2008/2009
Fans and Blowers
GENERAL CATALOGUE

DC Axial Fans
DC Centrifugal Blowers
Variable-speed Fans and Blowers
Customized Fans and Blowers
AC Fans and Blowers
Please visit our website for any technical inquiries or information.
For non-technical inquiries, contact our local NIDEC SERVO sales office or distributor in your area.
This catalog contains only the latest standard products in the inventory and semi-standard products. Contact your NIDEC SERVO sales office or distributor for details about customized and semi-customized products.
The dimensions, specifications, and components contained in this catalog are subject to change without prior notice due to further product improvements.
Contact NIDEC SERVO Co. or a distributor if you wish to obtain product samples.
Catalog Information Guide

The descriptions of the AC and DC fans and blowers appear on the product pages as shown below. Contact NIDEC SERVO if clarification or further information is desired.

- Lineup of standard products and basic characteristics.
- Fan/blower noise in free air state. (Static pressure 0 Pa) (This value is sometimes considerably higher when the fan or blower is installed in your equipment. See pages G-8 to G-10)
- Operable voltage range. (PQ characteristics vary depending on the operating voltage. See page G-7)
- Startup current value. (Use to select the power source)
- Current value in free air state. (The current at the operating point will be an increment of 20% or less of the rating with fans and will be below the rating with blowers. See page G-13)
- Important notes regarding the basic characteristics.
- List of products which do not meet the standard life.
- Mounting hole dimensions as examples for fan mounting. (Recommended shapes to maximize fan performance characteristics)
- Customizing, safety standards, 3D data.

Contact NIDEC SERVO if clarification or further information is desired.
High customer satisfaction achieved thanks to our quiet and energy efficient products with unsurpassed reliability and customizability.

Focusing on product development for computer related equipment, the compact axial fans from NIDEC SERVO are the result of technological innovations that minimize noise to the greatest possible extent.

NIDEC SERVO’s product designs incorporate several industry firsts, including specially molded 3-dimensional blades, and GentleTyphoon fans with a unique blade shape. Market requirements are always researched and catered to in advance; meaning customers always receive products that perform well ahead of market rivals.

- Versatile lineups of axial fans and centrifugal blowers
  Fans for high static pressure applications are also supplied as standard products.

  The aerodynamic characteristics required for fan motors differ depending on the equipment in which they are installed, but may roughly be grouped into airflow focus and pressure focus types respectively. The axial fans and centrifugal blowers (also called “centrifugal fans” and “sirocco fans”), as fan motors of NIDEC SERVO, fall into both the former and latter categories. Recently, NIDEC SERVO has also developed pressure focus type axial fans, suitable for use in high static pressure regions, in response to diverse customer requirements.

  As its name implies, an axial fan generates airflow in the motor axial direction. Airflow can be generated cylindrically by the propeller from the entire diameter of the fan, allowing considerable airflow generation. The axial fan sucks in air and pushes it out through the propeller blades, without large pressure (static pressure) output.

  The centrifugal blower, on the other hand, recovers the airflow released by the impeller blades in a centrifugal direction from the motor shaft center via the scroll casing (also called a “housing” or “frame”) and discharges it unidirectionally. This system effectively converts a centrifugal force into pressure, increasing the pressure (static pressure) to blow the air. However, only a limited airflow passes through the impeller, preventing a large airflow from being obtained.

  NIDEC SERVO refers to the former as fans and the latter as blowers, to easily distinguish the differences between the two types.

  In addition to these two types, NIDEC SERVO has recently released axial fans with features resembling those of the blower (high static pressure region fans, e.g. the G1751M series). These fans are attracting the attention of the IT industry and are highly rated as quiet products, capable of saving energy with high-impedance equipment, with which conventional axial fans have not been efficient.

- Our ceaseless quest to reduce noise

  NIDEC SERVO continues to introduce a never ending series of quiet products to the market. People know to talk to NIDEC SERVO if low noise is a priority, and that reputation has grown over many years. Day and night, NIDEC SERVO is active in the research and development of low noise technology. NIDEC SERVO also swiftly introduced computational fluid dynamics (CFD) to deliver quiet fans and blowers that customers can use without worrying about designing noise reduction measures into their application.

- Versatile lineup of energy saving products

  The power consumption of fans may be problematic with some high airflow products and with large fans and blowers. When several units are used, a high capacity power source must be installed. NIDEC SERVO markets a large variety of high-efficiency fan motors that can reduce the power capacity required for such machines.

  Only highly reliable products are delivered to customers

  With product liability in mind, it is the logical responsibility of manufacturers to supply highly reliable products that can be used by customers without any product safety worries. Products with new designs are only supplied to the market after their viability has been verified by subjecting them to various reliability tests and proving that they are problem-free. Moreover, only high-reliability parts are used in the drive circuits of DC fans and blowers. NIDEC SERVO develops and designs products by specifying the strictest derating level in the industry.

- Customized and semi-customized product specifications

  Products are supplied in optimum customized form for bulk purchases. NIDEC SERVO is capable of swiftly accomplishing optimum designs by fully exploiting CFD technology. NIDEC SERVO will propose optimum semi-customized fans and blowers by combining its large variety of customized parts. Let NIDEC SERVO devise a suitable solution to meet your requirements.

- All NIDEC SERVO catalog products conform to the EU RoHS Directive

  All NIDEC SERVO products conform to the EU RoHS Directive by restricting the contents of six specified hazardous substances (lead, mercury, cadmium, hexavalent chromium, PBD and PBDE) to below tolerable values. (All products produced from the beginning of January 2006 meet the RoHS Directive. Certain standard inventory products may include those produced in and before December 2005. Please specify in your purchase orders that only RoHS-compliant products should be shipped.)

  NIDEC SERVO is also active in reducing another 18 hazardous substances.

- AC and DC fans

  One of the prominent advantages of AC fans is the fact that they can be directly connected to an AC power supply. The DC fan boasts high motor efficiency and is power-saving, as well as generating less heat, allowing the weight of the motor and venturi case to be reduced.

  AC fans and blowers use AC induction motors and are suitable for constant speed operation. DC fans and blowers, meanwhile, use DC brushless motors and can have highly variable airflow. By varying the voltage supply, the speed is also easily adjustable. Standard DC fans and blowers regulated by variable-speed control are also available. See pages G-51 for further details.

  [Principal applications]

  - Computers and peripheral terminal equipment
  - Servers
  - Personal computers
  - Copiers
  - Audio equipment
  - Broadcasting equipment
  - Communication equipment
  - Industrial equipment
  - Medical equipment
  - Game machines

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**Features of NIDEC SERVO Co. Fans & Blowers**

**AC/DC Axial Fans & Blowers**

**AC fans**

- Side intake and outlet
- High static pressure
- Linear intake and outlet
- Suitable for equipment with small ventilation resistance

**DC fans**

- Right angle intake and outlet
- Suitable for equipment requiring local cooling and with large ventilation resistance

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**Fans & Blowers**

**AC fans**

- **High capacity power supply**
- **High static pressure**
- **Linear intake and outlet**
- **Suitable for equipment with small ventilation resistance**

**DC fans**

- **Right angle intake and outlet**
- **Suitable for equipment requiring local cooling and with large ventilation resistance**

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**Blowers**

**High capacity power supply**

- **High static pressure**
- **Right angle intake and outlet**
- **Suitable for equipment requiring local cooling and with large ventilation resistance**
Motor Selection Guide (Fans)

### AC/DC Axial Fans & Blowers

#### Selection from external dimensions and max. airflow

<table>
<thead>
<tr>
<th>AC/DC</th>
<th>External Dimensions mm (inch)</th>
<th>Series</th>
<th>Page in Catalog</th>
<th>Max. airflow (m³/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>40 x 13 (1.6&quot; x 0.5&quot;)</td>
<td>EUDC</td>
<td>G-16</td>
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<tr>
<td>DC</td>
<td>40 x 28 (1.6&quot; x 1.1&quot;)</td>
<td>G0428C (G series)</td>
<td>G-31</td>
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<tr>
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<td>60 x 25 (2.4&quot; x 1.0&quot;)</td>
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<tr>
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<td>D0925C (Gentle Typhoon)</td>
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<tr>
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<td>G-23</td>
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<tr>
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<tr>
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<td>DC</td>
<td>172 x (51.6.8)50.0) x (2.0)</td>
<td>D1751M/D1751S</td>
<td>G-29/G-30</td>
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<td>DC</td>
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<td>G-36</td>
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<td>VE</td>
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<td>AC</td>
<td>92 x 25 (3.6 x 1.0)</td>
<td>WE</td>
<td>G-56</td>
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<td>AC</td>
<td>92 x 38 (3.6 x 1.5)</td>
<td>KA</td>
<td>G-57</td>
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<td>AC</td>
<td>120 x 25 (4.7 x 1.0)</td>
<td>SCUA/CU</td>
<td>G-53/G-58</td>
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<td>SCN/A/CN</td>
<td>G-54/G-59</td>
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<td>MA/PA</td>
<td>G-60/G-61</td>
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<tr>
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<td>180 x 90 (7.1&quot; x 3.5&quot;)</td>
<td>PL</td>
<td>G-62</td>
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</tbody>
</table>

#### Model code for DC fans and blowers (15-digit code)

- **D 12 38 B 24 B 5 A Z - 00**
  - Customized code
    - 00: Standard type
    - 01: Standard type (Model change product)
    - 04: 4P Terminal type
  - Rotation sensor
    - S: Lock detection type
    - Q: Sped detection type
    - R: Speed detection type (Output reversion type)
    - P: Pulse output type
    - Z: No sensor (Standard type)
  - Special code
    - A: Standard type
    - C: Higher moisture resistance
    - Y.Z: Variable speed
  - Speed
    - 1.2 ~ 9.A.B.C: Low ↔ High
  - Bearings
    - B: Ball bearing
  - Voltage
  - Frame type
    - B: Square metal venturi
    - C: Square resin venturi with ribs
    - D: Square resin venturi without ribs
    - E: Black painted type B
    - F: Round metal venturi
    - H: Spiral casing (1)
    - K: Reverse rotation spiral casing
  - Category
    - D: DC fan
    - E: DC blower
    - G: High static pressure DC fan

#### Manufacturing lot No.

- **9 A 25**
  - Date manufactured
  - Month manufactured: A ~ L = January ~ December
  - Year manufactured (Last digit of year)
## AC/DC Axial Fans & Blowers

### Motor Selection Guide (Blowers)

Selection from external dimensions and max. airflow

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>□48x25(1.9”x1.0”)</td>
<td>E0525H</td>
<td>G-37</td>
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<tr>
<td>DC</td>
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<tr>
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<tr>
<td>AC</td>
<td>□125x126x41(4.9”x5.0”x1.6”)</td>
<td>CB</td>
<td>G-63</td>
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</table>

### Model code for DC axial fans and blowers

**CNDC 12 B 7 R S**

- Sensor option: S: Lock detection type
- P: Pulse output type
- Q: Speed detection type
- SQ: Speed detection type
- Output revision type
- Venturi shape code: R: With ribs
- F: Without ribs
- V: Reinforcing spacer
- Revised No.: 4: Standard type
- Power saving type
- 7: Power saving type
- Speed/Bearings: Ball bearings
- B: Normal speed
- D: Half speed
- Z: High speed
- H: Super high speed
- U: Ultra speed
- N: Hyper speed
- K: Dual speeds
- Rated voltage: 5: DC 5 V
  - 12: DC 12 V
  - 24: DC 24 V
  - 48: DC 48 V
- Series name: EUDC, TUDC, PUDC, KUDC, KUDC, CUDC, CNDC, SMBD, MBDC, SFBD

### Model code for AC axial fans and blowers

**CN J 55 B 5 1**

- Sensor option: S: Sensor provided
- (Available on certain products only)
- Finish: 1: Black baking paint
- Wiring connection: 2: Terminal type
  - Centaur I only without grounding terminal
  - Centaur II with grounding terminal
  - Centaur III with grounding terminal
- Speed: B: Full speed
- D: Half speed
- F: Low speed
- Rated voltage: 55: AC100 V
  - 5: AC115 V
  - 60: AC200 V
  - 52: AC208 V ~ 230 V
  - 49: AC240 V
  - 47: AC100 V ~ 120 V
  - 48: AC200 V ~ 240 V
  - 77: AC220 V ~ 240 V / AC208 V ~ 230 V
  - 115: AC115 V
  - 150: AC250 V / AC 230 V
- Applicable standard: J: For domestic market
  - Overseas standards (UL, CSA, TÜV, VDE)
- Series name: VE, WE, KE, KE, G, SCU, SCU, SCU, SCU

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Characteristics of Fans and Blowers

1. Pressure loss (Ventilating resistance)

A force to obstruct the flow of air (pressure loss) is generated when air is channeled onto equipment, due to the parts layout and the shape of the air stream inside the equipment. This phenomenon is called ventilating resistance (also called “system impedance” and “channel resistance”). Air meets only modest resistance when it moves straight ahead within a wide space. (Fig. 1) When air passes through a narrow space or when the direction of an airflow changes, the ventilating resistance increases. (Fig. 2) The ventilating resistance increases further unless an outlet path (or a circulation path) is provided because an airflow cannot be created.

2. Differences in PQ characteristics of fans and blowers

As illustrated in Fig. 3, the PQ characteristics exhibit characteristic trends when a motor of equivalent power is used. The fan has a large airflow and its static pressure is 1/2 to 1/5 that of the blower. The blower has large static pressure and its airflow is 1/2 to 1/5 that of the fan.

In the absence of a ventilating resistance (0 Pa), the max. airflow (QFmax) flows, under circumstances where there are no objects located around the fan (This free air condition is the x-axis). However, this condition does not exist as long as a fan is assembled in equipment. The state showing considerable ventilating resistance and a lack of airflow corresponds to the y-axis in Fig. 3 and the airflow is zero because the air does not move. In this condition, there are obstacles in front and to the rear of a fan that prevent airflow or that shut off the circulation path of the air. This operating condition cannot be considered when a fan is used for cooling or ventilation purposes. (Continuing operation in this condition may damage the fan.)

The actual operating conditions vary between the two aforementioned extremes. Fig. 3 plots four ventilating resistances (plotted via quadratic curves). Units of equipment containing either a fan or a blower have varying ventilating resistances, of which these four curves show typical examples. The airflow flowing into the equipment is at the intersection between the ventilating resistance curve and the PQ characteristics of the fan or the blower. The curve of Ventilating Resistance 1, which has the smallest inclination, is assumed to be the ventilating resistance of ordinary fan or the blower. The curve of Ventilating Resistance 2, which has the largest inclination, is assumed to be the ventilating resistance of ordinary equipment. At this ventilating resistance, there are no large obstacles in front and to the rear of the fan and an adequate circulation path is provided. The fan can be operated most efficiently at this Ventilating Resistance 1, where about 80% of the maximum fan airflow is possible. (Airflow of QF2 with a fan and of QB2 with a blower respectively)

Of the four curves, the airflow of any equipment that has Ventilating Resistance Curve 4, with the largest inclination, will be a fraction of the max. airflow, even though a high performance fan or blower is installed. In this condition, the airflow will be QB1 with a blower and QF1 with a fan, the airflow of the blower being larger.

The airflow of Ventilating Resistance Curves 2 and 3, in between, will also be airflows at the intersection with the respective PQ characteristics. NIDEC SERVO supplies fans dedicated to a high static pressure region, with fan motors optimally designed for intermediate ventilating resistances. As Fig. 4 explains, quieter and energy saving operations are more feasible in the high static pressure region compared with ordinary axial fans. (See page G-36)

3. Method for calculating the required fan airflow

The method to calculate the required airflows (ventilation rates) is described for the cooling of equipment which generates heat.

The airflow (ventilation rate) necessary for internal equipment cooling is calculated as follows: (Note: the entire heat is exhausted by ventilation airflow and heat from radiation or conduction is not taken into consideration)

\[ Q = \frac{W}{\rho \times C \times (C - T)} \]

Where:
- \( Q \) : Required airflow (m³/s)
- \( W \): Heat generation rate (W)
- \( \rho \): Specific weight of air (kg/m³)
- \( C \): Specific heat of air (J/kg°C)
- \( C - T \): Temperature rise of air (°C)

Example: When wishing to limit the air temperature rise inside equipment that generates 100 W of heat, the following calculation formula is used:

\[ Q = \frac{100}{1200 \times 10} = 8.3 \times 10^{-3} \text{ m}^3/\text{s} = 0.50 \text{ m}^3/\text{min} \]

An airflow of 0.50 m³/min or more is required. This calculation formula for the required airflows (ventilation rate) can be translated into a graph as shown in Fig. 5.

![Air temperature rise and required airflow graph](image-url)
4. Fan and blower selection

The required airflow and ventilating resistance of equipment must be determined when selecting a fan or a blower. However, accurate determination of a ventilating resistance is difficult. In general you can select a fan’s max. airflow by multiplying the required airflow by 1.3 to 1.5. (The following figure [Fig. 6] shows the case of an air channel with an area approximately equal to that of the fan.)

If an adequate air channel is not available due to a high density of mounted parts, a fan with a max. airflow of more than two times the required airflow is sometimes needed. In this case, a special fan for a high static pressure region or a blower is recommended.

The following methods are used to accurately determine the ventilating resistance of equipment:
1) Send the equipment to a fan manufacturer and ask them to measure the ventilating resistance.
2) If 3D data of the equipment is available, ask the fan manufacturer to calculate the resistance.
3) Install a fan or a blower, whose relationship between the PQ characteristics and speed is already known, within the equipment and determine the ventilating resistance by measuring the speed.

5. PQ characteristics via the parallel or serial operations of axial fans

Parallel operation of 2 fans

When two fans are operated in parallel, only the max. airflow will double. Intersections QF1 and QF2 with ventilating resistance curves of the equipment will be the airflow actually flowing. This mode is advantageous when wishing to increase the airflow of equipment with only modest ventilation resistance.

Serial operation of 2 fans

When two fans are operated in series (stacked), only the maximum static pressure will increase by 1.5 times. Intersections QF1 and QF2 with ventilating resistance curves of the equipment will be the airflow actually flowing. This mode is advantageous when wishing to increase the airflow of equipment with high ventilation resistance.

(Note: A fan specially designed for a high static pressure region will be further advantageous for equipment that has high ventilating resistance. [See Fig. 9.])

Serial operation of 2 fans with stationary blades for a high static pressure region

When two fans are run in series (stacked), only the maximum static pressure will increase by 1.8 to 2 times. NIDEC SERVO special fans for high static pressure regions have stationary blades and achieve a lower reduction in static pressure during serial operation. The intersections QF1 and QF2 with ventilating resistance curves of the equipment will be the airflows actually flowing.

6. Voltage imposed to fan and blower and PQ characteristics

DC powered fans and blowers have the following relationship between the imposed voltage and the PQ characteristics. The following information will be useful when fine tuning performance or when using a fan or a blower for experimental purposes:

(Note: Only test operation is allowed to be used outside of the specified voltage range. Note that this information is not applicable to AC powered fans, nor to certain DC fans. [Example: SADC fans] Please check the product information pages.)

The speeds of fans and blowers vary in proportion of the voltage. Varying the voltage ±10 % will also cause the speed to vary by ±10 %. The speed affects the static pressure and airflow as follows. The static pressure varies based on the square of the speed and the airflow varies in proportion of the speed. Varying voltage ±10 % will cause the maximum static pressure to vary -19 to +21%, and the max. airflow to vary ±10 %. (See Fig. 10.)

An understanding of these relationships will allow free adjustment of the PQ characteristics during fan and blower operation.

