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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.

Low power consumption

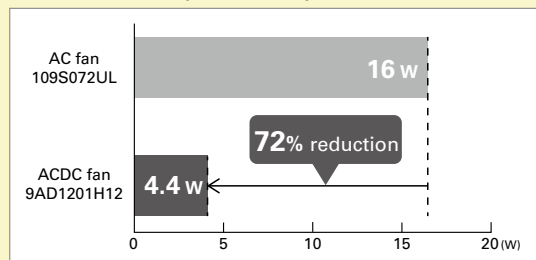
Long life

Wide voltage range

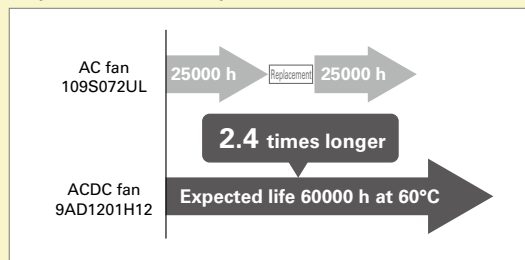
(Compared with our existing AC fan with equal size.)

With AC input, the same level of energy saving and long life as a DC fan can be achieved. The maintenance effort can be reduced too.

Power consumption comparison



Expected life comparison



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

9AD	09	01	H	1	2	
Type name	Frame size	Voltage	Speed code	Frame thickness	Sensor specifications	Frame form

Type name	9AD					
Frame size (mm)	09	12	92×92 120×120			
Voltage (V)	01 100 to 240					
Speed code	H M etc.					
Frame thickness (mm)	1 38					
Sensor specifications	2		H			
	Without a sensor		With a low-speed sensor			
Frame form	Nil			1		
	Plastic frame: Ribbed frame			Plastic frame: Ribless frame		

How to Read Specifications (ACDC fan)

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [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	3850	1.5 53.0	90 0.36	40	-20 to +75	60000/60°C
9AD0901M12				0.06	3.0	3100	1.18 41.7	56 0.22	33		

- Rated voltage This is the necessary voltage to drive the fan. Single-phase 100 to 240 VAC are also available.
- Operating voltage range The voltage range over which fan operation is guaranteed.
- Frequency This is a frequency of alternating current (AC). The frequencies of 50 Hz and 60 Hz are existing in Japan.
- Rated current The current when the fan is operating at rated voltage (at free air).
- Rated input The power value when the fan is operating at rated voltage (at free air).
- Rated speed The speed when the fan is operating at rated voltage (at free air).
- Max. airflow The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device).
Airflow is the volume of air generated by the fan per unit of time.
- Max. static pressure The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device).
Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
- SPL SPL stands for Sound Pressure Level. The noise level during the fan's rated operation.
Please refer to the technical material section for the measurement method.
- Operating temperature The temperature range over which fan operation is guaranteed (Non- condensing).
- Expected life Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. For more information, please refer to the technical material section.



92x92x38 mm

San Ace 92AD 9AD type

General Specifications

- Material Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-0)
 - Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
 - Motor structure Brushless DC motor
 - Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
 - Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame, and between sensor output and frame)
 - Insulation resistance..... 10 MΩ or more with a 500 VDC megger
 - Sound pressure level (SPL) At 1 m away from the air inlet
 - Storage temperature -30 to +75°C (Non-condensing)
 - Mass 250 g
- Do not solder wires directly to AC input terminals.

Specifications

The models listed below **have ribs and no sensors**. For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [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	3850	1.5 53.0	90 0.36	40	-20 to +75	60000/60°C
9AD0901M12				0.06	3.0	3100	1.18 41.7	56 0.22	33		

The models listed below **have ribs and low-speed sensors**. For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [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	3850	1.5 53.0	90 0.36	40	-20 to +75	60000/60°C
9AD0901M1H				0.06	3.0	3100	1.18 41.7	56 0.22	33		

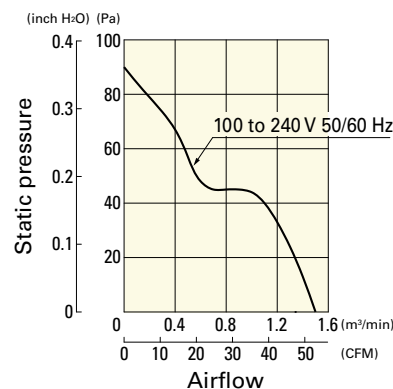
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

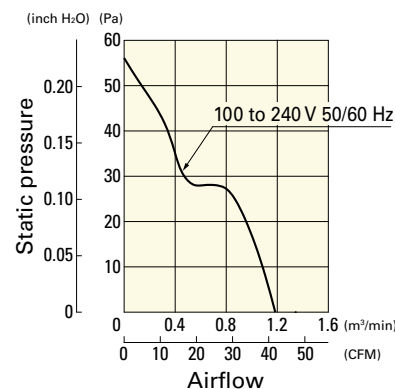
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-9AD0901H12	9AD0901H12	100 to 240 V		489-1635-L10	109-099E	M4x55 mm (4 screws)
ST1-9AD0901M12	9AD0901M12			489-1635-L10	109-099E	
ST1-9AD0901H1H	9AD0901H1H		○	489-1635-L10	109-099E	
ST1-9AD0901M1H	9AD0901M1H		○	489-1635-L10	109-099E	

Airflow - Static Pressure Characteristics

9AD0901H12, 9AD0901H1H

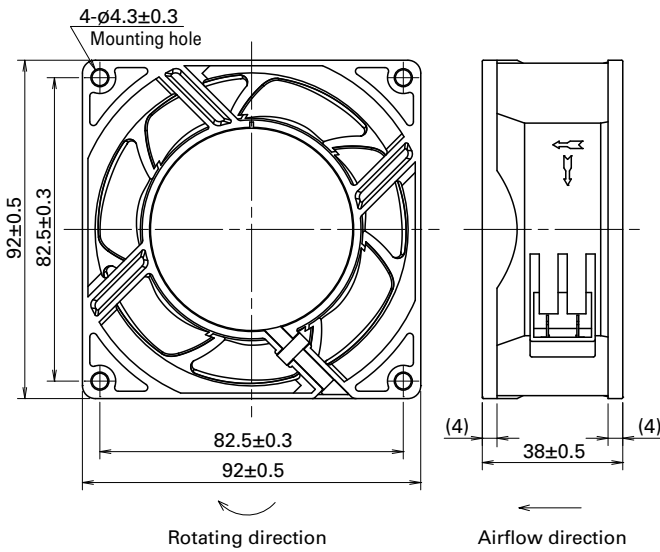


9AD0901M12, 9AD0901M1H

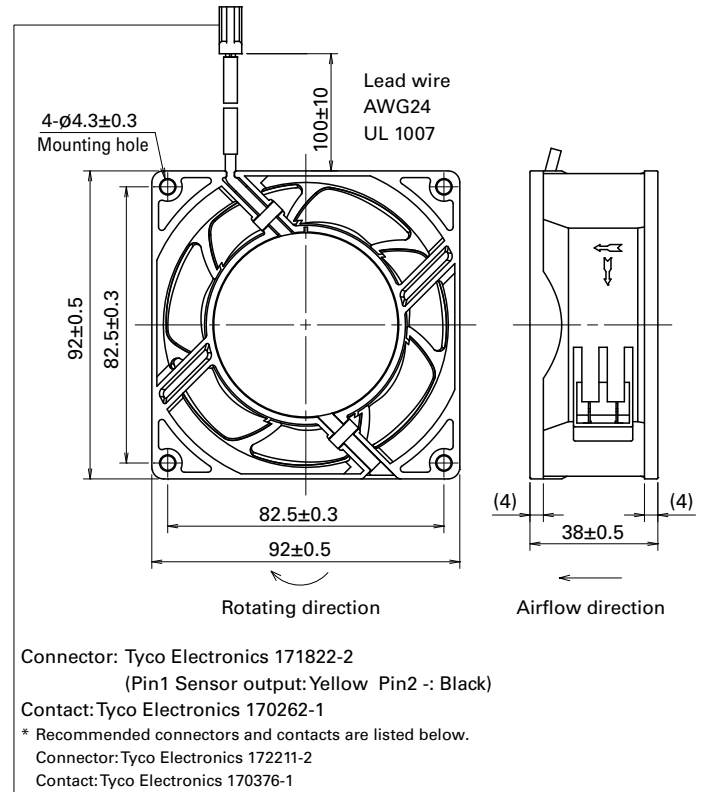


Dimensions (unit: mm) (With ribs)

