

92×92×38 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)
Expected life at 40°C is for reference only.
- Motor structure Brushless DC motor
- Motor protection function Locked rotor burnout protection
For details, please refer to p. 599.
- 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 (between lead wire conductors and frame)
- 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 (90000/40°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 (90000/40°C)
➤ 9AD0901M1H				0.06	3.0	3100	1.18 41.7	56 0.22	33		

Note 1: Sensor and control options are available for selection. Refer to the table on p. 641.

Note 2: The ➤ mark indicates Short Lead Time Service applicable models. See p. 654 for details.

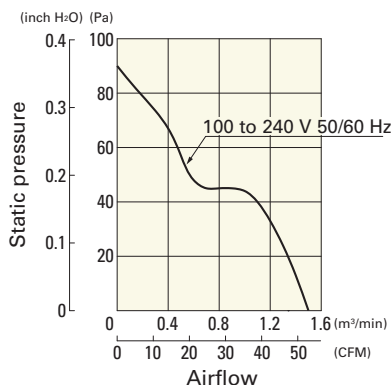
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 655.

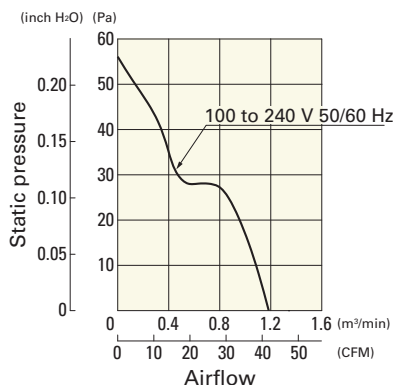
Order no.	Set items					
	Fan	Voltage	Low-speed sensor	Plug cord	Finger guards	Mounting screws
ST1-9AD0901H12	9AD0901H12	100 to 240 V		489-1635-L10	109-099E	M4×55 mm (4 screws)
ST1-9AD0901M12	9AD0901M12			489-1635-L10	109-099E	
ST1-9AD0901H1H	9AD0901H1H		○	489-1635-L10	109-099E	
ST1-9AD0901M1H	9AD0901M1H		○	489-1635-L10	109-099E	

Airflow - Static Pressure Characteristics

9AD0901H12, 9AD0901H1H

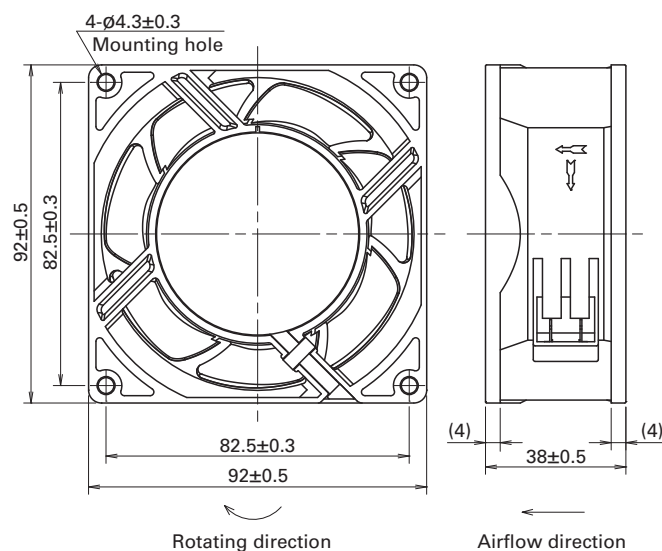


9AD0901M12, 9AD0901M1H

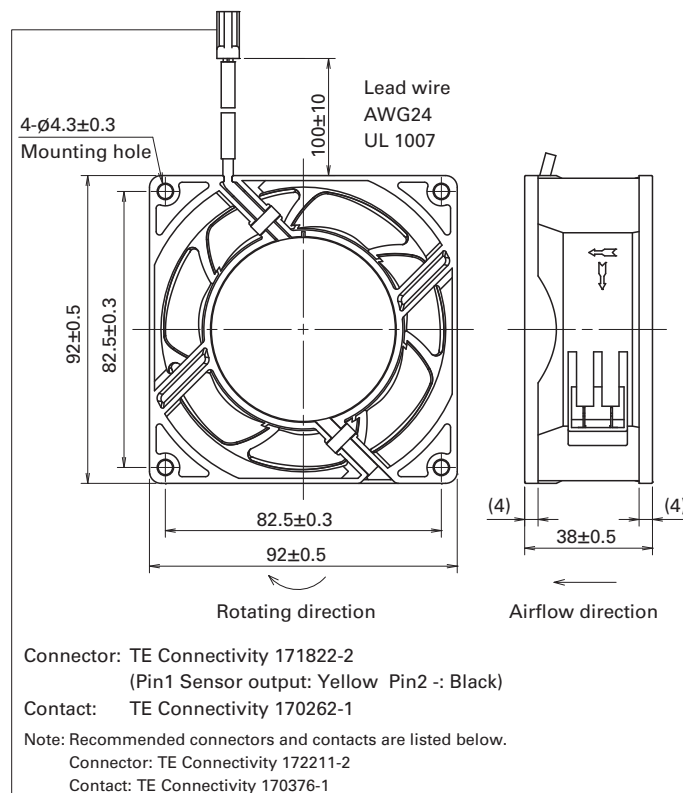


Dimensions (unit: mm) (With ribs)

