

AC Fan

These are cooling fans that operate on AC power. The lineup is available in 100, 115, 200, and 230 V models.

■ **How to Read Specifications** (AC fan) The following is a sample. See respective product pages for detailed information.

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 (56000/40°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 airflow at 0 Pa static pressure when the fan is operating at rated voltage. (Measured using the double chamber method)
Max. static pressure	.....	The static pressure at 0 m ³ /min airflow when the fan is operating at rated voltage. (Measured using the double chamber method)
SPL	.....	A-weighted sound pressure level (SPL) when the fan operates at the rated speed. For the measurement method, see the Technical Materials section in the catalog.
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. Expected life at 40°C is for reference only. 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)
Expected life at 40°C is for reference only.
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 (56000/40°C)
109-183	115										

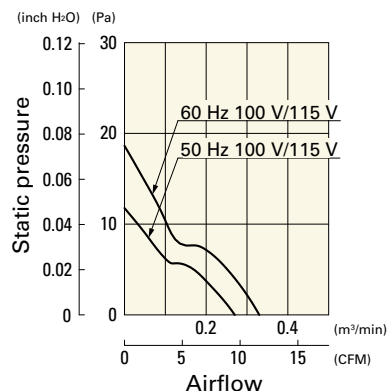
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 674.

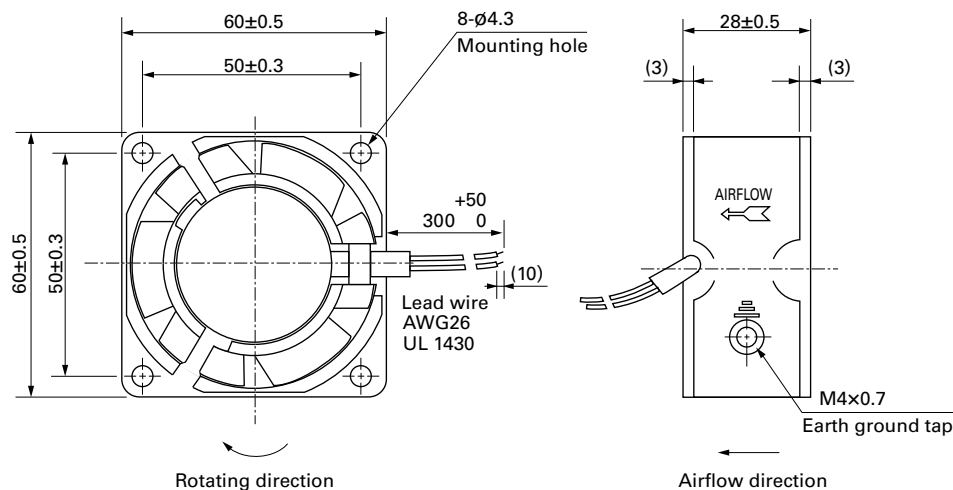
Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs)
ST1-109-180	109-180	100 V		Plug cord is not included because of the exposed-lead structure.	109-139E	M4×40 mm
ST1-109-183	109-183	115 V			109-139E	

Airflow - Static Pressure Characteristics

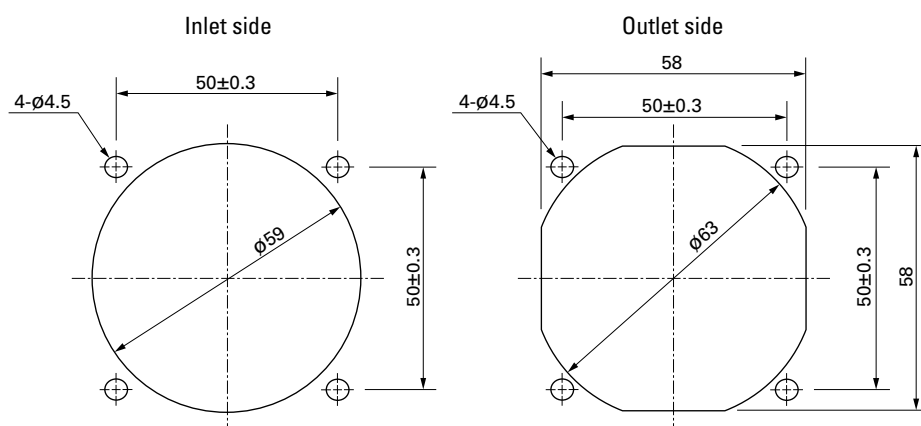
109-180, 109-183



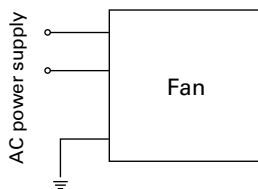
Dimensions (unit: mm)



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



Connection Schematic



Options

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1003G

Resin filter kits

page: p. 606

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)
Expected life at 40°C is for reference only.
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 (56000/40°C)
109-133	115			0.07/0.06	0.07/0.06						

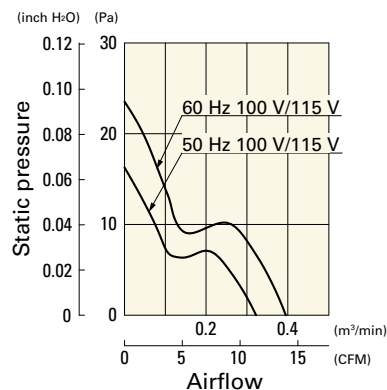
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 674.

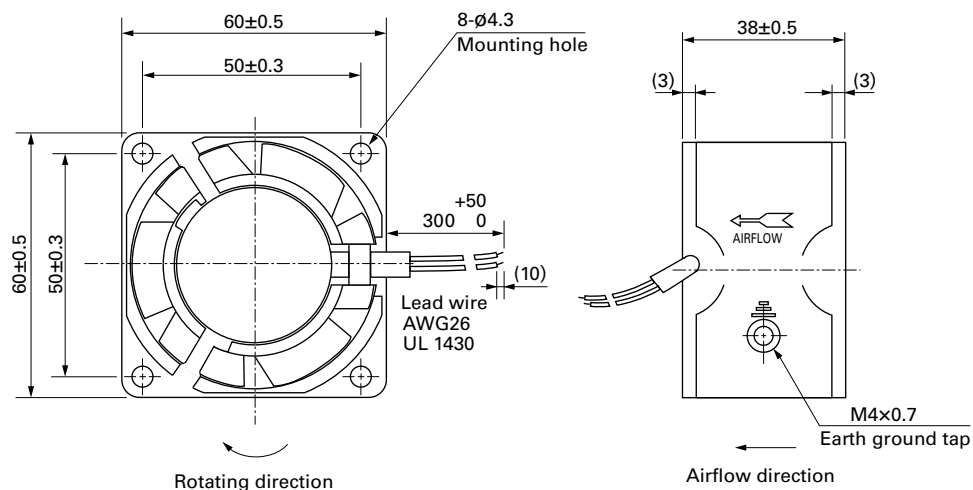
Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs)
ST1-109-130	109-130	100 V		Plug cord is not included because of the exposed-lead structure.	109-139E	M4×55 mm
ST1-109-133	109-133	115 V			109-139E	

Airflow - Static Pressure Characteristics

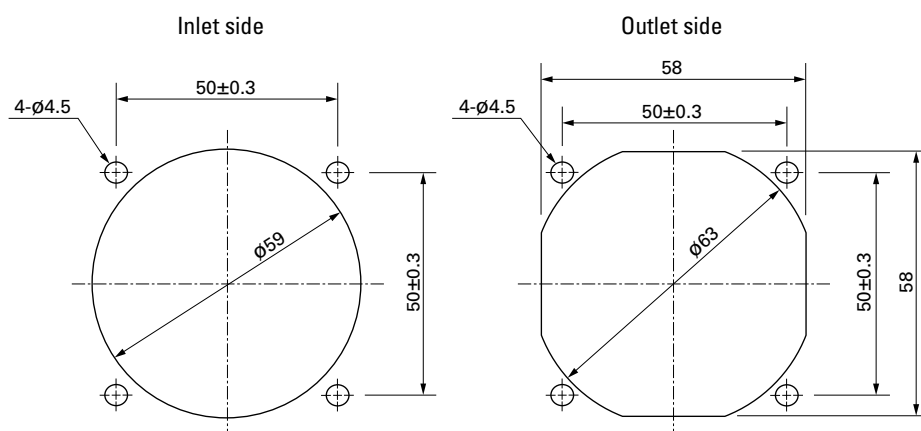
109-130, 109-133



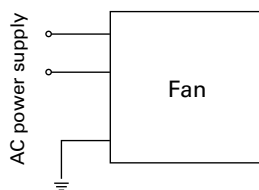
Dimensions (unit: mm)



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



Connection Schematic



Options

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1003G

Resin filter kits

page: p. 606

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)
Expected life at 40°C is for reference only.
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 (56000/40°C)
109-213	115			0.06/0.05	0.06/0.05						

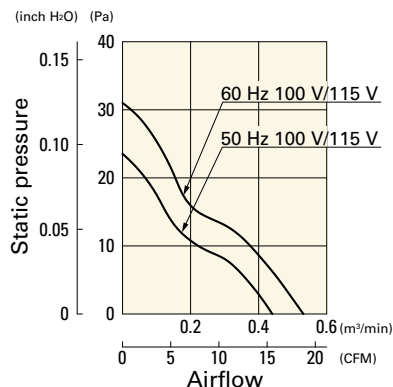
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 674.