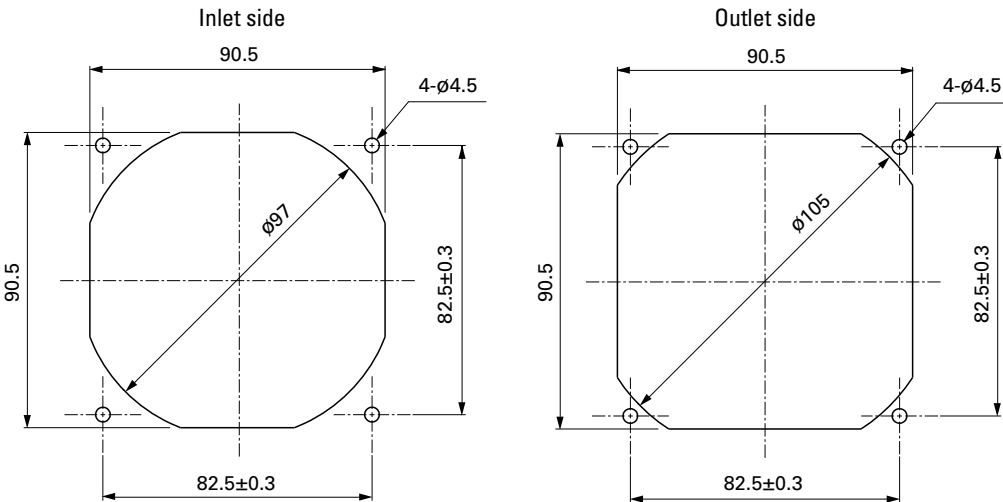
without Sensor



with Low-speed sensor

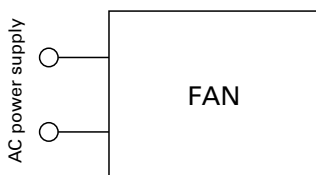


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

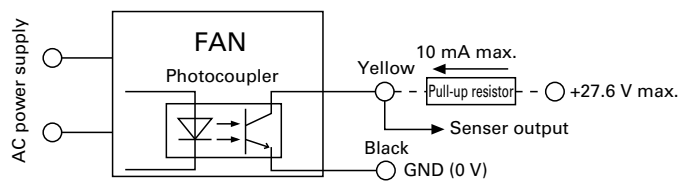


Wiring Diagram

without Sensor



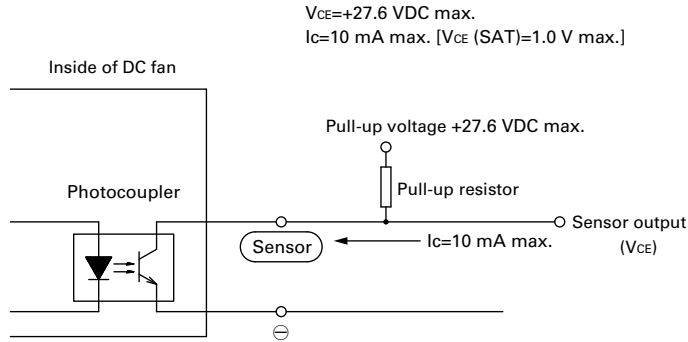
with Low-speed sensor



Specifications for Low-speed Sensors

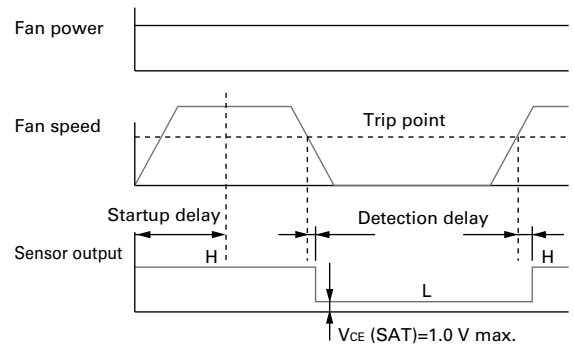
Typical standard model: 9AD0901H1H

Output circuit: Open collector

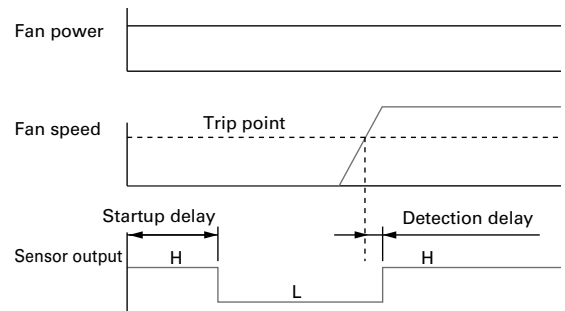


Sensor scheme

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±3 s

Detection delay: 3 s max.

Trip point: 1700 min⁻¹

9AD0901M1H

Startup delay: 36±3 s

Detection delay: 3 s max.

Trip point: 850 min⁻¹

Options

Finger guards

page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin filter kits

page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

Wiring harness for sensor

page: p. 524

Model no.: 489-1636

Resin finger guards

page: p. 520

Model no.: 109-1001G

Plug cord

page: p. 524

Model no.: 489-1635-L10, 489-1635-L21



120×120×38 mm

San Ace 120AD 9AD type

General Specifications

- Material Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor structure Brushless DC motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame, and between sensor output and frame)
- Insulation resistance..... 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30 to +75°C (Non-condensing)
- Mass 290 g

Do not solder wires directly to AC input terminals.

Specifications

The models listed below **have ribs and no sensors**. For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [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	3250	3.0 106	84 0.34	42	-20 to +75	60000/60°C

The models listed below **have ribs and low-speed sensors**. For models without ribs, append "1" to the end of model numbers.

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [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	3250	3.0 106	84 0.34	42	-20 to +75	60000/60°C

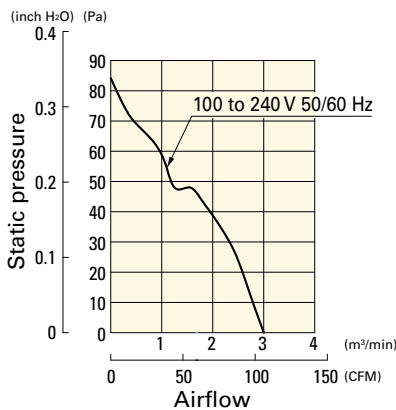
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-9AD1201H12	9AD1201H12	100 to		489-1635-L10	109-019E	M4×55 mm (4 screws)
ST1-9AD1201H1H	9AD1201H1H	240 V		489-1635-L10	109-019E	

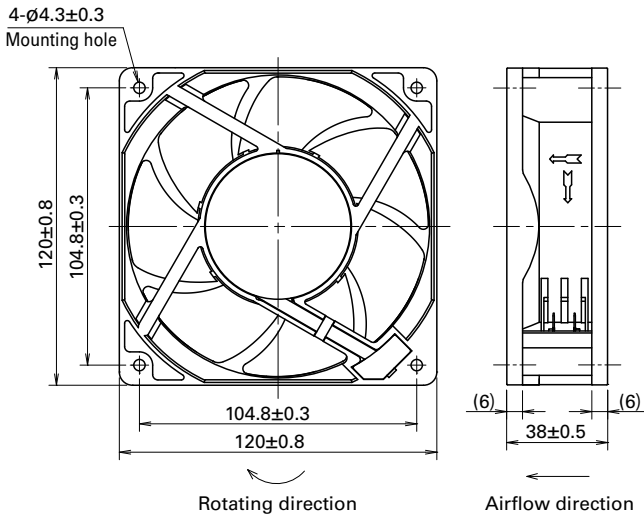
Airflow - Static Pressure Characteristics

