

# Improved Performance due to Model Change

Lower current consumption and low noise



ASFP4□



ASFP6□



ASEP8□



ASFP8□





ASFP9□






ASFP1□

# Fan Motor Selector Chart


## ■DC Fan motor

|   | ASFP4*7** □40 × 10t   |         |              |         |           |         | ASFP6*3** □60 × 25t   |         |              |         |           |         |
|---|---|---------|--------------|---------|-----------|---------|---|---------|--------------|---------|-----------|---------|
| Appearance shape                            |  |         |              |         |           |         |  |         |              |         |           |         |
| Item  | Standard speed  |         | Middle speed |         | Low speed |         | Standard speed  |         | Middle speed |         | Low speed |         |
| Rated voltage                               | 5 V DC  | 12 V DC | 5 V DC       | 12 V DC | 5 V DC    | 12 V DC | 12 V DC   | 24 V DC | 12 V DC      | 24 V DC | 12 V DC   | 24 V DC |
| Rated current [mA] (Max.)                   | 270   | 90      | 200          | 80      | 130       | 60      | 140   | 80      | 110          | 60      | 80        | 50      |
| Rated power consumption [W] (Max.)          | 1.35  | 1.08    | 1.00         | 0.96    | 0.65      | 0.72    | 1.68  | 1.92    | 1.32         | 1.44    | 0.96      | 1.20    |
| Rotation speed [min. <sup>-1</sup> ] (Ave.) | 7,500   |         | 6,500        |         | 5,500     |         | 4,000   |         | 3,500        |         | 3,000     |         |
| Max. static pressure [Pa] (Ave.)            | 50.0  |         | 37.0         |         | 27.5      |         | 46.0  |         | 35.0         |         | 26.0      |         |
| Max. air flow [m <sup>3</sup> /min.] (Ave.) | 0.19  |         | 0.16         |         | 0.14      |         | 0.56  |         | 0.48         |         | 0.41      |         |
| Noise [dB(A)] (Ave.)                        | 29.5  |         | 24.5         |         | 21.5      |         | 27.5  |         | 23.5         |         | 21.0      |         |
| Weight [g]                                  | 16  |         |              |         |           |         | 65  |         |              |         |           |         |
| Operating voltage range                     | For rated 5 V: 4.5 to 5.5 V DC, for rated 12 V: 10.2 to 13.8 V DC                 |         |              |         |           |         | For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 12 to 27.6 V DC                     |         |              |         |           |         |
| Page  | P.5   |         |              |         |           |         | P.6   |         |              |         |           |         |

|   | ASFP8*3** □80 × 25t  |         |              |         |           |         | ASFP9*3** □92 × 25t  |         |              |         |           |         |
|---|--|---------|--------------|---------|-----------|---------|--|---------|--------------|---------|-----------|---------|
| Appearance shape                            |  |         |              |         |           |         |  |         |              |         |           |         |
| Item  | Standard speed   |         | Middle speed |         | Low speed |         | Standard speed   |         | Middle speed |         | Low speed |         |
| Rated voltage                               | 12 V DC  | 24 V DC | 12 V DC      | 24 V DC | 12 V DC   | 24 V DC | 12 V DC  | 24 V DC | 12 V DC      | 24 V DC | 12 V DC   | 24 V DC |
| Rated current [mA] (Max.)                   | 180  | 90      | 80           | 50      | 60        | 40      | 170  | 90      | 130          | 70      | 90        | 50      |
| Rated power consumption [W] (Max.)          | 2.16   | 2.16    | 0.96         | 1.20    | 0.72      | 0.96    | 2.04   | 2.16    | 1.56         | 1.68    | 1.08      | 1.20    |
| Rotation speed [min. <sup>-1</sup> ] (Ave.) | 3,100  |         | 2,300        |         | 2,000     |         | 2,750  |         | 2,400        |         | 2,050     |         |
| Max. static pressure [Pa] (Ave.)            | 37.5   |         | 21.5         |         | 16.5      |         | 36.2   |         | 29.0         |         | 21.5      |         |
| Max. air flow [m <sup>3</sup> /min.] (Ave.) | 1.17   |         | 0.86         |         | 0.74      |         | 1.28   |         | 1.13         |         | 0.95      |         |
| Noise [dB(A)] (Ave.)                        | 30.0   |         | 22.0         |         | 19.0      |         | 29.0   |         | 25.0         |         | 22.0      |         |
| Weight [g]                                  | 80   |         |              |         |           |         | 102  |         |              |         |           |         |
| Operating voltage range                     | For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 12 to 27.6 V DC                    |         |              |         |           |         | For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 12 to 27.6 V DC                      |         |              |         |           |         |
| Page  | P.7  |         |              |         |           |         | P.8  |         |              |         |           |         |

|   | ASFP1*3** □120 × 25t  |         |              |         |           |         |
|---|---|---------|--------------|---------|-----------|---------|
| Appearance shape                            |  |         |              |         |           |         |
| Item  | Standard speed  |         | Middle speed |         | Low speed |         |
| Rated voltage                               | 12 V DC   | 24 V DC | 12 V DC      | 24 V DC | 12 V DC   | 24 V DC |
| Rated current [mA] (Max.)                   | 380   | 190     | 200          | 100     | 140       | 70      |
| Rated power consumption [W] (Max.)          | 4.56  | 4.56    | 2.40         | 2.40    | 1.68      | 1.68    |
| Rotation speed [min. <sup>-1</sup> ] (Ave.) | 2,500   |         | 1,900        |         | 1,600     |         |
| Max. static pressure [Pa] (Ave.)            | 48.0  |         | 28.5         |         | 21.0      |         |
| Max. air flow [m <sup>3</sup> /min.] (Ave.) | 2.58  |         | 1.90         |         | 1.63      |         |
| Noise [dB(A)] (Ave.)                        | 37.0  |         | 30.0         |         | 26.5      |         |
| Weight [g]                                  | 165   |         |              |         |           |         |
| Operating voltage range                     | For rated 12 V: 7 to 13.8 V DC, for rated 24 V: 12 to 27.6 V DC                     |         |              |         |           |         |
| Page  | P.9   |         |              |         |           |         |

## ■AC Fan motor

|   | ASEP8021* □80 × 25t   |           |
|---|---|-----------|
| Appearance shape                            |  |           |
| Rated voltage                               | 100 V   | 115 V     |
| Frequency                                   | 50 / 60 Hz  |           |
| Rated power consumption [W]                 | 8.0 / 6.5   | 8.0 / 6.5 |
| Rated current [mA] (Max.)                   | 130 / 110   | 110 / 90  |
| Locked current [mA] (Max.)                  | 150 / 140   | 130 / 120 |
| Rotation speed [min. <sup>-1</sup> ] (Ave.) | 2,700 / 3,200   |           |
| Max. air flow [m <sup>3</sup> /min.] (Ave.) | 0.57 / 0.68   |           |
| Max. static pressure [Pa] (Ave.)            | 39.0 / 55.0   |           |
| Noise [dB(A)] (Ave.)                        | 24.0 / 31.0   |           |
| Operating voltage range [V]                 | Rated voltage ±10%  |           |
| Weight [kg]                                 | 0.24  |           |
| Page  | P.10  |           |

