Fan Motor Selector Chart

AC FAN MOTOR

	ASEN6051∗ 60 sq.×30t		ASEN8021∗ 80 sq.×25t		ASEN804∗∗∗ 80 sq.×38t			
Type	NEW 		NEW 		NEW 			
Rated voltage	100 V	115 V	100 V	115 V	100 V	115 V	200 V	230 V
Frequency	50/60 Hz		50/60 Hz		50/60 Hz			
Input power (W) $^{+10}_{-20\%}$	6/5	4.5/4	6/5	6/5	9/7			10/8
Rated current, max. (mA)	80/70	70/60	90/80	80/70	170/120	140/110	80/65	70/55
Locked current (mA)	85/75	70/60	95/85	85/75	180/160	160/140	90/80	80/70
Rotation speed, min. (r/min)	2,000/2,600		2,400/2,750		2,700/3,200			
Max. air flow, min. (m³/min)	0.2/0.26		0.74/0.85		0.75/0.9			
Max. static pressure, min. (Pa)	13.7/22.6		37.5/43		44.2/62.8			
Noise, average (dB(A))	28/29		28/33		33/38			
Operating voltage range (V)	Rated voltage ±10%		Rated voltage ±10%		Rated voltage ±10%			
Weight (kg)	0.14		0.22		0.3			
Page	14		15		16			

	ASEN902∗∗∗ 92 sq.×25t				ASEN102∗∗∗ 120 sq.×25t			
Type	NEW 				NEW 			
Rated voltage	100 V	115 V	200 V	230 V	100 V	115 V	200 V	230 V
Frequency	50/60 Hz				50/60 Hz			
Input power (W) $^{+10}_{-20\%}$	13/10				14/11			
Rated current, max. (mA)	190/150	170/130	100/80	90/70	220/180	190/160	110/90	100/90
Locked current (mA)	200/170	180/160	110/100	100/80	220/200	200/180	120/100	110/100
Rotation speed, min. (r/min)	2,600/3,100				2,300/2,700			
Max. air flow, min. (m³/min)	0.80/0.98				1.8/2.0			
Max. static pressure, min. (Pa)	43.1/60.8				41.2/41.2			
Noise, average (dB(A))	34/39				34/38			
Operating voltage range (V)	Rated voltage ±10%				Rated voltage ±10%			
Weight (kg)	0.3				0.36			
Page	17				18			

	ASEN104∗∗∗ 120 sq.×38t				ASEN5075∗ 150×172×38t			
Type	NEW 				NEW 			
Rated voltage	100 V	115 V	200 V	230 V	100 V	115 V	200 V	230 V
Frequency	50/60 Hz				50/60 Hz			
Input power (W) $^{+10}_{-20\%}$	15/14	15.5/14.5	15/13	15/14	37/33	35/32	34/33	35/35
Rated current, max. (mA)	270/230	250/210	140/120	120/100	470/400	380/360	230/210	190/180
Locked current (mA)	370/300	320/270	190/170	160/140	750/700	550/530	340/320	280/310
Rotation speed, min. (r/min)	2,600/2,900				2,700/3,200			
Max. air flow, min. (m³/min)	2.5/2.9				5.0/6.0			
Max. static pressure, min. (Pa)	64.7/76.4				157/215.8			
Noise, average (dB(A))	37/41				52/56			
Operating voltage range (V)	Rated voltage ±10%				Rated voltage ±10%			
Weight (kg)	0.55				0.8			
Page	19				20			

AC FAN MOTOR

Size	Specifications	Rotation speed	Voltage	Part number
60 sq.×30	Lead wire type	Standard speed	100V AC	ASEN60511
			115V AC	ASEN60512
80 sq.×25	Lead wire type	Standard speed	100V AC	ASEN80211
			115V AC	ASEN80212
80 sq.×38	Lead wire type	Standard speed	100V AC	ASEN80411
			115V AC	ASEN80412
			200V AC	ASEN80414
			230V AC	ASEN80416
	2-terminal type	Standard speed	100V AC	ASEN804519
			115V AC	ASEN804529
			200V AC	ASEN804549
			230V AC	ASEN804569
92 sq.×25	Lead wire type	Standard speed	100V AC	ASEN90211
			115V AC	ASEN90212
			200V AC	ASEN90214
			230V AC	ASEN90216
	2-terminal type	Standard speed	100V AC	ASEN902519
			115V AC	ASEN902529
			200V AC	ASEN902549
			230V AC	ASEN902569
120 sq.×25	Lead wire type	Standard speed	100V AC	ASEN10211
			115V AC	ASEN10212
			200V AC	ASEN10214
			230V AC	ASEN10216
	2-terminal type	Standard speed	100V AC	ASEN102519
			115V AC	ASEN102529
			200V AC	ASEN102549
			230V AC	ASEN102569
120 sq.×38	Lead wire type	Standard speed	100V AC	ASEN10411
			115V AC	ASEN10412
			200V AC	ASEN10414
			230V AC	ASEN10416
	2-terminal type	Standard speed	100V AC	ASEN104519
			115V AC	ASEN104529
			200V AC	ASEN104549
			230V AC	ASEN104569
150×172×38	2-terminal type	Standard speed	100V AC	ASEN50751
			115V AC	ASEN50752
			200V AC	ASEN50754
			230V AC	ASEN50756

Notes: 1. Although “standard speed” is used as the standard fan rotation speed, middle speed and low speed types can be special ordered.
2. 220 V AC and 240 V AC types can be special ordered.

ACCESSORIES

1. Plug Cord for AC Fan Motor

Product name	Specifications	Part number
Plug code for 2-terminal type	For inside of appliance, L = 1,000 mm	ASE51100
	Compliant with Electrical Appliance and Material Safety Law, L = 1,000 mm	ASE51107
	UL Standard, L = 1,000 mm	ASE51109

2. Fan Guard for DC and AC Fan Motor

Product name	Specifications	Part number
40 sq.	Recognized by UL/CSA	ASFN48001
60 sq.	Recognized by UL/CSA	ASFN68001
80 sq.	Recognized by UL/CSA	ASFN88001
92 sq.	Recognized by UL/CSA	ASFN98001
80 sq.	Compliant with Electrical Appliance and Material Safety Law	ASEN88001
92 sq.	Compliant with Electrical Appliance and Material Safety Law	ASEN98001
120 sq.	Compliant with Electrical Appliance and Material Safety Law	ASEN18001
150×172	Recognized by UL/CSA	ASEN58001

3. Filter for DC and AC Fan Motor

Product name	Part number
60 sq.	ASEN68002
80 sq.	ASEN88002
92 sq.	ASEN98002
120 sq.	ASEN18002

Ordering Information

AC Type

ASEN [1] [0] [2] [5] [1] [9]

Size
1: 120 sq.
5: 150 x 172
6: 60 sq.
8: 80 sq.
9: 92 sq.

Speed
0: Standard 2: Middle 4: Low

Case thickness
2: 25t
4: 38t
5: 30t
7: 38t (150 x 172 only)

Input type
1: Lead wire type
5: 2-terminal type

Rated voltage
1: 100 V AC 5: 220 V AC
2: 115 V AC 6: 230 V AC
4: 200 V AC 7: 240 V AC

Terminal specification
9: Terminal specification only (150 x 172 type not applicable)

• For the AC type, a middle speed type, low speed type, and 220 V and 240V types can be special ordered.

*Depending on the combination, not all specifications can be met. For details, please consult us.

