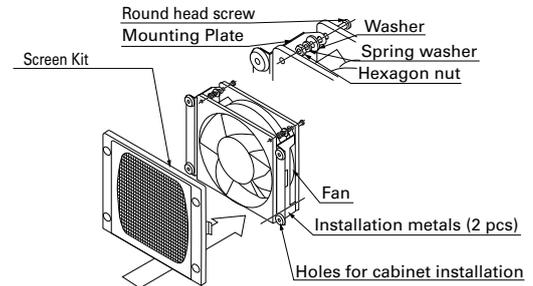


Reference Dimensions Of Mounting Holes (unit : mm)



The parts shown in the installation diagram (nuts, washers, and screws) are included.

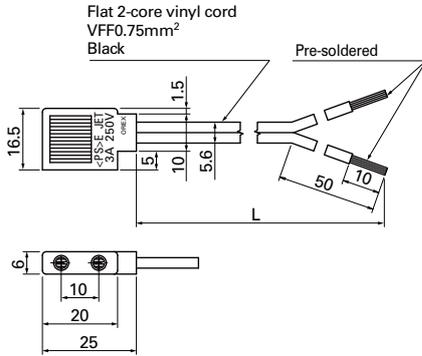
Mounting Example



Products Compliant with Electrical Appliance and Material Safety Law (unit : mm)

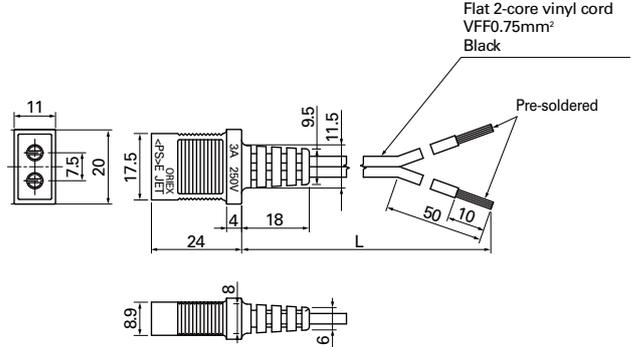
For 80×80×42mm

Model	Power cord length (L) [mm]	Mass [g]
489-008-L10	1,000	30
489-008-L21	2,100	61
489-008-L35	3,500	99



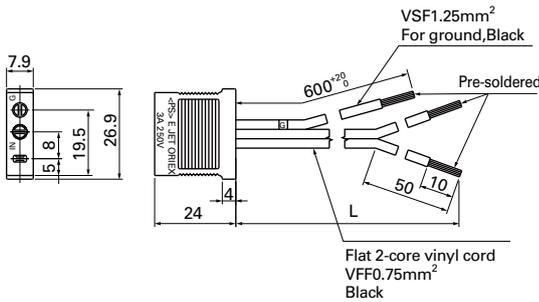
For 80×80×25mm 80×80×38mm 92×92×25mm 120×120×25mm

Model	Power cord length (L) [mm]	Mass [g]
489-016-L10	1,000	34
489-016-L21	2,100	64



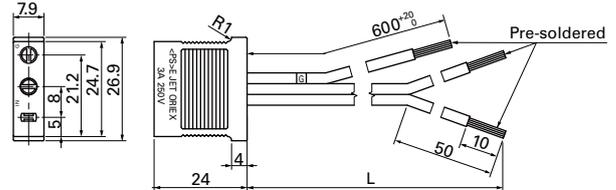
For 120×120×38mm (not including AC/DC fan)

Model	Power cord length (L) [mm]	Mass [g]
489-006-L10	1,000	47
489-006-L21	2,100	76
489-006-L35	3,500	114



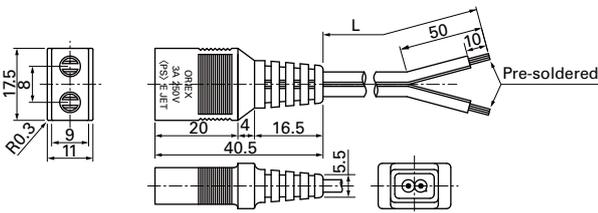
For 120×120×38mm (not including AC/DC fan)

Model	Power cord length (L) [mm]	Mass [g]
489-037-L10	1,000	46
489-037-L21	2,100	76
489-037-L35	3,500	114



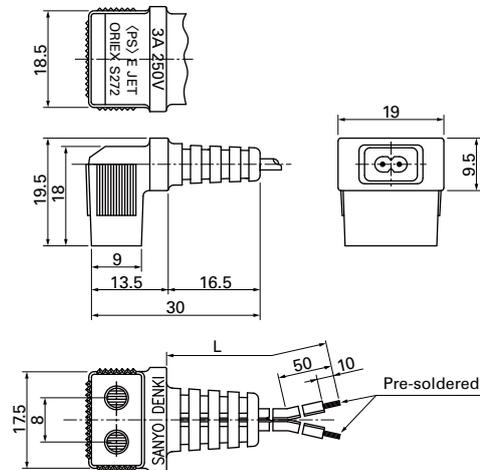
For 160×160×51mm

Model	Power cord length (L) [mm]	Mass [g]
489-1618-L10	1,000	34
489-1618-L21	2,100	63
489-1618-L28	2,800	83



For φ172mm×51mm φ172×150×51mm 160×160×51mm

Model	Power cord length (L) [mm]	Mass [g]
489-1619-L10	1,000	34
489-1619-L21	2,100	64

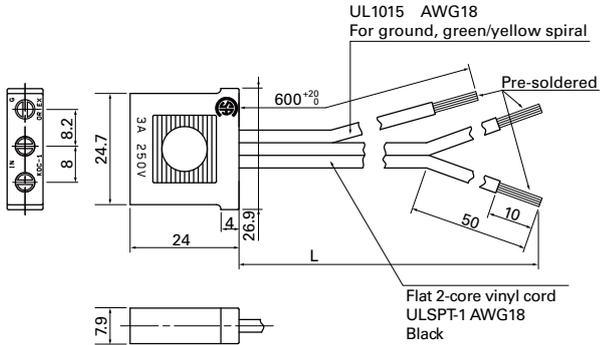


●Be careful not to damage the plug/cord when taking them out of the package.

UL/CSA Certified (unit : mm) **UL FILE No.: E50197** **CSA FILE No.: LR67048**

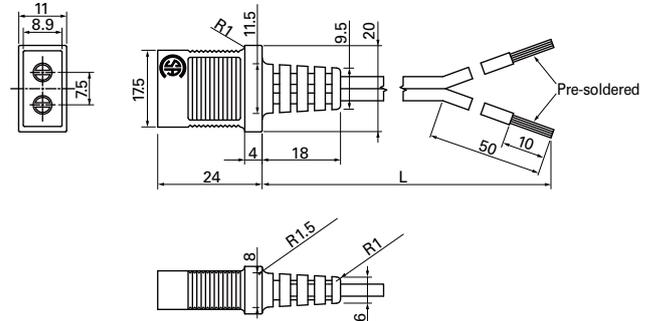
For 120×120×38mm (not including AC/DC fan)

Model	Power cord length (L) [mm]	Mass [g]
489-007-L10	1,000	48
489-007-L21	2,100	80



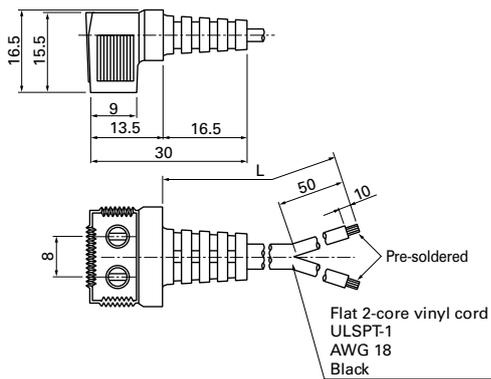
For 80×80×25mm 80×80×38mm 92×92×25mm

Model	Power cord length (L) [mm]	Mass [g]
489-047-L10	1,000	38
489-047-L21	2,100	71



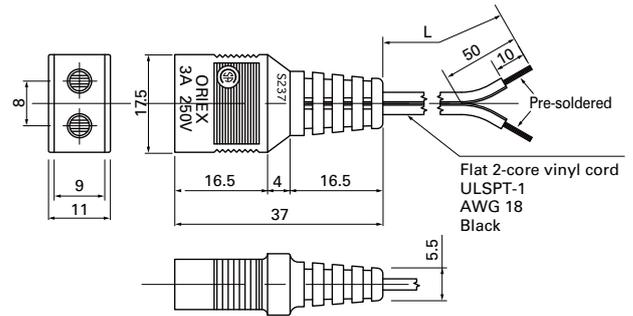
For φ172mm×51mm φ172×150×51mm 160×160×51mm

Model	Power cord length (L) [mm]	Mass [g]
489-084-L10	1,000	37
489-084-L21	2,100	70



For 160×160×51mm

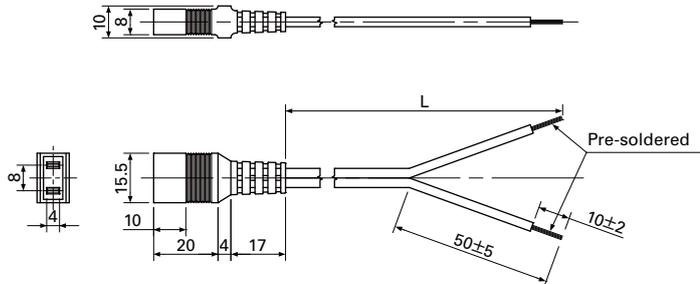
Model	Power cord length (L) [mm]	Mass [g]
489-086-L10	1,000	37
489-086-L21	2,100	70



Option

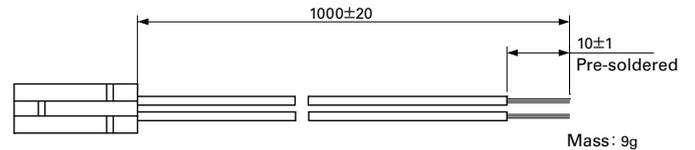
Products compliant with Electrical Appliance and Material Safety Law, UL/CSA [c-UL] Certified (unit : mm) **UL FILE No.E43202**

Model	Power cord length (L) [mm]	Mass [g]
489-1635-L10	1,000	38
489-1635-L21	2,100	74



Wiring Harness for Sensor

Model: 489-1636



● Be careful not to damage the plug/cord when taking them out of the package.

Recommended connectors for DC fans

DC

Manufacturer	2 pins Housing model number	3 pins Housing model number	4 pins Housing model number	Contact model number
MOLEX	22-01-1022:P/N 5051-02	22-01-1032:P/N 5051-03 22-01-3037:P/N 2695-03RP	22-01-1042:P/N 5051-04	08-70-0064:P/N 5159T
				08-70-0048:P/N 5159PBT
				39-00-0372:P/N 2759T
	43025-0200	—	43025-0400	43030-0001
	51191-0200	51191-0300	51191-0400	43030-0002
50-37-5023:P/N 5264-02	50-37-5033:P/N 5264-03	50-37-5043:P/N 5264-04	43030-0003	
51191-0200	51191-0300	51191-0400	50802-9001	
			08-70-1039:P/N 5263PBT	
50-37-5023:P/N 5264-02	50-37-5033:P/N 5264-03	50-37-5043:P/N 5264-04	39-00-0059:P/N 5556PBT	
39-01-2020:P/N 5557-02R	—	39-01-2040:P/N 5557-04R	39-00-0038:P/N 5556T	
Tyco Electronics	171822-2	171822-3	171822-4	170262-1
	179228-2	179228-3	179228-4	179227-1
Hirose	DF1B-2EP-2.5RC	DF1B-3EP-2.5RC	—	DF1B-2428PCF
	DF3-2EP-2C	DF3-3EP-2C	DF3-4EP-2C	DF3-EP2428PCF
	DF3AA-2EP-2C	DF3AA-3EP-2C	DF3AA-4EP-2C	
Japan Solderless Terminals	EHR-2	EHR-3	EHR-4	SEH-001T-P0.6
	SMP-02V-BC	SMP-03V-BC	SMP-04V-BC	SHF-001T-0.8BS
	SMP-02V-NC	SMP-03V-NC	—	
	H2P-SHF-AA	H3P-SHF-AA	—	
	PHR-2	PHR-3	PHR-4	SPH-002T-P0.5S
	XAP-02V-1	XAP-03V-1	XAP-04V-1	SXA-001T-P0.6
	XMP-02V	XMP-03V	—	
	XHP-2	XHP-3	XHP-4	SXH-001GU-P0.6
	SMR-02V-B	SMR-03V-B	SMR-04V-B	SXH-001T-P0.6
	SMR-02V-N	SMR-03V-N	SMR-04V-N	SYM-001T-P0.6

Recommended tubes and cable ties for DC fan

DC

	Manufacturer	Representative model numbers	Specifications	UL File No.
PVC tube	YAMAICHI CHEMICAL	YET-300H	105°C 300V VW-1	E55011
	IWASE KAGAKU KOGYO	AH-3		E56036
Thermal contraction tube	SUMITOMO ELECTRIC	SUMITUBE® F2 (Z)	125°C 600V VW-1	E48762
	SUMI-PAC	SUMITUBE® F32		
Cable tie	THOMAS & BETTS	TY-23M	UL94V-2	E49405
	PANDUIT	BT1M		E56854
	HellermannTyton	T18R		E64962

Note : The specifications in this table are for reference purposes only. When selecting, please check catalogs of each brand.

Overview and Characteristics of Fan

Overview DC AC

A cooling fan is widely used to extend life of your system by cooling off heat of the system that many electrical components are mounted in a very high density and dissipating heat. Since we SANYO DENKI developed "San Ace" which is the first AC fan in Japan in 1965, we have increased fan motor lineup until now meeting customer's needs rapidly based on our tremendous career. We SANYO DENKI will continue to develop new fans with high airflow, low noise, low vibration, and energy-saving design.

Characteristics DC AC

We can roughly divide fan into two types which are AC and DC.

AC Fans

SANYO DENKI succeeded in the mass-production of AC fans in 1965. SANYO DENKI was the first Japanese manufacturer to have succeeded at this.

- High performance
- High reliability
- Safety

DC Fans

SANYO DENKI succeeded in the mass-production of DC fans in 1982.

- High performance
- Low power consumption
- Low vibration
- Low leakage of flux
- High reliability

SANYO DENKI currently has a wider variety of products like Long Life Fan, CPU cooler, Splash Proof Fan, and Oil Proof Fan etc to meet all customer needs.

Guideline in Selecting a Fan

How to select an appropriate fan DC AC

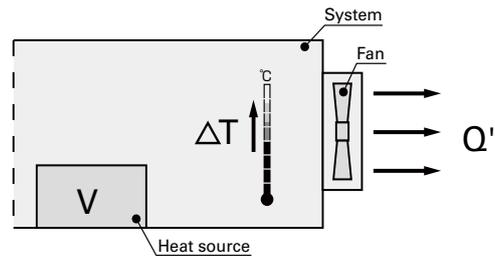
The following example is a guideline regarding how to select an appropriate fan for cooling your system

1. Determining of your system specifications and conditions

Determine the temperature rise inside your system and obtain the total heating value inside your system on the basis of its inputs and outputs.

Example

- V : Total heating value of your system (W) =100 (W)
- ΔT : Inside temperature rise (K) =15 (K)



2. Calculating the required airflow for cooling

After the equipment specifications and conditions of your system have been determined, calculate required airflow to meet the conditions. (Note that the formula shown below only applies when the heat radiation is performed only by cooling air from the fan.)

Example

Q': Motion airflow (m³/min)

$$Q' = \frac{V}{20\Delta T} = \frac{100 (W)}{20 \times 15 (K)} \approx 0.33 (m^3/min)$$

3. Selecting the fan

After the motion airflow has been calculated, select an appropriate fan motor based on the value. The motion airflow when the fan motor is actually mounted in your system can be obtained using the airflow-static pressure characteristics curve and system impedance. However, the system impedance cannot be measured without a measuring equipment, so fan with 1.5 to 2 times higher airflow than the actual max airflow should be selected (operating airflow is one-third to two-thirds of maximum airflow).

Example

Q: Maximum airflow (m³/min)

$$Q' = Q \times 2/3$$

$$Q = Q' \times 3/2 = 0.33 \times 3/2 \approx 0.5 (m^3/min)$$

Next, In case that you select a fan having an airflow of 0.5 (m³/min) or more and a appropriate size for the space inside your system.

For example, If you need a fan of 60mm square, 25mm thickness and 12V, you should select is 109R0612H402 (maximum airflow = 0.53m³/min).

4. Confirming the selected fan

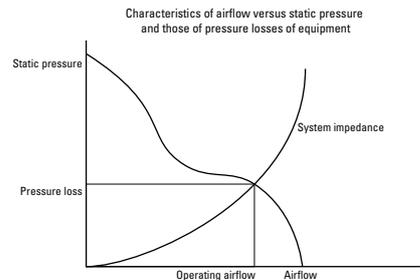
Calculate the temperature rise inside your sysetem when your sysetem having 100 (W) of total heating value is forcefully cooled down by a 109R0612H402 fan.

Example

$$Q' = Q \times 2/3 = 0.53 \times 2/3 \approx 0.353 (m^3/min)$$

$$\Delta T = V / 20Q' = 100 (W) / 20 \times 0.353 (m^3/min) \approx 14.2 (K)$$

From the above, the temperature rise inside your system is calculated as 14.2 (K).



Since the value obtained from the above equation is only a rough target, final fan selection should be based on your actual installation test.

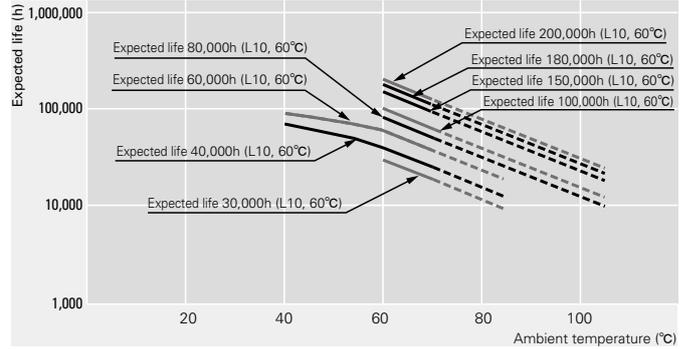
Characteristics Calculation Method and Description

Reliability and expected life

DC AC

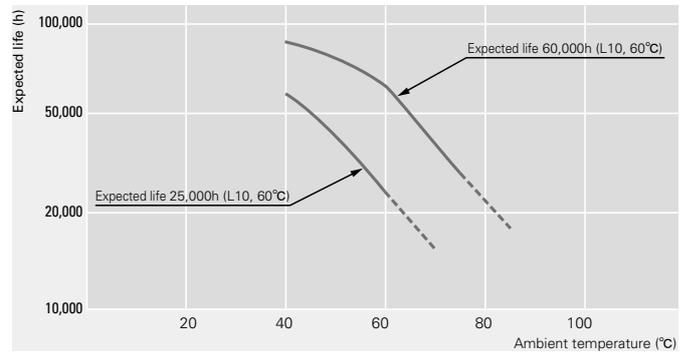
A cooling fan generally cools itself as well. The temperature rise of the motor is relatively low and the temperature rise of the grease in the bearings is also low, so expected life is longer than general some other motors. Since the service life of bearings is a theoretical value that applies when they are ideally lubricated, the life of lubricant can be regarded as expected life of the fan. DC fan consumes less power and its temperature rise of bearing is very low. When the measurement conditions are: L10 (the remaining product life in the lifespan test is 90%), with an atmospheric temperature of 60 degrees, at the rated voltage, and continuously run in a free air state. The table below indicates the relationship between ambient temperature and expected life estimated on the basis of our life tests and same other tests conducted by SANYO DENKI.

Expected life of DC Fans



Rated voltage, continuously run in a free air state, survival rate of 90%

Expected life of AC Fans

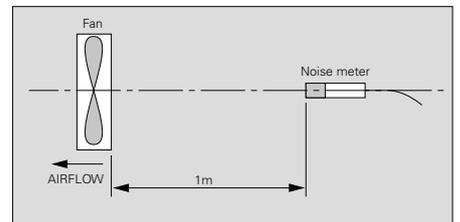


Rated voltage, continuously run in a free air state, survival rate of 90%

Noise characteristics

DC AC

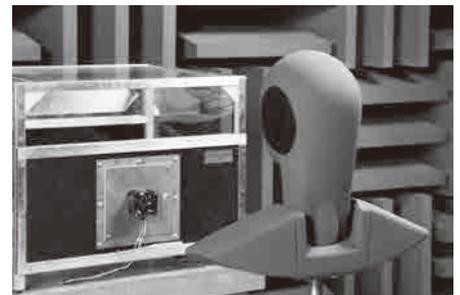
Noise is average value that measured at 1 meter away from air intake side of fan that is suspended on special frame in anechoic chamber (as per JIS B 8346).



Acoustic radio wave anechoic chamber

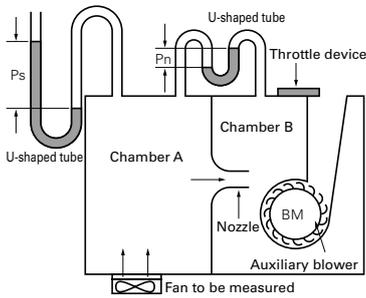


Noise characteristic measurement equipment



It is very difficult to measure airflow and static pressure. In fact, the performance curve may vary greatly according to the type of measuring equipment.

The commonly-used type of measuring equipment is a wind tunnel using a Pitot tube. SANYO DENKI uses a very precise method using double chamber equipped with many nozzles.



Double chamber measuring equipment

$$Q = 60A\bar{v} \text{ (A)}$$

where

Q = airflow (m³/min)

A = cross sectional area of nozzle = $\frac{\pi}{4}D^2$ (m²)

D = nozzle diameter

\bar{v} = average airflow velocity of nozzle = $\sqrt{2g \frac{P_n}{\gamma}}$ (m/sec)

γ : Air specific gravity (kg/m³)

($\gamma = 1.2 \text{ kg/m}^3$ at 20°C, 1 atmospheric pressure)

g = acceleration of gravity = 9.8 (m/sec²)

P_n = differential pressure (mm H₂O)

P_s = static pressure (mm H₂O)

The measuring equipment using double chamber is method to be calculated from airflow goes through nozzle and differential pressure between pressure of inside of chamber (P_s) and atmospheric pressure by measuring differential pressure between air intake and exhaust of nozzle (P_n).

Conversion table

Static pressure

1mm H₂O = 0.0394inch H₂O

1mm H₂O = 9.8Pa (Pascal)

1inch H₂O = 25.4mm H₂O

1Pa = 0.102mm H₂O

1inch H₂O = 249Pa

Airflow

1m³/min = 35.31ft³/min (CFM)

1CFM = 0.0283m³/min

1m³/min = 16.67ℓ /sec

1CFM = 0.472ℓ /sec

1ℓ /sec = 0.06m³/min

Splash Proof Fan

Ingress protection ratings (IP code)

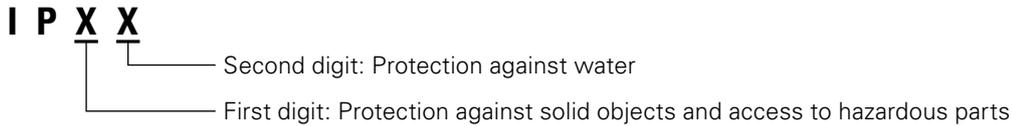
DC

- IP Codes used by SANYO DENKI express the level of protection that internal electrical components (for fans: electrical components and motor coils) have against solid objects, water, and access to hazardous parts. San Ace Splash Proof fans feature high protection levels.



Protected electrical components and motor coils

- Definition of Ingress Protection (IP Code)
Ingress Protection (IP Code) is defined in IEC (International Electrotechnical Commission) 60529* DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP Code). *IEC 60529:2001



First digit	Definition
0	No protection
1	Protection against solid objects > 50 mm
2	Protection against solid objects > 12.5 mm
3	Protection against solid objects > 2.5 mm
4	Protection against solid objects > 1 mm
5	Protection against a level of dust that could hinder operation or impair safety
6	Complete protection against dust

Second digit	Definition
0	No protection
1	Protection against dripping water
2	Protection against water spray up to 15°
3	Protection against spraying water
4	Protection against splashing water
5	Protection against low pressure water jets
6	Protection against high pressure water jets
7	Protection against temporary immersion in water
8	Protection against submersion in water

UPS, inverter, rectifier, high-voltage power supply, etc.

Cautions for Use of a Cooling Fan in the Vicinity of a Power Switching Circuit (prevention of electrolytic corrosion)

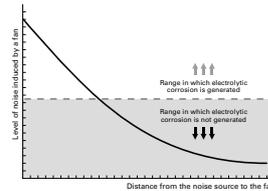
If a fan is installed near a large-power or high-voltage switching circuit, the heavy electromagnetic noise resulting from electromagnetic induction in such circuits or the influence of high-frequency noise imposed through the power line of the fan may induce current through the shaft bearing of the fan. Such current may damage the oil film on the bearing and even the friction surface of the bearing. This adverse effect is known as "electrolytic corrosion of the fan." Electrolytic corrosion affects the smooth revolution of the fan and may reduce its service life. An audible symptom is unusual noise emitted from the fan. This adverse effect is often observed and may partly be explained by the practice of mounting high-density parts, which reduces the gap between the switching circuits and the fan and the use of higher switching frequencies apt to provoke induction. Data processing/communications devices that operate at low voltages are not liable to electrolytic corrosion since they generate less electromagnetic noise.

A Case of electrolytic corrosion DC AC

Fans without anti-corrosion features installed near components that generate electromagnetic noise, such as inverter controllers, are liable to experience electrolytic corrosion.

No.	Use	Period until the occurrence of unusual noise
1	Switching power supply	6 months to 2 years
2	UPS	6 months to 2 years
3	General-purpose inverter	1 to 1.5 years
4	Air cleaner	2 to 3 months
5	Inverter for LCDs	6 months

The curve shown in the graph below represents the relationship between the level of the electromagnetic noise induced by a fan and the distance from the fan to the noise source.

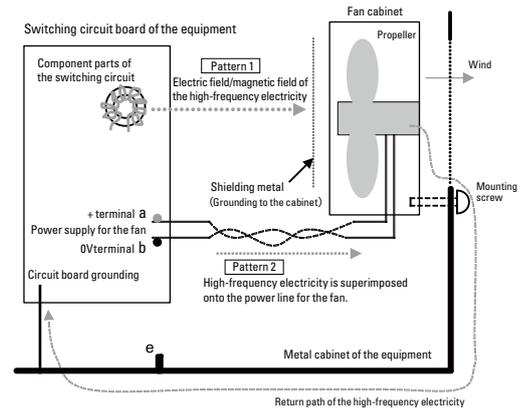


Occurrence of electrolytic corrosion Pattern 1

- (1)The fan gets charged with high-frequency electricity by high-frequency noise (electric field/magnetic field) generated in the switching circuit.
- (2)Because of high-frequency electricity charged in the fan, an electric current flows through the bearing of the fan.
- (3)The electric current breaks the oil membrane on the surface of the bearing and the bearing gets abraded (electrolytically corroded).
- (4)This symptom often occurs in equipment in which switching circuits are sped up and implemented in high density.
- (5)Countermeasure 1: To provide a shield plate^(Note 1) inside the fan (The plate should be such that does not interfere with airflow).
- (6)Countermeasure 2: To use a fan with ceramic bearings.

Occurrence of electrolytic corrosion Pattern 2

- (1)High-frequency electricity flows from the circuit board into the inside of the fan superimposed with the power line for the fan.
- (2)High-frequency electricity that has entered into the fan flows through the bearing.
- (3)Oil membrane on the surface of the bearing gets broken and the bearing gets abraded (electrolytically corroded).
- (4)Countermeasure 1: To remove high-frequency component between terminals "a" and "b", "a" and "e" and "b" and "e" of the power supply for the fan, or to insert a filter^(Note 2) into the power line for the fan.
- (5)Countermeasure 2: To use a fan with ceramic bearings
- (6)Cables should be twisted in order to decrease induction to the power line for the fan.



Note 1 : Shielding metal plate

As an electromagnetic shield metal, "EMC Guard" is available from our company. <http://www.sanyodenki.co.jp/product/newfan/indexf.html>
 Certain shielding effect can be expected from mounting a general-purpose finger guard inside the fan. In each case, grounding to the cabinet is required.

Note 2 : Filter

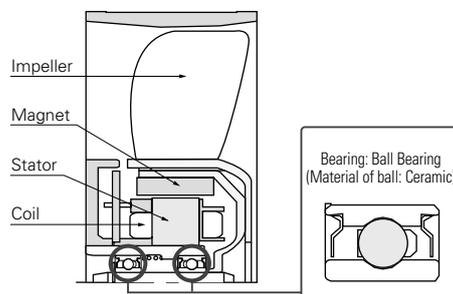
Insert a common mode filter when the high-frequency electricity is superimposed on both lines "a" and "b" in the same phase and, if not, insert a normal mode filter.

Measures against electrolytic corrosion DC AC

- Relocate fans far from all electromagnetic noise sources.
- Attach an EMC guard to ordinary fans. This should have an effect on electromagnetic noise due to radiation.
- As a power supply, the fan is wired from a circuit for which noise is not superimposed.
- Against heavy electromagnetic noise (electromagnetic induction) and conductive noise from the power supply line for a fan, we recommend the use of an "Electrolytic corrosion proof fan" with ceramic bearing.

This cooling fan prevents electrolytic corrosion of bearings even under conditions where electromagnetic noise is generated. Electrolytic corrosion of ball bearings is prevented by using ceramic balls in ball bearings. The ceramic material is an insulating material. Manufacturable to meet specifications of all San Ace series fans.

Component Diagram



Caution

Electrolytic Corrosion Proof Fan has been designed to prevent the electrolytic corrosion of ball bearings in the fan, but this does not guarantee that the fan will operate normally under conditions where there is strong electromagnetic noise. Please be sure to fully evaluate the value of fan malfunction due to noise in advance.

Specifications for DC Fan Sensors

Pulse sensor (Tach output type) example DC

Pulse sensor outputs two pulse waves per revolution of fan, and it is good to detect fan speed. Pulse sensors can be incorporated in all kinds of DC fans.

* Noise from inside the fan or from external devices may effect sensor output.
Contact us for more information.

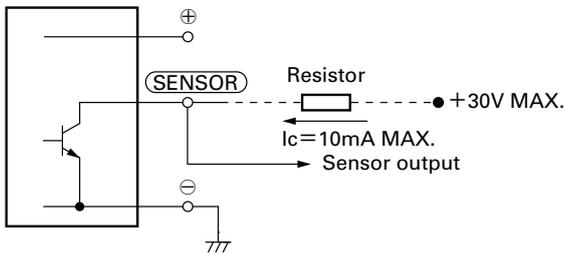
The specifications listed below are for the 9G1212H101 model, and vary with the model number used. Please contact your point of sale for details.

Output circuit
Open collector

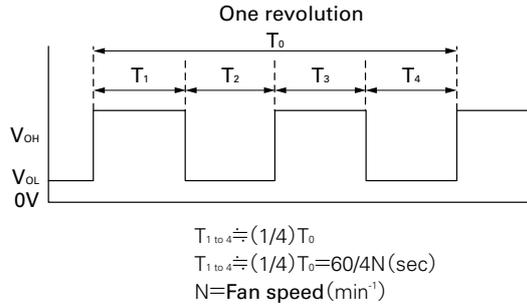
Specifications

$V_{CE} = +30V$ MAX.
(For a 48V-rated fan: $V_{CE} = +60V$ MAX.)
 $I_c = 10mA$ MAX. [$V_{OL} = V_{CE} (SAT) = 0.4V$ or less]

Inside of DC fan



Output waveform (Need pull-up resistor)
In case of steady running



* If you want detailed specifications that apply when the rotor is locked, please contact SANYO DENKI.

Locked rotor sensor (rotation/lock detection type) example DC

Locked rotor sensor outputs fan status signals. It is good to check whether the fan is running or locked

- * Noise from inside the fan or from external devices may effect sensor output.
- * Regarding details of the reverse logic and specifications of lock sensor output signals, please contact SANYO DENKI.
- * Lock sensor can not be used in some models. Contact us for more information.

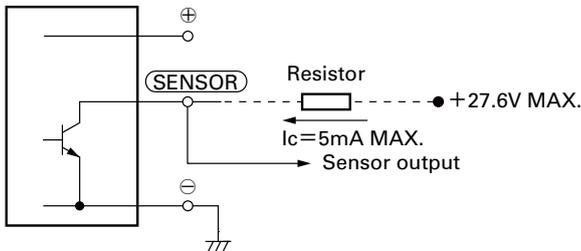
The specifications listed below are for the 9G1212H1D01 model, and vary with the model number used. Please contact your point of sale for details.

Output circuit
Open collector

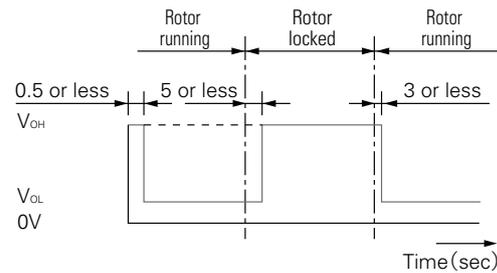
Specifications

$V_{CE} = +27.6V$ MAX.
For a 48V fan $V_{CE} = +60V$ MAX.
 $I_c = 5mA$ MAX. [$V_{OL} = V_{CE} (SAT) = 0.6V$ or less]
For a 48V fan: $V_{CE} (SAT) = 0.4V$ or less

Inside of DC fan



Output waveform (Need pull-up resistor)



Note: The output is completely at V_{OL} with 0.5 seconds or less after power-up.

Low-speed sensor outputs a signal when fan speed goes down to trip point or less. It is good to detect cooling degradation of fan.

*Noise from inside the fan or from external devices may effect sensor output, please.

*If you want detailed specification and reverse signal output, please contact SANYO DENKI.