9AD1201H12, 9AD1201H1H

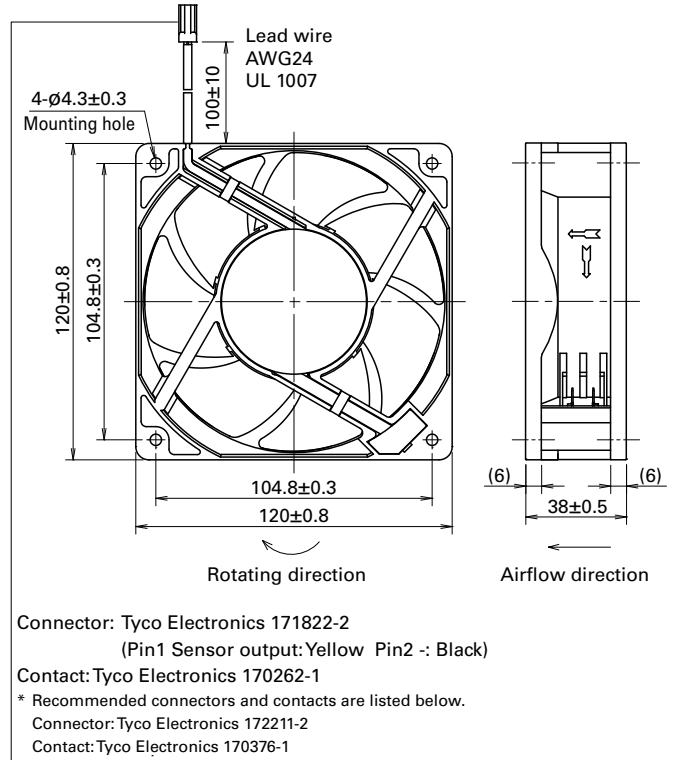


Dimensions (unit: mm) (With ribs)

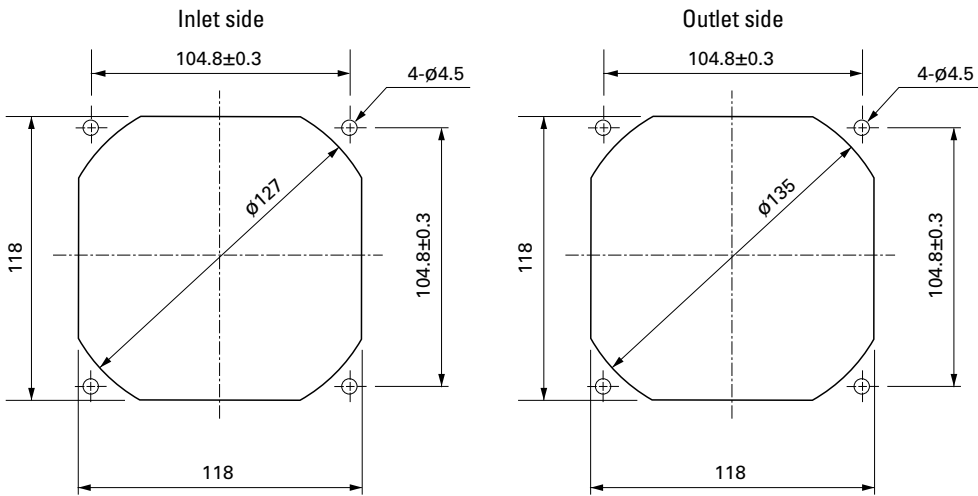
without Sensor



with Low-speed sensor

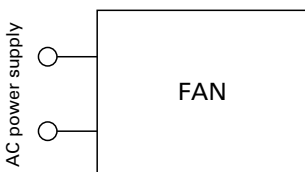


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

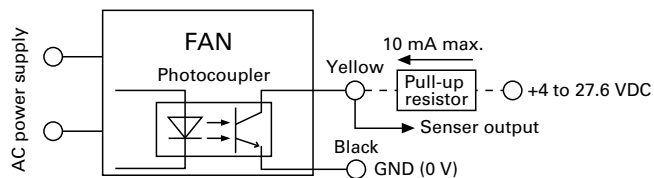


Wiring Diagram

without Sensor



with Low-speed sensor

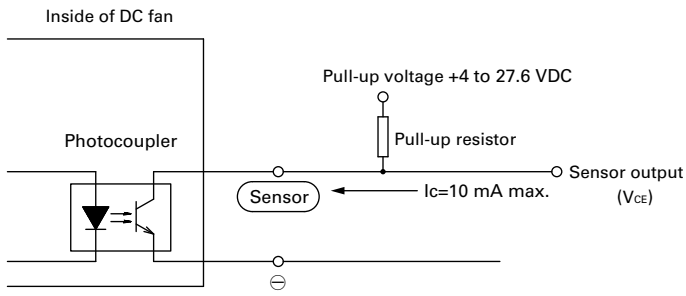


Specifications for Low-speed Sensors

Model No.: 9AD1201H1H

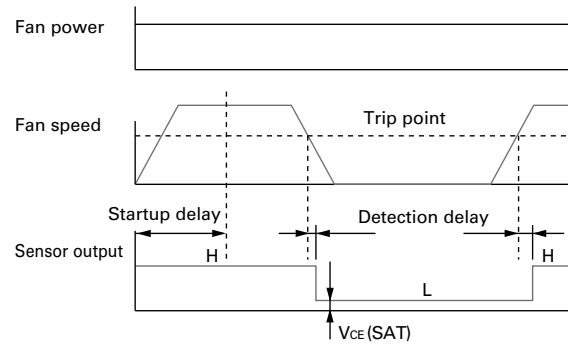
Output circuit: Open collector

$V_{CE} = +27.6$ VDC max.
 $I_C = 10$ mA max. [$V_{CE(SAT)} = 1.0$ V max.]

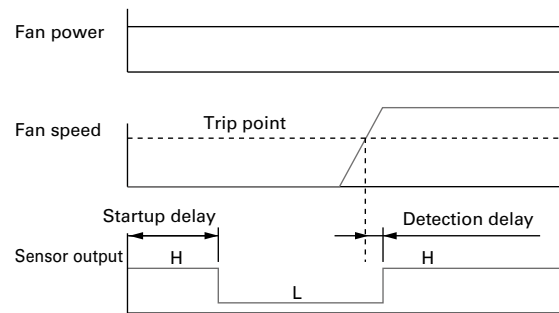


Sensor scheme

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 ± 3 s
 Detection delay: 3 s max.
 Trip point: 1700 min^{-1}

Options

Finger guards page: p. 514

Model no.: 109-019C, 109-019H, 109-019E, 109-019K

Resin filter kits page: p. 521

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),
 109-1000F30 (30PPI), 109-1000F40 (40PPI)

Wiring harness for sensor page: p. 524

Model no.: 489-1636

Resin finger guards page: p. 520

Model no.: 109-1000G

Plug cord page: p. 524

Model no.: 489-1635-L10, 489-1635-L21

AC Fan

The cooling fan operates at 100 to 230 VAC.

■ How to Read Specifications (AC fan)

Model no.	Rated 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	2250/2700	0.27/0.33 9.5/11.7	11.8/18.6 0.047/0.075	24/26	-30 to +70	25000/60°C
109-183	115				0.06/0.05						

- Rated voltage This is the necessary voltage to drive the fan. Single-phase 100, 115, 200 and 230 VAC are also available.
- Frequency This is a frequency of alternating current (AC). The frequencies of 50 Hz and 60 Hz are existing in Japan.
Performance of AC fan varies depending on the frequency. Example: Rated speed 2250/2700 = 50 Hz → 2250, 60 Hz → 2700
- Input The power value when the fan is operating at rated voltage (at free air).
- Current The current when the fan is operating at rated voltage (at free air).
- Locked rotor current This is a current when rotor of motor that applies rated voltage is locked.
- Rated speed The speed when the fan is operating at rated voltage (at free air).
- Max. airflow The maximum airflow that the fan can generate during rated operation (measured with our double chamber measuring device).
Airflow is the volume of air generated by the fan per unit of time.
- Max. static pressure The maximum static pressure value that the fan can produce during rated operation (measured with our double chamber measuring device).
Static pressure indicates a fan's ability to move air against resistance due to the internal structure of the device to which the fan is installed.
- SPL SPL stands for Sound Pressure Level. The noise level during the fan's rated operation.
Please refer to the technical material section for the measurement method.
- Operating temperature The temperature range over which fan operation is guaranteed (Non- condensing).
- Expected life Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. For more information, please refer to the technical material section.