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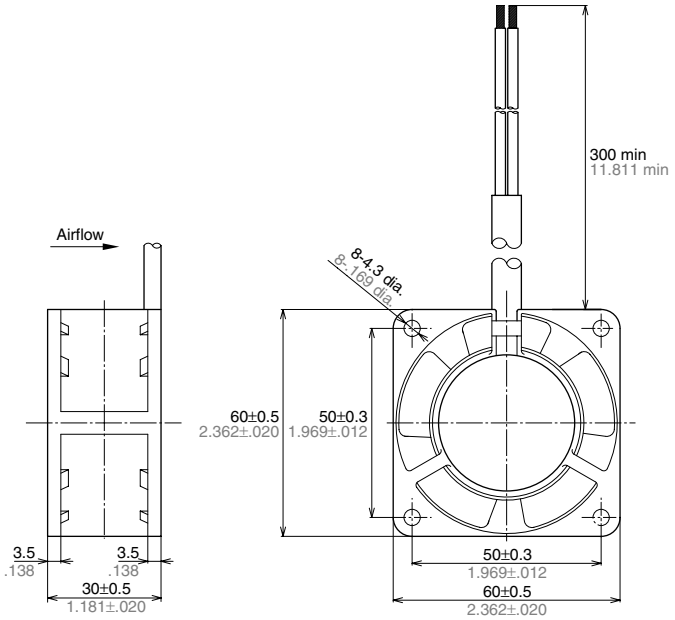
AC Fan Motor

60 sq.×30t (ASEN6)

NEW

DIMENSIONS (mm inch)



RoHS Directive compatibility information
http://www.nais-e.com/

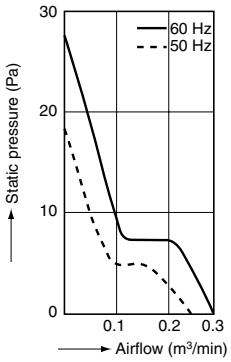
RATING

Lead wire type, Standard speed

Part number	Rated voltage (V)	Frequency (Hz)	Input power, $^{+10}_{-20}$% (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN60511	100	50/60	6/5	80/70	85/75	2000/2600	0.2/0.26	13.7/22.6	28/29 (29/30)	±10	0.14
ASEN60512	115		4.5/4	70/60	70/60						

Notes: 1. Asterisks in the table above indicate minimum values.
2. Values above without designations are averages.
3. Noise level was measured at a distance of 1 m from side of fan. Values in brackets were measured at a distance of 1 m from front of fan.

DATA (Airflow - Static pressure Characteristic Curve)



MATERIALS USED

Frame: aluminum alloy die-casting
Propeller: plastic
Bearings: ball bearings
Lead wires: UL3266 and AWG22
Label: 100 V class...black base

SPECIFICATIONS

Ambient temperature		–10°C to +60°C +14°F to +140°F
Ambient humidity		15 to 85%RH
Storage temperature		–20°C to +70°C –4°F to +158°F
Breakdown voltage		1,500 V AC for 1 min. (between charging section and frame)
Insulation resistance		Min. 100MΩ (at 500 V DC megger)(between charging section and frame)
Insulation class		UL:A class, CSA:B class
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
	Applied direction	X, Y and Z directions
	Applied time	10 min. in each direction
Protection		Impedance protected
Mean life		MTTF: 50,000 hrs. (Time it takes until rotation frequency drops 30% of initial value when run continuously under 25°C 77°F and room humidity at the nominal voltage.)

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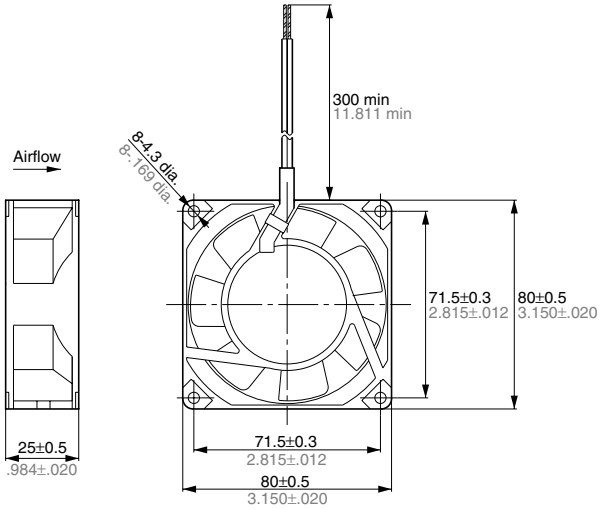
AC Fan Motor

80 sq.×25t (ASEN8)

NEW

DIMENSIONS (mm inch)



RoHS Directive compatibility information
http://www.nais-e.com/

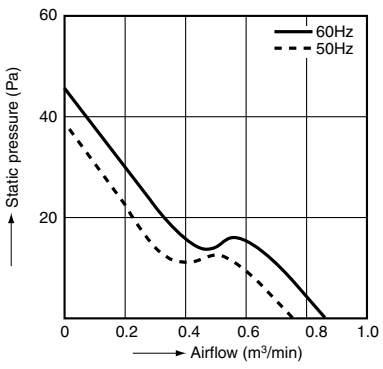
RATING

Lead wire type, Standard speed

Part number	Rated voltage (V)	Frequency (Hz)	Input power, $^{+10}_{-20}$ % (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN80211	100	50/60	6/5	90/80	95/85	2400/2750	0.74/0.85	37.5/43	28/33 (29/34)	±10	0.22
ASEN80212	115			80/70	85/75						

Notes: 1. Asterisks in the table above indicate minimum values.
2. Values above without designations are averages.
3. Noise level was measured at a distance of 1 m from side of fan. Values in brackets were measured at a distance of 1 m from front of fan.

DATA (Airflow - Static pressure Characteristic Curve)



MATERIALS USED

Frame: aluminum alloy die-casting
Propeller: plastic
Bearings: ball bearings
Lead wires: UL3266 and AWG22

Label: 100 V class...black base

SPECIFICATIONS

Ambient temperature		–10°C to +60°C +14°F to +140°F
Ambient humidity		15 to 85%RH
Storage temperature		–20°C to +70°C –4°F to +158°F
Breakdown voltage		1,500 V AC for 1 min. (between charging section and frame)
Insulation resistance		Min. 100MΩ (at 500 V DC megger)(between charging section and frame)
Insulation class		UL:A class, CSA:B class
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
	Applied direction	X, Y and Z directions
	Applied time	10 min. in each direction
Protection		Impedance protected
Mean life		MTTF: 50,000 hrs. (Time it takes until rotation frequency drops 30% of initial value when run continuously under 25°C 77°F and room humidity at the nominal voltage.)

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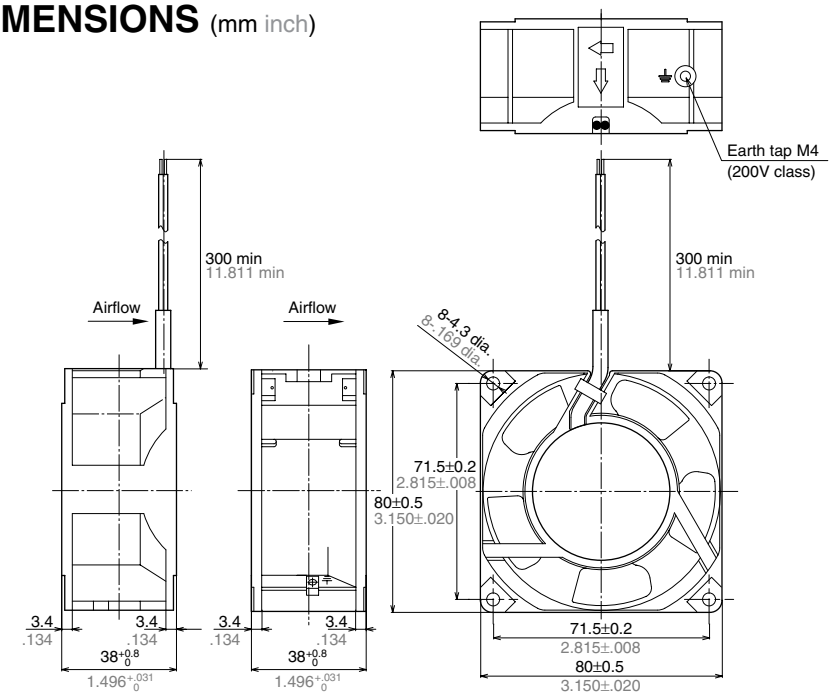
AC Fan Motor