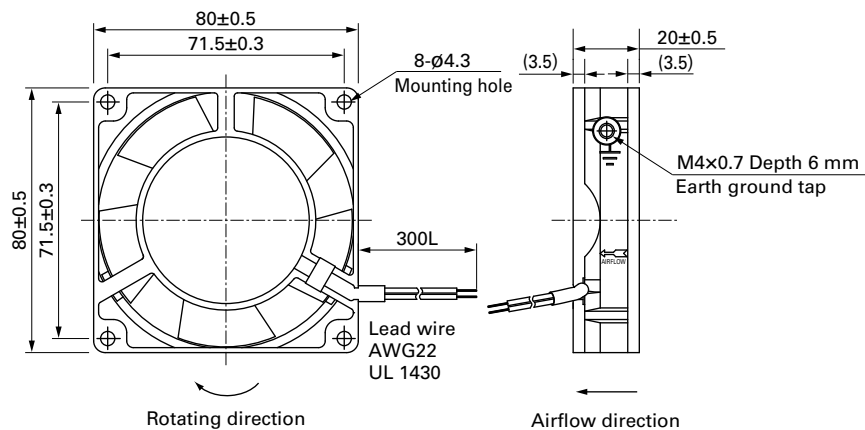
Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs)
ST1-109-210	109-210	100 V		Plug cord is not included because of the exposed-lead structure.	109-049E	M4×40 mm
ST1-109-213	109-213	115 V			109-049E	

Airflow - Static Pressure Characteristics

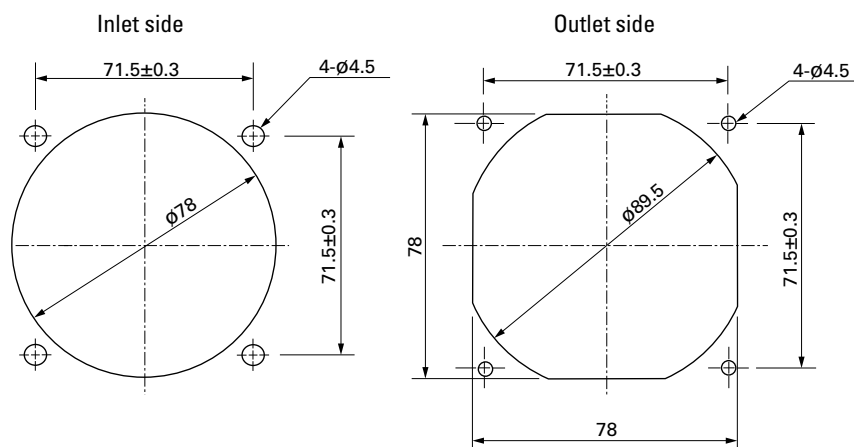
109-210, 109-213



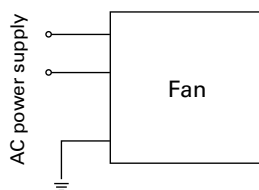
■ Dimensions (unit: mm)



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



■ Connection Schematic



■ Options

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1002G

Resin filter kits

page: p. 606

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)
Expected life at 40°C is for reference only.
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 [m³/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 (56000/40°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	2350/2700	0.55/0.63	19.4/22.3	21.6/28.4	0.087/0.114	28/30		
109S030	100			0.12/0.1	0.13/0.11								
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 PSE (Japanese safety standard) compatible

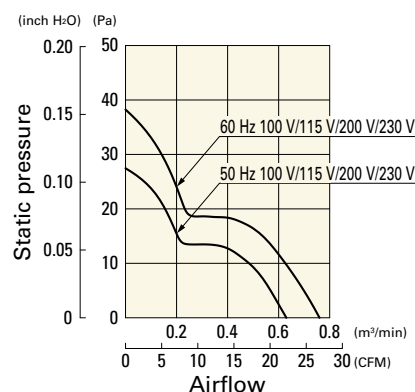
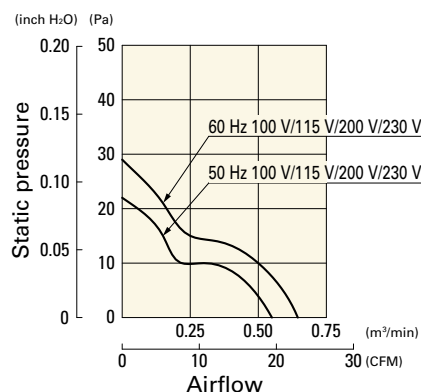
A set of a fan, finger guard, plug cord (PSE compatible), and screws. For details, please refer to p. 674.

Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs) ⁽²⁾
ST1-109S050	109S050	100 V		489-016-L10 ⁽¹⁾	109-049E	M4×40 mm
ST1-109S053	109S053	115 V		489-016-L10 ⁽¹⁾	109-049E	
ST1-109S051	109S051	200 V		489-016-L10 ⁽¹⁾	109-049E	
ST1-109S054	109S054	230 V		489-016-L10 ⁽¹⁾	109-049E	
ST1-109S030	109S030	100 V		489-016-L10 ⁽¹⁾	109-049E	
ST1-109S033	109S033	115 V		489-016-L10 ⁽¹⁾	109-049E	
ST1-109S031	109S031	200 V		489-016-L10 ⁽¹⁾	109-049E	
ST1-109S034	109S034	230 V		489-016-L10 ⁽¹⁾	109-049E	

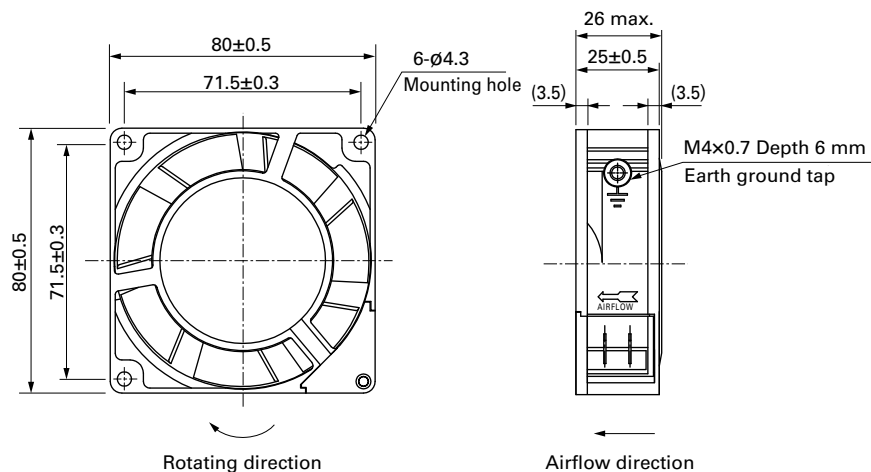
(1) PSE compatible, but not UL compatible.

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

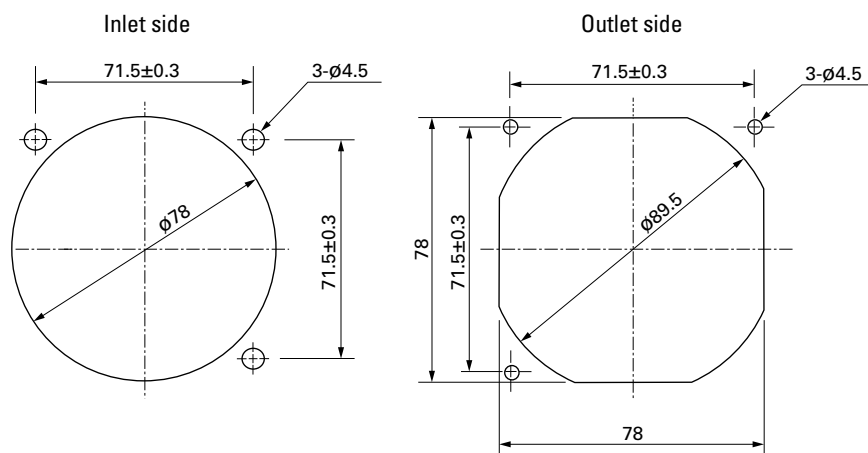
Airflow - Static Pressure Characteristics

109S050, 109S053, 109S051, 109S054

109S030, 109S033, 109S031, 109S034


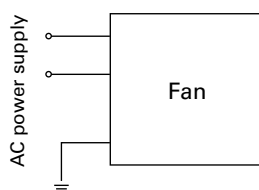
■ Dimensions (unit: mm)



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



■ Connection Schematic



■ Options

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1002G

Resin filter kits

page: p. 606

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

Plug cord

page: p. 609 to 610

PSE compatible models

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

UL/CSA certified models

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

AC

AC Fan 80 mm sq.

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)
Expected life at 40°C is for reference only.
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 (56000/40°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 PSE (Japanese safety standard) compatible

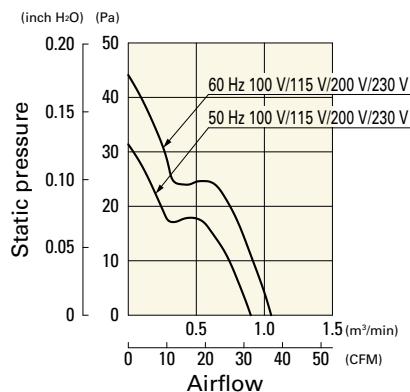
A set of a fan, finger guard, plug cord (PSE compatible), and screws. For details, please refer to p. 674.

Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs) ⁽²⁾
ST1-109-150	109-150	100 V		489-016-L10 ⁽¹⁾	109-049E	M4×55 mm
ST1-109-153	109-153	115 V		489-016-L10 ⁽¹⁾	109-049E	
ST1-109-151	109-151	200 V		489-016-L10 ⁽¹⁾	109-049E	
ST1-109-154	109-154	230 V		489-016-L10 ⁽¹⁾	109-049E	

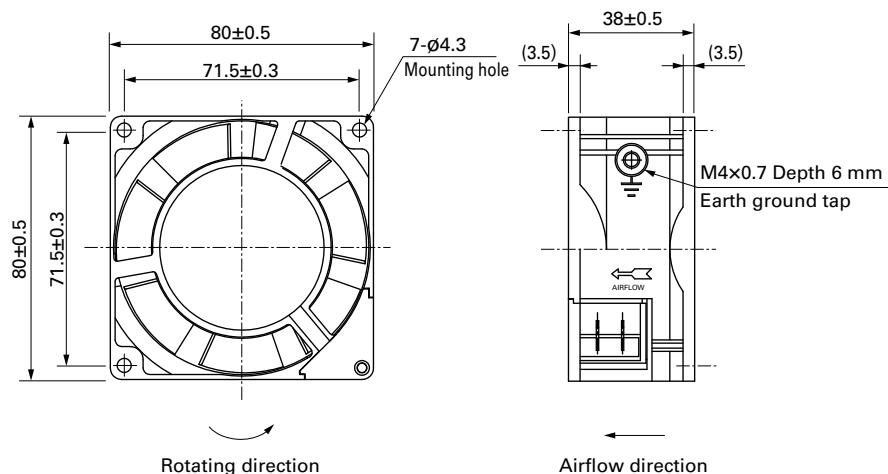
(1) PSE compatible, but not UL compatible.

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

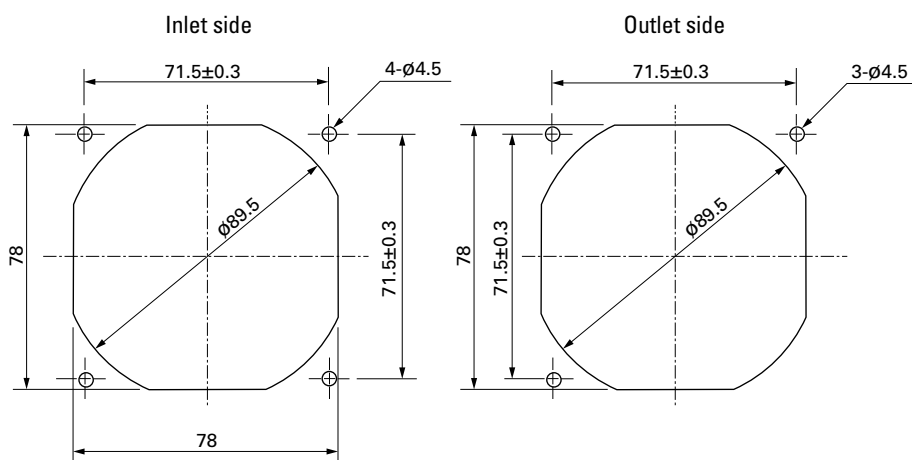
Airflow - Static Pressure Characteristics

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


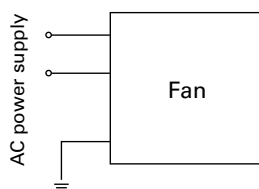
Dimensions (unit: mm)



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



Connection Schematic



Options

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1002G

Resin filter kits

page: p. 606

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

Plug cord

page: p. 609 to 610

PSE compatible models

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

UL/CSA certified models

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

AC

AC Fan 80 mm sq.