# Product Types

## ■DC Fan motor

| Size      | Speed          | Rated voltage | Part No.  |
|-----------|----------------|---------------|-----------|
| □40 × 10  | Standard speed | 5 V DC        | ASFP40770 |
|           | Middle speed   |               | ASFP42770 |
|           | Low speed      |               | ASFP44770 |
|           | Standard speed | 12 V DC       | ASFP40771 |
|           | Middle speed   |               | ASFP42771 |
|           | Low speed      |               | ASFP44771 |
| □60 × 25  | Standard speed | 12 V DC       | ASFP60371 |
|           | Middle speed   |               | ASFP62371 |
|           | Low speed      |               | ASFP64371 |
|           | Standard speed | 24 V DC       | ASFP60372 |
|           | Middle speed   |               | ASFP62372 |
|           | Low speed      |               | ASFP64372 |
| □80 × 25  | Standard speed | 12 V DC       | ASFP80371 |
|           | Middle speed   |               | ASFP82371 |
|           | Low speed      |               | ASFP84371 |
|           | Standard speed | 24 V DC       | ASFP80372 |
|           | Middle speed   |               | ASFP82372 |
|           | Low speed      |               | ASFP84372 |
| □92 × 25  | Standard speed | 12 V DC       | ASFP90371 |
|           | Middle speed   |               | ASFP92371 |
|           | Low speed      |               | ASFP94371 |
|           | Standard speed | 24 V DC       | ASFP90372 |
|           | Middle speed   |               | ASFP92372 |
|           | Low speed      |               | ASFP94372 |
| □120 × 25 | Standard speed | 12 V DC       | ASFP10371 |
|           | Middle speed   |               | ASFP12371 |
|           | Low speed      |               | ASFP14371 |
|           | Standard speed | 24 V DC       | ASFP10372 |
|           | Middle speed   |               | ASFP12372 |
|           | Low speed      |               | ASFP14372 |

Note: A super speed type (except ASFP4 series) and type with sensor can be special ordered.  
(For details, please refer the "Functions of DC Fan Sensor" on page 12.)

## ■AC Fan motor

| Size     | Speed          | Rated voltage | Part No.  |
|----------|----------------|---------------|-----------|
| □80 × 25 | Standard speed | 100 V AC      | ASEP80211 |
|          |                | 115 V AC      | ASEP80212 |

## ■Accessories

### 1. Fan guard (for DC and AC)

| Product name       | Standards   | Part No.  |
|--------------------|---|-----------|
| Fan guard for □40  | Recognized by UL/CSA  | ASFN48001 |
| Fan guard for □60  | Recognized by UL/CSA  | ASFN68001 |
| Fan guard for □80  | Recognized by UL/CSA  | ASFN88001 |
| Fan guard for □80  | Compliant with Electrical Appliance and Material Safety Law | ASEN88001 |
| Fan guard for □92  | Recognized by UL/CSA  | ASFN98001 |
| Fan guard for □92  | Compliant with Electrical Appliance and Material Safety Law | ASEN98001 |
| Fan guard for □120 | Recognized by UL/CSA  | ASFN18001 |

### 2. Fan motor filter (for DC and AC)

| Product name              | Part No.  |
|---------------------------|-----------|
| Fan motor filter for □60  | ASEN68002 |
| Fan motor filter for □80  | ASEN88002 |
| Fan motor filter for □92  | ASEN98002 |
| Fan motor filter for □120 | ASEN18002 |

# Ordering Information

## ■DC type

ASFP 6 0 3 7 1

### Size

- 1:  120
- 4:  40 (Cannot select super speed type)
- 6:  60
- 8:  80
- 9:  92

### Speed

- 0: Standard
- 2: Middle
- 4: Low

### Case thickness

- 3: 25t (60, 80, 92, 120)
- 7: 10t (40)

### Sensor when blocked

- 7: Without sensor
- 9: With sensor

### Rated voltage

- 0: 5 V DC (40)
- 1: 12 V DC (all types)
- 2: 24 V DC (60, 80, 92 and 120)

For the DC type, a super speed type (except ASFP4 series) and type with sensor can be special ordered.

## ■AC type

ASEP 8 0 2 1 1

### Size

- 8:  80

### Speed

- 0: Standard

### Case thickness

- 2: 25t (80)

### Input type

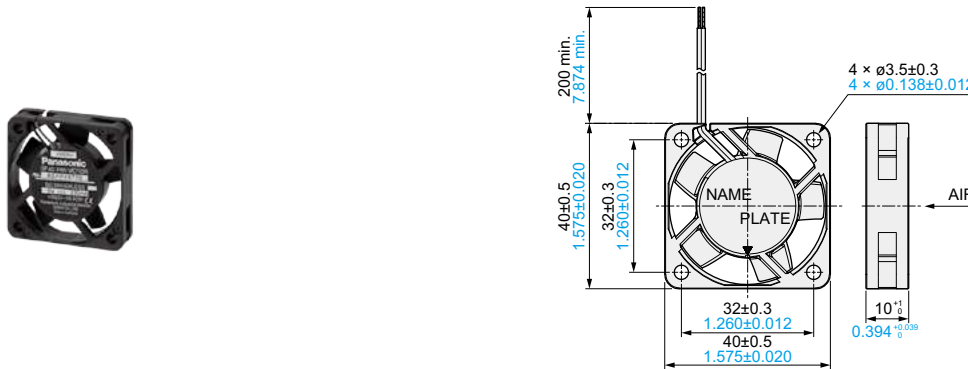
- 1: Lead wire type

### Rated voltage

- 1: 100 V AC
- 2: 115 V AC

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

## ■Dimensions (mm in)



## ■Rating

### 1. Standard speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP40770 | 5                 | 1.35 / 0.90                             | 270 / 180                      | 6,750 / 7,500                                    | 0.16 / 0.19                                      | 39.0 / 50.0                           | 32.5 / 29.5                     | 16.0       |
| ASFP40771 | 12                | 1.08 / 0.72                             | 90 / 60                        |  |  |                                       |                                 |            |

### 2. Middle speed

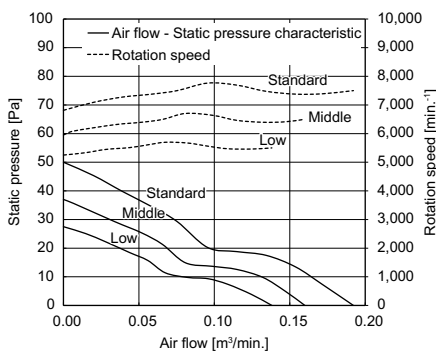
| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP42770 | 5                 | 1.00 / 0.70                             | 200 / 140                      | 5,850 / 6,500                                    | 0.13 / 0.16                                      | 27.0 / 37.0                           | 27.5 / 24.5                     | 16.0       |
| ASFP42771 | 12                | 0.96 / 0.60                             | 80 / 50                        |  |  |                                       |                                 |            |

### 3. Low speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP44770 | 5                 | 0.65 / 0.40                             | 130 / 80                       | 4,950 / 5,500                                    | 0.10 / 0.14                                      | 19.0 / 27.5                           | 24.5 / 21.5                     | 16.0       |
| ASFP44771 | 12                | 0.72 / 0.48                             | 60 / 40                        |  |  |                                       |                                 |            |

Note: Noise levels are based on measurements taken at a distance of 1 m 3.281 ft from the front of the fan.