80 sq.×38t (ASEN8)

NEW

DIMENSIONS (mm inch)



Lead wire type 2 terminals type

RoHS Directive compatibility information
http://www.nais-e.com/

RATING

1. Lead wire type, Standard speed

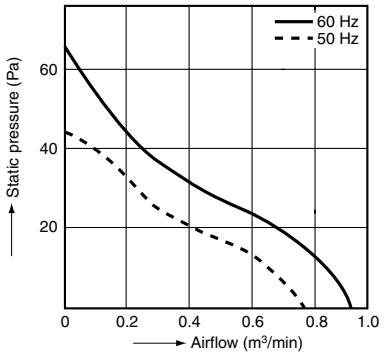
Part number	Rated voltage (V)	Frequency (Hz)	Input power, +10 −20 % (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN80411	100	50/60	9/7	170/120	180/160	2700/3200	0.75/0.9	44.2/62.8	33/38 (36/42)	±10	0.3
ASEN80412	115			140/110	160/140						
ASEN80414	200			80/65	90/80						
ASEN80416	230		10/8	70/55	80/70						

2. 2 terminals type, Standard speed

Part number	Rated voltage (V)	Frequency (Hz)	Input power, +10 −20 % (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN804519	100	50/60	9/7	170/120	180/160	2700/3200	0.75/0.9	44.2/62.8	33/38 (36/42)	±10	0.3
ASEN804529	115			140/110	160/140						
ASEN804549	200			80/65	90/80						
ASEN804569	230		10/8	70/55	80/70						

Notes: 1. Asterisks in the table above indicate minimum values.
2. Values above without designations are averages.
3. Noise level was measured at a distance of 1 m from side of fan. Values in brackets were measured at a distance of 1 m from front of fan.

DATA (Airflow - Static pressure Characteristic Curve)



MATERIALS USED

Frame: aluminum alloy die-casting
Propeller: plastic
Bearings: ball bearings
Lead wires: UL3266 and AWG22
Terminal: Equivalent to Faston #110
Label: 100 V class...black base
200 V class...red base

SPECIFICATIONS

Ambient temperature		–10°C to +60°C +14°F to +140°F
Ambient humidity		15 to 85%RH
Storage temperature		–20°C to +70°C –4°F to +158°F
Breakdown voltage		1,500 V AC for 1 min. (between charging section and frame)
Insulation resistance		Min. 100MΩ (at 500 V DC megger)(between charging section and frame)
Insulation class		UL:A class, CSA:B class
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
	Applied direction	X, Y and Z directions
	Applied time	10 min. in each direction
Protection		Impedance protected
Mean life		MTTF: 50,000 hrs. (Time it takes until rotation frequency drops 30% of initial value when run continuously under 25°C 77°F and room humidity at the nominal voltage.)

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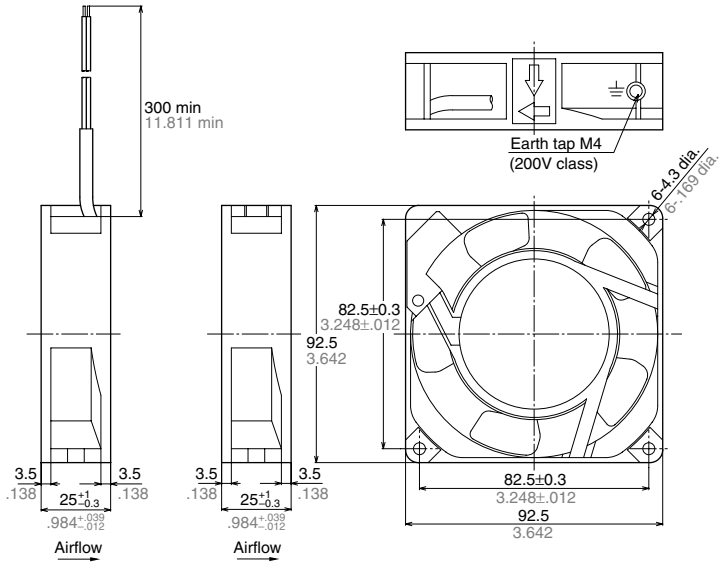
AC Fan Motor

92 sq.×25t (ASEN9)

NEW

RoHS Directive compatibility information
http://www.nais-e.com/

DIMENSIONS (mm inch)



RATING

1. Lead wire type, Standard speed

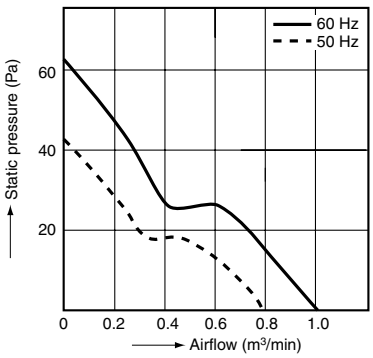
Part number	Rated voltage (V)	Frequency (Hz)	Input power, +10 −20 % (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN90211	100	50/60	13/10	190/150	200/170	2600/3100	0.80/0.98	43.1/60.8	34/39 (39/44)	±10	0.3
ASEN90212	115			170/130	180/160						
ASEN90214	200			100/80	110/100						
ASEN90216	230			90/70	100/80						

2. 2 terminals type, Standard speed

Part number	Rated voltage (V)	Frequency (Hz)	Input power, +10 −20 % (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN902519	100	50/60	13/10	190/150	200/170	2600/3100	0.80/0.98	43.1/60.8	34/39 (39/44)	±10	0.3
ASEN902529	115			170/130	180/160						
ASEN902549	200			100/80	110/100						
ASEN902569	230			90/70	100/80						

Notes: 1. Asterisks in the table above indicate minimum values.
2. Values above without designations are averages.
3. Noise level was measured at a distance of 1 m from side of fan. Values in brackets were measured at a distance of 1 m from front of fan.

DATA (Airflow - Static pressure Characteristic Curve)



MATERIALS USED

Frame: aluminum alloy die-casting
Propeller: plastic
Bearings: ball bearings
Lead wires: UL3266 and AWG22
Terminal: Equivalent to Faston #110
Label: 100 V class...black base
200 V class...red base

SPECIFICATIONS

Ambient temperature		–10°C to +60°C +14°F to +140°F
Ambient humidity		15 to 85%RH
Storage temperature		–20°C to +70°C –4°F to +158°F
Breakdown voltage		1,500 V AC for 1 min. (between charging section and frame)
Insulation resistance		Min. 100MΩ (at 500 V DC megger)(between charging section and frame)
Insulation class		UL:A class, CSA:B class
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
	Applied direction	X, Y and Z directions
	Applied time	10 min. in each direction
Protection		Impedance protected
Mean life		MTTF: 50,000 hrs. (Time it takes until rotation frequency drops 30% of initial value when run continuously under 25°C 77°F and room humidity at the nominal voltage.)