80×80×42 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)
Expected life at 40°C is for reference only.
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 [m³/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 (56000/40°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 PSE (Japanese safety standard) compatible

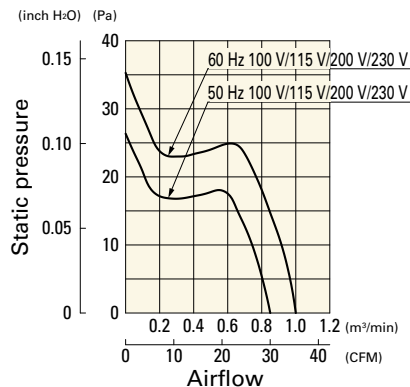
A set of a fan, finger guard, plug cord (PSE compatible), and screws. For details, please refer to p. 674.

Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs)
ST1-109-040UL	109-040UL	100 V		489-008-L10*	109-049E	M4×55 mm
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	

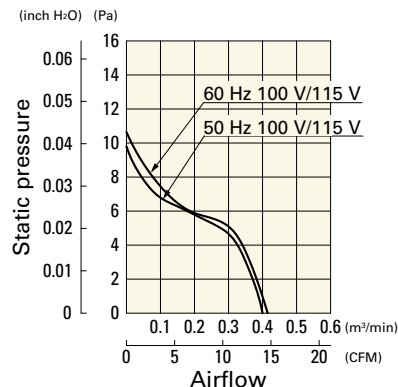
* PSE compatible, but not UL compatible.

Airflow - Static Pressure Characteristics

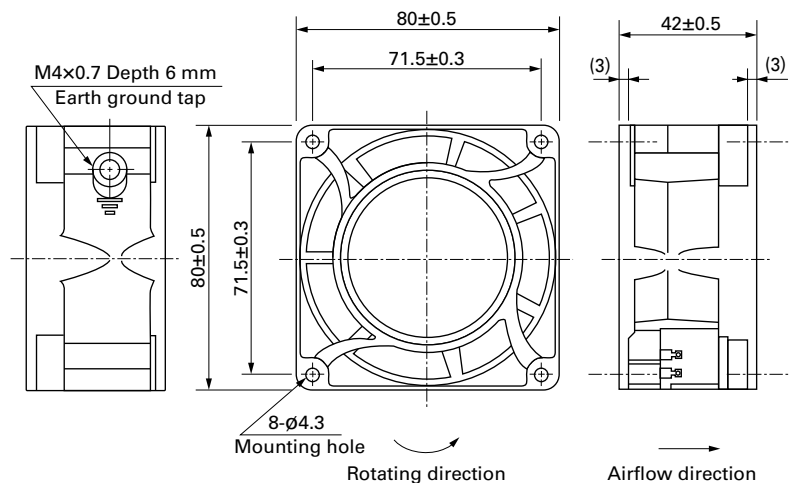
109-040UL, 109-043UL, 109-041UL, 109-044UL



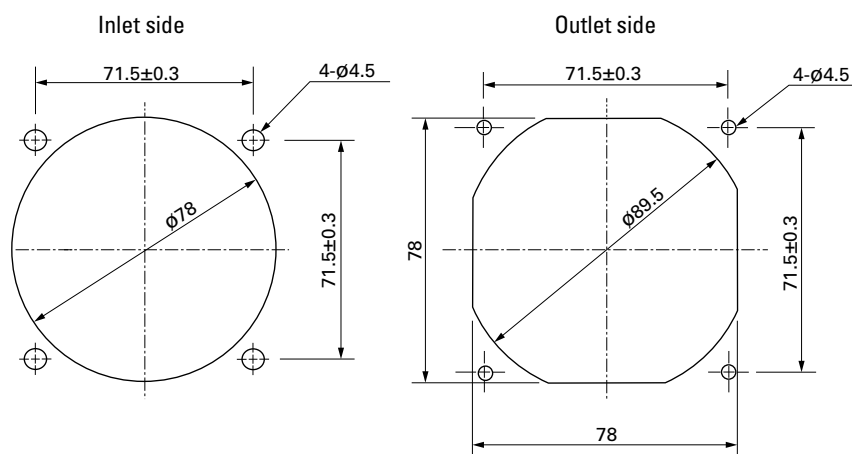
109-047UL, 109-033UL



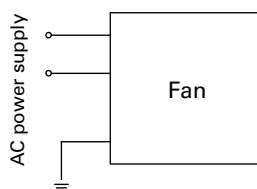
■ Dimensions (unit: mm)



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



■ Connection Schematic



■ Options

Finger guards

page: p. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1002G

Resin filter kits

page: p. 606

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

Plug cord

page: p. 609

PSE compatible models

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

AC

AC Fan 80 mm sq.

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)
Expected life at 40°C is for reference only.
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) 50/60 Hz 1500 VAC 1 minute (between AC input terminal and frame)
50/60 Hz 1000 VAC 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 [m³/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 (56000/40°C)
109S093	115			0.09/0.08	0.11/0.1								
109S092	200		11/10	0.07/0.06	0.08/0.08	2400/2800	0.84/0.98	29.7/34.6	31.4/40.2	0.126/0.161	32/35		
109S094	230			10/9	0.06/0.05									0.07/0.07
109S095	100		8/7	0.1 /0.09	0.11/0.1	1500/1700	0.55/0.65	19.4/23	12.5/16.3	0.05 /0.065	24/27		
109S096*	100		7/6	0.09/0.08	0.09/0.08								
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. 622. 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 [m³/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 (56000/40°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.

Set Models PSE (Japanese safety standard) compatible

A set of a fan, finger guard, plug cord (PSE compatible), and screws. For details, please refer to p. 674.

Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs) ⁽²⁾
ST1-109S091	109S091	100 V		489-016-L10 ⁽¹⁾	109-099E	M3×40 mm
ST1-109S093	109S093	115 V		489-016-L10 ⁽¹⁾	109-099E	
ST1-109S092	109S092	200 V		489-016-L10 ⁽¹⁾	109-099E	
ST1-109S094	109S094	230 V		489-016-L10 ⁽¹⁾	109-099E	
ST1-109S095	109S095	100 V		489-016-L10 ⁽¹⁾	109-099E	
ST1-109S096	109S096	100 V		489-016-L10 ⁽¹⁾	109-099E	
ST1-109S193	109S193	115 V		489-016-L10 ⁽¹⁾	109-099E	
ST1-109S192	109S192	200 V		489-016-L10 ⁽¹⁾	109-099E	
ST1-109S194	109S194	230 V		489-016-L10 ⁽¹⁾	109-099E	
ST1-109S491-20	109S491-20	100 V	○ (5 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S491-30	109S491-30		○ (12 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S493-20	109S493-20	115 V	○ (5 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S493-30	109S493-30		○ (12 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S492-20	109S492-20	200 V	○ (5 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S492-30	109S492-30		○ (12 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S494-20	109S494-20	230 V	○ (5 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S494-30	109S494-30		○ (12 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S495-20	109S495-20	100 V	○ (5 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S495-30	109S495-30		○ (12 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S496-20	109S496-20		○ (5 V)	489-016-L10 ⁽¹⁾	109-099E	
ST1-109S496-30	109S496-30		○ (12 V)	489-016-L10 ⁽¹⁾	109-099E	

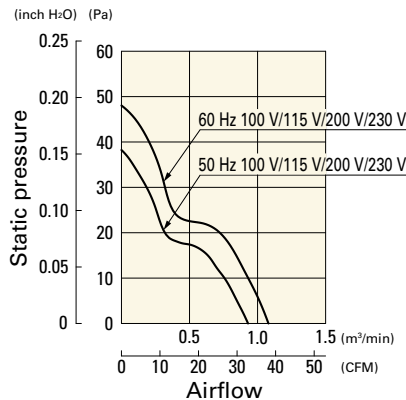
(1) PSE compatible, but not UL compatible.

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

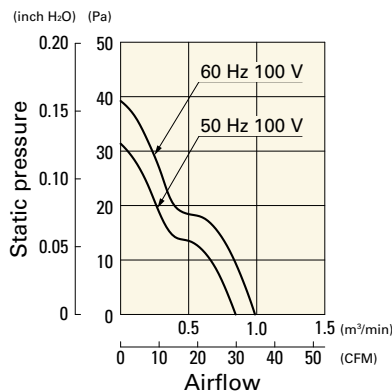
Airflow - Static Pressure Characteristics