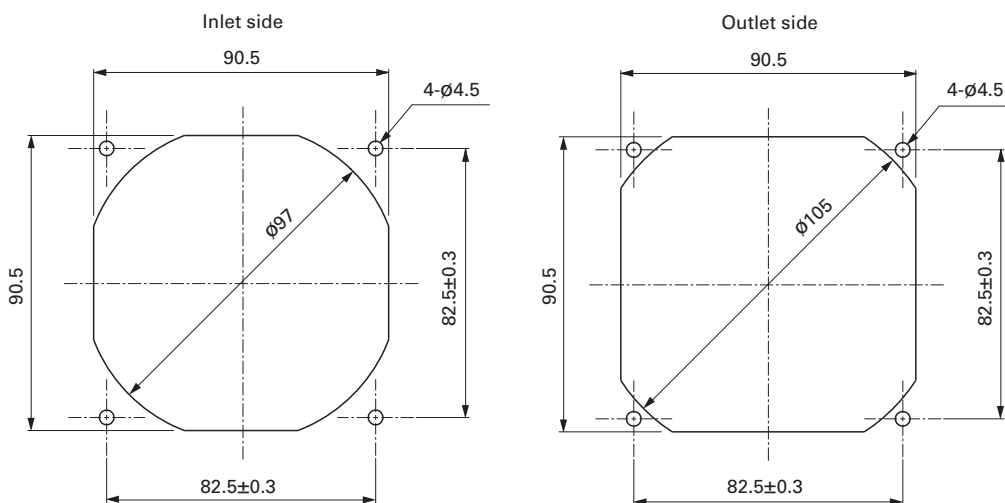
without Sensor



with Low-speed sensor

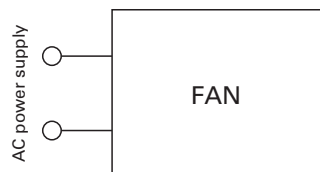


Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

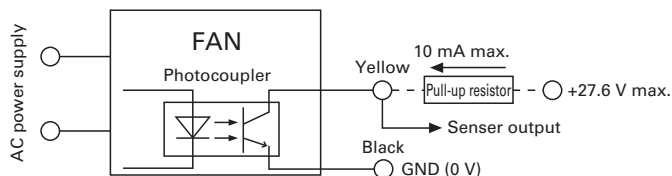


Wiring Diagram

without Sensor



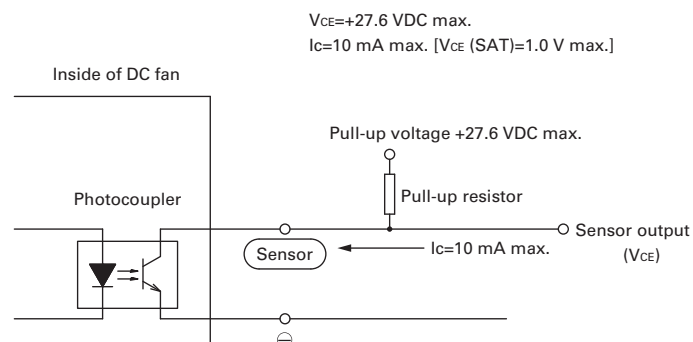
with Low-speed sensor



Specifications for Low-speed Sensors

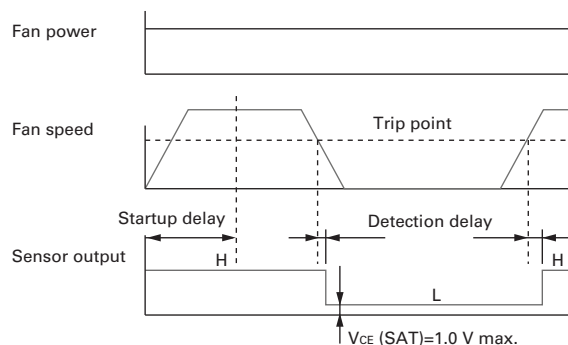
Typical standard model: 9AD0901H1H

Output circuit: Open collector

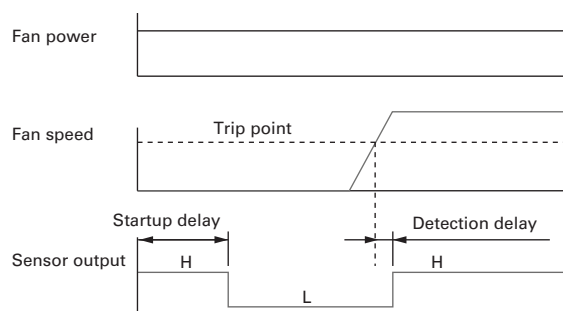


Sensor scheme

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: $18 \pm 3 \text{ s}$
 Detection delay: 3 s max.
 Trip point: 1700 min^{-1}

9AD0901M1H

Startup delay: $36 \pm 3 \text{ s}$
 Detection delay: 3 s max.
 Trip point: 850 min^{-1}

Options

Finger guards

page: p. 584

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

Resin finger guards

page: p. 591

Model no.: 109-1001G

Resin filter kits

page: p. 592

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

Plug cord

page: p. 595

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

Wiring harness for sensor

page: p. 595

Model no.: 489-1636

Features of the San Ace 92AD 9AD type ACDC Fan

Low power consumption

Long life

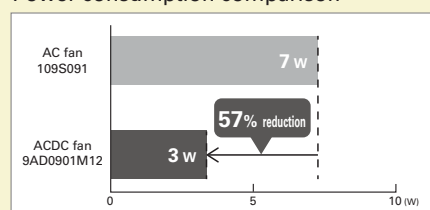
Wide voltage range

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

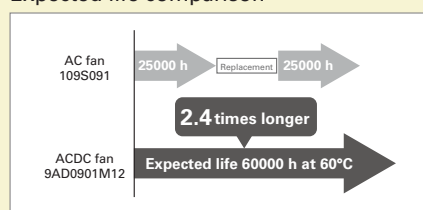
With AC input, the same level of energy saving and long life as a DC fan can be achieved.

The maintenance effort can be reduced too.

Power consumption comparison



Expected life comparison





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)
Expected life at 40°C is for reference only.
- Motor structure Brushless DC motor
- Motor protection function Locked rotor burnout protection
For details, please refer to p. 599.
- 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 (between lead wire conductors and frame)
- 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 (90000/40°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 (90000/40°C)

Note 1: Sensor and control options are available for selection. Refer to the table on p. 641.

Note 2: The » mark indicates Short Lead Time Service applicable models. See p. 654 for details.

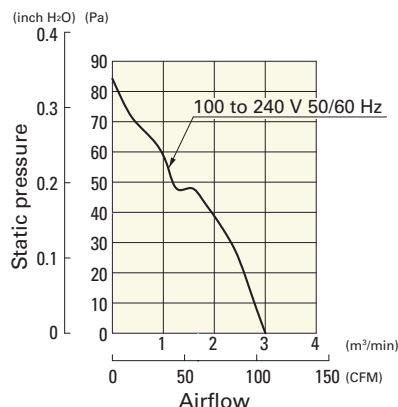
Set Models

Fan, finger guard, plug cord, screws, etc. can be purchased in one package. For details, please refer to p. 655.

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

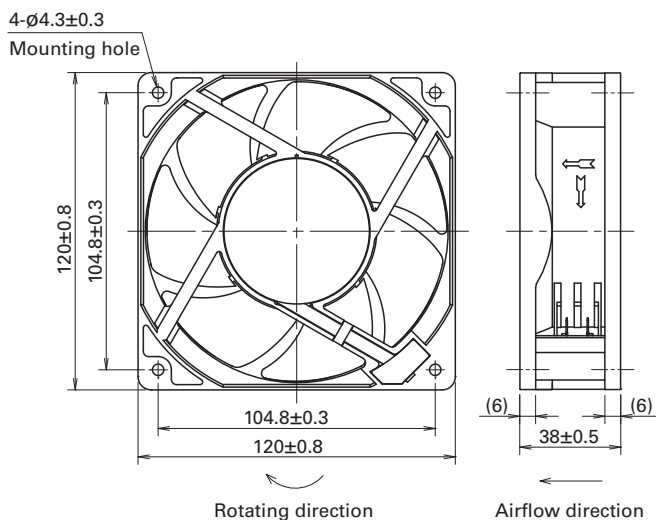
Airflow - Static Pressure Characteristics

9AD1201H12, 9AD1201H1H

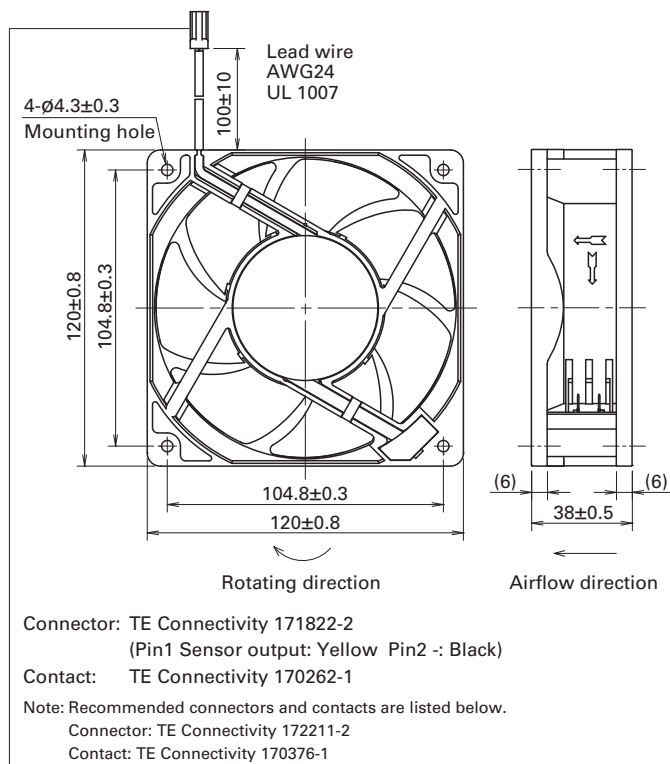


Dimensions (unit: mm) (With ribs)