Panasonic
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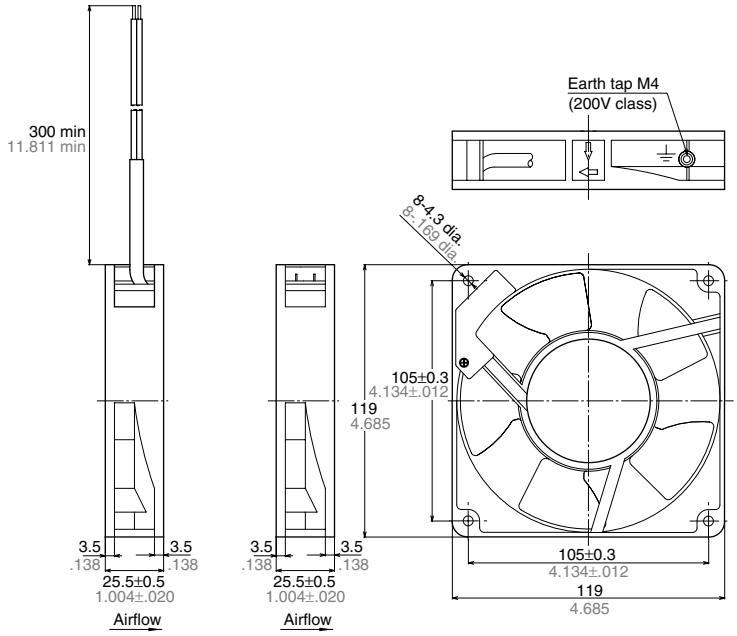
AC Fan Motor

120 sq.×25t (ASEN1)

NEW

RoHS Directive compatibility information
http://www.nais-e.com/

DIMENSIONS (mm inch)



Lead wire type 2 terminals type

RATING

1. Lead wire type, Standard speed

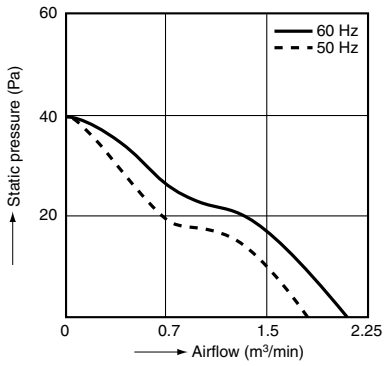
Part number	Rated voltage (V)	Frequency (Hz)	Input power, $^{+10}_{-20}$% (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN10211	100	50/60	14/11	220/180	220/200	2300/2700	1.8/2.0	41.2/41.2	34/38 (42/46)	±10	0.36
ASEN10212	115			190/160	200/180						
ASEN10214	200			110/90	120/100						
ASEN10216	230			100/90	110/100						

2. 2 terminals type, Standard speed

Part number	Rated voltage (V)	Frequency (Hz)	Input power, $^{+10}_{-20}$% (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN102519	100	50/60	14/11	220/180	220/200	2300/2700	1.8/2.0	41.2/41.2	34/38 (42/46)	±10	0.36
ASEN102529	115			190/160	200/180						
ASEN102549	200			110/90	120/100						
ASEN102569	230			100/90	110/100						

Notes: 1. Asterisks in the table above indicate minimum values.
2. Values above without designations are averages.
3. Noise level was measured at a distance of 1 m from side of fan. Values in brackets were measured at a distance of 1 m from front of fan.

DATA (Airflow - Static pressure Characteristic Curve)



MATERIALS USED

Frame: aluminum alloy die-casting
Propeller: plastic
Bearings: ball bearings
Lead wires: UL3266 and AWG22
Terminal: Equivalent to Faston #110
Label: 100 V class...black base
200 V class...red base

SPECIFICATIONS

Ambient temperature		–10°C to +60°C +14°F to +140°F
Ambient humidity		15 to 85%RH
Storage temperature		–20°C to +70°C –4°F to +158°F
Breakdown voltage		1,500 V AC for 1 min. (between charging section and frame)
Insulation resistance		Min. 100MΩ (at 500 V DC megger)(between charging section and frame)
Insulation class		UL:A class, CSA:B class
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
	Applied direction	X, Y and Z directions
	Applied time	10 min. in each direction
Protection		Impedance protected
Mean life		MTTF: 50,000 hrs. (Time it takes until rotation frequency drops 30% of initial value when run continuously under 25°C 77°F and room humidity at the nominal voltage.)

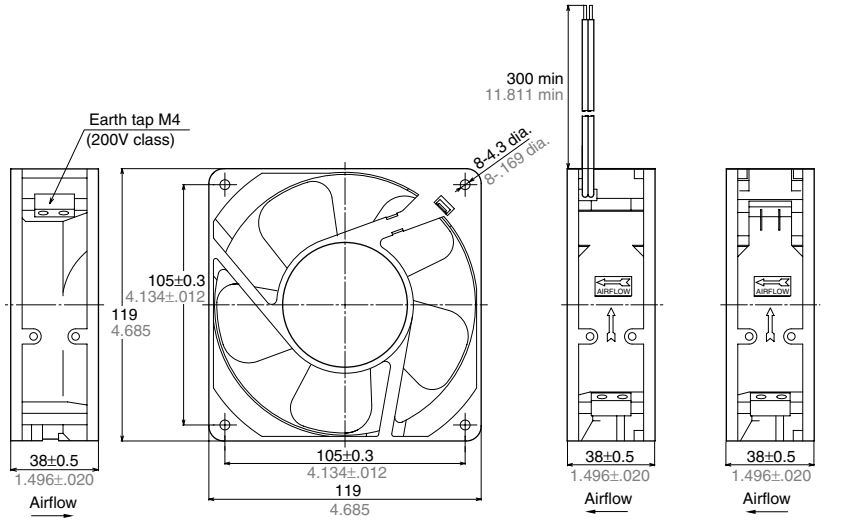
Panasonic
ideas for life

AC Fan Motor

120 sq.×38t (ASEN1)

NEW

DIMENSIONS (mm inch)



Lead wire type 2 terminals type

RoHS Directive compatibility information
http://www.nais-e.com/

RATING

1. Lead wire type, Standard speed

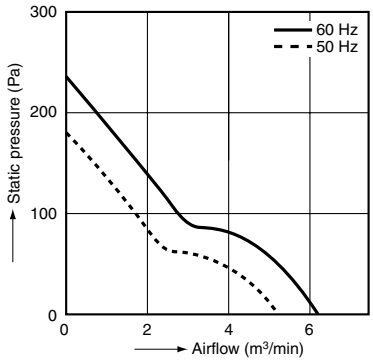
Part number	Rated voltage (V)	Frequency (Hz)	Input power, $^{+10}_{-20}$% (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN10411	100	50/60	15/14	270/230	370/300	2600/2900	2.5/2.9	64.7/76.4	37/41 (44/48)	±10	0.55
ASEN10412	115		15.5/14.5	250/210	320/270						
ASEN10414	200		15/13	140/120	190/170						
ASEN10416	230		15/14	120/100	160/140						

2. 2 terminals type, Standard speed

Part number	Rated voltage (V)	Frequency (Hz)	Input power, $^{+10}_{-20}$% (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN104519	100	50/60	15/14	270/230	370/300	2600/2900	2.5/2.9	64.7/76.4	37/41 (44/48)	±10	0.55
ASEN104529	115		15.5/14.5	250/210	320/270						
ASEN104549	200		15/13	140/120	190/170						
ASEN104569	230		15/14	120/100	160/140						

Notes: 1. Asterisks in the table above indicate minimum values.
2. Values above without designations are averages.
3. Noise level was measured at a distance of 1 m from side of fan. Values in brackets were measured at a distance of 1 m from front of fan.