Standard

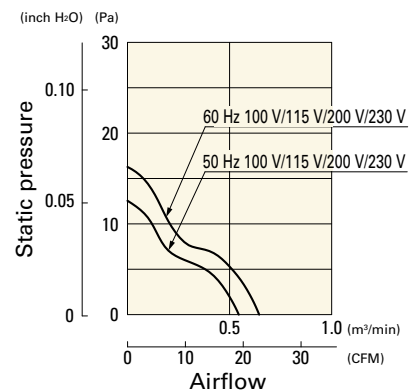
109S091, 109S093, 109S092, 109S094



109S095

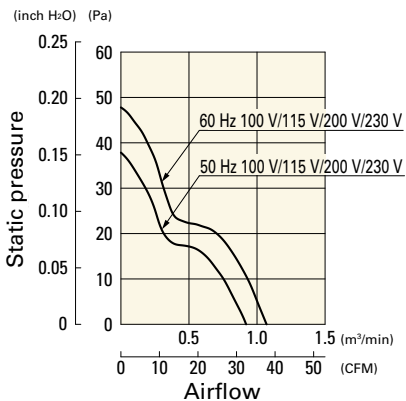


109S096, 109S193, 109S192, 109S194

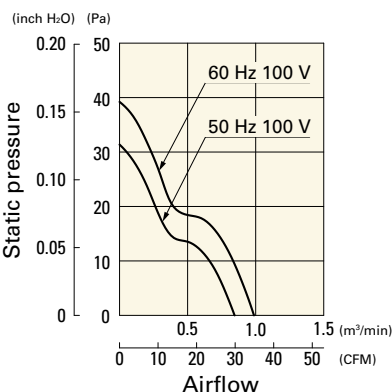


with Sensor

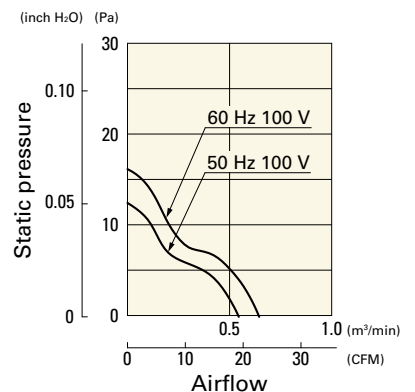
109S491, 109S493, 109S492, 109S494



109S495

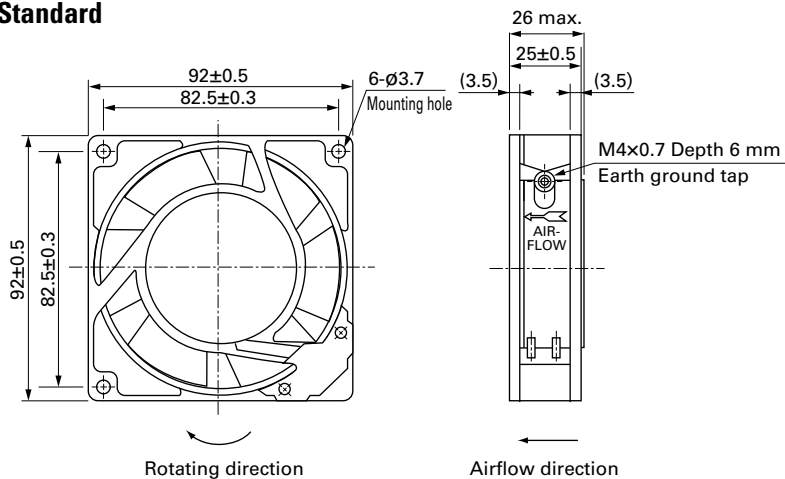


109S496



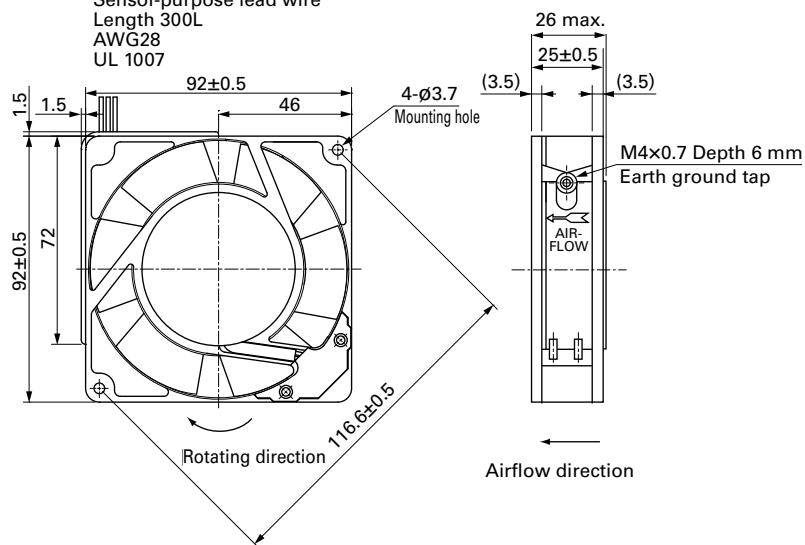
AC
AC Fan 92 mm sq.

Standard



with Sensor

Sensor-purpose lead wire
Length 300L
AWG28
UL 1007



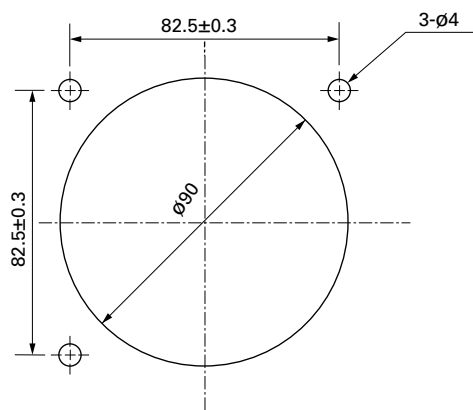
AC

AC Fan 92 mm sq.

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

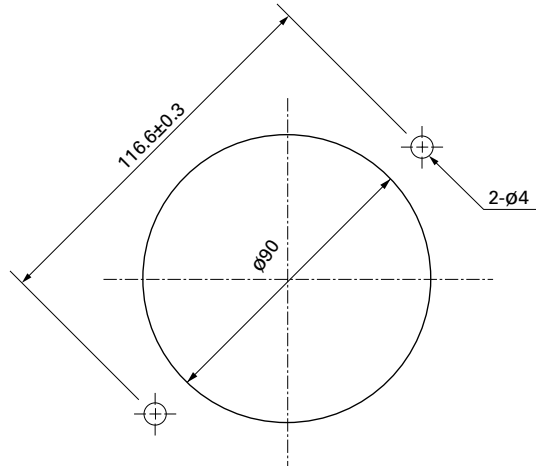
Standard

Inlet side, Outlet side



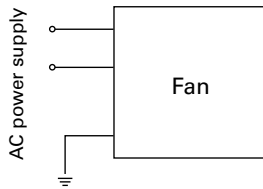
with Sensor

Inlet side, Outlet side



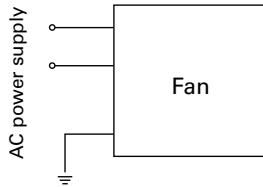
Connection Schematic

Standard

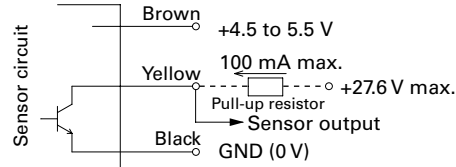


with Sensor

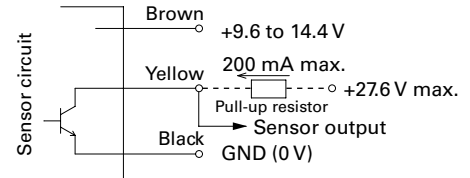
For fan power supply



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. 598

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

Resin finger guards

page: p. 605

Model no.: 109-1001G

Resin filter kits

page: p. 606

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

Plug cord

page: p. 609 to 610

PSE compatible models
Model no.: 489-016-L10, 489-016-L21
UL/CSA certified models
Model no.: 489-047-L10, 489-047-L21



120×120×25 mm

San Ace 120


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)
Expected life at 40°C is for reference only.
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) 50/60 Hz 1500 VAC 1 minute (between AC input terminal and frame)
50/60 Hz 1000 VAC 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 370 g/390 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 [m³/min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
109S085	100	50/60	13.5/12	0.16/0.14	0.19/0.17	2500/2900	1.95/2.3 68.9/81.3	48 /51.9 0.193/0.207	38/41	-30 to +60	25000/60°C (56000/40°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			9.5/8.5	0.11							0.11/0.1	2200/2350	1.7 /1.8 60.1/63.6	29.4/26.5 0.118/0.106	34/35
109S083	115		0.1		0.1 /0.09						
109S082	200		0.07		0.07/0.06						
109S089	230		0.06		0.06/0.05						
109S086*	100		12/10		0.14/0.12	0.15/0.13	1400/1600	1.1 /1.25 38.9/44.2	14.7/18.6 0.059/0.075			24/27

*These are low-speed models.

with Sensor

For sensor specifications, please refer to p. 622. 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. 109S485-20

For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109S485-30

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]
109S485	100	50/60	13.5/12	0.16/0.14	0.19/0.17	2500/2900	1.95/2.3 68.9/81.3	48 /51.9 0.193/0.207	38/41	-10 to +60	25000/60°C (56000/40°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	0.15/0.13	1400/1600	1.1 /1.25 38.9/44.2	14.7/18.6 0.059/0.075	24/27		

*These are low-speed models.

Set Models PSE (Japanese safety standard) compatible

A set of a fan, finger guard, plug cord (PSE compatible), and screws. For details, please refer to p. 674.

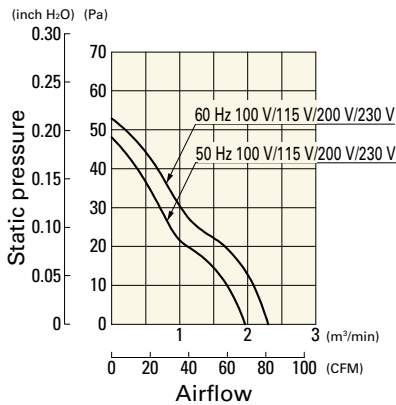
Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs)
ST1-109S085	109S085	100 V		489-016-L10*	109-019E	M3×40 mm
ST1-109S084	109S084	115 V		489-016-L10*	109-019E	
ST1-109S088	109S088	200 V		489-016-L10*	109-019E	
ST1-109S087	109S087	230 V		489-016-L10*	109-019E	
ST1-109S081	109S081	100 V		489-016-L10*	109-019E	
ST1-109S083	109S083	115 V		489-016-L10*	109-019E	
ST1-109S082	109S082	200 V		489-016-L10*	109-019E	
ST1-109S089	109S089	230 V		489-016-L10*	109-019E	
ST1-109S086	109S086			489-016-L10*	109-019E	
ST1-109S485-20	109S485-20	100 V	○ (5 V)	489-016-L10*	109-019E	
ST1-109S485-30	109S485-30		○ (12 V)	489-016-L10*	109-019E	
ST1-109S484-20	109S484-20	115 V	○ (5 V)	489-016-L10*	109-019E	
ST1-109S484-30	109S484-30		○ (12 V)	489-016-L10*	109-019E	
ST1-109S488-20	109S488-20	200 V	○ (5 V)	489-016-L10*	109-019E	
ST1-109S488-30	109S488-30		○ (12 V)	489-016-L10*	109-019E	
ST1-109S487-20	109S487-20	230 V	○ (5 V)	489-016-L10*	109-019E	
ST1-109S487-30	109S487-30		○ (12 V)	489-016-L10*	109-019E	
ST1-109S486-20	109S486-20	100 V	○ (5 V)	489-016-L10*	109-019E	
ST1-109S486-30	109S486-30		○ (12 V)	489-016-L10*	109-019E	

* PSE compatible, but not UL compatible.