## ■Data (air flow - static pressure characteristic)



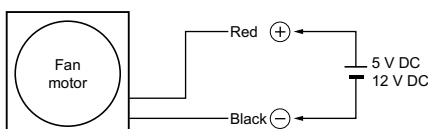
## ■Materials used

Frame: plastic  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL1061 and AWG26

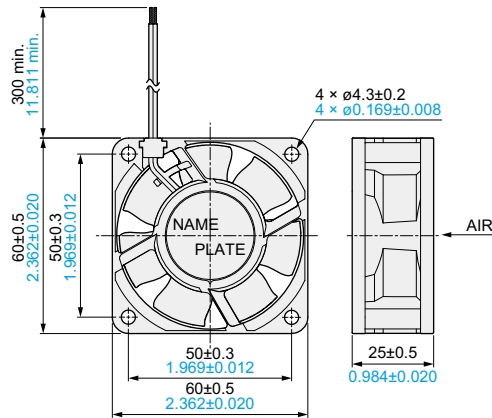
## ■Specifications

|                                     |   |                           |
|-------------------------------------|---|---------------------------|
| Ambient temperature                 | -10 to +60 °C +14 to +140 °F  |                           |
| Humidity resistance test conditions | +85 °C +185 °F, 95 % RH, 240 hours  |                           |
| Temperature rise                    | Coil surface: Max. +50 °C +122 °F (Rated voltage, by resistive method)<br>External surface: Max. +20 °C +68 °F (Rated voltage, by thermocouple method)                |                           |
| Breakdown voltage                   | 500 V AC for 1 min. (between lead wire and external housing)  |                           |
| Insulation resistance               | Min. 10 MΩ (at 500 V DC)  |                           |
| Vibration resistance                | Frequency   | 10 to 55 Hz               |
|                                     | Double amplitude width  | 0.75 mm 0.030 in          |
|                                     | Applied direction   | X, Y and Z directions     |
|                                     | Applied time  | 10 min. in each direction |
| Lead wire tensile strength          | 9.8 N, single wires did not break at 15 seconds   |                           |
| Fan blockage                        | No coil burnout even after blockage of 72 hours at rated voltage.   |                           |
| Reverse polarity power connection   | No damage even after reverse polarity connection for short time at rated voltage.   |                           |
| Expected life                       | 50,000 hours at +40 °C +104 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.) |                           |

## ■Wiring diagram



## ■ Dimensions (mm in)



## ■ Rating

### 1. Standard speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP60371 | 12                | 1.68 / 1.20                             | 140 / 100                      | 3,800 / 4,000                                    | 0.51 / 0.56                                      | 39.0 / 46.0                           | 32.5 / 27.5                     | 65         |
| ASFP60372 | 24                | 1.92 / 1.44                             | 80 / 60                        |  |  |                                       |                                 |            |

### 2. Middle speed

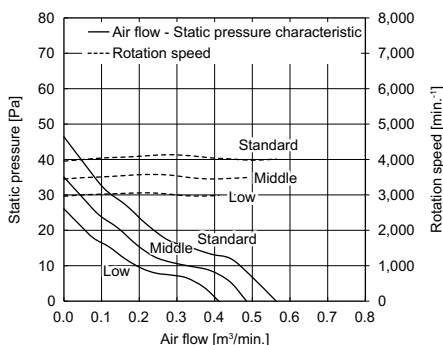
| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP62371 | 12                | 1.32 / 0.96                             | 110 / 80                       | 3,300 / 3,500                                    | 0.44 / 0.48                                      | 29.0 / 35.0                           | 28.5 / 23.5                     | 65         |
| ASFP62372 | 24                | 1.44 / 0.96                             | 60 / 40                        |  |  |                                       |                                 |            |

### 3. Low speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP64371 | 12                | 0.96 / 0.72                             | 80 / 60                        | 2,800 / 3,000                                    | 0.37 / 0.41                                      | 21.0 / 26.0                           | 26.0 / 21.0                     | 65         |
| ASFP64372 | 24                | 1.20 / 0.72                             | 50 / 30                        |  |  |                                       |                                 |            |

Note: Noise levels are based on measurements taken at a distance of 1 m 3.281 ft from the front of the fan.

## ■ Data (air flow - static pressure characteristic)



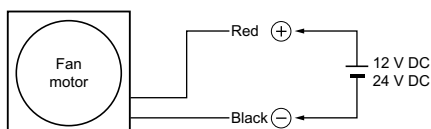
## ■ Materials used

Frame: plastic  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL3385 and AWG26

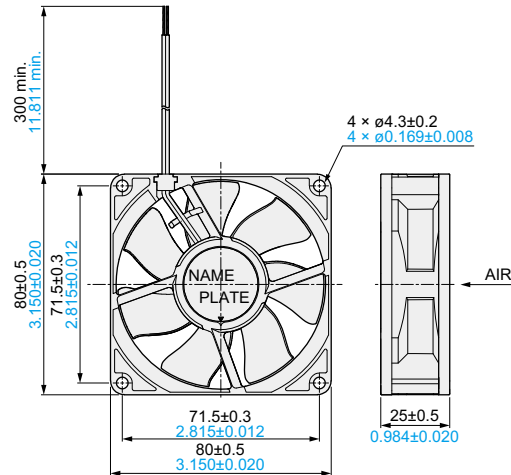
## ■ Specifications

|                                     |   |
|-------------------------------------|---|
| Ambient temperature                 | -10 to +60 °C +14 to +140 °F  |
| Humidity resistance test conditions | +85 °C +185 °F, 95 % RH, 240 hours  |
| Temperature rise                    | Coil surface: Max. +50 °C +122 °F (Rated voltage, by resistive method)<br>External surface: Max. +20 °C +68 °F (Rated voltage, by thermocouple method)                |
| Breakdown voltage                   | 500 V AC for 1 min. (between lead wire and external housing)  |
| Insulation resistance               | Min. 10 MΩ (at 500 V DC)  |
| Frequency                           | 10 to 55 Hz   |
| Double amplitude width              | 0.75 mm 0.030 in  |
| Applied direction                   | X, Y and Z directions   |
| Applied time                        | 10 min. in each direction   |
| Lead wire tensile strength          | 9.8 N, single wires did not break at 15 seconds   |
| Fan blockage                        | No coil burnout even after blockage of 72 hours at rated voltage.   |
| Reverse polarity power connection   | No damage even after reverse polarity connection for short time at rated voltage.   |
| Expected life                       | 40,000 hours at +60 °C +140 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.) |

## ■ Wiring diagram



## ■ Dimensions (mm in)



## ■ Rating

### 1. Standard speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP80371 | 12                | 2.16 / 1.68                             | 180 / 140                      | 2,900 / 3,100                                    | 1.07 / 1.17                                      | 32.0 / 37.5                           | 35.0 / 30.0                     | 80         |
| ASFP80372 | 24                | 2.16 / 1.92                             | 90 / 80                        |  |  |                                       |                                 |            |