60×60×28 mm

San Ace 60

General Specifications

- Material Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) At 1 m away from the air inlet
- Operating voltage range Voltage of each model ±10%
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire Black, 2 pcs
- Mass 120 g

Specifications

Model no.	Rated 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	2250/2700	0.27/0.33 9.5/11.7	11.8/18.6 0.047/0.075	24/26	-30 to +70	25000/60°C
109-183	115				0.06/0.05						

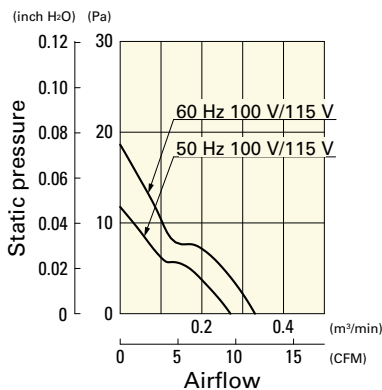
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

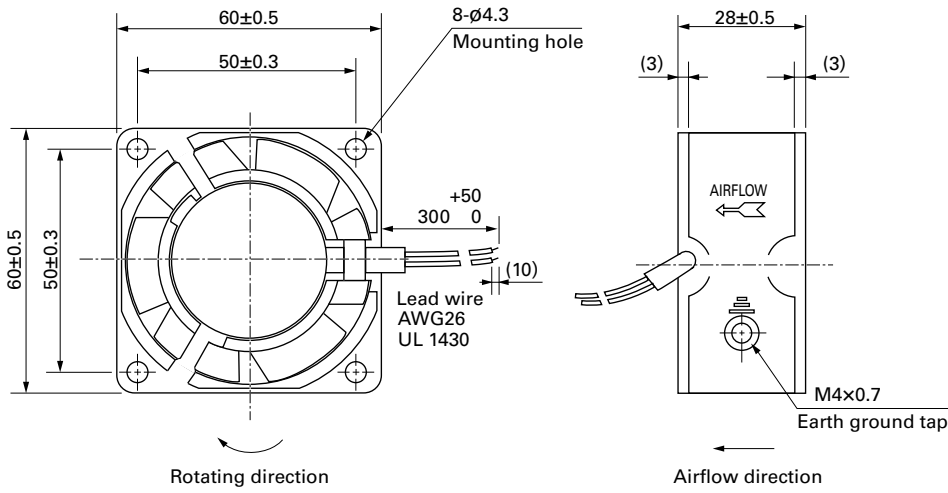
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-180	109-180	100 V		Plug cord is not included because of the exposed-lead structure.	109-139E	M4×40 mm (4 screws)
ST1-109-183	109-183	115 V			109-139E	

Airflow - Static Pressure Characteristics

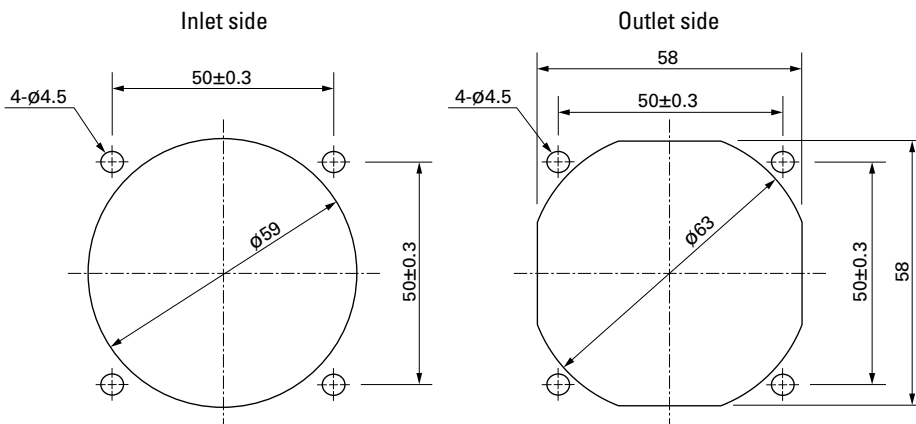
109-180, 109-183



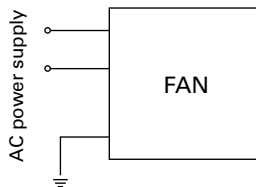
Dimensions (unit: mm)



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



Wiring Diagram



Options

Finger guards

page: p. 513

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

Resin finger guards

page: p. 520

Model no.: 109-1003G

Resin filter kits

page: p. 521

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



60×60×38 mm

San Ace 60   

General Specifications

- Material Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) At 1 m away from the air inlet
- Operating voltage range Voltage of each model ±10%
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire Black, 2 pcs
- Mass 170 g

Specifications

Model no.	Rated 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	2600/3150	0.33/0.4 11.7/14.1	16.3/23.3 0.065/0.094	28/30	-30 to +60	25000/60°C
109-133	115			0.07/0.06	0.07/0.06						

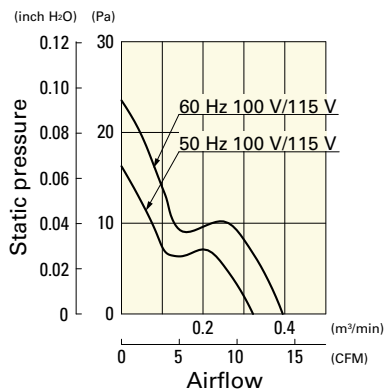
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

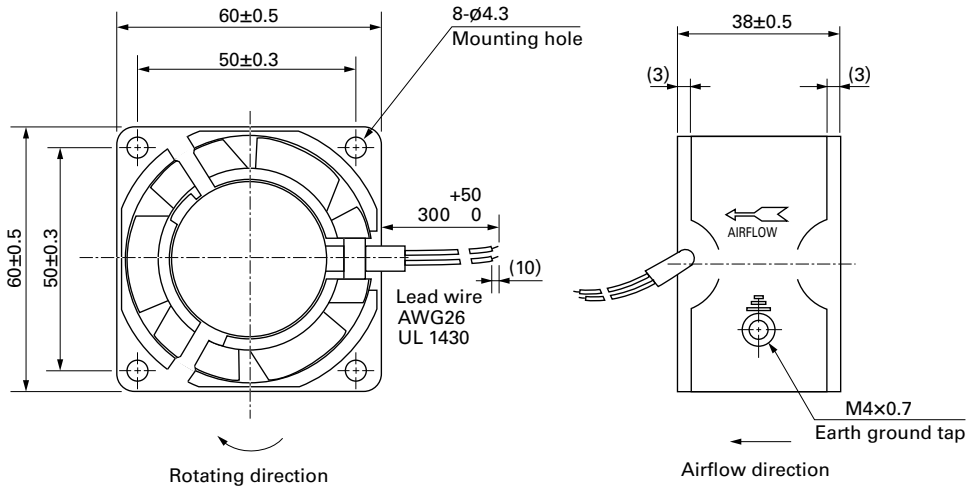
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-130	109-130	100 V		Plug cord is not included because of the exposed-lead structure.	109-139E	M4×55 mm (4 screws)
ST1-109-133	109-133	115 V			109-139E	

Airflow - Static Pressure Characteristics

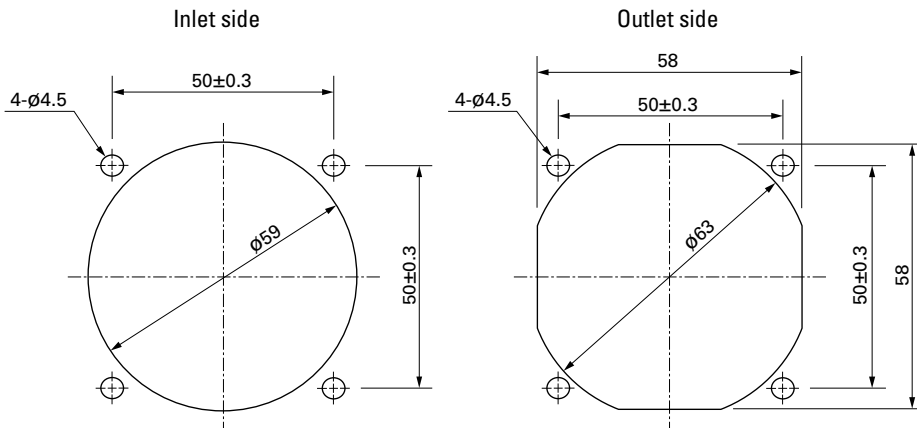
109-130, 109-133



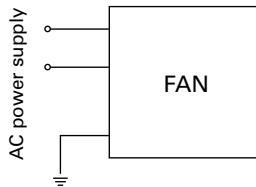
Dimensions (unit: mm)