*Low-speed sensors can not be used in some models. Contact us for more information.

The specifications listed below are for the 9G1212H1H01 model, and vary with the model number used. Please contact your point of sale for details.

Output circuit

Open collector

Specifications

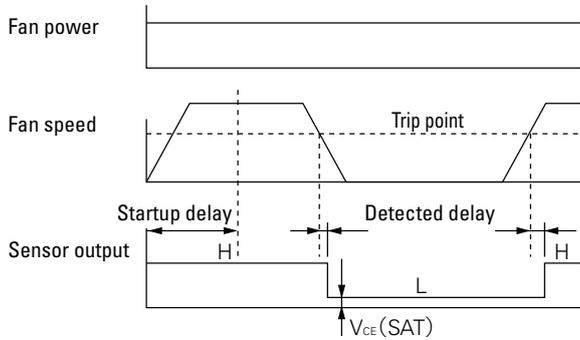
$V_{CE} = 27.6V \text{ MAX.}$

$I_c = 10mA \text{ MAX.}$ [$V_{OL} = V_{CE}(\text{SAT}) = 0.5V \text{ or less}$]

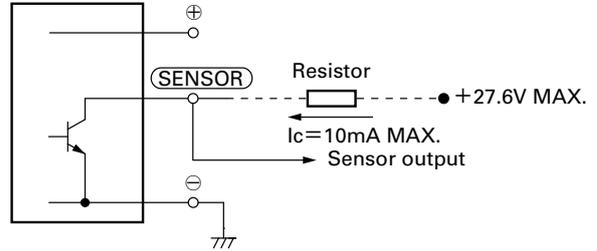
Sensor scheme

Example 1:

In case steady running

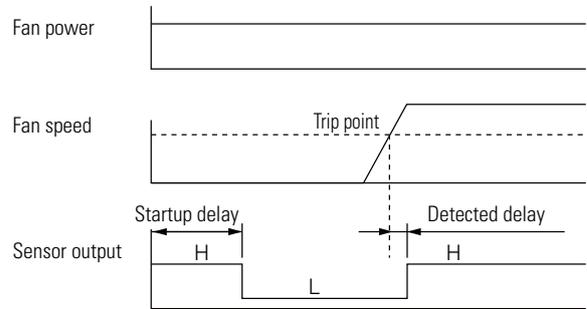


Inside of DC fan



Example 2:

In case that the rotor is locked when the fan motor is turned on and released after the start-up delay time.



Specifications for PWM Control Function

The PWM control function is a function that externally controls the rotation speed of the fan by changing the duty of the input pulse signal between the control terminal and GND.

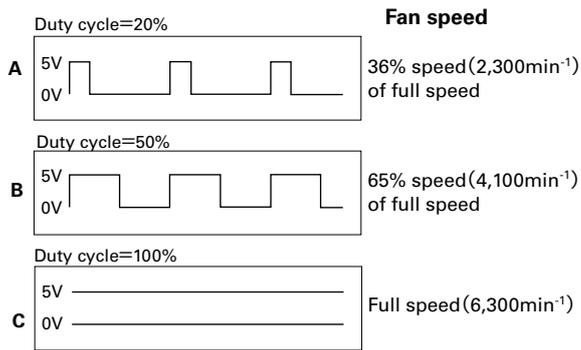
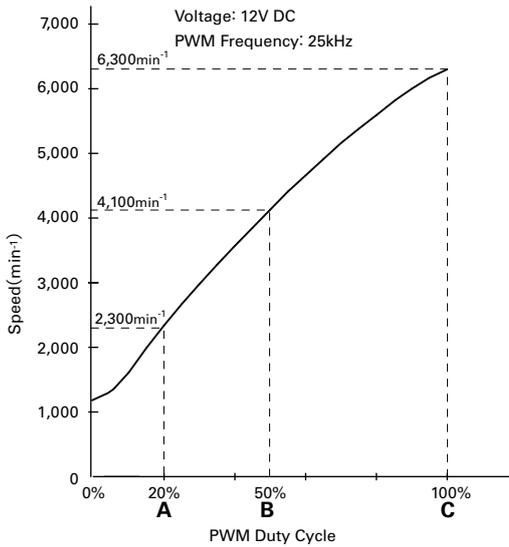
It regulates optimum airflow for efficient cooling when necessary, and is effective for lowering power consumption and reducing equipment noise level.

* Some models can not have PWM control function. Contact us for more information.

Typical standard model: 9G0812P1G04 DC

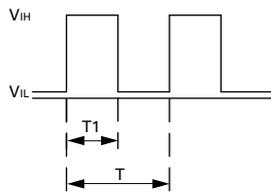
The details shown below are just one example. Specifications vary with each model number.

PWM Duty - Speed Characteristics



PWM Input Signal

Input Signal Wave Form



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

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

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

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

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

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

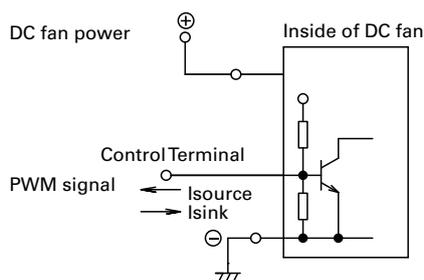
Control Terminal Voltage : 5.25V Max. (When control terminal is opened)

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.

The rotation speed characteristics for the PWM duty may change when inputting different voltages and frequencies or using the open collector and the drain input. Please contact us as necessary.

Example of Connection Schematic



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

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

Control Terminal Voltage : 5.25V Max. (When control terminal is opened)

Specifications for AC Fan Sensor

ACDC fan sensor specifications differ from those below. Please refer to each product page.

Specifications of sensor circuit

AC

	5V (ITEM-20*)	12V (ITEM-30*)
Example of model.no	109S405UL	
System	Speed detection, Auto-restart, Open collector	
Power supply	DC5V±10% At 5V, 6mA	DC12V±20% At 12V, 10mA
Recommend sensor circuit output	At Vp=5V, I=100mA MAX.	At Vp=12V, I=200mA MAX.
Trip point	Standard speed : 1,700min ⁻¹ ±10% Low speed : 850min ⁻¹ ±10%	
Response speed	Standard speed : Startup delay 18sec Low speed : Startup delay 36sec	Detection delay 1sec Detection delay 2sec
Insulation resistance	10 MΩ MIN. at a 500V DC megger (Note)	
Dielectric strength	50/60 Hz, 1,000V AC, 1 minute (Note)	
Ambient conditions	Temperature: -10 to +60°C, humidity: 90%RH MAX. (at 40°C)	

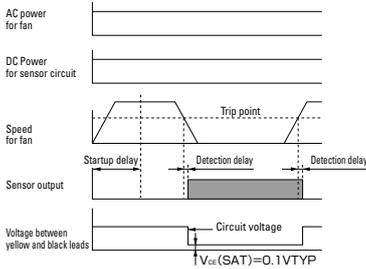


*[ITEM-20] and [ITEM-30] are printed on the fan nameplate.

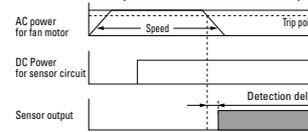
Note: Between one end that all sensor leads consisting of brown, yellow and black are tied together and the G terminal or power terminal of the fan.

Sensor scheme

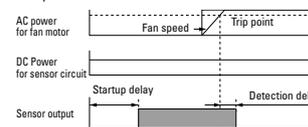
Example 1: When the AC power for the fan and the DC power for the sensor are turned on at the same time



Example 2: When the AC power for the fan is turned on first, then the DC power for sensor is powered on

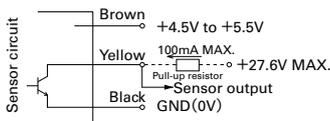


Example 3: When the DC power for sensor is first powered on, then the AC power for the fan is turned on

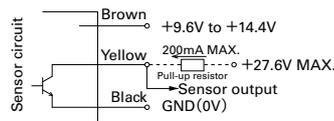


Sensor output circuit

5V (ITEM-20*)



12V (ITEM-30*)



GND (Black) should be shared in case that power supply for sensor circuit (Brown) and that for sensor pull-up (Yellow) are separated.

Operating Precautions DC AC

Temperature conditions

Operating temperature: Refer to the specifications table for each model.

Storage temperature: -20°C to $+70^{\circ}\text{C}$ / -30°C to $+70^{\circ}\text{C}$ (Varies for each model / Non condensing)

* Rapid change in temperature may cause condensation. Prevent condensation when storing. Condensation may affect lubrication performance and insulation.

Power specifications

For the specification of rated voltage and voltage range, please check the catalog or drawing for the model number.

Use of voltage exceeding the specified range may lead to performance degradation, device failure, or fire hazards. Do not apply voltage that exceeds specifications to the fan.

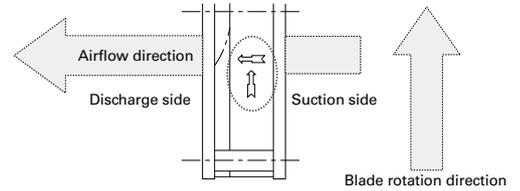
An electronic circuit is used for the DC fan. For power supply, use power with ripple less than 5% with low line noise and surge to prevent electronic circuit trouble.

Handling precautions

The fan motor is equipped with a precision ball bearing. Therefore, please handle the motors carefully in order not to shock the bearings.

Installation tips

There are no limitations on the installation direction of fans or blowers. Fans have symbols on the fan indicating the airflow direction and blade rotation direction. When installing, use these symbols to check the airflow direction.



Symbols indicating the fan airflow direction and blade rotation direction

Recommended screw torque

This shows the recommended values for the screw torque when installing the fans. If the tightening torque is higher than the recommended values, the fan can be deformed or damaged.

Use care when tightening. Also, be sure to always use a fan with a ribbed structure when securing by screws with both flanges.

DC fan

Fan mounting hole diameter [mm]	Nominal screw diameter	Recommended screw torque
$\phi 3.5$	M3	0.44N·m MAX.
$\phi 4.3, \phi 4.5$	M4	0.78N·m MAX.
$\phi 4.3, \phi 4.5$	M4	0.98N·m MAX. ($\phi 172\text{mm} \times 51\text{mm}$, $\phi 172\text{mm} \times 150\text{mm} \times 51\text{mm}$, $\phi 200 \times 70\text{mm}$)

AC fan

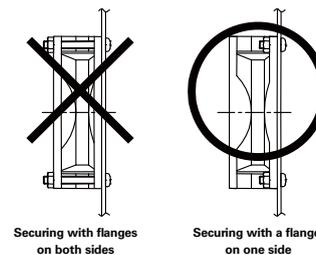
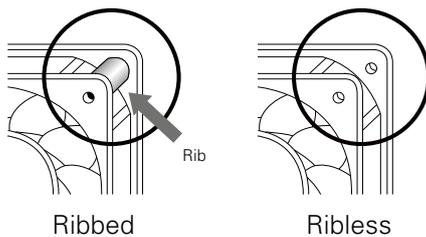
Fan mounting hole diameter [mm]	Nominal screw diameter	Recommended screw torque
$\phi 3.5, \phi 3.7$	M3	0.44N·m MAX.
$\phi 4.3$	M4	0.58N·m MAX. (120mm×120mm MAX.)
$\phi 4.3$	M4	0.78N·m MAX. (ACDC fan, $\phi 172\text{mm}$)
$\phi 5.5$	M4, M5	0.78N·m MAX. (160mm×160mm)

Comparison of ribbed and ribless structures

Regarding plastic frame, we have a option ribbed and ribless about mounting. Please use preferred type up to your application. Please use ribbed fan in case that you hook fan up clamping either side fan mounting hole target. (According to the model, only models with or without ribs are available.)

*Use a fan with a rib structure when securing by screws with both flanges.

· When securing screws to ribless plastic frame models, use a flange to secure on one side.



Fan Mounting Using Self-tapping Screw DC

Installing self-tapping screws into the plastic frame of the fan may split or deform it.

If using self-tapping screws, use screws that are recommended by our company, and refer to our recommended tightening torques and recommended pilot hole shapes. Pay close attention to the operating precautions and fully understand your equipment before you use it.

Recommended screw torques

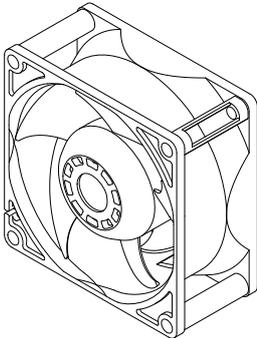


Fig. A: Ribbed fan

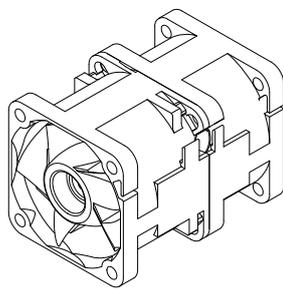


Fig. B: Counter rotating fan

	Recommended screw torque [N·m]	Fan mounting hole diameter [mm]
Ribbed fan (Fig. A)	0.8 Max.	φ3.5, φ4.3, φ4.5
Counter rotating fan (Fig. B)	0.6 Max.	

Do not use self-tapping screws in the following cases:

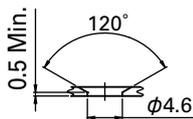
- For ribless fans (except for counter rotating fans)
- When mounting finger guards on fans

Using self-tapping screws could deform or split the frame. Please use regular screws.

Recommended pilot hole shape

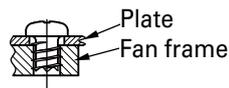
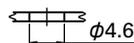
[For nominal diameter 4mm]

Self-tapping screw model No.
SY-NS020412P11



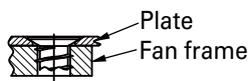
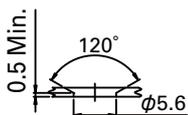
Minimum mounting plate thickness: T=1.2mm

Self-tapping screw model No.
SY-NS010412P11



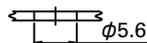
[For nominal diameters of 4.8mm and 5mm]

Self-tapping screw model No.
SY-NS024812P15
SY-NS020512P15



Minimum mounting plate thickness: T=1.2mm

Self-tapping screw model No.
SY-NS014812P15
SY-NS010512P15



Recommended self-tapping screws

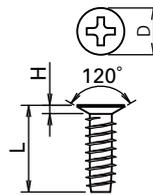
· Material: Steel

· Plating: Trivalent chromating plating

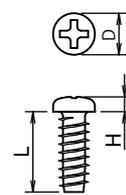
unit : mm

Fan mounting hole diameter	Self-tapping screw model No.	Nominal screw diameter	Length [L]	Head shape	Flat-head/pan-head dimensions		
					Head diameter [D]	Height of head [H]	Cross recess No.
φ3.5	SY-NS020412P11	4	12	Flat	6.2	1.1 Max.	2
	SY-NS010412P11	4	12	Pan	5.5	2.0	2
φ4.3	SY-NS024812P15	4.8	12	Flat	6.8	1.2 Max.	2
	SY-NS014812P15	4.8	12	Pan	7.0	2.6	2
φ4.5	SY-NS020512P15	5	12	Flat	6.8	1.2 Max.	2
	SY-NS010512P15	5	12	Pan	7.0	2.6	2

Head shape: Flat

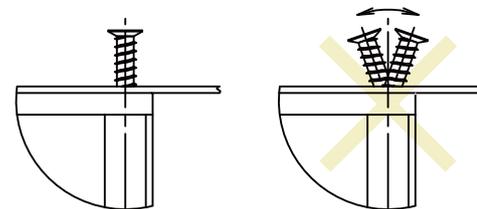


Head shape: Pan



Operating precautions

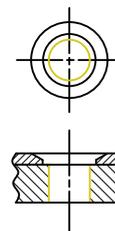
- Place the self-tapping screw so that it is vertical and centered with the frame mounting hole (Fig. A) and then screw it in. The self-tapping screw could deform or split the frame if you screw it into the frame when the screw is not vertical.
- Screw in the self-tapping screw with the center of the mounting hole on the fan and the center of the pilot hole on the mounting plate aligned (Fig. B). Misaligned holes could lead to the frame being deformed or split.



Vertically placed screw

Inclined screw

Fig. A



Aligned and centered holes



Misaligned holes

Fig. B

- Tightening the screw beyond the recommended screw torque could deform or split the frame.
- With flat-head screws, failure to use the recommended pilot hole shape will cause interference between the flat-head screw and fan frame which could split the frame.

Recommended screw manufacturer

To purchase the screws, please contact the screw manufacturer directly.

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<http://www.saima.co.jp/English/>

Please Read:

Safety Precautions DC AC

- In order to ensure that this product is used safely, be sure that you read and understand the following precautions fully and use the product only as directed.
- Be sure to read these Safety Precautions carefully before installing, connecting, operating, maintaining, or inspecting this product. Follow all the precautions and directions given here.
- This product has been designed and manufactured for use as a device to be used in general industrial machinery, and may not be used as a standalone product.
- The product of our company (hereafter called the product) falls into the category of the products specified in the Attached List 1, Item 16 (Class 84, Item 14) of the Export Trade Control Ordinance. To export the product as an individual part or to export a product into which the product is assembled, the "Information Requirements" and "Objective Requirements" that the Ministry of Economy, Trade and Industry established based on the "Catchall Controls" must be studied for applicability. Based on information on applicability and specified requirements, appropriate export formalities must be performed.

In order to prevent any possible bodily injury or damage to property or equipment, the following precautions for ensuring safety are displayed according to the following two ranks of importance:

 Danger	Handling or using the product improperly and in disregard of the instructions with this mark might result in serious bodily injury or death.
 Warning	Handling or using the product improperly and in disregard of the instructions with this mark might result in bodily injury or physical damage.

※ Note: Items marked 'Warning' might also result in serious bodily injury or death in some circumstances. Always follow the instructions for items marked 'Danger'.

Descriptions of the precautions to be taken to ensure safety are given below.

Danger

- If the product is used in medical appliances or other types of equipment that affect people's lives, sufficient safety-related evaluations and preparations must be made in advance, and the product or the type of equipment into which the product is assembled must be used on the user's own responsibility.
- If the product is used in types of equipment that have a strong social and public impact, sufficient prior evaluations and safety-related evaluations and preparations must be made, and the product or the type of equipment into which the product is assembled must be used on the user's own responsibility.
- If the product is used in an environment where there are vibrations, for example, in a car or aboard a ship, sufficient prior evaluations and safety-related evaluations and preparations must be made, and the product or the piece of equipment into which the product is assembled must be used on the user's own responsibility.
- Connect all wires properly and securely. Failure to do so might result in burns, fire, or exposure to electrical shock.
- If there are any grounding taps or wires, attach all grounds securely. Failure to do so might result in exposure to electrical shock.
- Never use in explosive atmosphere, as doing so might result in fires, burns, or bodily injury.
- Never operate with any live wires exposed, as doing so might result in electrical shock.
- Never allow any persons or objects to approach or come into contact with the rotor while in operation, as doing so might result in damage or personal injury.
- Turn off the power and stop using the product immediately if you notice any sparks, smoke, odd odors, sounds, or anything unusual during operation. Failure to do so might result in fire, burns, or electrical shock.
- Never allow the product to fall, topple over, or otherwise be subjected to excessive shocks when moving it, as doing so might result in product breakdown or substandard operation.
- The product should be handled only by personnel with sufficient training and knowledge and under the responsibility of the end user.
- Never attempt to disassemble, repair, or alter this product in any way, as doing so might result in fire, burns, or electrical shock.
- Dispose of the product as industrial waste. Please contact your local government office for further details about disposal.

Warning

Handling

- Installation, placement, connections, wiring, or relocation of the product should be performed by knowledgeable or correctly licensed personnel. Never perform such work while the product is live as this might lead to injury, electrical shock, burns, or fire.
- Do not use the fan if not fixed or stand in hand.
- Never allow yourself to come into contact with the ends of wires or plugs when measuring the insulation resistance or dielectric strength voltage. This might result in electrical shock.
- Never attempt to disassemble or alter this product in any way. Doing so might invalidate any warranties concerning the functions or performance of the product, and might also result in fire, burns, bodily injury, or electrical shock.

Instruction

- If the fan stops during operation, give proper consideration to the device for its protection.
- Never use the product at voltages, temperatures, or any other settings which exceed those given in the product specifications. This might result in substandard operation, breakdown, fire, bodily injury, or electrical shock.
- The fan may fail to operate properly if there is insufficient power capacity, because the starting current is several times larger than the rated current will flow at the moment of the voltage is supplied to the fan. Be sure to inquire about startup current levels for individual models.
- Do not control the speed of the fan by power supply PWM. It may cause fan failure.
- Start up all fans at the same possible timing if two or more fans which wind interferes with each other are installed in the device.
If the fan is exposed to wind from other fans at start up, it may cause fan failure or the fan may not start up correctly.
- Never insert or remove any lead wires, plug cord or connectors while the power is turned on. When inserting or removing plugs or connections, always be sure to first check that the power has been turned off and hold the housing of the plug or connector when doing so. Failure to do so might result in damage or exposure to electrical shock.
- Do not remove the lead wire from the frame hook. It may scratch and damage the surface of the lead wire.
- Never remove the product identification plate. This might result in breakdown or electrical shock.
- Do not push the nameplate of the DC fan with strong force. The nameplate may break and touch the shaft.
- The product might become damaged if foreign objects or external forces are allowed to interfere with normal fan operation.
- Do not implement ON-OFF of power supply in negative line. That might cause damage of the fan.

Warning

Installation

- When fixing this product into place, be sure to take into consideration the product's weight, the vibrations generated during operation, and all other relevant factors. Failure to do so might cause the product or parts of it to fall out of position, resulting in bodily injury or malfunction of the product.
- Be sure to check the direction of installation (i.e., the fan), as failing to do so might result in bodily injury or mechanical breakdown.
- In order to ensure that the product operates properly, allow spaces for ventilation and take whatever steps necessary to prevent the entry of foreign objects. Failure to do so might result in bodily injury or mechanical breakdown.
- When fixing the fan with screws, make sure the screw and sheet metal do not deform the frame of the fan before operation. If the frame of the fan is deformed, mechanical failure may be occurred or specified performance may not be generated.
- When fixing the fan with screws, ensure the screwing torque. If the screwing torque is over the recommended screw torque, fan frame may be deformed or damaged. Use a plastic frame with a ribbed structure when securing by screws with both flanges. In order to prevent from loosening screw, please use plain washer and spring lock washer. For screwing torque of each fan type, contact SANYO DENKI or SANYO DENKI distributor.
- When fixing the fan with self-tapping screws, fan frame may be damaged.
- When excessive shock is attached to fan, impeller may be protruded from the surface of fan frame. Make sure that impeller does not touch cover such as finger guard and mounting plate. Do not give excessive shock to fan to avoid fan failure and deterioration of fan performance.
- Pulling or pinching the lead wires could result in damage to the wire, and you should avoid placing excessive stresses on these wires. The device should also be installed so that the lead wires are not allowed to come into contact with the rotor or blades. Failure to do so might result in damage or exposure to electrical shock.
- Take proper precautions against static electricity when making electrical connections. Failure to do so might cause the breakdown of the fan or device.
- Install a finger guard or other cover if there is any danger of fingers, hands or objects coming into contact with the rotor or blades. Failure to do so might result in bodily injury or mechanical breakdown.
- Install the finger guard, filter, and plate to the fan in the correct position while avoiding touching of the rotor blade. Avoiding this will prevent device failure. Please use SANYO DENKI genuine finger guards and filter kits.
- Make electrical connections properly. If not, there is a possibility that breakdown of device, malfunction, breakdown and deterioration of product might cause.

Installation of Centrifugal Fan

- The fan shall be fixed with screws. For screw size of each fan type, refer to drawing or catalog.
- Do not use the screws with length over the depth of mounting screw. Fan might not be fixed by damaging threaded hole. For depth of mounting screw of each fan type, refer to drawing or catalogue.
- When fixing the fan with screws, ensure the screwing torque. If the screwing torque is over the recommended screw torque, threaded holes may be damaged. Also, in order to prevent from loosening screw, please use plain washer and spring lock washer. For screwing torque of each fan type, contact SANYO DENKI or SANYO DENKI distributor.
- When excessive shock is given to fan, impeller may be protruded. Make sure that impeller does not touch cover such as inlet nozzle and finger guard, and mounting plate. For positional relation among the fan, inlet nozzle, and plate of each fan type, refer to drawing or catalog.
- Install the inlet nozzle, finger guard, and plate to the fan in the correct position while avoiding touching of the rotor blade. Avoiding this will prevent device failure. Please use SANYO DENKI genuine inlet nozzle.

Environment of usage

- The product must not be used or stored in a flammable or corrosive gas atmosphere, in a place where water or oil splashes (not applicable to Splash Proof or Oil Proof Fans), in a place where there is much dust or humidity, in a place where condensation occurs, in a place where the product is exposed to radioactive rays or is in direct sunlight, in a place where a salty sea breeze blows or seawater splashes, or in an environment where the product may be contaminated by such corrosive materials as sulfurous water, sulfurous volcanic ash, organic solvents, acidic chemicals, alkali chemicals, etc., such hazardous substances as nuclear fuel materials, etc. If it is used or stored in such places or environments, there is the possibility that a fire may occur, the product may malfunction or its performance may deteriorate.
- Avoid using or storing the product in locations and an environment where it could be constantly exposed to vibrations, strong shocks, centrifugal force, acceleration, magnetic or electromagnetic noise, and which the electromagnetic noise overlaps into power voltage. This might result in product breakdown or substandard operation.
- Avoid using or storing the product under environments where rapidly changed such as thermal and humidity change. This might result in product breakdown or deterioration.

Maintenance

- Maintenance and inspections should always be performed by personnel with sufficient training and knowledge. Failure to do so might result in fire, burns, bodily injury, or electrical shock.
- Never perform any maintenance or inspections while the product is in operation. Also note that the blades continue to rotate for some time immediately after operation ceases. You should always be sure to check to see that all rotating parts have come to a stop before beginning work.
- Never use gasoline, paint thinner, benzene, or any other organic solvents to clean the product as this could result in the deformation or substandard operation.

Safety Standards

List of safety standards acquired → refer to the index (pp. 465 to 486)

Description of safety standards

1. UL ratings (USA)



Underwriters Laboratories Inc. was established by the American Union of Fire Insurance Underwriters. The purpose of UL is to ensure safety of machines, equipment, and materials and protect human lives and property from fire and other accidents. To that end, UL has conducted numerous tests and extensive research and, as a result, set up UL ratings. Any seller of products in any of the majority of the states of the USA must produce their products according to the UL ratings, have them pass UL-specified safety inspections, and have them listed in UL's registration book. Therefore, to export and sell any product in the United States, one must in most cases apply for UL-listing. Additionally, UL is accredited by The Standards Council of Canada (SCC) as both a Certification Organization (CO) and a Testing Organization (TO) and is officially recognized in all provinces and territories throughout Canada. Accordingly, our products can be tested by UL for compliance with Canadian safety standards. Certified products are entitled to display the C-UL Mark, which authorizes their use and sale in Canada. If products are deemed to be compliant with both U.S. and Canadian standards, then both the UL Mark and C-UL Mark can be displayed or a combination U.S. and Canadian mark (bottom left). Our products are certified as satisfying all UL507 requirements.

2. CSA standards (Canada)



The Canadian Standards Association (CSA) was set up in response to the advice of the Canadian government. In Canada, the law prohibits the use and sale of any product other than those approved under CSA in terms of safety. CSA has set up CSA standards as inspection procedures and other requirements to ensure product safety. Our products are certified as satisfying the CSA standard C22.2 No. 113.

3. EN standards (EU members)



In the EU territory, the harmonization of industrial standards and safety standards of different countries is under way. The unified standards are called Harmonized Standards. Each of these standards is marked EN above the standard number. EN standards offer the grounds in design and manufacture when one exports a product to the EU territory. In order for a product to receive a safety marking, the product must be found to conform to TÜV, VDE, or other relevant standard. Our products are certified as satisfying all TÜV Rheinland EN60950 requirements.

4. Electrical appliance and material safety law



As of April 1, 2001, the Electrical Appliance and Material Control Law has been revised and reenacted as the Electrical Appliance and Material Safety Law. AC fans are classified as 'Blowers' under 'Electric motor-operated appliances'. They are categorized as electrical products other than specific electrical appliances (with the exception of some models) and are required to be labeled to indicate PSE certification.

5. CE marking



To distribute their equipment in the EU territory, manufacturers are obligated to give a CE marking as proof that the equipment conforms to related EU directives. Manufacturers use EN standards as criteria of judgment as to whether the equipment satisfies the requirements of specific directives or, in the absence of applicable EN standards, they use IEC standards. Manufacturers then prepare a self-declaration to indicate that the equipment conforms to related directives and apply a CE marking. (Depending on the degree of risk of the equipment, some kinds of equipment are required to receive type tests conducted by certified authorities and, after a type test certificate is obtained, manufacturers make a self-declaration.)

Scope of application and compulsory timing of major EC directives

Machine directives

These directives apply to equipment that has a moving part that may injure humans. The directives generally apply to a wide range of machine tools and other industrial machines.

EMC directives

They apply to equipment which may be affected by electromagnetic interference (EMI) or has electromagnetic susceptibility (EMS).

Low-voltage directive

This directive applies to equipment that is used in an AC range between 50 and 1,000V and in a DC range between 75 and 1,500V.

JIS: Japanese Industrial Standards

Japan's national standards related to mining and manufacturing industries

IEC : International Electrotechnical Commission

This is an international commission on electrical standardization. This commission promotes the unification and cooperation of international standards related to electric and electronics engineering and issues IEC standards in order eventually to allow different countries to conform to the international standards.

DIN : Deutsches Institut für Normung e.V.

This is a German standards institute. The institute uses a wide-range set of standards covering many industrial sectors. The set of standards includes basic standards.

VDE : Verband Deutscher Elektrotechniker e.V.

It is a German association of electric engineers. VDE establishes safety standards related to electrical engineering and issues them as DIN-VDE standards.

RoHS Directive

Since October 2012, all the products in this catalog have complied with the maximum concentration values of the hazardous substances referred to in the Annex II to EU RoHS Directive 2011/65/EU,* except for the exempted applications specified in the Annex III to the Directive. Please note that SANYO DENKI does not use exemption 7(c)-III: Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC, for those products.

* Lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE)

RoHS Directive:

DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Index by Model No./Safety Standards List - DC Fans DC

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
	109BC12FC7-1	109BC12FA7-1	109BC12FC7-1	109BC12FD7-1			—	52mm×15mm	—	
109BC12GC7-1	109BC12GA7-1	109BC12GC7-1	109BC12GD7-1	—	52mm×15mm	—	✓	✓	✓	379
109BC12HC7-1	109BC12HA7-1	109BC12HC7-1	109BC12HD7-1	—	52mm×15mm	—	✓	✓	✓	379
109BC12MC7-1	109BC12MA7-1	109BC12MC7-1	109BC12MD7-1	—	52mm×15mm	—	✓	✓	✓	379
109BC24FC7-1	109BC24FA7-1	109BC24FC7-1	109BC24FD7-1	—	52mm×15mm	—	✓	✓	✓	379
109BC24GC7-1	109BC24GA7-1	109BC24GC7-1	109BC24GD7-1	—	52mm×15mm	—	✓	✓	✓	379
109BC24HC7-1	109BC24HA7-1	109BC24HC7-1	109BC24HD7-1	—	52mm×15mm	—	✓	✓	✓	379
109BD12FC2	109BD12FA2	109BD12FC2	109BD12FD2	—	76mm×30mm	—	✓	✓	✓	383
109BD12HC2	109BD12HA2	109BD12HC2	109BD12HD2	109BD12P2H01	76mm×30mm	—	✓	✓	✓	383
109BD12MC2	109BD12MA2	109BD12MC2	109BD12MD2	—	76mm×30mm	—	✓	✓	✓	383
109BD24FC2	109BD24FA2	109BD24FC2	109BD24FD2	—	76mm×30mm	—	✓	✓	✓	383
109BD24HC2	109BD24HA2	109BD24HC2	109BD24HD2	—	76mm×30mm	—	✓	✓	✓	383
109BD24MC2	109BD24MA2	109BD24MC2	109BD24MD2	—	76mm×30mm	—	✓	✓	✓	383
109BG12HC1	109BG12HA1	109BG12HC1	109BG12HD1	—	160mm×40mm	—	✓	✓	✓	396
109BG12MC1	109BG12MA1	109BG12MC1	109BG12MD1	—	160mm×40mm	—	✓	✓	✓	396
109BG24HC1	109BG24HA1	109BG24HC1	109BG24HD1	—	160mm×40mm	—	✓	✓	✓	396
109BG24MC1	109BG24MA1	109BG24MC1	109BG24MD1	—	160mm×40mm	—	✓	✓	✓	396
109BJ12HC2	109BJ12HA2	109BJ12HC2	—	—	127mm×32mm	—	✓	✓	✓	395
109BJ12MC2	109BJ12MA2	109BJ12MC2	—	—	127mm×32mm	—	✓	✓	✓	395
109BJ24HC2	109BJ24HA2	109BJ24HC2	—	—	127mm×32mm	—	✓	✓	✓	395
109BJ24MC2	109BJ24MA2	109BJ24MC2	—	—	127mm×32mm	—	✓	✓	✓	395
109BM12GC2-1	109BM12GA2-1	109BM12GC2-1	—	—	97mm×33mm	—	✓	✓	✓	385
109BM12HC2-1	109BM12HA2-1	109BM12HC2-1	—	—	97mm×33mm	—	✓	✓	✓	385
109BM12MC2-1	109BM12MA2-1	109BM12MC2-1	—	109BM12P2M01	97mm×33mm	—	✓	✓	✓	385
109BM24GC2-1	109BM24GA2-1	109BM24GC2-1	—	—	97mm×33mm	—	✓	✓	✓	385
109BM24HC2-1	109BM24HA2-1	109BM24HC2-1	—	—	97mm×33mm	—	✓	✓	✓	385
109BM24MC2-1	109BM24MA2-1	109BM24MC2-1	—	—	97mm×33mm	—	✓	✓	✓	385
109E1312A101	109E1312A102	109E1312A101	109E1312A1D01	—	127×127×38mm	No	✓	✓	✓	175
109E1312S101	109E1312S102	109E1312S101	109E1312S1D01	—	127×127×38mm	No	✓	✓	✓	175
109E1324A101	109E1324A102	109E1324A101	109E1324A1D01	—	127×127×38mm	No	✓	✓	✓	175
109E1324G101	109E1324G102	109E1324G101	109E1324G1D01	—	127×127×38mm	No	✓	✓	✓	175
109E1324S101	109E1324S102	109E1324S101	109E1324S1D01	—	127×127×38mm	No	✓	✓	✓	175
109E1348A101	109E1348A102	109E1348A101	109E1348A1D01	—	127×127×38mm	No	✓	✓	✓	175
109E1348G101	109E1348G102	109E1348G101	109E1348G1D01	—	127×127×38mm	No	✓	✓	✓	175
109E1348S101	109E1348S102	109E1348S101	109E1348S1D01	—	127×127×38mm	No	✓	✓	✓	175
109E1712F501	109E1712F502	109E1712F501	109E1712F5D01	—	φ172mm×51mm	No	✓	✓	✓	195
109E1712H501	109E1712H502	109E1712H501	109E1712H5D01	—	φ172mm×51mm	No	✓	✓	✓	195
109E1712K501	109E1712K502	109E1712K501	—	—	φ172mm×51mm	No	✓	✓	✓	195
109E1712M501	109E1712M502	109E1712M501	—	—	φ172mm×51mm	No	✓	✓	✓	195
109E1712Y501	109E1712Y502	109E1712Y501	—	—	φ172mm×51mm	No	✓	✓	✓	195
109E1724C501	109E1724C502	109E1724C501	109E1724C5D01	9EH1724P5C01	φ172mm×51mm	No	✓	✓	✓	195
109E1724F501	109E1724F502	109E1724F501	109E1724F5D01	—	φ172mm×51mm	No	✓	✓	✓	195
109E1724H501	109E1724H502	109E1724H501	109E1724H5D01	—	φ172mm×51mm	No	✓	✓	✓	195
109E1724K501	109E1724K502	109E1724K501	109E1724K5D01	—	φ172mm×51mm	No	✓	✓	✓	195
109E1724M501	109E1724M502	109E1724M501	—	—	φ172mm×51mm	No	✓	✓	✓	195
109E1748C501	109E1748C502	109E1748C501	—	—	φ172mm×51mm	No	✓	✓	✓	195
109E1748F501	109E1748F502	109E1748F501	—	—	φ172mm×51mm	No	✓	✓	✓	195
109E1748H501	109E1748H502	109E1748H501	109E1748H5D01	—	φ172mm×51mm	No	✓	✓	✓	195
109E1748K501	109E1748K502	109E1748K501	—	109E1748P5K03	φ172mm×51mm	No	✓	✓	✓	195
109E1748M501	109E1748M502	109E1748M501	—	—	φ172mm×51mm	No	✓	✓	✓	195
109E4712L401	109E4712L402	109E4712L401	109E4712L4D01	—	φ172×147×25mm	No	✓	✓	✓	185
109E4712M401	109E4712M402	109E4712M401	109E4712M4D01	—	φ172×147×25mm	No	✓	✓	✓	185
109E4724F401	109E4724F402	109E4724F401	109E4724F4D01	—	φ172×147×25mm	No	✓	✓	✓	185
109E4724H401	109E4724H402	109E4724H401	109E4724H4D01	—	φ172×147×25mm	No	✓	✓	✓	185

Please contact your point of sale regarding low-speed sensors.