### 2. Middle speed

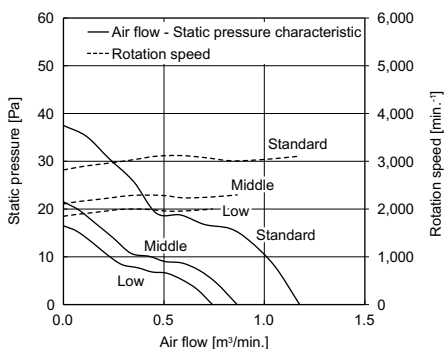
| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP82371 | 12                | 0.96 / 0.72                             | 80 / 60                        | 2,100 / 2,300                                    | 0.76 / 0.86                                      | 17.0 / 21.5                           | 27.0 / 22.0                     | 80         |
| ASFP82372 | 24                | 1.20 / 0.96                             | 50 / 40                        |  |  |                                       |                                 |            |

### 3. Low speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP84371 | 12                | 0.72 / 0.60                             | 60 / 50                        | 1,800 / 2,000                                    | 0.65 / 0.74                                      | 12.5 / 16.5                           | 24.0 / 19.0                     | 80         |
| ASFP84372 | 24                | 0.96 / 0.72                             | 40 / 30                        |  |  |                                       |                                 |            |

Note: Noise levels are based on measurements taken at a distance of 1 m 3.281 ft from the front of the fan.

## ■ Data (air flow - static pressure characteristic)



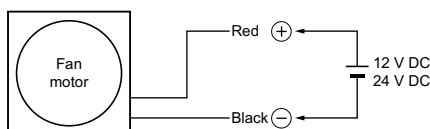
## ■ Materials used

Frame: plastic  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL3385 and AWG26

## ■ Specifications

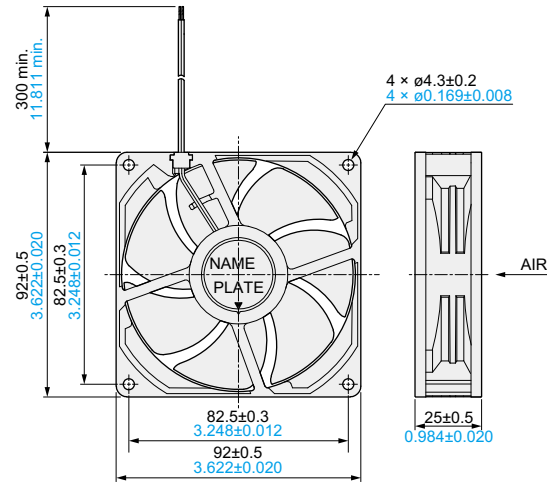
|                                     |   |                       |
|-------------------------------------|---|-----------------------|
| Ambient temperature                 | -10 to +60 °C +14 to +140 °F  |                       |
| Humidity resistance test conditions | +85 °C +185 °F, 95 % RH, 240 hours  |                       |
| Temperature rise                    | Coil surface: Max. +50 °C +122 °F (Rated voltage, by resistive method)<br>External surface: Max. +20 °C +68 °F (Rated voltage, by thermocouple method)                |                       |
| Breakdown voltage                   | 500 V AC for 1 min. (between lead wire and external housing)  |                       |
| Insulation resistance               | Min. 10 MΩ (at 500 V DC)  |                       |
| Vibration resistance                | Frequency   | 10 to 55 Hz           |
|                                     | Double amplitude width  | 0.75 mm 0.030 in      |
|                                     | Applied direction   | X, Y and Z directions |
| Applied time                        | 10 min. in each direction   |                       |
| Lead wire tensile strength          | 9.8 N, single wires did not break at 15 seconds   |                       |
| Fan blockage                        | No coil burnout even after blockage of 72 hours at rated voltage.   |                       |
| Reverse polarity power connection   | No damage even after reverse polarity connection for short time at rated voltage.   |                       |
| Expected life                       | 40,000 hours at +60 °C +140 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.) |                       |

## ■ Wiring diagram





## ■Dimensions (mm in)



## ■Rating

### 1. Standard speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP90371 | 12                | 2.04 / 1.68                             | 170 / 140                      | 2,550 / 2,750                                    | 1.15 / 1.28                                      | 30.0 / 36.2                           | 34.0 / 29.0                     | 102        |
| ASFP90372 | 24                | 2.16 / 1.68                             | 90 / 70                        |  |  |                                       |                                 |            |

### 2. Middle speed

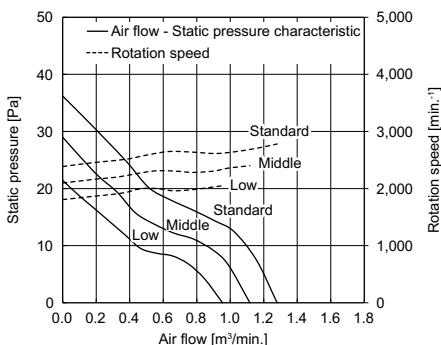
| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP92371 | 12                | 1.56 / 1.20                             | 130 / 100                      | 2,200 / 2,400                                    | 1.00 / 1.13                                      | 24.0 / 29.0                           | 30.0 / 25.0                     | 102        |
| ASFP92372 | 24                | 1.68 / 1.20                             | 70 / 50                        |  |  |                                       |                                 |            |

### 3. Low speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP94371 | 12                | 1.08 / 0.84                             | 90 / 70                        | 1,850 / 2,050                                    | 0.80 / 0.95                                      | 17.0 / 21.5                           | 27.0 / 22.0                     | 102        |
| ASFP94372 | 24                | 1.20 / 0.96                             | 50 / 40                        |  |  |                                       |                                 |            |

Note: Noise levels are based on measurements taken at a distance of 1 m 3.281 ft from the front of the fan.

## ■Data (air flow - static pressure characteristic)



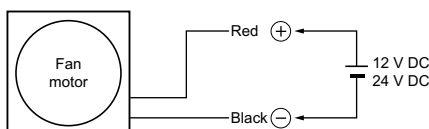
## ■Materials used

Frame: plastic  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL3385 and AWG26

## ■Specifications

|                                     |   |
|-------------------------------------|---|
| Ambient temperature                 | -10 to +60 °C +14 to +140 °F  |
| Humidity resistance test conditions | +85 °C +185 °F, 95 % RH, 240 hours  |
| Temperature rise                    | Coil surface: Max. +50 °C +122 °F (Rated voltage, by resistive method)<br>External surface: Max. +20 °C +68 °F (Rated voltage, by thermocouple method)                |
| Breakdown voltage                   | 500 V AC for 1 min. (between lead wire and external housing)  |
| Insulation resistance               | Min. 10 MΩ (at 500 V DC)  |
| Frequency                           | 10 to 55 Hz   |
| Double amplitude width              | 0.75 mm 0.030 in  |
| Applied direction                   | X, Y and Z directions   |
| Applied time                        | 10 min. in each direction   |
| Lead wire tensile strength          | 9.8 N, single wires did not break at 15 seconds   |
| Fan blockage                        | No coil burnout even after blockage of 72 hours at rated voltage.   |
| Reverse polarity power connection   | No damage even after reverse polarity connection for short time at rated voltage.   |
| Expected life                       | 40,000 hours at +60 °C +140 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.) |