7. Performance degradation of PQ characteristics when options are installed

Options such as a fan guard and filter are sometimes installed for safety. These options, however, increase the ventilation resistance and noise. A fan guard has slight ventilation resistance and degrades the PQ characteristics only negligibly. However, when tightly fitted onto a fan, the noise level increases by about +1 to +5 dB. In particularly, options should be installed more than 10 mm away from the fan to minimize the increase in noise.

Using a 120 mm × 38 mm AC fan (CN55B3) as an example, fluctuations of the PQ characteristics when options are installed are plotted in Figs. 12 and 13.
8. Unit conversion tables of PQ characteristics

At present, the PQ characteristics are expressed in Japan by Pa (static pressure) and m³/min (airflow). Use the following conversion tables for conversion between CFM, which is used in some countries, and between manufacturers as a customer service—please make use of this.

The units previously used in Japan.

Table 1 Static pressure conversion table
<table>
<thead>
<tr>
<th>Pa (N/m²)</th>
<th>mmH₂O</th>
<th>inH₂O</th>
<th>kgf/cm²</th>
<th>atm</th>
<th>bar</th>
<th>lb/in²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.02X10⁻³</td>
<td>4.02X10⁻³</td>
<td>1.02X10⁻³</td>
<td>9.87X10⁻³</td>
<td>1.00X10⁻²</td>
<td>1.45X10⁻²</td>
</tr>
<tr>
<td>9.81</td>
<td>3.94X10⁻³</td>
<td>1.35X10⁻²</td>
<td>1.00X10⁻²</td>
<td>9.68X10⁻³</td>
<td>9.00X10⁻³</td>
<td>1.42X10⁻²</td>
</tr>
<tr>
<td>2.49X10⁻³</td>
<td>25.4X10⁻³</td>
<td>1</td>
<td>2.54X10⁻³</td>
<td>2.46X10⁻³</td>
<td>2.49X10⁻²</td>
<td>3.61X10⁻²</td>
</tr>
<tr>
<td>9.81X10⁻³</td>
<td>1.00X10⁻²</td>
<td>3.94X10⁻³</td>
<td>1</td>
<td>9.87X10⁻³</td>
<td>9.01X10⁻³</td>
<td>14.2X10⁻²</td>
</tr>
<tr>
<td>1.01X10⁻²</td>
<td>1.03X10⁻²</td>
<td>4.07X10⁻³</td>
<td>1.03</td>
<td>1</td>
<td>1.01</td>
<td>14.7X10⁻²</td>
</tr>
<tr>
<td>1.00X10⁻²</td>
<td>1.02X10⁻²</td>
<td>4.02X10⁻³</td>
<td>1.02</td>
<td>9.87X10⁻³</td>
<td>1</td>
<td>14.5X10⁻²</td>
</tr>
<tr>
<td>6.9X10⁻³</td>
<td>7.03X10⁻³</td>
<td>2.77X10⁻³</td>
<td>7.03</td>
<td>6.81X10⁻³</td>
<td>6.90X10⁻³</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2 Airflow conversion table

<table>
<thead>
<tr>
<th>m³/s</th>
<th>m³/min</th>
<th>l/S</th>
<th>l/min</th>
<th>m³/h</th>
<th>ft³/s</th>
<th>CFM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.00X10⁻³</td>
<td>1.00X10⁻³</td>
<td>6.00X10⁻³</td>
<td>3.60X10⁻³</td>
<td>3.60X10⁻³</td>
<td>2.12</td>
</tr>
<tr>
<td>1.67X10⁻³</td>
<td>1</td>
<td>1.67X10⁻³</td>
<td>1.00X10⁻³</td>
<td>6.00X10⁻³</td>
<td>5.89X10⁻³</td>
<td>3.53X10⁻²</td>
</tr>
<tr>
<td>1.00X10⁻³</td>
<td>6.00X10⁻³</td>
<td>1</td>
<td>6.00X10⁻³</td>
<td>3.60X10⁻³</td>
<td>3.53X10⁻³</td>
<td>2.12</td>
</tr>
<tr>
<td>1.67X10⁻³</td>
<td>1.00X10⁻³</td>
<td>1.67X10⁻³</td>
<td>1</td>
<td>6.00X10⁻³</td>
<td>5.89X10⁻³</td>
<td>3.53X10⁻²</td>
</tr>
<tr>
<td>2.78X10⁻³</td>
<td>1.67X10⁻³</td>
<td>2.78X10⁻³</td>
<td>1.67X10⁻³</td>
<td>1</td>
<td>9.81X10⁻³</td>
<td>5.88X10⁻³</td>
</tr>
<tr>
<td>2.83X10⁻³</td>
<td>1.7</td>
<td>2.83X10⁻³</td>
<td>1.70X10⁻³</td>
<td>1.02X10⁻³</td>
<td>1</td>
<td>6.00X10⁻³</td>
</tr>
<tr>
<td>4.72X10⁻³</td>
<td>2.83X10⁻³</td>
<td>4.72X10⁻³</td>
<td>2.83X10⁻³</td>
<td>1.70</td>
<td>1.67X10⁻²</td>
<td>1</td>
</tr>
</tbody>
</table>

9. Measurement method of PQ characteristics

The aerodynamic characteristic measuring apparatus is illustrated in Fig. 14. This apparatus conforms to the ANSI/AMCA Standard 210-85, as well as JIS B 8330 (Testing methods for turbo-fans).

It is very difficult to measure PQ performance with high accuracy and the various measuring equipment used by fan manufacturers feature a wide range of accuracy. For this reason, simultaneous acquisition of comparable data obtained by the same measuring apparatus is recommended when verification of strict variation in performance is desired. (NIDEC SERVO also measures the comparative data of fans manufactured by other fan manufacturers as a customer service—please make use of this.)

- **Aerodynamic test apparatus (Double chamber type)**
  - Airflow measuring unit: Measures the pressure differential in the front and to the rear of a nozzle
  - Static pressure measuring unit: Measures the static pressure rise of a fan based on the difference with external air pressure
  - Auxiliary exhaust blower, Airflow controller

2. Noise of fan

The noise of the fan itself (catalog noise) is measured in a small anechoic room, in which background noise is adequately low, in a free-air state with no objects surrounding the fan. The aerodynamic noise (blade sound) and motor sound are the principal noise sources.

3. Noise after installation in equipment

After installing the fan in your equipment the noise level sometimes increases drastically (up to 8 dB to 15 dB) compared with the noise emitted by the fan itself. This is caused by the resonance of the fan vibration within the equipment, an obstacle in front of the intake (the fan guard may also become an obstacle), an increase in load noise due to ventilating resistance, the use of a fan with excessively large power, an insufficient circulation path, and other causes.

Noise can be reduced significantly by reducing the factors that increase noise. (In the best case scenario, only the noise level of the fan itself is generated)

NIDEC SERVO provides a service to analyze customers’ equipment noise. Please contact NIDEC SERVO with your requirements.

4. Noise measurement

Noise is measured in accordance with the test method specified in JIS C 9603 Ventilating fans in Range A measurement, placed in a position 1 m in front of the intake side of fans and blowers. (Background noise 15 dB (A))
5. Noise calculation

Noise is a sound pressure value measured in a position where the energy of a sound source arrives. It is called a sound pressure level (SPL) and is expressed in dB.

If the sound energy increases 10 times, the sound level increases 10 dB and 60 dB represents sound pressure energy that is 1000 times that of 30 dB and 10000 times that of 20 dB.

The total noise of several fans is calculated as follows:

\[
\text{Total noise (L)} = 10 \log \left( 10^{L1/10} + 10^{L2/10} + \cdots + 10^{Ln/10} \right)
\]

Example: If four fans individually emit noise of 30 dB, 35 dB, 40 dB and 45 dB, the total noise of the four fans will be:

\[
L = 10 \log \left( 10^{30/10} + 10^{35/10} + 10^{40/10} + 10^{45/10} \right) = 66.6 \text{ dB}
\]

If all three fans emit 40 dB, their total noise will be:

\[
L = 10 \log \left( 10^{40/10} + 10^{40/10} + 10^{40/10} \right) = 40 + 10 \log 3 = 44.8 \text{ dB}
\]

The noise can be calculated from the following graph in Fig. 16 if the noise difference between two fans is 13 dB or less:

\[
\begin{align*}
\text{Calculate the difference in the noise values of two fans} & = 40 \text{ dB} - 30 \text{ dB} = 10 \text{ dB} \\
\text{Read the value on the axis of ordinates from} & = 10 \text{ dB} \\
\text{Add 0.4 dB to the larger noise value,} & = 40 \text{ dB} + 0.4 \text{ dB} = 40.4 \text{ dB}
\end{align*}
\]

The total noise of the two fans will be 40.4 dB

6. Speed and noise value

A fan's noise value is the total of the aerodynamic and motor noise. Most noise is aerodynamic in nature, except in products with a low speed.

The speed and noise value vary in proportion to the sixth power and the noise value increases when the speed increases. (Some people say that they vary in proportion to the fifth power.) Increasing the speed will double the max. airflow and quadruple the maximum static pressure. Noise increases 18.1 dB (+15 dB at the fifth power).

\[
dB2 = dB1 + 60 \log (N2/N1)
\]

dB1: Noise value when the speed is N1

dB2: Noise value when the speed is N2

<table>
<thead>
<tr>
<th>Speed</th>
<th>0000 min⁻¹ (Standard)</th>
<th>2200 min⁻¹</th>
<th>2600 min⁻¹</th>
<th>3000 min⁻¹</th>
<th>4000 min⁻¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise value</td>
<td>0</td>
<td>+2.5 dB</td>
<td>+6.8 dB</td>
<td>+10.6 dB</td>
<td>+18.1 dB</td>
</tr>
</tbody>
</table>

7. Propeller diameter and noise level

The fan noise is strongly linked to the propeller size. Comparing the noise of fans with equivalent speed, the noise theoretically varies to the seventh power of the propeller diameter as follows:

In reality, the propeller shape is not symmetric and calculations cannot be performed as explained in the theory. However, the noise value with equivalent airflow rate will be as shown in the following table, indicating that a larger fan will reduce noise. (Value calculated based on the theory that the airflow varies to the third power of the propeller diameter)

\[
dB2 = dB1 + 70 \log (D2/D1)
\]

dB1: Noise value when the speed is D1

dB2: Noise value when the speed is D2

<table>
<thead>
<tr>
<th>Propeller diameter</th>
<th>55 mm</th>
<th>75 mm</th>
<th>86 mm</th>
<th>114 mm (Standard)</th>
<th>121 mm</th>
<th>142 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise value with equivalent speed</td>
<td>-22.2 dB</td>
<td>-12.7 dB</td>
<td>-8.6 dB</td>
<td>0 dB</td>
<td>+1.8 dB</td>
<td>+6.7 dB</td>
</tr>
<tr>
<td>Noise value with equivalent airflow</td>
<td>+34.8 dB</td>
<td>+20.0 dB</td>
<td>+13.5 dB</td>
<td>0 dB</td>
<td>-2.8 dB</td>
<td>-10.5 dB</td>
</tr>
</tbody>
</table>

8. Object distance and noise value

The noise value (SPL) decreases as the sound source becomes distant while the fan noise value varies in proportion to the square of the distance and can be expressed by the following formula: (When the reflection sound to nearby walls is ignored)

\[
dB2 = dB1 - 20 \log (L2/L1)
\]

dB1: Noise value when the distance from the sound source is L1

dB2: Noise value when the distance from the sound source is L2

Distance from sound (cm) | 50 cm | 1 m (Standard) | 150 cm |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Noise Value</td>
<td>+6 dB</td>
<td>0 dB</td>
<td>-3.5 dB</td>
</tr>
</tbody>
</table>

9. Ventilating resistance and noise value

Fan manufacturers note the noise values in their catalogs assuming a free air condition (ventilating resistance 0). When fans are physically assembled in equipment, the ventilating resistance cannot be zero and the noise values listed in catalogs are for reference purposes only. A method used to estimate sound values when fans are assembled in equipment is described below.

A noise value at each point of the PQ characteristics is called "load noise" and fans and blowers have their own characteristics. (See Figs. 17 and 18.)

The load noise is the noise of the fan itself at the point of operation. Fan characteristics include a "neck" (dip) in the plotted curves. This dip is caused by turbulence in the airflow on the propeller surfaces and noise increases steeply between this part and a low airflow region.

The fan has an area where noise becomes lowest (region of higher airflow than the neck). The circulation path should be designed such as to reduce ventilating resistance. However, if the ventilating resistance cannot be reduced with any equipment after trying various ideas, the study of fans for a high static pressure region is recommended. These are fans that have been developed and designed to emit low noise in a high static pressure region compared with ordinary fans. (See Fig. 4 on pages G-6 and G-31 to G-36.)

As plotted in Fig. 18, the load noise of blowers generally varies only slightly, while trends in load noise differ from one product to another of the blower manufacturers. Even if the catalog values are the same, noise invariably varies at the same operating point.

The blowers manufactured by NIDEC SERVO are designed to emit the lowest noise at customers' operating points so that the customers can base catalog load noise values reliably as actual blower noise.
10. Fan guards increase noise

When mounted directly onto a fan, a fan guard increases noise by about +1 to +5 dB. Install a fan guard more than 10 mm from equipment to reduce the increase in noise.

11. Equipment resonance with fan

The fan contains a motor that causes mechanical vibration and electrical vibration, which sometimes causes equipment containing a fan to resonate. This problem can be solved by combining the following three methods:

1) Cut off the vibration transfer route to equipment by providing a rubber vibration isolator or other cushioning.
2) Change the natural frequency of equipment by changing the board thickness or by other means.
3) Change to a low-vibration fan (customized product), in which case consult NIDEC SERVO for more information.

12. Quiet operation by Silent Fan

The rotating sound (blade sound) is the principal factor generating the noise of ordinary square axial fans. The frequency characteristic of these fans peaks at the number of blades x speed and the related high frequency component. This is mainly caused by periodical fluctuations of blade lift due to non-uniform airflow (turbulence), caused by an object on the upstream side of the fan and attributed to the shape of the fan venturi.

The NIDEC SERVO Silent Fans, part of the range of axial fans with a unique venturi shape, are renowned for their particular quietness. To prevent non-uniform airflow on the upstream side of the fan, the venturi mounting flange has a single flange on the outlet side only, as illustrated in Fig. 19. The intake flow velocity and direction of the fan are made constant through analysis of the air intake flow to prevent separation of flow from the peripheral parts of the venturi, thereby achieving exceptional quietness. Thanks to the design preventing flow disturbance on the intake side when a fan is mounted, a premium silence effect unrivalled by conventional square fans is achieved.

Comparison of noise generating sources

● Silent Fan

Intake air flows in a fixed direction and at a constant flow velocity along the arc on the edge, hardly producing any noisy eddy turbulence.

● Square Venturi Fan

The airflow on the intake side is not constant. Differences in flow velocity and direction cause shear flow and trigger periodic lift fluctuations, leading to noise generation. The air separation phenomenon occurs in the edge part, which is the thinnest part of the square venturi and round intake side, generating many eddy turbulences and increasing propeller resistance, thereby causing noise.

13. The low-noise benefits you can get from our Gentle Typhoon. It has the perfect noise performance!

We at NIDEC Servo enhanced our Silent Fan Technology to bring you a brand new series called Gentle Typhoon in 2008. Designers can expect drastic noise reductions when building products with this fan. Our Gentle Typhoon works to dampen noise in your products based on the combination of the propeller blades, which brings to mind spinning vortices of air and the square venturi which deters the occurrence of turbulence. Not only is the acoustic level improved, but so is overall noise quality. The square shape offers compatibility conventional fans currently used by designers. Replace your current use fan for the Gentle Typhoon and experience a tranquil quieting of your next device. (20 and G-23)
Life of fans and blowers

The life of fans is solely dependent on bearings. The bearing load $P$ in relation to the basic rated load $C$ is $P < C$, (meaning $P$ is a great deal smaller than $C$). Therefore we can say that grease life determines the fan life. Grease life is significantly affected by ambient temperature. The fans of NIDEC SERVO feature a special design that minimizes grease temperature rises as illustrated below.

- **AC fan**

![AC Fan Diagram](Image)

- **DC fan**

![DC Fan Diagram](Image)

#### Long-life structure

The fan motor contains two parts which generate heat, namely, the stator and rotor.

The AC fan holds a bearing in a dedicated sleeve to help retard the transfer of heat generated by the rotor, and limit the temperature rises of the bearing.

The DC fan has an external rotor structure and the temperature of the bearing is significantly affected by stator temperature. When the speed rank rises, the motor temperature also rises, thereby increasing the heat transfer to the bearing. NIDEC SERVO fans feature a high-efficiency circuit and low motor losses to keep the bearing temperature below the preset temperature, thereby ensuring a long life.

The bearing temperature differs depending on the structure, materials and other factors and life varies to some extent. However, the life expectancy as illustrated in Fig. 23 is the basic data.

NIDEC SERVO accepts inquiries and orders for semi-customized products (long life products) featuring a reduction in bearing temperature increase. Please contact NIDEC SERVO for further information.

The life expectancy curve that is common to AC and DC fans is plotted in Fig. 23. (The curve represents the life expectancy based on a survival rate of 90%) and is not the guaranteed life. NIDEC SERVO will provide the MTTF (mean time to failure) data upon request.

![Life Expectancy Curve](Image)

(Note: This life expectancy curve has been prepared based on the results of life tests conducted at a rated voltage in a free air condition in an environmental test room with a negligible amount of dust. When using the fans in your application please take into consideration the actual operating conditions and safety factors. Some of the products contained in the catalogs do not meet the foregoing life expectancy data. [Products which do not meet the standard life are listed on the product information pages.])

(Definition of life: End of life is defined when the speed or noise of a product deteriorates by 20%)

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### Applicable standards

NIDEC SERVO fans and blowers have been accepted in certification tests for Japanese and overseas safety standards for use in various applications. (Please inquire to NIDEC SERVO for standards that are not included in the following.)

**Electrical Appliance and Material Safety Law (Japan)**

The AC fans that fall under the scope of the Electrical Appliance and Material Safety Law are manufactured in compliance with its technical standard. AC fans are classified as fans and blowers in one of 480 electrical appliance item categories other than specified electrical appliances. The marking of the (PS)E mark is a legal obligation. See page G-53 and subsequent pages for NIDEC SERVO products with the (PS)E mark.

Power plug cords are classified as specified electrical appliances and the marking of the (PS)E mark is a legal obligation. (See page G-66.)

**Certification test by the UL Standard**

NIDEC SERVO fans and blowers have been accepted in certification tests under the fan and blower safety test standard UL-507.75 of UNDERWRITERS LABORATORIES INC., the electrical appliance safety inspection organization of the United States. Products that are accepted in certification tests are marked with the mark on their nameplates and model names are registered, to attest that they are certified products. The registration No. of NIDEC SERVO is E 48889: Fans and blowers

E 78112: Plugs and cords (Category Nos. W1007, W1008)

Non-regular factory audits by UL are conducted in connection with the production of certified products and safety verification is performed by ensuring the materials used, electrical characteristics and other items pass strict factory test inspections.

**Certification test by the CSA Standard**

NIDEC SERVO fans and blowers have been accepted in certification tests, based on general specification requirements and rules to prevent overheating inside motors under fan and blower safety test standard CSA STANDARDS ASSOCIATION, the electrical appliance safety inspection organization of Canada. Products that are accepted in certification tests are marked with the mark on their nameplates and model names are registered, to attest that they are certified products under the CSA standards. The registration No. of NIDEC SERVO is LR49399: Made in Japan

LR108118: Made in Indonesia

As with the UL standards, safety verification is performed by ensuring non-regular factory audits are performed by CSA. (Some products are certified by the mark.)