Standard name	Certification number
UL	E46810
CSA	172248

※TÜV certification numbers differ by model.

※The content of this catalog is current as of September 2015.

Please ask us about new products that we released after September 2015 if you want.

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	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							UL	CSA	TÜV	
109E4724L401	109E4724L402	109E4724L401	109E4724L4D01	—	φ 172×147×25mm	No	✓	✓	✓	185
109E4724M401	109E4724M402	109E4724M401	109E4724M4D01	—	φ 172×147×25mm	No	✓	✓	✓	185
109E4748F401	109E4748F402	109E4748F401	109E4748F4D01	—	φ 172×147×25mm	No	✓	✓	✓	185
109E4748H401	109E4748H402	109E4748H401	109E4748H4D01	—	φ 172×147×25mm	No	✓	✓	✓	185
109E4748L401	109E4748L402	109E4748L401	109E4748L4D01	—	φ 172×147×25mm	No	✓	✓	✓	185
109E4748M401	109E4748M402	109E4748M401	109E4748M4D01	—	φ 172×147×25mm	No	✓	✓	✓	185
109E4748S401	109E4748S402	109E4748S401	109E4748S4D01	—	φ 172×147×25mm	No	✓	✓	✓	185
109E5712F501	109E5712F502	109E5712F501	—	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5712H501	109E5712H502	109E5712H501	109E5712H5D01	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5712K501	109E5712K502	109E5712K501	109E5712K5D01	109E5712P5K04	φ 172×150×51mm	No	✓	✓	✓	193
109E5712M501	109E5712M502	109E5712M501	109E5712M5D01	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5712Y501	109E5712Y502	109E5712Y501	—	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5724C501	109E5724C502	109E5724C501	109E5724C5D01	9EH5724P5C01	φ 172×150×51mm	No	✓	✓	✓	193
109E5724F501	109E5724F502	109E5724F501	—	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5724H501	109E5724H502	109E5724H501	109E5724H5D01	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5724K501	109E5724K502	109E5724K501	109E5724K5D01	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5724M501	109E5724M502	109E5724M501	—	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5748C501	109E5748C502	109E5748C501	—	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5748F501	109E5748F502	109E5748F501	—	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5748H501	109E5748H502	109E5748H501	109E5748H5D01	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5748K501	109E5748K502	109E5748K501	—	—	φ 172×150×51mm	No	✓	✓	✓	193
109E5748M501	109E5748M502	109E5748M501	—	—	φ 172×150×51mm	No	✓	✓	✓	193
109L1412H101	109L1412H102	109L1412H101	109L1412H1D01	—	140×140×38mm	No	✓	✓	✓	341
109L1412M101	109L1412M102	109L1412M101	—	—	140×140×38mm	No	✓	✓	✓	341
109L1424H101	109L1424H102	109L1424H101	109L1424H1D01	—	140×140×38mm	No	✓	✓	✓	341
109L1424M101	109L1424M102	109L1424M101	109L1424M1D01	—	140×140×38mm	No	✓	✓	✓	341
109L1448H101	109L1448H102	109L1448H101	109L1448H1D01	—	140×140×38mm	No	✓	✓	✓	341
109L1448M101	109L1448M102	109L1448M101	109L1448M1D01	—	140×140×38mm	No	✓	✓	✓	341
109L1712H501	109L1712H502	109L1712H501	109L1712H5D01	—	φ 172mm×51mm	No	✓	✓	✓	347
109L1712M501	109L1712M502	109L1712M501	109L1712M5D01	—	φ 172mm×51mm	No	✓	✓	✓	347
109L1724H501	109L1724H502	109L1724H501	109L1724H5D01	—	φ 172mm×51mm	No	✓	✓	✓	347
109L1724M501	109L1724M502	109L1724M501	109L1724M5D01	—	φ 172mm×51mm	No	✓	✓	✓	347
109L1748H501	109L1748H502	109L1748H501	109L1748H5D01	—	φ 172mm×51mm	No	✓	✓	✓	347
109L1748M501	109L1748M502	109L1748M501	109L1748M5D01	—	φ 172mm×51mm	No	✓	✓	✓	347
109L5712H501	109L5712H502	109L5712H501	109L5712H5D01	—	φ 172×150×51mm	No	✓	✓	✓	345
109L5712M501	109L5712M502	109L5712M501	109L5712M5D01	—	φ 172×150×51mm	No	✓	✓	✓	345
109L5724H501	109L5724H502	109L5724H501	109L5724H5D01	—	φ 172×150×51mm	No	✓	✓	✓	345
109L5724M501	109L5724M502	109L5724M501	109L5724M5D01	—	φ 172×150×51mm	No	✓	✓	✓	345
109L5748H501	109L5748H502	109L5748H501	109L5748H5D01	—	φ 172×150×51mm	No	✓	✓	✓	345
109L5748M501	109L5748M502	109L5748M501	109L5748M5D01	—	φ 172×150×51mm	No	✓	✓	✓	345
109P0405F3013	109P0405F3023	109P0405F3013	109P0405F3D013	—	40×40×28mm	Yes	✓	✓	✓	43
109P0405F601	109P0405F602	109P0405F601	109P0405F6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0405H3013	109P0405H3023	109P0405H3013	109P0405H3D013	—	40×40×28mm	Yes	✓	✓	✓	43
109P0405H601	109P0405H602	109P0405H601	109P0405H6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0405H701	109P0405H702	109P0405H701	109P0405H7D01	—	40×40×15mm	Yes	✓	✓	✓	21
109P0405H901	109P0405H902	109P0405H901	109P0405H9D01	—	40×40×10mm	Yes	✓	✓	✓	17
109P0405J601	109P0405J602	109P0405J601	—	—	40×40×20mm	Yes	✓	✓	✓	27
109P0405M601	109P0405M602	109P0405M601	109P0405M6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0405M701	109P0405M702	109P0405M701	—	—	40×40×15mm	Yes	✓	✓	✓	21
109P0405M901	109P0405M902	109P0405M901	109P0405M9D01	—	40×40×10mm	Yes	✓	✓	✓	17
109P0412B3013	109P0412B3023	109P0412B3013	109P0412B3D013	109P0412P3B013	40×40×28mm	Yes	✓	✓	✓	43
109P0412D601	109P0412D602	109P0412D601	109P0412D6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0412E601	109P0412E602	109P0412E601	109P0412E6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0412F3013	109P0412F3023	109P0412F3013	109P0412F3D013	—	40×40×28mm	Yes	✓	✓	✓	43
109P0412F601	109P0412F602	109P0412F601	109P0412F6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0412G3013	109P0412G3023	109P0412G3013	109P0412G3D013	109P0412P3G033	40×40×28mm	Yes	✓	✓	✓	43
109P0412G601	109P0412G602	109P0412G601	109P0412G6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0412H3013	109P0412H3023	109P0412H3013	109P0412H3D013	109P0412P3H013	40×40×28mm	Yes	✓	✓	✓	43
109P0412H601	109P0412H602	109P0412H601	109P0412H6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0412H701	109P0412H702	109P0412H701	109P0412H7D01	—	40×40×15mm	Yes	✓	✓	✓	21
109P0412H901	109P0412H902	109P0412H901	109P0412H9D01	—	40×40×10mm	Yes	✓	✓	✓	17
109P0412J3013	109P0412J3023	109P0412J3013	109P0412J3D013	109P0412P3J033	40×40×28mm	Yes	✓	✓	✓	43

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							UL	CSA	TÜV	
109P0412K3013	109P0412K3023	109P0412K3013	109P0412K3D013	9PH0412P3K033	40×40×28mm	Yes	✓	✓	✓	43
109P0412M3013	109P0412M3023	109P0412M3013	109P0412M3D013	—	40×40×28mm	Yes	✓	✓	✓	43
109P0412M601	109P0412M602	109P0412M601	109P0412M6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0412M701	109P0412M702	109P0412M701	109P0412M7D01	—	40×40×15mm	Yes	✓	✓	✓	21
109P0412M901	109P0412M902	109P0412M901	109P0412M9D01	—	40×40×10mm	Yes	✓	✓	✓	17
109P0412R701	109P0412R702	109P0412R701	109P0412R7D01	—	40×40×15mm	Yes	✓	✓	✓	21
109P0412S701	109P0412S702	109P0412S701	109P0412S7D01	—	40×40×15mm	Yes	✓	✓	✓	21
109P0424B3013	109P0424B3023	109P0424B3013	109P0424B3D013	—	40×40×28mm	Yes	✓	✓	✓	43
109P0424B601	109P0424B602	109P0424B601	109P0424B6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0424D601	109P0424D602	109P0424D601	109P0424D6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0424F3013	109P0424F3023	109P0424F3013	109P0424F3D013	—	40×40×28mm	Yes	✓	✓	✓	43
109P0424F601	109P0424F602	109P0424F601	109P0424F6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0424G3013	109P0424G3023	109P0424G3013	109P0424G3D013	—	40×40×28mm	Yes	✓	✓	✓	43
109P0424G601	109P0424G602	109P0424G601	—	—	40×40×20mm	Yes	✓	✓	✓	27
109P0424H3013	109P0424H3023	109P0424H3013	109P0424H3D013	—	40×40×28mm	Yes	✓	✓	✓	43
109P0424H601	109P0424H602	109P0424H601	109P0424H6D01	—	40×40×20mm	Yes	✓	✓	✓	27
109P0424H701	109P0424H702	109P0424H701	109P0424H7D01	—	40×40×15mm	Yes	✓	✓	✓	21
109P0424J3013	109P0424J3023	109P0424J3013	109P0424J3D013	—	40×40×28mm	Yes	✓	✓	✓	43
109P0424R3013	109P0424R3023	109P0424R3013	—	—	40×40×28mm	Yes	—	—	—	43
109P0505M701	109P0505M702	109P0505M701	109P0505M7D01	—	52×52×15mm	Yes	✓	✓	✓	51
109P0512A701	109P0512A702	109P0512A701	109P0512A7D01	—	52×52×15mm	Yes	✓	✓	✓	51
109P0512H701	109P0512H702	109P0512H701	109P0512H7D01	—	52×52×15mm	Yes	✓	✓	✓	51
109P0512M701	109P0512M702	109P0512M701	109P0512M7D01	—	52×52×15mm	Yes	✓	✓	✓	51
109P0524A701	109P0524A702	109P0524A701	109P0524A7D01	—	52×52×15mm	Yes	✓	✓	✓	51
109P0524H701	109P0524H702	109P0524H701	109P0524H7D01	—	52×52×15mm	Yes	✓	✓	✓	51
109P0524M701	109P0524M702	109P0524M701	109P0524M7D01	—	52×52×15mm	Yes	✓	✓	✓	51
109P0605H701	109P0605H702	109P0605H701	109P0605H7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0605M701	109P0605M702	109P0605M701	109P0605M7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0612B701	109P0612B702	109P0612B701	109P0612B7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0612H601	109P0612H602	109P0612H601	109P0612H6D01	—	60×60×20mm	Yes	✓	✓	✓	65
109P0612H701	109P0612H702	109P0612H701	109P0612H7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0612K701	109P0612K702	109P0612K701	109P0612K7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0612M601	109P0612M602	109P0612M601	109P0612M6D01	—	60×60×20mm	Yes	✓	✓	✓	65
109P0612M701	109P0612M702	109P0612M701	109P0612M7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0612S701	109P0612S702	109P0612S701	109P0612S7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0612V601	109P0612V602	109P0612V601	109P0612V6D01	—	60×60×20mm	Yes	✓	✓	✓	65
109P0624H601	109P0624H602	109P0624H601	109P0624H6D01	—	60×60×20mm	Yes	✓	✓	✓	65
109P0624H701	109P0624H702	109P0624H701	109P0624H7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0624J701	109P0624J702	109P0624J701	109P0624J7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0624M601	109P0624M602	109P0624M601	109P0624M6D01	—	60×60×20mm	Yes	✓	✓	✓	65
109P0624M701	109P0624M702	109P0624M701	109P0624M7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0624S701	109P0624S702	109P0624S701	109P0624S7D01	—	60×60×15mm	Yes	✓	✓	✓	59
109P0624V601	109P0624V602	109P0624V601	109P0624V6D01	—	60×60×20mm	Yes	✓	✓	✓	65
109P0648H601	109P0648H602	109P0648H601	109P0648H6D01	—	60×60×20mm	Yes	✓	✓	✓	65
109P0812A201	109P0812A202	109P0812A201	109P0812A2D01	—	80×80×32mm	Yes	✓	✓	✓	117
109P0812A2011	109P0812A2021	109P0812A2011	109P0812A2D011	—	80×80×32mm	No	✓	✓	✓	117
109P0812C601	109P0812C602	109P0812C601	109P0812C6D01	—	80×80×20mm	Yes	—	—	—	97
109P0812H201	109P0812H202	109P0812H201	109P0812H2D01	—	80×80×32mm	Yes	✓	✓	✓	117
109P0812H2011	109P0812H2021	109P0812H2011	109P0812H2D011	—	80×80×32mm	No	✓	✓	✓	117
109P0812H601	109P0812H602	109P0812H601	109P0812H6D01	—	80×80×20mm	Yes	✓	✓	✓	97
109P0812H701	109P0812H702	109P0812H701	109P0812H7D01	—	80×80×15mm	Yes	✓	✓	✓	93
109P0812M201	109P0812M202	109P0812M201	109P0812M2D01	—	80×80×32mm	Yes	✓	✓	✓	117
109P0812M2011	109P0812M2021	109P0812M2011	109P0812M2D011	—	80×80×32mm	No	✓	✓	✓	117
109P0812M601	109P0812M602	109P0812M601	109P0812M6D01	—	80×80×20mm	Yes	✓	✓	✓	97
109P0812M701	109P0812M702	109P0812M701	109P0812M7D01	—	80×80×15mm	Yes	✓	✓	✓	93
109P0824A201	109P0824A202	109P0824A201	109P0824A2D01	—	80×80×32mm	Yes	✓	✓	✓	117
109P0824A2011	109P0824A2021	109P0824A2011	—	—	80×80×32mm	No	✓	✓	✓	117
109P0824H201	109P0824H202	109P0824H201	109P0824H2D01	—	80×80×32mm	Yes	✓	✓	✓	117
109P0824H2011	109P0824H2021	109P0824H2011	109P0824H2D011	—	80×80×32mm	No	✓	✓	✓	117
109P0824H601	109P0824H602	109P0824H601	109P0824H6D01	—	80×80×20mm	Yes	✓	✓	✓	97
109P0824H701	109P0824H702	109P0824H701	109P0824H7D01	—	80×80×15mm	Yes	✓	✓	✓	93
109P0824M201	109P0824M202	109P0824M201	109P0824M2D01	—	80×80×32mm	Yes	✓	✓	✓	117

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							UL	CSA	TÜV	
109P0824M2011	109P0824M2021	109P0824M2011	109P0824M2D011	—	80×80×32mm	No	✓	✓	✓	117
109P0824M601	109P0824M602	109P0824M601	109P0824M6D01	—	80×80×20mm	Yes	✓	✓	✓	97
109P0824M701	109P0824M702	109P0824M701	—	—	80×80×15mm	Yes	✓	✓	✓	93
109P0848C601	109P0848C602	109P0848C601	109P0848C6D01	—	80×80×20mm	Yes	✓	✓	✓	97
109P0848H201	109P0848H202	109P0848H201	109P0848H2D01	—	80×80×32mm	Yes	✓	✓	✓	117
109P0848H2011	109P0848H2021	109P0848H2011	—	—	80×80×32mm	No	✓	✓	✓	117
109P0848H601	—	109P0848H601	109P0848H6D01	—	80×80×20mm	Yes	✓	✓	✓	97
109P1312H101	109P1312H102	109P1312H101	109P1312H1D01	—	127×127×38mm	Yes	✓	✓	✓	173
109P1312H1011	109P1312H1021	109P1312H1011	109P1312H1D011	—	127×127×38mm	No	✓	✓	✓	173
109P1312S101	109P1312S102	109P1312S101	109P1312S1D01	—	127×127×38mm	Yes	✓	✓	✓	173
109P1312S1011	109P1312S1021	109P1312S1011	109P1312S1D011	—	127×127×38mm	No	✓	✓	✓	173
109P1324H101	109P1324H102	109P1324H101	109P1324H1D01	—	127×127×38mm	Yes	✓	✓	✓	173
109P1324H1011	109P1324H1021	109P1324H1011	109P1324H1D011	—	127×127×38mm	No	✓	✓	✓	173
109P1324S101	109P1324S102	109P1324S101	109P1324S1D01	—	127×127×38mm	Yes	✓	✓	✓	173
109P1324S1011	109P1324S1021	109P1324S1011	109P1324S1D011	—	127×127×38mm	No	✓	✓	✓	173
109P1348H101	109P1348H102	109P1348H101	109P1348H1D01	—	127×127×38mm	Yes	✓	✓	✓	173
109P1348H1011	109P1348H1021	109P1348H1011	109P1348H1D011	—	127×127×38mm	No	✓	✓	✓	173
109P1348S101	109P1348S102	109P1348S101	109P1348S1D01	—	127×127×38mm	Yes	✓	✓	✓	173
109P1348S1011	109P1348S1021	109P1348S1011	109P1348S1D011	—	127×127×38mm	No	✓	✓	✓	173
109P1412H101	109P1412H102	109P1412H101	109P1412H1D01	—	140×140×38mm	Yes	✓	✓	✓	181
109P1412M101	109P1412M102	109P1412M101	—	—	140×140×38mm	Yes	✓	✓	✓	181
109P1424H101	109P1424H102	109P1424H101	109P1424H1D01	—	140×140×38mm	Yes	✓	✓	✓	181
109P1424M101	109P1424M102	109P1424M101	—	—	140×140×38mm	Yes	✓	✓	✓	181
109P1448H101	109P1448H102	109P1448H101	—	—	140×140×38mm	Yes	✓	✓	✓	181
109P1448M101	109P1448M102	109P1448M101	—	—	140×140×38mm	Yes	✓	✓	✓	181
109R0605F401	109R0605F402	109R0605F401	109R0605F4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0605F4011	109R0605F4021	109R0605F4011	—	—	60×60×25mm	No	✓	✓	✓	71
109R0605H401	109R0605H402	109R0605H401	109R0605H4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0605H4011	109R0605H4021	109R0605H4011	—	—	60×60×25mm	No	✓	✓	✓	71
109R0605M401	109R0605M402	109R0605M401	109R0605M4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0605M4011	109R0605M4021	109R0605M4011	—	—	60×60×25mm	No	✓	✓	✓	71
109R0612D401	109R0612D402	109R0612D401	109R0612D4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0612D4011	109R0612D4021	109R0612D4011	109R0612D4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0612F401	109R0612F402	109R0612F401	109R0612F4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0612F4011	109R0612F4021	109R0612F4011	109R0612F4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0612G401	109R0612G402	109R0612G401	109R0612G4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0612G4011	109R0612G4021	109R0612G4011	109R0612G4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0612H401	109R0612H402	109R0612H401	109R0612H4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0612H4011	109R0612H4021	109R0612H4011	—	—	60×60×25mm	No	✓	✓	✓	71
109R0612J401	109R0612J402	109R0612J401	109R0612J4D01	109R0612P4J03	60×60×25mm	Yes	✓	✓	✓	71
109R0612J4011	109R0612J4021	109R0612J4011	109R0612J4D011	109R0612P4J061	60×60×25mm	No	✓	✓	✓	71
109R0612M401	109R0612M402	109R0612M401	109R0612M4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0612M4011	109R0612M4021	109R0612M4011	109R0612M4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0612S401	109R0612S402	109R0612S401	109R0612S4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0612S4011	109R0612S4021	109R0612S4011	109R0612S4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0624D401	109R0624D402	109R0624D401	109R0624D4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0624D4011	109R0624D4021	109R0624D4011	—	—	60×60×25mm	No	✓	✓	✓	71
109R0624F401	109R0624F402	109R0624F401	109R0624F4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0624F4011	109R0624F4021	109R0624F4011	—	—	60×60×25mm	No	✓	✓	✓	71
109R0624G401	109R0624G402	109R0624G401	109R0624G4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0624G4011	109R0624G4021	109R0624G4011	109R0624G4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0624H401	109R0624H402	109R0624H401	109R0624H4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0624H4011	109R0624H4021	109R0624H4011	109R0624H4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0624J401	109R0624J402	109R0624J401	109R0624J4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0624J4011	109R0624J4021	109R0624J4011	109R0624J4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0624M401	109R0624M402	109R0624M401	109R0624M4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0624M4011	109R0624M4021	109R0624M4011	109R0624M4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0624S401	109R0624S402	109R0624S401	109R0624S4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0624S4011	109R0624S4021	109R0624S4011	109R0624S4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0648G401	109R0648G402	109R0648G401	109R0648G4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0648G4011	109R0648G4021	109R0648G4011	109R0648G4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0648H401	109R0648H402	109R0648H401	109R0648H4D01	—	60×60×25mm	Yes	✓	✓	✓	71

Please contact your point of sale regarding low-speed sensors.

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							✓	✓	✓	
109R0648H4011	109R0648H4021	109R0648H4011	109R0648H4D011	—	60×60×25mm	No	✓	✓	✓	71
109R0648J401	109R0648J402	109R0648J401	109R0648J4D01	—	60×60×25mm	Yes	✓	✓	✓	71
109R0648J4011	109R0648J4021	109R0648J4011	—	—	60×60×25mm	No	✓	✓	✓	71
109R0805F401	109R0805F402	109R0805F401	109R0805F4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0805F4011	109R0805F4021	109R0805F4011	—	—	80×80×25mm	No	✓	✓	✓	109
109R0805M401	109R0805M402	109R0805M401	—	—	80×80×25mm	Yes	✓	✓	✓	109
109R0805M4011	109R0805M4021	109R0805M4011	—	—	80×80×25mm	No	✓	✓	✓	109
109R0812E401	109R0812E402	109R0812E401	—	—	80×80×25mm	Yes	—	—	—	109
109R0812E4011	—	109R0812E4011	—	—	80×80×25mm	No	—	—	—	109
109R0812F401	109R0812F402	109R0812F401	109R0812F4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0812F4011	109R0812F4021	109R0812F4011	109R0812F4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0812G401	109R0812G402	109R0812G401	109R0812G4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0812G4011	109R0812G4021	109R0812G4011	109R0812G4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0812H401	109R0812H402	109R0812H401	109R0812H4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0812H4011	109R0812H4021	109R0812H4011	109R0812H4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0812L401	109R0812L402	109R0812L401	109R0812L4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0812L4011	109R0812L4021	109R0812L4011	109R0812L4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0812M401	109R0812M402	109R0812M401	109R0812M4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0812M4011	109R0812M4021	109R0812M4011	109R0812M4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0812S401	109R0812S402	109R0812S401	109R0812S4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0812S4011	109R0812S4021	109R0812S4011	109R0812S4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0824F401	109R0824F402	109R0824F401	109R0824F4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0824F4011	109R0824F4021	109R0824F4011	109R0824F4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0824G401	109R0824G402	109R0824G401	109R0824G4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0824G4011	109R0824G4021	109R0824G4011	109R0824G4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0824H401	109R0824H402	109R0824H401	109R0824H4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0824H4011	109R0824H4021	109R0824H4011	109R0824H4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0824L401	109R0824L402	109R0824L401	109R0824L4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0824L4011	109R0824L4021	109R0824L4011	109R0824L4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0824M401	109R0824M402	109R0824M401	109R0824M4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0824M4011	109R0824M4021	109R0824M4011	109R0824M4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0824S401	109R0824S402	109R0824S401	109R0824S4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0824S4011	109R0824S4021	109R0824S4011	109R0824S4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0848K401	109R0848K402	109R0848K401	109R0848K4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0848K4011	109R0848K4021	109R0848K4011	109R0848K4D011	—	80×80×25mm	No	✓	✓	✓	109
109R0848S401	109R0848S402	109R0848S401	109R0848S4D01	—	80×80×25mm	Yes	✓	✓	✓	109
109R0848S4011	109R0848S4021	109R0848S4011	109R0848S4D011	—	80×80×25mm	No	✓	✓	✓	109
109W1412H101-U	109W1412H102-U	109W1412H101-U	—	—	140×140×38mm	No	✓	✓	✓	277
109W1412M101-U	109W1412M102-U	109W1412M101-U	109W1412M1D01-U	—	140×140×38mm	No	✓	✓	✓	277
109W1424H101-U	109W1424H102-U	109W1424H101-U	—	—	140×140×38mm	No	✓	✓	✓	277
109W1424M101-U	109W1424M102-U	109W1424M101-U	—	—	140×140×38mm	No	✓	✓	✓	277
109W1448H101-U	109W1448H102-U	109W1448H101-U	109W1448H1D01-U	—	140×140×38mm	No	✓	✓	✓	277
109W1448M101-U	109W1448M102-U	109W1448M101-U	—	—	140×140×38mm	No	✓	✓	✓	277
9A0612F401	9A0612F402	9A0612F401	9A0612F4D01	—	60×60×25mm	Yes	✓	✓	✓	75
9A0612F4011	9A0612F4021	9A0612F4011	9A0612F4D011	—	60×60×25mm	No	✓	✓	✓	75
9A0612G401	9A0612G402	9A0612G401	9A0612G4D01	9AH0612P4G03	60×60×25mm	Yes	✓	✓	✓	75
9A0612G4011	9A0612G4021	9A0612G4011	9A0612G4D011	—	60×60×25mm	No	✓	✓	✓	75
9A0612H401	9A0612H402	9A0612H401	9A0612H4D01	9AH0612P4H05	60×60×25mm	Yes	✓	✓	✓	75
9A0612H4011	9A0612H4021	9A0612H4011	9A0612H4D011	—	60×60×25mm	No	✓	✓	✓	75
9A0612M401	9A0612M402	9A0612M401	9A0612M4D01	—	60×60×25mm	Yes	✓	✓	✓	75
9A0612M4011	9A0612M4021	9A0612M4011	—	—	60×60×25mm	No	✓	✓	✓	75
9A0612S401	9A0612S402	9A0612S401	9A0612S4D01	—	60×60×25mm	Yes	✓	✓	✓	75
9A0612S4011	9A0612S4021	9A0612S4011	9A0612S4D011	—	60×60×25mm	No	✓	✓	✓	75
9A0624F401	9A0624F402	9A0624F401	9A0624F4D01	—	60×60×25mm	Yes	✓	✓	✓	75
9A0624F4011	9A0624F4021	9A0624F4011	9A0624F4D011	—	60×60×25mm	No	✓	✓	✓	75
9A0624G401	9A0624G402	9A0624G401	9A0624G4D01	—	60×60×25mm	Yes	✓	✓	✓	75
9A0624G4011	9A0624G4021	9A0624G4011	—	—	60×60×25mm	No	✓	✓	✓	75
9A0624H401	9A0624H402	9A0624H401	9A0624H4D01	—	60×60×25mm	Yes	✓	✓	✓	75
9A0624H4011	9A0624H4021	9A0624H4011	9A0624H4D011	—	60×60×25mm	No	✓	✓	✓	75
9A0624M401	9A0624M402	9A0624M401	9A0624M4D01	—	60×60×25mm	Yes	✓	✓	✓	75
9A0624M4011	9A0624M4021	9A0624M4011	9A0624M4D011	—	60×60×25mm	No	✓	✓	✓	75
9A0624S401	9A0624S402	9A0624S401	9A0624S4D01	—	60×60×25mm	Yes	✓	✓	✓	75

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							✓	✓	✓	
9A0624S4011	9A0624S4021	9A0624S4011	—	—	60×60×25mm	No	✓	✓	✓	75
9A0812F401	9A0812F402	9A0812F401	9A0812F4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0812F4011	9A0812F4021	9A0812F4011	9A0812F4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0812G401	9A0812G402	9A0812G401	9A0812G4D01	9AH0812P4G04	80×80×25mm	Yes	✓	✓	✓	113
9A0812G4011	9A0812G4021	9A0812G4011	9A0812G4D011	9AH0812P4G011	80×80×25mm	No	✓	✓	✓	113
9A0812H401	9A0812H402	9A0812H401	9A0812H4D01	9AH0812P4H04	80×80×25mm	Yes	✓	✓	✓	113
9A0812H4011	9A0812H4021	9A0812H4011	9A0812H4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0812L401	9A0812L402	9A0812L401	9A0812L4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0812L4011	9A0812L4021	9A0812L4011	9A0812L4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0812M401	9A0812M402	9A0812M401	9A0812M4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0812M4011	9A0812M4021	9A0812M4011	9A0812M4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0812S401	9A0812S402	9A0812S401	9A0812S4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0812S4011	9A0812S4021	9A0812S4011	9A0812S4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0824F401	9A0824F402	9A0824F401	9A0824F4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0824F4011	9A0824F4021	9A0824F4011	9A0824F4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0824G401	9A0824G402	9A0824G401	9A0824G4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0824G4011	9A0824G4021	9A0824G4011	9A0824G4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0824H401	9A0824H402	9A0824H401	9A0824H4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0824H4011	9A0824H4021	9A0824H4011	9A0824H4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0824L401	9A0824L402	9A0824L401	9A0824L4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0824L4011	9A0824L4021	9A0824L4011	9A0824L4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0824M401	9A0824M402	9A0824M401	9A0824M4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0824M4011	9A0824M4021	9A0824M4011	9A0824M4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0824S401	9A0824S402	9A0824S401	9A0824S4D01	—	80×80×25mm	Yes	✓	✓	✓	113
9A0824S4011	9A0824S4021	9A0824S4011	9A0824S4D011	—	80×80×25mm	No	✓	✓	✓	113
9A0912F401	9A0912F402	9A0912F401	9A0912F4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0912F4011	9A0912F4021	9A0912F4011	9A0912F4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0912G401	9A0912G402	9A0912G401	9A0912G4D01	9AH0912P4G03	92×92×25mm	Yes	✓	✓	✓	137
9A0912G4011	9A0912G4021	9A0912G4011	9A0912G4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0912H401	9A0912H402	9A0912H401	9A0912H4D01	9AH0912P4H03	92×92×25mm	Yes	✓	✓	✓	137
9A0912H4011	9A0912H4021	9A0912H4011	9A0912H4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0912L401	9A0912L402	9A0912L401	9A0912L4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0912L4011	9A0912L4021	9A0912L4011	9A0912L4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0912M401	9A0912M402	9A0912M401	9A0912M4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0912M4011	9A0912M4021	9A0912M4011	9A0912M4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0912S401	9A0912S402	9A0912S401	9A0912S4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0912S4011	9A0912S4021	9A0912S4011	9A0912S4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0924F401	9A0924F402	9A0924F401	9A0924F4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0924F4011	9A0924F4021	9A0924F4011	9A0924F4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0924G401	9A0924G402	9A0924G401	9A0924G4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0924G4011	9A0924G4021	9A0924G4011	—	—	92×92×25mm	No	✓	✓	✓	137
9A0924H401	9A0924H402	9A0924H401	9A0924H4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0924H4011	9A0924H4021	9A0924H4011	9A0924H4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0924L401	9A0924L402	9A0924L401	9A0924L4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0924L4011	9A0924L4021	9A0924L4011	9A0924L4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0924M401	9A0924M402	9A0924M401	9A0924M4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0924M4011	9A0924M4021	9A0924M4011	9A0924M4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0924S401	9A0924S402	9A0924S401	9A0924S4D01	—	92×92×25mm	Yes	✓	✓	✓	137
9A0924S4011	9A0924S4021	9A0924S4011	9A0924S4D011	—	92×92×25mm	No	✓	✓	✓	137
9A0948S401	9A0948S402	9A0948S401	—	—	92×92×25mm	Yes	✓	✓	✓	137
9A0948S4011	9A0948S4021	9A0948S4011	—	—	92×92×25mm	No	✓	✓	✓	137
9BD12FC6-1	9BD12FA6-1	9BD12FC6-1	9BD12FD6-1	—	76mm×20mm	—	✓	✓	✓	381
9BD12HC6-1	9BD12HA6-1	9BD12HC6-1	9BD12HD6-1	—	76mm×20mm	—	✓	✓	✓	381
9BD12SC6-1	9BD12SA6-1	9BD12SC6-1	9BD12SD6-1	9BD12P6S01	76mm×20mm	—	✓	✓	✓	381
9BD24FC6-1	9BD24FA6-1	9BD24FC6-1	9BD24FD6-1	—	76mm×20mm	—	✓	✓	✓	381
9BD24HC6-1	9BD24HA6-1	9BD24HC6-1	9BD24HD6-1	—	76mm×20mm	—	✓	✓	✓	381
9BD24SC6-1	9BD24SA6-1	9BD24SC6-1	9BD24SD6-1	9BD24P6S06	76mm×20mm	—	✓	✓	✓	381
9BFB12P2H003	—	—	—	9BFB12P2H003	120mm×32mm	—	✓	✓	✓	393
9BFB24P2H003	—	—	—	9BFB24P2H003	120mm×32mm	—	✓	✓	✓	393
9BMB12F201	9BMB12F202	9BMB12F201	9BMB12F2D01	9BMB12P2F01	97mm×33mm	—	✓	✓	✓	387
9BMB12G201	9BMB12G202	9BMB12G201	—	9BMB12P2G01	97mm×33mm	—	✓	✓	✓	387
9BMB12H201	9BMB12H202	9BMB12H201	9BMB12H2D01	9BMB12P2H01	97mm×33mm	—	✓	✓	✓	387