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



Wiring Diagram



Options

Finger guards

page: p. 513

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

Resin finger guards

page: p. 520

Model no.: 109-1003G

Resin filter kits

page: p. 521

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



80×80×20 mm

San Ace 80

General Specifications

- Material Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) At 1 m away from the air inlet
- Operating voltage range Voltage of each model ±10%
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire Black, 2 pcs
- Mass 180 g

Specifications

Model no.	Rated 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	2500/3000	0.44/0.53 15.5/18.7	23.5/31.4 0.094/0.126	26/31	-30 to +60	25000/60°C
109-213	115			0.06/0.05	0.06/0.05						

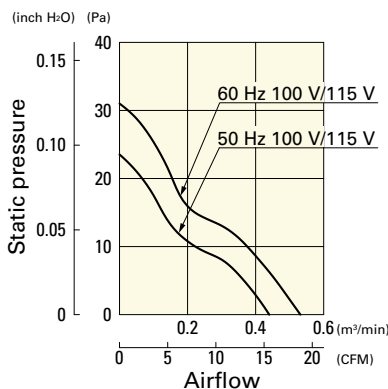
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

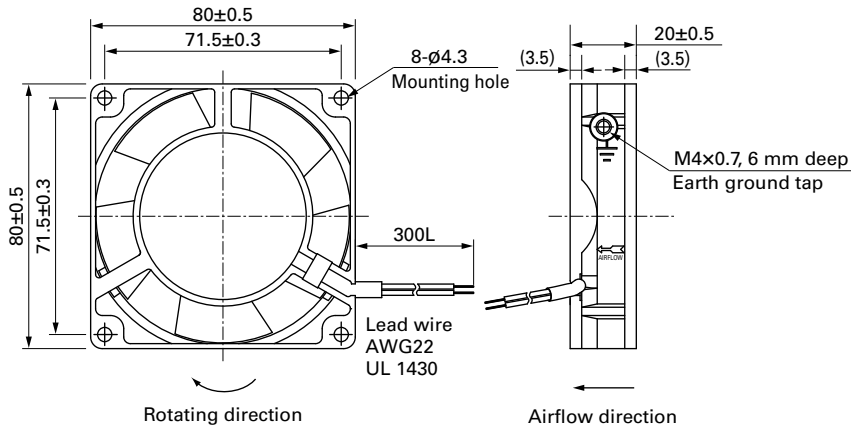
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-210	109-210	100 V		Plug cord is not included because of the exposed-lead structure.	109-049E	M4×40 mm (4 screws)
ST1-109-213	109-213	115 V			109-049E	

Airflow - Static Pressure Characteristics

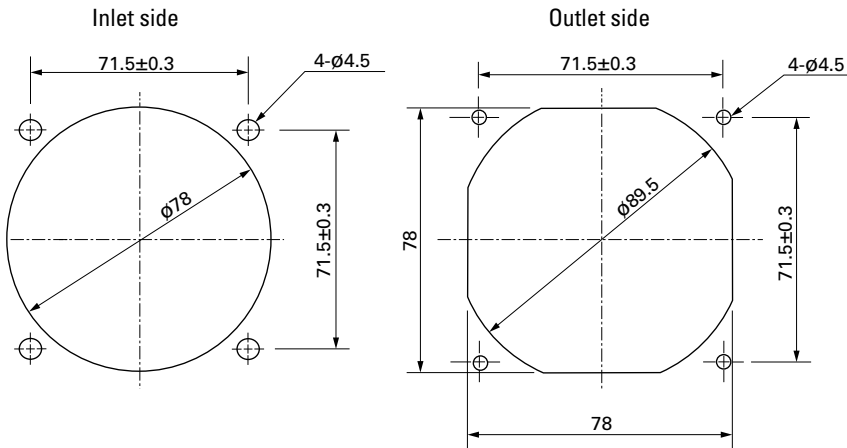
109-210, 109-213



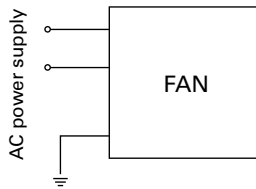
Dimensions (unit: mm)



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



Wiring Diagram



Options

Finger guards

page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards

page: p. 520

Model no.: 109-1002G

Resin filter kits

page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)



80×80×25 mm

San Ace 80

General Specifications

- Material Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) At 1 m away from the air inlet
- Operating voltage range Voltage of each model ±10%
- Storage temperature -30 to +70°C (Non-condensing)
- Mass 270 g

Specifications

Model no.	Rated 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	2650/3100	0.63/0.76 22.3/26.9	27.5/38.3 0.11 /0.154	30/33	-30 to +60	25000/60°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	2350/2700	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						

Set Models

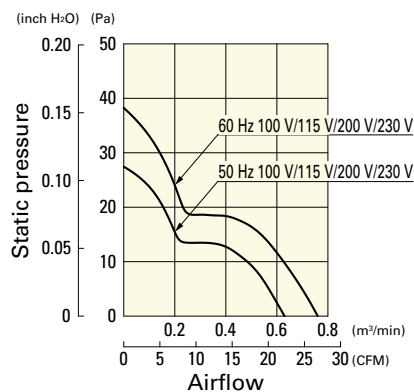
Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109S050	109S050	100 V		489-016-L10	109-049E	M4×40 mm (4 screws)*
ST1-109S053	109S053	115 V		489-016-L10	109-049E	
ST1-109S051	109S051	200 V		489-016-L10	109-049E	
ST1-109S054	109S054	230 V		489-016-L10	109-049E	
ST1-109S030	109S030	100 V		489-016-L10	109-049E	
ST1-109S033	109S033	115 V		489-016-L10	109-049E	
ST1-109S031	109S031	200 V		489-016-L10	109-049E	
ST1-109S034	109S034	230 V		489-016-L10	109-049E	

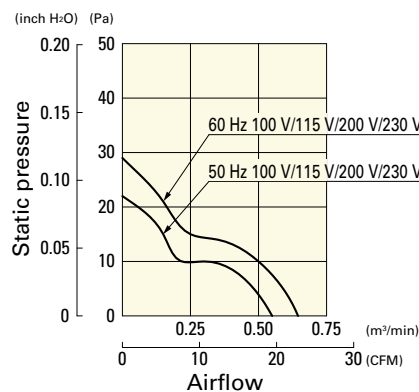
* Though these are 2-hole or 3-hole frame mount types, 4 screws are included for extra.