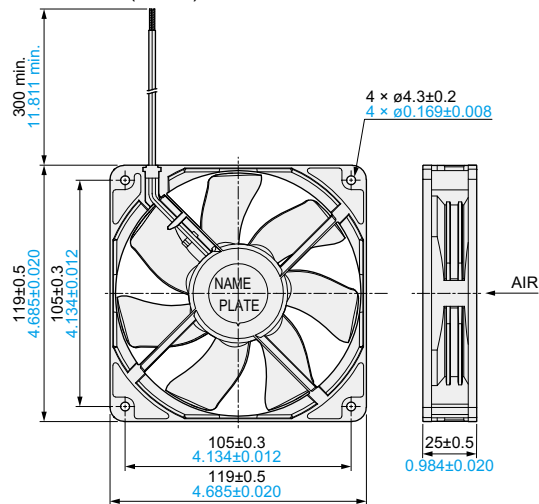
## ■Wiring diagram







### Dimensions (mm in)



### Rating

#### 1. Standard speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP10371 | 12                | 4.56 / 2.88                             | 380 / 240                      | 2,300 / 2,500                                    | 2.26 / 2.58                                      | 39.5 / 48.0                           | 42.0 / 37.0                     | 165        |
| ASFP10372 | 24                | 4.56 / 2.64                             | 190 / 110                      |  |  |                                       |                                 |            |

#### 2. Middle speed

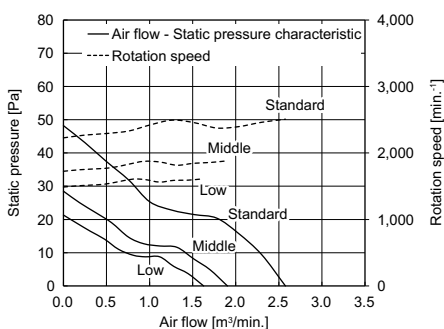
| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP12371 | 12                | 2.40 / 1.56                             | 200 / 130                      | 1,700 / 1,900                                    | 1.65 / 1.90                                      | 21.5 / 28.5                           | 35.0 / 30.0                     | 165        |
| ASFP12372 | 24                | 2.40 / 1.44                             | 100 / 60                       |  |  |                                       |                                 |            |

#### 3. Low speed

| Part No.  | Rated voltage [V] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Weight [g] |
|-----------|-------------------|---|--------------------------------|--|--|---------------------------------------|---------------------------------|------------|
| ASFP14371 | 12                | 1.68 / 1.08                             | 140 / 90                       | 1,400 / 1,600                                    | 1.34 / 1.63                                      | 14.5 / 21.0                           | 31.5 / 26.5                     | 165        |
| ASFP14372 | 24                | 1.68 / 0.96                             | 70 / 40                        |  |  |                                       |                                 |            |

Note: Noise levels are based on measurements taken at a distance of 1 m 3.281 ft from the front of the fan.

### Data (air flow - static pressure characteristic)



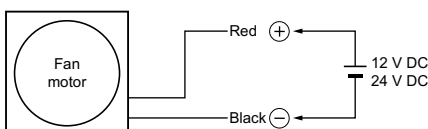
### Materials used

Frame: plastic  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL3385 and AWG26

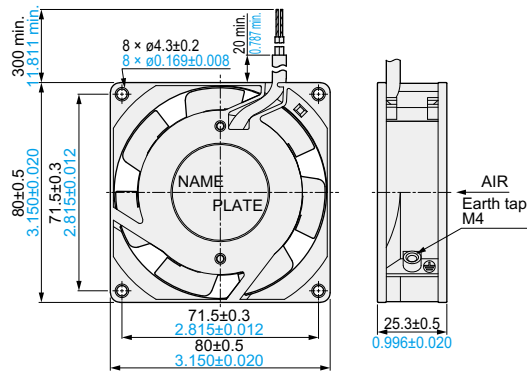
### Specifications

|                                     |   |                       |
|-------------------------------------|---|-----------------------|
| Ambient temperature                 | -10 to +60 °C +14 to +140 °F  |                       |
| Humidity resistance test conditions | +85 °C +185 °F, 95 % RH, 240 hours  |                       |
| Temperature rise                    | Coil surface: Max. +50 °C +122 °F (Rated voltage, by resistive method)<br>External surface: Max. +20 °C +68 °F (Rated voltage, by thermocouple method)                |                       |
| Breakdown voltage                   | 500 V AC for 1 min. (between lead wire and external housing)  |                       |
| Insulation resistance               | Min. 10 MΩ (at 500 V DC)  |                       |
| Vibration resistance                | Frequency   | 10 to 55 Hz           |
|                                     | Double amplitude width  | 0.75 mm 0.030 in      |
|                                     | Applied direction   | X, Y and Z directions |
| Applied time                        | 10 min. in each direction   |                       |
| Lead wire tensile strength          | 9.8 N, single wires did not break at 15 seconds   |                       |
| Fan blockage                        | No coil burnout even after blockage of 72 hours at rated voltage.   |                       |
| Reverse polarity power connection   | No damage even after reverse polarity connection for short time at rated voltage.   |                       |
| Expected life                       | 40,000 hours at +60 °C +140 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.) |                       |

### Wiring diagram



## ■ Dimensions (mm in)



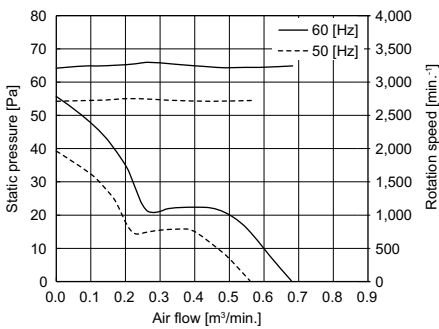
## ■ Rating

### 1. Lead wire type standard speed

| Part No.  | Rated voltage [V] | Frequency [Hz] | Rated power consumption [W] Max. / Ave. | Rated current [mA] Max. / Ave. | Locked current [mA] Max. / Ave. | Rotation speed [min. <sup>-1</sup> ] Min. / Ave. | Max. air flow [m <sup>3</sup> /min.] Min. / Ave. | Max. static pressure [Pa] Min. / Ave. | Noise [dB] Max. / Ave. (Note 1) | Operating voltage range (V) [%] | Weight [kg] |
|-----------|-------------------|----------------|---|--------------------------------|---------------------------------|--|--|---------------------------------------|---------------------------------|---------------------------------|-------------|
| ASEP80211 | 100               | 50             | 8.8 / 8.0                               | 130 / 110                      | 150 / 120                       | 2,500 / 2,700                                    | 0.52 / 0.57                                      | 34.0 / 39.0                           | 29.0 / 24.0 (34.0 / 29.0)       | ±10                             | 0.24        |
|           |                   | 60             | 7.15 / 6.5                              | 110 / 90                       | 140 / 110                       | 3,000 / 3,200                                    | 0.63 / 0.68                                      | 48.0 / 55.0                           | 36.0 / 31.0 (41.0 / 36.0)       |                                 |             |
| ASEP80212 | 115               | 50             | 8.8 / 8.0                               | 110 / 93                       | 130 / 100                       | 2,500 / 2,700                                    | 0.52 / 0.57                                      | 34.0 / 39.0                           | 29.0 / 24.0 (34.0 / 29.0)       |                                 |             |
|           |                   | 60             | 7.15 / 6.5                              | 90 / 77                        | 120 / 90                        | 3,000 / 3,200                                    | 0.63 / 0.68                                      | 48.0 / 55.0                           | 36.0 / 31.0 (41.0 / 36.0)       |                                 |             |

Note: Noise level was measured at a distance of 1 m 3.281 ft from side of fan. Values in brackets were measured at a distance of 1 m 3.281 ft from front of fan.