**Certification test by TUV**

NIDEC SERVO fans and blowers have been accepted in safety certification tests based on the Business-Use Electrical Equipment Standard EN60950 and the VDE Standard No. 0806/08.81 of T RHEINLAND e.V, the industrial electrical appliance safety inspection organization of Germany. Products that are accepted in certification tests are marked with the mark on their nameplates and model names are registered, to attest that they are certified products under the TUV standards. The registration Nos. of NIDEC SERVO are:

- LICENCE No.: R60299, R60300, R60301, R60302, R945156
- R975069, R975545, R965066, R2-50004410
- REPORT No.: E61087, E61088, E61089, E61090

As under the UL and CSA standards, safety verification is performed by clearing non-regular factory audits by TUV.)
 Certification test by VDE

NIDEC SERVO fans and blowers have been accepted in safety certification tests based on the Fan and Blower Safety Inspection Standard DIN VDE0700 of VERBAND DEUTSCHER ELEKTROTECNICKER e.V, an electrical appliance safety inspection organization of Germany with the highest authority. Products that are accepted in certification tests are marked with the mark on their nameplates and model names are registered, to attest that they are certified products under the VDE standards.

The registration No. of NIDEC SERVO is 3019.

As under the UL, CSA and TUV standards, safety verification is performed by clearing non-regular factory audits by VDE.

Insulation class

The insulation class of AC and DC fans and the blowers of NIDEC SERVO meet the heat resistance performance of Class E (120 °C) under JIS C 4004 (Rotating electrical machines - General), CLASS A (105 °C) under the UL-703 standard, CLASS A (105 °C) under the CSA-C22.2 standard, and DIN IEC950/VDE0806 standard and CLASS E (90 °C) under the VDE0700 standard.

Dielectric strength

The AC fans and blowers of NIDEC SERVO satisfy 1500 V 50 Hz for one minute or 1800 V 50 Hz for one second. Dielectric strength tests under JIS C 4004 specify a voltage impression of “2 x rated voltage + 1000 V.”

The DC fans and blowers of NIDEC SERVO are accepted in withstand voltage tests of 500 V 50 Hz for one minute or 600 V 50 Hz for one second. The interrupting current of 5 mA is set for the dielectric strength testers.

Dielectric strengths are tested between the power terminal of the fan/blower or lead wire conductor (two lead wires tied together) and metal frame (or other metal part) using a dielectric strength tester.

Insulation resistance

The insulation resistance of the AC and DC fans and blowers of NIDEC SERVO is 10 MΩ or higher at 500 V DC between the power terminal or lead wire conductor and frame. Insulation resistance tests are conducted between the power terminal of the fan/blower or lead wire conductor (two lead wires tied together) and metal frame (or other metal part) using an insulation resistance tester.

Electrical performance

The values described in the catalog are average values. Please request NIDEC SERVO to send a product drawing or delivery specification for products when wishing to confirm standard values.

Temperature protection

Two methods are used to protect the temperature of the windings of AC fans and blowers, namely, impedance protection and thermal protection. These two methods are used differently depending on the type of motor used.

Impedance protection method

This method is generally used with shaded pole induction motors. Temperature increase is limited below a preset value by impedance (AC resistance) natural to the motor windings. In particular, the UL standard specifies that motors must not burn out when the rotor is operated for 18 days at normal temperature (24 °C). NIDEC SERVO fans and blowers meet this standard. Those products that are controlled by the Electrical Appliance and Material Safety Law of Japan are designed to limit coil temperature rises to less than 75 K.

The impedance protection method is effective only within the usage range. Note that smoke will be generated and ignition caused if a high voltage is imposed.

Thermal protection method

This method is used with motors of a capacitor phase advancing type or triple-phase induction motors. Embedding a bimetal switch with a contact in the motor winding part, the current is shut off when the preset winding temperature is exceeded, to prevent burning caused by abnormal overheating of the motor.

The windings of DC fans and blowers are protected against abnormal temperature rises by automatic reset, by shutting off the current if it detects a locked state or by current limiting automatic reset. This method involves the energizing circuit being turned off by a lock detection function inside the motor drive circuit when the fan is locked, shutting off (or limiting) the current.

Operation is reactivated automatically after the locking is reset. Note that this protection system does not function properly if used with duty (PWM) control power supply. NIDEC SERVO supplies variable-speed fans whose speed can be variably controlled by a PWM signal. (See pages G-31 to G-36, and G-51.)
Vital Precautions for DC Fans and Blowers

- **Reverse connection protection**
  The DC fans and blowers embed a reverse connection protection circuit. Fans or blowers will not fail, even if connected in reverse within the usage range. (The fans or blowers will not activate, as no current flows to the circuit.)

- **Yield strength to electrical noise**
  Yield strength to static noise: The yield strength between the lines or between a frame and line is 5 kV.
  Yield strength to induced noise: Yield strength by an induced noise test apparatus is 2 kV.
  Note 1: Malfunction of the sensor alarms will result if the induced noise exceeds 1 kV. Insert a 0.1 μF capacitor between the sensor line and ground as a precaution.
  Note 2: Some of the products without a 15-digit product code cannot guarantee these yield strengths. Contact NIDEC SERVO for further information.

- **Static electricity control**
  A static electricity measure is needed if a terminal trailing from the fan motor is touched, otherwise the circuit is prone to damage by static electricity.

- **Handling of the alarm output lead wires**
  Inadvertently using a tester or other apparatus with a sensor lead wire will cause overcurrent to flow to the sensor circuit inside the motor, potentially causing a circuit fault. Pay attention to the permissible current and prevent any overcurrent from flowing. Contact NIDEC SERVO if it becomes necessary to connect an LED or relay directly to a sensor lead wire. (There are products that allow a current larger than the permissible current described on page G-15 depending on conditions.)

- **Power supply selection for DC fans and blowers**
  Select a power source that supplies smooth power (ripples within ±5%, peak within operating voltage). Significant line noise (including surge voltage) causes circuit faults. Make it a point to check line noise after assembling a fan.
  Select a power source remembering that a current 2 to 5 times the rated current flows at startup. (If an inrush current [normally less than 10 μs] poses a problem, measure it and take action accordingly.)
  The operating current peaks when the motor load is largest (at maximum static pressure for fans and in free air condition for blowers). When assembled, the current sometimes exceeds the rated current (fans) or smaller (blowers). (See the diagrams below.)
  When current is flowing, connect all terminals from the fan motor before turning it on. Imperfect wiring connection or a wiring change while the power is turned on will damage the circuit inside the fan or cause it to deteriorate.

- **Power ON and OFF of DC fans and blowers**
  Always perform ON-OFF control on the + side. ON - OFF control on the ground level causes circuit failure. ON-OFF control directly before a DC fan or a blower (between a fan and power supply) increases the risk of failures due to the counter-electromotive force from the motor coil. In this case, be sure to insert a diode or other device in parallel.
  Surge voltage can sometimes be generated with DC fans and blowers due to a wiring condition or other reason, even if the power is turned off. Insert a diode or other device in parallel to the power lead wire when the equipment requires very high reliability.
  (Recommended diode: With a capacity to withstand reverse voltage and a starting current 3 times the rated voltage)

- **DUTY (PWM) control of DC fans and blowers**
  The locking protection circuit does not function properly if variable-speed operation is performed through DUTY (PWM [pulse width modulation]) control of the power lead wire using a speed controller sold on the market or other device. The alarm output does not function properly with fans that are installed with sensors. As mentioned earlier, caution should also be exercised with surge voltage that occurs during ON-OFF switching in DUTY control (out of guarantee.) Please note that this operating method increases fan vibration, increasing the likelihood of abnormal sounds due to vibration. Dedicated fans and blowers are recommended for variable-speed operations. (See pages G-31 to G36 and G-51.)

- **Connect multiple DC fans and blowers in parallel**
  Connect multiple fans and blowers in parallel to the power supply. A serial connection (example: two 12 V products connected serially to a 24 V power supply) will cause the voltage for each product to fluctuate, resulting in a drastic excess of the usage range and circuit failure.
  Please direct your questions or inquiries to NIDEC SERVO Sales or to the NIDEC SERVO website.

---

![Example of fan operating current](image1)

![Example of blower operating current](image2)

Fig. 24

Fig. 25
Operational and handling precautions

1. Operating environment
   1) Only highly durable flame-retardant resin is used. Nevertheless, avoid the presence of petroleum oil, such as cutting fluid and toxic gas from contact with resin sections of fans and blowers where such oil or gas is frequently used in operation by installing a filter or other apparatus. (If the operating environment cannot be improved, NIDEC SERVO will be glad to conduct a yield strength verification test upon receipt of fluid and other item/s. Consult NIDEC SERVO for more information.)
   2) Open-type motors are used. The use of a fan or blower in a dusty place will adversely affect the circuit and ball bearings.
   3) Avoid operating a fan or a blower in relative humidity exceeding 90%.
   4) The maximum storage temperature is normally 70 °C. Products with an operating temperature of 70 °C or higher can be operated only up to the specified temperature. Check the operating temperature range on the product information pages.
   5) Exercise reasonable care with condensation when returning to an environment higher than 0 °C from storage or operating conditions below freezing point. Condensation results in failure and shortens the life.
   6) The life may shorten considerably if a fan or a blower is installed in equipment that vibrates prominently. NIDEC SERVO products conform to JIS C 0040 (Vibration testing methods for small motors) and withstand a maximum vibration acceleration of 9.1 G maximum (10 Hz to 55 Hz, amplitude 1.5 mm, sweep 1 minute/cycle, two hours each in X, Y and Z directions). However, operation at 5 G or less is recommended.
   7) AC and DC fans and blowers cannot be operated while the intake side is tightly closed. This will shorten the motor life and result in circuit failure.
   8) Operation near a high frequency power source may on rare occasions cause inflow of an induced current into the inside of a fan, shortening the life (and increasing noise due to BB galvanic corrosion). If an induced current flows, measures to prevent such inflow are needed.

2. Imposed voltage and frequency
   1) The permissible range of AC fans and blowers is ±10 % of the rated voltage. Operations outside of the rated frequency result in considerable fluctuations in performance and life. Operations in serial connection (example: two 100 V products connected serially to a 200 V power supply) will increase the imposed voltage beyond the permissible range and should be avoided.
   2) Use a sufficiently smooth power supply with DC fans and blowers. (Ripples of ±5 % or less, and peak within the usage range) The usage range differs from one product to another. Check it on the product information pages.

3. Installation orientation
   There are no installation orientation limitations for products containing ball bearings. Operate fans and blowers in compliance with the operating environment temperature and other conditions. Contact NIDEC SERVO for further information or if clarification is needed.

Handling precautions

The fan motors of NIDEC SERVO contain double side shielded precision ball bearings. Dropping the product could result in abnormal noise (Birnfell dent) of ball bearings during operation. Exercise care when handling the products as follows:
   1. Product falling: Avoid dropping the product from a height of 5 cm or higher.
   2. Falling of crated product: Avoid dropping a crated product from a height of 30 cm or higher.
   3. Storage and stacking of crated products: Crated products may be stacked up to seven layers. Take sufficient precautionary measures to prevent getting them wet.
   4. Do not apply a load of 2 kgf or more to the connecting part of the lead wire of a DC fan.

Fan operational precautions

- Strive to ensure the channel shape is as smooth as possible to avoid stagnation in the airflow.
- Make the flow velocity larger around the object for which cooling is desired.
- Place the fan on the downstream side when wishing to cool the entire space inside the equipment.
- An upward flow in conjunction with the ascension of heated air is recommended for airflow inside equipment.
- Take actions to mitigate the impacts of fans and for reverse flow in the event of failure where multiple fans are installed.

1. When placing an object on the fan intake side, try to maintain a distance of more than half a blade diameter.

2. The pressure varies on the fan intake and outlet sides. The leakage of air from the outlet side causes noise. Minimize air leakage from the outlet side when installing a fan.

3. Design the channel (circulation path) selecting a good flow direction in terms of both noise and PQ characteristics.

- Ventilating resistance can be expressed by the following formula:

\[
P = 0.000243Q^2 \cdot \frac{1}{A_i^{0.5}}
\]

- A reduction of \(A_i\) (the channel cross sectional area) is critical. Avoid any sharp change in the cross sectional area in the flow direction.

- Avoid any sharp change in flow direction.

- Avoid placing a printed circuit board and other parts orthogonal to the flow direction.

4. Drill fan mounting holes to ensure the smooth flow of air to reduce noise by referring to the recommended dimensions for fan mounting holes on the fan or blower's catalog page.
The DC fans and blowers of NIDEC SERVO have a function to send an alarm signal when the fan motor revolutions slow down. Several systems are used to cut off the system power supply by this alarm signal, with three types of sensors available. Select the right type of sensor in accordance with the purpose of use. The lead wire for the sensor is yellow. The output type is an open collector output for all three types.

Sensor type

1. Lock detection type (Product code: S)

The output signal indicates an [L] state (transistor is ON) while the propeller is rotating, changing to an [H] state (transistor is OFF) less than five seconds after the propeller stops rotating. The propeller automatically restarts operation within five seconds when the lock is unlocked. ([H] → [L] 5 s). If the pull-up voltage is live, the [H] state (transistor is OFF) will engage in less than five seconds, even when the power is turned off.

- Specification: Vce = 28 V max (55.2 V max for 48 V products)
- IC = 5 mA max
- (Vce (SAT) = 0.4 V max)

Note: The output waveform for type SQ (R) will be reversed. The speed setting for the alarm output is about half the rated speed. For more detailed information, please request a product delivery specification from NIDEC SERVO.

2. Pulse output type (Product code: P)

A rectangular wave of two pulses will be output for each turn of the propeller while the propeller is rotating, outputting two types of signal depending on the propeller position when the propeller is locked. (See the note below)

- Specification: Vce = 28 V max (55.2 V max for 48 V products)
- IC = 5 mA max
- (Vce (SAT) = 0.4 V max)

3. Speed detection type (Product code: Q)

The output signal indicates the [H] state when the propeller revolutions are slower than the preset speed, changing to the [L] state when the propeller revolutions exceed the reset speed.

AC fans with sensors

By equipping the motor with a rotation detection function, the AC fans of NIDEC SERVO have a system to send an alarm signal when the fan motor revolutions slow down and to cut off the system power supply. In 1980, NIDEC SERVO developed a system to output an alarm signal by detecting the lowering of generated voltage by installing a tachometer generator with the cooling fan and this system has since been incorporated in NIDEC SERVO products. The output type of the alarm signal is an open collector output.

Sensor connection

1. LED Display

2. Relay operation

Operational and handling precautions

Operate fans and blowers at an ambient temperature of between -10 °C and 60 °C and relative humidity of less than 90 %. Latch output is not used so malfunction by electrical noise can be ruled out. However, note that the semiconductor devices in the internal circuitry may be damaged by electrical noise and high voltage. No delay circuit is provided so a trouble signal is output on startup. As when operating and handling the fan, exercise caution to avoid dropping and exposing the blower to shock and vibration.

Sensor connection

A sensor is available with the AS ad PL series only.

Sensor connection

EUDC series □ 40 × 13mm

■ Standard specification

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■ General specification

Materials Used
- Venturi: ABS and PBT synthetic resins
- Propeller: ABS and PBT synthetic resins
- Bearing: Both side shielded ball bearing

Motor
- Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

Common Elec. Spec.
- See pages G-11, G-12, G-13.
- Standard Carton: 400 to a carton of (450 x 380 x 300) mm, mass 12 kg

■ Standard airflow and static pressure characteristics (At rated voltage)

[By double chamber method]

![Graph showing airflow and static pressure characteristics](image)

■ External dimensions in mm (inches)
- Lead wire type
  - Lead wire spec: AWG24 UL1007 or UL3266
  - Color: (+) Red, (-) Black

■ Wiring connection diagram

- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
- Power source (-): Black

■ Mounting hole dimensions in mm (inches)
- [Recommendation]

DC axial fan with sensor

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- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: R9451586
- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
### TUDC series \[ 60 \times 25 \text{ mm} \]

**DC Axial Fan**

**TUDC**

\[ 60 \times 25 \ (2.4" \times 1.0") \]

Max. airflow: 0.87 m³/min
Max. static pressure: 130 Pa
Mass: 75 g

---

#### Standard specification

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#### General specification

- **Materials Used**
  - Venturi: ABS and PBT synthetic resins
  - Propeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

- **Common Elec. Spec.**
  - See pages G-11, G-12, G-13.

- **Standard Carton**
  - 100 to a carton of (450 x 380 x 160) mm, mass 9 kg

#### Standard airflow and static pressure characteristics (At rated voltage)

- By double chamber method

---

#### Wiring connection diagram

Power source (+): Red
Sensor output: Yellow
When sensor is installed
Power source (-): Black or blue

---

#### DC axial fan with sensor

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- **Nidec SERVO** can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact Nidec SERVO during your product planning and development stage.

- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: R945186

- Customizing to the sleeve bearing specification also accepted depending on the intended purchase quantity. Contact Nidec SERVO for further information.

- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
**Standard specification**

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<tr>
<td>0.94</td>
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<td>1.5</td>
<td>12</td>
<td>7.2-13.8</td>
<td>PUDC12B4</td>
<td>-20 ~ +70</td>
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<td>320</td>
<td>70-180</td>
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<td>0.73</td>
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<td>0.10</td>
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<td>8.4-13.8</td>
<td>PUDC12D4</td>
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</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V, 24 V or 48 V), and normal temperature and humidity.
- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: RA91586.

