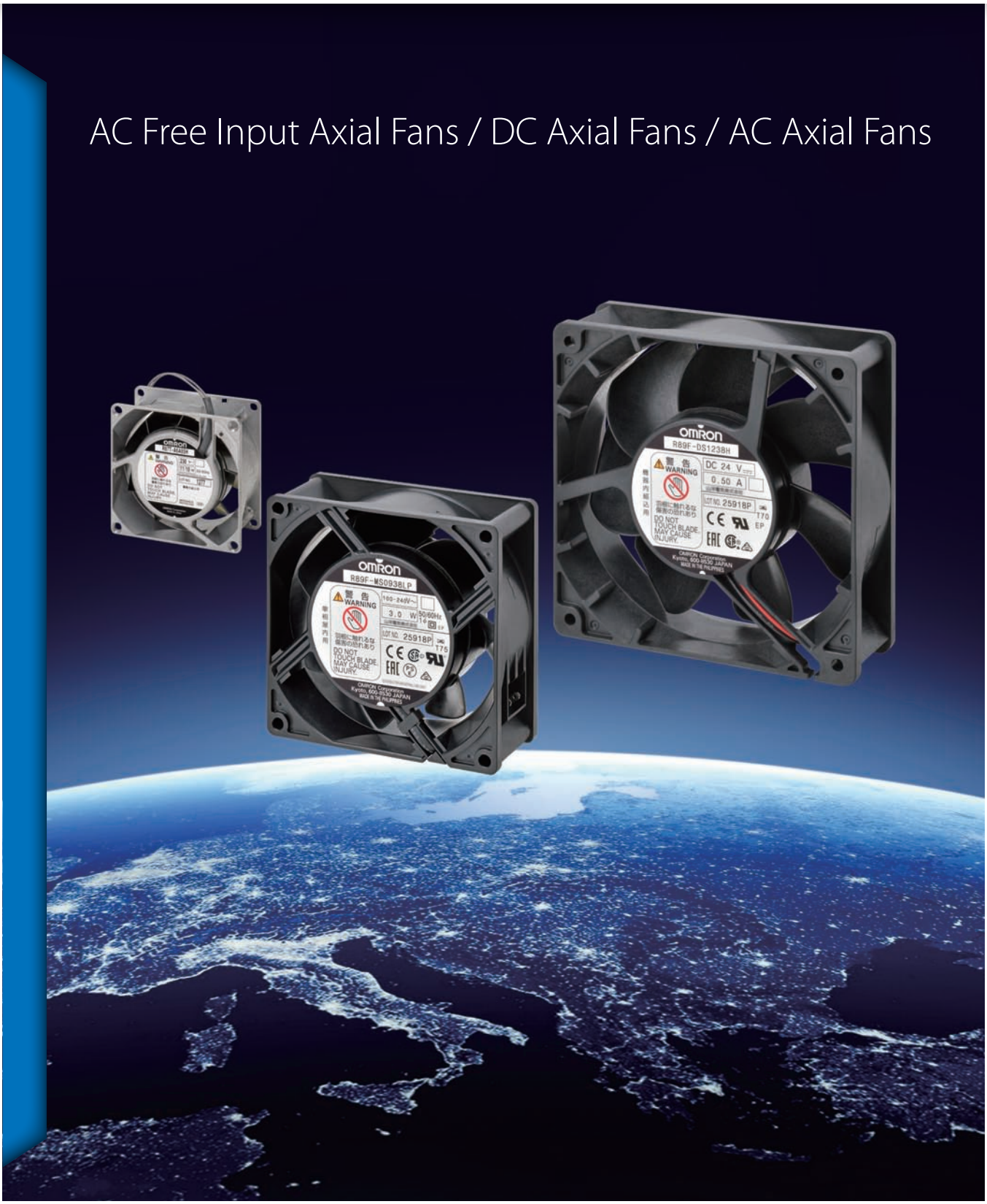
OMRON

# Axial Fans Series Catalog



# OMRON's rich and multiple lineup of axial fans

## For less design effort

**DC Axial Fans** R89F-DS



| size(mm) | □92×t25 | □120×t25 | □120×t38 |
|---|---|---|---|
| Rated voltage | 24 VDC | 24 VDC | 24 VDC |

**AC Free Input Axial Fans** R89-MS


| size(mm) | □92×t38 | □120×t38 |
|---|---|---|
| Rated voltage | 100 to 240 VAC | 100 to 240 VAC |

Note: "AC Free Input Axial Fan" refers to an axial fan which allows multiple input voltage ranging 100 to 240 VAC.

### Not affected by changes in voltage so no need to redesign for export

**AC Axial Fans**

Selection and design must be altered according to shipping destination countries and their power specifications

| Configuration effort | Design effort | Application costs |
|---|---|---|
| Voltage selection | Design change<br>Plan drawing<br>Evaluation tests | Reapplication for standards certification |

100,115, 200, or 230 VAC

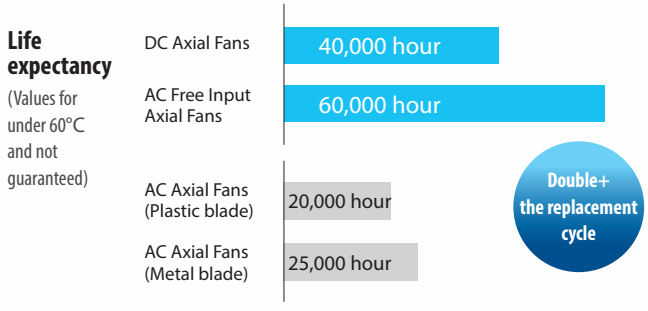
**DC Axial Fans / AC Free Input Axial Fans**

**Reduce design and standards certification application efforts by unifying power specifications**

**Can be single common model**

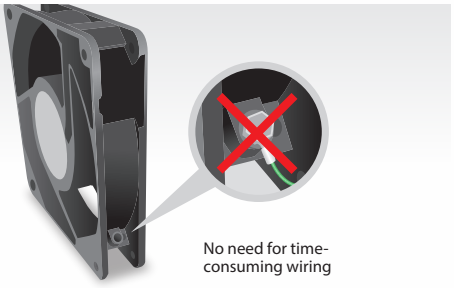
- DC Axial Fans 24 VDC
- AC Free Input Axial Fans 100 to 240 VAC

### Also, the service life of the fans themselves increased by twofold*1 or more




*1. Compared with □120×t38 AC axial fans

### No need to connect ground lines

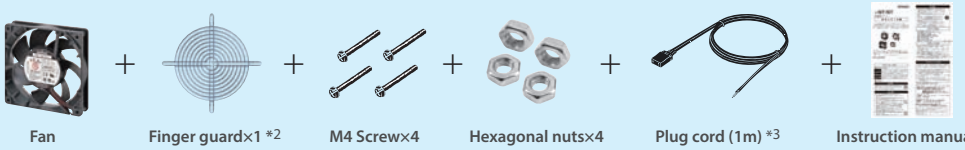


No need for time-consuming wiring

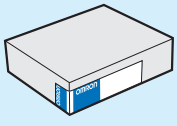
### This Set Model allows you to purchase the necessary parts with a single order.

There's no need to purchase and manage each parts, and this reduces the hassle of parts management.