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
9BMB12K201	9BMB12K202	9BMB12K201	—	9BMB12P2K01	97mm×33mm	—	✓	✓	✓	387
9BMB12P2F01	9BMB12F202	9BMB12F201	9BMB12F2D01	9BMB12P2F01	97mm×33mm	—	✓	✓	✓	387
9BMB12P2G01	9BMB12G202	9BMB12G201	—	9BMB12P2G01	97mm×33mm	—	✓	✓	✓	387
9BMB12P2H01	9BMB12H202	9BMB12H201	9BMB12H2D01	9BMB12P2H01	97mm×33mm	—	✓	✓	✓	387
9BMB12P2K01	9BMB12K202	9BMB12K201	—	9BMB12P2K01	97mm×33mm	—	✓	✓	✓	387
9BMB12P2S01	9BMB12S202	9BMB12S201	—	9BMB12P2S01	97mm×33mm	—	✓	✓	✓	387
9BMB12S201	9BMB12S202	9BMB12S201	—	9BMB12P2S01	97mm×33mm	—	✓	✓	✓	387
9BMB24F201	9BMB24F202	9BMB24F201	—	9BMB24P2F01	97mm×33mm	—	✓	✓	✓	387
9BMB24G201	9BMB24G202	9BMB24G201	9BMB24G2D01	9BMB24P2G01	97mm×33mm	—	✓	✓	✓	387
9BMB24H201	9BMB24H202	9BMB24H201	9BMB24H2D01	9BMB24P2H01	97mm×33mm	—	✓	✓	✓	387
9BMB24K201	9BMB24K202	9BMB24K201	—	9BMB24P2K01	97mm×33mm	—	✓	✓	✓	387
9BMB24P2F01	9BMB24F202	9BMB24F201	—	9BMB24P2F01	97mm×33mm	—	✓	✓	✓	387
9BMB24P2G01	9BMB24G202	9BMB24G201	9BMB24G2D01	9BMB24P2G01	97mm×33mm	—	✓	✓	✓	387
9BMB24P2H01	9BMB24H202	9BMB24H201	9BMB24H2D01	9BMB24P2H01	97mm×33mm	—	✓	✓	✓	387
9BMB24P2K01	9BMB24K202	9BMB24K201	—	9BMB24P2K01	97mm×33mm	—	✓	✓	✓	387
9BMB24P2S01	9BMB24S202	9BMB24S201	—	9BMB24P2S01	97mm×33mm	—	✓	✓	✓	387
9BMB24S201	9BMB24S202	9BMB24S201	—	9BMB24P2S01	97mm×33mm	—	✓	✓	✓	387
9CR0612P5G03	—	9CR0612G501	—	9CR0612P5G03	60×60×51mm	—	✓	✓	✓	217
9CR0612P5H03	—	9CR0612H501	—	9CR0612P5H03	60×60×51mm	—	✓	✓	✓	217
9CR1212P0G03	9CR1212G002	9CR1212G001	—	9CR1212P0G03	120×120×76mm	—	✓	✓	✓	229
9CR5748P9G001	—	—	—	9CR5748P9G001	φ172×150×102mm	—	✓	✓	✓	231
9CRA0312P4J03	—	9CRA0312J401	—	9CRA0312P4J03	38×38×48mm	—	✓	✓	✓	203
9CRA0312P4K03	9CRA0312K402	—	—	9CRA0312P4K03	38×38×48mm	—	✓	✓	✓	203
9CRA0412P4G03	9CRA0412G402	—	—	9CRA0412P4G03	40×40×48mm	—	✓	✓	✓	205
9CRA0412P4J03	9CRA0412J402	9CRA0412J401	—	9CRA0412P4J03	40×40×48mm	—	✓	✓	✓	205
9CRA0412P4K03	9CRA0412K402	9CRA0412K401	—	9CRA0412P4K03	40×40×48mm	—	✓	✓	✓	205
9CRA0612P0G001	—	—	—	9CRA0612P0G001	60×60×76mm	—	✓	✓	✓	223
9CRA0612P0S001	—	—	—	9CRA0612P0S001	60×60×76mm	—	✓	✓	✓	223
9CRA0612P6G001	—	—	—	9CRA0612P6G001	60×60×56mm	—	✓	✓	✓	219
9CRA0612P6J001	—	—	—	9CRA0612P6J001	60×60×56mm	—	✓	✓	✓	219
9CRA0612P6K001	—	—	—	9CRA0612P6K001	60×60×56mm	—	✓	✓	✓	219
9CRA0812P8G001	—	9CRA0812G8001	—	9CRA0812P8G001	80×80×80mm	—	✓	✓	✓	227
9CRA0848P8G001	—	—	—	9CRA0848P8G001	80×80×80mm	—	✓	✓	✓	227
9CRB0412P5J201	—	—	—	9CRB0412P5J201	40×40×56mm	—	✓	✓	✓	207
9CRB0412P5K001	—	—	—	9CRB0412P5K001	40×40×56mm	—	✓	✓	✓	207
9CRB0412P5S201	—	—	—	9CRB0412P5S201	40×40×56mm	—	✓	✓	✓	207
9CRD0412P5G03	—	—	—	9CRD0412P5G03	40×40×56mm	—	✓	✓	✓	211
9CRD0412P5H03	—	—	—	9CRD0412P5H03	40×40×56mm	—	✓	✓	✓	211
9CRD0412P5J03	—	—	—	9CRD0412P5J03	40×40×56mm	—	✓	✓	✓	211
9CRD0412P5M03	—	—	—	9CRD0412P5M03	40×40×56mm	—	✓	✓	✓	211
9CRE0412P5J03	9CRE0412J502	—	—	9CRE0412P5J03	40×40×56mm	—	✓	✓	✓	215
9CRE0612P0G001	—	—	—	9CRE0612P0G001	60×60×76mm	Yes	✓	✓	✓	221
9CRE0812P8G001	—	—	—	9CRE0812P8G001	80×80×80mm	Yes	✓	✓	✓	225
9CRF0412P5K201	—	—	—	9CRF0412P5K201	40×40×56mm	—	✓	✓	✓	209
9CRL0612P0G001	—	—	—	9CRL0612P0G001	60×60×76mm	No	✓	✓	✓	319
9CRL0812P8G001	—	—	—	9CRL0812P8G001	80×80×80mm	No	✓	✓	✓	325
9EC2024H001	9EC2024H002	9EC2024H001	9EC2024H0D01	—	φ200mm×70mm	No	✓	✓	✓	199
9EC2048A001	9EC2048A002	9EC2048A001	9EC2048A0D01	9EC2048P0A01	φ200mm×70mm	No	✓	✓	✓	199
9EC2048H001	—	9EC2048H001	—	—	φ200mm×70mm	No	✓	✓	✓	199
9EC2048J001	9EC2048J002	9EC2048J001	—	9EC2048P0J01	φ200mm×70mm	No	—	—	—	199
9G0612G101	9G0612G102	9G0612G101	9G0612G1D01	9G0612P1G03	60×60×38mm	Yes	✓	✓	✓	85
9G0612G1011	9G0612G1021	9G0612G1011	9G0612G1D011	9G0612P1G011	60×60×38mm	No	✓	✓	✓	85
9G0612P4H001	9G0612H4002	—	—	9G0612P4H001	60×60×25mm	Yes	✓	✓	✓	69
9G0612P4H0011	9G0612H40021	9G0612H40011	—	9G0612P4H0011	60×60×25mm	No	✓	✓	✓	69
9G0612P4S001	9G0612S4002	9G0612S4001	—	9G0612P4S001	60×60×25mm	Yes	✓	✓	✓	69
9G0612P4S0011	9G0612S40021	—	—	9G0612P4S0011	60×60×25mm	No	✓	✓	✓	69
9G0612S101	9G0612S102	9G0612S101	9G0612S1D01	—	60×60×38mm	Yes	✓	✓	✓	85
9G0612S1011	9G0612S1021	9G0612S1011	—	—	60×60×38mm	No	✓	✓	✓	85
9G0624G101	9G0624G102	9G0624G101	9G0624G1D01	9G0624P1G03	60×60×38mm	Yes	✓	✓	✓	85
9G0624G1011	9G0624G1021	9G0624G1011	9G0624G1D011	9G0624P1G031	60×60×38mm	No	✓	✓	✓	85
9G0624H101	9G0624H102	9G0624H101	9G0624H1D01	—	60×60×38mm	Yes	✓	✓	✓	85
9G0624H1011	9G0624H1021	9G0624H1011	—	—	60×60×38mm	No	✓	✓	✓	85

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							UL	CSA	TÜV	
9G0624P4H001	9G0624H4002	9G0624H4001	—	9G0624P4H001	60×60×25mm	Yes	✓	✓	✓	69
9G0624P4H0011	9G0624H40021	—	—	9G0624P4H0011	60×60×25mm	No	✓	✓	✓	69
9G0624P4S001	9G0624S4002	—	—	9G0624P4S001	60×60×25mm	Yes	✓	✓	✓	69
9G0624P4S0011	—	—	—	9G0624P4S0011	60×60×25mm	No	✓	✓	✓	69
9G0624S101	9G0624S102	9G0624S101	9G0624S1D01	—	60×60×38mm	Yes	✓	✓	✓	85
9G0624S1011	9G0624S1021	9G0624S1011	—	—	60×60×38mm	No	✓	✓	✓	85
9G0648G101	9G0648G102	9G0648G101	9G0648G1D01	9G0648P1G01	60×60×38mm	Yes	✓	✓	✓	85
9G0648G1011	9G0648G1021	9G0648G1011	—	9G0648P1G011	60×60×38mm	No	✓	✓	✓	85
9G0648P4S001	—	—	—	9G0648P4S001	60×60×25mm	Yes	✓	✓	✓	69
9G0648P4S0011	—	—	—	9G0648P4S0011	60×60×25mm	No	✓	✓	✓	69
9G0648S101	9G0648S102	9G0648S101	9G0648S1D01	—	60×60×38mm	Yes	✓	✓	✓	85
9G0648S1011	9G0648S1021	9G0648S1011	—	—	60×60×38mm	No	✓	✓	✓	85
9G0812G101	9G0812G102	9G0812G101	9G0812G1D01	9G0812P1G04	80×80×38mm	Yes	✓	✓	✓	129
9G0812G1011	9G0812G1021	9G0812G1011	—	—	80×80×38mm	No	✓	✓	✓	129
9G0812H101	9G0812H102	9G0812H101	9G0812H1D01	9G0812P1H03	80×80×38mm	Yes	✓	✓	✓	129
9G0812H1011	9G0812H1021	9G0812H1011	—	9G0812P1H051	80×80×38mm	No	✓	✓	✓	129
9G0812K101	9G0812K102	9G0812K101	—	9G0812P1K08	80×80×38mm	Yes	✓	✓	✓	129
9G0812K1011	9G0812K1021	9G0812K1011	—	9G0812P1K081	80×80×38mm	No	✓	✓	✓	129
9G0824G101	9G0824G102	9G0824G101	9G0824G1D01	9G0824P1G04	80×80×38mm	Yes	✓	✓	✓	129
9G0824G1011	9G0824G1021	9G0824G1011	—	—	80×80×38mm	No	✓	✓	✓	129
9G0824H101	9G0824H102	9G0824H101	9G0824H1D01	—	80×80×38mm	Yes	✓	✓	✓	129
9G0824H1011	9G0824H1021	9G0824H1011	9G0824H1D011	—	80×80×38mm	No	✓	✓	✓	129
9G0848G101	9G0848G102	9G0848G101	9G0848G1D01	9G0848P1G03	80×80×38mm	Yes	✓	✓	✓	129
9G0848G1011	9G0848G1021	9G0848G1011	—	—	80×80×38mm	No	✓	✓	✓	129
9G0848H101	9G0848H102	9G0848H101	—	9G0848P1H04	80×80×38mm	Yes	✓	✓	✓	129
9G0848H1011	9G0848H1021	9G0848H1011	—	—	80×80×38mm	No	✓	✓	✓	129
9G0912A201	9G0912A202	9G0912A201	9G0912A2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0912A2011	9G0912A2021	9G0912A2011	9G0912A2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0912G101	9G0912G102	9G0912G101	9G0912G1D01	9G0912P1G03	92×92×38mm	Yes	✓	✓	✓	149
9G0912G1011	9G0912G1021	9G0912G1011	—	9G0912P1G031	92×92×38mm	No	✓	✓	✓	149
9G0912H101	9G0912H102	9G0912H101	9G0912H1D01	9G0912P1H05	92×92×38mm	Yes	✓	✓	✓	149
9G0912H1011	9G0912H1021	9G0912H1011	9G0912H1D011	—	92×92×38mm	No	✓	✓	✓	149
9G0912H201	9G0912H202	9G0912H201	9G0912H2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0912H2011	9G0912H2021	9G0912H2011	9G0912H2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0912M201	9G0912M202	9G0912M201	9G0912M2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0912M2011	9G0912M2021	9G0912M2011	9G0912M2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0912S201	9G0912S202	9G0912S201	9G0912S2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0912S2011	9G0912S2021	9G0912S2011	9G0912S2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0924A201	9G0924A202	9G0924A201	9G0924A2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0924A2011	9G0924A2021	9G0924A2011	9G0924A2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0924G101	9G0924G102	9G0924G101	9G0924G1D01	—	92×92×38mm	Yes	✓	✓	✓	149
9G0924G1011	9G0924G1021	9G0924G1011	9G0924G1D011	—	92×92×38mm	No	✓	✓	✓	149
9G0924H101	9G0924H102	9G0924H101	9G0924H1D01	—	92×92×38mm	Yes	✓	✓	✓	149
9G0924H1011	9G0924H1021	9G0924H1011	9G0924H1D011	—	92×92×38mm	No	✓	✓	✓	149
9G0924H201	9G0924H202	9G0924H201	9G0924H2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0924H2011	9G0924H2021	9G0924H2011	9G0924H2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0924M201	9G0924M202	9G0924M201	9G0924M2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0924M2011	9G0924M2021	9G0924M2011	9G0924M2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0924S201	9G0924S202	9G0924S201	9G0924S2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0924S2011	9G0924S2021	9G0924S2011	9G0924S2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0948A201	9G0948A202	9G0948A201	9G0948A2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0948A2011	9G0948A2021	9G0948A2011	9G0948A2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0948G101	9G0948G102	9G0948G101	9G0948G1D01	—	92×92×38mm	Yes	✓	✓	✓	149
9G0948G1011	9G0948G1021	9G0948G1011	9G0948G1D011	—	92×92×38mm	No	✓	✓	✓	149
9G0948H101	9G0948H102	9G0948H101	9G0948H1D01	—	92×92×38mm	Yes	✓	✓	✓	149
9G0948H1011	—	9G0948H1011	—	—	92×92×38mm	No	✓	✓	✓	149
9G0948H201	9G0948H202	9G0948H201	9G0948H2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0948H2011	9G0948H2021	9G0948H2011	9G0948H2D011	—	92×92×32mm	No	✓	✓	✓	139
9G0948J101	—	9G0948J101	—	—	92×92×38mm	Yes	✓	✓	✓	149
9G0948J1011	—	9G0948J1011	—	9G0948P1J031	92×92×38mm	No	✓	✓	✓	149
9G0948M201	9G0948M202	9G0948M201	9G0948M2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0948M2011	9G0948M2021	9G0948M2011	9G0948M2D011	—	92×92×32mm	No	✓	✓	✓	139

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							UL	CSA	TÜV	
9G0948S201	9G0948S202	9G0948S201	9G0948S2D01	—	92×92×32mm	Yes	✓	✓	✓	139
9G0948S2011	9G0948S2021	9G0948S2011	9G0948S2D011	—	92×92×32mm	No	✓	✓	✓	139
9G1212A401	9G1212A402	9G1212A401	9G1212A4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1212A4011	9G1212A4021	9G1212A4011	9G1212A4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1212B401	—	9G1212B401	—	—	120×120×25mm	Yes	—	—	—	157
9G1212B4011	—	9G1212B4011	—	—	120×120×25mm	No	—	—	—	157
9G1212E101	9G1212E102	9G1212E101	9G1212E1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1212E1011	9G1212E1021	9G1212E1011	9G1212E1D011	—	120×120×38mm	No	✓	✓	✓	167
9G1212E401	9G1212E402	9G1212E401	9G1212E4D01	9G1212P4E05	120×120×25mm	Yes	✓	✓	✓	157
9G1212E4011	9G1212E4021	9G1212E4011	9G1212E4D011	9G1212P4E041	120×120×25mm	No	✓	✓	✓	157
9G1212F101	9G1212F102	9G1212F101	—	—	120×120×38mm	Yes	✓	✓	✓	167
9G1212F1011	9G1212F1021	9G1212F1011	—	—	120×120×38mm	No	✓	✓	✓	167
9G1212F401	9G1212F402	9G1212F401	9G1212F4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1212F4011	9G1212F4021	9G1212F4011	9G1212F4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1212G101	9G1212G102	9G1212G101	9G1212G1D01	9G1212P1G04	120×120×38mm	Yes	✓	✓	✓	167
9G1212G1011	9G1212G1021	9G1212G1011	9G1212G1D011	9G1212P1G081	120×120×38mm	No	✓	✓	✓	167
9G1212G401	9G1212G402	9G1212G401	9G1212G4D01	9G1212P4G03	120×120×25mm	Yes	✓	✓	✓	157
9G1212G4011	9G1212G4021	9G1212G4011	9G1212G4D011	9G1212P4G031	120×120×25mm	No	✓	✓	✓	157
9G1212H101	9G1212H102	9G1212H101	9G1212H1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1212H1011	9G1212H1021	9G1212H1011	9G1212H1D011	—	120×120×38mm	No	✓	✓	✓	167
9G1212H401	9G1212H402	9G1212H401	9G1212H4D01	9G1212P4H04	120×120×25mm	Yes	✓	✓	✓	157
9G1212H4011	9G1212H4021	9G1212H4011	9G1212H4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1212M101	9G1212M102	9G1212M101	9G1212M1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1212M1011	9G1212M1021	9G1212M1011	—	—	120×120×38mm	No	✓	✓	✓	167
9G1212M401	9G1212M402	9G1212M401	9G1212M4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1212M4011	9G1212M4021	9G1212M4011	9G1212M4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1224A401	9G1224A402	9G1224A401	9G1224A4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1224A4011	9G1224A4021	9G1224A4011	9G1224A4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1224E101	9G1224E102	9G1224E101	9G1224E1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1224E1011	9G1224E1021	9G1224E1011	9G1224E1D011	—	120×120×38mm	No	✓	✓	✓	167
9G1224E401	9G1224E402	9G1224E401	9G1224E4D01	9G1224P4E01	120×120×25mm	Yes	✓	✓	✓	157
9G1224E4011	9G1224E4021	9G1224E4011	9G1224E4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1224F101	9G1224F102	9G1224F101	9G1224F1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1224F1011	9G1224F1021	9G1224F1011	—	—	120×120×38mm	No	✓	✓	✓	167
9G1224F401	9G1224F402	9G1224F401	9G1224F4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1224F4011	9G1224F4021	9G1224F4011	—	—	120×120×25mm	No	✓	✓	✓	157
9G1224G101	9G1224G102	9G1224G101	9G1224G1D01	9G1224P1G01	120×120×38mm	Yes	✓	✓	✓	167
9G1224G1011	9G1224G1021	9G1224G1011	9G1224G1D011	—	120×120×38mm	No	✓	✓	✓	167
9G1224G401	9G1224G402	9G1224G401	9G1224G4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1224G4011	9G1224G4021	9G1224G4011	9G1224G4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1224H101	9G1224H102	9G1224H101	9G1224H1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1224H1011	9G1224H1021	9G1224H1011	9G1224H1D011	—	120×120×38mm	No	✓	✓	✓	167
9G1224H401	9G1224H402	9G1224H401	9G1224H4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1224H4011	9G1224H4021	9G1224H4011	9G1224H4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1224M101	9G1224M102	9G1224M101	9G1224M1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1224M1011	9G1224M1021	9G1224M1011	9G1224M1D011	—	120×120×38mm	No	✓	✓	✓	167
9G1224M401	9G1224M402	9G1224M401	9G1224M4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1224M4011	9G1224M4021	9G1224M4011	9G1224M4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1248A401	9G1248A402	9G1248A401	9G1248A4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1248A4011	9G1248A4021	9G1248A4011	9G1248A4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1248E101	9G1248E102	9G1248E101	9G1248E1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1248E1011	9G1248E1021	9G1248E1011	9G1248E1D011	—	120×120×38mm	No	✓	✓	✓	167
9G1248E401	9G1248E402	9G1248E401	9G1248E4D01	9G1248P4E05	120×120×25mm	Yes	✓	✓	✓	157
9G1248E4011	9G1248E4021	9G1248E4011	9G1248E4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1248F101	9G1248F102	9G1248F101	9G1248F1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1248F1011	9G1248F1021	9G1248F1011	—	—	120×120×38mm	No	✓	✓	✓	167
9G1248F401	9G1248F402	9G1248F401	9G1248F4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1248F4011	9G1248F4021	9G1248F4011	9G1248F4D011	—	120×120×25mm	No	✓	✓	✓	157
9G1248G101	9G1248G102	9G1248G101	9G1248G1D01	9G1248P1G04	120×120×38mm	Yes	✓	✓	✓	167
9G1248G1011	9G1248G1021	9G1248G1011	9G1248G1D011	9G1248P1G041	120×120×38mm	No	✓	✓	✓	167
9G1248G401	9G1248G402	9G1248G401	9G1248G4D01	9G1248P4G04	120×120×25mm	Yes	✓	✓	✓	157
9G1248G4011	9G1248G4021	9G1248G4011	9G1248G4D011	—	120×120×25mm	No	✓	✓	✓	157

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							✓	✓	✓	
9G1248H101	9G1248H102	9G1248H101	9G1248H1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1248H1011	9G1248H1021	9G1248H1011	9G1248H1D011	—	120×120×38mm	No	✓	✓	✓	167
9G1248H401	9G1248H402	9G1248H401	9G1248H4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1248H4011	9G1248H4021	9G1248H4011	—	—	120×120×25mm	No	✓	✓	✓	157
9G1248M101	9G1248M102	9G1248M101	9G1248M1D01	—	120×120×38mm	Yes	✓	✓	✓	167
9G1248M1011	9G1248M1021	9G1248M1011	—	—	120×120×38mm	No	✓	✓	✓	167
9G1248M401	9G1248M402	9G1248M401	9G1248M4D01	—	120×120×25mm	Yes	✓	✓	✓	157
9G1248M4011	9G1248M4021	9G1248M4011	—	—	120×120×25mm	No	✓	✓	✓	157
9GA0312P3G001	—	9GA0312G3001	—	9GA0312P3G001	38×38×28mm	Yes	✓	✓	✓	13
9GA0312P3G0011	—	—	—	9GA0312P3G0011	38×38×28mm	No	✓	✓	✓	13
9GA0312P3J001	—	9GA0312J3001	—	9GA0312P3J001	38×38×28mm	Yes	✓	✓	✓	13
9GA0312P3J0011	—	—	—	9GA0312P3J0011	38×38×28mm	No	✓	✓	✓	13
9GA0312P3K001	—	9GA0312K3001	—	9GA0312P3K001	38×38×28mm	Yes	✓	✓	✓	13
9GA0312P3K0011	—	—	—	9GA0312P3K0011	38×38×28mm	No	✓	✓	✓	13
9GA0405P6F001	9GA0405F6002	9GA0405F6001	—	9GA0405P6F001	40×40×20mm	Yes	✓	✓	✓	23
9GA0405P6H001	9GA0405H6002	9GA0405H6001	—	9GA0405P6H001	40×40×20mm	Yes	✓	✓	✓	23
9GA0412G7001	9GA0412G7002	9GA0412G7001	9GA0412G7D001	9GA0412P7G001	40×40×15mm	Yes	✓	✓	✓	19
9GA0412H7001	9GA0412H7002	9GA0412H7001	—	—	40×40×15mm	Yes	✓	✓	✓	19
9GA0412P3G01	9GA0412G302	9GA0412G301	—	9GA0412P3G01	40×40×28mm	Yes	✓	✓	✓	35
9GA0412P3G011	9GA0412G3021	9GA0412G3011	—	9GA0412P3G011	40×40×28mm	No	✓	✓	✓	35
9GA0412P3H01	9GA0412H302	9GA0412H301	—	9GA0412P3H01	40×40×28mm	Yes	✓	✓	✓	35
9GA0412P3H011	9GA0412H3021	9GA0412H3011	—	9GA0412P3H011	40×40×28mm	No	✓	✓	✓	35
9GA0412P3J01	9GA0412J302	9GA0412J301	9GA0412J3D01	9GA0412P3J01	40×40×28mm	Yes	✓	✓	✓	35
9GA0412P3J011	9GA0412J3021	9GA0412J3011	—	9GA0412P3J011	40×40×28mm	No	✓	✓	✓	35
9GA0412P3K01	9GA0412K302	9GA0412K301	—	9GA0412P3K01	40×40×28mm	Yes	✓	✓	✓	35
9GA0412P3K011	9GA0412K3021	9GA0412K3011	—	9GA0412P3K011	40×40×28mm	No	✓	✓	✓	35
9GA0412P3M01	9GA0412M302	9GA0412M301	9GA0412M3D01	9GA0412P3M01	40×40×28mm	Yes	✓	✓	✓	35
9GA0412P3M011	9GA0412M3021	9GA0412M3011	—	9GA0412P3M011	40×40×28mm	No	✓	✓	✓	35
9GA0412P6F001	9GA0412F6002	9GA0412F6001	—	9GA0412P6F001	40×40×20mm	Yes	✓	✓	✓	23
9GA0412P6G001	9GA0412G6002	9GA0412G6001	—	9GA0412P6G001	40×40×20mm	Yes	✓	✓	✓	23
9GA0412P6H001	9GA0412H6002	9GA0412H6001	—	9GA0412P6H001	40×40×20mm	Yes	✓	✓	✓	23
9GA0412P7G001	9GA0412G7002	9GA0412G7001	9GA0412G7D001	9GA0412P7G001	40×40×15mm	Yes	✓	✓	✓	19
9GA0424P3G001	9GA0424G3002	9GA0424G3001	9GA0424G3D001	9GA0424P3G001	40×40×28mm	Yes	✓	✓	✓	35
9GA0424P3G0011	9GA0424G30021	9GA0424G30011	—	9GA0424P3G0011	40×40×28mm	No	✓	✓	✓	35
9GA0424P3H001	9GA0424H3002	9GA0424H3001	9GA0424H3D001	9GA0424P3H001	40×40×28mm	Yes	✓	✓	✓	35
9GA0424P3H0011	9GA0424H30021	9GA0424H30011	—	9GA0424P3H0011	40×40×28mm	No	✓	✓	✓	35
9GA0424P3J001	9GA0424J3002	9GA0424J3001	9GA0424J3D001	9GA0424P3J001	40×40×28mm	Yes	✓	✓	✓	35
9GA0424P3J0011	9GA0424J30021	9GA0424J30011	—	9GA0424P3J0011	40×40×28mm	No	✓	✓	✓	35
9GA0424P3M001	9GA0424M3002	9GA0424M3001	—	9GA0424P3M001	40×40×28mm	Yes	✓	✓	✓	35
9GA0424P3M0011	9GA0424M30021	9GA0424M30011	—	9GA0424P3M0011	40×40×28mm	No	✓	✓	✓	35
9GA0424P6F001	9GA0424F6002	9GA0424F6001	—	9GA0424P6F001	40×40×20mm	Yes	✓	✓	✓	23
9GA0424P6G001	9GA0424G6002	9GA0424G6001	9GA0424G6D001	9GA0424P6G001	40×40×20mm	Yes	✓	✓	✓	23
9GA0424P6H001	9GA0424H6002	9GA0424H6001	9GA0424H6D001	9GA0424P6H001	40×40×20mm	Yes	✓	✓	✓	23
9GA0512P7A001	9GA0512A7002	9GA0512A7001	9GA0512A7D001	9GA0512P7A001	52×52×15mm	Yes	✓	✓	✓	47
9GA0512P7G001	9GA0512G7002	9GA0512G7001	9GA0512G7D001	9GA0512P7G001	52×52×15mm	Yes	✓	✓	✓	47
9GA0512P7H001	9GA0512H7002	9GA0512H7001	9GA0512H7D001	9GA0512P7H001	52×52×15mm	Yes	✓	✓	✓	47
9GA0512P7M001	9GA0512M7002	9GA0512M7001	9GA0512M7D001	9GA0512P7M001	52×52×15mm	Yes	✓	✓	✓	47
9GA0524P7A001	9GA0524A7002	9GA0524A7001	9GA0524A7D001	9GA0524P7A001	52×52×15mm	Yes	✓	✓	✓	47
9GA0524P7G001	9GA0524G7002	9GA0524G7001	9GA0524G7D001	9GA0524P7G001	52×52×15mm	Yes	✓	✓	✓	47
9GA0524P7H001	9GA0524H7002	9GA0524H7001	9GA0524H7D001	9GA0524P7H001	52×52×15mm	Yes	✓	✓	✓	47
9GA0524P7M001	9GA0524M7002	9GA0524M7001	9GA0524M7D001	9GA0524P7M001	52×52×15mm	Yes	✓	✓	✓	47
9GA0612G701	9GA0612G702	9GA0612G701	9GA0612G7D01	9GA0612P7G01	60×60×15mm	Yes	✓	✓	✓	55
9GA0612G9001	—	9GA0612G9001	—	—	60×60×10mm	No	✓	✓	✓	53
9GA0612H6001	9GA0612H6002	9GA0612H6001	—	—	60×60×20mm	Yes	✓	✓	✓	61
9GA0612H701	9GA0612H702	9GA0612H701	9GA0612H7D01	9GA0612P7H01	60×60×15mm	Yes	✓	✓	✓	55
9GA0612H9001	—	9GA0612H9001	—	—	60×60×10mm	No	✓	✓	✓	53
9GA0612L701	9GA0612L702	9GA0612L701	9GA0612L7D01	—	60×60×15mm	Yes	✓	✓	✓	55
9GA0612L9001	—	9GA0612L9001	—	—	60×60×10mm	No	✓	✓	✓	53
9GA0612M6001	9GA0612M6002	9GA0612M6001	—	—	60×60×20mm	Yes	✓	✓	✓	61
9GA0612M701	9GA0612M702	9GA0612M701	9GA0612M7D01	—	60×60×15mm	Yes	✓	✓	✓	55
9GA0612P1H03	9GA0612H102	9GA0612H101	—	9GA0612P1H03	60×60×38mm	Yes	✓	✓	✓	77
9GA0612P1H031	9GA0612H1021	9GA0612H1011	—	9GA0612P1H031	60×60×38mm	No	✓	✓	✓	77