**Wiring connection diagram**

- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
- Power source (-): Black or blue

**External dimensions in mm (inches)**

- Lead wire type: AWG24 UL1007 or UL3266
- Color: Red (-) Black (PUDC□4: Blue)

**Mounting hole dimensions in mm (inches)**

- Options (sold separately)
  - Guard: F80UL guard
  - Filter: F80 filter
  - Identical for the intake and outlet sides

**DC axial fan with sensor**

- Model Code

<table>
<thead>
<tr>
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<td>PUDC124RS</td>
<td>PUDC12H4</td>
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<td>PUDC12U7</td>
<td>PUDC12U7R</td>
<td>PUDC12H4</td>
<td>PUDC12H4P</td>
<td>PUDC12U7</td>
<td>PUDC12U7R</td>
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<td>PUDC244RS</td>
<td>PUDC24H4</td>
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</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: RA91586.
- Customized fans with sleeve bearings are also available depending on the intended purchase quantity. Contact NIDEC SERVO for further information.
- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
KUDC series □ 92 × 25 mm

DC Axial Fan
KUDC

Max. airflow: 1.8 m³/min
Max. static pressure: 70 Pa
Mass: 100 g

Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow</th>
<th>M. Static Pressure</th>
<th>Noise level</th>
<th>Speed</th>
<th>Input</th>
<th>Voltage Spec. V</th>
<th>Current mA</th>
<th>Model Code</th>
<th>Operating Temp. Range °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min CFM</td>
<td>Pa inH2O</td>
<td>dB</td>
<td>rpm</td>
<td>W</td>
<td>Rated Start</td>
<td>Rating</td>
<td>With Spacer</td>
<td></td>
</tr>
<tr>
<td>1.8</td>
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<td>70</td>
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<td>60</td>
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</tr>
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<td>24-24-55.2</td>
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<tr>
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<tr>
<td>1</td>
<td>35</td>
<td>24</td>
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<td>26</td>
<td>110-240</td>
<td>12-8.4-13.8</td>
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<td></td>
<td>24-14-27.6</td>
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<td>KUDC24D4/4V</td>
<td></td>
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</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V, 24 V, or 48 V), and normal temperature and humidity.
- The life expectancy of KUDC-U speed products at rated voltage and in continuous operation is 30,000 hours at 60 °C. (40,000 hours for other products)

General specification

- Materials Used: Venturi: ABS and PBT synthetic resins
  Propeller: ABS and PBT synthetic resins
  Bearing: Both side shielded ball bearing
- Motor: Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset
- Common Elec. Spec. See pages G-11, G-12, G-13
- Standard Carton: 70 to a carton of (450 x 380 x 300) mm, mass 7 kg

Standard airflow and static pressure characteristics (At rated voltage)

External dimensions in mm (inches)
- Lead wire type
  - Lead wire spec. AWG24 UL1007 or UL3266
  - Color: (+) Red (-) Black (KUDC□D4: Blue)

Mounting hole dimensions in mm (inches)
- Options (sold separately)
  - Guard: F92UL guard
  - Filter: F92 filter
  - Spacer: Flange spacer PU DC

DC axial fan with sensor

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files: UL: E48888, CSA: LR49399, TUV: R9451586
- 3D data is also available at our webCAD site (www.cadenas.co.jp).
## Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow</th>
<th>Max. Static Pressure</th>
<th>Noise (dBA)</th>
<th>Speed (r/min)</th>
<th>Voltage Spec. V</th>
<th>Current (mA)</th>
<th>Model Code</th>
<th>Operating Temp. Range (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min</td>
<td>CFM</td>
<td>Pa</td>
<td>inH₂O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td>71</td>
<td>67</td>
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<td>24</td>
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<td>34</td>
<td>24</td>
<td>12.0-26.4</td>
<td>90</td>
</tr>
</tbody>
</table>

- *Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.*
- *The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.*
- *The only venturi shape available for these products is ribbed flange.*
- *This fan is specially designed for long life. At rated voltage and in continuous operation the expected life is 80,000 hours at 60°C. (100,000 hours at 40°C).*
- *PWM (pulse width modulation) allowing for variable speed control is available in some models (reference the G-51 spec).*

### General specification

- **Fan model code**
  - D0925C12B4AS-00
  - D0925C12B4AZ-00
  - D0925C12B6AS-00
  - D0925C12B6AZ-00
  - D0925C12B8AS-00
  - D0925C12B8AZ-00
  - D0925C24B4AS-00
  - D0925C24B4AZ-00
  - D0925C24B6AS-00
  - D0925C24B6AZ-00
  - D0925C24B7AS-00
  - D0925C24B7AZ-00
  - D0925C24B8ZP-00

- **Materials Used**
  - Venturi: SPS synthetic resins
  - Propeller: SPS synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

- **Common Elec. Spec.**
  - See pages G-11, G-12, G-13.

- **Standard Carton**
  - 70 to a carton of (450 x 380 x 300) mm, mass 7 kg

### Features

- **Wider low-noise operating range (50% increase)**
- **Significant vibration reduction using two methods.**
- **Energy efficiency (30% less input power than previous models)**
- **New design improves quality of sound.**
- **Sensor (lock, pulse) can be installed**
- **Variable speed (PWM, voltage, resistance) available**

### Wiring connection diagram

**Power source (+): Red**

**Sensor output: Yellow**

**When sensor is installed**

**Power source (-): Black**

### Mounting Hole Dimensions

**Options (sold separately)**
- Guard: F92UL guard
- Filter: F92 filter

### DC axial fan with sensor

<table>
<thead>
<tr>
<th>Rated Voltage</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>D0925C12B8AS-00</td>
</tr>
<tr>
<td>24 V</td>
<td>D0925C24B8AS-00</td>
</tr>
</tbody>
</table>

- **PWM (pulse width modulation) allowing for variable speed control is available in some models (reference the G-51 spec).**
- **NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.**
- **The listed products are registered in the following overseas standards files, UL/cUL:48889, TUV:R5000441:**
**KLDC series □ 92 × 32 mm**

**Standard specification**

<table>
<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise Level (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Input Power (W)</th>
<th>Voltage Spec.</th>
<th>Current (mA)</th>
<th>Model Code</th>
<th>Operating Temperature Range (°C)</th>
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</thead>
<tbody>
<tr>
<td>2.1</td>
<td>74</td>
<td>140</td>
<td>0.56</td>
<td>48</td>
<td>4600</td>
<td>5.7</td>
<td>12</td>
<td>6 - 13.8</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>4.6</td>
<td>4150</td>
<td>6.2</td>
<td>24</td>
<td>12 - 27.8</td>
</tr>
<tr>
<td>1.9</td>
<td>67</td>
<td>115</td>
<td>0.46</td>
<td>45</td>
<td>3800</td>
<td>4.6</td>
<td>24</td>
<td>7.2 - 13.8</td>
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<td>1.7</td>
<td>60</td>
<td>86</td>
<td>0.35</td>
<td>43</td>
<td>3200</td>
<td>3.6</td>
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<td>12 - 27.8</td>
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<td>1.5</td>
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<td>0.26</td>
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<td>280</td>
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<td>7.2 - 13.8</td>
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</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.

**General specification**

- **Materials Used**
  - Venturi: ABS and PBT synthetic resins
  - Propeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

- **Common Elec. Spec.**
  - See pages G-11, G-12, G-13.

- **Standard Carton**
  - 60 to a carton of (450 x 380 x 220) mm, mass 9 kg

**Standard airflow and static pressure characteristics (At rated voltage)**

[Diagram showing airflow and static pressure characteristics]

**Wiring connection diagram**

- Power source (+): Red
- Sensor output: Yellow

**External dimensions in mm (inches)**

- **Lead wire type**
  - Lead wire spec. AWG24 UL1007 or UL3266
  - Color (+) Red
  - (-) Black

**Mounting hole dimensions in mm (inches)**

- Options (sold separately)
- Guard: F92UL guard
- Filter: F92 filter

**DC axial fan with sensor**

<table>
<thead>
<tr>
<th>Rated Voltage</th>
<th>Model Code</th>
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<td>12 V</td>
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<td>24 V</td>
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<td></td>
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</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: R9451586
- 3D data is also available at our web-CAD site (www.cadenas.co.jp).
### Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow</th>
<th>Max. Static Pressure</th>
<th>Noise Level</th>
<th>Speed min⁻¹</th>
<th>Input W</th>
<th>Voltage Spec. V</th>
<th>Current mA</th>
<th>Model Code</th>
<th>Operating Temp. Range °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min</td>
<td>CFM</td>
<td>Pa</td>
<td>inH₂O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.25</td>
<td>115</td>
<td>125</td>
<td>0.50</td>
<td>50</td>
<td>3700</td>
<td>6.5</td>
<td>12</td>
<td>8.4-13.8</td>
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<td>380</td>
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</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.
- The life expectancy of CUDC12B4Q and CUDC12B4SQ products at rated voltage and in continuous operation is 20,000 hours at 60°C. (40,000 hours for other products).

### General specification

- **Venturi shape**
  - Use ribbed venturi with a reinforced corner when the venturi is mounted with screws. (The spacer is indicated in the model code by the letter 'R'.)

### External dimensions in mm (inches)

- **Lead wire type**
  - Lead wire spec. AWG24 UL1007 or UL3266
  - Color (+) Red
  - Color (-) Black (CUDC12D4: Blue)

### Mounting hole dimensions in mm (inches) [Recommendation]

- Options (sold separately)
  - Guard: F120UL guard
  - Filter: F120 filter

### DC axial fan with sensor

<table>
<thead>
<tr>
<th>Rated Voltage</th>
<th>Model Code</th>
</tr>
</thead>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL:48889, CSA:LR49399 (only available in D speed), TUV:R9451586
- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
Brushless DC Fans & Blowers

D1225C (for low speed applications) Series 120 × 25 mm

Standard specification

<table>
<thead>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min</td>
<td>CFM</td>
<td>Pa</td>
<td>nH2O</td>
<td>dB</td>
<td>r/min</td>
<td>Rating</td>
<td>Operating Range</td>
</tr>
<tr>
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<td>0.113</td>
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<td>2150</td>
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<td>5.0-13.2</td>
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<tr>
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</tr>
</tbody>
</table>

- Noise values shown at 1m were converted as follows: subtract 12dB from actual noise measurements taken at 25 cm (as shown in the noise graph below).
- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- Characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.
- Only venturi shape available for these products is ribbed.
- Depending on quantities, Nidec SERVO can meet many of your requirements for customization, such as special connectors, sensors, variable speed specifications and other modifications. Please contact Nidec SERVO for more information.

General specification

- Wide low-noise range (noise reduced in high density devices)
- 2-way vibration reduction (lowers resonant noise of entire device)
- Energy Efficient (wide reduction compared to previous model)
- Design to improve sound (for low speed applications)
- Sensors Available (lock, pulse)
- Variable speed available (PWM, voltage resistance)

- Materials Used
  - Venturi: PBT-ABS synthetic resins
  - Propeller: PBT-ABS synthetic resins
  - Bearing: Both side shielded ball bearing

- Motor
  - Brushless DC motor.
  - Protection type: Current shut off by detecting lock state, automatically reset

Common Elec. Spec.
See pages G-11, G-12, G-13.

Standard Carton
60 to a carton of (450 x 380 x 300) mm, mass 13 kg

External dimensions in mm (inches)

- 8 pockets (2 each provided in 4 places on flanged ribs) hold the M4 nuts (not included), and make for easy attachment.

Mounting hole dimensions in mm (inches) [Recommendation]

- Options (sold separately)
  - Guard: F120UL guard
  - Filter: F120 filter
**Standard specification**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<tr>
<td>m³/min</td>
<td>CFM</td>
<td>Pa</td>
<td>inH₂O</td>
<td>dBA</td>
<td>m/s</td>
<td>W</td>
<td>Rating</td>
<td>Operating Range</td>
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<td>160</td>
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<td>12</td>
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<td>19.2-27.6</td>
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</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V, 24 V or 48 V), and normal temperature and humidity.
- The life expectancy of CNCD-Z speed products at rated voltage and in continuous operation is 30,000 hours at 60° (40,000 hours for other products).

**General specification**

**With Spacer**

- **Venturi shape:** ABS and PBT synthetic resins
- **Propeller:** ABS and PBT synthetic resins
- **Bearing:** Both side shielded ball bearing

**Motor**

- Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

**Common Elec. Spec.**

See pages G-11, G-12, G-13.

**Standard Carton**

40 to a carton of (450 x 380 x 300) mm, mass 12 kg

**External dimensions in mm (inches)**

- **Lead wire type:** Lead wire spec. AWG24 UL1007 or UL3266
- **Color:** (+) Red (-) Black (CNDC□□□□D7: Blue)

**Mounting hole dimensions in mm (inches)**

- Options (sold separately)
  - Guard: F120UL guard
  - Filter: F120 filter
  - Spacer: Flange spacer CNDC

**DC axial fan with sensor**

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889 (Excep H, U speed models), CSA: LR49399 (H, U speed model only), TUV: R9451586
- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
**D1238T series  □ 120 × 38 mm**

- **Features**
  - Power saving
  - Low noise
  - High airflow models, featuring an aerodynamic design inheriting the concept of Silent Fans and incorporating a newly developed high-efficiency motor.
  - Interchangeable with currently installed box fans.

- **Standard airflow and static pressure characteristics**
  - [By double chamber method]

- **General specification**
  - Materials Used:
    - Venturi: ABS and PBT synthetic resins
    - Propeller: ABS and PBT synthetic resins
    - Bearing: Both side shielded ball bearing
  - Motor:
    - Brushless DC motor, Protection type: OverCurrent detection and automatic resetting by current limiting
  - Common Elec. Spec:
    - See pages G-11, G-12, G-13.

- **Wiring connection diagram**
  - Power source (+): Red
  - Sensor output: Yellow
  - When sensor is installed
  - Power source (-): Black

- **Mounting hole dimensions**
  - [Recommendation]
  - Options (sold separately)
    - Guard: F120UL guard
      - Ensure the guard is situated more than 10 mm from the fan to minimize noise increase when mounting a guard on the intake side. See page G-9.
      - Filter: F120 filter

- **DC axial fan with sensor**
  - Rated Vol. | Model Code
    - 12 V | D1238T12B7AP-00
    - 24 V | D1238T24B7AS-00
    - 48 V | D1238T48B6AS-00

- **Certification**
  - UL/cUL: E48889, TUV: R50004410 (The 7 speed i only available in the 24 V ver).
  - An electronic version of the NIDEC SERVO catalog can be forwarded upon request.
  - 3D data is also available at our web2-CAD site (www.cadenas.co.jp).

- **Facts**
  - Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
  - The characteristics are the values at rated voltage (12V, 24V or 48V), and normal temperature and humidity.

### DC Axial Fan 
**D1238T**

- **Max. airflow: 4.4 m³/min **
- **Max. static pressure: 160 Pa **
- **Mass: 290 g **

- **Fan model code**
  - D1238T12B6AZ-00
  - D1238T12B7AP-00
  - D1238T12B7AZ-00
  - D1238T24B7AS-00
  - D1238T24B7AZ-00
  - D1238T48B6AS-00
  - D1238T48B6AP-00
  - D1238T48B6AZ-00
  - D1238T48B7AZ-00
  - D1238T48B7AP-00
  - D1238T48B7AS-00
  - D1238T48B7AZ-00
  - D1238T48B7CZ-00

- **Certification**
  - NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.

- **Literature**
  - The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410 (The 7 speed i only available in the 24 V ver).

- **Request**
  - An electronic version of the NIDEC SERVO catalog can be forwarded upon request.
  - 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
### Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow</th>
<th>Max. Static Pressure</th>
<th>Noise (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Input W</th>
<th>Voltage Spec. V</th>
<th>Current mA</th>
<th>Operating Temp. Range °C</th>
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<tr>
<td>6.2 m³/min</td>
<td>219 Pa</td>
<td>62</td>
<td>5500</td>
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<td>18-27.6</td>
<td>1100</td>
<td>2700</td>
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<tr>
<td>5.25 m³/min</td>
<td>185 Pa</td>
<td>59</td>
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<td>4.8 m³/min</td>
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<td>1650</td>
<td>5200</td>
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<tr>
<td>4.4 m³/min</td>
<td>155 Pa</td>
<td>54</td>
<td>4000</td>
<td>14.4</td>
<td>1200</td>
<td>580</td>
<td>1850</td>
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</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V, 24 V or 48 V), and normal temperature and humidity.

### General specification

- **Materials Used**
  - Venturi: Aluminum alloy die castings
  - Propeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Overcurrent detection and automatic reseting by current limiting

- **Common Elec. Spec.**
  - See pages G-11, G-12, G-13.

### External dimensions in mm (inches)

- **Lead wire type**
  - Lead wire spec.: AWG24 UL1007 or UL3266
  - Color (+) Red (-) Black

### Wiring connection diagram

- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
  - Power source (-): Black

### Mounting hole dimensions in mm (inches)

- Options (sold separately)
  - Guard: F120UL guard
  - Filter: F120 filter

### DC axial fan with sensor

- **Rated Vol.**
  - 12 V
  - 24 V
  - 48 V

- **Model Code**
  - D1238B12B8AP-00
  - D1238B12B9AP-00
  - D1238B24B7AP-00
  - D1238B24B9AP-00
  - D1238B48B7AP-00
  - D1238B48B9AP-00

- **NIDEC SERVO** can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.

- The listed products are registered in the following overseas standards files, UL: E129458, CSA: LR49399, TUV: R50004410

- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
**Standard specification**

<table>
<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Input (W)</th>
<th>Voltage Spec. (V)</th>
<th>Current (mA)</th>
<th>Model Code</th>
<th>Operating Temp. Range (°C)</th>
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<tbody>
<tr>
<td>5.8</td>
<td>205</td>
<td>185</td>
<td>0.74</td>
<td>58</td>
<td>4500</td>
<td>19.8</td>
<td>12</td>
<td>8.4-13.8</td>
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<td>5</td>
<td>177</td>
<td>150</td>
<td>0.60</td>
<td>54</td>
<td>3900</td>
<td>19.7</td>
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<td>16.8-27.6</td>
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<tr>
<td>4.6</td>
<td>162</td>
<td>130</td>
<td>0.52</td>
<td>51</td>
<td>3400</td>
<td>21.1</td>
<td>48</td>
<td>36.5-55.2</td>
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</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V, 24 V or 48 V), and normal temperature and humidity.

**General specification**

- **Materials Used**
  - Venturi: Aluminum alloy die castings
  - Propeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor. Protection type: Overcurrent detection and automatic resetting by current limiting


**Standard airflow and static pressure characteristics (At rated voltage)**

[Graph showing airflow and static pressure characteristics]

**External dimensions in mm (inches)**

- **Lead wire type**
  - Lead wire spec. AWG24 UL1007 or UL3266
  - Color (+): Red
  - Color (-): Black

**Mounting hole dimensions in mm (inches)**

- **Options (sold separately)**
  - Guard: F127ULguard

**DC axial fan with sensor**

<table>
<thead>
<tr>
<th>Rated Vol.</th>
<th>Model Code</th>
</tr>
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<tbody>
<tr>
<td>24 V</td>
<td>D1338B24B7AS-00</td>
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<tr>
<td></td>
<td>D1338B24B8AS-00</td>
</tr>
<tr>
<td></td>
<td>D1338B24B8AP-00</td>
</tr>
<tr>
<td>48 V</td>
<td>D1338B48B7AS-00</td>
</tr>
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<td></td>
<td>D1338B48B7AP-00</td>
</tr>
<tr>
<td></td>
<td>D1338B48B8AS-00</td>
</tr>
<tr>
<td></td>
<td>D1338B48B8AP-00</td>
</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: 50004410
- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
# Standard specification

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<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>m³/min CFM</td>
<td>Pa inH₂O</td>
<td>dB</td>
<td>min⁻¹</td>
<td>W</td>
<td>Rating</td>
<td>Operating Range</td>
<td>Rating</td>
<td>Starting</td>
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<tr>
<td>5.1 180</td>
<td>185 0.74</td>
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<td>4300</td>
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<td>350 950</td>
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- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (48 V), and normal temperature and humidity.

## General specification

- **Materials Used**
  - Venturi: Aluminum alloy die castings
  - Propeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor. Protection type: Overcurrent detection and automatic resetting by current limiting


## External dimensions in mm (inches)

- **Lead wire type**
  - Color: (+) Red, (-) Black

<table>
<thead>
<tr>
<th>Width</th>
<th>Height</th>
<th>Depth</th>
</tr>
</thead>
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<tr>
<td>17.5</td>
<td>3.7</td>
<td>11.8</td>
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<tr>
<td>(0.70)</td>
<td>(0.15)</td>
<td>(0.47)</td>
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</table>

- Lead wire spec: AWG24 UL1007 or UL3266

## Wiring connection diagram

- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
- Power source (-): Black

## Mounting hole dimensions in mm (inches)

- Options (sold separately):
  - Guard: F127UL guard

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Width</th>
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<tr>
<td>4.3</td>
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<td>(0.17)</td>
<td>(0.1)</td>
<td>(0.08)</td>
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</table>

- DC axial fan with sensor

<table>
<thead>
<tr>
<th>Rated Vol</th>
<th>Model Code</th>
</tr>
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<td>48 V</td>
<td>D1338S48B7AZ-00</td>
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### Standard specification

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<td>580</td>
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<td>4800</td>
<td>6900</td>
<td>D1751M24B2ZP9-00</td>
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<td>12.7</td>
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<td>510</td>
<td>2.05</td>
<td>16-28</td>
<td>3400</td>
<td>4800</td>
<td>D1751M24B2ZP9-00</td>
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<td>410</td>
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<td>1650</td>
<td>3500</td>
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<td>10.2</td>
<td>360</td>
<td>315</td>
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<td>12-27.6</td>
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<td>1800</td>
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<td>1150</td>
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<tr>
<td>6.8</td>
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<td>12-27.6</td>
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<td>2400</td>
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</tr>
<tr>
<td>5.8</td>
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<td>2800</td>
<td>310</td>
<td>900</td>
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<td>850</td>
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</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V, 24 V, 48 V), and normal temperature and humidity.