Set Contents

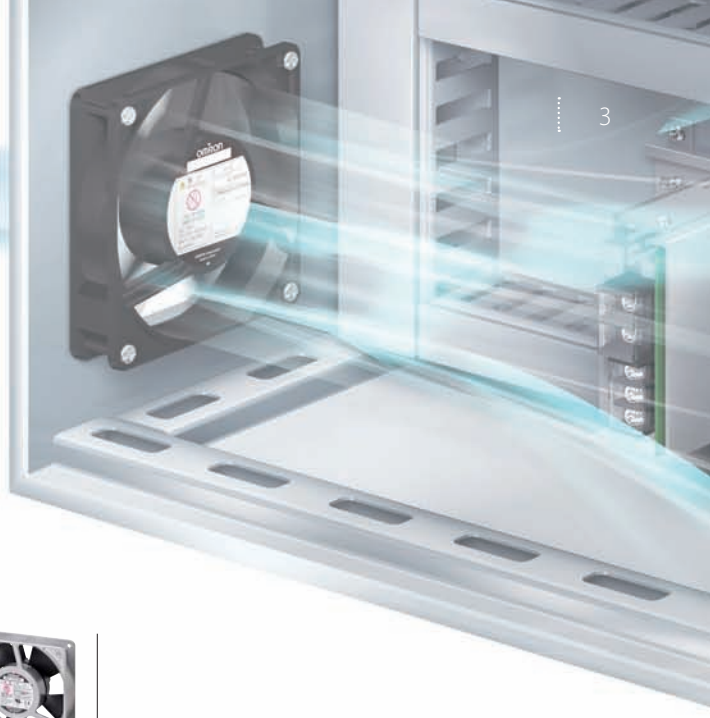


Fan + Finger guard×1 *2 + M4 Screw×4 + Hexagonal nuts×4 + Plug cord (1m) *3 + Instruction manual



* Packaging for illustrative purposes only

*2. Model differs according to the number of finger guards. Refer to Set Model on page 19 and 22 for details. *3. AC Free Input Axial Fans only



## For economy type

### AC Axial Fans R87F/R87T R87F Plastic blade type

| | | | | | |
|---|---|---|---|---|---|
| size(mm) | □80×t25 | □80×t38 | □92×t25 | □120×t25 | □120×t38 |
| Rated voltage | 100, 115, 200, 230 VAC | 100, 115, 200 , or 230 VAC | 100, 115, 200 , or 230 VAC | 100, 115, 200 , or 230 VAC | 100, 115, 200 , or 230 VAC |

## For environmental resistance

### AC Axial Fans R87T Metal blade type

| | | | | | |
|---|---|---|---|---|---|
| size(mm) | □80×t25 | □80×t38 | □120×t38 | φ150×t38 | φ150×t55 |
| Rated voltage | 100, 115, 200 , or 230 VAC | 100, 115, 200 , or 230 VAC | 100, 115, 200 , or 230 VAC | 100, 115, 200 , or 230 VAC | 100, 115, 200 , or 230 VAC |

Small ← Flow Rate · Size · Noise → Large

### Metal blade models deliver high environmental resistance

Mist resistance

Wide range of operating temperatures

Also available are water-resistant models

| | |
|---|---|
| size(mm) | □120×t38 |
| Rated voltage | 100, 115, 200, or 230 VAC |

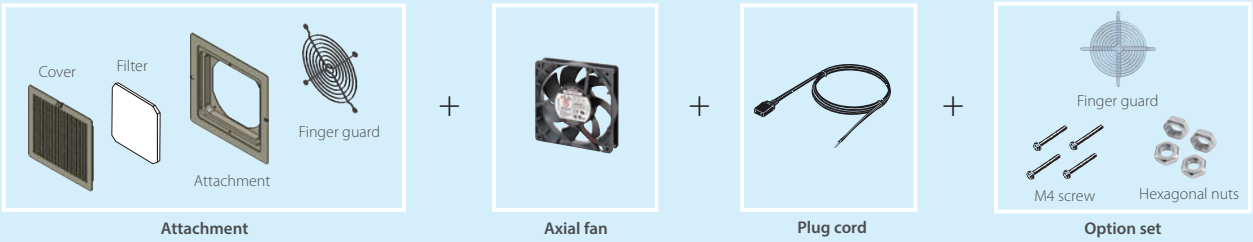
## For less mounting effort

### Box Fan R87B

| | | | |
|---|---|---|---|
| size(mm) | □120×t38 | □120×t38 | □120×t38 |
| Rated voltage | 100, 115, 200, or 230 VAC | 100, 115, 200, or 230 VAC | 100, 115, 200, or 230 VAC |

Just open the cover to replace the filter

The Box Fan is a built-in cooling fan in control panel and as a device with an axial fan mounted on a square-hole attachment.
This axial fan unit has a structure that hides the drilled surface and is easy installed.
You can select a single box, double box, or triple box of axial fan as required.
Order the attachment, axial fan, plug cord, and option set respectively.




Attachment | Axial fan | Plug cord | Option set

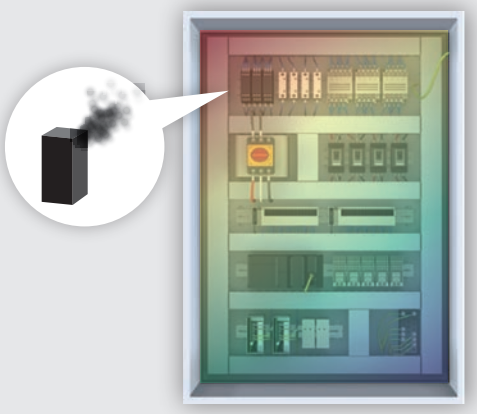
Note: Some specifications are available as set model. Refer to *Setting model* on page 57 for details.

# Select the optimal fan to resolve issues regarding temperatures inside the panel

If the temperature inside the panel increases, the lives of devices and parts inside the panel will be reduced and malfunctions could result.Particularly devices and parts that generate heat are greatly affected by heat.
Panel cooling and Fan selection are extremely important to long-term usage of the panel and parts inside the panel.

**Without the right fan...**

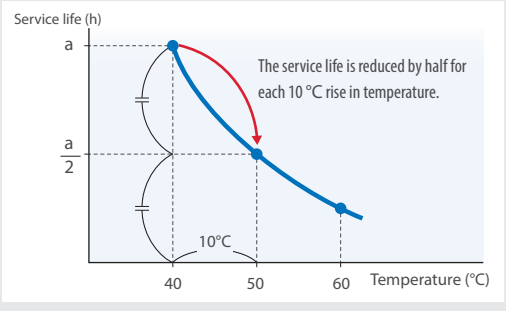
Temperatures in the panel go up, leading to device failure



Device service life is shortened, leading to additional replacement effort

## Control devices has a service life.

As a general rule, control devices cease to perform properly (i.e. reach the end of their service lives) as their electrolytic capacitors wear out over time, before finally becoming inoperable. Continuing to use control devices past the end of their service lives may render the devices themselves inoperable when you power them on. This can cause unexpected facility stoppages.
Continuing to use control devices while they are hot may lead to their early failure.




**Relationship between service life of a electrolytic capacitor and temperature**

# Selecting Fans

## 1 Check the heating values of devices and the panel (kW).

Check the heating value of each device located in the control panel and then find the total heating value.

## 2 ΔT of devices and panel: Allowable temperature rise (°C)

ΔT can be obtained by subtracting the device ambient temperature, T1 from the allowable internal temperature, T2.

Note: As a guideline, you can make the calculation with a value of 10°C.
(Use the more severe condition.)

## 3 Calculate Q, the required flow rate (m3/min).

Q(m3/min) = 50×W/ΔT

## 4 Select the size of the required Fan based on the maximum flow rate.

As a general rule, factoring in the system impedance, select a Fan with a maximum flow rate of 1.3 to 2 times the calculated required flow rate (Q).
As a rough guide, 1.3 times for a small system impedance, 1.5 times for medium, and 2 times for large.
As the flow rate increases, noise increases. If the Fan is used in an environment where noise is a problem, select a Fan with a lower flow rate.

System impedance

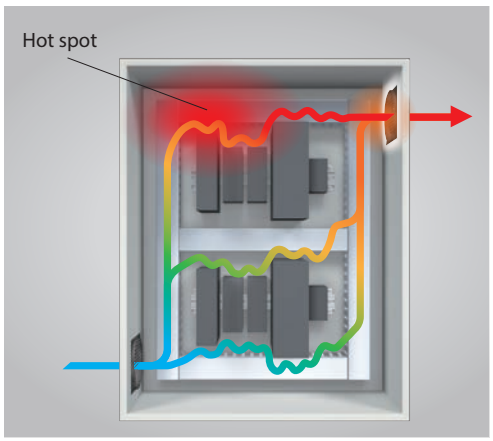
Represents the degree of airflow obstruction. Because system impedance is influenced by airflow, obstacles, and layout, cooling efficiency may vary while using fans with the same flow rate.