without Sensor

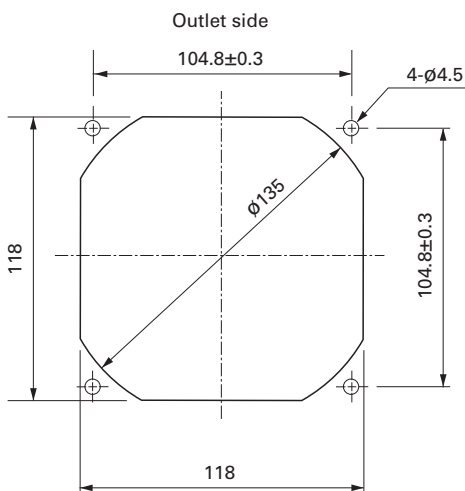
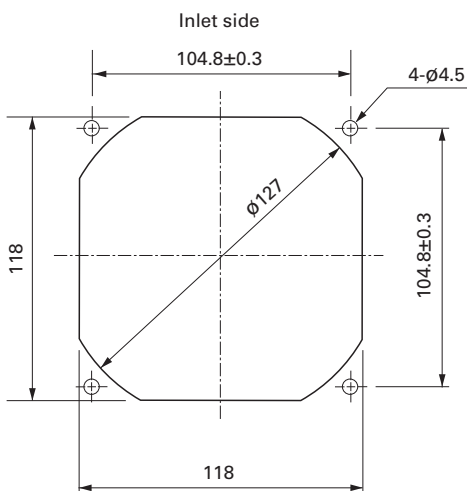


with Low-speed sensor



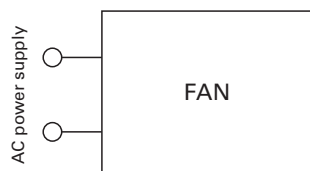
Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

ACDC Fan 120 mm sq.

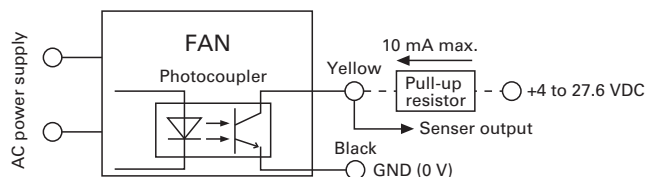


Wiring Diagram

without Sensor



with Low-speed sensor



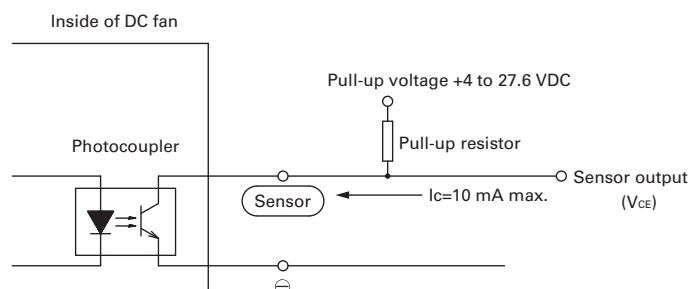
Specifications for Low-speed Sensors

Model No.: 9AD1201H1H

Output circuit: Open collector

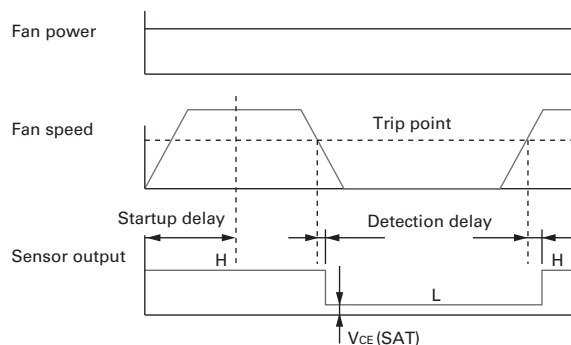
$V_{CE} = +27.6$ VDC max.

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

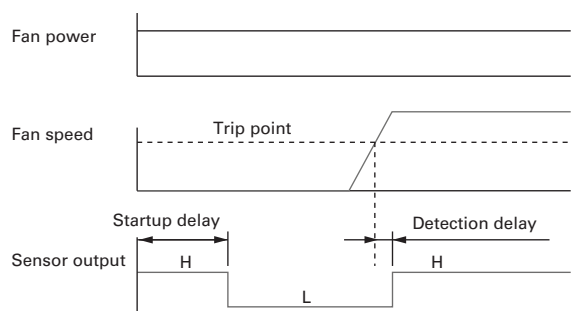


Sensor scheme

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. 585

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

Resin finger guards

page: p. 591

Model no.: 109-1000G

Resin filter kits

page: p. 592

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

Plug cord

page: p. 595

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

Wiring harness for sensor

page: p. 595

Model no.: 489-1636

Features of the San Ace 120AD 9AD type ACDC Fan

Low power consumption

Long life

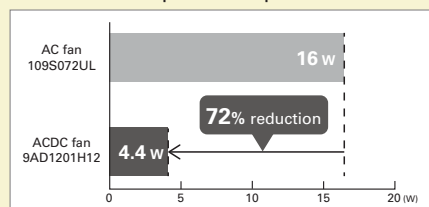
Wide voltage range

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

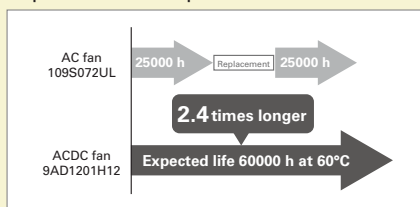
With AC input, the same level of energy saving and long life as a DC fan can be achieved.

The maintenance effort can be reduced too.

Power consumption comparison



Expected life comparison



Ø225×99 mm


San Ace 225AD 9ADTS type

General Specifications

- Material Motor case: Aluminum (Black coating), 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)
Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection
For details, please refer to p. 599.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire

AC power input	L: Orange N: Gray	Ground	Yellow / Green
+10 VDC output	Red ⊖Black	Sensor	Yellow
		Control	Brown
- Mass 1800 g

Specifications When the optional inlet nozzle (109-1134) is mounted.

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9ADTS11P0G001	115	90 to 132	100	2.23	155	3200	23.0 812	815 3.27	74	-20 to +60	40000/60°C (70000/40°C)
			20	0.3	10	1000	7.1 252	80 0.32	50		
9ADTS11P0F001			100	1.11	70	2450	17.6 621	480 1.93	68		
			20	0.3	10	1000	7.1 252	80 0.32	50		
9ADTS23P0G001	230	180 to 264	100	1.17	155	3200	23.0 812	815 3.27	74		
			20	0.2	10	1000	7.1 252	80 0.32	50		
9ADTS23P0F001			100	0.64	70	2450	17.6 621	480 1.93	68		
			20	0.2	10	1000	7.1 252	80 0.32	50		

* PWM input frequency is 1 kHz; models without specifications at 0% PWM duty cycle have zero fan speed at 0%.