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							✓	✓	✓	
9GA0612P1J03	9GA0612J102	9GA0612J101	9GA0612J1D01	9GA0612P1J03	60×60×38mm	Yes	✓	✓	✓	77
9GA0612P1J031	9GA0612J1021	9GA0612J1011	—	9GA0612P1J031	60×60×38mm	No	✓	✓	✓	77
9GA0612P1K03	9GA0612K102	9GA0612K101	—	9GA0612P1K03	60×60×38mm	Yes	✓	✓	✓	77
9GA0612P1K031	9GA0612K1021	9GA0612K1011	—	9GA0612P1K031	60×60×38mm	No	✓	✓	✓	77
9GA0612P1K60	—	—	—	9GA0612P1K60	60×60×38mm	Yes	✓	✓	✓	77
9GA0612P1K601	—	—	—	9GA0612P1K601	60×60×38mm	No	✓	✓	✓	77
9GA0612P6G001	9GA0612G6002	9GA0612G6001	—	9GA0612P6G001	60×60×20mm	Yes	✓	✓	✓	61
9GA0612P6S001	9GA0612S6002	9GA0612S6001	—	9GA0612P6S001	60×60×20mm	Yes	✓	✓	✓	61
9GA0612P7G01	9GA0612G702	9GA0612G701	9GA0612G7D01	9GA0612P7G01	60×60×15mm	Yes	✓	✓	✓	55
9GA0612P7H01	9GA0612H702	9GA0612H701	9GA0612H7D01	9GA0612P7H01	60×60×15mm	Yes	✓	✓	✓	55
9GA0624H6001	9GA0624H6002	9GA0624H6001	9GA0624H6D001	—	60×60×20mm	Yes	✓	✓	✓	61
9GA0624M6001	9GA0624M6002	9GA0624M6001	—	—	60×60×20mm	Yes	✓	✓	✓	61
9GA0624P1J03	9GA0624J102	9GA0624J101	—	9GA0624P1J03	60×60×38mm	Yes	✓	✓	✓	77
9GA0624P1J031	9GA0624J1021	9GA0624J1011	—	9GA0624P1J031	60×60×38mm	No	✓	✓	✓	77
9GA0624P1K03	—	—	—	9GA0624P1K03	60×60×38mm	Yes	✓	✓	✓	77
9GA0624P1K031	—	—	—	9GA0624P1K031	60×60×38mm	No	✓	✓	✓	77
9GA0624P6G001	—	—	—	9GA0624P6G001	60×60×20mm	Yes	✓	✓	✓	61
9GA0624P6S001	—	—	—	9GA0624P6S001	60×60×20mm	Yes	✓	✓	✓	61
9GA0624P7G01	—	—	—	9GA0624P7G01	60×60×15mm	Yes	✓	✓	✓	55
9GA0712P1G001	—	—	—	9GA0712P1G001	70×70×38mm	Yes	✓	✓	✓	87
9GA0712P1G0011	—	—	—	9GA0712P1G0011	70×70×38mm	No	✓	✓	✓	87
9GA0712P1H001	—	—	—	9GA0712P1H001	70×70×38mm	Yes	✓	✓	✓	87
9GA0712P1H0011	—	—	—	9GA0712P1H0011	70×70×38mm	No	✓	✓	✓	87
9GA0812H7001	—	9GA0812H7001	9GA0812H7D001	—	80×80×15mm	Yes	—	—	—	89
9GA0812P1G61	—	—	—	9GA0812P1G61	80×80×38mm	Yes	✓	✓	✓	121
9GA0812P1G611	—	—	—	9GA0812P1G611	80×80×38mm	No	✓	✓	✓	121
9GA0812P1H61	9GA0812H162	9GA0812H161	—	9GA0812P1H61	80×80×38mm	Yes	✓	✓	✓	121
9GA0812P1H611	9GA0812H1621	9GA0812H1611	—	9GA0812P1H611	80×80×38mm	No	✓	✓	✓	121
9GA0812P1S61	9GA0812S162	9GA0812S161	9GA0812S1D61	9GA0812P1S61	80×80×38mm	Yes	✓	✓	✓	121
9GA0812P1S611	9GA0812S1621	9GA0812S1611	—	9GA0812P1S611	80×80×38mm	No	✓	✓	✓	121
9GA0812P2H001	—	—	—	9GA0812P2H001	80×80×32mm	Yes	✓	✓	✓	115
9GA0812P2H0011	—	—	—	9GA0812P2H0011	80×80×32mm	No	✓	✓	✓	115
9GA0812P2M001	—	—	—	9GA0812P2M001	80×80×32mm	Yes	✓	✓	✓	115
9GA0812P2M0011	—	—	—	9GA0812P2M0011	80×80×32mm	No	✓	✓	✓	115
9GA0812P2S001	—	9GA0812S2001	—	9GA0812P2S001	80×80×32mm	Yes	✓	✓	✓	115
9GA0812P2S0011	—	—	—	9GA0812P2S0011	80×80×32mm	No	✓	✓	✓	115
9GA0812P4G001	9GA0812G4002	9GA0812G4001	—	9GA0812P4G001	80×80×25mm	Yes	✓	✓	✓	99
9GA0812P4G0011	9GA0812G40021	9GA0812G40011	—	9GA0812P4G0011	80×80×25mm	No	✓	✓	✓	99
9GA0812P4H001	9GA0812H4002	9GA0812H4001	—	9GA0812P4H001	80×80×25mm	Yes	✓	✓	✓	99
9GA0812P4H0011	9GA0812H40021	9GA0812H40011	—	9GA0812P4H0011	80×80×25mm	No	✓	✓	✓	99
9GA0812P4J001	9GA0812J4002	9GA0812J4001	—	9GA0812P4J001	80×80×25mm	Yes	✓	✓	✓	99
9GA0812P4J0011	9GA0812J40021	9GA0812J40011	—	9GA0812P4J0011	80×80×25mm	No	✓	✓	✓	99
9GA0812P6G001	9GA0812G6002	9GA0812G6001	—	9GA0812P6G001	80×80×20mm	Yes	✓	✓	✓	95
9GA0812P6M001	9GA0812M6002	9GA0812M6001	—	9GA0812P6M001	80×80×20mm	Yes	✓	✓	✓	95
9GA0812P7G001	—	—	—	9GA0812P7G001	80×80×15mm	Yes	✓	✓	✓	89
9GA0812P7S001	—	—	—	9GA0812P7S001	80×80×15mm	Yes	✓	✓	✓	89
9GA0824H7001	—	9GA0824H7001	—	—	80×80×15mm	Yes	✓	✓	✓	89
9GA0824P1H61	9GA0824H162	9GA0824H161	—	9GA0824P1H61	80×80×38mm	Yes	✓	✓	✓	121
9GA0824P1H611	9GA0824H1621	9GA0824H1611	—	9GA0824P1H611	80×80×38mm	No	✓	✓	✓	121
9GA0824P1S61	9GA0824S162	9GA0824S161	—	9GA0824P1S61	80×80×38mm	Yes	✓	✓	✓	121
9GA0824P1S611	9GA0824S1621	9GA0824S1611	—	9GA0824P1S611	80×80×38mm	No	✓	✓	✓	121
9GA0824P2S001	—	—	—	9GA0824P2S001	80×80×32mm	Yes	✓	✓	✓	115
9GA0824P2S0011	—	—	—	9GA0824P2S0011	80×80×32mm	No	✓	✓	✓	115
9GA0824P4G001	9GA0824G4002	9GA0824G4001	—	9GA0824P4G001	80×80×25mm	Yes	✓	✓	✓	99
9GA0824P4G0011	9GA0824G40021	9GA0824G40011	—	9GA0824P4G0011	80×80×25mm	No	✓	✓	✓	99
9GA0824P4H001	9GA0824H4002	9GA0824H4001	—	9GA0824P4H001	80×80×25mm	Yes	✓	✓	✓	99
9GA0824P4H0011	9GA0824H40021	9GA0824H40011	—	9GA0824P4H0011	80×80×25mm	No	✓	✓	✓	99
9GA0824P4J001	9GA0824J4002	9GA0824J4001	—	9GA0824P4J001	80×80×25mm	Yes	✓	✓	✓	99
9GA0824P4J0011	9GA0824J40021	9GA0824J40011	—	9GA0824P4J0011	80×80×25mm	No	✓	✓	✓	99
9GA0824P6G001	9GA0824G6002	9GA0824G6001	—	9GA0824P6G001	80×80×20mm	Yes	✓	✓	✓	95
9GA0824P6M001	9GA0824M6002	9GA0824M6001	—	9GA0824P6M001	80×80×20mm	Yes	✓	✓	✓	95
9GA0824P7G001	—	—	—	9GA0824P7G001	80×80×15mm	Yes	✓	✓	✓	89

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							UL	CSA	TÜV	
9GA0824P7S001	—	—	—	9GA0824P7S001	80×80×15mm	Yes	✓	✓	✓	89
9GA0912P1H03	9GA0912H102	9GA0912H101	9GA0912H1D01	9GA0912P1H03	92×92×38mm	Yes	✓	✓	✓	141
9GA0912P1H031	9GA0912H1021	9GA0912H1011	—	9GA0912P1H031	92×92×38mm	No	✓	✓	✓	141
9GA0912P4G03	9GA0912G402	9GA0912G401	—	9GA0912P4G03	92×92×25mm	Yes	✓	✓	✓	131
9GA0912P4G031	9GA0912G4021	9GA0912G4011	—	9GA0912P4G031	92×92×25mm	No	✓	✓	✓	131
9GA0912P4J03	9GA0912J402	9GA0912J401	—	9GA0912P4J03	92×92×25mm	Yes	✓	✓	✓	131
9GA0912P4J031	9GA0912J4021	9GA0912J4011	—	9GA0912P4J031	92×92×25mm	No	✓	✓	✓	131
9GA0912P4S03	9GA0912S402	9GA0912S401	—	9GA0912P4S03	92×92×25mm	Yes	✓	✓	✓	131
9GA0912P4S031	9GA0912S4021	9GA0912S4011	—	9GA0912P4S031	92×92×25mm	No	✓	✓	✓	131
9GA0924P1H01	9GA0924H102	9GA0924H101	9GA0924H1D01	9GA0924P1H01	92×92×38mm	Yes	✓	✓	✓	141
9GA0924P1H011	—	9GA0924H1011	9GA0924H1D011	9GA0924P1H011	92×92×38mm	No	✓	✓	✓	141
9GA0924P4G03	9GA0924G402	9GA0924G401	9GA0924G4D01	9GA0924P4G03	92×92×25mm	Yes	✓	✓	✓	131
9GA0924P4G031	9GA0924G4021	9GA0924G4011	—	9GA0924P4G031	92×92×25mm	No	✓	✓	✓	131
9GA0924P4J03	9GA0924J402	9GA0924J401	9GA0924J4D01	9GA0924P4J03	92×92×25mm	Yes	✓	✓	✓	131
9GA0924P4J031	9GA0924J4021	9GA0924J4011	—	9GA0924P4J031	92×92×25mm	No	✓	✓	✓	131
9GA0924P4S03	9GA0924S402	9GA0924S401	—	9GA0924P4S03	92×92×25mm	Yes	✓	✓	✓	131
9GA0924P4S031	9GA0924S4021	9GA0924S4011	—	9GA0924P4S031	92×92×25mm	No	✓	✓	✓	131
9GA0948P1H03	9GA0948H102	9GA0948H101	—	9GA0948P1H03	92×92×38mm	Yes	✓	✓	✓	141
9GA0948P1H031	—	—	—	9GA0948P1H031	92×92×38mm	No	✓	✓	✓	141
9GAX0412P3K001	—	—	—	9GAX0412P3K001	40×40×28mm	Yes	✓	✓	✓	33
9GAX0412P3K0011	—	—	—	9GAX0412P3K0011	40×40×28mm	No	✓	✓	✓	33
9GAX0412P3K003	—	—	—	9GAX0412P3K001	40×40×28mm	Yes	✓	✓	✓	33
9GAX0412P3K0031	—	—	—	9GAX0412P3K0031	40×40×28mm	No	✓	✓	✓	33
9GAX0412P3S001	—	—	—	9GAX0412P3S001	40×40×28mm	Yes	✓	✓	✓	33
9GAX0412P3S0011	—	—	—	9GAX0412P3S0011	40×40×28mm	No	✓	✓	✓	33
9GAX0412P3S003	—	—	—	9GAX0412P3S003	40×40×28mm	Yes	✓	✓	✓	33
9GAX0412P3S0031	—	—	—	9GAX0412P3S0031	40×40×28mm	No	✓	✓	✓	33
9GE0412P3G03	—	—	9GE0412G3D01	9GE0412P3G03	40×40×28mm	No	✓	✓	✓	39
9GE0412P3J03	—	9GE0412J301	9GE0412J3D01	9GE0412P3J03	40×40×28mm	No	✓	✓	✓	39
9GE0412P3K03	—	9GE0412K301	9GE0412K3D01	9GE0412P3K03	40×40×28mm	No	✓	✓	✓	39
9GL1212E101	9GL1212E102	9GL1212E101	9GL1212E1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1212F101	9GL1212F102	9GL1212F101	9GL1212F1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1212G101	9GL1212G102	9GL1212G101	9GL1212G1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1212H101	9GL1212H102	9GL1212H101	9GL1212H1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1212M101	9GL1212M102	9GL1212M101	9GL1212M1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1224E101	9GL1224E102	9GL1224E101	9GL1224E1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1224F101	9GL1224F102	9GL1224F101	9GL1224F1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1224G101	9GL1224G102	9GL1224G101	9GL1224G1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1224H101	9GL1224H102	9GL1224H101	9GL1224H1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1224M101	9GL1224M102	9GL1224M101	9GL1224M1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1248E101	9GL1248E102	9GL1248E101	9GL1248E1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1248F101	9GL1248F102	9GL1248F101	9GL1248F1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1248G101	9GL1248G102	9GL1248G101	9GL1248G1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1248H101	9GL1248H102	9GL1248H101	9GL1248H1D01	—	120×120×38mm	No	✓	✓	✓	337
9GL1248M101	9GL1248M102	9GL1248M101	9GL1248M1D01	—	120×120×38mm	No	✓	✓	✓	337
9GT0412P3J001	—	—	—	9GT0412P3J001	40×40×28mm	No	✓	✓	✓	351
9GT0424P3J001	—	—	—	9GT0424P3J001	40×40×28mm	No	✓	✓	✓	351
9GT0612P4G001	—	—	—	9GT0612P4G001	60×60×25mm	No	✓	✓	✓	353
9GT0624P4G001	—	—	—	9GT0624P4G001	60×60×25mm	No	✓	✓	✓	353
9GT0812P4S001	—	—	—	9GT0812P4S001	80×80×25mm	No	✓	✓	✓	355
9GT0824P4S001	9GT0824S4002	—	—	9GT0824P4S001	80×80×25mm	No	✓	✓	✓	355
9GT0912P1M001	—	—	—	9GT0912P1M001	92×92×38mm	No	✓	✓	✓	359
9GT0912P4J001	9GT0912J4002	—	—	9GT0912P4J001	92×92×25mm	No	✓	✓	✓	357
9GT0924P1M001	—	—	—	9GT0924P1M001	92×92×38mm	No	✓	✓	✓	359
9GT0924P4J001	—	—	—	9GT0924P4J001	92×92×25mm	No	✓	✓	✓	357
9GT1212P1S001	—	—	—	9GT1212P1S001	120×120×38mm	No	✓	✓	✓	361
9GT1224P1S001	9GT1224S1002	—	—	9GT1224P1S001	120×120×38mm	No	✓	✓	✓	361
9GV0312E301	9GV0312E302	9GV0312E301	9GV0312E3D01	—	38×38×28mm	Yes	✓	✓	✓	15
9GV0312E3011	—	9GV0312E3011	9GV0312E3D011	—	38×38×28mm	No	✓	✓	✓	15
9GV0312G301	9GV0312G302	9GV0312G301	9GV0312G3D01	9GV0312P3G03	38×38×28mm	Yes	✓	✓	✓	15
9GV0312G3011	9GV0312G3021	9GV0312G3011	—	—	38×38×28mm	No	✓	✓	✓	15
9GV0312H301	9GV0312H302	9GV0312H301	—	—	38×38×28mm	Yes	✓	✓	✓	15

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							✓	✓	✓	
9GV0312H3011	—	9GV0312H3011	—	—	38×38×28mm	No	✓	✓	✓	15
9GV0312J301	9GV0312J302	9GV0312J301	9GV0312J3D01	9GV0312P3J03	38×38×28mm	Yes	✓	✓	✓	15
9GV0312J3011	9GV0312J3021	9GV0312J3011	—	9GV0312P3J031	38×38×28mm	No	✓	✓	✓	15
9GV0312K301	—	9GV0312K301	9GV0312K3D01	9GV0312P3K01	38×38×28mm	Yes	✓	✓	✓	15
9GV0312K3011	—	9GV0312K3011	—	—	38×38×28mm	No	✓	✓	✓	15
9GV0412C301	—	9GV0412C301	9GV0412C3D01	—	40×40×28mm	Yes	✓	✓	✓	41
9GV0412C3011	—	9GV0412C3011	9GV0412C3D011	—	40×40×28mm	No	✓	✓	✓	41
9GV0412G301	9GV0412G302	9GV0412G301	9GV0412G3D01	9GV0412P3G03	40×40×28mm	Yes	✓	✓	✓	41
9GV0412G3011	9GV0412G3021	9GV0412G3011	9GV0412G3D011	9GV0412P3G031	40×40×28mm	No	✓	✓	✓	41
9GV0412H301	—	9GV0412H301	9GV0412H3D01	9GV0412P3H01	40×40×28mm	Yes	✓	✓	✓	41
9GV0412H3011	—	9GV0412H3011	—	—	40×40×28mm	No	✓	✓	✓	41
9GV0412J301	9GV0412J302	9GV0412J301	9GV0412J3D01	9GV0412P3J03	40×40×28mm	Yes	✓	✓	✓	41
9GV0412J3011	9GV0412J3021	9GV0412J3011	—	9GV0412P3J031	40×40×28mm	No	✓	✓	✓	41
9GV0412K301	9GV0412K302	9GV0412K301	9GV0412K3D01	9GV0412P3K03	40×40×28mm	Yes	✓	✓	✓	41
9GV0412K3011	—	9GV0412K3011	—	—	40×40×28mm	No	✓	✓	✓	41
9GV0612P1G03	9GV0612G102	9GV0612G101	9GV0612G1D01	9GV0612P1G03	60×60×38mm	Yes	✓	✓	✓	81
9GV0612P1G031	—	9GV0612G1011	9GV0612G1D011	9GV0612P1G031	60×60×38mm	No	✓	✓	✓	81
9GV0612P1H03	9GV0612H102	9GV0612H101	9GV0612H1D01	9GV0612P1H03	60×60×38mm	Yes	✓	✓	✓	81
9GV0612P1H031	9GV0612H1021	9GV0612H1011	9GV0612H1D011	9GV0612P1H031	60×60×38mm	No	✓	✓	✓	81
9GV0612P1L01	9GV0612L102	—	—	9GV0612P1L01	60×60×38mm	Yes	✓	✓	✓	81
9GV0612P1L011	—	9GV0612L1011	—	9GV0612P1L011	60×60×38mm	No	✓	✓	✓	81
9GV0612P1M03	—	9GV0612M101	9GV0612M1D01	9GV0612P1M03	60×60×38mm	Yes	✓	✓	✓	81
9GV0612P1M031	—	9GV0612M1011	9GV0612M1D011	9GV0612P1M031	60×60×38mm	No	✓	✓	✓	81
9GV0624P1G03	9GV0624G102	—	—	9GV0624P1G03	60×60×38mm	Yes	✓	✓	✓	81
9GV0624P1G031	9GV0624G1021	—	—	9GV0624P1G031	60×60×38mm	No	✓	✓	✓	81
9GV0624P1M03	9GV0624M102	9GV0624M101	—	9GV0624P1M03	60×60×38mm	Yes	✓	✓	✓	81
9GV0624P1M031	—	—	—	9GV0624P1M031	60×60×38mm	No	✓	✓	✓	81
9GV0648P1H03	—	—	—	9GV0648P1H03	60×60×38mm	Yes	✓	✓	✓	81
9GV0648P1H031	—	—	—	9GV0648P1H031	60×60×38mm	No	✓	✓	✓	81
9GV0812P1F03	—	—	—	9GV0812P1F03	80×80×38mm	Yes	✓	✓	✓	125
9GV0812P1F031	—	—	—	9GV0812P1F031	80×80×38mm	No	✓	✓	✓	125
9GV0812P1G03	9GV0812G102	9GV0812G101	—	9GV0812P1G03	80×80×38mm	Yes	✓	✓	✓	125
9GV0812P1G031	9GV0812G1021	9GV0812G1011	—	9GV0812P1G031	80×80×38mm	No	✓	✓	✓	125
9GV0812P1H03	9GV0812H102	9GV0812H101	—	9GV0812P1H03	80×80×38mm	Yes	✓	✓	✓	125
9GV0812P1H031	9GV0812H1021	9GV0812H1011	—	9GV0812P1H031	80×80×38mm	No	✓	✓	✓	125
9GV0812P1M03	—	—	—	9GV0812P1M03	80×80×38mm	Yes	✓	✓	✓	125
9GV0812P1M031	—	—	—	9GV0812P1M031	80×80×38mm	No	✓	✓	✓	125
9GV0812P4J03	9GV0812J402	9GV0812J401	—	9GV0812P4J03	80×80×25mm	Yes	✓	✓	✓	105
9GV0812P4J031	9GV0812J4021	9GV0812J4011	—	9GV0812P4J031	80×80×25mm	No	✓	✓	✓	105
9GV0812P4K03	—	9GV0812K401	9GV0812K4D01	9GV0812P4K03	80×80×25mm	Yes	✓	✓	✓	105
9GV0812P4K031	9GV0812K4021	9GV0812K4011	9GV0812K4D011	9GV0812P4K031	80×80×25mm	No	✓	✓	✓	105
9GV0824P1G03	9GV0824G102	—	—	9GV0824P1G03	80×80×38mm	Yes	✓	✓	✓	125
9GV0824P1G031	—	—	—	9GV0824P1G031	80×80×38mm	No	✓	✓	✓	125
9GV0824P4K01	9GV0824K402	9GV0824K401	—	9GV0824P4K01	80×80×25mm	Yes	✓	✓	✓	105
9GV0824P4K011	—	—	—	9GV0824P4K011	80×80×25mm	No	✓	✓	✓	105
9GV0848P1G03	9GV0848G102	9GV0848G101	—	9GV0848P1G03	80×80×38mm	Yes	✓	✓	✓	125
9GV0848P1G031	—	9GV0848G1011	—	9GV0848P1G031	80×80×38mm	No	✓	✓	✓	125
9GV0848P4K03	—	9GV0848K401	—	9GV0848P4K03	80×80×25mm	Yes	✓	✓	✓	105
9GV0848P4K031	—	—	—	9GV0848P4K031	80×80×25mm	No	✓	✓	✓	105
9GV0912P1F03	—	—	—	9GV0912P1F03	92×92×38mm	Yes	✓	✓	✓	145
9GV0912P1F031	—	—	—	9GV0912P1F031	92×92×38mm	No	✓	✓	✓	145
9GV0912P1G03	—	—	—	9GV0912P1G03	92×92×38mm	Yes	✓	✓	✓	145
9GV0912P1G031	—	—	—	9GV0912P1G031	92×92×38mm	No	✓	✓	✓	145
9GV0912P1H03	9GV0912H102	—	9GV0912H1D01	9GV0912P1H03	92×92×38mm	Yes	✓	✓	✓	145
9GV0912P1H031	—	—	—	9GV0912P1H031	92×92×38mm	No	✓	✓	✓	145
9GV0948P1F03	—	—	—	9GV0948P1F03	92×92×38mm	Yes	✓	✓	✓	145
9GV0948P1F031	—	—	—	9GV0948P1F031	92×92×38mm	No	✓	✓	✓	145
9GV0948P1H03	9GV0948H102	9GV0948H101	—	9GV0948P1H03	92×92×38mm	Yes	✓	✓	✓	145
9GV0948P1H031	9GV0948H1021	—	—	9GV0948P1H031	92×92×38mm	No	✓	✓	✓	145
9GV1212P1G01	—	—	—	9GV1212P1G01	120×120×38mm	Yes	✓	✓	✓	163
9GV1212P1G011	—	9GV1212G1011	—	9GV1212P1G011	120×120×38mm	No	✓	✓	✓	163
9GV1212P1J01	9GV1212J102	9GV1212J101	—	9GV1212P1J01	120×120×38mm	Yes	✓	✓	✓	163

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	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							UL	CSA	TÜV	
9GV1212P1J011	9GV1212J1021	9GV1212J1011	—	9GV1212P1J011	120×120×38mm	No	✓	✓	✓	163
9GV1212P4G01	9GV1212G402	9GV1212G401	—	9GV1212P4G01	120×120×25mm	Yes	✓	✓	✓	153
9GV1212P4G011	9GV1212G4021	9GV1212G4011	—	—	120×120×25mm	No	✓	✓	✓	153
9GV1224P1H01	9GV1224H102	9GV1224H101	9GV1224H1D01	9GV1224P1H01	120×120×38mm	Yes	✓	✓	✓	163
9GV1224P1H011	9GV1224H1021	9GV1224H1011	—	9GV1224P1H011	120×120×38mm	No	✓	✓	✓	163
9GV1224P1J01	9GV1224J102	9GV1224J101	9GV1224J1D01	9GV1224P1J01	120×120×38mm	Yes	✓	✓	✓	163
9GV1224P1J011	9GV1224J1021	9GV1224J1011	9GV1224J1D011	9GV1224P1J011	120×120×38mm	No	✓	✓	✓	163
9GV1224P4G01	9GV1224G402	9GV1224G401	—	9GV1224P4G01	120×120×25mm	Yes	✓	✓	✓	153
9GV1224P4G011	9GV1224G4021	—	—	—	120×120×25mm	No	✓	✓	✓	153
9GV1248P1B10	9GV1248B102	9GV1248B101	9GV1248B1D01	9GV1248P1B10	120×120×38mm	Yes	✓	✓	✓	163
9GV1248P1B101	—	9GV1248B1011	—	9GV1248P1B101	120×120×38mm	No	✓	✓	✓	163
9GV1248P1J01	9GV1248J102	9GV1248J101	—	9GV1248P1J01	120×120×38mm	Yes	✓	✓	✓	163
9GV1248P1J011	9GV1248J1021	9GV1248J1011	—	9GV1248P1J011	120×120×38mm	No	✓	✓	✓	163
9GV1248P4G01	9GV1248G402	9GV1248G4011	—	9GV1248P4G01	120×120×25mm	Yes	✓	✓	✓	153
9GV1248P4G011	—	9GV1248G4011	—	9GV1248P4G011	120×120×25mm	No	✓	✓	✓	153
9GV1248P4H01	9GV1248H402	9GV1248H401	—	9GV1248P4H01	120×120×25mm	Yes	✓	✓	✓	153
9GV1248P4H011	—	—	—	9GV1248P4H011	120×120×25mm	No	✓	✓	✓	153
9GV1248P4J01	—	—	—	9GV1248P4J01	120×120×25mm	Yes	✓	✓	✓	153
9GV1248P4J011	—	—	—	9GV1248P4J011	120×120×25mm	No	✓	✓	✓	153
9GV1412P1G001	—	—	—	9GV1412P1G001	140×140×38mm	No	✓	✓	✓	177
9GV1412P1H001	—	—	—	9GV1412P1H001	140×140×38mm	No	✓	✓	✓	177
9GV1412P1S001	—	—	—	9GV1412P1S001	140×140×38mm	No	✓	✓	✓	177
9GV1424P1G001	—	—	—	9GV1424P1G001	140×140×38mm	No	✓	✓	✓	177
9GV1424P1H001	—	—	—	9GV1424P1H001	140×140×38mm	No	✓	✓	✓	177
9GV1424P1S001	—	—	—	9GV1424P1S001	140×140×38mm	No	✓	✓	✓	177
9GV1448P1G001	—	—	—	9GV1448P1G001	140×140×38mm	No	✓	✓	✓	177
9GV1448P1H001	—	—	—	9GV1448P1H001	140×140×38mm	No	✓	✓	✓	177
9GV1448P1S001	—	—	—	9GV1448P1S001	140×140×38mm	No	✓	✓	✓	177
9GV1512H501	9GV1512H502	9GV1512H501	—	9GV1512P5H03	150×150×50mm	Yes	✓	✓	✓	183
9GV1512H5011	9GV1512H5021	9GV1512H5011	—	—	150×150×50mm	No	✓	✓	✓	183
9GV1512M501	9GV1512M502	9GV1512M501	—	9GV1512P5M03	150×150×50mm	Yes	✓	✓	✓	183
9GV1512M5011	9GV1512M5021	9GV1512M5011	—	—	150×150×50mm	No	✓	✓	✓	183
9GV1524M501	9GV1524M502	9GV1524M501	9GV1524M5D01	—	150×150×50mm	Yes	✓	✓	✓	183
9GV1524M5011	—	9GV1524M5011	—	—	150×150×50mm	No	✓	✓	✓	183
9GV2048P0G201	—	—	—	9GV2048P0G201	φ200mm×70mm	No	✓	✓	✓	197
9GV3612G301	9GV3612G302	9GV3612G301	9GV3612G3D01	9GV3612P3G03	36×36×28mm	Yes	✓	✓	✓	11
9GV3612J301	9GV3612J302	9GV3612J301	9GV3612J3D01	9GV3612P3J03	36×36×28mm	Yes	✓	✓	✓	11
9GV5724H501	9GV5724H502	9GV5724H501	—	9GV5724P5H03	φ172×150×51mm	No	✓	✓	✓	191
9GV5748H501	9GV5748H502	9GV5748H501	—	9GV5748P5H01	φ172×150×51mm	No	✓	✓	✓	191
9GX3612P3K001	—	—	—	9GX3612P3K001	36×36×28mm	Yes	✓	✓	✓	11
9HV0412P3K001	—	—	—	9HV0412P3K001	40×40×28mm	No	✓	✓	✓	31
9HV0812P1G001	9HV0812G1002	9HV0812G1001	—	9HV0812P1G001	80×80×38mm	Yes	✓	✓	✓	119
9HV0812P1G0011	9HV0812G10021	9HV0812G10011	—	9HV0812P1G0011	80×80×38mm	No	✓	✓	✓	119
9HV0824P1G003	—	—	—	9HV0824P1G003	80×80×38mm	No	✓	✓	✓	119
9HV0848P1G001	9HV0848G1002	9HV0848G1001	9HV0848G1D001	9HV0848P1G001	80×80×38mm	Yes	✓	✓	✓	119
9HV0848P1G0011	9HV0848G10021	9HV0848G10011	—	9HV0848P1G0011	80×80×38mm	No	✓	✓	✓	119
9HV0912P1G001	—	—	—	9HV0912P1G001	92×92×38mm	Yes	✓	✓	✓	143
9HV0912P1G0011	—	—	—	9HV0912P1G0011	92×92×38mm	No	✓	✓	✓	143
9HV0948P1G001	—	—	—	9HV0948P1G001	92×92×38mm	Yes	✓	✓	✓	143
9HV0948P1G0011	—	—	—	9HV0948P1G0011	92×92×38mm	No	✓	✓	✓	143
9HV1224P1A001	—	—	—	9HV1224P1A001	120×120×38mm	No	✓	✓	✓	161
9HV1248P1G001	9HV1248G1002	9HV1248G1001	—	9HV1248P1G001	120×120×38mm	No	✓	✓	✓	161
9HV1248P1H001	9HV1248H1002	9HV1248H1001	—	9HV1248P1H001	120×120×38mm	No	✓	✓	✓	161
9HV5724P5H001	—	—	—	9HV5724P5H001	φ172×150×51mm	No	✓	✓	✓	187
9HV5748P5G001	—	—	—	9HV5748P5G001	φ172×150×51mm	No	✓	✓	✓	187
9L0412H301	9L0412H302	9L0412H301	9L0412H3D01	—	40×40×28mm	No	✓	✓	✓	311
9L0412J301	9L0412J302	9L0412J301	9L0412J3D01	—	40×40×28mm	No	✓	✓	✓	311
9L0412M301	9L0412M302	9L0412M301	9L0412M3D01	—	40×40×28mm	No	✓	✓	✓	311
9LB1412H501	9LB1412H502	9LB1412H501	9LB1412H5D01	—	140×140×51mm	No	✓	✓	✓	343
9LB1412M501	9LB1412M502	9LB1412M501	9LB1412M5D01	—	140×140×51mm	No	✓	✓	✓	343
9LB1412S501	9LB1412S502	9LB1412S501	9LB1412S5D01	—	140×140×51mm	No	✓	✓	✓	343
9LB1424B501	9LB1424B502	9LB1424B501	—	—	140×140×51mm	No	—	—	—	343