### General specification

- Materials Used: Venturi: Aluminum alloy die castings, Propelle: ABS and PBT synthetic resins, Bearing: Both side shielded ball bearing
- Motor: Brushless DC motor, Protection type: Overcurrent detection and automatic resetting by current limiting
- Standard Carton: 12 to a carton of (450 x 380 x 220)mm, mass 10kg

### External dimensions in mm (inches)[Recommendation]

- Options (sold separately)
  - Guard: GUARD172

### Mouting hole dimensions in mm (inches)

- Lead wire type

### PWM speed control specification

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- PVM (pulse width modulation) allowing for variable speed control is available in some models (reference the G-51 spec.)
- The listed products are registered in the following overseas standard files, UL/CSA: E48889, TUV: R50004410

---

**DC axial fan with sensor**

- Rated Vol: 12 V
- Model Code: D1751M12B1AS-00

---

**Speed performance (At rated vol., Air) specification (Room temperature)**

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- PVM (pulse width modulation) allowing for variable speed control is available in some models (reference the G-51 spec.)
- The listed products are registered in the following overseas standard files, UL/CSA: E48889, TUV: R50004410
**D1751S series 172 × 51 mm**

### Standard specification

<table>
<thead>
<tr>
<th>Max. airflow m³/min</th>
<th>Max. static pressure Pa</th>
<th>Noise level dB</th>
<th>Speed min⁻¹</th>
<th>Voltage spec. V</th>
<th>Current mA Rating</th>
<th>Model code</th>
</tr>
</thead>
<tbody>
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<td>14.2</td>
<td>501</td>
<td>640</td>
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<td>0.66</td>
<td>48</td>
<td>3200</td>
<td>D1751S24B4ZP300</td>
</tr>
<tr>
<td>5.8</td>
<td>205</td>
<td>125</td>
<td>0.50</td>
<td>44</td>
<td>2800</td>
<td>D1751S24B3ZP300</td>
</tr>
<tr>
<td>4.2</td>
<td>148</td>
<td>70</td>
<td>0.28</td>
<td>36</td>
<td>2000</td>
<td>D1751S24B2ZP300</td>
</tr>
</tbody>
</table>

#### General specification

- **Materials Used**
  - Venturi: Aluminum alloy die castings
  - Propeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Overcurrent detection and automatic resetting by current limiting

- **Common Elec. Spec.**
  - See pages G-11, G-12, G-13.

- **Standard Carton**
  - 12 to a carton of (450 x 380 x 220)mm, mass 10.5kg

- **PWM speed control specification**

- **Speed Performance (At rated vol.Air)**
  - Specification
  - 1st (198%) 2nd (148%) 3rd (0%) 4th (0%)
  - 5th (100%)

### DC axial fan with sensor

- **Rated Vol.**
  - 12 V
  - 24 V
  - 48 V

- **Model Code**
  - D1751S12B1AP-00
  - D1751S12B2AP-00
  - D1751S12B3AP-00
  - D1751S12B4AP-00
  - D1751S12B5AP-00
  - D1751S12B6AP-00
  - D1751S12B7AP-00
  - D1751S12B8AP-00
  - D1751S12B9AP-00
  - D1751S12B1AZ-00
  - D1751S12B2AZ-00
  - D1751S12B3AZ-00
  - D1751S12B4AZ-00
  - D1751S12B5AZ-00
  - D1751S12B6AZ-00
  - D1751S12B7AZ-00
  - D1751S12B8AZ-00
  - D1751S12B9AZ-00
  - D1751S12B1AS-00
  - D1751S12B2AS-00
  - D1751S12B3AS-00
  - D1751S12B4AS-00
  - D1751S12B5AS-00
  - D1751S12B6AS-00
  - D1751S12B7AS-00
  - D1751S12B8AS-00
  - D1751S12B9AS-00

- **Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.**
- **The characteristics are the values at rated voltage (12 V, 24 V, 48 V), and normal temperature and humidity.**

- **NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.**
- **PWM (pulse width modulation) allowing for variable speed control is available in some models (reference the G-51 spec.)**
- **The listed products are registered in the following overseas standards files, UL/CUL: E48889, TUV: R50004410**
**Brushless DC Fans & Blowers**

**DC Axial Fan**

**Fixed Blade Type**

**G0428C**

- **40×28 (1.6”×1.1”)**
- Max. airflow: 0.65 m³/min
- Max. static pressure: 435 Pa
- Mass: 50 g

**Fan model code**

G0428C12BAZP-00

---

### Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow</th>
<th>Max. Static-Pressure</th>
<th>Noise</th>
<th>Speed min⁻¹</th>
<th>Voltage Spec. V</th>
<th>Current mA</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min CFM</td>
<td>Pa</td>
<td>dB</td>
<td>Max. Min.</td>
<td>Rating</td>
<td>Starting</td>
<td></td>
</tr>
<tr>
<td>0.65</td>
<td>22.9</td>
<td>435</td>
<td>1.75</td>
<td>55</td>
<td>00</td>
<td>G0428C12BAZP-00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16500</td>
<td>3000</td>
<td>7-13.2</td>
<td></td>
</tr>
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<td></td>
<td>570</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1200</td>
<td></td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V), and normal temperature and humidity.
- Max. CFM and max static pressure points conclude at max rotational speed.

### General specification

**Materials Used**

- Venturi: ABS and PBT synthetic resins
- Propeller: ABS and PBT synthetic resins
- Bearing: Both side shielded ball bearing

**Motor**

- Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

**Common Elec. Spec.**

See pages G-11, G-12, G-13.

### Standard airflow and static pressure characteristics (At rated voltage)

[By double chamber method]

---

### External dimensions in mm (inches)

- **Lead wire type**

- Lead wire spec. AWG26 UL3265
- Color (+) Red (-) Black
- (Sensor) Yellow (Speed Control) Blue

---

### PWM speed control specification

---

### Speed performance (At rated vol., Air)

specification (Room temperature)

**CASE 1**

- 1 line out
- 1mA Max.
- ±V out
- ±V Max.
- 5V Max.
- 0.4V
- Frequency
- 25kHz-30kHz

**CASE 2**

- 1 line out
- 1mA Max.
- ±V out
- ±V Max.
- 5V TTL
- 0.5V Max.
- Frequency
- 25kHz-30kHz

---

**Mounting hole dimensions** in mm (inches)

[Recommendation]

- Identical for the intake and outlet sides

---

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410
Brushless DC Fans & Blowers

**G0638D series □ 60 × 38 mm**

### Standard specification

<table>
<thead>
<tr>
<th>Model code</th>
<th>Operating Temp. Range°C</th>
<th>Max. airflow</th>
<th>Max. static pressure</th>
<th>Noise</th>
<th>Conv. min⁻¹</th>
<th>Voltage spec. V</th>
<th>Current mA</th>
<th>Rating</th>
<th>Staring</th>
</tr>
</thead>
<tbody>
<tr>
<td>G0638D12BAZP-00</td>
<td>-20 ~ 60</td>
<td>1.81</td>
<td>1.89</td>
<td>63</td>
<td>62000</td>
<td>12</td>
<td>8.4-13.8</td>
<td>1660</td>
<td>2450</td>
</tr>
<tr>
<td>G0638D12B9ZP-00</td>
<td>-20 ~ 60</td>
<td>1.60</td>
<td>1.57</td>
<td>59</td>
<td>10600</td>
<td>12</td>
<td>8.4-13.8</td>
<td>1060</td>
<td>1800</td>
</tr>
<tr>
<td>G0638D12B8ZP-00</td>
<td>-20 ~ 60</td>
<td>1.40</td>
<td>1.22</td>
<td>56</td>
<td>9600</td>
<td>12</td>
<td>8.4-13.8</td>
<td>800</td>
<td>1500</td>
</tr>
<tr>
<td>G0638D12B7ZP-00</td>
<td>-20 ~ 60</td>
<td>1.20</td>
<td>0.84</td>
<td>52</td>
<td>8250</td>
<td>12</td>
<td>8.4-13.8</td>
<td>540</td>
<td>1100</td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V), and normal temperature and humidity.
- Max. CPM and max static pressure points coincide at max rotational speed.

### General specification

**Materials Used**
- Venturi: ABS and PBT synthetic resins
- Propeller: ABS and PBT synthetic resins
- Bearing: Both side shielded ball bearing

**Motor**
- Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

**Common Elec. Spec.**
- See pages G-11, G-12, G-13.

### Standard airflow and static pressure characteristics (At rated voltage) [By double chamber method]

<table>
<thead>
<tr>
<th>Airflow (m³/min)</th>
<th>Static pressure (Pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>5</td>
</tr>
<tr>
<td>0.4</td>
<td>10</td>
</tr>
<tr>
<td>0.6</td>
<td>15</td>
</tr>
<tr>
<td>0.8</td>
<td>20</td>
</tr>
<tr>
<td>1.0</td>
<td>25</td>
</tr>
</tbody>
</table>

### PWM speed control specification

![PWM speed control specification diagram]

**Mounting hole dimensions in mm (inches) [Recommendation]**

- Options (sold separately)
  - Guard: F60UL guard
  - Filter: F60P filter

### External dimensions in mm (inches)

- Lead wire type
  - Lead wire spec. AWG24
  - UL3266
  - Color: (+) Red, (-) Black, (Sensor) Yellow, (Speed Control) Blue

### Speed performance (At rated vol., Air) specification (Room temperature)

- **CASE 1**
  - +1 out
  - +1 in
  - 1mA Max.
  - 5V Max.
  - 0.5V Max.
  - Frequency 500kHz-5kHz

- **CASE 2**
  - +1 out
  - +1 in
  - 1mA Max.
  - Frequency 500kHz-5kHz

NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
### Standard specification

<table>
<thead>
<tr>
<th>Max. airflow (m³/min)</th>
<th>Max. static pressure (Pa)</th>
<th>Noise (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Voltage spec. V</th>
<th>Current mA</th>
<th>Model code</th>
<th>Operating temp. Range°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.83</td>
<td>100</td>
<td>1.89</td>
<td>60</td>
<td>8000</td>
<td>1800</td>
<td>GB083C12BAZP-00</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>8.4-13.8</td>
<td>GB083C12B9ZP-00</td>
<td>70</td>
</tr>
<tr>
<td>2.5</td>
<td>88</td>
<td>1.45</td>
<td>57</td>
<td>7200</td>
<td>1700</td>
<td>GB083C24B7ZP-00</td>
<td>70</td>
</tr>
<tr>
<td>2.25</td>
<td>79</td>
<td>1.17</td>
<td>54</td>
<td>6400</td>
<td>1500</td>
<td>GB083C24B9ZP-00</td>
<td>70</td>
</tr>
<tr>
<td>2.0</td>
<td>71</td>
<td>0.88</td>
<td>50</td>
<td>5600</td>
<td>1200</td>
<td>GB083C24B8ZP-00</td>
<td>70</td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V, or 24V), and normal temperature and humidity.
- Max. CFM and max static pressure points conclude at max rotational speed.

### General specification

- **Materials Used**
  - Venturi: ABS and PBT synthetic resins
  - Propeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

- **Common Spec.**
  - See pages G-11, G-12, G-13.

### External dimensions in mm (inches)

- **Lead wire type**
  - Lead wire spec: AWG24 UL3266
  - Color: (+) Red (Sensor) Yellow (Speed control) Blue

### PWM speed control specification

- **Speed performance (At rated volt., Air)**
  - Specification (Room temperature)

### Mounting hole dimensions in mm (inches)

- **Options (sold separately)**
  - Guard: F80UL guard
  - Filter: F80 filter

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.

- The listed products are registered in the following overseas standards files, UL/ cUL: E48889, TUV: R50004410

- 3D data is also available at our web2-CAD site (www.web2cad.co.jp).
**G0938B Series**

**Fixed Blade Type G0938B**

### DC Axial Fan

#### Standard specification

- Max. airflow: 3.9 m³/min
- Max. static pressure: 490 Pa
- Mass: 320 g

<table>
<thead>
<tr>
<th>Model code</th>
<th>Operating Temp. Range(°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G0938B12BAZP-00</td>
<td>-20 ~ +60</td>
</tr>
<tr>
<td>G0938B24BAZP-00</td>
<td>-20 ~ +70</td>
</tr>
</tbody>
</table>

#### Generalspecification

- **Materials Used**
  - Venturi: Aluminum alloy die castings
  - Propeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor
  - Protection type: Current shut off by detecting lock state, automatically reset

- **Common Elec. Spec.**
  - See pages G-11, G-12, G-13

### External dimensions in mm (inches)

- **Lead wire type**
  - AWG24 UL3266
  - Color: (+)Red  (-)Black
  - (Sensor)Yellow (Speed control)Blue

- **Speed performance (At rated vol., Air)**
  - specification (Room temperature)

### PWM speed control specification

- **(At rated voltage)**

### Mounting hole dimensions in mm (inches)

#### Options sold separately

- Guard: F92UL guard
- Filter: F92 filter

---

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410.

---

G1238B Series □ 119 × 38 mm

■ Standard specification

<table>
<thead>
<tr>
<th>Max. airflow</th>
<th>Max. static pressure</th>
<th>Noise</th>
<th>Speed</th>
<th>Voltage spec.</th>
<th>Current mA</th>
<th>Model code</th>
<th>Operating temp. range C</th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min</td>
<td>CFM</td>
<td>Pa</td>
<td>inH₂O</td>
<td>dB</td>
<td>Max.</td>
<td>Min.</td>
<td>Rating</td>
</tr>
<tr>
<td>7.4</td>
<td>261</td>
<td>520</td>
<td>2.09</td>
<td>67</td>
<td>6300</td>
<td>1000</td>
<td>12</td>
</tr>
<tr>
<td>6.3</td>
<td>223</td>
<td>415</td>
<td>1.67</td>
<td>64</td>
<td>5300</td>
<td>1000</td>
<td>12</td>
</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410

■ General specification

**Materials Used**
- Venturi: Aluminum alloy die castings.
- Propeller: ABS and PBT synthetic resins
- Bearing: Both side shielded ball bearing

**Motor**
- Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

**Common Elec. Spec.**
- See pages G-11, G-12, G-13.

![PWM speed control specification (At rated voltage)](image)

![Speed performance (At rated vol., Air) specification (Room temperature)](image)

![Mounting hole dimensions in mm (inches)](image)

**Options (sold separately)**
- Guard: F120UL guard
- Filter: F120 filter

Indential for the intake and outlet sides.

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410

Brushless DC Fans & Blowers

G1751M series 172 × 150 × 51 mm

Fan model code
G1751M24B5ZP-00
G1751M24B6ZP-00
G1751M24B7ZP-00
G1751M24B8ZP-00
G1751M48B5ZP-00
G1751M48B6ZP-00
G1751M48B7ZP-00
G1751M48B8ZP-00
G1751M48B9ZP-00
G1751M48B5ZP-00

High static pressure fans suitable for cooling densely assembled equipment.

Fan model code
G1751M24B5ZP-00
G1751M24B6ZP-00
G1751M24B7ZP-00
G1751M24B8ZP-00
G1751M48B5ZP-00
G1751M48B6ZP-00
G1751M48B7ZP-00
G1751M48B8ZP-00
G1751M48B9ZP-00
G1751M48B5ZP-00

■ Standard specification

<table>
<thead>
<tr>
<th>Max. airflow (m/min)</th>
<th>Max. static pressure (Pa)</th>
<th>Noise (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Voltage spec. V</th>
<th>Current mA</th>
<th>Model code</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.2</td>
<td>395</td>
<td>3.13</td>
<td>6800</td>
<td>24</td>
<td>16-28</td>
<td>G1751M24B9ZP-00</td>
</tr>
<tr>
<td>10.0</td>
<td>353</td>
<td>3.37</td>
<td>6200</td>
<td>48</td>
<td>36-60</td>
<td>G1751M48B9ZP-00</td>
</tr>
<tr>
<td>9.2</td>
<td>325</td>
<td>3.74</td>
<td>5600</td>
<td>48</td>
<td>36-60</td>
<td>G1751M24B8ZP-00</td>
</tr>
<tr>
<td>8.3</td>
<td>293</td>
<td>4.90</td>
<td>5100</td>
<td>24</td>
<td>12-27.6</td>
<td>G1751M24B6ZP-00</td>
</tr>
<tr>
<td>7.3</td>
<td>258</td>
<td>6.31</td>
<td>4500</td>
<td>48</td>
<td>36-60</td>
<td>G1751M48B8ZP-00</td>
</tr>
</tbody>
</table>

■ General specification

Materials Used
Venturi: Aluminum alloy die castings
Propeller: ABS and PBT synthetic resins
Bearing: Both side shielded ball bearing

Motor
Brushless DC motor. Protection type: Overcurrent detection and automatic resetting by current limiting

Common Elec. Spec.
See pages G-11, G-12, G-13.

Standard Carton
12 to a carton of (450 x 380 x 220) mm, mass 11 kg

■ Standard airflow and static pressure characteristics (At rated voltage)

[By double chamber method]

■ External dimensions in mm (inches)

Lead wire type
Lead wire spec. AWG24 UL3266
Color (+) Red (-) Black (Sensor) Yellow (Speed control) Blue

■ PWM speed control specification

Speed performance (At rated vol., Air) specification (Room temperature)

CASE 1
-1 out
-1 in
1mA Max.
5V Max.
5V Loss
0.5V Max.
FREQUENCY
500kHz 5kHz

FAN
+VDC
Hi DUTY
(PWM)

FAN
+VDC
Hi DUTY
(PWM)

CASE 2
-1 out
-1 in
1mA Max.
1mA Max.
5V TTL
0.5V MAX.
FREQUENCY
500kHz 5kHz

■ Mounting hole dimensions in mm (inches)

Options (sold separately)
Guard: GUARD172

NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.

The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410
**Features**

- The smaller 48 mm square blower gives as much airflow output as a larger 70 mm square blower while maintaining the same low noise level.
- Both clockwise and counterclockwise discharge (mirror-image) versions are available.

**Materials Used**
- Venturi: ABS and PBT synthetic resins
- Impeller: ABS and PBT synthetic resins
- Bearing: Both side shielded ball bearing

**General specification**

<table>
<thead>
<tr>
<th>Max. Airflow</th>
<th>Max. Static Pressure</th>
<th>Noise</th>
<th>Speed (min⁻¹)</th>
<th>Voltage Spec. V</th>
<th>Current mA</th>
<th>Model Code</th>
<th>Operating Temp. Range °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.22 m³/min</td>
<td>7.8 Pa</td>
<td>220</td>
<td>0.88 dB</td>
<td>42.5</td>
<td>6700</td>
<td></td>
<td>E052SH12B7AZ-00</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td>E052SK12B7AZ-00</td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td>E052SH24B7AZ-00</td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>E052SK24B7AZ-00</td>
<td></td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.