## Additionally

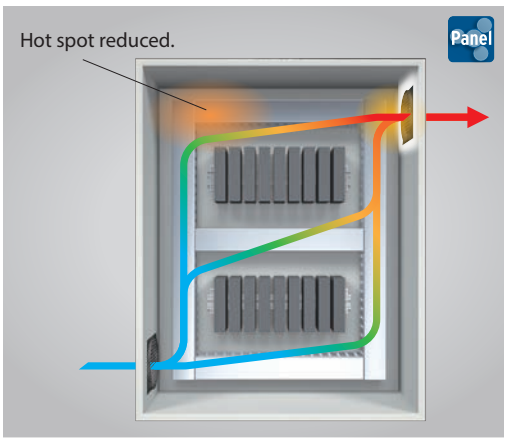
# OMRON's Value Design products can improve airflow through uniform sizing

Boost the reliability of your devices by evening out heat radiation

Previously Differences in heights and depths create hot spots.




Now The unified heights and depths help reduce hot spots.




Reducing the temperature inside the panel increases product reliability, decreases the failure rate, and lengthens life expectancies.

# AC Free Input Axial Fans

| Series | Size (mm) | Model | Power supply voltage (V) | Rotational speed | Safety standards | | | Terminal type | Page |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Compliant standards | Certified standards | | | |
| | | | | | CE mark | UL | CSA | | |
| R89F Fans with Plastic Blades |  92 × 92 × t38 | **R89F-MS0938HP** | 100 to 240 VAC | High | Yes | Yes | Yes | Terminals only | 20 |
| | | **R89F-MS0938LP** | 100 to 240 VAC | Low | Yes | Yes | Yes | Terminals only | |
| |  120 × 120 × t38 | **R89F-MS1238HP** | 100 to 240 VAC | High | Yes | Yes | Yes | Terminals only | 21 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Plug Cords | **R89F-PC-□** | --- | --- | Yes | --- | --- | 50 |
| Finger Guards | **R87F-FG□** | | --- | --- | --- | | 52 |
| Filters | **R87F-FL□(S)** | | --- | --- | --- | | 53 |

# DC Axial Fans

| Series | Size (mm) | Model | Power supply voltage (V) | Rotational speed | Safety standards | | | Terminal type | Page |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Compliant standards | Certified standards | | | |
| | | | | | CE mark | UL | CSA | | |
| R89F Fans with Plastic Blades |  92 × 92 × t25 | **R89F-DS0925H** | 24 VDC | High | Yes | Yes | Yes | Lead wires only | 23 |
| | | **R89F-DS0925L** | 24 VDC | Low | Yes | Yes | Yes | Lead wires only | |
| |  120 × 120 × t25 | **R89F-DS1225H** | 24 VDC | High | Yes | Yes | Yes | Lead wires only | 24 |
| | | **R89F-DS1225L** | 24 VDC | Low | Yes | Yes | Yes | Lead wires only | |
| |  120 × 120 × t38 | **R89F-DS1238H** | 24 VDC | High | Yes | Yes | Yes | Lead wires only | 25 |
| | | **R89F-DS1238L** | 24 VDC | Low | Yes | Yes | Yes | Lead wires only | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Finger Guards | **R87F-FG□** | --- | --- | --- | --- | --- | 52 |
| Filters | **R87F-FL□(S)** | | --- | --- | --- | | 53 |

# AC Axial Fans

| Series | Size (mm) | Model | Power supply voltage (V) | Rotational speed | Safety standards | | | | Terminal type | Page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Compliant standards | | Certified standards | | | |
| | | | | | CE mark | PSE | UL | CSA | | |
| R87F Fans with Plastic Blades |  80 × 80 × t25 | **R87F-A1A83H** | 100 VAC | High | Yes | Not applica-ble | Pending | Pending | Lead wires only | 28 |
| | | **R87F-A3A83H** | 115 VAC | | | | | | | |
| | | **R87F-A4A83H** | 200 VAC | | | | | | | |
| | | **R87F-A6A83H** | 230 VAC | | | | | | | |
| | | **R87F-A1A83L** | 100 VAC | Low | | | | | | |
| | | **R87F-A3A83L** | 115 VAC | | | | | | | |
| | | **R87F-A4A83L** | 200 VAC | | | | | | | |
| | | **R87F-A6A83L** | 230 VAC | | | | | | | |
| |  80 × 80 × t38 | **R87F-A1A85HP** | 100 VAC | High | Yes | Yes | Pending | Pending | Terminals only | 30 |
| | | **R87F-A3A85HP** | 115 VAC | | | | | | | |
| | | **R87F-A4A85HP** | 200 VAC | | | | | | | |
| | | **R87F-A6A85HP** | 230 VAC | | | | | | | |
| | | **R87F-A1A85LP** | 100 VAC | Low | | | | | | |
| | | **R87F-A3A85LP** | 115 VAC | | | | | | | |
| | | **R87F-A4A85LP** | 200 VAC | | | | | | | |
| | | **R87F-A6A85LP** | 230 VAC | | | | | | | |
| |  92 × 92 × t25 | **R87F-A1A93HP** | 100 VAC | High | Yes | Yes | Pending | Pending | Terminals only | 32 |
| | | **R87F-A3A93HP** | 115 VAC | | | | | | | |
| | | **R87F-A4A93HP** | 200 VAC | | | | | | | |
| | | **R87F-A6A93HP** | 230 VAC | | | | | | | |
| | | **R87F-A1A93LP** | 100 VAC | Low | | | | | | |
| | | **R87F-A3A93LP** | 115 VAC | | | | | | | |
| | | **R87F-A4A93LP** | 200 VAC | | | | | | | |
| | | **R87F-A6A93LP** | 230 VAC | | | | | | | |
| |  120 × 120 × t25 | **R87F-A1A13HP** | 100 VAC | High | Yes | Yes | Pending | Pending | Terminals only | 34 |
| | | **R87F-A3A13HP** | 115 VAC | | | | | | | |
| | | **R87F-A4A13HP** | 200 VAC | | | | | | | |
| | | **R87F-A6A13HP** | 230 VAC | | | | | | | |
| | | **R87F-A1A13LP** | 100 VAC | Low | | | | | | |
| | | **R87F-A3A13LP** | 115 VAC | | | | | | | |
| | | **R87F-A4A13LP** | 200 VAC | | | | | | | |
| | | **R87F-A6A13LP** | 230 VAC | | | | | | | |
| |  120 × 120 × t38 | **R87F-A1A15HP** | 100 VAC | High | Yes | Yes | Pending | Pending | Terminals only | 36 |
| | | **R87F-A3A15HP** | 115 VAC | | | | | | | |
| | | **R87F-A4A15HP** | 200 VAC | | | | | | | |
| | | **R87F-A6A15HP** | 230 VAC | | | | | | | |
| | | **R87F-A1A15LP** | 100 VAC | Low | | | | | | |
| | | **R87F-A3A15LP** | 115 VAC | | | | | | | |
| | | **R87F-A4A15LP** | 200 VAC | | | | | | | |
| | | **R87F-A6A15LP** | 230 VAC | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Plug Cords | **R87F-PC** | --- | --- | --- | Pending | --- | --- | 51 |
| | **R87F-PCJT** | | --- | Yes | --- | --- | | |
| Finger Guards | **R87F-FG□** | | --- | --- | --- | --- | --- | 52 |
| Filters | **R87F-FL□** | | --- | --- | --- | --- | | 53 |
| | **R87F-FL120S** | | --- | --- | --- | --- | | |