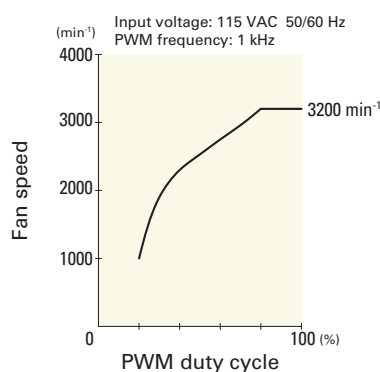
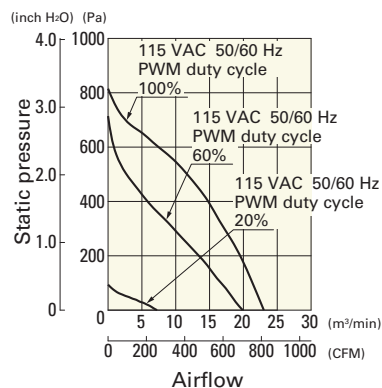
• AC power frequency: 50/60 Hz

Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

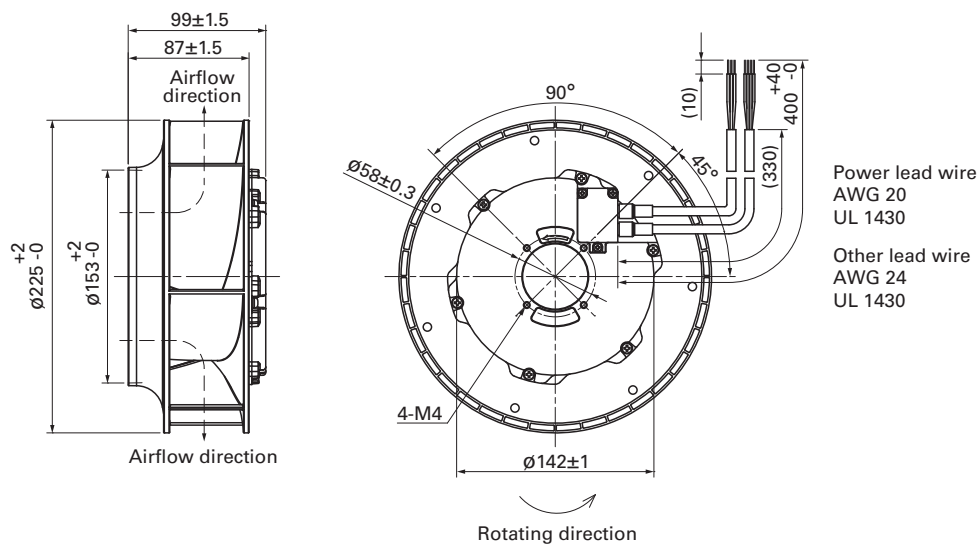
9ADTS11P0G001 With pulse sensor with PWM control function

PWM duty cycle

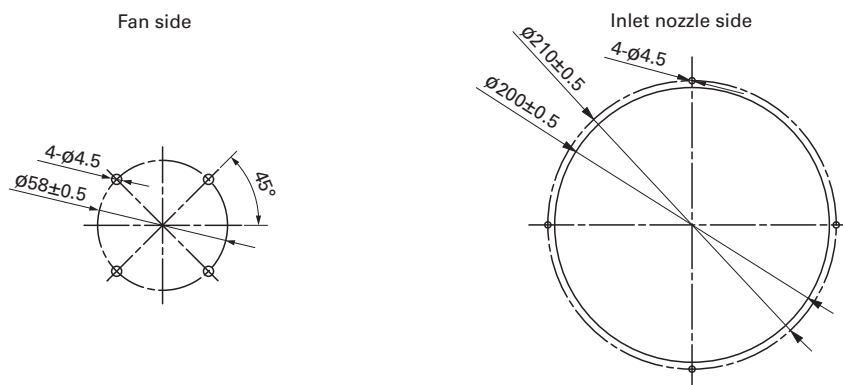
PWM duty - Speed characteristics example



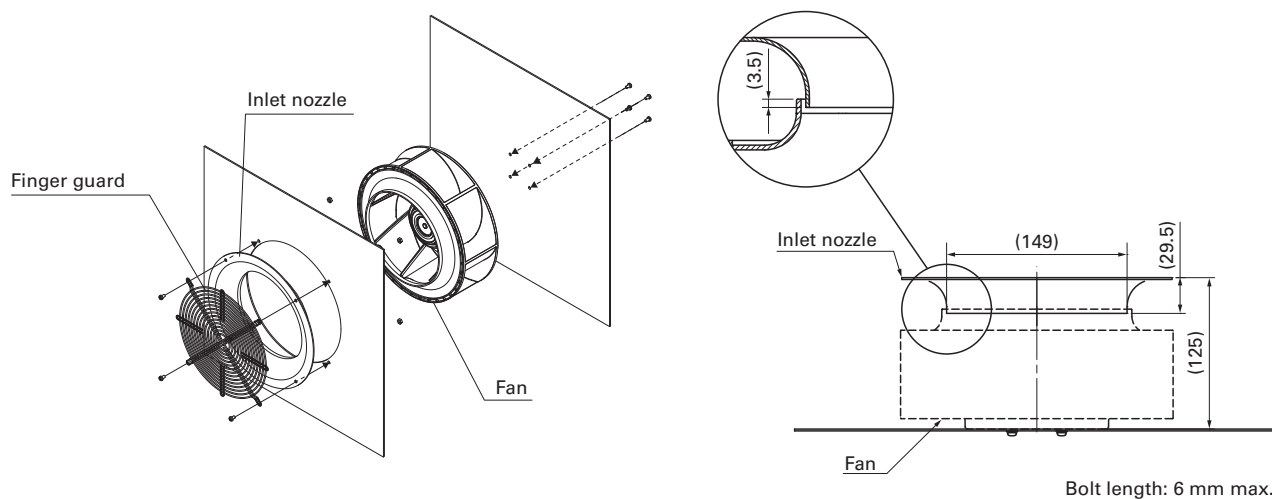
Dimensions (unit: mm)



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



Reference Diagram for Mounting



Options

Finger guards

page: p. 587

Model no.: 109-1137, 109-1137H

Inlet nozzle

page: p. 589

Model no.: 109-1134, 109-1134H

Ø225×99 mm

San Ace 225AD 9ADW1TS type



General Specifications

- Material Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage)
Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection
For details, please refer to p. 599.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and motor case)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire

AC power input	L: Orange N: Gray	Ground	Yellow / Green
+10 VDC output	Red ⊖Black	Sensor	Yellow
		Control	Brown
- Mass 1900 g
- Ingress protection IP56

Specifications When the optional inlet nozzle (109-1134H) is mounted.

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9ADW1TS11P0H001	115	90 to 132	100	2.06	140	3100	22.3 787	760 3.05	73	-20 to +60	40000/60°C (70000/40°C)
			20	0.3	11	1000	7.1 252	80 0.32	50		
9ADW1TS11P0M001			100	1.08	61	2350	16.9 597	440 1.77	67		
			20	0.3	11	1000	7.1 252	80 0.32	50		
9ADW1TS23P0H001	230	180 to 264	100	1.06	140	3100	22.3 787	760 3.05	73		
			20	0.2	11	1000	7.1 252	80 0.32	50		
9ADW1TS23P0M001			100	0.57	61	2350	16.9 597	440 1.77	67		
			20	0.2	11	1000	7.1 252	80 0.32	50		

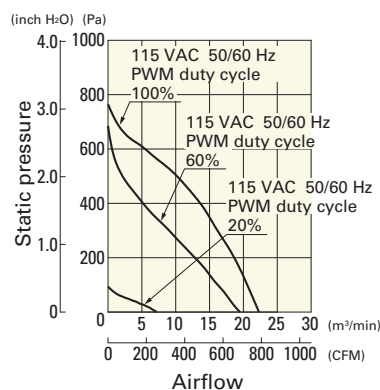
* PWM input frequency is 1 kHz; models without specifications at 0% PWM duty cycle have zero fan speed at 0%.