Airflow - Static Pressure Characteristics

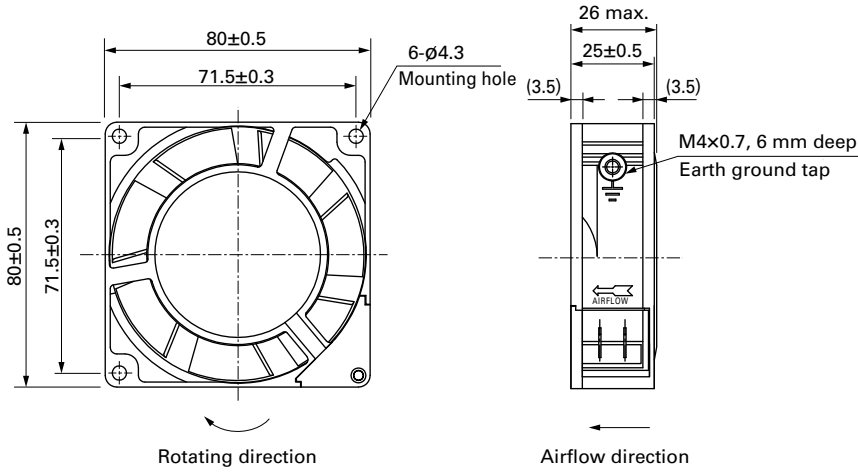
109S050, 109S053, 109S051, 109S054



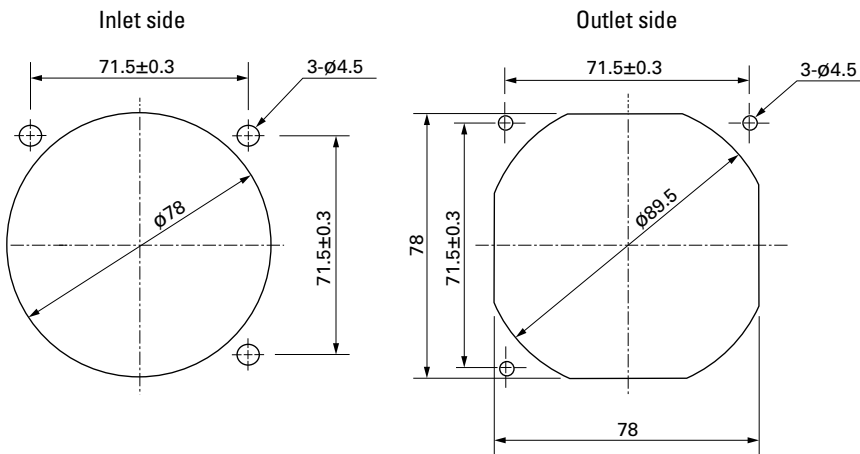
109S030, 109S033, 109S031, 109S034



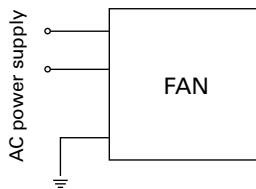
Dimensions (unit: mm)



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



Wiring Diagram



Options

Finger guards

page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards

page: p. 520

Model no.: 109-1002G

Resin filter kits

page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Plug cord

page: pp. 523 to 524

Model no.: 489-016-L10, 489-016-L21, 489-047-L10,
489-047-L21



80×80×38 mm

San Ace 80

General Specifications

- Material Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) At 1 m away from the air inlet
- Operating voltage range Voltage of each model ±10%
- Storage temperature -30 to +70°C (Non-condensing)
- Mass 400 g

Specifications

Model no.	Rated 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	2700/3150	0.9/1.05 31.8/37.1	31.4/44.1 0.126/0.177	35/39	-30 to +60	25000/60°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						

Set Models

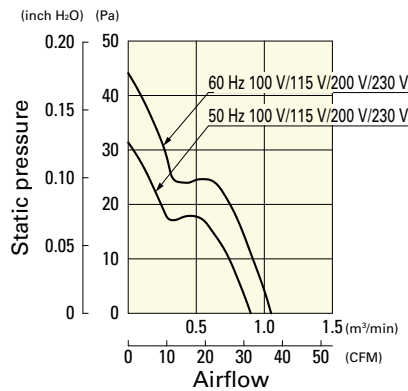
Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-150	109-150	100 V		489-016-L10	109-049E	M4×55 mm (4 screws)*
ST1-109-153	109-153	115 V		489-016-L10	109-049E	
ST1-109-151	109-151	200 V		489-016-L10	109-049E	
ST1-109-154	109-154	230 V		489-016-L10	109-049E	

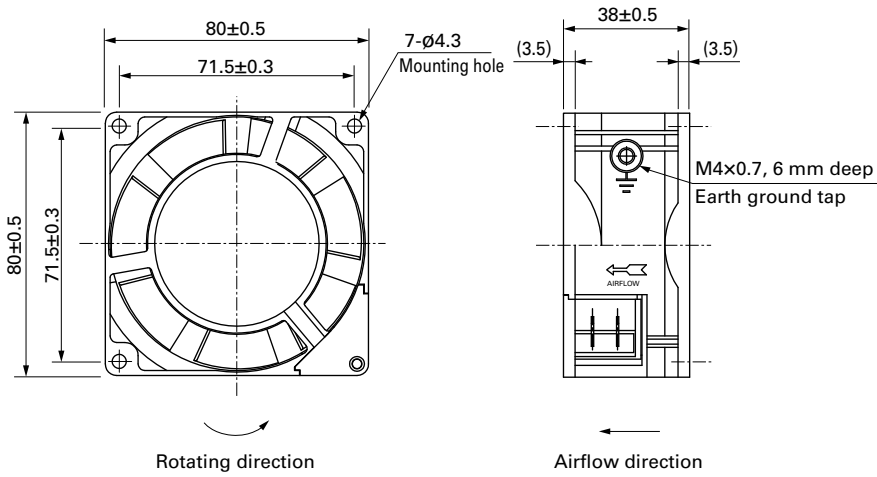
*Though these are 2-hole or 3-hole frame mount types, 4 screws are included for extra.

Airflow - Static Pressure Characteristics

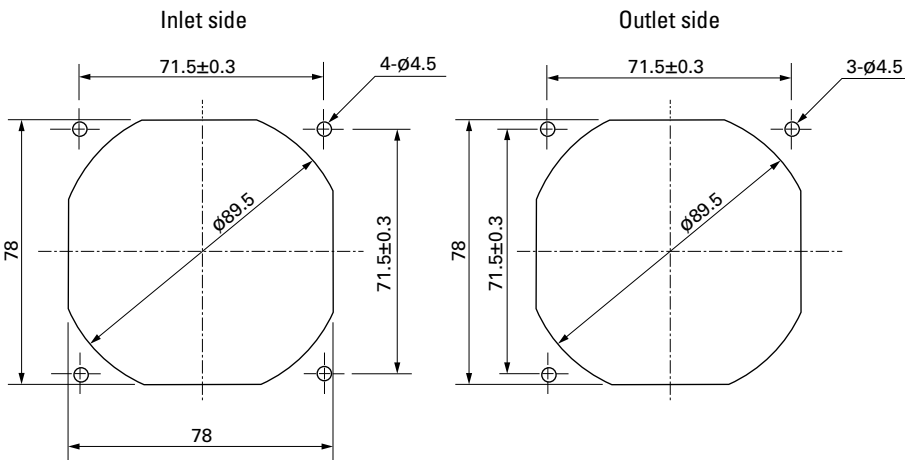
109-150, 109-153, 109-151, 109-154



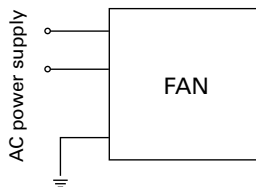
Dimensions (unit: mm)



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



Wiring Diagram



Options

Finger guards

page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards

page: p. 520

Model no.: 109-1002G

Resin filter kits

page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Plug cord

page: pp. 523 to 524

Model no.: 489-016-L10, 489-016-L21, 489-047-L10,
489-047-L21



80x80x42 mm

San Ace 80

General Specifications

- Material Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) At 1 m away from the air inlet
- Operating voltage range Voltage of each model ±10%
- Storage temperature -30 to +70°C (Non-condensing)
- Mass 410 g

Specifications

Model no.	Rated 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	2650/3100	0.85/1.0 30.0/35.3	24.5/35.3 0.098/0.142	40/44	-30 to +60	25000/60°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	1500/1500	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				

*These are low-speed models.

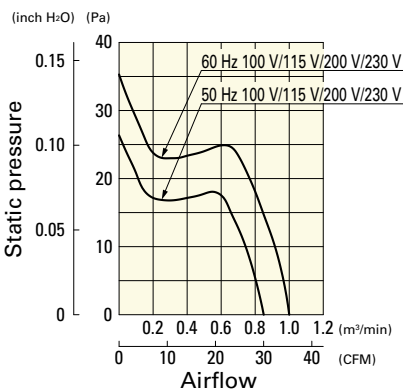
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

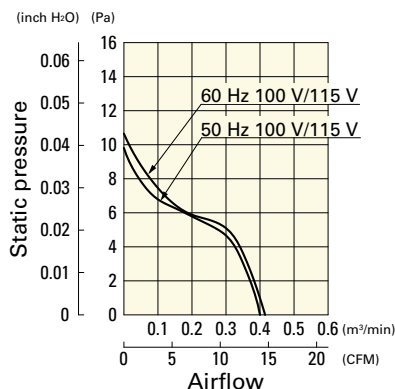
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109-040UL	109-040UL	100 V		489-008-L10	109-049E	M4x55 mm (4 screws)
ST1-109-043UL	109-043UL	115 V		489-008-L10	109-049E	
ST1-109-041UL	109-041UL	200 V		489-008-L10	109-049E	
ST1-109-044UL	109-044UL	230 V		489-008-L10	109-049E	
ST1-109-047UL	109-047UL	100 V		489-008-L10	109-049E	
ST1-109-033UL	109-033UL	115 V		489-008-L10	109-049E	