| Series | Size (mm) | Model | Power supply voltage (V) | Rotational speed | Safety standards | | | | Terminal type | Page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Compliant standards | | Certified standards | | | |
| | | | | | CE mark | PSE | UL | CSA | | |
| R87T Fans with Metal Blades |  80 × 80 × t25 | **R87T-A1A83H** | 100 VAC | High | Yes | Not applicable | Pending | --- | Lead wires only | 38 |
| | | **R87T-A3A83H** | 115 VAC | | | | | | | |
| | | **R87T-A4A83H** | 200 VAC | | | | | | | |
| | | **R87T-A6A83H** | 230 VAC | | | | | | | |
| |  80 × 80 × t38 | **R87T-A1A85H** | 100 VAC | High | Yes | Not applicable | Pending | --- | Lead wires only | 40 |
| | | **R87T-A3A85H** | 115 VAC | | | | | | | |
| | | **R87T-A4A85H** | 200 VAC | | | | | | | |
| | | **R87T-A6A85H** | 230 VAC | | | | | | | |
| |  120 × 120 × t38 | **R87T-A1A15HP** | 100 VAC | High | Yes | Yes | Pending | --- | Terminals only | 42 |
| | | **R87T-A3A15HP** | 115 VAC | | | | | | | |
| | | **R87T-A4A15HP** | 200 VAC | | | | | | | |
| | | **R87T-A6A15HP** | 230 VAC | | | | | | | |
| |  150 dia. × t38 | **R87T-A1A05H** | 100 VAC | High | Yes | Not applicable | Pending | --- | Lead wires only | 44 |
| | | **R87T-A3A05H** | 115 VAC | | | | | | | |
| | | **R87T-A4A05H** | 200 VAC | | | | | | | |
| | | **R87T-A6A05H** | 230 VAC | | | | | | | |
| |  150 dia. × t55 | **R87T-A1A07H** | 100 VAC | High | Yes | Not applicable | Pending | --- | Lead wires only | 46 |
| | | **R87T-A3A07H** | 115 VAC | | | | | | | |
| | | **R87T-A4A07H** | 200 VAC | | | | | | | |
| | | **R87T-A6A07H** | 230 VAC | | | | | | | |
| |  120 × 120 × t38 | **R87T-A1A15H-WR** | 100 VAC | High | Yes | Not applicable | cUL pending | --- | Lead wires only | 48 |
| | | **R87T-A3A15H-WR** | 115 VAC | | | | | | | |
| | | **R87T-A4A15H-WR** | 200 VAC | | | | | | | |
| | | **R87T-A6A15H-WR** | 200 to 230 VAC | | | | | | | |

# Box Fans

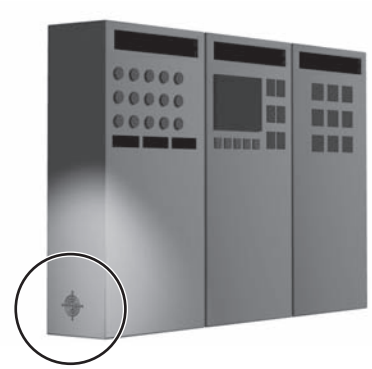
| Type | Rotational speed | Fan material | Power supply voltage (V) | Attachment | | AC Axial fan | | Plug cord ✻ | | Option Set | | Safety standards | | Terminal type | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Compliant standards | Certified standards | | |
| | | | | Model | Qty | Model | Qty | Model | Qty | Model | Qty | CE/PSE | UL/CSA | | |
| Single box fan  | High | Plastic blade | 100 VAC | **R87B-N** | 1 | **R87F-A1A15HP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | --- | --- | Terminals only | 55 |
| | | | 115 VAC | **R87B-N** | 1 | **R87F-A3A15HP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | | | 200 VAC | **R87B-N** | 1 | **R87F-A4A15HP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | | | 230 VAC | **R87B-N** | 1 | **R87F-A6A15HP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | | Metal blade | 100 VAC | **R87B-N** | 1 | **R87T-A1A15HP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | | | 115 VAC | **R87B-N** | 1 | **R87T-A3A15HP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | | | 200 VAC | **R87B-N** | 1 | **R87T-A4A15HP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | | | 230 VAC | **R87B-N** | 1 | **R87T-A6A15HP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | Low | Plastic blade | 100 VAC | **R87B-N** | 1 | **R87F-A1A15LP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | | | 115 VAC | **R87B-N** | 1 | **R87F-A3A15LP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | | | 200 VAC | **R87B-N** | 1 | **R87F-A4A15LP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| | | | 230 VAC | **R87B-N** | 1 | **R87F-A6A15LP** | 1 | **R87F-PC-20** | 1 | **R87F-SET1238** | 1 | | | | |
| Double box fan  | High | Plastic blade | 100 VAC | **R87B-N2** | 1 | **R87F-A1A15HP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | --- | --- | Terminals only | |
| | | | 115 VAC | **R87B-N2** | 1 | **R87F-A3A15HP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | | | 200 VAC | **R87B-N2** | 1 | **R87F-A4A15HP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | | | 230 VAC | **R87B-N2** | 1 | **R87F-A6A15HP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | | Metal blade | 100 VAC | **R87B-N2** | 1 | **R87T-A1A15HP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | | | 115 VAC | **R87B-N2** | 1 | **R87T-A3A15HP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | | | 200 VAC | **R87B-N2** | 1 | **R87T-A4A15HP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | | | 230 VAC | **R87B-N2** | 1 | **R87T-A6A15HP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | Low | Plastic blade | 100 VAC | **R87B-N2** | 1 | **R87F-A1A15LP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | | | 115 VAC | **R87B-N2** | 1 | **R87F-A3A15LP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | | | 200 VAC | **R87B-N2** | 1 | **R87F-A4A15LP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| | | | 230 VAC | **R87B-N2** | 1 | **R87F-A6A15LP** | 2 | **R87F-PC-20** | 2 | **R87F-SET1238** | 2 | | | | |
| Triple box fan  | High | Plastic blade | 100 VAC | **R87B-N3** | 1 | **R87F-A1A15HP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | --- | --- | Terminals only | |
| | | | 115 VAC | **R87B-N3** | 1 | **R87F-A3A15HP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | | | 200 VAC | **R87B-N3** | 1 | **R87F-A4A15HP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | | | 230 VAC | **R87B-N3** | 1 | **R87F-A6A15HP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | | Metal blade | 100 VAC | **R87B-N3** | 1 | **R87T-A1A15HP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | | | 115 VAC | **R87B-N3** | 1 | **R87T-A3A15HP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | | | 200 VAC | **R87B-N3** | 1 | **R87T-A4A15HP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | | | 230 VAC | **R87B-N3** | 1 | **R87T-A6A15HP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | Low | Plastic blade | 100 VAC | **R87B-N3** | 1 | **R87F-A1A15LP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | | | 115 VAC | **R87B-N3** | 1 | **R87F-A3A15LP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | | | 200 VAC | **R87B-N3** | 1 | **R87F-A4A15LP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |
| | | | 230 VAC | **R87B-N3** | 1 | **R87F-A6A15LP** | 3 | **R87F-PC-20** | 3 | **R87F-SET1238** | 3 | | | | |

✻ The plug cord can be replaced with other model. Refer to page 56 for details. When you select another model, the qty required is the same as the one of R87F-PC-20 listed in the table above.

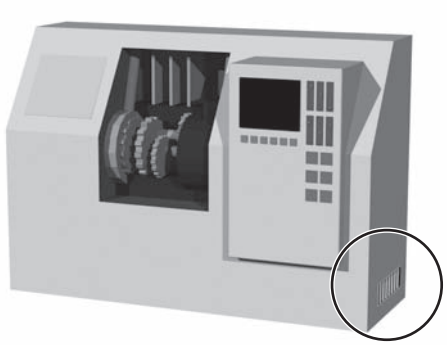
# Applications for Axial Fans

**Axial Fans can perform stable cleaning in a variety of purposes and locations.**

## ■ Control Panels



## ■ Machine Tools

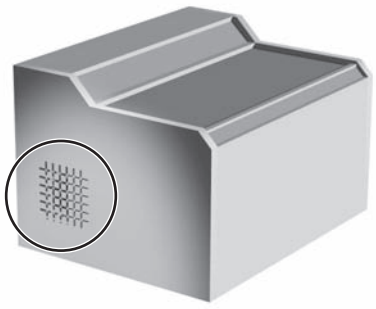


## ■ Measurement Devices

## ■ Medical Devices

## ■ Solder Fume Suction Equipment

## ■ Vending Machines and Showcases



**Note:** Water-resistant fans are recommended for vending machines and showcases.

# Safety Precautions for All Axial Fans

## Warning Indications

| | |
|---|---|
| **Warning** | **Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death. Additionally there may be significant property damage.** |
| **Caution** | **Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury or property damage.** |
| **Precautions for Safe Use** | **Supplementary comments on what to do or avoid doing to use the product safely.** |
| **Precautions for Correct Use** | **Supplementary comments on what to do or avoid doing to prevent failure to operate, malfunction, or undesirable effects on product performance.** |

## Meaning of Product Safety Symbols

| | |
|---|---|
|  | **Used to prohibit touching certain portions of the device under specific conditions because of the possibility of injuries.** |
|  | **Used for general prohibitions for which there is no specific symbol.** |
|  | **Used to indicate prohibition when there is a risk of minor injury from electrical shock or other source if the product is disassembled.** |
|  | **Used for general mandatory action precautions for which there is no specified symbol.** |

## ⚠ WARNING

Do not touch the blades. Doing so may result in injury. Always mount the optional Finger Guard when there is any possibility that a person may touch the fan blade.