DATA (Airflow - Static pressure Characteristic Curve)



MATERIALS USED

Frame: aluminum alloy die-casting
Propeller: plastic
Bearings: ball bearings
Lead wires: UL3266 and AWG22
Terminal: Equivalent to Faston #110
Label: 100 V class...black base
200 V class...red base

SPECIFICATIONS

Ambient temperature		–10°C to +60°C +14°F to +140°F
Ambient humidity		15 to 85%RH
Storage temperature		–20°C to +70°C –4°F to +158°F
Breakdown voltage		1,500 V AC for 1 min. (between charging section and frame)
Insulation resistance		Min. 100MΩ (at 500 V DC megger)(between charging section and frame)
Insulation class		UL:A class, CSA:B class
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
	Applied direction	X, Y and Z directions
	Applied time	10 min. in each direction
Protection		Impedance protected
Mean life		MTTF: 50,000 hrs. (Time it takes until rotation frequency drops 30% of initial value when run continuously under 25°C 77°F and room humidity at the nominal voltage.)

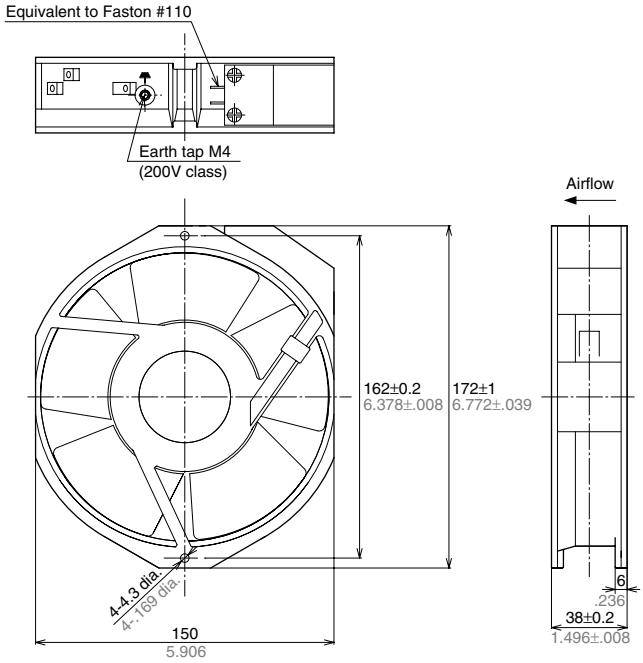
Panasonic
ideas for life

AC Fan Motor

150×172×38t (ASEN5)

NEW

DIMENSIONS (mm inch)



RoHS Directive compatibility information
http://www.nais-e.com/

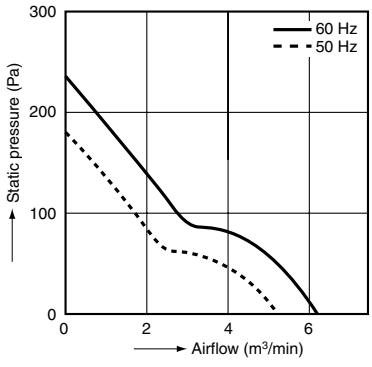
RATING

2 terminals type, Standard speed

Part number	Rated voltage (V)	Frequency (Hz)	Input power, $^{+10}_{-20}$% (W)	Rated current, max. (mA)	Locked current, max. (mA)	*Rotation speed (r/min)	*Max. air flow (m³/min)	*Max. static pressure (Pa)	Noise (dB(A))	Operating voltage range (V) (%)	Weight (kg)
ASEN50751	100	50/60	37/33	470/440	750/700	2700/3200	5.0/6.0	157/215.8	52/56 (57/61)	±10	0.8
ASEN50752	115		35/32	380/360	550/530						
ASEN50754	200		34/33	230/210	340/320						
ASEN50756	230		35/35	190/180	280/310						

Notes: 1. Asterisks in the table above indicate minimum values.
2. Values above without designations are averages.
3. Noise level was measured at a distance of 1 m from side of fan. Values in brackets were measured at a distance of 1 m from front of fan.

DATA (Airflow - Static pressure Characteristic Curve)



MATERIALS USED

Frame: aluminum alloy die-casting
Propeller: plastic
Bearings: ball bearings
Terminal: Equivalent to Faston #110
Label: 100 V class...black base
200 V class...red base

SPECIFICATIONS

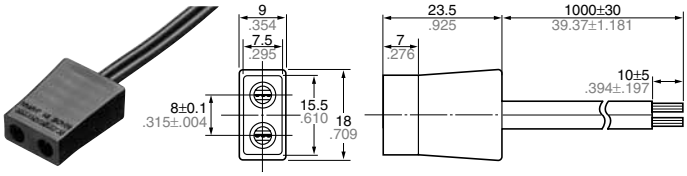
Ambient temperature		–10°C to +60°C +14°F to +140°F
Ambient humidity		15 to 85%RH
Storage temperature		–20°C to +70°C –4°F to +158°F
Breakdown voltage		1,500 V AC for 1 min. (between charging section and frame)
Insulation resistance		Min. 100MΩ(at 500 V DC megger)(between charging section and frame)
Insulation class		UL:A class, CSA:B class
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
	Applied direction	X, Y and Z directions
	Applied time	10 min. in each direction
Protection		Impedance protected
Mean life		MTTF: 50,000 hrs. (Time it takes until rotation frequency drops 30% of initial value when run continuously under 25°C 77°F and room humidity at the nominal voltage.)

Accessories

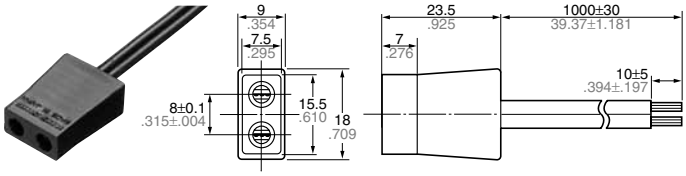
DIMENSIONS (mm inch)

1. Plug cord for AC Fan Motor
2 terminals type

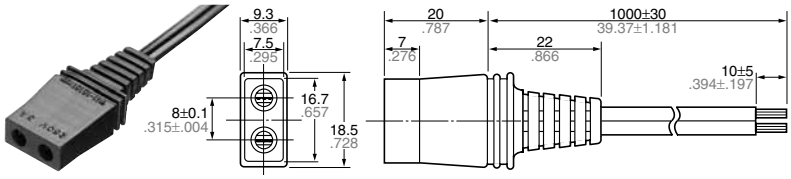
ASE51100
For inside of appliance
Flat type 2-core cord (20/0.18)



ASE51109
UL Standard: File No. E106219
Thermoplastic, flat type 2-core cord
UL SPT-1 AWG18 (41/0.16)
CSA POT-64 AWG18 (41/0.16)

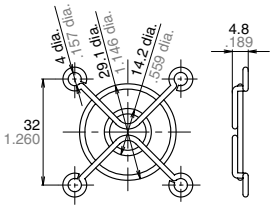


ASE51107
Compliant with Electrical Appliance and Material Safety Law
Flat type 2-core cord (30/0.18)

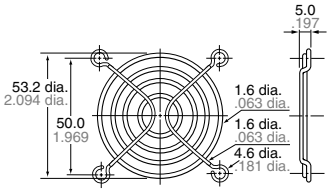


2. Fan guard (You can use this with both DC and AC types.)

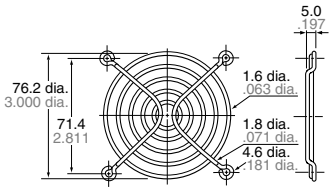
ASFN48001
Recognized for 40 sq. by UL/CSA
Material used: Steel, 1.6 dia.



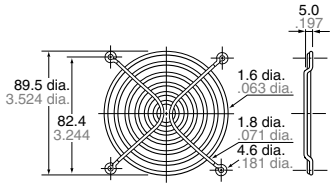
ASFN68001
Recognized for 60 sq. by UL/CSA
Material used: Steel, 1.6 dia.