Airflow - Static Pressure Characteristics

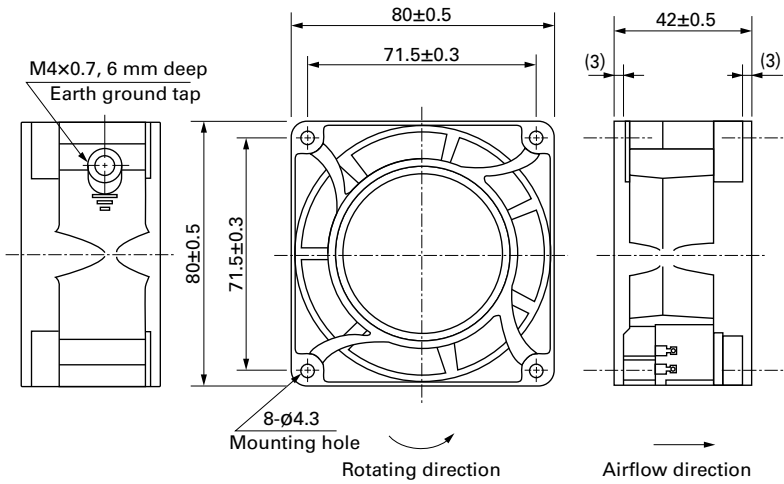
109-040UL, 109-043UL, 109-041UL, 109-044UL



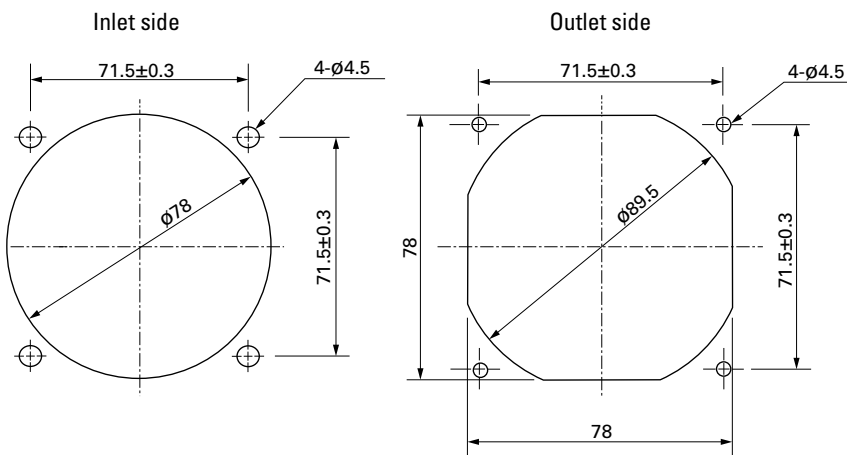
109-047UL, 109-033UL



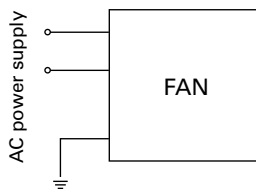
Dimensions (unit: mm)



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



Wiring Diagram



Options

Finger guards

page: p. 513

Model no.: 109-049C, 109-049E, 109-049H

Resin finger guards

page: p. 520

Model no.: 109-1002G

Resin filter kits

page: p. 521

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),
109-1002F30 (30PPI), 109-1002F40 (40PPI)

Plug cord

page: p. 523

Model no.: 489-008-L10, 489-008-L21, 489-008-L35

92×92×25 mm

San Ace 92  Only standard fans (without sensors) have acquired CSA certification.



General Specifications

- Material Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 529.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) Between AC input and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
Between AC input and G: 50/60 Hz 1500 VAC 1 minute
Between G and DC input (Sensor output): 50/60 Hz 1000 VAC 1 minute
- Insulation resistance 10 MΩ or more with a 500 VDC megger
- Sound pressure level (SPL) At 1 m away from the air inlet
- Operating voltage range Voltage of each model ±10%
- Storage temperature -30 to +70°C (Non-condensing)
- Sensor-Purpose lead wire ⊕Brown ⊖Black (Sensor) Yellow
- Mass 290 g/310 g (with Sensor)

Specifications

Standard

Model no.	Rated 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	2700/3100	0.95/1.1 33.6/38.9	39.2/49.0 0.157/0.197	35/38	-30 to +60	25000/60°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	2400/2800	0.84/0.98 29.7/34.6	31.4/40.2 0.126/0.161	32/35		
109S096*	100		7/6	0.09/0.08	0.09/0.08	1500/1700	0.55/0.65 19.4/23	12.5/16.3 0.05 /0.065	24/27		
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						

*These are low-speed models.

with Sensor

For sensor specifications, please refer to p. 531. Sensor specification differs depending on the fan's speed specification.

For a 5 V sensor power supply (ITEM-20), please append "-20" to the end of model number. E.g. 109S491-20

For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109S491-30

Model no.	Rated 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	2700/3100	0.95/1.1 33.6/38.9	39.2/49.0 0.157/0.197	35/38	-10 to +60	25000/60°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	2400/2800	0.84/0.98 29.7/34.6	31.4/40.2 0.126/0.161	32/35		
109S496*			7/6	0.09/0.08	0.09/0.08	1500/1700	0.55/0.65 19.4/23	12.5/16.3 0.05 /0.065	24/27		

*These are low-speed models.

For the **San Ace 92AD** 9AD type **92×92×38** mm fan, please refer to p. 458.

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.

Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 574.

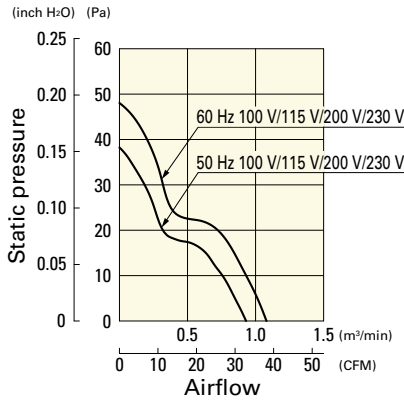
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-109S091	109S091	100 V		489-016-L10	109-099E	M3×40 mm (4 screws)*
ST1-109S093	109S093	115 V		489-016-L10	109-099E	
ST1-109S092	109S092	200 V		489-016-L10	109-099E	
ST1-109S094	109S094	230 V		489-016-L10	109-099E	
ST1-109S095	109S095	100 V		489-016-L10	109-099E	
ST1-109S096	109S096	100 V		489-016-L10	109-099E	
ST1-109S193	109S193	115 V		489-016-L10	109-099E	
ST1-109S192	109S192	200 V		489-016-L10	109-099E	
ST1-109S194	109S194	230 V		489-016-L10	109-099E	
ST1-109S491-20	109S491-20	100 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S491-30	109S491-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S493-20	109S493-20	115 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S493-30	109S493-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S492-20	109S492-20	200 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S492-30	109S492-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S494-20	109S494-20	230 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S494-30	109S494-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S495-20	109S495-20	100 V	○ (5 V)	489-016-L10	109-099E	
ST1-109S495-30	109S495-30		○ (12 V)	489-016-L10	109-099E	
ST1-109S496-20	109S496-20		○ (5 V)	489-016-L10	109-099E	
ST1-109S496-30	109S496-30		○ (12 V)	489-016-L10	109-099E	

*Though these are 2-hole or 3-hole frame mount types, 4 screws are included for extra.