Do not use the Box Fan with the Finger Guard removed.

Make sure that power is turned OFF before performing any action that requires touching the blades, such as inspections or filter replacement.

## ⚠ CAUTION

Do not hold the Fan by its power lines, or pull the power lines with excessive force. Injury may occasionally occur if the Fan falls.

Do no insert objects into the rotating parts of the Fan. Fan failure may occasionally result in property damage or minor injury.

Do not allow the Fan to be subjected to shock, such as falling, otherwise the service life and performance characteristics of the Fan will be adversely affected. Precision-type ball bearings are used to hold the shaft of the Fan.

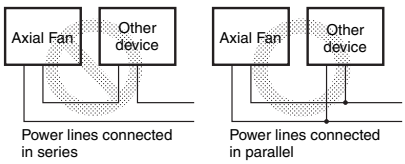
Do not use the Fan outside the rated temperature range or above the rated voltage. Do not use the Fan outside the operating temperature range and allowable voltage fluctuation range. Do not touch the motor section during operation or immediately after stopping operation.

Do not use the Fan where subject to flammable or explosive gas. Otherwise, minor injury from explosion may occasionally occur.

Do not attempt to disassemble, repair, or modify the Fan. Property damage or minor injury may occasionally occur due to electric shock, fire, or Fan failure.

Unexpected operation of the Fan after, for example, the Fan has stopped due to contact failure, due to the operation of overheating protection (thermal protection), or due to operation of restraint burnout protection, may result in minor injury.
Make sure that the power is turned OFF before performing any action that requires touching the blades, such as inspections.

Do not wire the power lines of the Fan in series with those of other Fans or devices. Wire the devices in parallel. Fan failure may occasionally result in property damage or minor injury.




Be sure to secure the Fan with the mounting bolts. Not doing so may result in injury due to the Fan falling. Use M4 bolts to mount the Fan.
The recommended tightening torque is as follows.
R87□: 0.44 N·m
R89F: 0.78 N·m

Provide measures, such as circuit-breaker fuses, on the power supply lines of devices that are using Axial Fans. Short-circuiting of the Fan may adversely affect other devices.

## Precautions for Safe Use

Do not install or store the Fan in the following environments.

- Locations subject directly to water (except for water-resistant Fans)
- Locations subject directly to oil
- Locations subject directly to vibration or shock
- Locations subject to strong static electricity or harmonics
- Locations subject to excessive dust or metallic powder
- Locations subject to direct sunlight
- Locations subject to condensation or icing
- Locations subject to corrosive gases (particularly sulfide and ammonia gases)

## Precautions for Correct Use

1. Check the direction of the airflow before installing the Fan. The direction of the airflow is indicated with an arrow on the Fan frame. The arrow points in the direction that the air flows.
2. Refer to the panel cutout dimensions in each datasheet to cut a hole in the installation device and secure the Fan with bolts.
3. The Fan is intended for cooling and air circulation. Do not use it for other purposes.
4. Dispose of the Fan as industrial waste.
5. Ensure that no organic solvents or alkaline chemicals are in contact with plastic parts of the Fan, otherwise cracks, swelling, or dissolution may result.
6. When using the Fan as a CE-compliant product, use in an environment below the display temperature of "T□□" indicated on the product label.
7. When using the following model, ensure EMC conformity by using a power supply line cable no longer than 30 m.
   In addition, do not connect to a DC distribution network.
   Applicable model: R89F-DS□ Series
8. Confirm the color of power line cable (red: +, black: -) when wiring the following model.
   Applicable model: R89F-DS□ Series
9. Secure the cover of the Box Fan with the mounting bolts. If the cover is loose, vibration may cause it to come off.
10. Do not remove the cover while the Box Fan is operating.

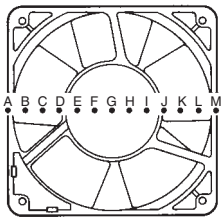
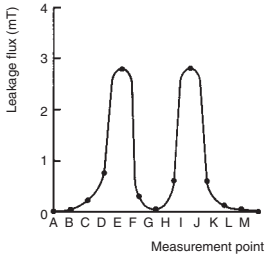
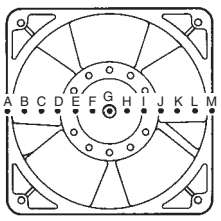
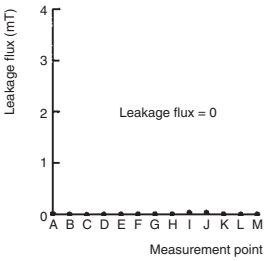
## Precautions for Correct Use

### Leakage Flux

- Leakage flux from an Axial Fan may distort the image on nearby CRT screens. Measures to prevent this problem include:

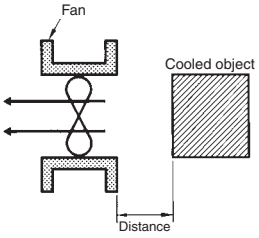
1. Keeping CRTs at least 30 cm away from the Axial Fan.
2. Shielding the Axial Fan side with metal mesh.
   The leakage flux from a Fan with metal blades is less than with plastic blades. The leakage flux distribution curves are shown below as examples.

#### R87T and Other AC Axial Fans

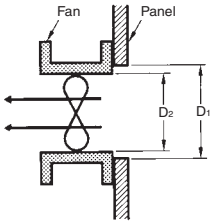
| | | |
|---|---|---|
| Inlet | Dimensions |  |
| | Leakage flux distribution |  |
| Outlet | Dimensions |  |
| | Leakage flux distribution |  |

## Noise Countermeasures

- The cooling effect and noise levels of Axial Fans are greatly affected by the mounting conditions. Take the points listed below into account when installing the Fans.
- Maintain as much clearance as possible between the Fan inlet and the cooled object. (If the cooled object occupies about the same surface area as the Fan on a flat surface, a distance of approximately 10 cm is appropriate.)

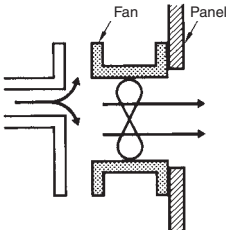



- The diameter of the Fan installation hole (D2) should be larger than the diameter of the Fan (D1).
  $D_1$:Fan installation hole diameter
  $D_2$:Fan diameter
  $D_1 > D_2$

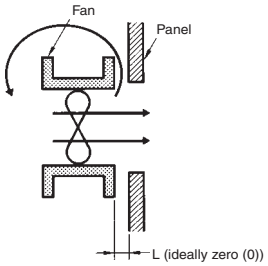



## Cooling Effect

- Avoid rapid changes in air flow direction or air-flow cross-section which reduce the cooling effect.



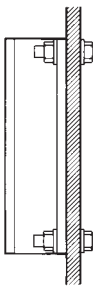

- When installing the Fan, keep the clearance at the outlet side as small as possible. (If there is a large clearance at the outlet side, it may not be possible to obtain a sufficient cooling effect.)