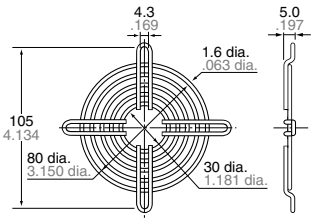
ASFN88001
Recognized for 80 sq. by UL/CSA
Material used: Steel, 1.6 dia.



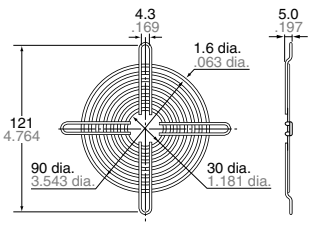
ASFN98001
Recognized for 92 sq. by UL/CSA
Material used: Steel, 1.6 dia.



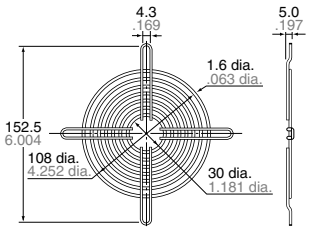
ASEN88001
For 80 sq. by Electrical Appliance and Material Safety Law
Material used: Steel, 1.6 dia.



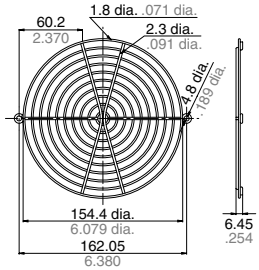
ASEN98001
For 92 sq. by Electrical Appliance and Material Safety Law
Material used: Steel, 1.6 dia.



ASEN18001
For 120 sq. by Electrical Appliance and Material Safety Law
Material used: Steel, 1.6 dia.

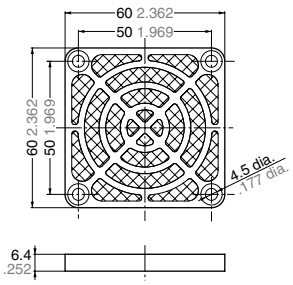


ASEN58001
Recognized for 150×172 by UL/CSA
Material used: Steel, 2.3 dia.

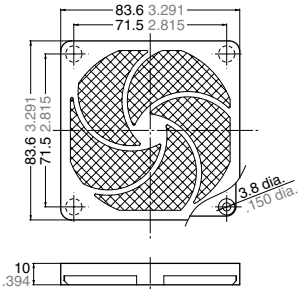


3. Fan motor filter (You can use this with both DC and AC types.)

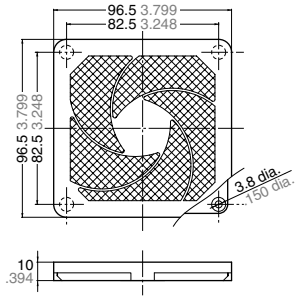
ASEN68002
For 60 sq.



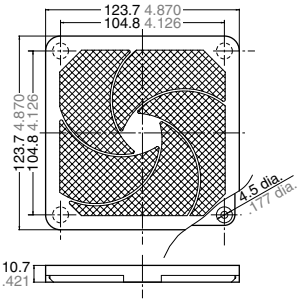
ASEN88002
For 80 sq.



ASEN98002
For 92 sq.



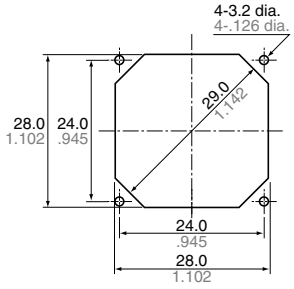
ASEN18002
For 120 sq.



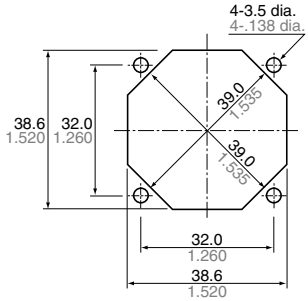
Mounting Hole Dimensions

For DC Fan Motor

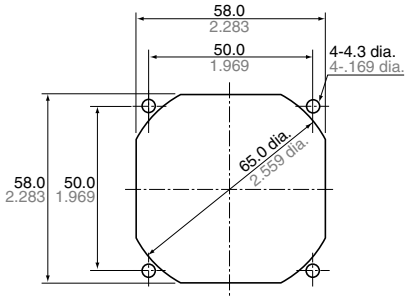
1. 30 sq. Series
Discharge side/Suction side



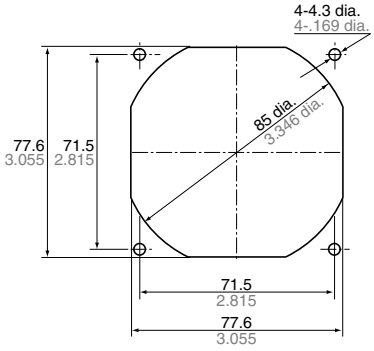
2. 40 sq. Series
Discharge side/Suction side



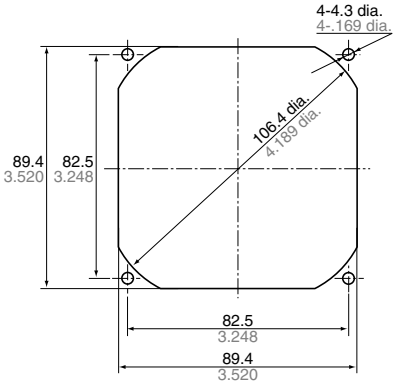
3. 60 sq. Series
Discharge side/Suction side



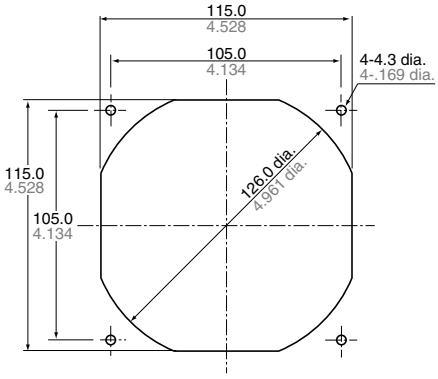
4. 80 sq. Series
Discharge side/Suction side



5. 92 sq. Series
Discharge side/Suction side

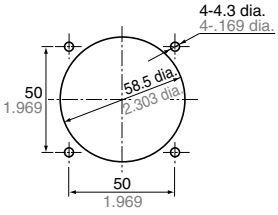


6. 120 sq. Series
Discharge side/Suction side

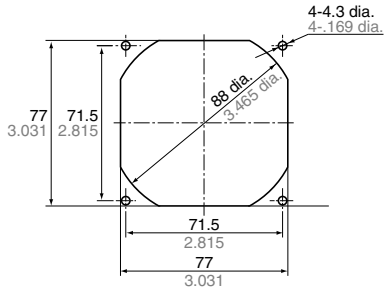


For AC Fan Motor

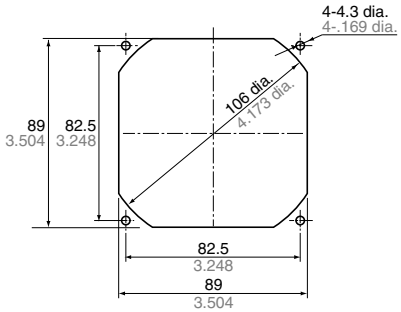
1. 60 sq. Series
Discharge side/Suction side