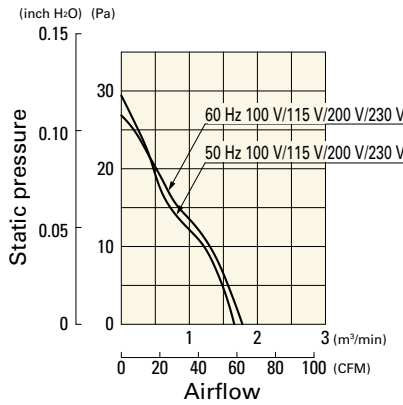
Airflow - Static Pressure Characteristics

Standard

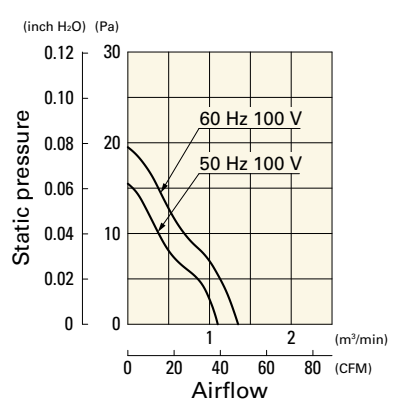
109S085, 109S084, 109S088, 109S087



109S081, 109S083, 109S082, 109S089

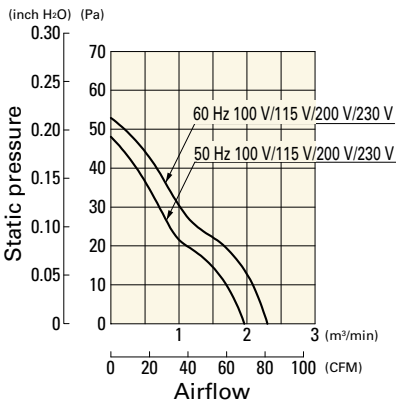


109S086

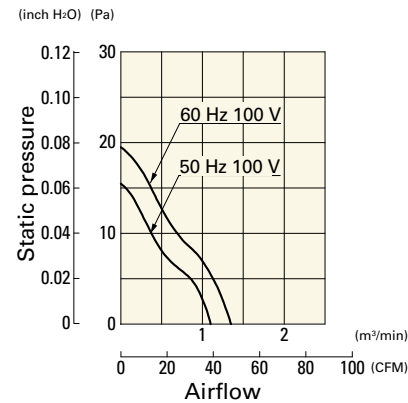


with Sensor

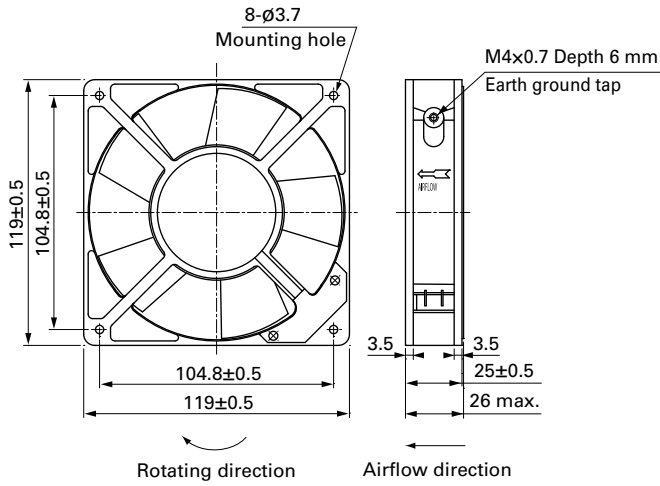
109S485, 109S484, 109S488, 109S487



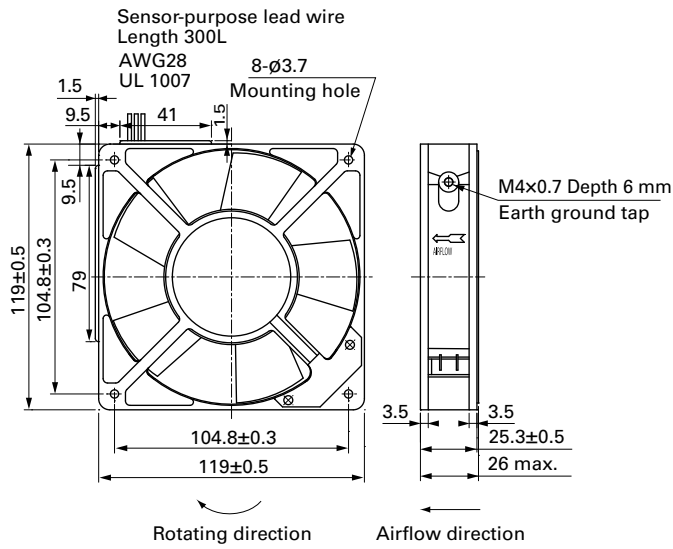
109S486



Standard



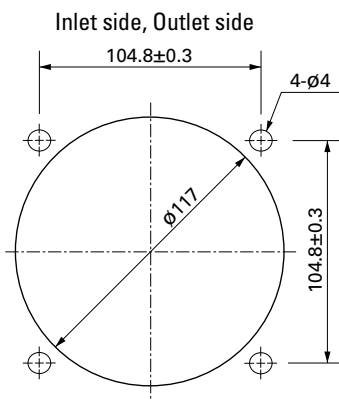
with Sensor When mounting the model with a sensor, please screw-mount through both flanges as it has a sensor box.



AC

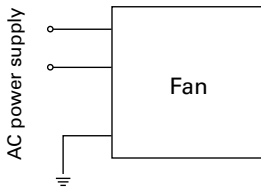
AC Fan 120 mm sq.

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



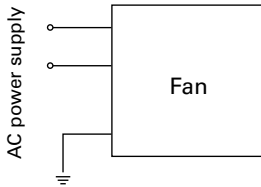
Connection Schematic

Standard

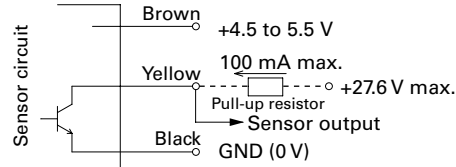


with Sensor

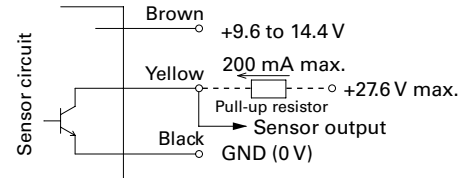
For fan power supply



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. 599

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

Resin finger guards

page: p. 605

Model no.: 109-1000G

Resin filter kits

page: p. 606

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

Plug cord

page: p. 609 to 610

PSE compatible models

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

UL/CSA certified models

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

AC

AC Fan 120 mm sq.



120×120×38 mm

San Ace 120


Certifications vary by model no. See the Specifications below.

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)
Expected life at 40°C is for reference only.
- Motor structure Shaded coil motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and G terminal)
- Dielectric strength (with sensor) 50/60 Hz 1500 VAC 1 minute (between AC input terminal and G terminal)
50/60 Hz 1000 VAC 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 550 g/580 g (with Sensor)

Specifications

Standard

Standard conformity: UL, CSA, TÜV, CE, UKCA, and PSE

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min ⁻¹]	Max. airflow [m³/min] [CFM]		Max. static pressure [Pa] [inchH₂O]		SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
109S075UL	100	50/60	18/16	0.24/0.21	0.32/0.28	2700/3100	2.5 /2.9	88.3/102.5	57.9/68.7	0.233/0.276	42/45	-30 to +60	25000/60°C (56000/40°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								
109S005UL	100		14/12	0.18/0.16	0.25/0.22	2700/3100	2.35/2.7	83 / 95.4	55.9/65.7	0.224/0.264	40/43		
109S024UL	115			0.16/0.14	0.21/0.18								
109S008UL	200			0.09/0.08	0.13/0.11								
109S025UL	230			0.08/0.07	0.11/0.09								
109S029UL	100		14/12	0.18/0.16	0.23/0.21	2450/2700	2.15/2.35	76 / 83	44.1/49.0	0.177/0.197	38/40		
109S013UL			13/11	0.16/0.14	0.16/0.15	1800/2000	1.55/1.75	54.8/ 60.8	23.5/26.4	0.094/0.106	30/32		
109S006UL *			7/7	0.1 /0.09	0.1 /0.09	1650/1700	1.45/1.5	51.2/ 53	17.6/17.6	0.071/0.071	28/28		
	115		10/10	0.13/0.11	0.13/0.11	1800/1900	1.56/1.64	55 / 57.9	20 /20.6	0.08 /0.083	30/31		
109S010UL *	200		7/7	0.05/0.04	0.05/0.04	1650/1700	1.45/1.5	51.2/ 53	17.6/17.6	0.071/0.071	28/28		
	240		11/11	0.06/0.05	0.06/0.05	1800/1950	1.58/1.68	55.8/ 59.3	20.6/21.6	0.083/0.087	30/32		

*These are low-speed models.

Standard conformity: PSE

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min ⁻¹]	Max. airflow [m³/min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]				
109S005	100	50/60	14/12	0.18/0.16	0.25/0.22	2700/3100	2.35/2.7 83 / 95.4	55.9/65.7 0.224/0.264	40/43	-30 to +60	25000/60°C (56000/40°C)				
109S024	120			0.16/0.14	0.21/0.18										
109S008	200			0.09/0.08	0.13/0.11										
109S025	230			0.08/0.07	0.11/0.09										
109S013	100		13/11	0.16/0.14	0.16/0.15	1800/2000	1.55/1.75 54.8/ 60.8	23.5/26.4 0.094/0.106	30/32						
109S006*			7/7	0.1 /0.09	0.1 /0.09	1650/1700	1.45/1.5 51.2/ 53	17.6/17.6 0.071/0.071	28/28						
109S010 *	200			0.05/0.04	0.05/0.04										
				0.05/0.04	0.05/0.04										

*These are low-speed models.

with Sensor

For sensor specifications, please refer to p. 622. 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. 109S405UL-20

For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109S405UL-30

Model no.	Rated voltage [V]	Frequency [Hz]	Input [W]	Current [A]	Locked rotor current [A]	Rated speed [min ⁻¹]	Max. airflow [m³/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	2700/3100	2.35/2.7 83 / 95.4	55.9/65.7 0.224/0.264	40/43	-10 to +60	25000/60°C (56000/40°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	2450/2700	2.15/2.35 76 / 83	44.1/49.0 0.177/0.197	38/40		
109S406UL *				0.09/0.08	0.1 /0.09	1650/1700	1.45/1.5 51 / 53	17.7/17.7 0.071/0.071	28/28		
109S475UL	100		18/16	0.24/0.21	0.32/0.28	2700/3100	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						

*These are low-speed models.

Set Models PSE (Japanese safety standard) compatible

A set of a fan, finger guard, plug cord (PSE compatible), and screws. For details, please refer to p. 674.

Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs)
ST1-109S075UL	109S075UL	100 V		489-037-L10*	109-019E	M3×55 mm
ST1-109S074UL	109S074UL	115 V		489-037-L10*	109-019E	
ST1-109S078UL	109S078UL	200 V		489-037-L10*	109-019E	
ST1-109S072UL	109S072UL	230 V		489-037-L10*	109-019E	
ST1-109S005	109S005	100 V		489-006-L10*	109-019E	
ST1-109S005UL	109S005UL			489-037-L10*	109-019E	
ST1-109S024	109S024	120 V		489-006-L10*	109-019E	
ST1-109S024UL	109S024UL	115 V		489-037-L10*	109-019E	
ST1-109S008	109S008	200 V		489-006-L10*	109-019E	
ST1-109S008UL	109S008UL			489-037-L10*	109-019E	
ST1-109S025	109S025	230 V		489-006-L10*	109-019E	
ST1-109S025UL	109S025UL			489-037-L10*	109-019E	
ST1-109S029UL	109S029UL	100 V		489-037-L10*	109-019E	
ST1-109S013	109S013			489-006-L10*	109-019E	
ST1-109S013UL	109S013UL			489-037-L10*	109-019E	
ST1-109S006	109S006			489-006-L10*	109-019E	
ST1-109S006UL	109S006UL	100 V 115 V		489-037-L10*	109-019E	
ST1-109S010	109S010	200 V		489-006-L10*	109-019E	
ST1-109S010UL	109S010UL	200 V 240 V		489-037-L10*	109-019E	
ST1-109S405UL-20	109S405UL-20	100 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S405UL-30	109S405UL-30		○ (12 V)	489-037-L10*	109-019E	
ST1-109S424UL-20	109S424UL-20	115 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S424UL-30	109S424UL-30		○ (12 V)	489-037-L10*	109-019E	
ST1-109S408UL-20	109S408UL-20	200 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S408UL-30	109S408UL-30		○ (12 V)	489-037-L10*	109-019E	
ST1-109S425UL-20	109S425UL-20	230 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S425UL-30	109S425UL-30		○ (12 V)	489-037-L10*	109-019E	
ST1-109S429UL-20	109S429UL-20	100 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S429UL-30	109S429UL-30		○ (12 V)	489-037-L10*	109-019E	
ST1-109S406UL-20	109S406UL-20	100 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S406UL-30	109S406UL-30		○ (12 V)	489-037-L10*	109-019E	
ST1-109S475UL-20	109S475UL-20	100 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S475UL-30	109S475UL-30		○ (12 V)	489-037-L10*	109-019E	
ST1-109S474UL-20	109S474UL-20	115 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S474UL-30	109S474UL-30		○ (12 V)	489-037-L10*	109-019E	
ST1-109S478UL-20	109S478UL-20	200 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S478UL-30	109S478UL-30		○ (12 V)	489-037-L10*	109-019E	
ST1-109S472UL-20	109S472UL-20	230 V	○ (5 V)	489-037-L10*	109-019E	
ST1-109S472UL-30	109S472UL-30		○ (12 V)	489-037-L10*	109-019E	

* PSE compatible, but not UL compatible.

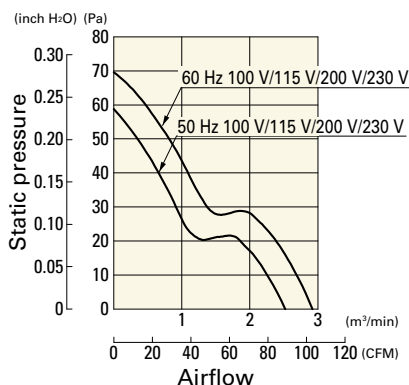
AC

AC Fan 120 mm sq.

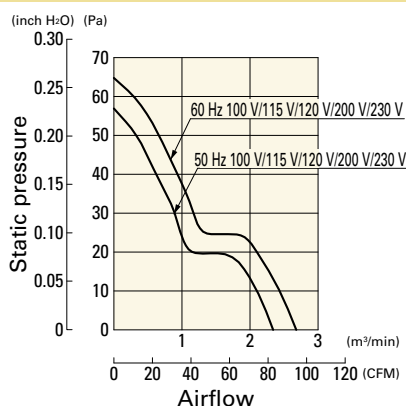
Airflow - Static Pressure Characteristics

Standard

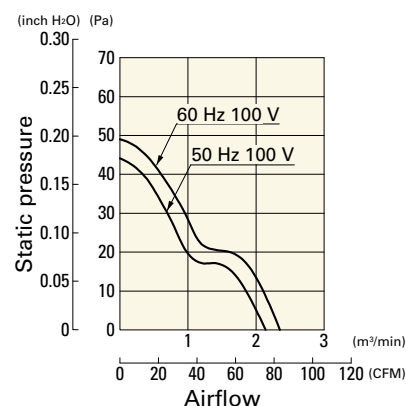
109S075UL, 109S074UL, 109S078UL, 109S072UL



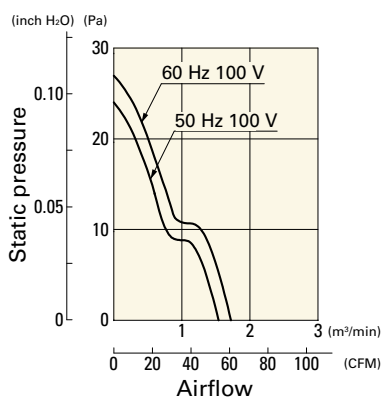
109S005, 109S005UL, 109S024, 109S024UL, 109S008, 109S008UL, 109S025, 109S025UL



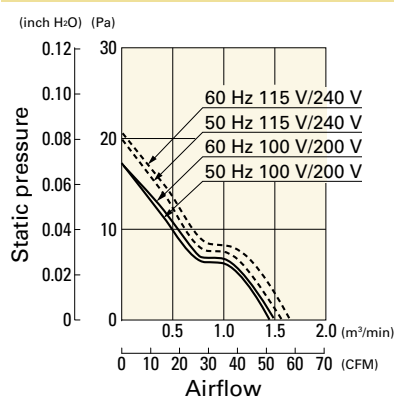
109S029UL



109S013, 109S013UL

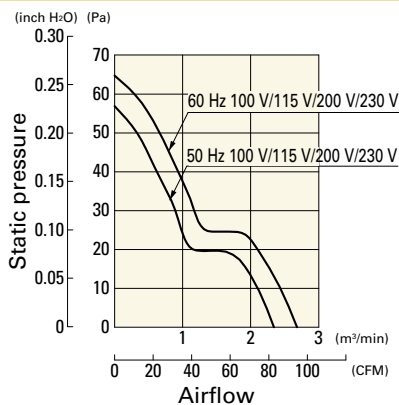


109S006, 109S006UL, 109S010, 109S010UL

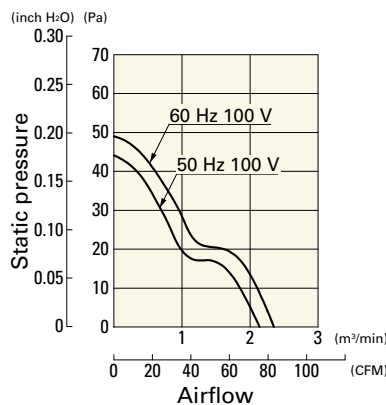


with Sensor

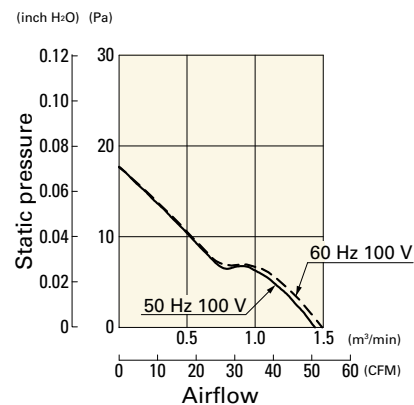
109S405UL, 109S424UL, 109S408UL, 109S425UL



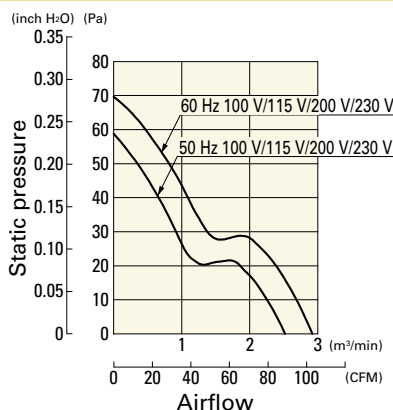
109S429UL



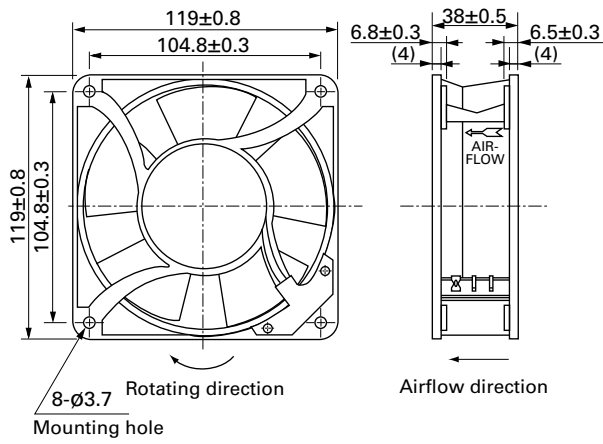
109S406UL



109S475UL, 109S474UL, 109S478UL, 109S472UL

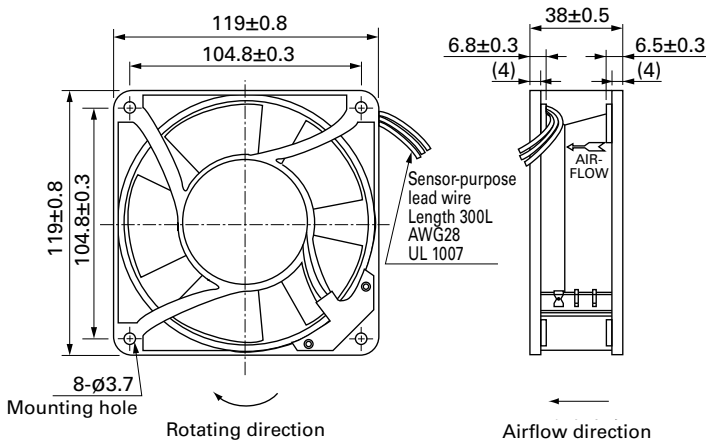


Standard

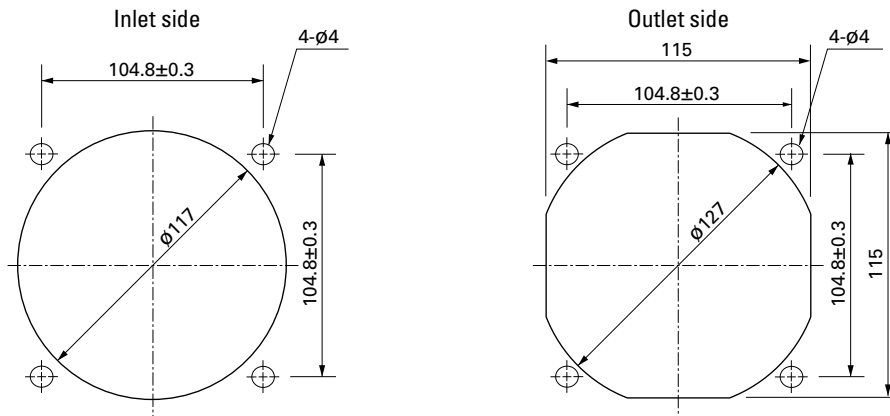


with Sensor

When mounting the model with a sensor, please screw-mount through both flanges as it has a sensor box.