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							✓	✓	✓	
9LB1424H501	9LB1424H502	9LB1424H501	9LB1424H5D01	—	140×140×51mm	No	✓	✓	✓	343
9LB1424M501	9LB1424M502	9LB1424M501	9LB1424M5D01	—	140×140×51mm	No	✓	✓	✓	343
9LB1424S501	9LB1424S502	9LB1424S501	9LB1424S5D01	—	140×140×51mm	No	✓	✓	✓	343
9LB1448F501	—	9LB1448F501	—	—	140×140×51mm	No	—	—	—	343
9LB1448H501	9LB1448H502	9LB1448H501	9LB1448H5D01	—	140×140×51mm	No	✓	✓	✓	343
9LB1448M501	9LB1448M502	9LB1448M501	9LB1448M5D01	—	140×140×51mm	No	✓	✓	✓	343
9LB1448S501	9LB1448S502	9LB1448S501	9LB1448S5D01	—	140×140×51mm	No	✓	✓	✓	343
9LG0612P4H001	—	—	—	9LG0612P4H001	60×60×25mm	No	✓	✓	✓	313
9LG0612P4J001	—	—	—	9LG0612P4J001	60×60×25mm	No	✓	✓	✓	313
9LG0612P4M001	—	—	—	9LG0612P4M001	60×60×25mm	No	✓	✓	✓	313
9LG0612P4S001	—	—	—	9LG0612P4S001	60×60×25mm	No	✓	✓	✓	313
9LG0624P4H001	—	—	—	9LG0624P4H001	60×60×25mm	No	✓	✓	✓	313
9LG0624P4J001	—	—	—	9LG0624P4J001	60×60×25mm	No	✓	✓	✓	313
9LG0624P4M001	—	—	—	9LG0624P4M001	60×60×25mm	No	✓	✓	✓	313
9LG0624P4S001	—	—	—	9LG0624P4S001	60×60×25mm	No	✓	✓	✓	313
9LG0648P4H001	—	—	—	9LG0648P4H001	60×60×25mm	No	✓	✓	✓	313
9LG0648P4J001	—	—	—	9LG0648P4J001	60×60×25mm	No	✓	✓	✓	313
9LG0648P4M001	—	—	—	9LG0648P4M001	60×60×25mm	No	✓	✓	✓	313
9LG0648P4S001	—	—	—	9LG0648P4S001	60×60×25mm	No	✓	✓	✓	313
9LG0812P4G001	—	—	—	9LG0812P4G001	80×80×25mm	No	✓	✓	✓	321
9LG0812P4H001	—	—	—	9LG0812P4H001	80×80×25mm	No	✓	✓	✓	321
9LG0812P4J001	—	—	—	9LG0812P4J001	80×80×25mm	No	✓	✓	✓	321
9LG0824P4G001	—	—	—	9LG0824P4G001	80×80×25mm	No	✓	✓	✓	321
9LG0824P4H001	—	—	—	9LG0824P4H001	80×80×25mm	No	✓	✓	✓	321
9LG0824P4J001	—	—	—	9LG0824P4J001	80×80×25mm	No	✓	✓	✓	321
9LG0912P1F001	—	—	—	9LG0912P1F001	92×92×38mm	No	✓	✓	✓	331
9LG0912P1H001	—	—	—	9LG0912P1H001	92×92×38mm	No	✓	✓	✓	331
9LG0912P4G001	—	—	—	9LG0912P4G001	92×92×25mm	No	✓	✓	✓	327
9LG0912P4H001	—	—	—	9LG0912P4H001	92×92×25mm	No	✓	✓	✓	327
9LG0912P4J001	—	—	—	9LG0912P4J001	92×92×25mm	No	✓	✓	✓	327
9LG0912P4S001	—	—	9LG0924S4D001	9LG0912P4S001	92×92×25mm	No	✓	✓	✓	327
9LG0924P1F001	—	—	—	9LG0924P1F001	92×92×38mm	No	✓	✓	✓	331
9LG0924P1H001	—	—	—	9LG0924P1H001	92×92×38mm	No	✓	✓	✓	331
9LG0924P4G001	—	—	—	9LG0924P4G001	92×92×25mm	No	✓	✓	✓	327
9LG0924P4H001	—	—	—	9LG0924P4H001	92×92×25mm	No	✓	✓	✓	327
9LG0924P4J001	—	—	—	9LG0924P4J001	92×92×25mm	No	✓	✓	✓	327
9LG0924P4S001	—	—	—	9LG0924P4S001	92×92×25mm	No	✓	✓	✓	327
9LG1212P1G001	—	—	—	9LG1212P1G001	120×120×38mm	No	✓	✓	✓	333
9LG1212P1H001	—	—	—	9LG1212P1H001	120×120×38mm	No	✓	✓	✓	333
9LG1212P1S001	—	—	—	9LG1212P1S001	120×120×38mm	No	✓	✓	✓	333
9LG1224P1G001	—	—	9LG1224G1D001	9LG1224P1G001	120×120×38mm	No	✓	✓	✓	333
9LG1224P1H001	—	—	—	9LG1224P1H001	120×120×38mm	No	✓	✓	✓	333
9LG1224P1S001	—	—	—	9LG1224P1S001	120×120×38mm	No	✓	✓	✓	333
9LG1248P1G001	—	—	—	9LG1248P1G001	120×120×38mm	No	✓	✓	✓	333
9LG1248P1H001	—	—	—	9LG1248P1H001	120×120×38mm	No	✓	✓	✓	333
9LG1248P1S001	—	—	—	9LG1248P1S001	120×120×38mm	No	✓	✓	✓	333
9RF1312P3H001	—	—	—	9RF1312P3H001	φ 136mm×28mm	No	✓	✓	✓	235
9RF1324P3H001	—	—	—	9RF1324P3H001	φ 136mm×28mm	No	✓	✓	✓	235
9S0612F401	9S0612F402	9S0612F401	9S0612F4D01	9S0612P4F01	60×60×25mm	Yes	✓	✓	✓	67
9S0612F4011	9S0612F4021	9S0612F4011	9S0612F4D011	9S0612P4F011	60×60×25mm	No	✓	✓	✓	67
9S0612H401	9S0612H402	9S0612H401	9S0612H4D01	9S0612P4H01	60×60×25mm	Yes	✓	✓	✓	67
9S0612H4011	9S0612H4021	9S0612H4011	9S0612H4D011	9S0612P4H011	60×60×25mm	No	✓	✓	✓	67
9S0612M401	9S0612M402	9S0612M401	9S0612M4D01	9S0612P4M01	60×60×25mm	Yes	✓	✓	✓	67
9S0612M4011	9S0612M4021	9S0612M4011	9S0612M4D011	—	60×60×25mm	No	✓	✓	✓	67
9S0612S401	9S0612S402	9S0612S401	9S0612S4D01	9S0612P4S01	60×60×25mm	Yes	✓	✓	✓	67
9S0612S4011	—	9S0612S4011	—	—	60×60×25mm	No	✓	✓	✓	67
9S0812F401	9S0812F402	9S0812F401	9S0812F4D01	9S0812P4F01	80×80×25mm	Yes	✓	✓	✓	103
9S0812F4011	9S0812F4021	9S0812F4011	9S0812F4D011	9S0812P4F011	80×80×25mm	No	✓	✓	✓	103
9S0812H401	9S0812H402	9S0812H401	9S0812H4D01	—	80×80×25mm	Yes	✓	✓	—	103
9S0812H4011	—	9S0812H4011	9S0812H4D011	—	80×80×25mm	No	✓	✓	—	103
9S0812L401	9S0812L402	9S0812L401	9S0812L4D01	—	80×80×25mm	Yes	✓	✓	✓	103
9S0812L4011	9S0812L4021	9S0812L4011	9S0812L4D011	—	80×80×25mm	No	✓	✓	✓	103

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	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							✓	✓	✓	
9S0812M401	9S0812M402	9S0812M401	9S0812M4D01	9S0812P4M01	80×80×25mm	Yes	✓	✓	✓	103
9S0812M4011	9S0812M4021	9S0812M4011	9S0812M4D011	9S0812P4M011	80×80×25mm	No	✓	✓	✓	103
9S0824L401	9S0824L402	9S0824L401	9S0824L4D01	—	80×80×25mm	Yes	✓	✓	✓	103
9S0824L4011	9S0824L4021	9S0824L4011	—	—	80×80×25mm	No	✓	✓	✓	103
9S0824M401	9S0824M402	9S0824M401	9S0824M4D01	—	80×80×25mm	Yes	✓	✓	✓	103
9S0824M4011	9S0824M4021	9S0824M4011	—	—	80×80×25mm	No	✓	✓	✓	103
9S0912F401	9S0912F402	9S0912F401	9S0912F4D01	9S0912P4F01	92×92×25mm	Yes	✓	✓	✓	135
9S0912F4011	9S0912F4021	9S0912F4011	9S0912F4D011	9S0912P4F011	92×92×25mm	No	✓	✓	✓	135
9S0912L401	9S0912L402	9S0912L401	9S0912L4D01	—	92×92×25mm	Yes	✓	✓	✓	135
9S0912L4011	9S0912L4021	9S0912L4011	9S0912L4D011	—	92×92×25mm	No	✓	✓	✓	135
9S0912M401	9S0912M402	9S0912M401	9S0912M4D01	9S0912P4M01	92×92×25mm	Yes	✓	✓	✓	135
9S0912M4011	9S0912M4021	9S0912M4011	—	9S0912P4M011	92×92×25mm	No	✓	✓	✓	135
9S0924F401	9S0924F402	9S0924F401	9S0924F4D01	—	92×92×25mm	Yes	✓	✓	✓	135
9S0924F4011	9S0924F4021	9S0924F4011	—	—	92×92×25mm	No	✓	✓	✓	135
9S0924L401	9S0924L402	9S0924L401	9S0924L4D01	—	92×92×25mm	Yes	✓	✓	✓	135
9S0924L4011	9S0924L4021	9S0924L4011	—	—	92×92×25mm	No	✓	✓	✓	135
9S0924M401	9S0924M402	9S0924M401	9S0924M4D01	—	92×92×25mm	Yes	✓	✓	✓	135
9S0924M4011	9S0924M4021	9S0924M4011	—	—	92×92×25mm	No	✓	✓	✓	135
9S1212F401	9S1212F402	9S1212F401	9S1212F4D01	9S1212P4F01	120×120×25mm	Yes	✓	✓	✓	151
9S1212F4011	9S1212F4021	9S1212F4011	9S1212F4D011	9S1212P4F011	120×120×25mm	No	✓	✓	✓	151
9S1212H401	9S1212H402	9S1212H401	9S1212H4D01	9S1212P4H01	120×120×25mm	Yes	✓	✓	✓	151
9S1212H4011	9S1212H4021	9S1212H4011	—	9S1212P4H011	120×120×25mm	No	✓	✓	✓	151
9S1212L401	9S1212L402	9S1212L401	9S1212L4D01	—	120×120×25mm	Yes	✓	✓	✓	151
9S1212L4011	9S1212L4021	9S1212L4011	9S1212L4D011	9S1212P4L011	120×120×25mm	No	✓	✓	✓	151
9S1212M401	9S1212M402	9S1212M401	9S1212M4D01	9S1212P4M01	120×120×25mm	Yes	✓	✓	✓	151
9S1212M4011	9S1212M4021	9S1212M4011	9S1212M4D011	9S1212P4M011	120×120×25mm	No	✓	✓	✓	151
9S1224M401	9S1224M402	9S1224M401	9S1224M4D01	—	120×120×25mm	Yes	✓	✓	✓	151
9S1224M4011	—	9S1224M4011	9S1224M4D011	—	120×120×25mm	No	✓	✓	✓	151
9SG1212G101	9SG1212G102	9SG1212G101	9SG1212G1D01	9SG1212P1G01	120×120×38mm	No	✓	✓	✓	171
9SG1224G101	9SG1224G102	9SG1224G101	9SG1224G1D01	9SG1224P1G01	120×120×38mm	No	✓	✓	✓	171
9SG1224H101	9SG1224H102	9SG1224H101	—	—	120×120×38mm	No	—	—	—	171
9SG1248G101	9SG1248G102	9SG1248G101	—	9SG1248P1G01	120×120×38mm	No	✓	✓	✓	171
9SG5724P5H61	9SG5724H562	—	—	9SG5724P5H61	φ172×150×51mm	No	✓	✓	✓	189
9SG5748P5G01	—	—	—	9SG5748P5G01	φ172×150×51mm	No	✓	✓	✓	189
9SG5748P5H01	—	—	—	9SG5748P5H01	φ172×150×51mm	No	✓	✓	✓	189
9TG24P0G01	9TG24G002	9TG24G001	—	9TG24P0G01	φ175mm×69mm	—	✓	✓	✓	371
9TG24P0S01	9TG24S002	9TG24S001	—	9TG24P0S01	φ175mm×69mm	—	✓	✓	✓	371
9TG48P0G01	—	—	—	9TG48P0G01	φ175mm×69mm	—	✓	✓	✓	371
9TJ24P0H61	—	—	—	9TJ24P0H61	φ133mm×91mm	—	✓	✓	✓	367
9TJ48P0H01	—	—	—	9TJ48P0H01	φ133mm×91mm	—	✓	✓	✓	367
9TM48P4H01	—	—	—	9TM48P4H01	φ100mm×25mm	—	✓	✓	✓	365
9TN24P1H01	—	—	—	9TN24P1H01	φ150mm×35mm	—	✓	✓	✓	369
9TN48P1H01	—	—	—	9TN48P1H01	φ150mm×35mm	—	✓	✓	✓	369
9TP24P0H001	—	—	—	9TP24P0H001	φ221mm×71mm	—	✓	✓	✓	373
9TP48P0G001	—	—	—	9TP48P0G001	φ221mm×71mm	—	✓	✓	✓	373
9TP48P0H001	—	—	—	9TP48P0H001	φ221mm×71mm	—	✓	✓	✓	373
9TS48P0G001	—	—	—	9TS48P0G001	φ225mm×99mm	—	✓	✓	✓	375
9TS48P0H001	—	—	—	9TS48P0H001	φ225mm×99mm	—	✓	✓	✓	375
9W1TG48P0H61	—	—	—	9W1TG48P0H61	φ175mm×69mm	—	✓	✓	✓	293
9W1TJ24P0H61	—	—	—	9W1TJ24P0H61	φ133mm×91mm	—	✓	✓	✓	289
9W1TJ48P0H61	—	—	—	9W1TJ48P0H61	φ133mm×91mm	—	✓	✓	✓	289
9W1TM48P4G01	—	—	—	9W1TM48P4G01	φ100mm×25mm	—	✓	✓	✓	287
9W1TM48P4H01	—	—	—	9W1TM48P4H01	φ100mm×25mm	—	✓	✓	✓	287
9W1TN48P1H01	—	—	—	9W1TN48P1H01	φ150mm×35mm	—	✓	✓	✓	291
9WB1412H501	9WB1412H502	9WB1412H501	—	—	140×140×51mm	No	✓	✓	✓	279
9WB1412M501	9WB1412M502	9WB1412M501	9WB1412M5D01	—	140×140×51mm	No	✓	✓	✓	279
9WB1412S501	9WB1412S502	9WB1412S501	9WB1412S5D01	—	140×140×51mm	No	✓	✓	✓	279
9WB1424H501	9WB1424H502	9WB1424H501	9WB1424H5D01	—	140×140×51mm	No	✓	✓	✓	279
9WB1424M501	9WB1424M502	9WB1424M501	—	—	140×140×51mm	No	✓	✓	✓	279
9WB1448H501	9WB1448H502	9WB1448H501	9WB1448H5D01	—	140×140×51mm	No	✓	✓	✓	279
9WB1448S501	9WB1448S502	9WB1448S501	9WB1448S5D01	—	140×140×51mm	No	✓	✓	✓	279
9WE1724K501	9WE1724K502	9WE1724K501	—	—	φ172mm×51mm	No	✓	✓	✓	284

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	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							✓	✓	✓	
9WE5724K501	9WE5724K502	9WE5724K501	—	—	φ 172×150×51mm	No	✓	✓	✓	283
9WE5748K501	9WE5748K502	9WE5748K501	9WE5748K5D01	9WE5748P5K01	φ 172×150×51mm	No	✓	✓	✓	283
9WF0424F601	—	9WF0424F601	9WF0424F6D01	—	40×40×20mm	Yes	✓	✓	✓	298
9WF0424H601	9WF0424H602	9WF0424H601	9WF0424H6D01	—	40×40×20mm	Yes	✓	✓	✓	298
9WF0424H701	9WF0424H702	9WF0424H701	9WF0424H7D01	—	40×40×15mm	Yes	✓	✓	✓	297
9WF0624H401	9WF0624H402	9WF0624H401	—	—	60×60×25mm	Yes	✓	✓	✓	301
9WF0624H601	—	9WF0624H601	—	—	60×60×20mm	Yes	✓	✓	✓	300
9WF0624H701	9WF0624H702	9WF0624H701	9WF0624H7D01	—	60×60×15mm	Yes	✓	✓	✓	299
9WF0824S401	9WF0824S402	9WF0824S401	—	—	80×80×25mm	Yes	✓	✓	✓	302
9WF0924H201	9WF0924H202	9WF0924H201	9WF0924H2D01	—	92×92×32mm	Yes	✓	✓	✓	305
9WF0924H401	9WF0924H402	9WF0924H401	9WF0924H4D01	—	92×92×25mm	Yes	✓	✓	✓	303
9WF0924S201	9WF0924S202	9WF0924S201	9WF0924S2D01	—	92×92×32mm	Yes	✓	✓	✓	305
9WF1224H101	9WF1224H102	9WF1224H101	9WF1224H1D01	—	120×120×38mm	Yes	✓	✓	✓	307
9WG1212E101-E	9WG1212E102-E	9WG1212E101-E	9WG1212E1D01-E	—	120×120×38mm	No	✓	✓	✓	273
9WG1212F101-E	9WG1212F102-E	9WG1212F101-E	—	—	120×120×38mm	No	✓	✓	✓	273
9WG1212G101-E	9WG1212G102-E	9WG1212G101-E	9WG1212G1D01-E	—	120×120×38mm	No	✓	✓	✓	273
9WG1212H101-E	9WG1212H102-E	9WG1212H101-E	9WG1212H1D01-E	—	120×120×38mm	No	✓	✓	✓	273
9WG1212M101-E	—	9WG1212M101-E	—	—	120×120×38mm	No	✓	✓	✓	273
9WG1224E101-E	9WG1224E102-E	9WG1224E101-E	9WG1224E1D01-E	—	120×120×38mm	No	✓	✓	✓	273
9WG1224F101-E	9WG1224F102-E	9WG1224F101-E	—	—	120×120×38mm	No	✓	✓	✓	273
9WG1224G101-E	9WG1224G102-E	9WG1224G101-E	9WG1224G1D01-E	—	120×120×38mm	No	✓	✓	✓	273
9WG1224H101-E	9WG1224H102-E	9WG1224H101-E	9WG1224H1D01-E	—	120×120×38mm	No	✓	✓	✓	273
9WG1224M101-E	9WG1224M102-E	9WG1224M101-E	—	—	120×120×38mm	No	✓	✓	✓	273
9WG1248E101-E	9WG1248E102-E	9WG1248E101-E	—	—	120×120×38mm	No	✓	✓	✓	273
9WG1248F101-E	—	9WG1248F101-E	—	—	120×120×38mm	No	✓	✓	✓	273
9WG1248G101-E	9WG1248G102-E	9WG1248G101-E	—	—	120×120×38mm	No	✓	✓	✓	273
9WG1248H101-E	—	9WG1248H101-E	9WG1248H1D01-E	—	120×120×38mm	No	✓	✓	✓	273
9WG1248M101-E	—	9WG1248M101-E	—	—	120×120×38mm	No	✓	✓	✓	273
9WG5748P5G001	—	—	—	9WG5748P5G001	φ 172×150×51mm	No	✓	✓	✓	281
9WG5748P5H001	—	9WG5748H5001	—	9WG5748P5H001	φ 172×150×51mm	No	✓	✓	✓	281
9WL0412P3G001	—	—	—	9WL0412P3G001	40×40×28mm	No	✓	✓	✓	240
9WL0412P3J001	—	—	—	9WL0412P3J001	40×40×28mm	No	✓	✓	✓	240
9WL0424P3G001	—	—	—	9WL0424P3G001	40×40×28mm	No	✓	✓	✓	240
9WL0424P3J001	—	—	—	9WL0424P3J001	40×40×28mm	No	✓	✓	✓	240
9WL0612P4H001	—	—	—	9WL0612P4H001	60×60×25mm	No	✓	✓	✓	243
9WL0612P4J001	—	—	—	9WL0612P4J001	60×60×25mm	No	✓	✓	✓	243
9WL0612P4S001	9WL0612S4002	—	—	9WL0612P4S001	60×60×25mm	No	✓	✓	✓	243
9WL0624P4H001	—	—	—	9WL0624P4H001	60×60×25mm	No	✓	✓	✓	243
9WL0624P4J001	—	—	—	9WL0624P4J001	60×60×25mm	No	✓	✓	✓	243
9WL0624P4S001	—	—	—	9WL0624P4S001	60×60×25mm	No	✓	✓	✓	243
9WL0812P4G001	—	—	—	9WL0812P4G001	80×80×25mm	No	✓	✓	✓	249
9WL0812P4H001	—	—	—	9WL0812P4H001	80×80×25mm	No	✓	✓	✓	249
9WL0812P4J001	—	—	—	9WL0812P4J001	80×80×25mm	No	✓	✓	✓	249
9WL0824P4G001	—	—	—	9WL0824P4G001	80×80×25mm	No	✓	✓	✓	249
9WL0824P4H001	—	—	—	9WL0824P4H001	80×80×25mm	No	✓	✓	✓	249
9WL0824P4J001	—	—	—	9WL0824P4J001	80×80×25mm	No	✓	✓	✓	249
9WL0912P4G001	—	—	—	9WL0912P4G001	92×92×25mm	No	✓	✓	✓	259
9WL0912P4H001	—	—	—	9WL0912P4H001	92×92×25mm	No	✓	✓	✓	259
9WL0912P4J001	—	—	—	9WL0912P4J001	92×92×25mm	No	✓	✓	✓	259
9WL0912P4S001	—	—	—	9WL0912P4S001	92×92×25mm	No	✓	✓	✓	259
9WL0924P4H001	—	—	—	9WL0924P4H001	92×92×25mm	No	✓	✓	✓	259
9WL0924P4J001	—	—	—	9WL0924P4J001	92×92×25mm	No	✓	✓	✓	259
9WL0924P4S001	—	—	—	9WL0924P4S001	92×92×25mm	No	✓	✓	✓	259
9WP0412F6001	9WP0412F6002	9WP0412F6001	—	—	40×40×20mm	Yes	✓	✓	✓	239
9WP0412H6001	9WP0412H6002	9WP0412H6001	—	—	40×40×20mm	Yes	✓	✓	✓	239
9WP0612D401	9WP0612D402	9WP0612D401	9WP0612D4D01	—	60×60×25mm	Yes	✓	✓	✓	247
9WP0612D4011	—	9WP0612D4011	—	—	60×60×25mm	No	✓	✓	✓	247
9WP0612G401	9WP0612G402	9WP0612G401	9WP0612G4D01	9WP0612P4G01	60×60×25mm	Yes	✓	✓	✓	247
9WP0612G4011	9WP0612G4021	9WP0612G4011	—	—	60×60×25mm	No	✓	✓	✓	247
9WP0612H401	9WP0612H402	9WP0612H401	9WP0612H4D01	—	60×60×25mm	Yes	✓	✓	✓	247
9WP0612H4011	9WP0612H4021	9WP0612H4011	9WP0612H4D011	—	60×60×25mm	No	✓	✓	✓	247
9WP0624G401	9WP0624G402	9WP0624G401	—	—	60×60×25mm	Yes	✓	✓	✓	247

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
							✓	✓	✓	
9WP0624G4011	—	9WP0624G4011	—	—	60×60×25mm	No	✓	✓	✓	247
9WP0624H401	9WP0624H402	9WP0624H401	9WP0624H4D01	—	60×60×25mm	Yes	✓	✓	✓	247
9WP0624H4011	9WP0624H4021	9WP0624H4011	9WP0624H4D011	—	60×60×25mm	No	✓	✓	✓	247
9WP0648H401	9WP0648H402	9WP0648H401	9WP0648H4D01	—	60×60×25mm	Yes	✓	✓	✓	247
9WP0648H4011	9WP0648H4021	9WP0648H4011	9WP0648H4D011	—	60×60×25mm	No	✓	✓	✓	247
9WP0812G401	9WP0812G402	9WP0812G401	9WP0812G4D01	9VWP0812P4G01	80×80×25mm	Yes	✓	✓	✓	253
9WP0812G4011	9WP0812G4021	9WP0812G4011	—	—	80×80×25mm	No	✓	✓	✓	253
9WP0812H401	9WP0812H402	9WP0812H401	9WP0812H4D01	—	80×80×25mm	Yes	✓	✓	✓	253
9WP0812H4011	9WP0812H4021	9WP0812H4011	9WP0812H4D011	—	80×80×25mm	No	✓	✓	✓	253
9WP0824H401	9WP0824H402	9WP0824H401	9WP0824H4D01	—	80×80×25mm	Yes	✓	✓	✓	253
9WP0824H4011	9WP0824H4021	9WP0824H4011	9WP0824H4D011	—	80×80×25mm	No	✓	✓	✓	253
9WP0824S401	9WP0824S402	9WP0824S401	9WP0824S4D01	—	80×80×25mm	Yes	✓	✓	✓	253
9WP0824S4011	—	9WP0824S4011	—	—	80×80×25mm	No	✓	✓	✓	253
9WP0848S401	9WP0848S402	9WP0848S401	9WP0848S4D01	—	80×80×25mm	Yes	✓	✓	✓	253
9WP0848S4011	9WP0848S4021	9WP0848S4011	9WP0848S4D011	—	80×80×25mm	No	✓	✓	✓	253
9WP0912F401	9WP0912F402	9WP0912F401	9WP0912F4D01	—	92×92×25mm	Yes	—	—	—	265
9WP0912S401	—	9WP0912S401	—	—	92×92×25mm	Yes	—	—	—	265
9WP0924B401	9WP0924B402	9WP0924B401	9WP0924B4D01	—	92×92×25mm	Yes	✓	✓	✓	265
9WP0924F401	9WP0924F402	9WP0924F401	9WP0924F4D01	—	92×92×25mm	Yes	✓	✓	✓	265
9WP0924G401	—	9WP0924G401	—	—	92×92×25mm	Yes	✓	✓	✓	265
9WP0924H401	9WP0924H402	9WP0924H401	9WP0924H4D01	—	92×92×25mm	Yes	✓	✓	✓	265
9WP0924S401	9WP0924S402	9WP0924S401	9WP0924S4D01	—	92×92×25mm	Yes	—	—	—	265
9WP1212H101	9WP1212H102	9WP1212H101	9WP1212H1D01	—	120×120×38mm	Yes	✓	✓	✓	271
9WP1212H1011	9WP1212H1021	9WP1212H1011	9WP1212H1D011	—	120×120×38mm	No	✓	✓	✓	271
9WP1224H101	9WP1224H102	9WP1224H101	9WP1224H1D01	—	120×120×38mm	Yes	✓	✓	✓	271
9WP1224H1011	9WP1224H1021	9WP1224H1011	9WP1224H1D011	—	120×120×38mm	No	✓	✓	✓	271
9WP1248H101	9WP1248H102	9WP1248H101	9WP1248H1D01	—	120×120×38mm	Yes	✓	✓	✓	271
9WP1248H1011	9WP1248H1021	9WP1248H1011	—	—	120×120×38mm	No	✓	✓	✓	271
9WS0812F401	9WS0812F402	9WS0812F401	9WS0812F4D01	—	80×80×25mm	Yes	✓	✓	✓	255
9WS0812F4011	9WS0812F4021	9WS0812F4011	—	—	80×80×25mm	No	✓	✓	✓	255
9WS0812H401	9WS0812H402	9WS0812H401	—	—	80×80×25mm	Yes	✓	✓	✓	255
9WS0812H4011	9WS0812H4021	9WS0812H4011	—	—	80×80×25mm	No	✓	✓	✓	255
9WS0812M401	9WS0812M402	9WS0812M401	9WS0812M4D01	—	80×80×25mm	Yes	✓	✓	✓	255
9WS0812M4011	9WS0812M4021	9WS0812M4011	—	—	80×80×25mm	No	✓	✓	✓	255
9WS0824F401	9WS0824F402	9WS0824F401	—	—	80×80×25mm	Yes	✓	✓	✓	255
9WS0824F4011	9WS0824F4021	9WS0824F4011	—	—	80×80×25mm	No	✓	✓	✓	255
9WS0824H401	9WS0824H402	9WS0824H401	9WS0824H4D01	—	80×80×25mm	Yes	✓	✓	✓	255
9WS0824H4011	9WS0824H4021	9WS0824H4011	—	—	80×80×25mm	No	✓	✓	✓	255
9WS0824M401	9WS0824M402	9WS0824M401	9WS0824M4D01	—	80×80×25mm	Yes	✓	✓	✓	255
9WS0824M4011	9WS0824M4021	9WS0824M4011	—	—	80×80×25mm	No	✓	✓	✓	255
9WS0912F401	9WS0912F402	9WS0912F401	9WS0912F4D01	—	92×92×25mm	Yes	✓	✓	✓	263
9WS0912H401	9WS0912H402	9WS0912H401	—	—	92×92×25mm	Yes	✓	✓	✓	263
9WS0912L401	9WS0912L402	9WS0912L401	—	—	92×92×25mm	Yes	✓	✓	✓	263
9WS0912M401	9WS0912M402	9WS0912M401	—	—	92×92×25mm	Yes	✓	✓	✓	263
9WS0924F401	9WS0924F402	9WS0924F401	—	—	92×92×25mm	Yes	✓	✓	✓	263
9WS0924H401	9WS0924H402	9WS0924H401	9WS0924H4D01	—	92×92×25mm	Yes	✓	✓	✓	263
9WS0924L401	9WS0924L402	9WS0924L401	—	—	92×92×25mm	Yes	✓	✓	✓	263
9WS0924M401	9WS0924M402	9WS0924M401	9WS0924M4D01	—	92×92×25mm	Yes	✓	✓	✓	263
9WS1212H101	9WS1212H102	9WS1212H101	—	—	120×120×38mm	Yes	✓	✓	✓	275
9WS1212H1011	9WS1212H1021	9WS1212H1011	—	—	120×120×38mm	No	✓	✓	✓	275
9WS1212M101	9WS1212M102	9WS1212M101	—	—	120×120×38mm	Yes	✓	✓	✓	275
9WS1212M1011	9WS1212M1021	9WS1212M1011	—	—	120×120×38mm	No	✓	✓	✓	275
9WS1224H101	9WS1224H102	9WS1224H101	—	—	120×120×38mm	Yes	✓	✓	✓	275
9WS1224H1011	9WS1224H1021	9WS1224H1011	—	—	120×120×38mm	No	✓	✓	✓	275
9WS1224M101	9WS1224M102	9WS1224M101	—	—	120×120×38mm	Yes	✓	✓	✓	275
9WS1224M1011	9WS1224M1021	9WS1224M1011	—	—	120×120×38mm	No	✓	✓	✓	275
9WS1248H101	9WS1248H102	9WS1248H101	9WS1248H1D01	—	120×120×38mm	Yes	✓	✓	✓	275
9WS1248H1011	9WS1248H1021	9WS1248H1011	9WS1248H1D011	—	120×120×38mm	No	✓	✓	✓	275
9WS1248M101	9WS1248M102	9WS1248M101	9WS1248M1D01	—	120×120×38mm	Yes	✓	✓	✓	275
9WS1248M1011	9WS1248M1021	9WS1248M1011	—	—	120×120×38mm	No	✓	✓	✓	275
9VW0812P1M001	—	—	—	9VW0812P1M001	80×80×38mm	No	✓	✓	✓	257
9VW0848P1H001	—	—	—	9VW0848P1H001	80×80×38mm	Yes	✓	✓	✓	257

Please contact your point of sale regarding low-speed sensors.

Models listed in the main section of this catalog	List of models (models not listed in the main section of this catalog are options. Standards for optional model numbers may differ from the certified standards listed at right.)				Frame Size	Rib	Standard (certification status is for the models listed in this catalog, and standards for optional model numbers may differ.)			page
	Without sensor	With pulse sensor	With Lock sensor	With PWM control function and pulse sensor			UL	CSA	TÜV	
	9WV0848P1H0011	—	—	—			9WV0848P1H0011	80×80×38mm	No	
9WV0948P1H001	—	—	—	9WV0948P1H001	92×92×38mm	Yes	✓	✓	✓	267
9WV1212P1J001	—	—	—	9WV1212P1J001	120×120×38mm	No	✓	✓	✓	269
9WV1224P1H001	9WV1224H102	9WV1224H101	9WV1224H1D001	9WV1224P1H001	120×120×38mm	No	✓	✓	✓	269
9WV1224P1J601	—	9WV1224J1001	—	9WV1224P1J601	120×120×38mm	No	✓	✓	✓	269
9WV1248P1J001	9WV1248J1002	9WV1248J1001	9WV1248J1D001	9WV1248P1J001	120×120×38mm	No	✓	✓	✓	269

Please contact your point of sale regarding low-speed sensors.

Index by Model No./Safety Standards List - ACDC Fans **AC**

Models listed in the main section of this catalog	Frame Size	Model	Rated Voltage [V]	UL (c-UL)	CSA (c-UL)	TÜV	CE	PSE	Note	page
9AD0901H12	92mm×92mm×38mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	399
9AD0901H121	92mm×92mm×38mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribless	399
9AD0901H1H	92mm×92mm×38mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	399
9AD0901H1H1	92mm×92mm×38mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribless	399
9AD0901M12	92mm×92mm×38mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	399
9AD0901M121	92mm×92mm×38mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribless	399
9AD0901M1H	92mm×92mm×38mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	399
9AD0901M1H1	92mm×92mm×38mm	San Ace 92AD	100 to 240	✓	✓	✓	✓	✓	Ribless	399
9AD1201H12	120mm×120mm×38mm	San Ace 120AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	403
9AD1201H121	120mm×120mm×38mm	San Ace 120AD	100 to 240	✓	✓	✓	✓	✓	Ribless	403
9AD1201H1H	120mm×120mm×38mm(with Low-speed sensor)	San Ace 120AD	100 to 240	✓	✓	✓	✓	✓	Ribbed	403
9AD1201H1H1	120mm×120mm×38mm(with Low-speed sensor)	San Ace 120AD	100 to 240	✓	✓	✓	✓	✓	Ribless	403

Please contact your point of sale for pulse sensors and lock sensors.