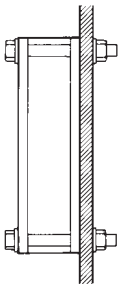



## Axial Fan Installation

- The Fan can be mounted with bolts through only one flange (single-flange mounting) or with through-bolts through both flanges (double-flange mounting). Take care not to distort the frame when using double-flange mounting.
  The appropriate tightening torques are indicated below.
  R87□: 0.44 N·m
  R89F: 0.78 N·m

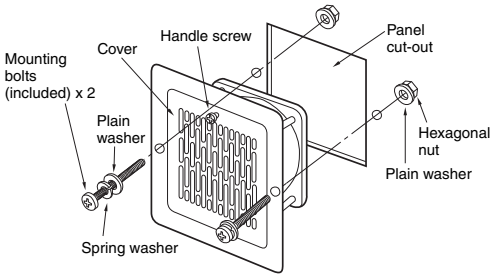
**Single-flange mounting** **Double-flange mounting**





## Box Fan Installation

- As shown in the figure, line the Box Fan up with the screw holes, insert it into the panel cut-out, and firmly secure it with the enclosed mounting bolts and nuts.
- The cover can be mounted either upward or downward. Use whichever direction is convenient.




## Precautions for Building Fans into Equipment

Always mount the optional Finger Guard when there is any possibility that a person may touch the Fan blade.

- Mount a protective shield or screen, or the optional Finger Guard to the Axial Fan installation.
- Do not use a Box Fan with the Finger Guard removed. Injury may occur as a result of touching the Fan blade.
- There are various types of optional R87F-FG Finger Guards available. Select the one that suits the size of the Axial Fan.
- Always turn OFF the power and confirm that the Fan blade has stopped turning before starting to conduct an inspection, replace the filter, etc. Injury may occur as a result of touching the Fan blade.

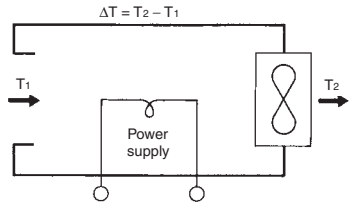
# Technical Explanation for Axial Fans

## Selecting a Fan

**Procedure**

(1) Estimate the amount of heat generated (W) inside the Unit.

(2) Set the maximum permitted temperature rise limit (ΔT) inside the Unit.




T1: Temperature of the inlet air (°C).
T2: Temperature of the outlet air (°C).

(3) Calculate the required flow rate.

$$Q = \frac{50\ W}{\Delta T}\ m^3/min$$

Q = flow rate ($m^3$/min.)
ΔT = permitted temperature rise limit (°C) (Normally between 8 to 10°C.)
W = amount of heat generated (kW)

(4) Estimate the system impedance from the air flow through the Unit or from previous data.

$\Delta P = KQ^n$

ΔP: Pressure drop (Pa)
K: Unit constant
n: Coefficient determined by air flow
n=1: laminar flow
n=2: turbulent flow
(n=2 is the normal value.)

(5) Select the Fan according to the P - Q characteristics.

(6) Measure the temperature rise in an installed Unit.

(7) Reappraise the Fan if the measured cooling effect is insufficient.

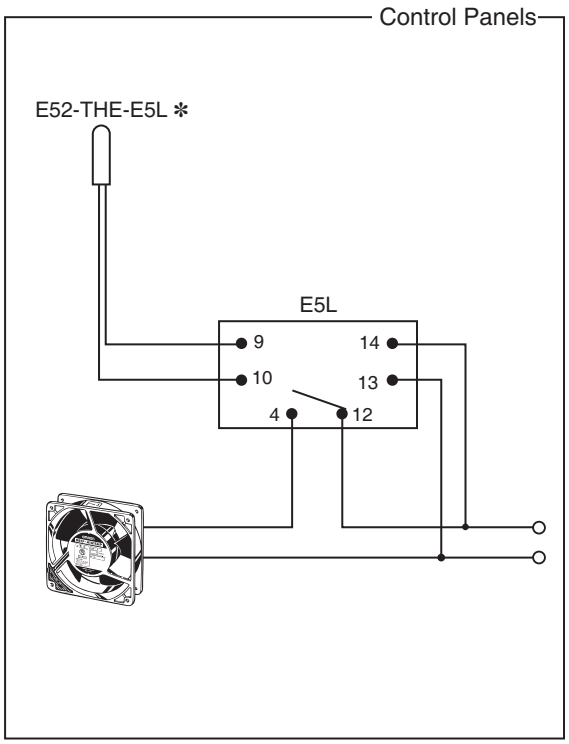
The procedure to select a Fan is described above. It is difficult, however, to obtain the actual system impedance. In general, therefore, select a Fan with a maximum flow rate of from 1.3 to 2 times the flow rate required.

As a rough guide, 1.3 times for a small system impedance, 1.5 times for medium, and 2 times for large.

Reconsider the Fan if the cooling effect is insufficient after the selected fan has been installed in the Unit and the temperature rise has been measured.

## Electronic Thermostat Connection Example

**Connection example**




✻ The sensor should be installed directly to the measurement target or toward the top of the panel.

# Explanation of Terms



## Nominal Value

The average value of data based on actual measurements. Nominal values cannot be treated as rated values.

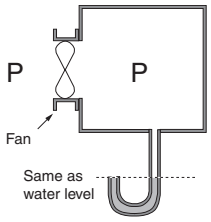
## Flow Rate: Q ($m^3$/min.)

The volume of air discharged by the Fan in a unit of time.

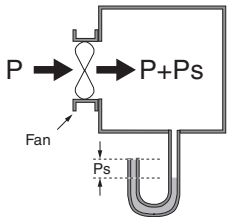
## Static Pressure: Ps (Pa)

The pressure difference across the front to the back of the Fan generated by the discharged air, which is unaffected by air flow speed.

(1) The air pressure across the front to the back of the Fan does not change when the Fan is stopped.




(2) Static pressure (Ps) is generated at the front of the Fan when it rotates.

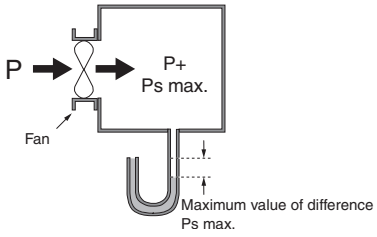



## Maximum Flow Rate: Q max. ($m^3$/min.)

The volume of air discharged by the Fan when the static pressure is adjusted to zero (Pa) at the flow measurement unit.

## Maximum Static Pressure: Ps max. (Pa)

The pressure difference inside and outside the Unit when the flow rate is adjusted to zero (0 $m^3$/min.) at the flow measurement unit. This would be the pressure in front of the Unit when the front of the fan was completely sealed.




## System Impedance

The flow resistance inside a mounted Axial Fan caused by the density of parts and shape of the flow path.

## Impedance Protection

A method of preventing burning damage when the motor is restricted from rotating by setting the motor winding impedance (AC resistance) to a value giving a temperature rise in the windings below the temperature at which burning occurs.

## Thermal Protection

A method of preventing burning damage when the motor is restricted from rotating by setting a thermal element to interrupt operation before the motor reaches a temperature at which burning occurs.

## Current Blocking Function

A method of preventing burning damage when the motor is restricted from rotating by periodically shutting down the motor winding current in order to ensure the motor temperature rise is below the temperature at which burning occurs.

## Power Supply Lead Wire Reverse Connection Protection

This function prevents problems with the fan even if the positive/negative lead wire of the power supply is connected in reverse.

# Further Information

## Flow Rate and Static Pressure

The characteristic graphs provided for each of the models represent the average of actual measurement data obtained under the measurement conditions given below. They are provided as reference for determining the Fan most suitable for the type of cooling required; the actual characteristics may differ from the values represented in the graphs. The graphs are not intended to guarantee these characteristic values.

A simple explanation of the flow rate/static pressure characteristics and the methods of measuring them is given below.

**Note:** The following symbols are used in the graph below for the flow rate/static pressure characteristics model: ◎ ○ ◉

**◎Maximum Static Pressure, Ps max. (flow rate = 0):**
Fully close the damper. Take the pressure difference between chamber B and ambient pressure (Ps). The maximum value of the pressure difference (Ps) is the maximum static pressure (Ps max).