**External dimensions in mm (inches)**

- **Lead wire type (E052H)**
  - Lead wire spec. AWG26 UL3265
  - Color (+) Red (-) Black

- **Lead wire type (E052K)**
  - Lead wire spec. AWG26 UL3265
  - Color (+) Red (-) Black

**Super silent blower with sensor**

<table>
<thead>
<tr>
<th>Rated Vol</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>E052SH12B7AS-00</td>
</tr>
<tr>
<td></td>
<td>E052SK12B7AS-00</td>
</tr>
<tr>
<td></td>
<td>E052SH12B7AP-00</td>
</tr>
<tr>
<td></td>
<td>E052SK12B7AP-00</td>
</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL E48889, TUV: R50004410.
### E0515H series 51 × 53 × 15 mm

#### Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow m³/min</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise Level (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Input W</th>
<th>Voltage Spec. V</th>
<th>Current mA</th>
<th>Model Code</th>
<th>Operating Temp. Range °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.125</td>
<td>4.4</td>
<td>210</td>
<td>0.84</td>
<td>42</td>
<td>6100</td>
<td>2.3</td>
<td>12</td>
<td>6-13.8</td>
</tr>
<tr>
<td>0.11</td>
<td>3.9</td>
<td>165</td>
<td>0.66</td>
<td>40</td>
<td>5500</td>
<td>1.7</td>
<td>12</td>
<td>6-13.8</td>
</tr>
<tr>
<td>0.1</td>
<td>3.5</td>
<td>135</td>
<td>0.54</td>
<td>37</td>
<td>5000</td>
<td>1.4</td>
<td>24</td>
<td>9.6-13.8</td>
</tr>
<tr>
<td>0.09</td>
<td>3.2</td>
<td>110</td>
<td>0.44</td>
<td>34</td>
<td>4500</td>
<td>1.1</td>
<td>12</td>
<td>9.6-13.8</td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.
- The life expectancy of E0515H-8 speed products at rated voltage and in continuous operation is 20,000 hours at 60 °C. (30,000 hours for other products)

#### General specification

- **Materials Used**: Venturi: ABS and PBT synthetic resins
  Impeller: ABS and PBT synthetic resins
- **Motor**: Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

#### Standard airflow and static pressure characteristics (At rated voltage)

[Graph showing airflow and static pressure characteristics]

#### External dimensions in mm (inches)

- **Lead wire type**
  - Lead wire length: 300 mm (11.8 in)
  - Intake: 36 (1.42 in) dia.
  - Intake: 5.3 (0.21 in) dia.
  - Outlet: 18.5 (0.73 in) dia.
  - Through hole: 4.5 (0.18 in) dia.
  - Color (+): Red
  - Color (-): Black

#### Wiring connection diagram

- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
- Power source (-): Black

#### DC centrifugal blower with sensor

<table>
<thead>
<tr>
<th>Rated Vol.</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>E0515H12B5AZ-00</td>
</tr>
<tr>
<td></td>
<td>E0515H12B5AZA01</td>
</tr>
<tr>
<td></td>
<td>E0515H12B7AZA01</td>
</tr>
<tr>
<td></td>
<td>E0515H12B8AZA01</td>
</tr>
<tr>
<td>24 V</td>
<td>E0515H24B5AZ-00</td>
</tr>
<tr>
<td></td>
<td>E0515H24B5AZA01</td>
</tr>
<tr>
<td></td>
<td>E0515H24B7AZA01</td>
</tr>
</tbody>
</table>

- **NIDEC SERVO** can meet many of your requirements for customization, such as special connectors, other sensors not listed above and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: R0451586
- 3D data is also available at our web:CAD site (www.cadenas.co.jp).
E0720H series 70 × 76 × 20 mm

Standard specification

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Operating Temp. Range °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>E0720H12B5AZ-00</td>
<td>-20 ~ +70</td>
</tr>
<tr>
<td>E0720H12B7AZ-00</td>
<td>-20 ~ +70</td>
</tr>
<tr>
<td>E0720H12B8AZ-00</td>
<td>-20 ~ +70</td>
</tr>
<tr>
<td>E0720H24B5AZ-00</td>
<td>-20 ~ +70</td>
</tr>
<tr>
<td>E0720H24B7AZ-00</td>
<td>-20 ~ +70</td>
</tr>
<tr>
<td>E0720H24B8AZ-00</td>
<td>-20 ~ +70</td>
</tr>
</tbody>
</table>

General specification

Materials Used
- Venturi: ABS and PBT synthetic resins
- Impeller: ABS and PBT synthetic resins
- Bearing: Both side shielded ball bearing

Motor
- Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

Common Elec. Spec.
- See pages G-11, G-12, G-13.

Standard Carton
- 150 to a carton of (450 x 380 x 295) mm, mass 8 kg

Standard airflow and static pressure characteristics (At rated voltage)

[By double chamber method]

External dimensions in mm (inches)

External dimension diagram

Wiring connection diagram

Super silent blower with sensor

<table>
<thead>
<tr>
<th>Rated Vol.</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>E0720H12B5AS-00, E0720H12B7AS-00, E0720H12B8AS-00, E0720H24B5AS-00, E0720H24B7AS-00, E0720H24B8AS-00</td>
</tr>
<tr>
<td>24 V</td>
<td>E0720H24B5AP-00, E0720H24B7AP-00, E0720H24B8AP-00</td>
</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL: E48888, CSA: LR49399, TUV: R500441.
E0720L series 72 × 75 × 20 mm

Features
- Dimensions almost equivalent to those of E0720H, yet features higher airflow and lower noise.
- Suitable for equipment that prioritizes high airflow over high static pressure.

Standard specification
- Max. Airflow: 0.31 m³/min
- Static pressure: 265 Pa
- Mass: 50 g

General specification
- Materials Used: Venturi: ABS and PBT synthetic resins
- Impeller: ABS and PBT synthetic resins
- Bearing: Both side shielded ball bearing
- Motor: Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset
- Standard Carton: 150 to a carton of (450 x 380 x 295) mm, mass 8 kg

Standard airflow and static pressure characteristics (At rated voltage)
[By double chamber method]

External dimensions in mm (inches)
- Lead wire type

Wiring connection diagram
- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
- Power source (-): Black

Super silent blower with sensor
- Rated Vol: 12 V
- Model Code: E0720L12B8AS-00, E0720L12B8AP-00

NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.

The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410

Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.

The characteristics are the values at rated voltage (12 V), and normal temperature and humidity.

The life expectancy of E0720L-8 speed products at rated voltage and in continuous operation is 18,000 hours at 60 °C. (25,000 hours for other products)
**Standard specification**

<table>
<thead>
<tr>
<th>Max. Airflow/m³/min</th>
<th>Max. Static Pressure/Pa</th>
<th>Noise dB/In.H₂O</th>
<th>Speed/min⁻¹</th>
<th>Input Power W</th>
<th>Voltage Spec. V Rating</th>
<th>Current mA Starting</th>
<th>Model Code</th>
<th>Operating Temp. Range °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.33</td>
<td>11.6</td>
<td>0.72</td>
<td>48</td>
<td>4.0</td>
<td>12</td>
<td>7.2-13.8</td>
<td>330</td>
<td>820</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.4</td>
<td>12-27.6</td>
<td>190</td>
<td>440</td>
</tr>
<tr>
<td>0.27</td>
<td>9.5</td>
<td>0.47</td>
<td>43</td>
<td>2.7</td>
<td>12</td>
<td>7.2-13.8</td>
<td>230</td>
<td>550</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12-27.6</td>
<td>190</td>
<td>120</td>
<td>350</td>
</tr>
<tr>
<td>0.24</td>
<td>8.5</td>
<td>0.35</td>
<td>41</td>
<td>2.2</td>
<td>12</td>
<td>7.2-13.8</td>
<td>180</td>
<td>450</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12-27.6</td>
<td>90</td>
<td>250</td>
<td>90</td>
</tr>
</tbody>
</table>

**General specification**

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.

**Standard airflow and static pressure characteristics (At rated voltage)**

By double chamber method

- **DC centrifugal blower with sensor**

<table>
<thead>
<tr>
<th>Rated Vol.</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>SMBD12H4S</td>
</tr>
<tr>
<td>24 V</td>
<td>SMBD24B4S</td>
</tr>
</tbody>
</table>

**Lead wire type**

- Lead wire spec: AWG24 UL1007 or UL3266
- Color (+): Red (-): Black

**External dimensions in mm (inches)**

- **Wiring connection diagram**

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: R9451586
- 3D data is also available at our web2-CAD site (www.cadenas.jp).
**MBDC series 76 × 30 mm**

**Standard specification**

<table>
<thead>
<tr>
<th>Max. Airflow</th>
<th>Max. Static Pressure</th>
<th>Noise</th>
<th>Speed</th>
<th>Input</th>
<th>Voltage</th>
<th>Current mA</th>
<th>Model Code</th>
<th>Operating Temp. Range °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min CFM</td>
<td>Pa</td>
<td>inH₂O</td>
<td>rpm</td>
<td>W</td>
<td>Spec. V</td>
<td>mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.33</td>
<td>11.6</td>
<td>172</td>
<td>0.69</td>
<td>47</td>
<td>4200</td>
<td>4.6</td>
<td>12</td>
<td>7.2-13.8</td>
</tr>
<tr>
<td>0.29</td>
<td>10.2</td>
<td>117</td>
<td>0.47</td>
<td>41</td>
<td>3400</td>
<td>3.1</td>
<td>24</td>
<td>12-27.6</td>
</tr>
<tr>
<td>0.25</td>
<td>8.8</td>
<td>83</td>
<td>0.33</td>
<td>38</td>
<td>3000</td>
<td>2.5</td>
<td>24</td>
<td>12-27.6</td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.

**General specification**

- **Materials Used**
  - Venturi: ABS and PBT synthetic resins
  - Impeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Current shuts off by detecting lock state, automatically reset

- **Common Elec. Spec.**
  - See pages G-11, G-12, G-13.

- **Standard Carton**
  - 120 to a carton of (450 × 380 × 300) mm, mass 13 kg

**Standard airflow and static pressure characteristics (At rated voltage)**

![Graph showing standard airflow and static pressure characteristics]

**External dimensions in mm (inches)**

- **Lead wire type**

**Wiring connection diagram**

- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
- Power source (-): Black

**DC centrifugal blower with sensor**

<table>
<thead>
<tr>
<th>Rated Vol.</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>MBDC12Z4S</td>
</tr>
<tr>
<td>24 V</td>
<td>MBDC12H4S</td>
</tr>
<tr>
<td>24 V</td>
<td>MBDC24B4S</td>
</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: R9451586.
- Customizing to the sleeve bearing specification also accepted depending on the intended purchase quantity. Contact NIDEC SERVO for further information.
- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
**E0818K series** 87 × 18 mm

## Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Voltage Spec. V</th>
<th>Current mA</th>
<th>Model Code</th>
<th>Operating Temp. Range, °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.28</td>
<td>9.9</td>
<td>285</td>
<td>1.14</td>
<td>41</td>
<td>3400</td>
<td>12</td>
<td>4.5-13.2</td>
</tr>
<tr>
<td>0.26</td>
<td>9.2</td>
<td>240</td>
<td>0.96</td>
<td>38</td>
<td>3100</td>
<td>12</td>
<td>4.5-13.2</td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V), and normal temperature and humidity.

## General specification

- **Materials Used**
  - Venturi: ABS and PBT synthetic resins
  - Impeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset


## Standard airflow and static pressure characteristics (At rated voltage)

[By double chamber method]

![Graph showing standard airflow and static pressure characteristics](image)

## External dimensions in mm (inches)

- **Lead wire type**
  - Lead wire spec. AWG26 UL3265
  - Color: (+) Red, (-) Black

## Wiring connection diagram

- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
- Power source (-): Black

## Super silent blower with sensor

<table>
<thead>
<tr>
<th>Rated Vol.</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E0818K12B5AS-00</td>
</tr>
<tr>
<td></td>
<td>E0818K12B6AS-00</td>
</tr>
<tr>
<td></td>
<td>E0818K12B5AP-00</td>
</tr>
<tr>
<td></td>
<td>E0818K12B6AP-00</td>
</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410
**Standard specification**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min CFM</td>
<td>Pa</td>
<td>inH2O</td>
<td>dB</td>
<td>min⁻¹</td>
<td>Rating</td>
<td>Operating Range</td>
<td>Rating</td>
<td>Starting</td>
</tr>
<tr>
<td>0.65</td>
<td>23</td>
<td>280</td>
<td>1.13</td>
<td>53</td>
<td>3900</td>
<td>7.8</td>
<td>12</td>
<td>7.2-13.8</td>
</tr>
<tr>
<td>0.56</td>
<td>20</td>
<td>200</td>
<td>0.80</td>
<td>49</td>
<td>3300</td>
<td>5.0</td>
<td>12</td>
<td>7.2-13.8</td>
</tr>
<tr>
<td>0.44</td>
<td>16</td>
<td>120</td>
<td>0.48</td>
<td>45</td>
<td>2700</td>
<td>3.5</td>
<td>12</td>
<td>7.2-13.8</td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.
- The life expectancy of SFBD-H speed products at rated voltage and in continuous operation is 30,000 hours at 60 °C. (40,000 hours for other products)

**General specification**

- Venturi: ABS and PBT synthetic resins
- Impeller: ABS and PBT synthetic resins
- Bearing: Both side shielded ball bearing
- Motor: Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset
- Standard Carton: 60 to a carton of (450 x 380 x 220) mm, mass 9 kg

**Standard airflow and static pressure characteristics (At rated voltage)**

![Graph showing airflow and static pressure characteristics]

**External dimensions in mm (inches)**

- Lead wire type
- Lead wire length: 300 ± 30 (11.8 ± 1.2)
- Intake: φ 55 (Intake inside dia.)
- Outlet: φ 45.8 (Through hole)
- Color: (+) Red, (-) Black

**DC centrifugal blower with sensor**

<table>
<thead>
<tr>
<th>Rated Vol.</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>SFBDB12Z7</td>
</tr>
<tr>
<td>24 V</td>
<td>SFBDB24Z7</td>
</tr>
<tr>
<td></td>
<td>SFBDB24H7</td>
</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL: E48889, CSA: LR49399, TUV: R945186
- Customizing to the sleeve bearing specification also accepted depending on the intended purchase quantity. Contact NIDEC SERVO for further information.
- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
### Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise Level (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Voltage Spec. V</th>
<th>Current mA</th>
<th>Model Code</th>
<th>Operating Temp. Range (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.78</td>
<td>28</td>
<td>520</td>
<td>2.09</td>
<td>55</td>
<td>5000</td>
<td>E1027H12BAAZ-00</td>
<td>-20 ~ +60</td>
</tr>
<tr>
<td>0.57</td>
<td>20</td>
<td>315</td>
<td>1.27</td>
<td>47</td>
<td>3600</td>
<td>E1027H12B7AZ-00</td>
<td>-20 ~ +70</td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V), and normal temperature and humidity.

### General specification

- **Materials Used**
  - Venturi: ABS and PBT synthetic resins
  - Impeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset


### Standard airflow and static pressure characteristics (At rated voltage)

![Graph showing airflow and static pressure characteristics for E1027H series fans.](image)

- By double chamber method

#### External dimensions in mm (inches)

- **Lead wire type**
  - Lead wire spec. AWG24 UL3266
  - Color: (+) Red, (-) Black

### Wiring connection diagram

- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
- Power source (-): Black

### Super silent blower with sensor

<table>
<thead>
<tr>
<th>Rated Vol.</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>E1027H12BAAS-00</td>
</tr>
<tr>
<td></td>
<td>E1027H12BAP-00</td>
</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004-10.

**NIDEC SERVO**

### Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow</th>
<th>Max. Static Pressure</th>
<th>Noise dB</th>
<th>Speed (mm/s)</th>
<th>Voltage spec. V</th>
<th>Current mA</th>
<th>Model Code</th>
<th>Operating Temp. Range °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min</td>
<td>CFM</td>
<td>Pa</td>
<td>inH₂O</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.30</td>
<td>46</td>
<td>800</td>
<td>3.22</td>
<td>62</td>
<td>5800</td>
<td>12</td>
<td>8.4-13.2</td>
</tr>
<tr>
<td></td>
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<tr>
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<td></td>
<td>24</td>
<td>16-26.4</td>
</tr>
<tr>
<td>0.85</td>
<td>30</td>
<td>320</td>
<td>1.29</td>
<td>51</td>
<td>3450</td>
<td>12</td>
<td>4.5-13.2</td>
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<td></td>
<td>24</td>
<td>10-26.4</td>
</tr>
<tr>
<td>0.76</td>
<td>27</td>
<td>260</td>
<td>1.05</td>
<td>48</td>
<td>3100</td>
<td>12</td>
<td>5-13.2</td>
</tr>
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<td>24</td>
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<tr>
<td>0.64</td>
<td>23</td>
<td>185</td>
<td>0.74</td>
<td>43</td>
<td>2600</td>
<td>12</td>
<td>5-13.2</td>
</tr>
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<td></td>
<td>24</td>
<td>10-26.4</td>
</tr>
<tr>
<td>0.53</td>
<td>19</td>
<td>120</td>
<td>0.48</td>
<td>39</td>
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<td>12</td>
<td>5-13.8</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td>10-26.4</td>
</tr>
</tbody>
</table>

### General specification

- Motor: Brushless DC motor. Protection type: Current shut off by detecting lock state, automatically reset
- Standard Carton: 50 to a carton of (450 x 380 x 220) mm, mass 8 kg

### External dimensions (in mm (inches))

- Lead wire type (E1033H/Y)
  - Lead wire spec. AWG24 UL2266 Color: (+) Red (-) Black

### Standard airflow and static pressure characteristics (At rated voltage)

[By double chamber method]

### Wiring connection diagram

- Power source (+): Red
- Sensor output: Yellow or orange
- When sensor is installed: Power source (-): Black

### Super silent blower with sensor

<table>
<thead>
<tr>
<th>Rated Vol</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>E1033H12B5AM-04</td>
</tr>
<tr>
<td>24 V</td>
<td>E1033H24B5AM-04</td>
</tr>
</tbody>
</table>

- AM-04 becomes a lock detection sensor (S) type or pulse sensor (P) type in accordance with the connector connection method.
- Note 1: Purchase a sensor output cord (See page G-66) optionally available or the customer shall provide a cord with equivalent specifications if a sensor function is desired.
- NIDEC SERVO can meet any of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410
Brushless DC Fans & Blowers

Super Silent Blowers

E1232L series 119 × 117 × 32 mm

119 × 117 × 32
(4.7" × 4.6" × 1.3")
Max. airflow: 1.13 m³/min
Max. static pressure: 460 Pa
Mass: 220 g

Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise Level (dB)</th>
<th>Speed (RPM)</th>
<th>Voltage Spec. (V)</th>
<th>Current (mA)</th>
<th>Model Code</th>
<th>Operating Temp. Range (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.13</td>
<td>40</td>
<td>1.85</td>
<td>54</td>
<td>3800</td>
<td>12</td>
<td>E1232L12B9AZ-00</td>
<td>-20 ~ +60</td>
</tr>
<tr>
<td>0.91</td>
<td>32</td>
<td>320</td>
<td>49</td>
<td>3100</td>
<td>12</td>
<td>E1232L12B7AZ-00</td>
<td>-20 ~ +70</td>
</tr>
<tr>
<td>0.83</td>
<td>29</td>
<td>250</td>
<td>47</td>
<td>2750</td>
<td>12</td>
<td>E1232L12B5AZ-00</td>
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</tr>
<tr>
<td>0.75</td>
<td>26</td>
<td>200</td>
<td>44</td>
<td>2450</td>
<td>12</td>
<td>E1232L12B3AZ-00</td>
<td></td>
</tr>
</tbody>
</table>

The life expectancy of E1232L-7, 9 speed products at rated voltage and in continuous operation is 30,000 hours at 60°C (40,000 hours for other products).