Index by Model No./Safety Standards List - AC Fans **AC**

Models listed in the main section of this catalog	Frame Size	Model	Rated Voltage [V]	UL (c-UL)	CSA (c-UL)	TÜV	CE	PSE	Note	page
109-033UL	80×80×42mm	San Ace 80	115	✓	✓	✓	✓	✓	Low-speed	419
109-040UL	80×80×42mm	San Ace 80	100	✓	✓	✓	✓	✓		419
109-041UL	80×80×42mm	San Ace 80	200	✓	✓	✓	✓	✓		419
109-043UL	80×80×42mm	San Ace 80	115	✓	✓	✓	✓	✓		419
109-044UL	80×80×42mm	San Ace 80	230	✓	✓	✓	✓	✓		419
109-047UL	80×80×42mm	San Ace 80	100	✓	✓	✓	✓	✓	Low-speed	419
109-130	60×60×38mm	San Ace 60	100	✓	—	✓	✓	—		411
109-133	60×60×38mm	San Ace 60	115	✓	—	✓	✓	—		411
109-150	80×80×38mm	San Ace 80	100	✓	✓	✓	✓	✓		417
109-151	80×80×38mm	San Ace 80	200	✓	✓	✓	✓	✓		417
109-153	80×80×38mm	San Ace 80	115	✓	✓	✓	✓	✓		417
109-154	80×80×38mm	San Ace 80	230	✓	✓	✓	✓	✓		417
109-180	60×60×28mm	San Ace 60	100	✓	—	✓	✓	—		409
109-183	60×60×28mm	San Ace 60	115	✓	—	✓	✓	—		409
109-210	80×80×20mm	San Ace 80	100	✓	✓	✓	✓	—		413
109-213	80×80×20mm	San Ace 80	115	✓	✓	✓	✓	—		413
109-311	φ 172mm×51mm (Round type)	San Ace 172	100	✓	✓	✓	✓	✓		437
109-312	φ 172mm×51mm (Round type)	San Ace 172	200	✓	✓	✓	✓	✓		437
109-313	φ 172mm×51mm (Round type)	San Ace 172	230	✓	✓	✓	✓	✓		437
109-314	φ 172mm×51mm (Round type)	San Ace 172	115	✓	✓	✓	✓	✓		437
109-371	φ 172mm×51mm (with sensor)	San Ace 172	100	✓	—	✓	✓	✓		437
109-372	φ 172mm×51mm (with sensor)	San Ace 172	200	✓	—	✓	✓	✓		437
109-373	φ 172mm×51mm (with sensor)	San Ace 172	230	✓	—	✓	✓	✓		437
109-374	φ 172mm×51mm (with sensor)	San Ace 172	115	✓	—	✓	✓	✓		437
109-601	160×160×51mm	San Ace 160	100	✓	✓	✓	✓	✓		433
109-602	160×160×51mm	San Ace 160	200	✓	✓	✓	✓	✓		433
109-603	160×160×51mm	San Ace 160	230	✓	✓	✓	✓	✓		433
109-604	160×160×51mm	San Ace 160	115	✓	✓	✓	✓	✓		433
109-641	160×160×51mm (with sensor)	San Ace 160	100	✓	—	✓	✓	✓		433
109-642	160×160×51mm (with sensor)	San Ace 160	200	✓	—	✓	✓	✓		433
109-643	160×160×51mm (with sensor)	San Ace 160	230	✓	—	✓	✓	✓		433
109-644	160×160×51mm (with sensor)	San Ace 160	115	✓	—	✓	✓	✓		433
109S005	120×120×38mm	San Ace 120	100	—	—	—	—	✓		429
109S005UL	120×120×38mm	San Ace 120	100	✓	✓	✓	✓	✓		429
109S006	120×120×38mm	San Ace 120	100	—	—	—	—	✓	Low-speed	429
109S006UL	120×120×38mm	San Ace 120	100/115	✓	✓	✓	✓	✓	Low-speed	429
109S008	120×120×38mm	San Ace 120	200	—	—	—	—	✓		429
109S008UL	120×120×38mm	San Ace 120	200	✓	✓	✓	✓	✓		429
109S010	120×120×38mm	San Ace 120	200	—	—	—	—	✓	Low-speed	429
109S010UL	120×120×38mm	San Ace 120	200/240	✓	✓	✓	✓	✓	Low-speed	429
109S013	120×120×38mm	San Ace 120	100	—	—	—	—	✓		429
109S013UL	120×120×38mm	San Ace 120	100	✓	✓	✓	✓	✓		429
109S024	120×120×38mm	San Ace 120	120	—	—	—	—	✓		429
109S024UL	120×120×38mm	San Ace 120	115	✓	✓	✓	✓	✓		429
109S025	120×120×38mm	San Ace 120	230	—	—	—	—	✓		429
109S025UL	120×120×38mm	San Ace 120	230	✓	✓	✓	✓	✓		429
109S029UL	120×120×38mm	San Ace 120	100	✓	✓	✓	✓	✓		429

Models listed in the main section of this catalog	Frame Size	Model	Rated Voltage [V]	UL (c-UL)	CSA (c-UL)	TÜV	CE	PSE	Note	page
109S030	80×80×25mm	San Ace 80	100	✓	✓	✓	✓	✓		415
109S031	80×80×25mm	San Ace 80	200	✓	✓	✓	✓	✓		415
109S033	80×80×25mm	San Ace 80	115	✓	✓	✓	✓	✓		415
109S034	80×80×25mm	San Ace 80	230	✓	✓	✓	✓	✓		415
109S050	80×80×25mm	San Ace 80	100	✓	✓	✓	✓	✓		415
109S051	80×80×25mm	San Ace 80	200	✓	✓	✓	✓	✓		415
109S053	80×80×25mm	San Ace 80	115	✓	✓	✓	✓	✓		415
109S054	80×80×25mm	San Ace 80	230	✓	✓	✓	✓	✓		415
109S072UL	120×120×38mm	San Ace 120	230	✓	✓	✓	✓	✓		429
109S074UL	120×120×38mm	San Ace 120	115	✓	✓	✓	✓	✓		429
109S075UL	120×120×38mm	San Ace 120	100	✓	✓	✓	✓	✓		429
109S078UL	120×120×38mm	San Ace 120	200	✓	✓	✓	✓	✓		429
109S081	120×120×25mm	San Ace 120	100	✓	✓	✓	✓	✓		425
109S082	120×120×25mm	San Ace 120	200	✓	✓	✓	✓	✓		425
109S083	120×120×25mm	San Ace 120	115	✓	✓	✓	✓	✓		425
109S084	120×120×25mm	San Ace 120	115	✓	✓	✓	✓	✓		425
109S085	120×120×25mm	San Ace 120	100	✓	✓	✓	✓	✓		425
109S086	120×120×25mm	San Ace 120	100	✓	✓	✓	✓	✓	Low-speed	425
109S087	120×120×25mm	San Ace 120	230	✓	✓	✓	✓	✓		425
109S088	120×120×25mm	San Ace 120	200	✓	✓	✓	✓	✓		425
109S089	120×120×25mm	San Ace 120	230	✓	✓	✓	✓	✓		425
109S091	92×92×25mm	San Ace 92	100	✓	✓	✓	✓	✓		421
109S092	92×92×25mm	San Ace 92	200	✓	✓	✓	✓	✓		421
109S093	92×92×25mm	San Ace 92	115	✓	✓	✓	✓	✓		421
109S094	92×92×25mm	San Ace 92	230	✓	✓	✓	✓	✓		421
109S095	92×92×25mm	San Ace 92	100	✓	✓	✓	✓	✓		421
109S096	92×92×25mm	San Ace 92	100	✓	✓	✓	✓	✓	Low-speed	421
109S192	92×92×25mm	San Ace 92	200	✓	✓	✓	✓	✓	Low-speed	421
109S193	92×92×25mm	San Ace 92	115	✓	✓	✓	✓	✓	Low-speed	421
109S194	92×92×25mm	San Ace 92	230	✓	✓	✓	✓	✓	Low-speed	421
109S301	φ 172mm×150mm×51mm (Sidecut type)	San Ace 172	100	✓	✓	✓	✓	✓		435
109S302	φ 172mm×150mm×51mm (Sidecut type)	San Ace 172	200	✓	✓	✓	✓	✓		435
109S303	φ 172mm×150mm×51mm (Sidecut type)	San Ace 172	230	✓	✓	✓	✓	✓		435
109S304	φ 172mm×150mm×51mm (Sidecut type)	San Ace 172	115	✓	✓	✓	✓	✓		435
109S405UL	120×120×38mm (with sensor)	San Ace 120	100	✓	—	✓	✓	✓		429
109S406UL	120×120×38mm (with sensor)	San Ace 120	100	✓	—	✓	✓	✓	Low-speed	429
109S408UL	120×120×38mm (with sensor)	San Ace 120	200	✓	—	✓	✓	✓		429
109S424UL	120×120×38mm (with sensor)	San Ace 120	115	✓	—	✓	✓	✓		429
109S425UL	120×120×38mm (with sensor)	San Ace 120	230	✓	—	✓	✓	✓		429
109S429UL	120×120×38mm (with sensor)	San Ace 120	100	✓	—	✓	✓	✓		429
109S472UL	120×120×38mm (with sensor)	San Ace 120	230	✓	—	✓	✓	✓		429
109S474UL	120×120×38mm (with sensor)	San Ace 120	115	✓	—	✓	✓	✓		429
109S475UL	120×120×38mm (with sensor)	San Ace 120	100	✓	—	✓	✓	✓		429
109S478UL	120×120×38mm (with sensor)	San Ace 120	200	✓	—	✓	✓	✓		429
109S484	120×120×25mm (with sensor)	San Ace 120	115	✓	—	✓	✓	✓		425
109S485	120×120×25mm (with sensor)	San Ace 120	100	✓	—	✓	✓	✓		425
109S486	120×120×25mm (with sensor)	San Ace 120	100	✓	—	✓	✓	✓	Low-speed	425
109S487	120×120×25mm (with sensor)	San Ace 120	230	✓	—	✓	✓	✓		425
109S488	120×120×25mm (with sensor)	San Ace 120	200	✓	—	✓	✓	✓		425
109S491	92×92×25mm (with sensor)	San Ace 92	100	✓	—	✓	✓	✓		421
109S492	92×92×25mm (with sensor)	San Ace 92	200	✓	—	✓	✓	✓		421
109S493	92×92×25mm (with sensor)	San Ace 92	115	✓	—	✓	✓	✓		421
109S494	92×92×25mm (with sensor)	San Ace 92	230	✓	—	✓	✓	✓		421
109S495	92×92×25mm (with sensor)	San Ace 92	100	✓	—	✓	✓	✓		421
109S496	92×92×25mm (with sensor)	San Ace 92	100	✓	—	✓	✓	✓	Low-speed	421

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■ Finger Guards **DC** **AC**

Model No.	Category	Matching Fan Size	page
109-019C	Finger Guards	120mm sq. type	440
109-019E	Finger Guards	120mm sq. type	441
109-019H	Finger Guards	120mm sq. type	440
109-019K	Finger Guards	120mm sq. type	441
109-049C	Finger Guards	80mm sq. type	440
109-049E	Finger Guards	80mm sq. type	440
109-049H	Finger Guards	80mm sq. type	440
109-059	Finger Guards	40mm sq. type	440
109-059H	Finger Guards	40mm sq. type	440
109-099C	Finger Guards	92mm sq. type	440
109-099E	Finger Guards	92mm sq., ϕ 100mm type	440
109-099H	Finger Guards	92mm sq., ϕ 100mm type	440
109-1050	Finger Guards	36mm sq. type	440
109-1051	Finger Guards	150mm sq. type	441
109-1052	Finger Guards	150mm sq. type	441
109-1065	Finger Guards	38mm sq. type	440
109-1066	Finger Guards	ϕ 172mm type	442
109-1068	Finger Guards	ϕ 172mm type	442
109-1102	Finger Guards	ϕ 200mm type	442
109-1103	Finger Guards	ϕ 200mm type	443
109-1104	Finger Guards	ϕ 150mm type	441
109-1104H	Finger Guards	ϕ 150mm type	441
109-1112	Finger Guards	ϕ 133mm type	441
109-1137	Finger Guards	ϕ 225mm type	441
109-1138	Finger Guards	ϕ 221mm type	441
109-1139	Finger Guards	ϕ 136mm type	441
109-139E	Finger Guards	60mm sq. type	440
109-139H	Finger Guards	60mm sq. type	440
109-149	Finger Guards	52mm sq. type	440
109-149E	Finger Guards	52mm sq. type	440
109-319E	Finger Guards	ϕ 172mm type	442
109-319H	Finger Guards	ϕ 172mm type	442
109-319J	Finger Guards	ϕ 172mm type	442
109-320	Finger Guards	ϕ 172mm type	442
109-719	Finger Guards	140mm sq. type	441
109-719H	Finger Guards	140mm sq. type	441
109-720	Finger Guards	ϕ 200mm type	442
109-720H	Finger Guards	ϕ 200mm type	442
109-721	Finger Guards	ϕ 200mm type	442
109-721H	Finger Guards	ϕ 200mm type	442
109-722	Finger Guards	127mm sq., ϕ 175mm type	442
109-723	Finger Guards	127mm sq. type	442

■ Resin Finger Guards/Resin Filter Kits **DC** **AC**

Model No.	Category	Matching Fan Size	page
109-1000F13	Resin Filter Kits	120mm sq. type	445
109-1000F20	Resin Filter Kits	120mm sq. type	445
109-1000F30	Resin Filter Kits	120mm sq. type	445
109-1000F40	Resin Filter Kits	120mm sq. type	445
109-1001F13	Resin Filter Kits	92mm sq. type	445
109-1001F20	Resin Filter Kits	92mm sq. type	445
109-1001F30	Resin Filter Kits	92mm sq. type	445
109-1001F40	Resin Filter Kits	92mm sq. type	445
109-1002F13	Resin Filter Kits	80mm sq. type	445
109-1002F20	Resin Filter Kits	80mm sq. type	445
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109-1003F13	Resin Filter Kits	60mm sq. type	445
109-1003F20	Resin Filter Kits	60mm sq. type	445
109-1003F30	Resin Filter Kits	60mm sq. type	445
109-1003F40	Resin Filter Kits	60mm sq. type	445
109-1000G	Resin Finger Guards	120mm sq. type	445
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■ EMC guards/Inlet nozzle for centrifugal fan and splash proof centrifugal fan **DC**

Model No.	Category	Matching Fan Size	page
109-1036	EMC guards	ϕ 172mm type	444
109-1037	EMC guards	120mm sq. type	444
109-1038	EMC guards	80mm sq. type	444
109-1039	EMC guards	80mm sq. type	444
109-1040	EMC guards	92mm sq. type	444
109-1069	Inlet nozzle for centrifugal fan and splash proof centrifugal fan	ϕ 133mm type	443
109-1069H	Inlet nozzle for centrifugal fan and splash proof centrifugal fan	ϕ 133mm type	443
109-1073	Inlet nozzle for centrifugal fan and splash proof centrifugal fan	ϕ 175mm type	443
109-1073H	Inlet nozzle for centrifugal fan and splash proof centrifugal fan	ϕ 175mm type	443
109-1080	Inlet nozzle for centrifugal fan and splash proof centrifugal fan	ϕ 100mm type	443
109-1081	Inlet nozzle for centrifugal fan and splash proof centrifugal fan	ϕ 150mm type	443
109-1081H	Inlet nozzle for centrifugal fan and splash proof centrifugal fan	ϕ 150mm type	443
109-1134	Inlet nozzle for centrifugal fan and splash proof centrifugal fan	ϕ 225mm type	443
109-1135	Inlet nozzle for centrifugal fan and splash proof centrifugal fan	ϕ 221mm type	443

■ Plug Cord **AC**

Model No.	UL	CSA	PSE	Applicable model	page
489-006-L10			✓	120×120×38mm	447
489-006-L21			✓	120×120×38mm	447
489-006-L35			✓	120×120×38mm	447
489-007-L10	✓	✓		120×120×38mm	448
489-007-L21	✓	✓		120×120×38mm	448
489-008-L10			✓	80×80×42mm	447
489-008-L21			✓	80×80×42mm	447
489-008-L35			✓	80×80×42mm	447
489-016-L10			✓	120×120×25mm 92×92×25mm 80×80×25mm 80×80×38mm	447
489-016-L21			✓	120×120×25mm 92×92×25mm 80×80×25mm 80×80×38mm	447
489-037-L10			✓	120×120×38mm	447
489-037-L21			✓	120×120×38mm	447
489-037-L35			✓	120×120×38mm	447
489-047-L10	✓	✓		120×120×25mm 92×92×25mm 80×80×25mm 80×80×38mm	448
489-047-L21	✓	✓		120×120×25mm 92×92×25mm 80×80×25mm 80×80×38mm	448
489-084-L10	✓	✓		ϕ 172×51mm ϕ 172×150×51mm 160×160×51mm	448
489-084-L21	✓	✓		ϕ 172×51mm ϕ 172×150×51mm 160×160×51mm	448
489-086-L10	✓	✓		160×160×51mm	448
489-086-L21	✓	✓		160×160×51mm	448
489-1618-L10			✓	160×160×51mm	447
489-1618-L21			✓	160×160×51mm	447
489-1618-L28			✓	160×160×51mm	447
489-1619-L10			✓	ϕ 172×51mm ϕ 172×150×51mm 160×160×51mm	447
489-1619-L21			✓	ϕ 172×51mm ϕ 172×150×51mm 160×160×51mm	447
489-1635-L10	✓	✓	✓	ACDC Fan	448
489-1635-L21	✓	✓	✓	ACDC Fan	448

Recommended connectors for DC fans 449p

Deleted Models in this Catalog

Following models were deleted in this latest version of catalog. However, these models are not discontinued product. Please contact us for further assistance if necessary.

■ DC Fan

Size	Model No.	Frame material	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Life Expectancy [h]
92 × 92 × 25mm	109P0912J401	Plastics	12	6 to 13.8	0.56	6.72	4,300	2.03 71.6	92.2 0.37	47	- 20 to + 60	40,000
92 × 92 × 25mm	109P0912W401	Plastics	12	6 to 16	0.21	2.52	2,850	1.45 51.2	45 0.181	33	- 20 to + 70	40,000
92 × 92 × 25mm	109P0912H401	Plastics	12	10.2 to 13.8	0.21	2.52	2,850	1.45 51.2	45 0.181	33	- 20 to + 70	40,000
92 × 92 × 25mm	109P0912F401	Plastics	12	10.2 to 13.8	0.14	1.68	2,450	1.24 43.8	32.3 0.130	30	- 20 to + 70	40,000
92 × 92 × 25mm	109P0912M401	Plastics	12	10.2 to 13.8	0.1	1.2	2,100	1.04 36.7	23.5 0.094	27	- 20 to + 70	40,000
92 × 92 × 25mm	109P0912L401	Plastics	12	10.2 to 13.8	0.07	0.84	1,700	0.8 28.3	16.6 0.067	23	- 20 to + 70	40,000
92 × 92 × 25mm	109P0924W401	Plastics	24	12 to 30	0.12	2.88	2,850	1.45 51.2	45 0.181	33	- 20 to + 70	40,000
92 × 92 × 25mm	109P0924H401	Plastics	24	20.4 to 27.6	0.12	2.88	2,850	1.45 51.2	45 0.181	33	- 20 to + 70	40,000
92 × 92 × 25mm	109P0924F401	Plastics	24	20.4 to 27.6	0.08	1.92	2,450	1.24 43.8	32.3 0.130	30	- 20 to + 70	40,000
92 × 92 × 25mm	109P0924M401	Plastics	24	20.4 to 27.6	0.06	1.44	2,100	1.04 36.7	23.5 0.094	27	- 20 to + 70	40,000
92 × 92 × 25mm	109P0924L401	Plastics	24	20.4 to 27.6	0.05	1.2	1,700	0.8 28.3	16.6 0.067	23	- 20 to + 70	40,000
92 × 92 × 25mm	109P0948H401	Plastics	48	43 to 53	0.06	2.88	2,850	1.45 51.2	45 0.181	33	- 20 to + 70	40,000
φ 200mm × 70mm	109E2024S001	Aluminum	24	21.6 to 26.4	1.9	45.6	3,200	10.45 369	287.1 1.153	57	- 10 to + 70	40,000
φ 200mm × 70mm	109E2024H001	Aluminum	24	20.4 to 27.6	1.0	24	2,600	8.2 289.5	192 0.771	51	- 10 to + 70	40,000
					1.9	45.6	3,200	10.45 369	287.1 1.153	57	- 10 to + 70	40,000
φ 200mm × 70mm	109E2024AS001	Aluminum	24	21.6 to 26.4	1.45	34.8	2,800	9 317.8	215.6 0.865	54	- 10 to + 70	40,000
					1.0	24	2,600	8.2 289.5	192 0.771	51	- 10 to + 70	40,000
φ 200mm × 70mm	109E2024MH001	Aluminum	24	20.4 to 27.6	0.63	15.12	2,100	6.7 236.6	115.4 0.463	45	- 10 to + 70	40,000
					1.0	24	2,600	8.2 289.5	192 0.771	51	- 10 to + 70	40,000

■ Counter Rotating Fan

Size	Model No.	Frame material	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Life Expectancy [h]
40 × 40 × 56mm	9CRA0412K501	Plastics	12	10.8 to 12.6	1.8	21.6	17,000 13,000	0.95 33.5	650 2.61	65	- 20 to + 60	40,000
40 × 40 × 56mm	9CRA0412J501	Plastics	12	10.8 to 13.2	1.4	16.8	15,800 12,200	0.9 31.8	570 2.29	62	- 20 to + 70	40,000
40 × 40 × 56mm	9CRA0412G501	Plastics	12	10.8 to 13.2	1.0	12	14,000 10,400	0.77 27.2	435 1.75	59	- 20 to + 70	40,000
60 × 60 × 76mm	9CR0612S001	Plastics	12	10.8 to 13.2	3.2	38.4	11,500 7,000	2.26 80	550 2.21	66	- 10 to + 60	40,000
60 × 60 × 76mm	9CR0612H001	Plastics	12	10.8 to 13.2	2.7	32.4	10,300 6,500	1.98 70	450 1.81	64	- 10 to + 60	40,000
80 × 80 × 80mm	9CR0812S801	Plastics	12	10.8 to 13.2	5.5	66.0	8,000 5,300	4.53 160	520 2.09	71	- 10 to + 60	40,000
80 × 80 × 80mm	9CR0812H801	Plastics	12	10.8 to 13.2	3.6	43.2	7,000 4,600	3.97 140	400 1.61	68	- 10 to + 60	40,000

Size	Model No.	Frame material	Rated Voltage [V]	PWM Frequency [kHz]	Rated Current [A]	Rated Speed [min ⁻¹]		Max. Airflow [m ³ /min] [CFM]		Max. Static Pressure [Pa] [inchH ₂ O]		SPL [dB(A)]	Expected Life [h]
						Duty Cycle 0%	Duty Cycle 100%						
60 × 60 × 76mm	9CR0612P0S03	Plastics	12	25.0	3.2	Inlet : 1,300 outlet : 800	Inlet : 11,500 outlet : 7,000	2.26	79.8	550	2.21	66	40,000
	9CR0612P0H03	Plastics	12	25.0	2.7	Inlet : 1,200 outlet : 800	Inlet : 10,300 outlet : 6,500	1.98	69.91	450	1.81	64	40,000
80 × 80 × 80mm	9CR0848P8S03	Plastics	48	25.0	1.29	Inlet : 2,000 outlet : 1,300	Inlet : 8,000 outlet : 5,300	4.53	159.95	520	2.09	71	40,000

■ Splash Proof Fan

Size	Model No.	Frame material	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Life Expectancy [h]
80 × 80 × 25mm	109W0812H401-U	Aluminum	12	10.2 to 13.8	0.18	2.16	3,000	1.06 37.4	39.2 0.157	32	-10 to +70	100,000
80 × 80 × 25mm	109W0812F401-U	Aluminum	12	10.2 to 13.8	0.14	1.68	2,700	0.93 32.8	32.3 0.130	29	-10 to +70	100,000
80 × 80 × 25mm	109W0812M401-U	Aluminum	12	10.2 to 13.8	0.10	1.20	2,400	0.83 29.3	26.5 0.106	26	-10 to +70	100,000
80 × 80 × 25mm	109W0812L401-U	Aluminum	12	10.2 to 13.8	0.08	0.96	1,900	0.63 22.2	16.67 0.067	22	-10 to +70	100,000
80 × 80 × 25mm	109W0824H401-U	Aluminum	24	20.4 to 27.6	0.09	2.16	3,000	1.06 37.4	39.2 0.157	32	-10 to +70	100,000
80 × 80 × 25mm	109W0824F401-U	Aluminum	24	20.4 to 27.6	0.08	1.92	2,700	0.93 32.8	32.3 0.130	29	-10 to +70	100,000
80 × 80 × 25mm	109W0824M401-U	Aluminum	24	20.4 to 27.6	0.07	1.68	2,400	0.83 29.3	26.5 0.106	26	-10 to +70	100,000
80 × 80 × 25mm	109W0824L401-U	Aluminum	24	20.4 to 27.6	0.05	1.20	1,900	0.63 22.2	16.67 0.067	22	-10 to +70	100,000
80 × 80 × 25mm	109W0848H401-U	Aluminum	48	40.8 to 55.2	0.06	2.88	3,150	1.10 38.8	43.1 0.173	34	-10 to +70	100,000
92 × 92 × 25mm	109W0912H401-U	Aluminum	12	10.2 to 13.8	0.21	2.52	2,850	1.38 48.7	45.1 0.181	33	-10 to +70	100,000
92 × 92 × 25mm	109W0912F401-U	Aluminum	12	10.2 to 13.8	0.14	1.68	2,450	1.18 41.7	32.3 0.130	30	-10 to +70	100,000
92 × 92 × 25mm	109W0912M401-U	Aluminum	12	10.2 to 13.8	0.11	1.32	2,100	1.01 35.7	23.5 0.094	27	-10 to +70	100,000
92 × 92 × 25mm	109W0912L401-U	Aluminum	12	10.2 to 13.8	0.08	0.96	1,700	0.80 28.2	16.7 0.067	23	-10 to +70	100,000
92 × 92 × 25mm	109W0924H401-U	Aluminum	24	20.4 to 27.6	0.12	2.88	2,850	1.38 48.7	45.1 0.181	33	-10 to +70	100,000
92 × 92 × 25mm	109W0924F401-U	Aluminum	24	20.4 to 27.6	0.08	1.92	2,450	1.18 41.7	32.3 0.130	30	-10 to +70	100,000
92 × 92 × 25mm	109W0924M401-U	Aluminum	24	20.4 to 27.6	0.06	1.44	2,100	1.01 35.7	23.5 0.094	27	-10 to +70	100,000
92 × 92 × 25mm	109W0924L401-U	Aluminum	24	20.4 to 27.6	0.05	1.20	1,700	0.80 28.2	16.7 0.067	23	-10 to +70	100,000
92 × 92 × 25mm	109W0948H401-U	Aluminum	48	40.8 to 55.2	0.06	2.88	2,850	1.38 48.7	45.1 0.181	33	-10 to +70	100,000

■ Long Life Fan

Size	Model No.	Frame material	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Life Expectancy [h]
60 × 60 × 25mm	109L0612G401	Aluminum	12	10.2 to 13.8	0.24	2.88	5,600	0.78 27.5	87.3 0.35	39	-20 to +70	100,000
60 × 60 × 25mm	109L0612S401	Aluminum	12	10.2 to 13.8	0.17	2.04	4,600	0.65 23.0	56.8 0.228	33	-20 to +70	100,000
60 × 60 × 25mm	109L0612H401	Aluminum	12	10.2 to 13.8	0.11	1.32	3,800	0.53 18.7	40.2 0.161	28	-20 to +70	100,000
60 × 60 × 25mm	109L0612F401	Aluminum	12	10.2 to 13.8	0.09	1.08	3,200	0.44 15.5	29.4 0.118	24	-20 to +70	100,000
60 × 60 × 25mm	109L0612M401	Aluminum	12	10.2 to 13.8	0.06	0.72	2,600	0.36 12.7	19.6 0.079	20	-20 to +70	100,000
60 × 60 × 25mm	109L0624D401	Aluminum	24	20.4 to 27.6	0.12	2.88	5,150	0.72 25.4	73.8 0.296	37	-20 to +70	100,000
60 × 60 × 25mm	109L0624S401	Aluminum	24	20.4 to 27.6	0.08	1.92	4,600	0.65 23.0	56.8 0.230	33	-20 to +70	100,000
60 × 60 × 25mm	109L0624H401	Aluminum	24	20.4 to 27.6	0.06	1.44	3,800	0.53 18.7	40.2 0.161	28	-20 to +70	100,000
60 × 60 × 25mm	109L0624F401	Aluminum	24	20.4 to 27.6	0.05	1.20	3,200	0.44 15.5	29.4 0.118	24	-20 to +70	100,000
60 × 60 × 25mm	109L0624M401	Aluminum	24	20.4 to 27.6	0.04	0.96	2,600	0.36 12.7	19.6 0.079	20	-20 to +70	100,000
60 × 60 × 25mm	109L0648G401	Aluminum	48	40.8 to 55.2	0.07	3.36	5,600	0.78 27.5	87.3 0.35	39	-20 to +60	80,000
60 × 60 × 25mm	109L0648H401	Aluminum	48	40 to 53	0.04	1.92	3,800	0.53 18.7	40.2 0.161	28	-20 to +70	100,000
80 × 80 × 25mm	109L0812S401	Aluminum	12	10.2 to 13.8	0.26	3.12	3,400	1.2 42.4	50 0.2	37	-20 to +70	100,000
80 × 80 × 25mm	109L0812H401	Aluminum	12	10.2 to 13.8	0.18	2.16	3,000	1.06 37.4	39.2 0.157	32	-20 to +70	100,000
80 × 80 × 25mm	109L0812F401	Aluminum	12	10.2 to 13.8	0.14	1.68	2,700	0.93 32.8	32.3 0.130	29	-20 to +70	100,000
80 × 80 × 25mm	109L0812M401	Aluminum	12	10.2 to 13.8	0.1	1.2	2,400	0.83 29.3	26.5 0.106	26	-20 to +70	100,000
80 × 80 × 25mm	109L0812L401	Aluminum	12	10.2 to 13.8	0.08	0.96	1,900	0.63 22.2	16.7 0.067	22	-20 to +70	100,000
80 × 80 × 25mm	109L0824S401	Aluminum	24	20.4 to 27.6	0.11	2.64	3,400	1.2 42.4	50 0.2	37	-20 to +70	100,000
80 × 80 × 25mm	109L0824H401	Aluminum	24	20.4 to 27.6	0.09	2.16	3,000	1.06 37.4	39.2 0.157	32	-20 to +70	100,000
80 × 80 × 25mm	109L0824F401	Aluminum	24	20.4 to 27.6	0.08	1.92	2,700	0.93 32.8	32.3 0.130	29	-20 to +70	100,000
80 × 80 × 25mm	109L0824M401	Aluminum	24	20.4 to 27.6	0.07	1.68	2,400	0.83 29.3	26.5 0.106	26	-20 to +70	100,000
80 × 80 × 25mm	109L0824L401	Aluminum	24	20.4 to 27.6	0.05	1.2	1,900	0.63 22.2	16.7 0.067	22	-20 to +70	100,000
80 × 80 × 25mm	109L0848H401	Aluminum	48	40.8 to 55.2	0.06	2.88	3,150	1.1 38.8	43.1 0.173	34	-20 to +70	100,000
92 × 92 × 25mm	109L0912S401	Aluminum	12	10.2 to 13.8	0.32	3.84	3,500	1.69 59.7	66.6 0.267	39	-20 to +70	100,000
92 × 92 × 25mm	109L0912H401	Aluminum	12	10.2 to 13.8	0.21	2.52	2,850	1.38 48.7	45.1 0.181	33	-20 to +70	100,000
92 × 92 × 25mm	109L0912F401	Aluminum	12	10.2 to 13.8	0.14	1.68	2,450	1.18 41.7	32.3 0.130	30	-20 to +70	100,000
92 × 92 × 25mm	109L0912M401	Aluminum	12	10.2 to 13.8	0.11	1.32	2,100	1.01 35.7	23.5 0.094	27	-20 to +70	100,000
92 × 92 × 25mm	109L0912L401	Aluminum	12	10.2 to 13.8	0.08	0.96	1,700	0.80 28.2	16.7 0.067	23	-20 to +70	100,000
92 × 92 × 25mm	109L0924H401	Aluminum	24	20.4 to 27.6	0.12	2.88	2,850	1.38 48.7	45.1 0.181	33	-20 to +70	100,000
92 × 92 × 25mm	109L0924F401	Aluminum	24	20.4 to 27.6	0.08	1.92	2,450	1.18 41.7	32.3 0.130	30	-20 to +70	100,000
92 × 92 × 25mm	109L0924M401	Aluminum	24	20.4 to 27.6	0.06	1.44	2,100	1.01 35.7	23.5 0.094	27	-20 to +70	100,000
92 × 92 × 25mm	109L0924L401	Aluminum	24	20.4 to 27.6	0.05	1.2	1,700	0.80 28.2	16.7 0.067	23	-20 to +70	100,000
92 × 92 × 25mm	109L0948C401	Aluminum	48	43 to 53	0.1	4.8	3,400	1.65 58.3	64.2 0.258	38	-20 to +70	80,000
92 × 92 × 25mm	109L0948H401	Aluminum	48	40.8 to 55.2	0.06	2.88	2,850	1.38 48.7	45.1 0.181	33	-20 to +70	100,000
120 × 120 × 38mm	9LB1212H101	Aluminum	12	10.2 to 13.8	0.39	4.68	2,600	2.9 102.4	67.62 0.272	39	-20 to +70	200,000
120 × 120 × 38mm	9LB1212M101	Aluminum	12	10.2 to 13.8	0.22	2.64	2,000	2.2 77.7	42.14 0.169	32	-20 to +70	200,000
120 × 120 × 38mm	9LB1224S101	Aluminum	24	20.4 to 27.6	0.46	11.04	3,500	3.88 137.0	120.8 0.485	48	-20 to +70	100,000
120 × 120 × 38mm	9LB1224H101	Aluminum	24	20.4 to 27.6	0.19	4.56	2,600	2.9 102.4	67.62 0.272	39	-20 to +70	200,000
120 × 120 × 38mm	9LB1224M101	Aluminum	24	20.4 to 27.6	0.11	2.64	2,000	2.2 77.7	42.14 0.169	32	-20 to +70	200,000
120 × 120 × 38mm	9LB1248H101	Aluminum	48	40.8 to 55.2	0.11	5.28	2,600	2.9 102.4	67.62 0.272	39	-20 to +70	200,000
120 × 120 × 38mm	9LB1248M101	Aluminum	48	40.8 to 55.2	0.06	2.88	2,000	2.2 77.7	42.14 0.169	32	-20 to +70	200,000