**○Intermediate Region, (Q, Ps):**
Adjust the auxiliary blower to change the static pressure (Ps). Measure the pressure difference between chamber A and chamber B (Pd). Calculate the flow rate (Q).

**◉ Maximum Flow Rate, Q max. (static pressure = 0):**
Fully open the damper and adjust the auxiliary blower to set the static pressure to zero (0). Measure the pressure difference between chamber A and chamber B (Pd). Take the flow rate (Q) calculated at this point as the maximum flow rate (Q max.).

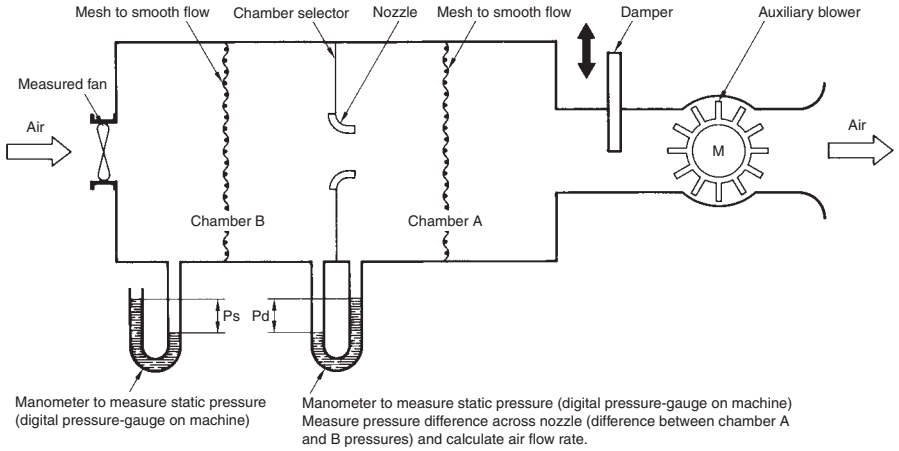
**Fan Operating Point:**
A Fan installed in equipment operates near the point where the Fan characteristic curve crosses the system impedance curve.

**Note:** The maximum flow rate and maximum static pressure do not indicate the Fan operating point when it is installed in equipment. However, these characteristics are important for comparing Fan performances and for selecting Fans.

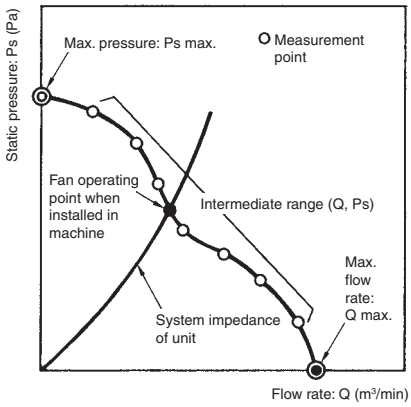
**Measurement Conditions for R87□ Series**

| Number of Fans tested | Ambient conditions | Measurement device |
|---|---|---|
| 5 | Temperature: 23 ±2°C Humidity: 65% ±5% | Measurement was performed using the multi-nozzle double chamber method based on AMCA (Air Moving Condition Association, U.S.A.) Standards 270 to 274. |

**Flow Rate Measurement Device**



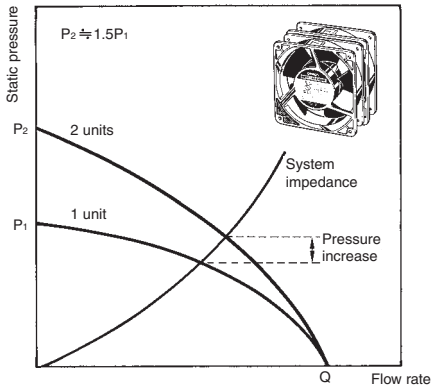

**Flow Rate/Static Pressure Characteristic Model**



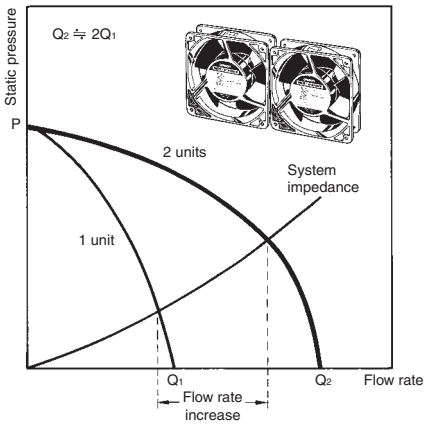
### Serial and Parallel Fan Operation

The characteristics of two identical Fans operated in series or parallel are determined as shown in the following diagrams.

**Serial Operation:**




**Parallel Operation:**

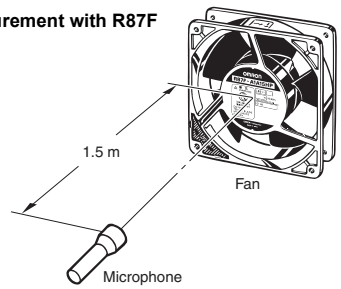



### Noise Measurements

Measurements are performed according to JIS B 8346 (Noise Level Measurement Method for Blowers and Compressors).

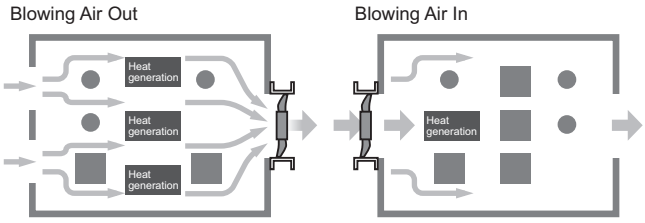
R87F: Measurement is performed at a position 1.5 m above the center line from the air inlet.
R89F: Measurement is performed at a position 1 m away from the air inlet.

**Measurement with R87F**




### Cooling Effect

Use the location and number of heat-generating elements to determine which is more efficient, blowing air out or blowing air in.




Many Heat-generating Elements in Various Locations

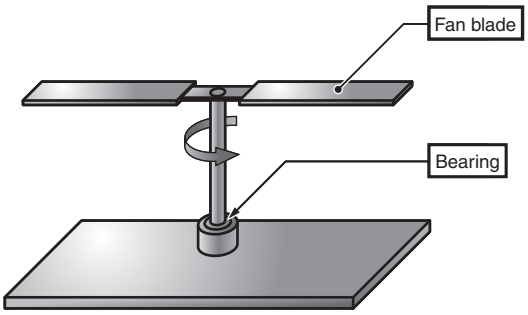
The pressure inside the box decreases, so dust can easily enter through other openings.

Heat-generating Elements in One Location

The pressure inside the box increases, preventing dust from easily enter through other openings.

### Service Life

The service life of an Axial Fan is generally determined by the bearings.
The following diagram is a simple, mechanical illustration of the Fan structure.
The Fan blade will turn smoothly if the bearings are in normal condition. When there is an abnormality in the bearings, however, the friction between the shaft and the bearings will increase until the blade eventually stops turning.
This is the definition of a Fan's service life.




**A mechanical illustration of the Axial Fan structure**

# R89F-M

## Reducing required design work through unified power supply voltage

- Reduced time spent on replacement thanks to a longer service life.
- Selection of free voltage input 100 to 240 VAC models.
- Available in set packages (including finger guards, plug cords, and mounting screws).
- CE marking compliant, and certified compliant with various standards including UL and CSA.

⚠ Be sure to read the *Safety Precautions for All Axial Fans* on page 12.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## Model Number Structure

### Model Number Legend

**R89F-M□□□□□□□-□□**

1 2 3 4 5 6 7 8

**1. Basic series**

| | |
|---|---|
| **R89F** | Plastic Blade Series |

**2. Rated voltage**

| | |
|---|---|
| **M** | 100 to 240 VAC |

**3. Frame shape**

| | |
|---|---|
| **S** | Square |

**4. Frame**

| | |
|---|---|
| **09** | 92 × 92 |
| **12** | 120 × 120 |

**5. Frame thickness**

| | |
|---|---|
| **38** | 38 |

**6. Rotational speed**

| | |
|---|---|
| **H** | High speed |
| **L** | Low speed |

**7. Terminal type**

| | |
|---|---|
| **P** | Terminals ✻ |

✻ A Plug Cord (R89F-PC) is required for models with terminals.