## ■ Data (air flow - static pressure characteristic)



## ■ Materials used

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

## ■ Specifications

|                       |   |                       |
|-----------------------|---|-----------------------|
| Ambient temperature   | -10 to +60 °C +14 to +140 °F  |                       |
| Ambient humidity      | 15 to 85 % RH   |                       |
| Breakdown voltage     | 1,500 V AC for 1 min. (between charging section and frame)  |                       |
| Insulation resistance | Min. 100 MΩ (at 500 V DC megger) (between charging section and frame)   |                       |
| Insulation class      | UL: A class   |                       |
| Vibration resistance  | Frequency   | 10 to 55 Hz           |
|                       | Double amplitude width  | 0.75 mm 0.030 in      |
|                       | Applied direction   | X, Y and Z directions |
| Applied time          | 10 min. in each direction   |                       |
| Protection            | Impedance protected   |                       |
| Mean life             | 100,000 hours at +25 °C +77 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.) |                       |

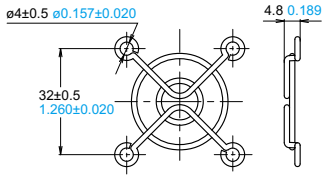
# Accessories

## ■ Dimensions (mm in)

### 1. Fan guard

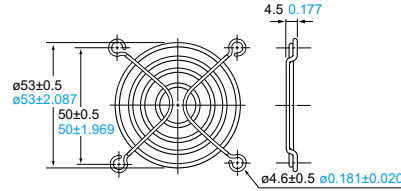
#### ASFN48001

Recognized for □40 by UL/CSA  
Material used: steel



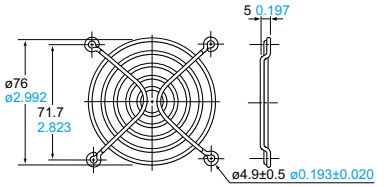
#### ASFN68001

Recognized for □60 by UL/CSA  
Material used: steel



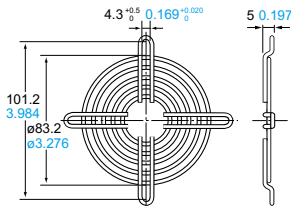
#### ASFN88001

Recognized for □80 by UL/CSA  
Material used: steel



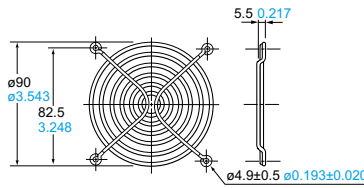
#### ASEN88001

For □80 by Electrical Appliance and  
Material Safety Law  
Material used: steel



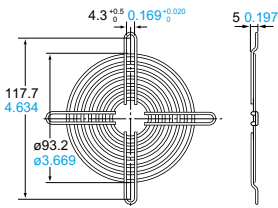
#### ASFN98001

Recognized for □92 by UL/CSA  
Material used: steel



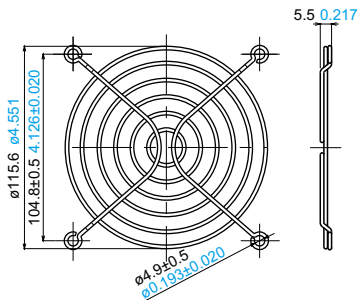
#### ASEN98001

For □92 by Electrical Appliance and  
Material Safety Law  
Material used: steel



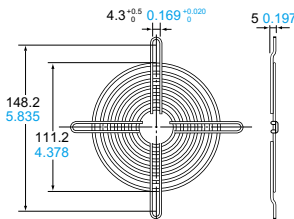
#### ASFN18001

Recognized for □120 by UL/CSA  
Material used: steel



#### ASEN18001

For □120 by Electrical Appliance and  
Material Safety Law  
Material used: steel



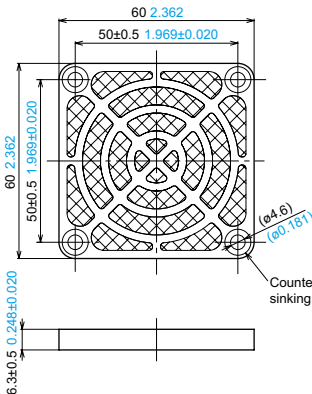
### 2. Fan motor filter



(ASEN18002)

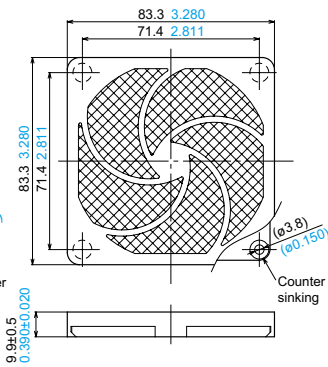
#### ASEN68002

For □60



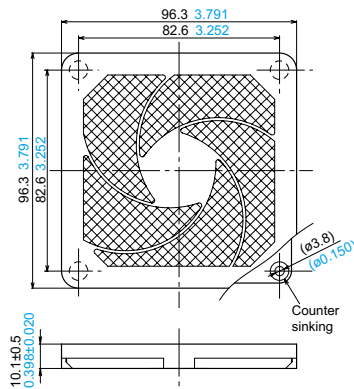
#### ASEN88002

For □80



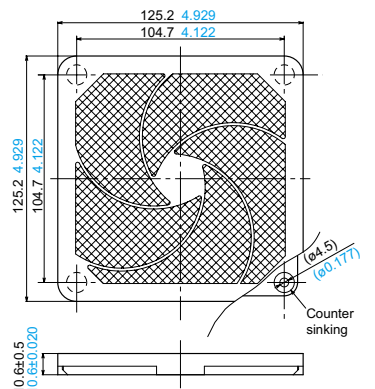
#### ASEN98002

For □92



#### ASEN18002

For □120



\*Non-indicated tolerance is  $\pm 1 \pm 0.039$ .

# Functions of DC Fan Sensor

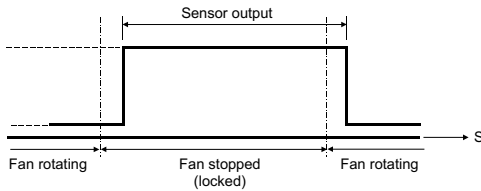
## ■DC Fan sensor

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

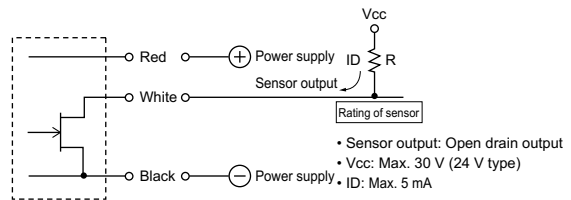
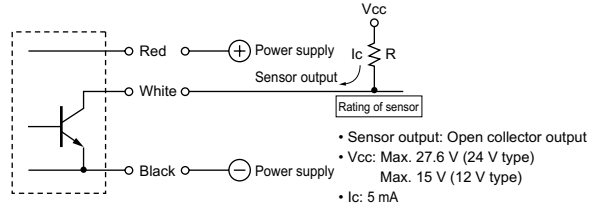


Notes: 1) Output may be high for approximately 0.5 seconds when power is turned on.