Deleted models in this catalog

Thermally Controlled Fan

Size	Model No.	Frame material	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Life Expectancy [h]
52 × 52 × 15mm	109P0512T7H12	Plastics	12	10.2 to 13.8	0.13	1.56	4,600	0.255 9.0	31.9 0.128	27	- 10 to + 70	60,000
					0.09	1.08	2,300	0.13 4.6	8.8 0.035	17		
52 × 52 × 15mm	109P0512T7H122	Plastics	12	10.2 to 13.8	0.13	1.56	4,900	0.27 9.5	36.2 0.145	28	- 10 to + 70	60,000
					0.09	1.08	2,400	0.14 4.9	9.6 0.039	17		
60 × 60 × 15mm	109P0612T7H12	Plastics	12	10.2 to 13.8	0.12	1.44	4,100	0.4 14.1	38.2 0.153	32	- 10 to + 70	60,000
					0.08	0.96	2,050	0.2 7.1	9.3 0.037	18		
60 × 60 × 15mm	109P0612T7H122	Plastics	12	10.2 to 13.8	0.12	1.44	4,300	0.42 14.8	42.0 0.169	32	- 10 to + 70	60,000
					0.08	0.96	2,100	0.2 7.0	9.7 0.039	18		
60 × 60 × 20mm	109P0612T6H12	Plastics	12	10.2 to 13.8	0.15	1.8	4,200	0.42 14.8	31.9 0.128	31	- 10 to + 70	60,000
					0.10	1.2	2,100	0.21 7.4	8.8 0.035	21		
60 × 60 × 20mm	109P0612T6H122	Plastics	12	10.2 to 13.8	0.15	1.8	4,400	0.44 15.5	35.0 0.141	33	- 10 to + 70	60,000
					0.10	1.2	2,150	0.22 7.8	9.2 0.037	21		
60 × 60 × 25mm	109R0612T4H12 109R0612T4H121	Plastics	12	10.2 to 13.8	0.13	1.56	3,800	0.53 18.7	40.2 0.161	28	- 10 to + 60	60,000
					0.10	1.20	1,900	0.26 9.2	9.8 0.039	15		
60 × 60 × 25mm	109R0612T4H122 109R0612T4H123	Plastics	12	10.2 to 13.8	0.13	1.56	3,950	0.55 19.4	41.8 0.168	28	- 10 to + 60	60,000
					0.10	1.20	1,950	0.27 9.5	10.3 0.041	15		
80 × 80 × 20mm	109P0812T6H12	Plastics	12	10.2 to 13.8	0.18	2.16	2,900	0.84 29.7	29.4 0.118	31	- 10 to + 60	60,000
					0.1	1.2	1,450	0.42 14.8	7.4 0.030	20		
80 × 80 × 20mm	109P0812T6H122	Plastics	12	10.2 to 13.8	0.18	2.16	3,050	0.88 31.0	32.5 0.131	32	- 10 to + 60	60,000
					0.1	1.2	1,450	0.42 14.8	7.4 0.030	20		
80 × 80 × 25mm	109R0812T4H12 109R0812T4H121	Plastics	12	10.2 to 13.8	0.14	1.68	2,900	1.03 36.4	35.3 0.142	29	- 10 to + 60	60,000
					0.09	1.08	1,450	0.51 18.0	8.8 0.035	14		
80 × 80 × 25mm	109R0812T4H122 109R0812T4H123	Plastics	12	10.2 to 13.8	0.14	1.68	3,000	1.07 37.8	37.7 0.151	29	- 10 to + 60	60,000
					0.09	1.08	1,450	0.51 18.0	8.8 0.035	14		
92 × 92 × 25mm	109P0912T4H12 109P0912T4H121	Plastics	12	10.2 to 13.8	0.2	2.4	2,850	1.45 51.2	45.1 0.181	33	- 10 to + 60	40,000
					0.1	1.2	1,400	0.71 25.0	11.3 0.045	18		
92 × 92 × 25mm	109P0912T4H122 109P0912T4H123	Plastics	12	10.2 to 13.8	0.2	2.4	3,000	1.52 53.7	50.0 0.201	35	- 10 to + 60	40,000
					0.1	1.2	1,400	0.71 25.0	11.3 0.045	18		
120 × 120 × 25mm	109P1212T4H12 109P1212T4H121	Plastics	12	10.2 to 13.8	0.55	6.6	2,800	2.5 88.3	53.9 0.216	40	- 10 to + 60	40,000
					0.22	2.64	1,400	1.25 44.1	13.7 0.055	25		
120 × 120 × 25mm	109P1212T4H122 109P1212T4H123	Plastics	12	10.2 to 13.8	0.55	6.6	2,800	2.5 88.3	53.9 0.216	40	- 10 to + 60	40,000
					0.22	2.64	1,400	1.25 44.1	13.7 0.055	25		
120 × 120 × 38mm	109R1212T1H12 109R1212T1H121	Plastics	12	10.2 to 13.8	0.48	5.75	2,600	2.9 102.4	64.7 0.260	39	- 10 to + 60	40,000
					0.23	2.76	1,300	1.4 49.4	16.2 0.065	24		
120 × 120 × 38mm	109R1212T1H122 109R1212T1H123	Plastics	12	10.2 to 13.8	0.48	5.75	2,600	2.9 102.4	64.7 0.260	39	- 10 to + 60	40,000
					0.23	2.76	1,300	1.4 49.4	16.2 0.065	24		

Blower

Size	Model No.	Frame material	Rated Voltage [V]	Operating Voltage Range [V]	Rated Current [A]	Rated Input [W]	Rated Speed [min ⁻¹]	Max. Airflow [m ³ /min] [CFM]	Max. Static Pressure [Pa] [inchH ₂ O]	SPL [dB(A)]	Operating Temperature [°C]	Life Expectancy [h]
120 × 32mm	109BF12HC2	Plastics	12	10.2 to 13.8	0.6	7.2	2,400	0.78 27.5	175.4 0.704	52	- 20 to + 60	40,000
120 × 32mm	109BF12MC2	Plastics	12	10.2 to 13.8	0.32	3.84	1,900	0.61 21.5	109.8 0.441	44	- 20 to + 60	40,000
120 × 32mm	109BF24HC2	Plastics	24	20.4 to 27.6	0.3	7.2	2,400	0.78 27.5	175.4 0.704	52	- 20 to + 60	40,000
120 × 32mm	109BF24MC2	Plastics	24	20.4 to 27.6	0.16	3.84	1,900	0.61 21.5	109.8 0.441	44	- 20 to + 60	40,000

• Storage temperature is -30°C to +70°C .

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COOLING SERVO

EGYPT**PONT EGYPT**

4, Aiashwal Street, End of Al Haram Street Giza, Egypt

TEL: +20 2 374 18 247 FAX: +20 106 1 444 501

SERVO

EGYPT**EGYELECTRONICS**

48, El-Sharifa Dina Maadi, Maadi, 11431 Cairo, Egypt

TEL: +20 1 6 8828820 FAX: +20 227 515 108

COOLING

FINLAND**WEXON OY**

P.O. BOX 293 00026 Basware, Finland

TEL: +358 9 290 440 FAX: +358 9 290 44100

**FRANCE****A.E. SERVICE**

Parc Activite du Cret de Mars, 42150 La Ricamarie, France

TEL: +33 04 77 41 21 47 FAX: +33 04 77 25 80 29

**FRANCE****AUBE Electronique**

ZAC de l'écluse des Marots 10800 Saint Thibault, France

TEL: +33 03 25 40 44 41 FAX: +33 03 25 40 44 42

**GERMANY****Avnet EMG GmbH**

Gausstrasse 10 31275 Lehrte, Germany

TEL: +49 5132 5099 0 FAX: +49 5132 5099 76

**GERMANY****Telemeter Electronic GmbH**

Joseph-Gaensler-strasse 10, 86609 Donauwoerth, Germany

TEL: +49 906 706 93 0 FAX: +49 906 706 93 50

**GERMANY****R.T.A. Deutschland GmbH**

Bublitzer Strasse 34 40599 Duesseldorf, Germany

TEL: +49 211 74966860 FAX: +49 211 74966866

**GERMANY****MJC Elektrotechnik GmbH**

Am Gielbrunnen 17 67304 Eisenberg, Germany

TEL: +49 0 63 51/1 27 67 0 FAX: +49 0 63 51/1 27 67 50

**GERMANY****Tronic One GmbH**

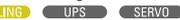
Mühlweg 2b, 82054 Sauerlach, Germany

TEL: +49 0 8104 90951-0 FAX: +49 0 8104 90951-69

**HONGKONG****Melco Industrial Supplies Co., Ltd.**

10th Floor, Billion Plaza 2, No.10 Cheung Yue Street, Cheung Sha Wan, Kowloon, Hong Kong

TEL: +852 2361 0102 FAX: +852 2387 4057

**HUNGARY****Q-TECH Engineering Ltd. & Co.**

Batthyany Lajos U. 8., 1161 Budapest, Hungary

TEL: +36 14 053 338 FAX: +36 14 059 134

**INDIA****System Controls Technology Solutions Pvt.Ltd.**

No: 119, 3rd Main, East of NGEF Layout, Kasturi Nagar, Bangalore - 560043, India.

TEL: +91 80 40820400,144,405,406 FAX: +91 80 40820426

**INDIA****Flexible Automation System PVT. LTD**

#412, Prestige Centre Point Cunningham Road, Bangalore -560 052, India

TEL: +91 80 2228 2427 FAX: +91 80 2225 7108

**INDIA****Strategi Automation Solutions Pvt. Ltd.**

Plot No.25/B, Doddanakundi Iddl Estate, Off Whitefield Road Behind Graphite India, Bangalore-560048, India

TEL: +91 80 32489798 FAX: +91 80 41163047

**INDIA****Arrow Electronics India Pvt. Ltd.**

Fortune Summit, Ward No.174, 6th Sector, HSR Layout, Roopena Agrahara, Bangalore - 560 068, India

TEL: +91 80 41353800 FAX: +91 80 41127784

**INDIA****Global Technocrats Inc.**

302, Gupta Tower II, G-33, Vikas Puri, New Delhi-110018, India

TEL: +91 12 42386745 FAX: +91 11 28542884

**INDONESIA****PT. DIFA DAYA SELARAS**

Jln. Palmerah Utara II No.5 Jakarta 11480, Indonesia

TEL: +62 21 536 64151 FAX: +62 21 536 52576

**INDONESIA****PT. Kumpel Durat**

Talavera Office Park 28th Floor Jl.Letjend TB.Simatupang Kav.22-26 Jakarta Selatan 12430, Indonesia

TEL: +62 217599 9876 FAX: +62 217599 9888

**INDONESIA****PT. Prasindo Agung Mandiri**

Jl. Alfallah No.18C, Cililitan Besar Raya-Jakarta 13650, Indonesia

TEL: +62 8088 8802 TEL: +62 8088 8802

**ISRAEL****CONLOG Ltd**

Intergreen Building, POB 3265, 17 Hamefalsim Street., 49130 Petah Tikva, Israel

TEL: +972 3 9269595 FAX: +972 3 9233367

**ISRAEL****ELECTRONDART**

9 Ben Zion Gellis Street, 4927909 Petah Tikva, Israel

TEL: +972 39314447 FAX: +972 39302867

**ISRAEL****RADION ENGINEERING COMPANY LTD.**

11, Haslvim Street, P.O.B 7111 Petah Tikva, 49250, Israel

TEL: +972 3 9226688 FAX: +972 3 9226655

**ITALY****R.T.A. s.r.l.**

Via Enrico Mattei fraz. Divisa 27020 Marcignago (PV) Italy

TEL: +39 0382 929 855 FAX: +39 0382 929 150

**KOREA****HY TECH CO., LTD. (former HAN YANG CORP.)**

#1110 Renaissance Tower, 14, Mallijae-ro, Mapo-gu, Seoul, Korea

TEL: +82 2 713 4343 FAX: +82 2 713 4332

**KOREA****SAMHWA YANGHENG CO., LTD.**

63 Mapo-daero, Mapo-gu, Seoul, Korea

TEL: +82 2 716 4763 FAX: +82 2 718 1873

**KOREA****TPC Mechatronics Corp**

353, Gajung-ro, Seo-ku, Incheon, Korea

TEL: +82 32 580 0008 FAX: +82 32 578 0786

**KOREA****TELCOM INTERNATIONAL INC.**

3F, Telcom B/D, 76, Seocho-daero, Seocho-gu, Seoul, Korea

TEL: +82 2 3472 9449 FAX: +82 2 3471 9449

**KOREA****INTERDEVICE Co., Ltd.**

Rm.801, Ace Gwangmyeong Tower, 108, Haan-ro, Gwangmyeong-si, Gyeonggi-do, Korea

TEL: +82 2 897 7781 FAX: +82 2 6280 1117

**LITHUANIA****INOBTAL UAB**

H. Manto 84-310, 92294 Klaipeda, Lithuania

TEL: +370 6122 2499

**MALAYSIA****Flexible Automation System Sdn Bhd (Kuala Lumpur)**

60, Jalan USJ10/1B, 47620 UEP Subang Jaya, Selangor, Malaysia

TEL: +60 03 5633 1280 FAX: +60 03 5633 6613

**MALAYSIA****GExcel TechnologiesSdn Bhd.**

No. 55, Jalan TPP 1/1, Taman Industri Puchong, 47100 Puchong, Selangor Darul Ehsan, Malaysia

TEL: +603 8062 3666 FAX: +60 03 8060 8519

**MALAYSIA****QuadRep Malaysia Sdn Bhd**

70-3B, Block F, Jalan PJJ 1/3B, SunwayMas Commercial Centre, 47301, Petaling Jaya, Selangor, Malaysia

TEL: +603 7880 9509 FAX: +603 7880 0509

**MEXICO****Arrow Electronics, Inc.**

Francisco Pimentel #98 Col. San Rafael Deleg. Cuauhtémoc C.P. 06470, México, D.F.

TEL: +52 55 5141 1680 FAX: +52 55 5703 1772

**MEXICO****Marsh Electronics, Inc.**

TEL: +1 800 236 8327 FAX: +1 414 771 2847

**MEXICO****Mouser Electronics, Inc.**

Av. Moctezuma #3515 Local 5-C Col. Ciudad del Sol, Zapopan, Jalisco, CP 45050, Mexico

TEL: +52 33 3612 7301 FAX: +52 33 3612 7356

**MEXICO****Newark Electronics Corporation**

Av. Aviacion No. 5051 Nave 18, Parque Industrial city Park, Zapopan, Jalisco, CP 45019, Mexico

TEL: +1 800 463 9275 FAX: +1 800 800 9275

**MEXICO****PUI (Projections Unlimited, Inc.)**

TEL: +1 800 551 4405 FAX: +1 949 789 0626

**MEXICO****Sager Electronics, Inc.**

TEL: +1 800 724 3780 FAX: +1 972 312 1823

**MEXICO****Tonar Industries**

TEL: +1 800 568 6627 FAX: +1 973 586 2075

**MEXICO****Carlberg and Associates**

501 S. Rockford Drive Tempe, AZ 85281, U.S.A.

TEL: +1 480 377 0760 FAX: +1 480 377 0767

**MEXICO****Fastech México SA de CV**

Av. Jose Ma. Vigil 2986, Col. Providencia, Guadalajara, Jalisco, CP 44630, Mexico

TEL: +52 33 36 41 50 51/52

MEXICO**Westrep**

400 N Tustin Avenue Suite #130 Santa Ana, CA 92705, U.S.A.

TEL: +1 714 527 2822 FAX: +1 714 527 3868

**MOROCCO****MEST**

6 rue de Provins, 20310 Casablanca, Morocco

TEL: +212 22 30 28 24 FAX: +212 22 30 14 90

**POLAND****SEMICON Sp. Z o.o.**

Ul. Zwolenska 43/43A, 04-761 Varszawa, Poland

TEL: +48 22 615 73 71 FAX: +48 22 615 64 31



POLAND**TEKNOSYSTEM SP. Z O.O.**

UL. Malowiejska 25, 04-962 Warszawa, Poland

TEL: +48 22 590 60 30 **COOLING****PORTUGAL****PROSISTAV**

Zona Industrial da Mota, RUA 7 Lte 6 A, Gafanha da Encarnacao, 3830-527 Ilhavo, Portugal

TEL: +351 234 397 210 FAX: +351 234 397 219 **COOLING** **SERVO****RUSSIA****WEXON OOO**

192236, St. Petersburg Sofiyskaya ul., 14 Russia

TEL: +7 812 3266503 FAX: +7 812 3266504 **COOLING** **SERVO****SINGAPORE****NEMATRON CONTROL SYSTEM (ASIA) PTE LTD**

209 Henderson Road #01-06 Henderson Ind. Park Singapore 159551

TEL: +65 6278 3289 FAX: +65 6278 8372 **COOLING** **UPS** **SERVO****SINGAPORE****QuadRep Marketing (S) Pte Ltd.**

53 Ubi Avenue 1, #03-30 Paya Ubi Industrial Park, Singapore 408934

TEL: +65 6346 1933 FAX: +65 6346 1911 **COOLING** **UPS****SPAIN****DIODE Espana S.A.**

C/Salvatierra, 3 28034 Madrid, Spain

TEL: +34 456 8100 FAX: +34 358 06 07 **COOLING** **SERVO****SPAIN****RTA IBERICA**

Callegeneralitat 22, 1º 3º, 8850 Gava (Barcelona), Spain

TEL: +34 936 388 805 FAX: +34 936 334 595 **COOLING** **SERVO****SWEDEN****OEM Electronics**

PO BOX 102, 573 29 Tranas, Sweden

TEL: +46 75 242 45 00 FAX: +46 75 242 45 09 **COOLING** **SERVO****SWEDEN****OEM Motor AB**

PO BOX 1011, 573 28 Tranas, Sweden

TEL: +46 75 242 41 00 FAX: +46 76 242 41 19 **SERVO****SWITZERLAND****Telemeter Electronic GmbH**

Kirchstrasse 28 CH-8574 Lengwil-Oberhofen/TG, Switzerland

TEL: +41 71 699 20 20 FAX: +41 71 699 20 24 **COOLING****SWITZERLAND****PowerParts AG**

Schareggstrasse 1, Postfach 108, CH-5506, Mägenwil, Switzerland

TEL: +41 62 896 7080 FAX: +41 62 896 7088 **COOLING** **SERVO****TAIWAN****YUNG HO CO., LTD.**

5th Floor, 36. Kuan Chien Road, Taipei, Taiwan, R.O.C.

TEL: +886 2 2311 6561 FAX: +886 2 2311 6469 **COOLING** **UPS** **SERVO****TAIWAN****QuadRep Electronics [T] Ltd.**

17F, No.79, Hsin Tai Wu Road, Sec.1, Hsi-Chih, New Taipei City, Taiwan, R.O.C.

TEL: +886 2 2698 9933 FAX: +886 2 2698 9911 **COOLING** **UPS** **SERVO****TAIWAN****SUN HOLY TRADING CO., LTD.**

3F, No.78, Sec 2, Chang An E. Road, Taipei, 104, Taiwan, R.O.C.

TEL: +886 2 2516 6060 FAX: +886 2 2508 0323 **COOLING** **UPS** **SERVO****THAILAND****T. N. INCORPORATED LTD.**

Rajanakarn Bldg., 183 South Sathorn Rd., Yannawa, Sathorn, Bangkok 10120, Thailand

TEL: +66 2 676 5959 FAX: +66 2 676 5968 **COOLING** **SERVO****THAILAND****ID MART CO.,LTD**

168/57 Nakniwas Road, Khwaeng Ladprao, Khet Ladprao Bangkok 10230, Thailand

TEL: +66 2 530 0777 FAX: +66 2 530 6777 **COOLING** **UPS** **SERVO****THAILAND****PMC TECHNOLOGY CO., LTD.**

10 Ruamchitt Road, Thanonnakornchaisri, Dusit, Bangkok 10300, Thailand

TEL: +66 2 667 4501 FAX: +66 2 667 4506 **COOLING** **UPS** **SERVO****THAILAND****Flexible Automation System Co.,Ltd**

1509 Soi Ladprao 94 (Srivara Town in Town) Wangthonglang, Bangkok 10310, Thailand

TEL: +66 2 530 7900 7 FAX: +66 2 530 7908 9 **COOLING** **UPS** **SERVO****THE NETHERLANDS****M.C. TECHNOLOGY**

Buys Ballotstraat 31, IND. Area Zandhorst II, 1704 SK Heerhugowaard, the Netherlands

TEL: +31 (0)72 5717821 FAX: +31 (0)72 5718461 **SERVO****THE NETHERLANDS****TOP-ELECTRONICS BV**

Postbus 439, 2920 AK Krimpen aan den IJssel, the Netherlands

TEL: +31 180 580 492 **COOLING** **SERVO****TURKEY****NETA NAKIS VE MAKINA SANAYI TICARET**

Velibaba Mahallesi, Balpetegi Sokak NO :5 , Pendik, 34896 Istanbul, Turkey

TEL: +90 216 339 39 44 FAX: +90 216 325 52 79 **COOLING** **SERVO****TURKEY****LINTEK MAKINA ELEKTRONIK TEKNOLOJILERI**

1348 SOK. N°3/3F Teknik Malzeme, Is Merkezi, Yenisehir, 35110 Izmir, Turkey

TEL: +90 232 457 294 FAX: +90 232 457 295 **SERVO****TURKEY****ROBOSAN OTOMAYSON SAN.TIC.LTD**

Uzuncayir Cad. NO:31, Kadikoy IS Merkezi C1 Block D:12, Hasanpasa, 34722 Kadikoy, Istanbul, Turkey

TEL: +90 216 340 39 70 FAX: +90 216 340 39 64 **SERVO****UNITED KINGDOM****EAO LTD.**

Albert Drive, Burgess Hill, West Sussex RH15 9TN, U.K.

TEL: +44 01444 23 6000 FAX: +44 01444 23 6641 **COOLING** **SERVO****UNITED KINGDOM****ERIKS**

Crakley Way Paertree Industrial Park Dudley, West Midlands DY2 0UW, U.K.

TEL: +44 138 424 61 00 FAX: +44 138 424 62 46 **SERVO****UNITED KINGDOM****INTELLIGENT AUTOMATION SYSTEMS Ltd**

16 Wood Stock Avenue, UB12QN Southall, Middlesex, U.K.

TEL: +44 7525 844 989 **SERVO****USA****Arrow Electronics, Inc.**

9201 E Dry Creek Road, Centennial, CO 80112

Please see other locations at;

http://www.arrow.com/office_locations/nac_office_locations.htmlTEL: +1 800 777 2776 **COOLING****USA****Marsh Electronics, Inc.**

1563 South 101st Street, Milwaukee, WI 53214, U.S.A.

Please see other locations at;

<http://www.marshelectronics.com/contact/branches.htm>TEL: +1 800 236 8327 FAX: +1 414 771 2847 **COOLING****USA****Mouser Electronics, Inc.**

1000 North Main Street Mansfield, TX 76063, U.S.A.

TEL: +1 800 346 6873 FAX: +1 817 804 3899 **COOLING****USA****Newark Electronics Corporation**

300 S. Riverside Plaza, Suite 2200, Chicago, IL 60606, U.S.A.

TEL: +1 800 463 9275 FAX: +1 888 551 4801 **COOLING** **UPS** **SERVO****USA****PUI (Projections Unlimited, Inc.)**

15311 Barranca Parkway, Irvine, CA 92618, U.S.A.

Please see other locations at;

<http://www.gopui.com/locations.htm>TEL: +1 800 551 4405 FAX: +1 949 789 0626 **COOLING****USA****Sager Electronics, Inc.**

19 Leona Drive, Middleborough, MA 02346, U.S.A.

Please see other locations at;

<http://www.sager.com/about-us/locations/>TEL: +1 800 724 3780 FAX: +1 508 947 0869 **COOLING** **SERVO****USA****Tonar Industries**

419 Franklin Avenue, Rockaway, NJ 07866, U.S.A.

Please see other locations at;

<http://www.tonar.com/contact>TEL: +1 800 568 6627 FAX: +1 973 586 2075 **COOLING****USA****AID Electronics, Inc.**

2418 Marsh Lane, Suite 102, Carrollton, TX 75006, U.S.A.

TEL: +1 800 669 4761 FAX: +1 972 478 8707 **COOLING****USA****Carlberg and Associates**

501 S. Rockford Drive Tempe, AZ 85281, U.S.A.

TEL: +1 480 377 0760 FAX: +1 480 377 0767 **COOLING****USA****Centech, Inc.**

4025 NE Lakewood Way, Suite 290, Lee's Summit, MO 64064-1703, U.S.A.

TEL: +1 816 795 9019 FAX: +1 816 795 0070 **COOLING****USA****Eastern Tech Corporation**

10195 Maxine Street, Ellicott City, MD 21042, U.S.A.

TEL: +1 410 715 2100 FAX: +1 410 715 2102 **COOLING****USA****Epic Technical Sales, Inc.**

9400 SW Beaverton-Hillsdale Hwy, Suite 140, Beaverton OR 97005, U.S.A.

TEL: +1 503 292 7922 FAX: +1 503 292 7903 **COOLING****USA****ExisQCI, Inc.**

1570 The Alameda Suite #150, San Jose, CA 95126, U.S.A.

TEL: +1 408 944 4600 FAX: +1 408 321 3200 **COOLING****USA****Jappe Company**

29 Northgate Rd., Ipswich, MA 01938, U.S.A.

TEL: +1 781 245 9359 **COOLING**

USA**Marathon Technical Associates**

1115 Edgewater Drive, Orlando, FL 32804, U.S.A.

TEL: +1 954 648 2844 **USA****Northport Engineering, Inc.**

1355 Mendota Heights Road, Suite 130, Mendota Heights, MN 55120, U.S.A.

TEL: +1 651 457 8000 FAX: +1 651 457 5603 **USA****Pinnacle Marketing, Inc.**

2805 Spring Forest Road, Suite 101, Raleigh, NC 27616-1900, U.S.A.

TEL: +1 888 764 7640 FAX: +1 888 764 7641 **USA****Straube Associates**

7970 South Sheridan Blvd. Ste. C, Westminster, CO 80003, U.S.A.

TEL: +1 303 426 0890 FAX: +1 303 426 0896 **USA****Synergy Sales INC**

Allaire Airport, Rte 34, P.O. Box 2521, Farmingdale, NJ 07727-2521, U.S.A.

TEL: +1 908 489 7764 FAX: +1 609 716 0932 **USA****Tech-Tron Sales, Inc**

1305 Remington Road, Suite K, Schaumburg, IL 60173, U.S.A.

TEL: +1 847 843 7530 FAX: +1 847 843 0339 **USA****T Technical Sales**

108 Saint Patrick Drive, Rochester, NY 14623, U.S.A.

TEL: +1 585 334 3378 **USA****Westrep**

400 N Tustin Avenue Suite #130 Santa Ana, CA 92705, U.S.A.

TEL: +1 714 527 2822 FAX: +1 714 527 3868 **USA****SHEPHERD CONTROLS & ASS., INC.**

203 S. Jupiter Road, Suite A Allen, TX 75002, U.S.A.

Please see other locations at;

<http://www.shepherdcontrols.com/>TEL: +1 972 727 7300 FAX: +1 972 727 7363 **USA****KIM CONTROLS, INC.**

10045 Davenport St. Minneapolis, MN 55449, U.S.A.

TEL: +1 763 780 2991 FAX: +1 763 780 9449 **USA****IOWA FLUID POWER**

1610 Blairs Ferry Road NE, Cedar Rapids, IA 52402, U.S.A.

Please see other locations at;

<http://www.iowafluid.com/>TEL: +1 800 333 7004 FAX: +1 319 395 7027 **USA****AUTOMATION PROCESS & CONTROLS (IL)**

6323 North Avondale Suite 246, Chicago, IL 60631, U.S.A.

Please see other locations at;

<http://www.apc-inc.com/>TEL: +1 773 763 8090 FAX: +1 773 467 0152 **USA****MARSHALL WOLF AUTOMATION**

923 South Main Street, Algonquin, IL 60102, U.S.A.

TEL: +1 800 325 9653 FAX: +1 847 658 0960 **USA****ENGINEERING ADVANTAGE INC.**

S84 W 19234 Enterprise Drive, Muskego, WI 53150, U.S.A.

TEL: +1 262 971 1717 FAX: +1 262 971 1710 **USA****IN-POSITION TECHNOLOGIES**

7403 W. Boston Street Chandler, AZ 85226, U.S.A.

TEL: +1 480 893 8086 FAX: +1 877 478 3242 **USA****TECHREP COMPONENTS, INC.**

25332 Narbonne Avenue, #160 Lomita, CA 90717, U.S.A.

TEL: +1 310 539 9070 FAX: +1 310 539 0439 **USA****Bay Advanced Technologies, LLC**

1715 East Newport Circle Santa Ana, CA 92705, U.S.A.

TEL: +1 657 622 2060 FAX: +1 657 622 2070 **USA****Provoast Automation**

1171 N. Red Gum Street Anaheim, CA 92806, U.S.A.

TEL: +1 714 996 9417 FAX: +1 714 996 9418 **USA****Bay Advanced Technologies, LLC**

8100 Central Avenue Newark, CA 94560-3449, U.S.A.

TEL: +1 510 857 0900 FAX: +1 510 857 1400 **USA****EASTERN INDUSTRIAL AUTOMATION**

7096 South Willow Street Manchester, NH 03103, U.S.A.

TEL: +1 603 645 6885 FAX: +1 603 668 1451 **USA****INDUSTRIAL AUTOMATION & MOTION INC.**

4530 William Penn Highway #395 Murrysville, PA 15668, U.S.A.

TEL: +1 412 965 9956 FAX: +1 412 245 1509 **USA****NORTHEAST MOTION, INC.**

20 Thurber Blvd. Unit #C Smithfield, RI 02917, U.S.A.

TEL: +1 401 231 4441 FAX: +1 401 231 6785 **USA****TRILINE AUTOMATION CORP.**

250 Summit Point Drive Henrietta, NY 14467, U.S.A.

TEL: +1 585 321 9620 FAX: +1 585 321 9628 **USA****CPU AUTOMATION**

164 Westford Road, Unit 3 Tyngsboro, MA 01879, U.S.A.

TEL: +1 978 226 1633 FAX: +1 978 226 1634 **USA****SADDLE BROOK CONTROLS**

PO BOX 881 280 N Midland Avenue Saddle Brook, NJ 07663, U.S.A.

TEL: +1 201 794 9588 **USA****DELTA SIGMA AUTOMATION**

2125 Barrett Park Dr. Suite 110 Kennesaw, GA 30144, U.S.A.

TEL: +1 770 975 3992 FAX: +1 770 874 0087 **USA****LIVINGSTON AND HAVEN**

11616 Wilmar Blvd. Charlotte, NC 28241, U.S.A.

TEL: +1 704 504 8301 FAX: +1 704 504 2529 **USA****CAROLINA MOTION CONTROLS, INC.**

1200 Woodruff Road, Suite H27 Greenville, SC 29607, U.S.A.

TEL: +1 864 458 9988 FAX: +1 864 288 2190 **USA****ADVANCED MACHINE AUTOMATION**

1024 11TH Court West Birmingham, AL 35204, U.S.A.

TEL: +1 205 581 1234 FAX: +1 205 581 1222 **USA****ADAMS AIR & HYDRAULICS**

7204 EAST Adamo Drive Tampa, FL 33619, U.S.A.

TEL: +1 813 626 4128 FAX: +1 813 626 7808 **USA****INT'L POWER ASSOCIATION**

7940 Silverton Avenue, #105 San Diego, CA 92126, U.S.A.

TEL: +1 858 271 5996 **USA****GJ Associates, Inc.**

11 Shepherd Hill Road Bedford, NH 03110, U.S.A.

TEL: +1 603 644 3677 FAX: +1 978 461 0155 **USA****Baldwin technologies**

4801 Telsa Dr., Suite G Bowie, MD 20715, U.S.A.

TEL: +1 301 860 1930 FAX: +1 301 860 1937 **USA****Power Support Engineering, Inc.**

18932 Adams Country Way Lutz, FL 33559, U.S.A.

TEL: +1 813 909 1199 **VIETNAM****QuadRep**

No.88/4, Street No.18, Hiep Binh Chanh Ward, Thu Duc District, HCM City, S.R. Vietnam

TEL: +84 8 3726 2981 FAX: +84 8 3726 2985   **VIETNAM****ARKTAKE VIET NAM JOINT STOCK COMPANY**

132 Yong Street, Phuong Liet Sub-dist, Thanh Xuan District, Hanoi, Vietnam

TEL: +84 4 3767 9428 FAX: +84 4 3767 9450  **VIETNAM****DPCVietNam TRADING & SERVICE CO., LTD**

27 Block B, Truong Son Street, Ward 15, District 10, HCMC, Vietnam

TEL: +84 8 3977 1926 FAX: +84 8 3977 1935   **VIETNAM****NHON CORPORATION**

40, 11 Street, Him Lam Residential Area, Binh Hung, Binh Chanh, Hcmc, Vitenam

TEL: +84 8 5431 9266 FAX: +84 8 5431 9269  



■Eco Products

SANYO DENKI's ECO PRODUCTS are designed with the concept of lessening impact on the environment in the process from product development to waste. The product units and packaging materials are designed for reduced environmental impact. We have established our own assessment criteria on the environmental impacts applicable to all processes, ranging from design to manufacture. Those products that satisfy the criteria are accredited as ECO PRODUCTS.

<http://www.sanyodenki.com>

SANYO DENKI CO., LTD.

3-33-1 Minami-Otsuka, Toshima-ku, Tokyo, 170-8451, Japan

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