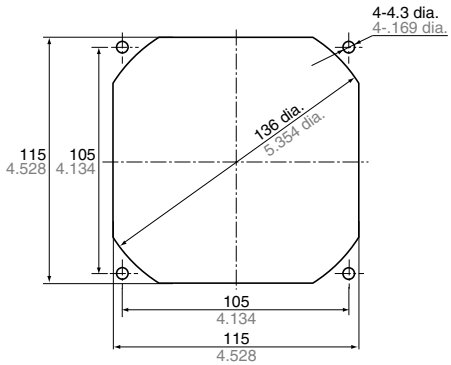
2. 80 sq. Series
Discharge side/Suction side



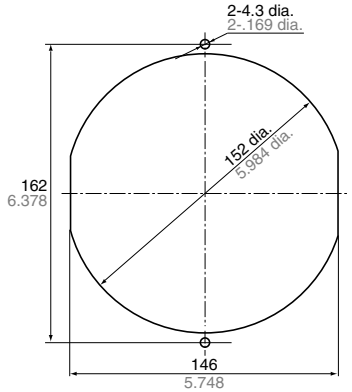
3. 92 sq. Series
Discharge side/Suction side



4. 120 sq. Series
Discharge side/Suction side



5. 150×172 Series
Discharge side/Suction side



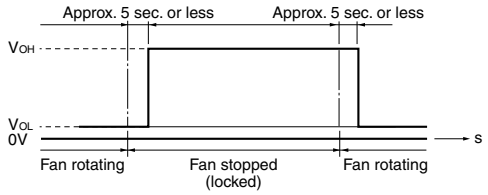
Functions of DC Fan Sensor

DC FAN SENSOR

If the fan stops as a result of forced external restraint, a signal will be generated to indicate that there is a problem. This signal can be used to control an external warning circuit in order to help prevent the device from overheating.
Although there are various detection methods for this sensor, we employ the method that uses a logic circuit.

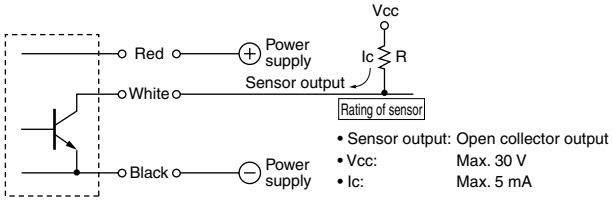
1. Lock sensor specifications

Output waveform



* Output may be high for approximately 0.5 seconds when power is turned on.
* The continually high output waveform type when fan is stopped (locked) is standard.
  A high/low output waveform type and output waveform type that corresponds to the rotation frequency during fan rotation are available by special order.
  Please inquire for details.

2. Sensor output circuit



Notes: 1. Set the resistance value (R) so that the sensor circuit current (Ic) does not exceed 5 mA.
2. When using at TTL level, the sensor circuit current (Ic) should be approximately 2 mA.

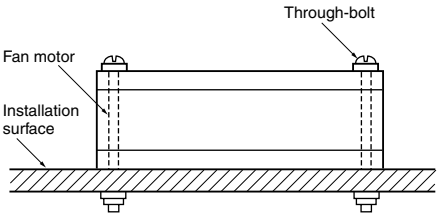
* Exceeding the values above may lead to IC damage.

Cautions For Use

DC FAN MOTOR

1. Do not reverse-connect the power supply. Although nothing adverse will occur if the rated voltage is connected in reverse for a short time period, the fan will not operate.
2. If the power is to be pulsed on and off in order to start and stop the fan quickly, be sure to install a switch on the + side of the power supply. Not doing so may damage the circuit.

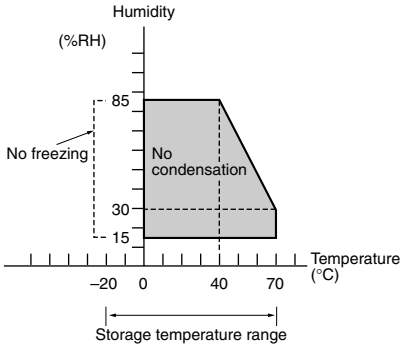
3. The DC fan motor installation bracket has a rib. As shown in the figure, use the through-bolts when installing.
4. Use a tightening torque of no more than 0.6 Nm.



DC FAN MOTOR and AC FAN MOTOR

1. Since our fan motor employs precision ball bearings, due care should be taken not to apply any shock in handling.
2. Due to the bearing mechanism, the noise level will increase in proportion to the length of time the fan is used. Avoid use where the temperature is high or where there is a lot of dirt.
3. Do not allow substances such as oil and grease to get onto the plastic part of the fan body. Some oils and greases decompose and become altered at high temperatures. These can have an adverse effect if they contact the fan. Therefore, be very careful when handling these substances.
4. Do not apply unnecessary force to the internal parts when handling the product. Also, do not use a fan that has been dropped.
5. Fan life is based on usage at room temperature and a humidity of 15 to 45% RH. Please verify life under actual conditions, since life will depend on the frequency and duration of use, as well as the atmosphere in which it is used.

6. Transport and storage conditions
The allowable specifications for environments suitable for transportation and storage are given below.



- No freezing between –20°C to 0°C –4°F to +32°F
- No condensation in the range above between 0°C to +70°C +32°F to +158°F

1) Condensation
If the temperature is high and there is a lot of humidity, condensation will occur when the temperature suddenly changes. This should be avoided because it can cause degradation of the fan insulation.
2) Freezing
At temperatures below 0°C +32°F moisture such as that caused by condensation will freeze and lead to problems such as lockage of the moving parts and operation lags. Be careful to prevent this from happening.
3) Low-temperature, low-humidity environments
Do not leave the fan for a long period in an environment of low temperature and low humidity. Doing so may cause the plastic to become brittle.
4) When storing, avoid places of high temperature and high humidity or where corrosive gas is present.
5) Do not store the fan any longer than six months.

Technical Information

MEASUREMENT of AIRFLOW and STATIC PRESSURE

It is very difficult to measure airflow and static pressure, and there are cases where measured values vary depending on measuring devices. There are two kinds of measuring methods; double chamber method provided by JIS and AMCA (Air Moving and Conditioning Association) and wind tunnel method. Our company adopted the double chamber method, and therefore we will explain it hereinafter.

The auxiliary blower (fan) adjusts an inner pressure by sucking out air. At this moment, as airflow and static pressure are varied by opening or closing the damper, each value is read on the manometer.

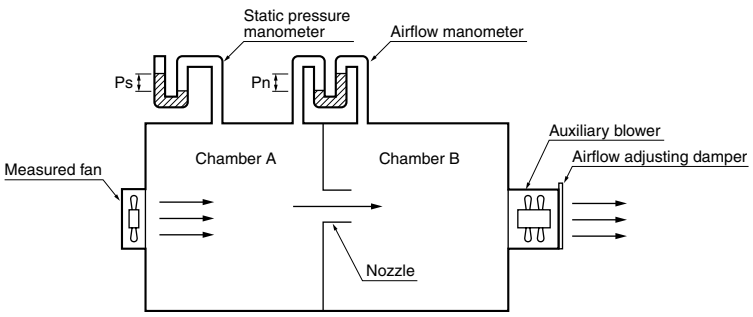
Maximum airflow:

The damper opens, and the auxiliary blower sucks out air so that static pressure becomes zero. At this moment, the pressure differential (airflow differential pressure: Pn) in chambers A and B becomes maximum. The airflow whose Pn is measured and which is determined by using the equation shown at right is called the maximum airflow.

Maximum static pressure:

When the damper is completely closed, the pressure in chamber A becomes maximum. At this moment, the pressure differential (static pressure: Ps) in chambers A against atmospheric pressure is called the maximum static pressure.