General specification

Materials Used:
Venturi: ABS and PBT synthetic resins
Impeller: ABS and PBT synthetic resins
Bearing: Both side shielded ball bearing

Motor:
Brushless DC motor, Protection type: Current shut off by detecting lock state, automatically reset

External dimensions in mm (inches)

Lead wire type

Lead wire length: 300 mm

Wiring connection diagram

Super silent blower with sensor

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R5000410.
### Standard specification

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>m³/min</td>
<td>CFM</td>
<td>Pa</td>
<td>inH₂O</td>
<td>min⁻¹</td>
<td>Rating</td>
<td>Operating Range</td>
<td>Rating</td>
</tr>
<tr>
<td>1.08</td>
<td>38</td>
<td>480</td>
<td>1.93</td>
<td>54</td>
<td>3400</td>
<td>12</td>
<td>8.4-13.2</td>
</tr>
<tr>
<td>0.87</td>
<td>31</td>
<td>310</td>
<td>1.25</td>
<td>49</td>
<td>2700</td>
<td>12</td>
<td>6-13.2</td>
</tr>
<tr>
<td>0.79</td>
<td>28</td>
<td>250</td>
<td>1.01</td>
<td>47</td>
<td>2500</td>
<td>12</td>
<td>6-13.2</td>
</tr>
<tr>
<td>0.72</td>
<td>25</td>
<td>210</td>
<td>0.84</td>
<td>45</td>
<td>2200</td>
<td>12</td>
<td>6-13.2</td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.

### General specification

- **Fan model code**
  - E1331K12B5AP-00
  - E1331K12B5A5-00
  - E1331K12B5AZ-00
  - E1331K12B6AP-00
  - E1331K12B6A5-00
  - E1331K12B6AZ-00
  - E1331K12B7AZ-00
  - E1331K12B9AP-00
  - E1331K12B9AS-00
  - E1331K12B9AZ-00
  - E1331K24B5AZ-00
  - E1331K24B6AP-00
  - E1331K24B6AS-00
  - E1331K24B6AZ-00
  - E1331K24B7AP-00
  - E1331K24B7AS-00
  - E1331K24B7AZ-00
  - E1331K24B9AP-00
  - E1331K24B9AS-00
  - E1331K24B9AZ-00

### Standard airflow and static pressure characteristics (At rated voltage)

**[By double chamber method]**

- **External dimensions in mm (inches)**
  - **Lead wire type**
  - **Lead wire length:** 300±30 (11.8±1.2)
  - **3-4.5 (Through hole):** 3.9±0.8
  - **Intake:** 54.4±0.3 (2.14±0.01
  - **Outlet:** 50.4±0.3 (1.98±0.01

- **Wiring connection diagram**
  - **Power source (+): Red**
  - **Power source (-): Black**
  - **Sensor output: Yellow**
  - **When sensor is installed**

### Super silent blower with sensor

- **Rated Vol.**
  - 12 V
    - E1331K12B5AP-00
    - E1331K12B5A5-00
    - E1331K12B9AP-00
    - E1331K12B9A5-00
  - 24 V
    - E1331K24B6AP-00
    - E1331K24B6AS-00
    - E1331K24B9AP-00
    - E1331K24B9A5-00

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410.
**Standard specification**

<table>
<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Input Power (W)</th>
<th>Voltage Spec. V</th>
<th>Current mA</th>
<th>Model Code</th>
<th>Operating Temp. Range (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>71</td>
<td>430</td>
<td>1.73</td>
<td>56</td>
<td>2700</td>
<td>19.4</td>
<td>E1540H12B5AZ-00</td>
<td>-20 ~ +70</td>
</tr>
<tr>
<td>1.65</td>
<td>58</td>
<td>270</td>
<td>1.09</td>
<td>51</td>
<td>2200</td>
<td>13</td>
<td>E1540H12B7AS-00</td>
<td></td>
</tr>
</tbody>
</table>

- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The characteristics are the values at rated voltage (12 V or 24 V), and normal temperature and humidity.
- The life expectancy of E1540H-7 speed products at rated voltage and in continuous operation is 30,000 hours at 60°C. (40,000 hours for other products)

**General specification**

- **Materials Used**
  - Venturi: ABS and PBT synthetic resins
  - Impeller: ABS and PBT synthetic resins
  - Bearing: Both side shielded ball bearing

- **Motor**
  - Brushless DC motor, Protection type: Overcurrent detection and automatic resetting by current limiting

- **Common Elec. Spec.**
  - See pages G-11, G-12, G-13.

- **Standard Carton**
  - 16 to a carton of (450 x 380 x 220) mm, mass 7 kg

**Standard airflow and static pressure characteristics (At rated voltage)**

- By double chamber method

- **External dimensions in mm (inches)**
  - Lead wire type
    - Lead wire length: 300 ± 10 mm
  - Intake: 91 (Intake inside dia. 3.58 dia Intake)
  - Outlet: 47 (Intake inside dia. 3.58 dia Intake)
  - Color: (+) Red (-) Black
  - AWG24 UL3266

**Wiring connection diagram**

- Power source (+): Red
- Sensor output: Yellow
- When sensor is installed
- Power source (-): Black

**Super silent blower with sensor**

<table>
<thead>
<tr>
<th>Rated Vol.</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 V</td>
<td>E1540H12B5AS-00</td>
</tr>
<tr>
<td></td>
<td>E1540H12B7AS-00</td>
</tr>
<tr>
<td></td>
<td>E1540H12B7AP-00</td>
</tr>
<tr>
<td>24 V</td>
<td>E1540H24B5AS-00</td>
</tr>
<tr>
<td></td>
<td>E1540H24B7AS-00</td>
</tr>
<tr>
<td></td>
<td>E1540H24B7AP-00</td>
</tr>
</tbody>
</table>

- NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.
- The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R50004410
- 3D data is also available at our web2-CAD site (www.cadenas.co.jp).
Brushless
DC Fans & Blowers

Super Silent Blowers
E2271Z

 ø 220×71 ( ø 8.7"×2.8")
Max. airflow: 18.1 m³/min
Max. static pressure: 650 Pa
Mass: 1300 g

Features

• Large airflow, high static pressure backward blowers without housing.
• A low noise effect can be achieved by combining an inlet ring.

Fan model code
E2271Z48B7AP-00
E2271Z48B7YP-00

Standard specification

m³/min | CFM | Pa | in H₂O | min⁻¹ | Rating | Operating Range | Rating | Starting
18.1 | 639 | 650 | 2.61 | 71 | 3200 | 48 | 36-57 | 2100 | 4500 | E2271Z48B7AP-00 | -20 ~ +60
14.7 | 519 | 470 | 1.89 | 69 | 2650 | 24 | 21.0-26.4 | 2600 | 3800 | E2271Z48B7YP-00 | -20 ~ +40

• Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
• The characteristics are the values at rated voltage (24V, or 48 V), and normal temperature and humidity.
• This product has limitations to ON/OFF functionality. For details, please reference the relevant diagrams in the specification.

General specification

Materials Used
Venture: Aluminum alloy die castings
Impeller: ABS and PBT synthetic resins
Bearing: Both side shielded ball bearing

Motor
Brushless DC motor, Protection type: Overcurrent detection and automatic resetting by current limiting

Common Elec. Spec.
See pages G-11, G-12, G-13.

External dimensions in mm (inches)

Lead wire type

Wiring connection diagram

Power source (+): Red
Sensor output: Yellow
When sensor is installed
Power source (-): Black

Options (sold separately)
• E2271 inlet ring

Super silent blower with sensor

Rated Volt  | Model Code
24 V       | E2271Z24B5YP-00
48 V       | E2271Z48B7AP-00

This product features a large airflow and high static pressure without using a housing. A standard specification is ensured if installed complying with the foregoing bell mouth shape and its position.

See page G-73 for detailed dimensions of the intake bell mouth.

A bell mouth fitting accessory (product code E2271 Inlet Ring) is available as an option. (See page G-65.)

NIDEC SERVO can meet many of your requirements for customization, such as special connectors, other sensors not listed above, variable speed specifications, and other modifications. Please contact NIDEC SERVO during your product planning and development stage.

The listed products are registered in the following overseas standards files, UL/cUL: E48889, TUV: R9451586 (E2271Z48B7 only models.)

Products for variable-speed operation by PWM, voltage or resistance value commands can also be supplied with this model. (See pages G-51 and 52.) Contact NIDEC SERVO for further information.


SERVO
### Variable-Speed Fans and Blowers

**Lineup of PWM variable-speed semi-standard products**

- A PWM signal from the customer equipment is input to the control line (blue) of the fan motor for variable-speed operation of fans and blowers. (Input and noise can be reduced when the internal temperature of the control circuit is low, such as during idling.)

**Sizes**

- Axial fans: 60 mm ~ 172 mm
- Blower: 70 mm ~ 220 mm

### Characteristics for reference

(The characteristics are typical characteristics and their curves will differ, depending on the particular model.)

- Standard values for PWM control signal - speed specification (at rated voltage, open, and normal temperature and humidity)

```
<table>
<thead>
<tr>
<th>Hi Duty (%)</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (rpm/min)</td>
<td>0</td>
<td>1000</td>
<td>2000</td>
<td>3000</td>
<td>4000</td>
<td>5000</td>
<td>6000</td>
<td>7000</td>
<td>8000</td>
<td>9000</td>
<td>10000</td>
</tr>
</tbody>
</table>
```

### Semi-standard products (Products in regular production)

#### Fan model code

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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>92×25mm</td>
<td>D0925C12B8ZP-00</td>
<td>2</td>
<td>71</td>
<td>67</td>
<td>0.27</td>
<td>40</td>
<td>4450</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>D0925C24B6ZP-00</td>
<td>4.4</td>
<td>155</td>
<td>170</td>
<td>0.68</td>
<td>54</td>
<td>4000</td>
<td>48</td>
</tr>
<tr>
<td>120×38mm</td>
<td>D1238B48B7ZP-00</td>
<td>14.2</td>
<td>501</td>
<td>580</td>
<td>2.33</td>
<td>75</td>
<td>6800</td>
<td>24</td>
</tr>
<tr>
<td>12×150×51mm</td>
<td>D1751M24B9ZP300</td>
<td>12.7</td>
<td>448</td>
<td>510</td>
<td>2.05</td>
<td>72</td>
<td>6100</td>
<td>24</td>
</tr>
<tr>
<td>12×175×51mm</td>
<td>D1751M24B9ZP300</td>
<td>12.7</td>
<td>448</td>
<td>510</td>
<td>2.05</td>
<td>72</td>
<td>6100</td>
<td>24</td>
</tr>
<tr>
<td>12×200×51mm</td>
<td>D1751M24B9ZP300</td>
<td>12.7</td>
<td>448</td>
<td>510</td>
<td>2.05</td>
<td>72</td>
<td>6100</td>
<td>24</td>
</tr>
<tr>
<td>97×85×33mm</td>
<td>E1033H12B8ZS-00</td>
<td>0.85</td>
<td>30</td>
<td>320</td>
<td>1.29</td>
<td>51</td>
<td>3450</td>
<td>12</td>
</tr>
<tr>
<td>92×100×35mm</td>
<td>E1033H12B8ZS-00</td>
<td>1.14</td>
<td>40</td>
<td>500</td>
<td>2.01</td>
<td>58</td>
<td>4850</td>
<td>24</td>
</tr>
<tr>
<td>92×120×35mm</td>
<td>E1033H12B8ZS-00</td>
<td>1.14</td>
<td>40</td>
<td>500</td>
<td>2.01</td>
<td>58</td>
<td>4850</td>
<td>24</td>
</tr>
</tbody>
</table>

*The D1751S24BZP-00 is a FFU (Fan Filter Unit) product. Only this version allows for voltage designed speed variation.*

- Aside from the above models, please see also the high pressure, variable speed G series fans.
- The lineup of variable-speed fans and blowers will be expanded regularly. Visit the NIDEC SERVO Website for information on the latest lineup.
- Direct your inquiry to NIDEC SERVO for connector termination to lead wires, for sensor specifications other than those contained in the catalog and for variable speed specifications. (Products tailored to voltage command control and resistance value command control are also available)
- To ensure correct installation and smooth operation please obtain a drawing for approval or reference drawing from NIDEC SERVO Co.
### Fully customized products

Fully customized products will be manufactured to optimally match your equipment for high volume needs, (more than 10,000 units/month) for home appliances such as refrigerators, air conditioners and washing machines and for industrial machinery and information communication equipment, including open showcases, power sources and computer-related equipment. Please contact NIDEC SERVO for more information.

![Fully customized product example 1](image1)
![Fully customized product example 2](image2)
![Fully customized product example 3](image3)

### Semi-customized products

Semi-customized products, including the following, will be manufactured by combining a large variety of components available to NIDEC SERVO. Please contact NIDEC SERVO for more information.

1. For operation in a high-temperature atmosphere of 80 °C.
2. Long life products (60,000 hours or longer at 60 °C, 100,000 hours at 50 °C)
3. Energy saving products (30 % to 50 % less input compared with conventional products)
4. IP55 products (Outdoor installation and in a high-humidity environment)
5. Variable-speed products (PWM, voltage or resistance value command), dual-speed products
6. Fans for high static pressure regions (92 mm sq. x 38 mm thick, 120 mm sq. x 38 mm thick, 172 mm dia. x 51 mm thick and others)
7. Fans to prevent galvanic corrosion of ball bearings (ceramic ball specification)

### Fan tray units

- Tray units fitted with a standard or semi-customized fans.
- Tray shape designed, manufactured and tailored to customer specifications.

![Fan tray unit example 1](image4)
![Fan tray unit example 2](image5)
![Fan unit example](image6)
### Standard specification

| Max. Airflow | Max. Static Pressure | Noise | Speed | Rated Vol. (±10%) | Freq. | Input W | Current mA | Lock Current mA | Lead Wire Type | Std* | Lead Wire Type | Std* |
|--------------|----------------------|-------|-------|------------------|-------|---------|------------|----------------|---------------|--------------|------|--------------|------|
| 1.9/2.2      | 69/78                | 0.17/ | 34/   | 2350/            | 100   | 13/11   | 190/140    | 190/165        | SCUA5B5B      | (U)  | SCUJ5B5       | P    |
| 1.2/1.45     | 46/52                | 0.06/ | 26/   | 1500/            | 100-120| 15/11.5 | 170/130    | 175/130        | SCUA47F5      | (U)  | SCUA47F5      | P    |

*Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.

*(U) in the standards column denotes products conforming to UL standard (certification not obtained as yet).

*Products conforming to the specifications of the Electrical Appliance and Material Safety Law (Japan) can be used in case the products are assembled in electric appliances used in Japan. (Products marked with the (PS)E mark)

### General specification

- **Materials Used**
  - Venturi: Aluminum alloy die casting
  - Propeller: Glass fiber reinforced polycarbonate resin
  - Bearing: Double-sided shielded ball bearing

- **Motor**
  - Shaded pole induction motor
  - Protection type: Impedance protection

- **Common Elec. Spec.**
  - See pages G-12.

- **Usage Range**
  - Rated voltage ±10%

- **Operating Temp. Range**
  - -20 °C ~ +60 °C

- **Standard Carton**
  - 30 to a carton of (560 x 300 x 190) mm, mass 10 kg

### Standard airflow and static pressure characteristics (At rated voltage)

**SCU B5**

![Static Pressure vs Airflow for SCU B5](image)

**SCU F5**

![Static Pressure vs Airflow for SCU F5](image)

### External dimensions in mm (inches)

- **Lead wire type**

  - **Rotation**
    - 4.4 ± 0.15 (inch)
  - **Log for guard mounting**
    - 10 ± 0.35

**Mounting hole dimensions in mm (inches)**

**Options sold separately**

- Guard: F120UL guard (Outlet side)
- Guard: SCU guard (Intake side)
AC Axial Fans & Blowers

**SCNA series 120 × 128 × 38 mm**

### Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise Level (dB)</th>
<th>Speed (m/min)</th>
<th>Rated Vol. (V)</th>
<th>Freq. (Hz)</th>
<th>Input Current (mA)</th>
<th>Lock Current (mA)</th>
<th>Model Code</th>
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<td>2.6/3.1</td>
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<td>80/80</td>
<td>38/42</td>
<td>1200/2800</td>
<td>14/12</td>
<td>200/180</td>
<td>300/270</td>
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<td>155/135</td>
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<td>110/90</td>
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<td>0.10/0.11</td>
<td>28/31</td>
<td>1890/2030</td>
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<td>60/50</td>
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- Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.
- The symbols in the standards column denote that they are registered in the following standards files, UL: UL E48889, C: CSA LR49399, LR: 108118
- Products conforming to the specifications of the Electrical Appliance and Material Safety Law (Japan) can be used in case the products are assembled in electric appliances used in Japan. (Products marked with the (PS)E mark)

### General specification

- **Materials Used**
  - Venturi: Aluminum alloy die casting
  - Propeller: Glass fiber reinforced polycarbonate resin
  - Bearing: Double - sided shielded ball bearing
- **Motor**
  - Shaded pole induction motor
  - Protection type: Impedance protection
- **Common Elec. Spec.**
  - See pages G-12.
- **Usage Range**
  - Rated voltage ±10 %
- **Operating Temp. Range**
  - -20 °C ~ +60 °C
- **Standard Carton**
  - 20 to a carton of (565 x 310 x 180) mm, mass 11.5 kg

### Standard airflow and static pressure characteristics (At rated voltage)

**SCNA2B5**

<table>
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<tr>
<th>Airflow (m³/min)</th>
<th>Static Pressure (Pa)</th>
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<td>1</td>
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**SCNA4D5**

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<td>1</td>
<td>80</td>
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<td>2</td>
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### External dimensions in mm (inches)

**Lead wire type**

- **Lead wire specification**
  - SCNA series: Heat resistant PVC 0.75 mm² (30 conductors, 0.18 dia.)
  - SCNA series: AWG22 UL1015
- **Options (sold separately)**
  - Guard: F120UL guard (Outlet side)
  - Guard: SCN guard (Intake side)

### Mounting hole dimensions in mm (inches)

- **Outlet side**
  - 117 (4.61 sq. in.)

**Options** ➔ **G-64**

VE series 80 × 25 mm

**Standard specification**

<table>
<thead>
<tr>
<th>Fan model code</th>
<th>VE115B5</th>
<th>VE2B5</th>
<th>VE47F5</th>
<th>VE48F5</th>
<th>VE50B5</th>
<th>VE52B5</th>
<th>VE55B5</th>
<th>VE60B5</th>
<th>VEJ47F5</th>
<th>VEJ48F5</th>
<th>VEJ55B5</th>
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<td>CFM</td>
<td>Pa</td>
<td>in H₂O</td>
<td>dB</td>
<td>Speed min⁻¹</td>
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<td>Freq.</td>
<td>Input W</td>
<td>Current mA</td>
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**General specification**

- **Materials Used**
  - Venturi: Aluminum alloy die casting
  - Propeller: Glass fiber reinforced polycarbonate resin
  - Bearing: Double - sided shielded ball bearing

- **Motor**
  - Shaded pole induction motor
  - Protection type: Impedance protection

- **Common Elec. Spec.**
  - See pages G-12.

- **Usage Range**
  - Rated voltage ±10 %

- **Operating Temp. Range**
  - -20 °C ~ +60 °C

- **Standard Carton**
  - 40 to a carton of (450 x 380 x 160) mm, mass 11 kg

**Standard airflow and static pressure characteristics (At rated voltage)**

**External dimensions** in mm (inches)
- **Lead wire type**
  - Lead wire specification
  - VEJ series: Heat resistant PVC 0.75 mm² (30 conductors, 0.18 dia.)
  - VE series: AWG22 UL1015

**Mounting hole dimensions** in mm (inches)
- [Recommendation]

**Options (sold separately)**
- Guard: F80UL guard
- Filter: F80 filter
WE series □ 92 × 25 mm

---

### Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise Level (dB)</th>
<th>Speed (m³/min)</th>
<th>Rated Vol. (V: ±10%)</th>
<th>Freq. (Hz)</th>
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</table>

Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.