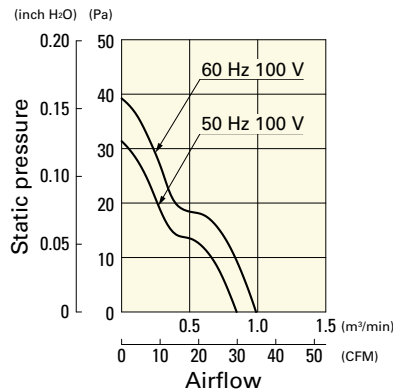
Airflow - Static Pressure Characteristics

Standard

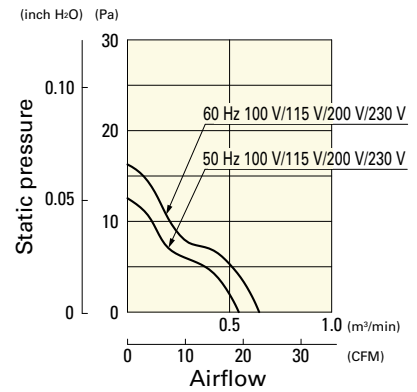
109S091, 109S093, 109S092, 109S094



109S095

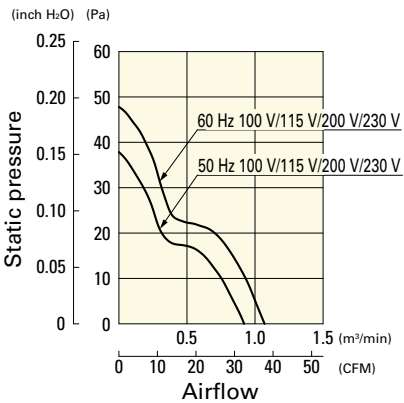


109S096, 109S193, 109S192, 109S194

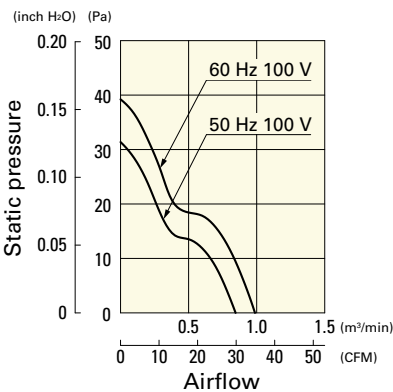


with Sensor

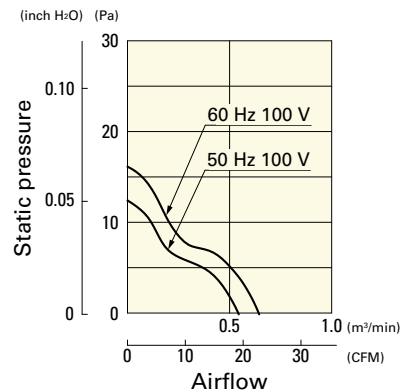
109S491, 109S493, 109S492, 109S494



109S495



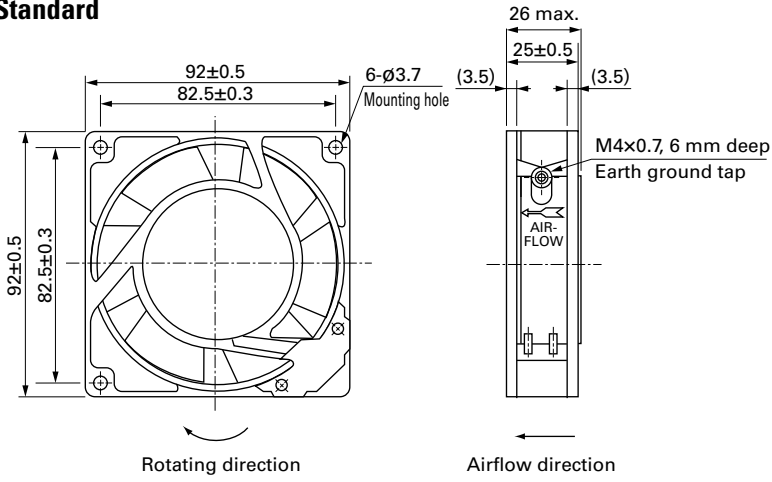
109S496



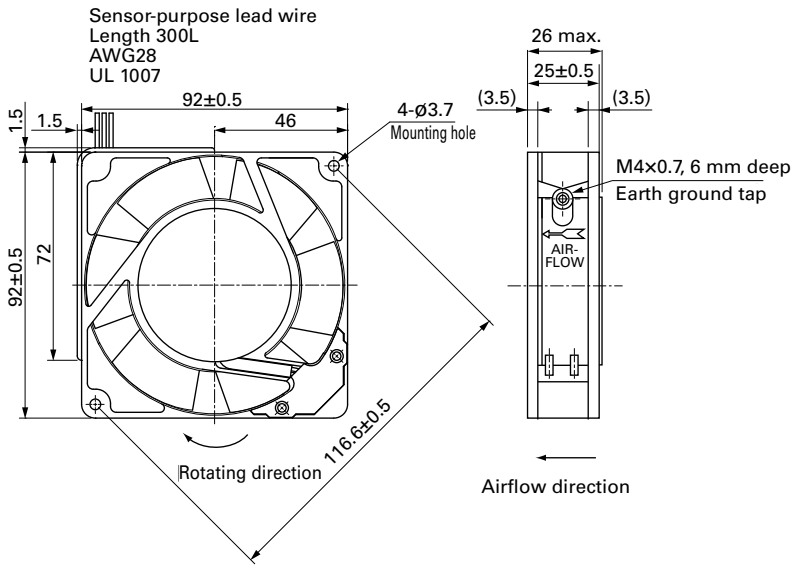
AC
AC Fan 92 mm sq.

Dimensions (unit: mm)

Standard

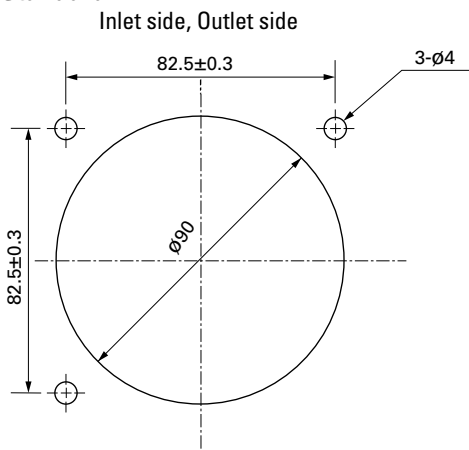


with Sensor

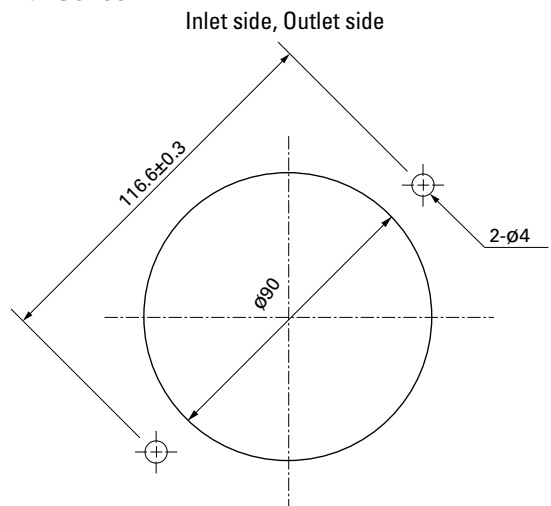


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Standard

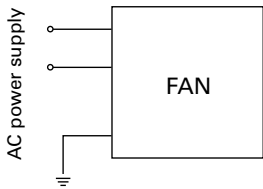


with Sensor



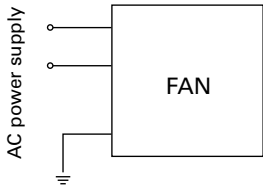
Wiring Diagram

Standard

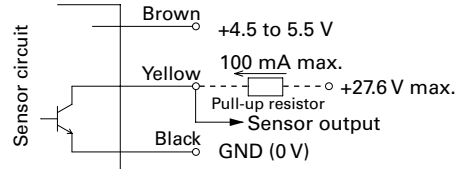


with Sensor

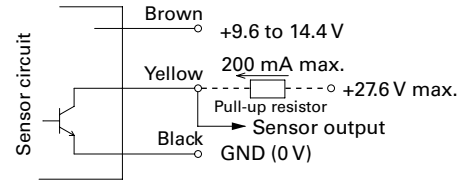
For fan power supply



For sensor circuit
5 V (ITEM-20)



12 V (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

Finger guards

page: p. 513

Model no.: 109-099C, 109-099E, 109-099H

Resin finger guards

page: p. 520

Model no.: 109-1001G

Resin filter kits

page: p. 521

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),
109-1001F30 (30PPI), 109-1001F40 (40PPI)

Plug cord

page: pp. 523 to 524

Model no.: 489-016-L10, 489-016-L21, 489-047-L10,
489-047-L21