• AC power frequency: 50/60 Hz

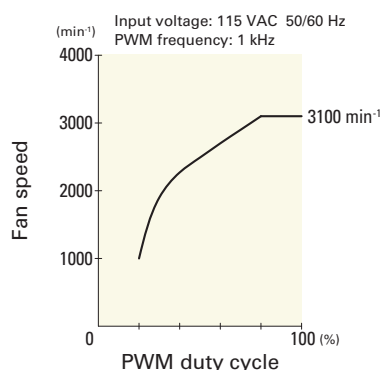
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9ADW1TS11P0H001 With pulse sensor with PWM control function

PWM duty cycle



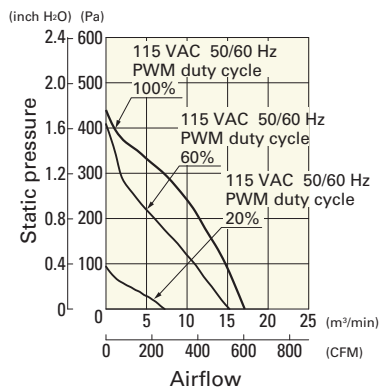
PWM duty - Speed characteristics example



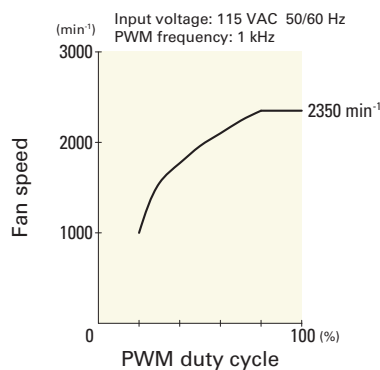
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9ADW1TS11P0M001 With pulse sensor with PWM control function

PWM duty cycle

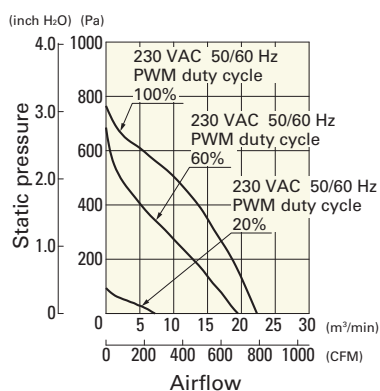


PWM duty - Speed characteristics example

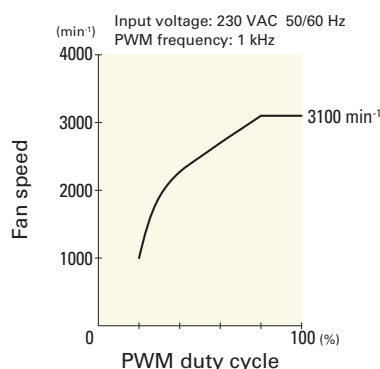


9ADW1TS23P0H001 With pulse sensor with PWM control function

PWM duty cycle

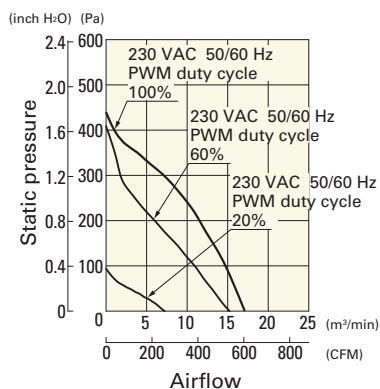


PWM duty - Speed characteristics example

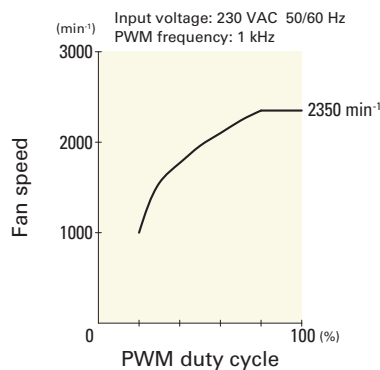


9ADW1TS23P0M001 With pulse sensor with PWM control function

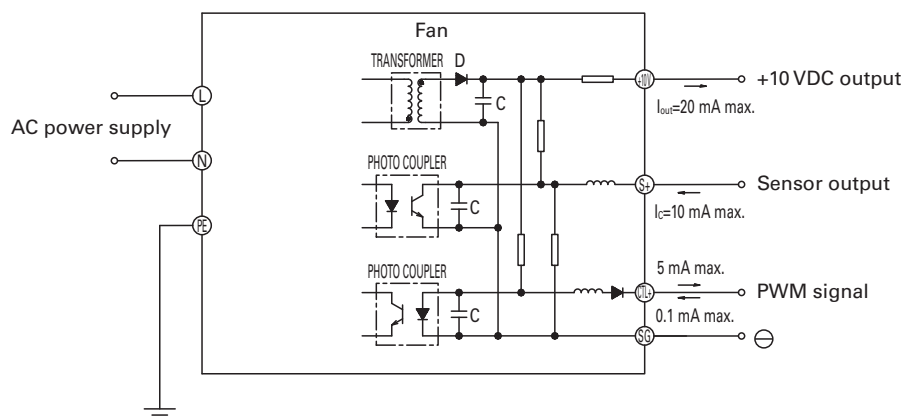
PWM duty cycle



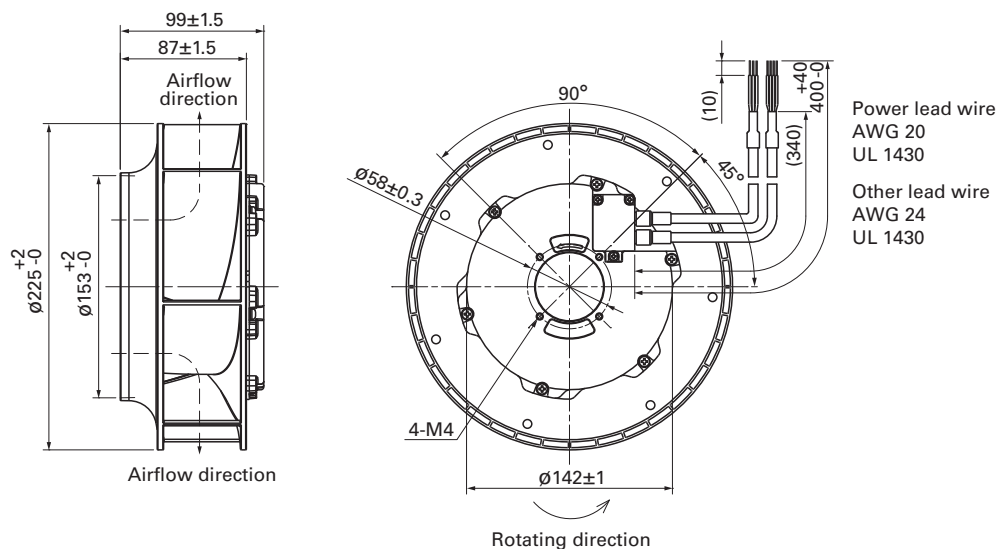
PWM duty - Speed characteristics example