* The symbols in the standards column denote that they are registered in the following standards files, U: UL E48889, T: TUV R60229-60302, V: VDE 3019UG

* Products conforming to the specifications of the Electrical Appliance and Material Safety Law (Japan) can be used in case the products are assembled in electric appliances used in Japan. (Products marked with the (PS)E mark)

---

### General specification

- **Materials Used**
  - Venturi: Aluminum alloy die casting
  - Propeller: Glass fiber reinforced polycarbonate resin
  - Bearing: Double - sided shielded ball bearing

- **Motor**
  - Shaded pole induction motor
  - Protection type: Impedance protection

- **Common Elec. Spec.**
  - See pages G-12.

- **Usage Range**
  - Rated voltage ±10 %

- **Operating Temp. Range**
  - -20 °C ~ +60 °C

- **Standard Carton**
  - 40 to a carton of (480 x 380 x 160) mm, mass 12 kg.

---

### Standard airflow and static pressure characteristics (At rated voltage)

**WE** | **B**  
---|---
Airflow (m³/min) | 0 | 0.4 | 0.8 | 1.2
Static pressure (Pa) | 0 | 20 | 40 | 60 | 80

**WE** | **F**  
---|---
Airflow (m³/min) | 0 | 0.4 | 0.8 | 1.2
Static pressure (Pa) | 0 | 20 | 40 | 60

---

### External dimensions in mm (inches)

#### Lead wire type (WE□□□)

- **Dimensions:**
  - 330.0 × 275.0 (13.0 x 10.8 in)
  - Rotation: 330.0 × 275.0 (13.0 x 10.8 in)
  - Airflow: 330.0 × 275.0 (13.0 x 10.8 in)

#### Terminal type [2 terminals: with grounding tap] (WE□□□)

- **Dimensions:**
  - 330.0 × 275.0 (13.0 x 10.8 in)
  - Rotation: 330.0 × 275.0 (13.0 x 10.8 in)
  - Airflow: 330.0 × 275.0 (13.0 x 10.8 in)

---

### Mounting hole dimensions in mm (inches)

#### [Recommendation]

- **Options (sold separately):**
  - Guard: F92UL guard
  - Filter: F92 filter
  - Power code: T2P1 code, D2P1 code, UL2P1 code

---

**KA series □ 92 × 38 mm**

**Standard specification**

<table>
<thead>
<tr>
<th>Model Code</th>
<th>Lead Wire Type</th>
<th>Std*</th>
<th>Terminal Type</th>
<th>Std*</th>
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<td>KA55B3</td>
<td>UP</td>
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<td>KA60B8</td>
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<td>KA47D5</td>
<td>U</td>
<td>KA47D3</td>
<td>UP</td>
<td></td>
</tr>
</tbody>
</table>

Max. airflow: 1.1 m³/min (50 Hz) 1.3 m³/min (60 Hz)
Max. static pressure: 62 Pa (50 Hz) 80 Pa (60 Hz)
Mass: 450 g

**Fan model code**

KA2B3
KA2B4
KA47D3
KA47D5
KA52B3
KA52B5
KA55B3
KA55B4
KA60B3
KA60B5
KAJ55B4
KAJ60B5

**General specification**

Materials Used:
Venturi: Aluminum alloy die casting
Propeller: PBT resin
Bearing: Double - sided shielded ball bearing

Motor:
Shaded pole induction motor
Protection type: Impedance protection

Common Elec. Spec.
See page G-12.
Usage Range:
Rated voltage ±10 %

Operating Temp. Range:
-20 °C ~ +60 °C

Standard Carton:
20 to a carton of (450 x 380 x 150) mm, mass 10 kg

**Standard airflow and static pressure characteristics**

At rated voltage

**External dimensions** in mm (inches)

- **Lead wire type (KA□□□/KA□□□)**
- **Terminal type (KA□□□)**

**Mounting hole dimensions** in mm (inches)

- Options (sold separately)
  - Guard: F92UL guard
  - Filter: F92 filter
  - Power code: T2P1 code, D2P1 code, UL2P1 code

Identical for the intake and outlet sides
CU series □ 120 × 25 mm

**Standard specification**

<table>
<thead>
<tr>
<th>Fan model code</th>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise (dBA)</th>
<th>Speed (m³/min)</th>
<th>Rated Vol. (V: 100%)</th>
<th>Freq. (Hz)</th>
<th>Input W</th>
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</tbody>
</table>

**General specification**

- **Materials Used:** Aluminum alloy die casting, Glass fiber reinforced polycarbonate resin
- **Motor:** Shaded pole induction motor, Double-sided shielded ball bearing
- **Common Elec. Spec.:** See page G-12
- **Usage Range:** Rated voltage ±10%
- **Operating Temp. Range:** -20 °C ~ +60 °C
- **Standard Carton:** 30 to a carton of (450 x 380 x 160) mm, mass 12 kg

**Standard airflow and static pressure characteristics (At rated voltage)**

![Diagram of airflow and static pressure characteristics]

**External dimensions in mm (inches)**

- **Lead wire type (CU□□□□):**
  - Lead wire specification: CUJ series, Heat resistant PVC 0.75 mm² (30 conductors, 0.18 dia.)
  - CU series: AWG22 UL 1015

**Mounting hole dimensions in mm (inches)**

- **Options (sold separately):**
  - Guard: F1D0UL guard
  - Filter: F1D0 filter
  - Power code: T2P1 code, D2P1 code, UL2P1 code

*Figures in the table are average measured values. Please request the product delivery specification when preparing a purchase specification.*

*The symbols in the standards column denote that they are registered in the following standards files, U: UL E48889, C: CSA LR49399, LR108118, T: TUV R60229-60302, V: VDE 3019UG*

*Products conforming to the specifications of the Electrical Appliance and Material Safety Law (Japan) can be used in case the products are assembled in electric appliances used in Japan. (Products marked with the (PS)E mark)*
AC Axial Fans & Blowers

AC Axial Fans

**CN**

<table>
<thead>
<tr>
<th><strong>Max. Airflow</strong></th>
<th><strong>Max. Static-Pressure</strong></th>
<th><strong>Noise</strong></th>
<th><strong>Speed</strong></th>
<th><strong>Rated Vol. V (±10%)</strong></th>
<th><strong>Freq. Hz</strong></th>
<th><strong>Input W</strong></th>
<th><strong>Current mA</strong></th>
<th><strong>Lock Current mA</strong></th>
<th><strong>Model Code</strong></th>
<th><strong>Lead Wire Type</strong></th>
<th><strong>Std Terminals Type</strong></th>
<th><strong>Std</strong></th>
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<tbody>
<tr>
<td>2.6/3.0</td>
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<td>100</td>
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<td>CN5S5B5, CN5S5B2</td>
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<td>1700/1800</td>
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<td>9/8.5</td>
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<td>UCT</td>
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</tbody>
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**General specification**

- Materials Used: Aluminum alloy die casting
- Propeller: Glass fiber reinforced polycarbonate resin
- Bearing: Double - sided shielded ball bearing
- Motor: Shaded pole induction motor
- Protection type: Impedance protection
- Usage Range: Rated voltage ±10 %
- Operating Temp. Range: -20 °C ~ +60 °C (20 °C ~ +55 °C in TUV standard)
- Standard Carton: 20 to a carton of (450 x 380 x 160) mm, mass 11 kg.

**Standard airflow and static pressure characteristics (At rated voltage)**

**External dimensions in mm (inches)**

- **Lead wire type (CN5S5B5)**
  - Lead wire specification:
    - CNJ series: Heat resistant PVC 0.75 mm² (30 conductors, 0.18 dia.)
    - CN series: AWG22 UL1015

- **Mounting hole dimensions in mm (inches)**
  - Options (sold separately):
    - Guard: F120UL guard
    - Filter: F120 filter
    - Power code: T2P1 code, D2P1 code, UL2P1 code (for 2 terminals) D3P1 code, UL3P1 code (for 3 terminals)

**Terminal type**

- [2 terminals: without grounding tap] (CN5S5B2)
- [3 terminals: with grounding tap] (CN5S5B3)

(Note) There is no grounding tap for CN series terminal type.

**SERVO**

AC Axial Fans & Blowers

AC Axial Fan MA

\[172 \times 150 \times 51 \text{ (} 6.8'' \times 6.0'' \times 2.0'')\]
Max. airflow: 5.5 m³/min (50 Hz) 6.5 m³/min (60 Hz)
Max. static pressure: 152 Pa (50 Hz) 186 Pa (60 Hz)
Mass: 950 g

Fan model code
- MA2B3
- MA47B3
- MA48B3
- MA55B3
- MA60B3
- MA77B3

**Standard specification**

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<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise Level (dB)</th>
<th>Speed (m/min)</th>
<th>Rated Vol. (V) (±10%)</th>
<th>Freq. (Hz)</th>
<th>Input Current (mA)</th>
<th>Lock Current (mA)</th>
<th>Model Code</th>
<th>Terminal Type</th>
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**General specification**

- Material used
  - Venturi: Aluminum alloy die casting
  - Propeller: ABS and PBT synthetic resins
  - Capacitor cover: Glass fiber reinforced polycarbonate resin
  - Capacitor: MF capacitor
  - Bearing: Double - sided shielded ball bearing
- Motor
  - Capacitor phase advancing type induction motor
  - Protection type: Thermal protection
  - See page G-12.
- Usage Range
  - Rated voltage: ±10 %
- Operating Temp. Range
  - -20 C ~ +60 C
- Standard Carton
  - 12 to a carton of (380 x 370 x 190) mm, mass 12.0 kg

**Standard airflow and static pressure characteristics (At rated voltage)**

**External dimensions in mm (inches)**

- Terminal type

**Mounting hole dimensions in mm (inches)**

[Recommendation]

- Options (sold separately)
  - Guard: GUARD 172
  - Power code: T2P1 code, D2P1 code, UL2P1 code
AC Axial Fan & Blowers

PA Series  \( \phi 172 \times 51 \) mm

**Standard specification** (Input and current are indicated on name plate)

<table>
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<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise (dB)</th>
<th>Speed (min⁻¹)</th>
<th>Rated Vol. (V ±10%)</th>
<th>Freq. (Hz)</th>
<th>Input W</th>
<th>Current mA</th>
<th>Lock Current mA</th>
<th>Model Code</th>
<th>Terminal Type</th>
<th>Standard*</th>
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**General specification**

- **Material Used**
  - Venturi: Aluminum alloy die casting
  - Propeller: ABS and PBT synthetic resins
  - Capacitor cover: Glass fiber reinforced polycarbonate resin
  - Capacitor: MF capacitor
  - Bearing: Double-sided shielded ball bearing
  - Motor: Capacitor phase advancing type induction motor
  - Protection type: Thermal protection

- **Common Elec. Spec.** See page G-12.
- **Usage Range** Rated voltage ±10 %
- **Operating Temp. Range** -20 °C ~ +60 °C
- **Standard Carton** 12 to a carton of (420 x 410 x 220) mm, mass 12.5 kg

**Standard airflow and static pressure characteristics (At rated voltage)**

- **PA B3**
  - Static pressure vs. Airflow (m³/min)
  - Static pressure at 60 Hz / 50 Hz

- **PA H3**
  - Static pressure vs. Airflow (m³/min)
  - Static pressure at 60 Hz / 50 Hz

**External dimensions in mm (inches)**

- **Terminal type**
  - Terminal: 0.5 (7) x 0.5 (9) x 7 (8) mm
  - Grounding tap: M4 through tapping

- **Mounting hole dimensions in mm (inches)**
  - [Recommendation]
  - 4 point mounting
  - 3 point mounting

**Options (sold separately)**
- Guard: GUARD 172
- Power code: TP1 code, DP1 code, ULTP1 code
AC Axial Fans & Blowers

Pl 180 x 90 mm

Standard specification

<table>
<thead>
<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise (dB</th>
<th>Speed (min⁻¹)</th>
<th>Rated Vol. V (±10%)</th>
<th>Freq. (Hz)</th>
<th>Input W</th>
<th>Current mA</th>
<th>Lock Current mA</th>
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</thead>
<tbody>
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<td>381/431</td>
<td>176/216</td>
<td>0.71/0.87</td>
<td>2750/3050</td>
<td>50/60</td>
<td>650/780</td>
<td>1160/1160</td>
<td>60/75</td>
</tr>
</tbody>
</table>

 göstermek üzere: 180 x 90 (7.1" x 3.5")
Max. airflow: 10.8 m³/min (50 Hz)
12.2 m³/min (60 Hz)
Max. static pressure: 176 Pa (50 Hz) 216 Pa (60 Hz)
Mass: 2200 g

General specification

Material Used: Venturi: Aluminum alloy die casting, Black baking paint
Propeller: Polycarbonate resin
Bearing: Ball bearing
Connector box: Polycarbonate
Motor: Capacitor phase advancing type induction motor and 3-phase induction motor
Protection type: Thermal protection
Usage Range: Rated voltage ±10 %
Operating Temp. Range: -20 °C ~ +60 °C
Standard Carton: 5 to a carton of (470 x 435 x 215) mm, mass 12 kg

Standard airflow and static pressure characteristics (At rated voltage)

Capacitor (Normally included)

External dimensions in mm (inches)

Terminal type

Mounting hole dimensions in mm (inches)

Fitting hole dimensions in mm (inches)

AC axial fan with sensor

Mating model code

Rated Voltage V (±10 %)  
Model Code  
Standard

Options (sold separately)

- Guard: F180UL guard
- Power code: PL4P1 code
- Sensor code: PL sensor 1 code

AC Axial Fans & Blowers

CB Series 125 × 126 × 41 mm

Standard specification

<table>
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<tr>
<th>Max. Airflow (m³/min)</th>
<th>Max. Static Pressure (Pa)</th>
<th>Noise Level (dBA)</th>
<th>Speed (min⁻¹)</th>
<th>Rated Vol. (V)</th>
<th>Freq. (Hz)</th>
<th>Input (W)</th>
<th>Current (mA)</th>
<th>Lock Terminals</th>
<th>Lead Wire Type</th>
<th>Model Code</th>
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General specification

- Housing: Aluminum alloy die casting
- Impeller: Polycarbonate resin
- Bearing: Double - sided shielded ball bearing
- Inlet cover: Aluminum board or Galvanized steel sheet
- Terminal: Brass, tin plating
- Motor: Shaded pole induction motor
- Protection type: Impedance protection

Usage Range: Rated voltage ±10 %
Operating Temp. Range: -20 °C ~ +60 °C

Standard airflow and static pressure characteristics (At rated voltage)

External dimensions in mm (inches)

- Lead wire type (CB4)
- Terminal type (CB3)

Lead wire specification: AWG22 UL1015
Guards (Options)

<table>
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<tr>
<th>Guard</th>
<th>Mass</th>
<th>Material</th>
<th>Surface Treatment</th>
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<tbody>
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<td>F60P Guard</td>
<td>4 g</td>
<td>Polycarbonate (black)</td>
<td>Nickel chromium plating</td>
</tr>
<tr>
<td>F60UL Guard</td>
<td>12 g</td>
<td>Mild steel wire 1.6 dia.</td>
<td>Nickel chromium plating</td>
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<td>F80UL Guard</td>
<td>14 g</td>
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<td>F92UL Guard</td>
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<td>F120UL Guard</td>
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<td>F180UL Guard</td>
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<td>F200UL Guard</td>
<td>82 g</td>
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**List of mating fan series**

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<th>Guard</th>
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<th>F70 UL</th>
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<th>F90 UL</th>
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</table>

*1: Can be installed only on outlet side.  *2: Can be installed only on intake side. All guards conform to the UL standard when combined with NIDEC SERVO fans. The installation of a filter, guard and other accessories will constitute a ventilating load, reducing the airflow. Select a suitable guard, taking into consideration the increase in air resistance. (See Figs. 12 and 13 on page G-7.)
### Filter

3-piece set

Guard (PPO resin UL94V-0)

Media (Polyurethane foam)

Retainer (PPO resin UL94V-0)

Note: Two retainer pins are provided on the F80 filter.

### Flange spacer

#### Component (Model Code) Parameters

<table>
<thead>
<tr>
<th>Component (Model Code)</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>Mating Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flange Spacer PUDC</td>
<td>5</td>
<td>8</td>
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</table>

*Ribbed venturi (PUDC-R, CUDEC-R) are available for PUDC and CUDEC.*

### Inlet ring

<table>
<thead>
<tr>
<th>Component (Model Code)</th>
<th>Mating Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2271 Inlet ring</td>
<td>E2271Z</td>
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</tbody>
</table>

Material: Galvanized steel sheet

Insert a flange spacer into the ribs of a venturi.

*(Installing a flange spacer)*
Plug Cords (Options)

Plug cords for AC fans
(Common specification: Rated 3 A, voltage 250 V, dielectric strength 1 minute at 1500 V 50 Hz)

<table>
<thead>
<tr>
<th>D2P1 cord (Mass 35 g)</th>
<th>UL2P1 cord (Mass 41 g)</th>
<th>T2P1 cord</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified under the Electrical Appliance and Material Safety Law (Japan) (&lt;PS&gt;E mark approved)</td>
<td>UL standard product (UL file No. E78112)</td>
<td>For wiring inside equipment</td>
</tr>
<tr>
<td>Cord: 0.18 dia. 30 conductors Black, heat resistant vinyl</td>
<td>Cord: 0.16 dia. 41 conductors Black, heat resistant vinyl</td>
<td>Cord: 0.18 dia. 30 conductors</td>
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<tr>
<td></td>
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<td>Black, heat resistant vinyl</td>
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</tbody>
</table>

D3P1 cord (Mass 59 g)
Certified under the Electrical Appliance and Material Safety Law (Japan) (<PS>E mark approved)
Cord:
For power feeding 0.18 dia. 30 conductors Black, heat resistant vinyl
For grounding 0.18 dia. 50 conductors Black, heat resistant vinyl

UL3P1 cord (Mass 60 g)
UL standard product (UL file No. E78112)
Cord:
For power feeding 0.16 dia. 41 conductors Black, heat resistant vinyl
For grounding AWG18 green/yellow spiral, heat resistant vinyl

PL sensor 1 cord
Connector HG (Plug)
Connector HG (Plug)

PL4P1 cord
Connector HG (Plug)

List of mating fan series

<table>
<thead>
<tr>
<th>Cord</th>
<th>T2P1</th>
<th>T2P2</th>
<th>D2P1</th>
<th>D3P1</th>
<th>UL2P1</th>
<th>UL3P1</th>
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<th>PL sensor</th>
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<tbody>
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</table>

Plug cords for DC fans

DCLD030ST-ZZ01 (S sensor output cord)
DCLD030PT-ZZ01 (P sensor output cord)

Fan connection connector

* Lead wire ends are sheathed to protect conductors. (Sheath peeling dimension10±5)

<table>
<thead>
<tr>
<th>Component (Model Code)</th>
<th>Mating Model Code</th>
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<tr>
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<tr>
<td>DCLD030PT-ZZ01</td>
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</table>
WARNING

• Please do not exceed the specifications noted in this catalogue, otherwise there is a chance of electric shock, injury, or other damage.
• Please do not insert your fingers or any other object into the fan’s interior, otherwise there is a chance of electric shock, injury, or fire.
• Any modifications made to this fan are beyond the limits of our guarantee. NIDEC SERVO cannot take responsibility for any customer modifications.
• Please ensure that a thorough evaluation has been done before using this fan in medical equipment or other devices related to human lives.
• Please ensure that a thorough evaluation has been done before using this fan in applications that have a serious effect on the public.

NOTE

• Figures in this catalogue are average measured values. Please request the product delivery specification when preparing a purchase specification.
• The dimensions, specifications, and components contained in this catalogue are subject to change without prior notice due to further product improvements.
2008/2009
Fans and Blowers
GENERAL CATALOGUE

DC Axial Fans
DC Centrifugal Blowers
Variable-speed Fans and Blowers
Customized Fans and Blowers
AC Fans and Blowers