Double chamber measuring device



1. Equation

Airflow Q =

$$60\times C\times\left(\frac{D}{2}\right)^2\times\pi\times\sqrt{\frac{2g}{7}\times(Pn\times9.81)}\quad(m^3/min)$$

In the above equation,

C: Flow coefficient of nozzle

D: Nozzle diameter (m)

γ: Air density =

$$\left[1.293\times\frac{273}{273+t}\times P\times133.32\right](kg/m^3)$$

t: Temperature(°C)

P: Atmospheric pressure(Pa)

g: 9.8(m/s²)

Pn: Airflow differential pressure (Pa)

Ps: Static pressure (Pa)

2. Unit conversion table

1) Airflow

m³/min.	l/s	CFM (ft³/min.)
1	16.678	35.334
0.06	1	2.1186
0.0283	0.472	1

2) Static pressure

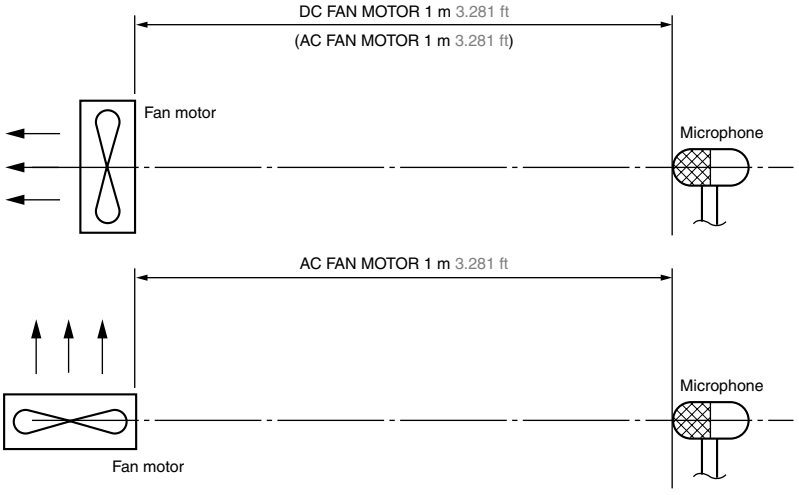
Pa	mmH₂O (mmAq)
1	0.10197
9.80665	1

NOISE MEASUREMENT

Operation noise is measured by hanging the fan in midair. For the DC fan, noise is measured in dB(A) 1 m from the front of the air-intake side. For the AC fan, noise is measured in dB(A) 1 m from the front of the air-intake side and the side of the fan.

The background noise complies with the section in JIS B8346 that states that it should be at least 10 dB lower than the target noise reading.

Our measurements were made in an anechoic chamber with a background noise of approximately 15 dB.



COUNTERMEASURES AGAINST MOISE

Our fan motors are designed placing great importance on low noise. However, take into consideration the following points because noise is influenced depending on the mechanism design used.

1) Leave a space between the rear side of the fan suction opening and the cooled object.

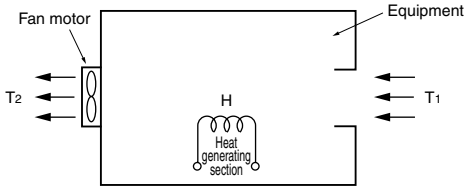
2) When using two or more fan motors, leave a space between the fans.

3) According to the mounting hole dimensions (page 22), design so that the mounting face and blades are not crossed.

4) Grease in the bearings will deteriorate and noise will gradually increase as the fan is used. The replacement period will differ depending on the conditions of use and allowable sound level. We recommend periodic replacement.

METHOD OF SELECTING FAN MOTOR

When selecting a fan motor, for normal use the following method is used.
1) Determine the amount of heat generated inside the equipment.
2) Decide the permissible temperature rise inside the equipment.



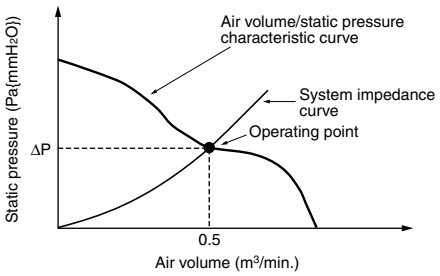
3) Calculate the volume of air necessary from Equation (1).
Equation (1)

$$Q=\frac{50\times H}{T_2-T_1}=\frac{50\times H}{\Delta T}\ (m^3/min)$$

where
Q: Air volume (m³/min.)
H: Heat generated (kW)
T_1: Inlet air temperature(°C)
T_2: Exhaust air temperature(°C)
ΔT: Temperature rise(°C)

4) Determine the system impedance of the equipment by means of Equation (2). For the flow of air to the equipment, there is a loss of pressure due to the resistance to the flow of air from the components inside the equipment. This loss varies in accordance with the flow of air. This is referred to as the system impedance.
$\Delta P=KQ^n$.....Equation (2)
where
ΔP: Pressure drop(Pa{mmH_2O})
K: Constant determined for each equipment
Q: Air volume (m³/min.)
n: Coefficient determined by air flow
In this equation, it is generally considered that n = 2.
Also, it is difficult to calculate the value of K, since there is no good method other than an actual test measurement with the equipment.
Example:
When the heat generated is 100 W with ΔT = 10°C 50°F, the following is the result.

$$Q=\frac{50\times 0.1}{10}=0.5\ (m^3/min)$$

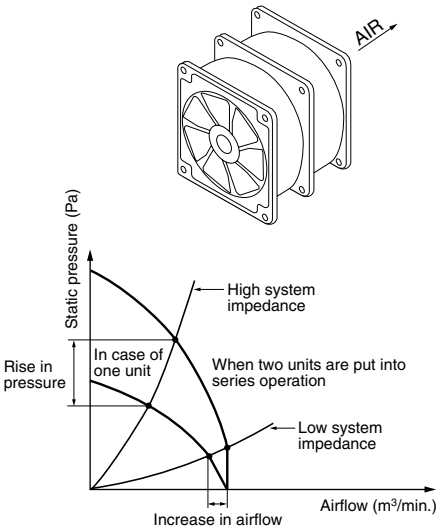


The intersection of the air volume/static pressure characteristic curve with the system impedance curve is called the operating point. This shows the condition with the fan motor operating.
In actuality, the system impedance is approximately assumed, a fan motor is decided from the catalogue, the temperature difference "ΔT" and air volume "Q" are measured, and from this data the fan is judged as suitable or not as the ordinary method. If the temperature difference "ΔT" is high indicating the air volume "Q" is not satisfactory, because the system impedance is higher than the assumed value, a change should be made to a fan motor with a greater air volume.

FAN MOTOR SERIES/PARALLEL OPERATION

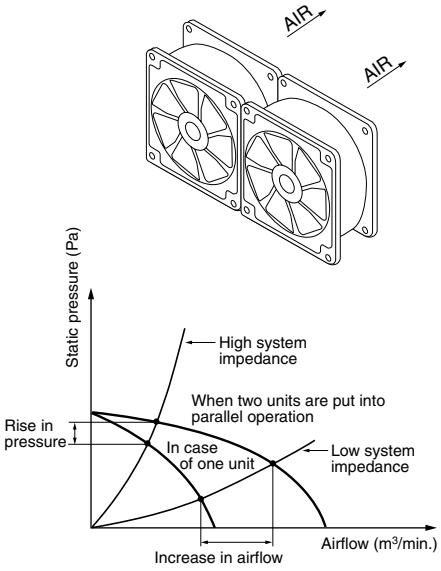
When one fan motor does not satisfy a sufficient cooling capacity;
Series operation: Higher pressure characteristic obtained. (Nearly double)
Parallel operation: Larger airflow characteristic obtained. (Nearly double)

1. In case of series operation



• In case of high system impedance, static pressure rises.
• In case of low system impedance, airflow slightly increases.

2. In case of parallel operation



• In case of low system impedance, airflow increases.
• In case of high system impedance, pressure slightly rises.