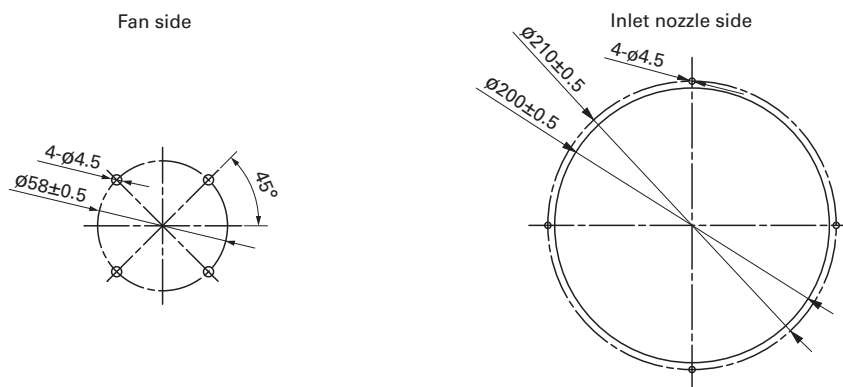
Wiring Diagram



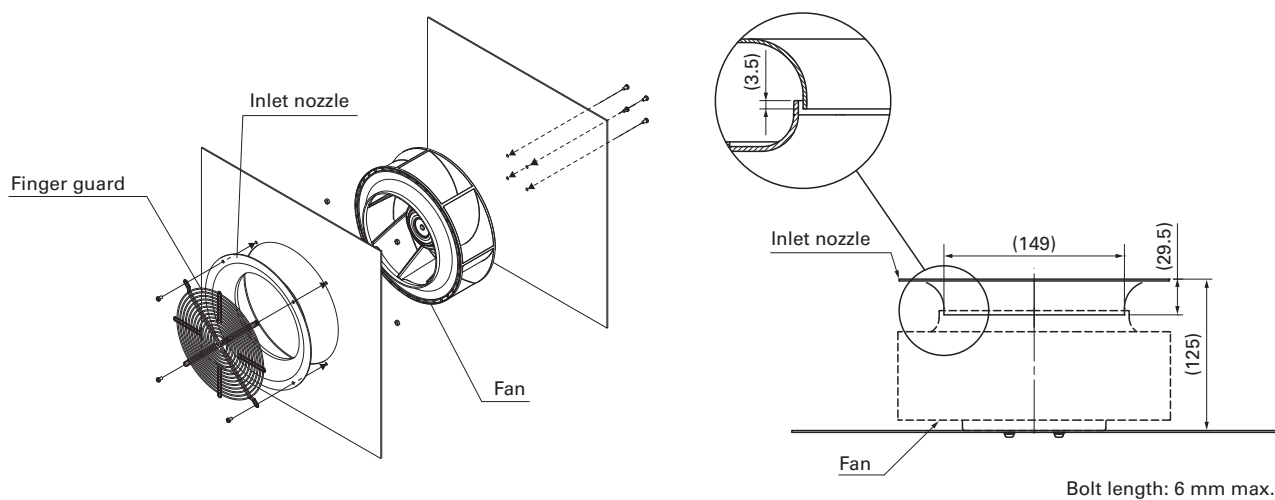
Dimensions (unit: mm)



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



Reference Diagram for Mounting



Options

Finger guards

page: p. 587

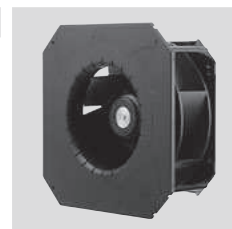
Model no.: 109-1137, 109-1137H

Inlet nozzle

page: p. 589

Model no.: 109-1134, 109-1134H

270×270×119 mm

San Ace 225AD 9ADB1TS type   


General Specifications

- Material Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
Bracket: Aluminum (Black coating), Plastic (Flammability: UL94V-0)
- 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 protection function Locked rotor burnout protection
For details, please refer to p. 599.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and bracket)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and bracket)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire

AC power input	L: Orange N: Gray	Ground	Yellow / Green
+10 VDC output	Red ⊖Black	Sensor	Yellow
		Control	Brown
- Mass 2500 g

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9ADB1TS11P0G001	115	90 to 132	100	2.23	155	3200	23.0 812	815 3.27	74	-20 to +60	40000/60°C (70000/40°C)
			20	0.3	10	1000	7.1 252	80 0.32	50		
9ADB1TS11P0F001			100	1.11	70	2450	17.6 621	480 1.93	68		
			20	0.3	10	1000	7.1 252	80 0.32	50		
9ADB1TS23P0G001	230	180 to 264	100	1.17	155	3200	23.0 812	815 3.27	74		
			20	0.2	10	1000	7.1 252	80 0.32	50		
9ADB1TS23P0F001			100	0.64	70	2450	17.6 621	480 1.93	68		
			20	0.2	10	1000	7.1 252	80 0.32	50		

* PWM input frequency is 1 kHz; models without specifications at 0% PWM duty cycle have zero fan speed at 0%.

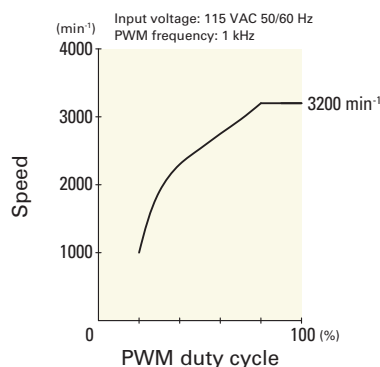
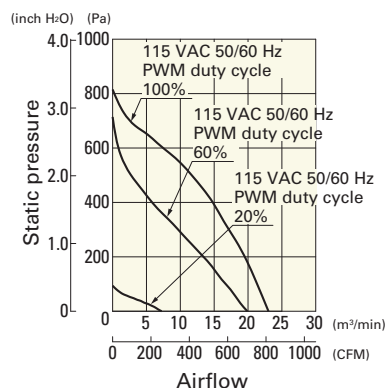
- AC power frequency: 50/60 Hz

Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9ADB1TS11P0G001 With pulse sensor with PWM control function

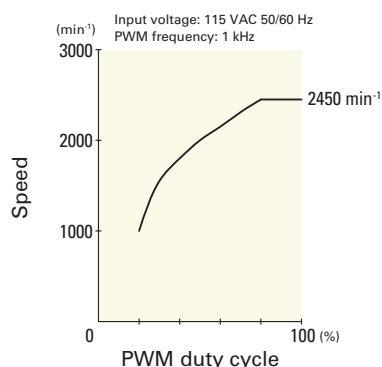
PWM duty cycle

PWM duty - Speed characteristics example



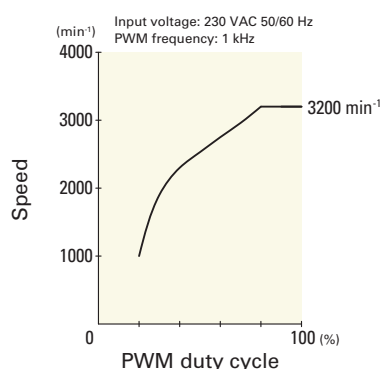
9ADB1TS11P0F001 With pulse sensor with PWM control function

PWM duty - Speed characteristics example



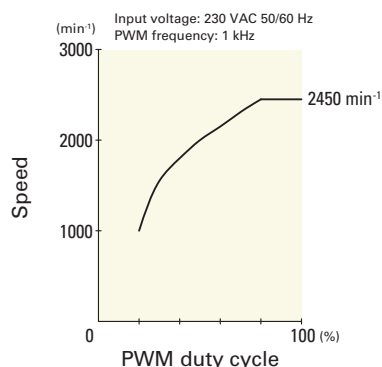
9ADB1TS23P0G001 With pulse sensor with PWM control function