2): The continually high output waveform type when fan is stopped (locked) is standard.

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



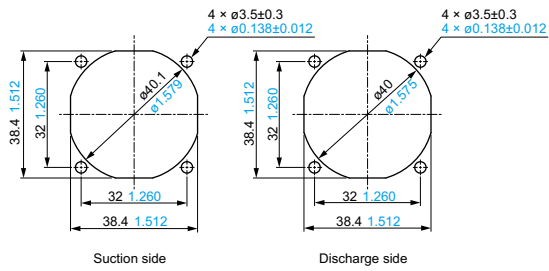
Notes: 1) Set the resistance value (R) so that the sensor circuit current does not exceed 5 mA. Exceeding the values above may lead to IC damage.

2) Open drain output only applies to ASFP1 series 24 V type.

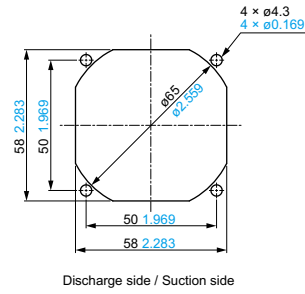
# Mounting Hole Dimensions

## ■ For DC Fan motor

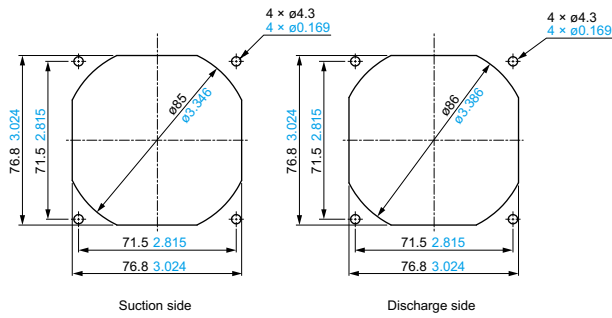
### 1. □40 series



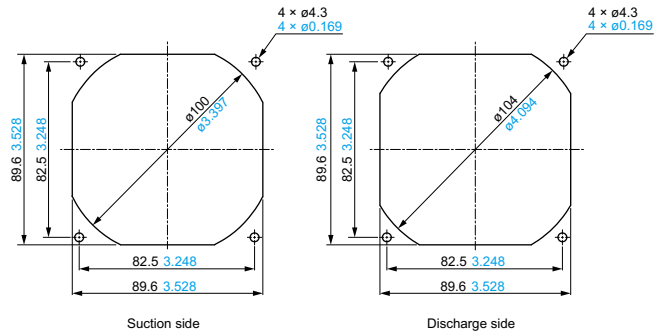
### 2. □60 series



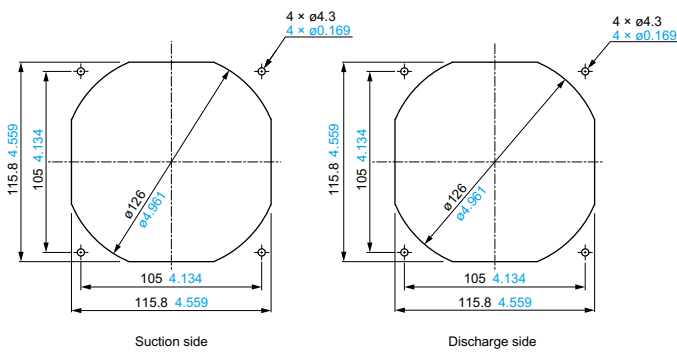
### 3. □80 series



### 4. □92 series

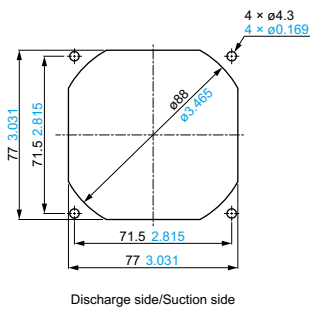


### 5. □120 series



## ■ For AC Fan motor

### 1. □80 series



\*Non-indicated tolerance is  $\pm 0.5 \pm 0.020$ .

# Cautions For Use

## Cautions for Safety Please observe the following in order to prevent accidents and injury.

Be sure to read the cautions for use the product correctly before installing, operating, maintaining and inspecting the product.  
Be sure to master all aspects of the device including safety and cautions.

- Warning** Cases in which a user could die or undergo serious injury due to incorrect handling.
- Caution** Cases in which a user could undergo serious injury or property could be damaged.

### ⚠ Cautions

- Please employ a protective device if there is a possibility of the device overheating when the fan stops.
- Do not touch the blades when they are rotating as injury may result.
- Be sure to ground the device to prevent the possibility of electrocution. (only applies to AC fan motors)
- Do not touch the terminals when the device is powered as you may be electrocuted. (only applies to AC fan motors)

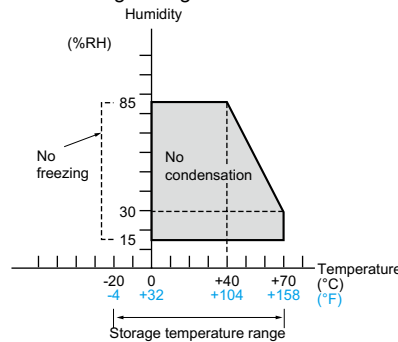
### ■ DC Fan motor

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.

### ■ DC Fan motor and AC Fan motor

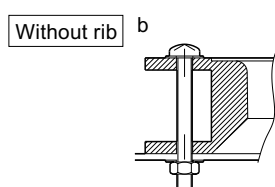
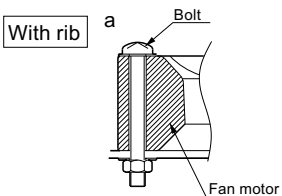
1. Since our fan motor employs precision ball bearings, due care should be taken not to apply any shock in handling.
2. Due to the bearing mechanism, the noise level will increase in proportion to the length of time the fan is used. Avoid use where the temperature is high or where there is a lot of dirt.
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. Installation  
Install according to the diagrams below.

6. Fan life is based on usage at room temperature (AC fan) and temperature +60 °C +140 °F. 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.
7. Transport and storage conditions  
The allowable specifications for environments suitable for transportation and storage are given below.

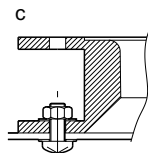


- No freezing between -20 to 0 °C -4 to +32 °F
- No condensation in the range above between 0 to +70 °C +32 to +158 °F

- 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.



Recommended tightening torque  
DC fan motor: Max. 0.67 N•m  
AC fan motor: Max. 0.98 N•m



When there is no rib, we recommend securing as shown in Fig. c.