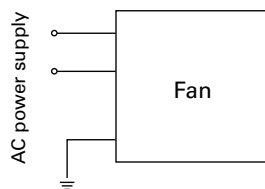


■ Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



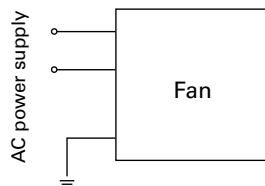
Connection Schematic

Standard

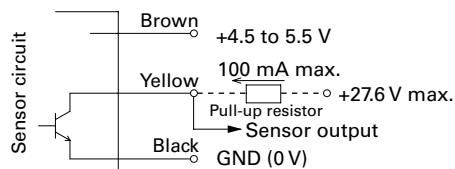


with Sensor

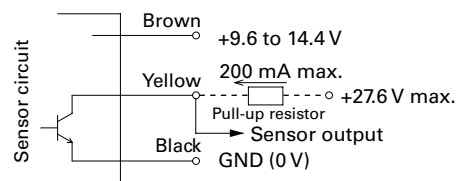
For fan power supply



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. 599

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

Resin finger guards

page: p. 605

Model no.: 109-1000G

Resin filter kits

page: p. 606

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

Filter kits

page: p. 608

Model no.: 109-018

Screen kits

page: p. 608

Model no.: 109-020

Plug cord

page: p. 609 to 610

PSE compatible models

- Dedicated models for fans whose model numbers not ending with "UL"
Model no.: 489-006-L10, 489-006-L21, 489-006-L35
- Dedicated models for fans whose model numbers ending with "UL"
Model no.: 489-037-L10, 489-037-L21, 489-037-L35

UL/CSA certified models

Model no.: 489-007-L10, 489-007-L21



160×160×51 mm

San Ace 160


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)
Expected life at 40°C is for reference only.
- Motor structure Capacitor motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) 50/60 Hz 1500 VAC 1 minute (between AC input terminal and frame)
50/60 Hz 1000 VAC 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 1100 g

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]
109-601	100	50/60	37.5/33	0.43/0.35	0.72/0.7	2850/3350	7.2/8.5 254.4/300.4	156.8/166.6 0.63/0.669	56/60	-30 to +60	25000/60°C (56000/40°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

For sensor specifications, please refer to p. 622. 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. 109-641-20

For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109-641-30

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]
109-641	100	50/60	37.5/33	0.43/0.35	0.72/0.7	2850/3350	7.2/8.5 254.4/300.4	156.8/166.6 0.63/0.669	56/60	-10 to +60	25000/60°C (56000/40°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						

Set Models

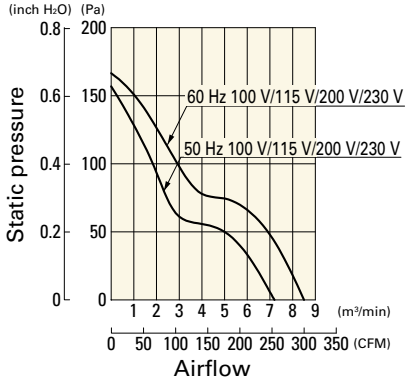
A set of a fan, finger guard, plug cord, and screws. For details, please refer to p. 674.

Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs)
ST1-109-601	109-601	100 V		489-1652-L10	109-619E	M5×20 mm
ST1-109-604	109-604	115 V		489-1652-L10	109-619E	
ST1-109-602	109-602	200 V		489-1652-L10	109-619E	
ST1-109-603	109-603	230 V		489-1652-L10	109-619E	
ST1-109-641-20	109-641-20	100 V	○ (5 V)	489-1652-L10	109-619E	
ST1-109-641-30	109-641-30		○ (12 V)	489-1652-L10	109-619E	
ST1-109-644-20	109-644-20		○ (5 V)	489-1652-L10	109-619E	
ST1-109-644-30	109-644-30		○ (12 V)	489-1652-L10	109-619E	
ST1-109-642-20	109-642-20	200 V	○ (5 V)	489-1652-L10	109-619E	
ST1-109-642-30	109-642-30		○ (12 V)	489-1652-L10	109-619E	
ST1-109-643-20	109-643-20	230 V	○ (5 V)	489-1652-L10	109-619E	
ST1-109-643-30	109-643-30		○ (12 V)	489-1652-L10	109-619E	

Airflow - Static Pressure Characteristics

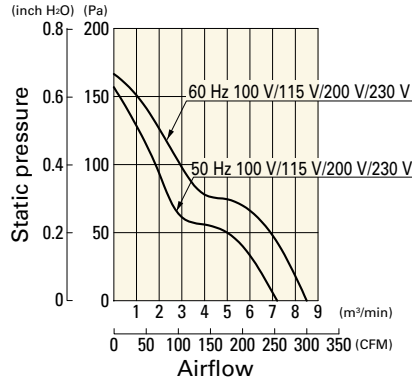
Standard

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



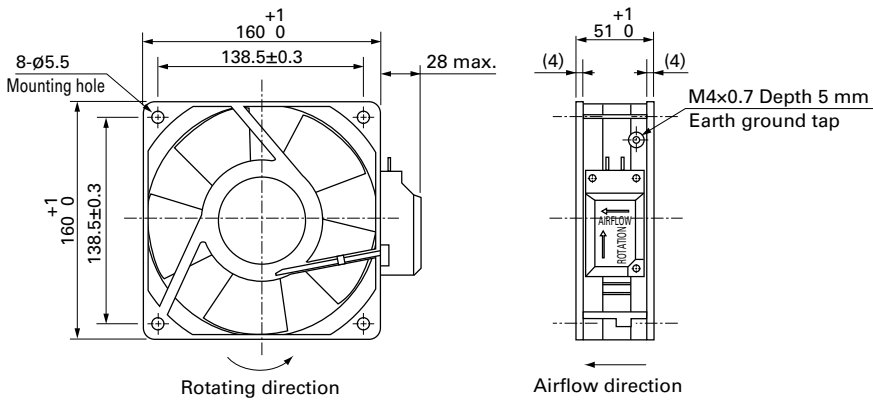
with Sensor

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

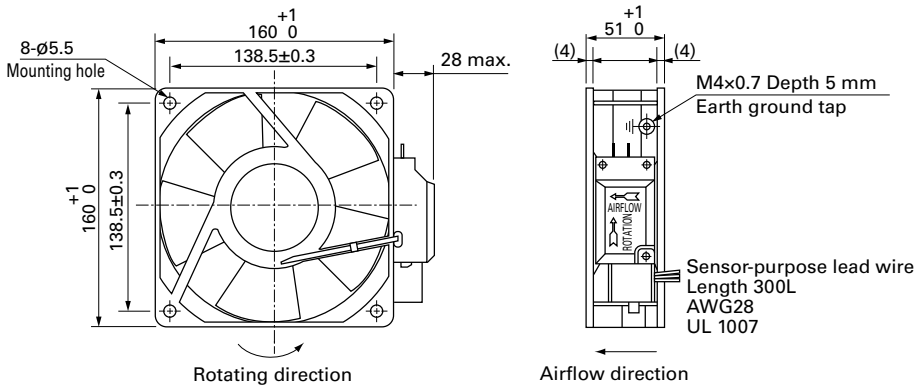


Dimensions (unit: mm)

Standard

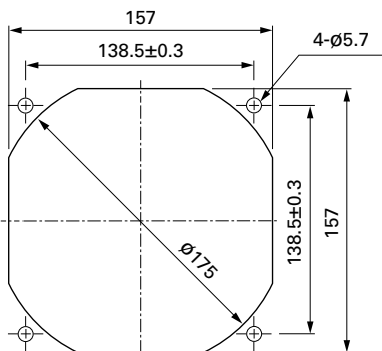


with Sensor



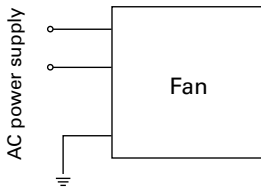
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



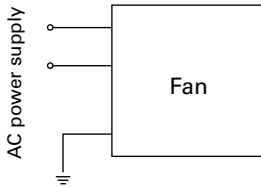
Connection Schematic

Standard

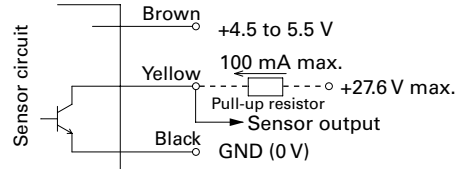


with Sensor

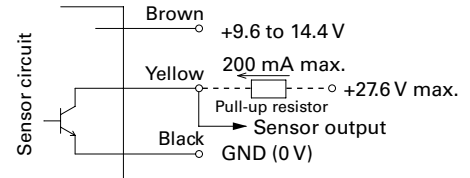
For fan power supply



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. 599

Model no.: 109-619E, 109-619H

Plug cord

page: p. 609 to 610

PSE compatible models

Model no.: 489-1619-L10, 489-1619-L21

UL/CSA certified models

Model no.: 489-084-L10, 489-084-L21

PSE compatible, UL/CSA [c-UL] certified models

Model no.: 489-1652-L10, 489-1652-L21

AC

AC Fan 160 mm sq.

Ø172×150×51 mm

San Ace 172

Sidecut type



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)
Expected life at 40°C is for reference only.
- Motor structure Capacitor motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 1000 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]
109S301	100	50/60	27/25	0.33/0.25	0.65/0.64	2900/3500	5.3/6.4 187.3/226.1	147/196 0.59/0.787	51/56	-30 to +60	25000/60°C (56000/40°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						

Set Models PSE (Japanese safety standard) compatible

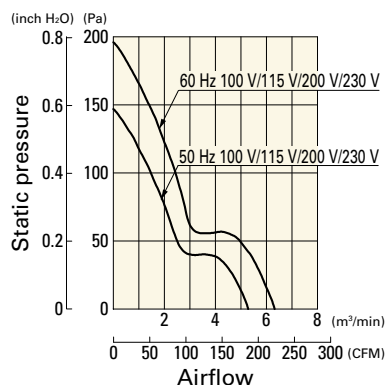
A set of a fan, finger guard, plug cord (PSE compatible), and screws. For details, please refer to p. 674.

Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs) ⁽²⁾
ST1-109S301	109S301	100 V		489-1619-L10 ⁽¹⁾	109-319E	M4×25 mm
ST1-109S304	109S304	115 V		489-1619-L10 ⁽¹⁾	109-319E	
ST1-109S302	109S302	200 V		489-1619-L10 ⁽¹⁾	109-319E	
ST1-109S303	109S303	230 V		489-1619-L10 ⁽¹⁾	109-319E	

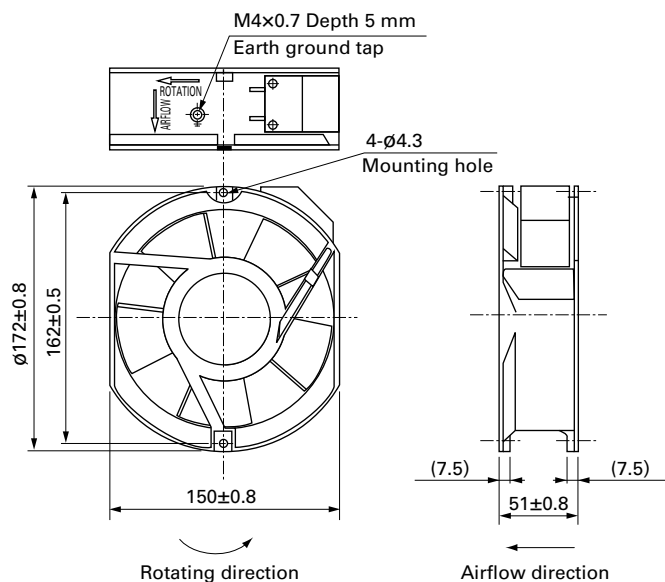
(1) PSE compatible, but not UL compatible.

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

Airflow - Static Pressure Characteristics

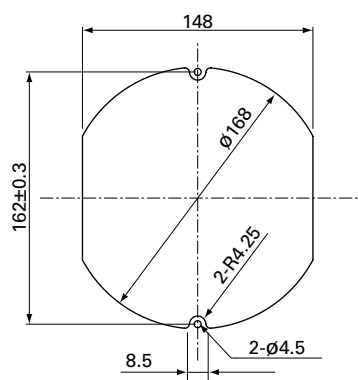
109S301, 109S304, 109S302, 109S303


■ Dimensions (unit: mm)

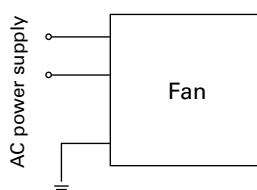


■ Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side



■ Connection Schematic



■ Options

Finger guards

page: p. 600

Model no.: 109-319J, 109-319E, 109-319H

Plug cord

page: p. 609 to 610

PSE compatible models
 Model no.: 489-1619-L10, 489-1619-L21
 UL/CSA certified models
 Model no.: 489-084-L10, 489-084-L21

AC

AC Fan $\phi 172$ mm

Ø172×51 mm

San Ace 172

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


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)
Expected life at 40°C is for reference only.
- Motor structure Capacitor motor
- Motor protection function Locked rotor burnout protection, Reverse polarity protection
For details, please refer to p. 616.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between input terminal and frame)
- Dielectric strength (with sensor) 50/60 Hz 1500 VAC 1 minute (between AC input terminal and frame)
50/60 Hz 1000 VAC 1 minute (between lead wire conductors and frame)
- Insulation resistance 10 MΩ min. at 500 VDC
- Sound pressure level (SPL) A-weighted 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 1000 g

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]
109-311	100	50/60	27/25	0.33/0.25	0.65/0.64	2900/3500	5.3/6.4 187.3/226.1	147/196 0.59/0.787	47/51	-30 to +60	25000/60°C (56000/40°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

For sensor specifications, please refer to p. 622. 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. 109-371-20

For a 12 V sensor power supply (ITEM-30), please append "-30" to the end of model number. E.g. 109-371-30

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]
109-371	100	50/60	27/25	0.33/0.25	0.65/0.64	2900/3500	5.3/6.4 187.3/226.1	147/196 0.59/0.787	47/51	-10 to +60	25000/60°C (56000/40°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						

Set Models PSE (Japanese safety standard) compatible

A set of a fan, finger guard, plug cord (PSE compatible), and screws. For details, please refer to p. 674.

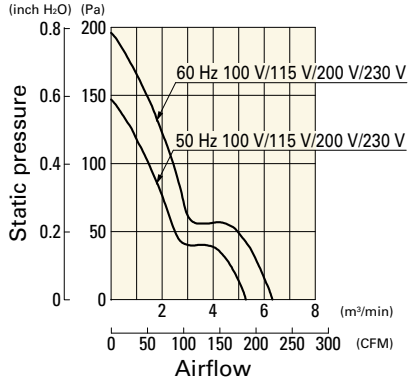
Order no.	Set items					
	Fan (1 pc)	Voltage	Low-speed sensor	Plug cord (1 pc)	Finger guard (1 pc)	Screws with hex nuts (4 pairs)
ST1-109-311	109-311	100 V		489-1619-L10*	109-319E	M4×25 mm
ST1-109-314	109-314	115 V		489-1619-L10*	109-319E	
ST1-109-312	109-312	200 V		489-1619-L10*	109-319E	
ST1-109-313	109-313	230 V		489-1619-L10*	109-319E	
ST1-109-371-20	109-371-20	100 V	○ (5 V)	489-1619-L10*	109-319E	
ST1-109-371-30	109-371-30		○ (12 V)	489-1619-L10*	109-319E	
ST1-109-374-20	109-374-20	115 V	○ (5 V)	489-1619-L10*	109-319E	
ST1-109-374-30	109-374-30		○ (12 V)	489-1619-L10*	109-319E	
ST1-109-372-20	109-372-20	200 V	○ (5 V)	489-1619-L10*	109-319E	
ST1-109-372-30	109-372-30		○ (12 V)	489-1619-L10*	109-319E	
ST1-109-373-20	109-373-20	230 V	○ (5 V)	489-1619-L10*	109-319E	
ST1-109-373-30	109-373-30		○ (12 V)	489-1619-L10*	109-319E	

* PSE compatible, but not UL compatible.

Airflow - Static Pressure Characteristics

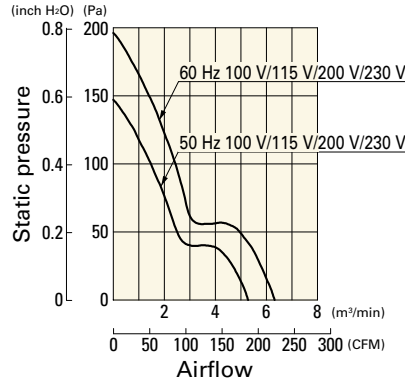
Standard

109-311, 109-314, 109-312, 109-313



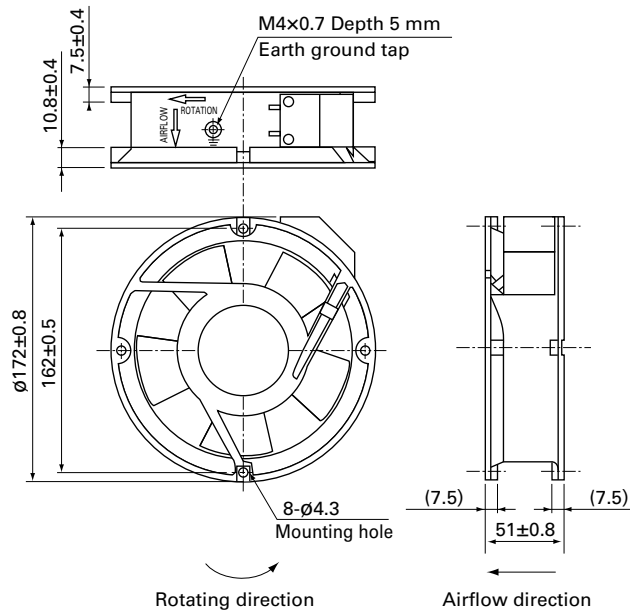
with Sensor

109-371, 109-374, 109-372, 109-373

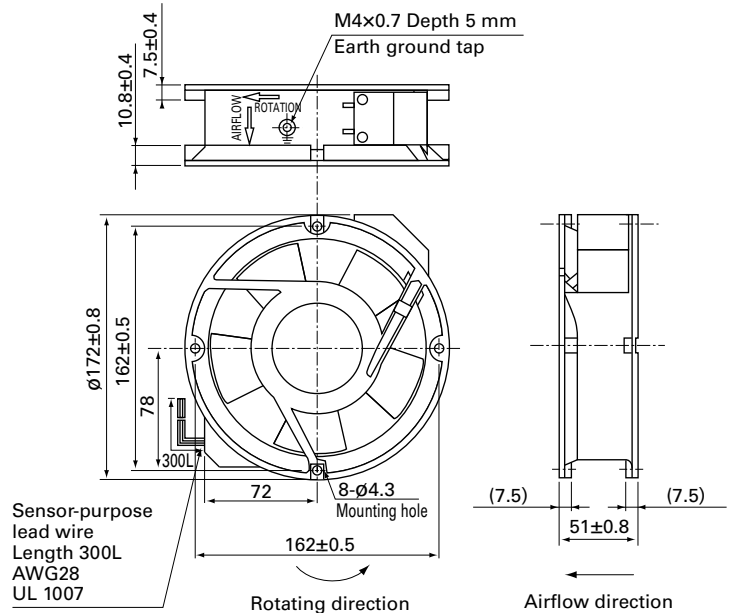


Dimensions (unit: mm)

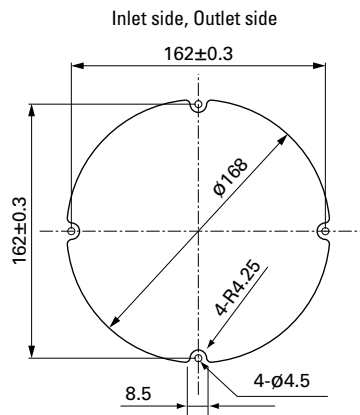
Standard



with Sensor



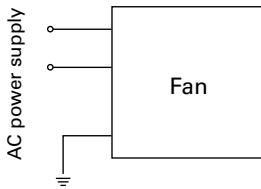
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)



AC
AC Fan $\varnothing$ 172 mm

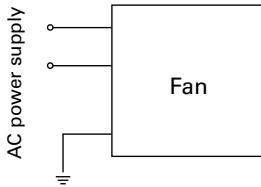
Connection Schematic

Standard

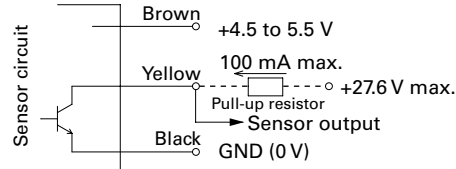


with Sensor

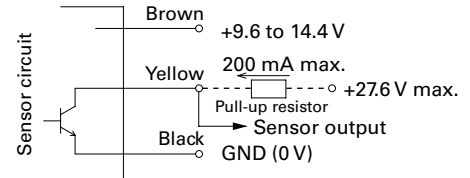
For fan power supply



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. 600

Model no.: 109-319E, 109-319H, 109-1066

Plug cord

page: p. 609 to 610

PSE compatible models

Model no.: 489-1619-L10, 489-1619-L21

UL/CSA certified models

Model no.: 489-084-L10, 489-084-L21

AC

AC Fan $\varnothing$ 172 mm