PWM duty - Speed characteristics example

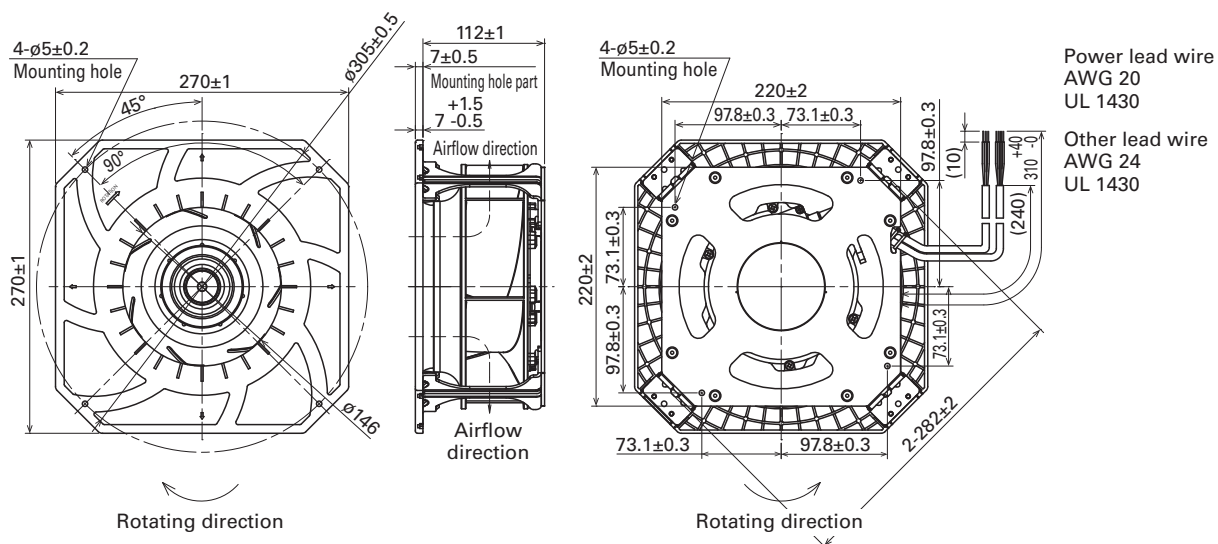


9ADB1TS23P0F001 With pulse sensor with PWM control function

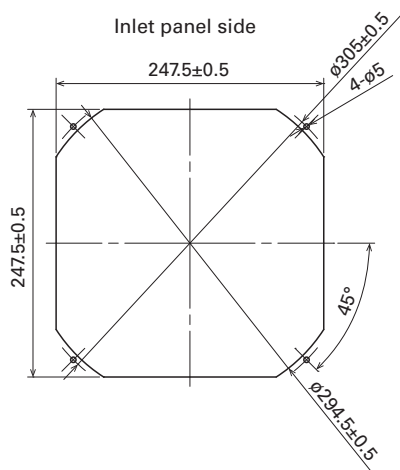
PWM duty - Speed characteristics example



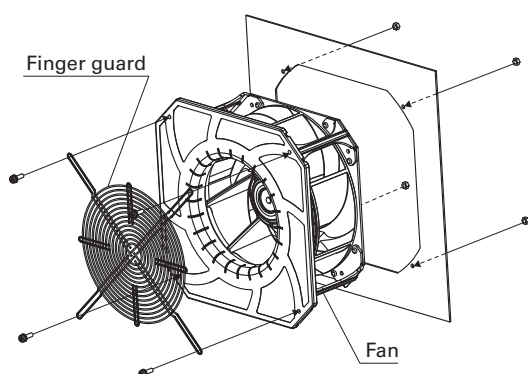
Dimensions (unit: mm)



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



Reference Diagram for Mounting



Options

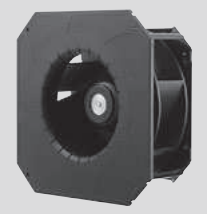
Finger guards

page: p. 588

Model no.: 109-1146, 109-1146H

270×270×119 mm

San Ace 225AD 9ADB1W1TS type



General Specifications

- Material Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
Bracket: Aluminum (Black coating), Plastic (Flammability: UL94V-0)
- Expected life See the table below. (L10 life: 90% survival rate for continuous operation in indoor free air at 60°C, rated voltage)
Expected life at 40°C is for reference only.
- Motor protection function Locked rotor burnout protection
For details, please refer to p. 599.
- Dielectric strength 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and bracket)
- Insulation resistance 10 MΩ or more with a 500 VDC megger (between lead wire conductors and bracket)
- Sound pressure level (SPL) At 1 m away from the air inlet
- Storage temperature -30 to +70°C (Non-condensing)
- Lead wire

AC power input	L: Orange N: Gray	Ground	Yellow / Green
+10 VDC output	Red ⊖Black	Sensor	Yellow
		Control	Brown
- Mass 2600 g
- Ingress protection IP56

Specifications

The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle [%]	Rated current [A]	Rated input [W]	Rated speed [min ⁻¹]	Max. airflow [m ³ /min] [CFM]	Max. static pressure [Pa] [inchH ₂ O]	SPL [dB (A)]	Operating temperature [°C]	Expected life [h]
9ADB1W1TS11P0H001	115	90 to 132	100	2.06	140	3100	22.3 787	760 3.05	73	-20 to +60	40000/60°C (70000/40°C)
			20	0.3	11	1000	7.1 252	80 0.32	50		
9ADB1W1TS11P0M001			100	1.08	61	2350	16.9 597	440 1.77	67		
			20	0.3	11	1000	7.1 252	80 0.32	50		
9ADB1W1TS23P0H001	230	180 to 264	100	1.06	140	3100	22.3 787	760 3.05	73		
			20	0.2	11	1000	7.1 252	80 0.32	50		
9ADB1W1TS23P0M001			100	0.57	61	2350	16.9 597	440 1.77	67		
			20	0.2	11	1000	7.1 252	80 0.32	50		

* PWM input frequency is 1 kHz; models without specifications at 0% PWM duty cycle have zero fan speed at 0%.

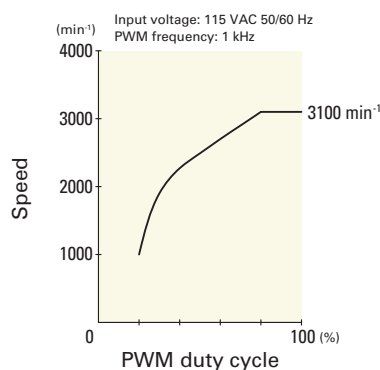
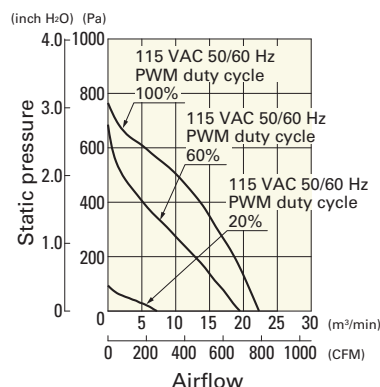
• AC power frequency: 50/60 Hz

Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9ADB1W1TS11P0H001 With pulse sensor with PWM control function

PWM duty cycle

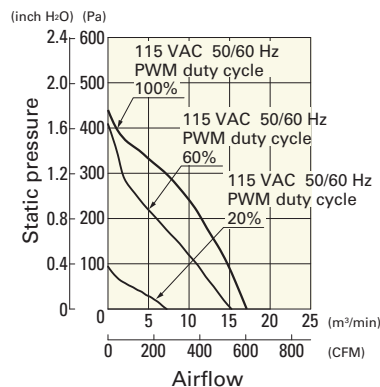
PWM duty - Speed characteristics example



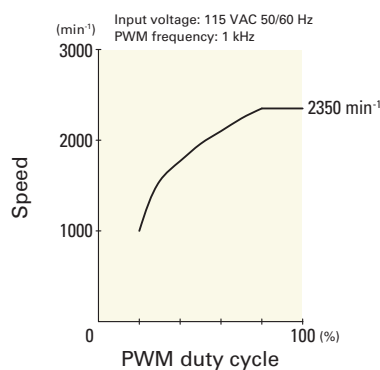
Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9ADB1W1TS11P0M001 With pulse sensor with PWM control function