# Technical Information

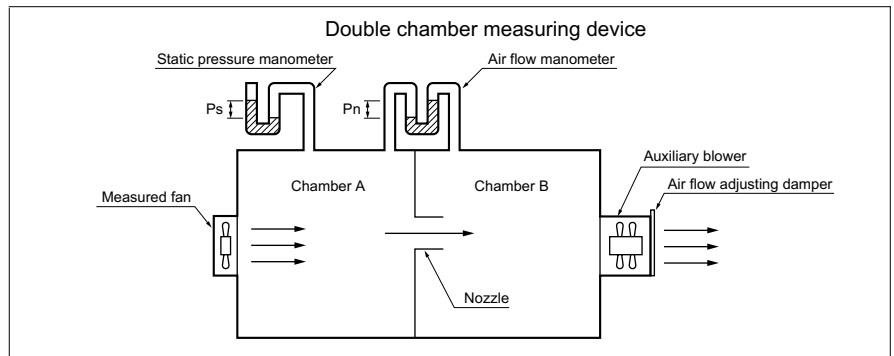
## Measurement of air flow and static pressure

It is very difficult to measure air flow 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 air flow and static pressure are varied by opening or closing the damper, each value is read on the manometer.

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

**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.



### 1. Equation

Air flow Q =

$$60 \times C \times \left(\frac{D}{2}\right)^2 \times \pi \times \sqrt{\frac{2g}{\gamma} \times (P_n \times 9.81)} \quad (\text{m}^3/\text{min})$$

In the above equation,

C: Flow coefficient of nozzle

D: Nozzle diameter (m)

$\gamma$ : Air density =

$$\left[1.293 \times \frac{273}{273+t} \times P \times 133.32\right] (\text{kg}/\text{m}^3)$$

t: Temperature (°C)

P: Atmospheric pressure (Pa)

g: 9.8 (m/s<sup>2</sup>)

Pn: Air flow differential pressure (Pa)

Ps: Static pressure (Pa)

### 2. Unit conversion table

#### 1) Air flow

| m <sup>3</sup> /min | ℓ/s    | CFM (ft <sup>3</sup> /min) |
|---------------------|--------|----------------------------|
| 1                   | 16.678 | 35.334                     |
| 0.06                | 1      | 2.1186                     |
| 0.0283              | 0.472  | 1                          |

#### 2) Static pressure

| Pa      | mmH <sub>2</sub> O (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 **3.281 ft** from the front of the suction opening. For the AC fan, noise is measured in dB (A) 1 m **3.281 ft** from the front and side of suction opening. 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.

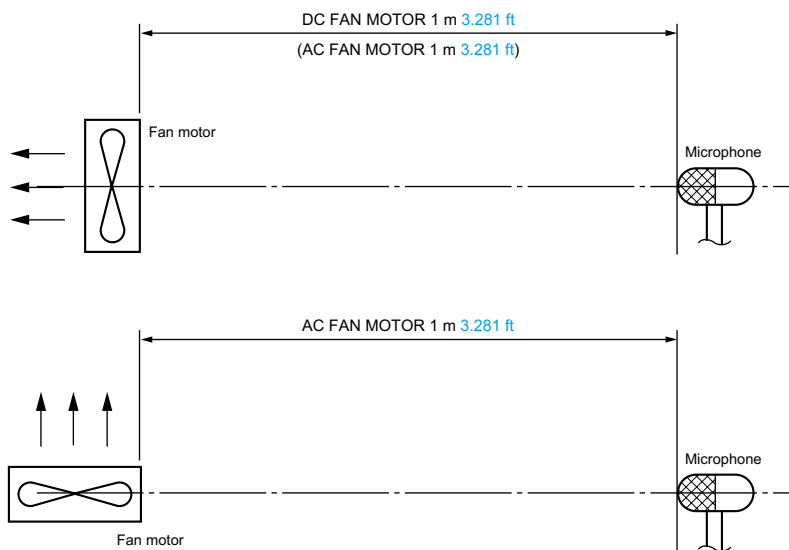
Our measurements were made in an anechoic chamber with a background noise of approximately 15 dB.

## Countermeasures against noise

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 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 13), 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.

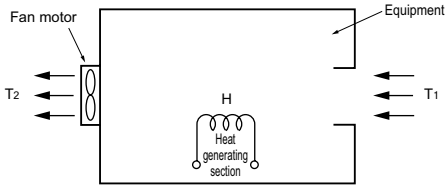




## Method of selecting fan motor

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)

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

where

- Q: Air flow (m<sup>3</sup>/min.)
- H: Heat generated (kW)
- T<sub>1</sub>: Inlet air temperature (°C)
- T<sub>2</sub>: 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.

$$\Delta P = KQ^n \text{ .....Equation (2)}$$

where

- ΔP: Pressure drop (Pa)
- K: Constant determined for each equipment
- Q: Air flow (m<sup>3</sup>/min.)
- n: Coefficient determined by air flow

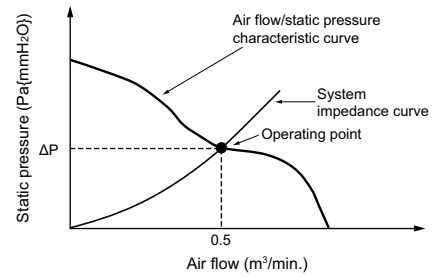
In this equation, it is generally considered that n = 2.

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.

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



The intersection of the air flow/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 flow "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 flow "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 flow.

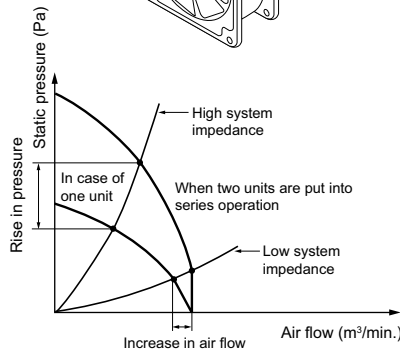
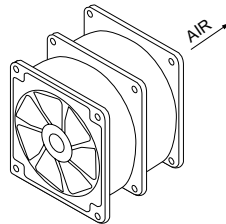
## Fan motor series/parallel operation

When one fan motor does not satisfy a sufficient cooling capacity;

Series operation: Higher pressure characteristic obtained. (Nearly double)

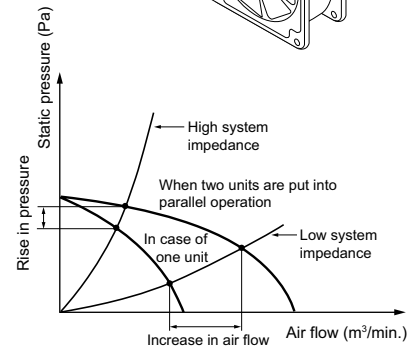
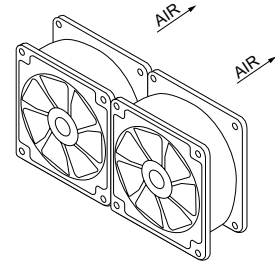
Parallel operation: Larger air flow characteristic obtained. (Nearly double)

### 1. In case of series operation



- In case of high system impedance, static pressure rises.
- In case of low system impedance, air flow slightly increases.

### 2. In case of parallel operation



- In case of low system impedance, air flow increases.
- In case of high system impedance, pressure slightly rises.

Please contact .....

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