PWM duty cycle

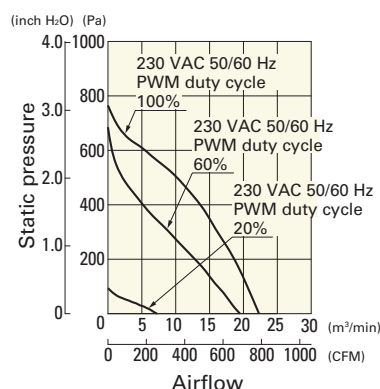


PWM duty - Speed characteristics example

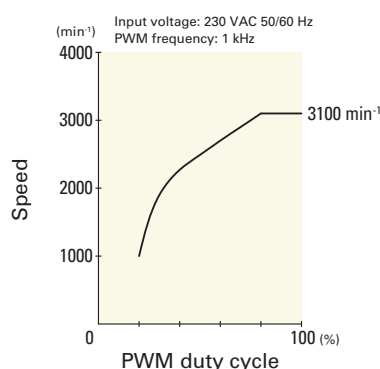


9ADB1W1TS23P0H001 With pulse sensor with PWM control function

PWM duty cycle

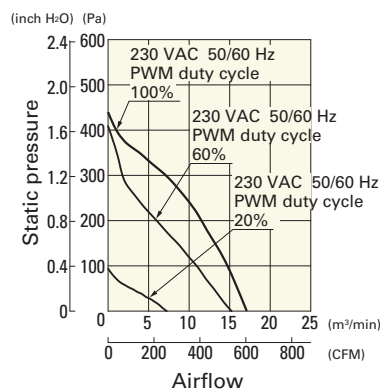


PWM duty - Speed characteristics example

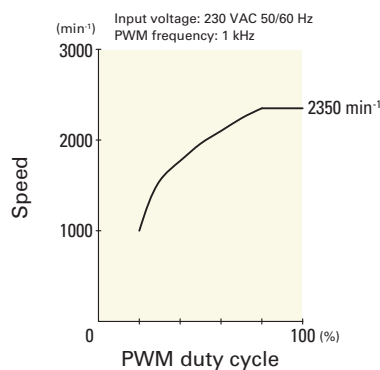


9ADB1W1TS23P0M001 With pulse sensor with PWM control function

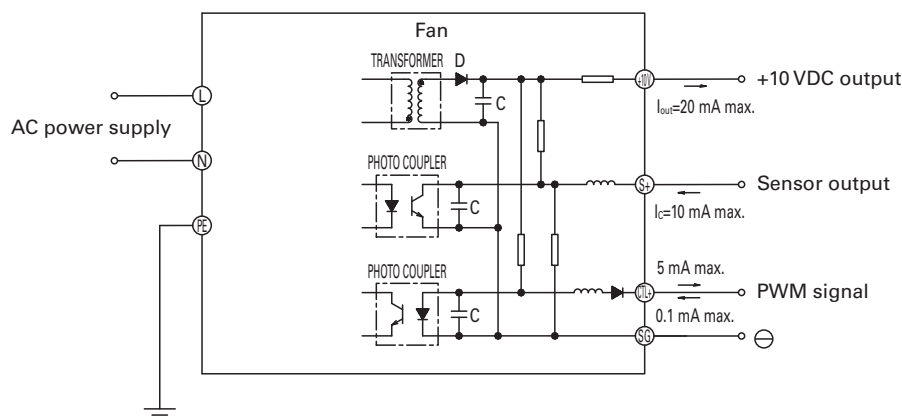
PWM duty cycle



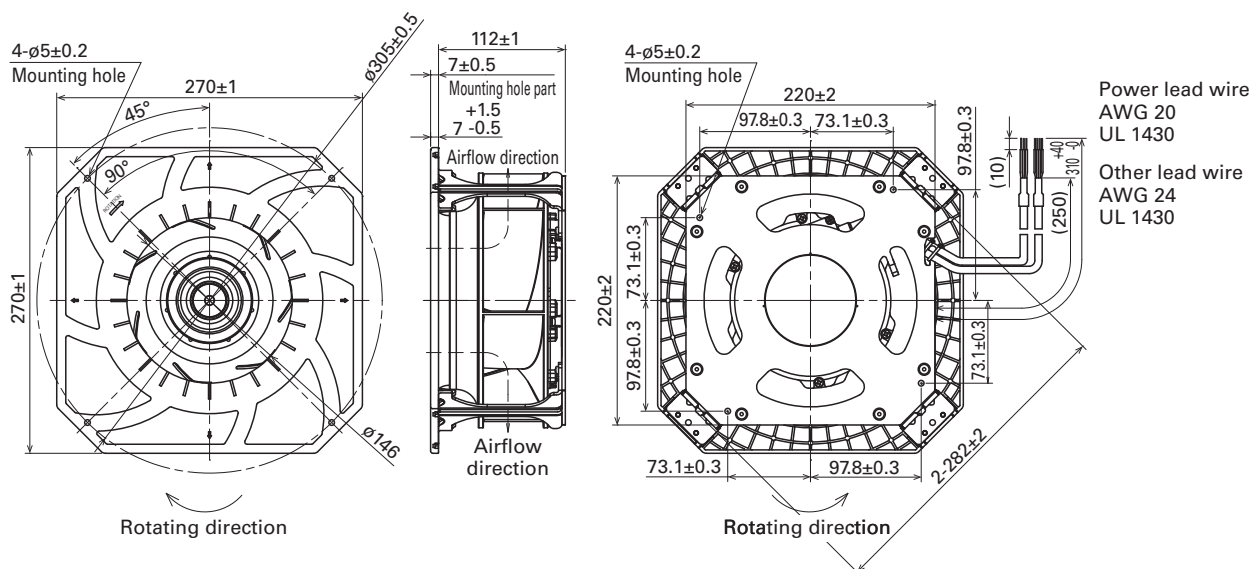
PWM duty - Speed characteristics example



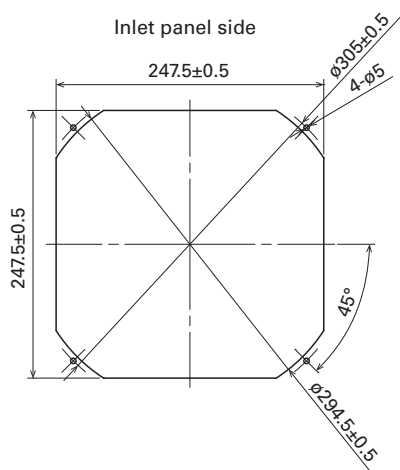
Wiring Diagram



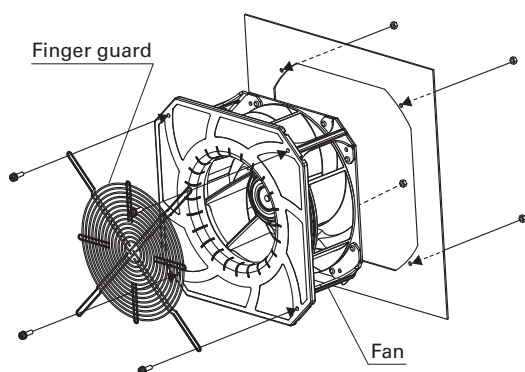
Dimensions (unit: mm)



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



Reference Diagram for Mounting



Options

Finger guards

page: p. 588

Model no.: 109-1146, 109-1146H

ACDC
ACDC Fan 270 mm sq.