**8. Delivered configuration**

| | |
|---|---|
| **No marking** | Standard |
| **S1** | Finger guard + Screw and nut set + Plug cord ✻ |
| **S2** | |

✻ Refer to *Set Model* on page 19 and 26 for details.

**Note:** These tables show only how to read model numbers. They do not indicate which products are available. Refer to *Ratings and Ordering Information* when ordering.

## Ordering Information

### AC Free Input Axial Fans

| Series | Size (mm) | Speed | Model | Page |
|---|---|---|---|---|
| R89F-M series | 92 × 92 × t38 | High | R89F-MS0938HP | 20 |
| | 92 × 92 × t38 | Low | R89F-MS0938LP | 20 |
| | 120 × 120 × t38 | High | R89F-MS1238HP | 21 |

### Options (Order Separately)

| Name | Model | Page |
|---|---|---|
| Plug Cord | R89F-PC-□ | 50 |
| Finger Guard | R87F-FG□ | 52 |
| Filter | R87F-FL□(S) | 53 |

**Note:** Mounting screws are not provided.

### Set Model

| Model | Set Contents |
|---|---|
| R89F-MS0938HP-S1 | Fan, Finger guard × 1, M4 Screw (55 mm) × 4 and nut set × 4, Plug cord (1 m) |
| R89F-MS0938LP-S1 | Fan, Finger guard × 1, M4 Screw (55 mm) × 4 and nut set × 4, Plug cord (1 m) |
| R89F-MS1238HP-S1 | Fan, Finger guard × 1, M4 Screw (55 mm) × 4 and nut set × 4, Plug cord (1 m) |
| R89F-MS0938HP-S2 | Fan, Finger guard × 2, M4 Screw (55 mm) × 4 and nut set × 4, Plug cord (1 m) |
| R89F-MS0938LP-S2 | Fan, Finger guard × 2, M4 Screw (55 mm) × 4 and nut set × 4, Plug cord (1 m) |
| R89F-MS1238HP-S2 | Fan, Finger guard × 2, M4 Screw (55 mm) × 4 and nut set × 4, Plug cord (1 m) |

## Safety Precautions

Refer to the *Safety Precautions for All Axial Fans* on page 12 to 14.

# R89F-M
# R89F-MS0938□ AC Free Input Axial Fans (92 × 92 × t38 mm)

## Ratings and Ordering Information

| Item / Model | Rated voltage | Permitted voltage fluctuation range | Frequency [Hz] | Rated current [A] ✻ | Rated input [W] ✻ | Rated rotational speed [r/min$^{-1}$] ✻ | Maximum flow rate [m$^3$/min] ✻ | Maximum static pressure [Pa] ✻ | Noise [dB] ✻ |
|---|---|---|---|---|---|---|---|---|---|
| **R89F-MS0938HP** | 100 to 240 VAC | 90 to 264 V | 50/60 | 0.08 | 4.5 | 3850 | 1.5 | 90 | 40 |
| **R89F-MS0938LP** | 100 to 240 VAC | 90 to 264 V | 50/60 | 0.06 | 3.0 | 3100 | 1.18 | 56 | 33 |

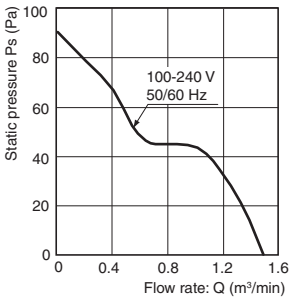
✻ An asterisk (✻) indicates a nominal value.

## Characteristics

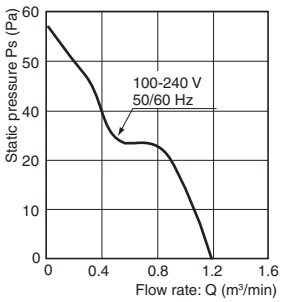
| | | |
|---|---|---|
| **Motor type** | | Brushless DC motor |
| **Terminal type** | | Terminals |
| **Insulation class** | | Class E (UL class A) |
| **Insulation resistance** | | 10 MΩ min. (at 500 VDC)<br>Between lead wire conductor and frame |
| **Insulation withstand voltage** | | 1,500 VAC (1 minute)<br>Between input terminal and frame |
| **Ambient operating temperature** | | -20 to 75°C (with no icing) |
| **Ambient storage temperature** | | -30 to +75°C (no icing) |
| **Ambient humidity** | | 20% to 85% |
| **Protection** | | Restraint burnout protection<br>(Current blocking function) |
| **Materials** | **Frame** | PBT/PC alloy (UL94V-0) |
| | **Blades** | PBT/PC alloy (UL94V-0) |
| **Bearings** | | Ball bearings |
| **Weight** | | Approx. 250 g |
| **Compliant standards** | | EN/IEC62368-1<br>EN/IEC60335-2-80<br>(CE marking compliant)<br>RCM<br>PSE |
| **Certified standards** | | UL: UL507 (Recognition)<br>CSA: C22.2 No.113 |

**Flow Rate and Static Pressure Characteristics (Reference Value)**

R89F-MS0938HP



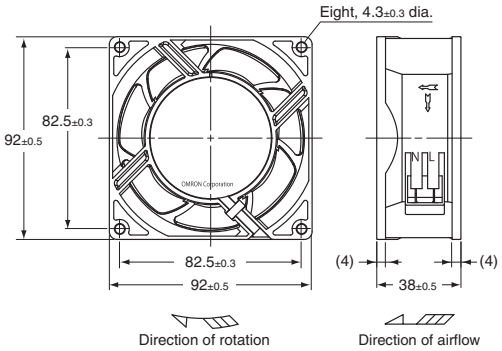

R89F-MS0938LP




**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

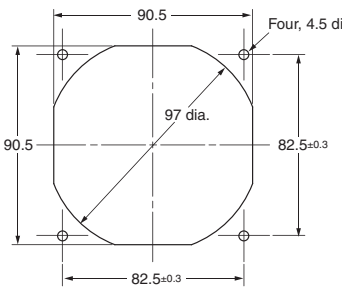
## Dimensions

**(Unit: mm)**

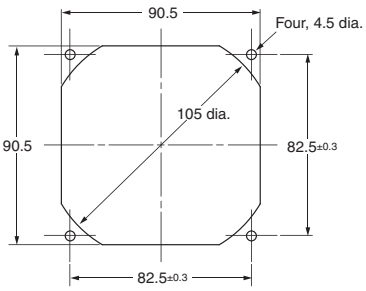




**Panel Cutouts**

**Inlet**




**Outlet**




## Options

| Name | Model | Page |
|---|---|---|
| Plug Cord | R89F-PC-□ | 50 |
| Finger Guard | R87F-FG90 | 52 |

# R89F-MS1238□ AC Free Input Axial Fans (120 × 120 × t38 mm)

## Ratings and Ordering Information

| Item / Model | Rated voltage | Permitted voltage fluctuation range | Frequency [Hz] | Rated current [A] ✻ | Rated input [W] ✻ | Rated rotational speed [r/min$^{-1}$] ✻ | Maximum flow rate [m$^3$/min] ✻ | Maximum static pressure [Pa] ✻ | Noise [dB] ✻ |
|---|---|---|---|---|---|---|---|---|---|
| **R89F-MS1238HP** | 100 to 240 VAC | 90 to 264 V | 50/60 | 0.08 | 4.4 | 3250 | 3.0 | 84 | 42 |

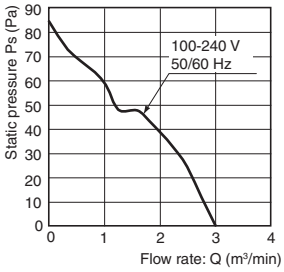
✻ An asterisk (✻) indicates a nominal value.

## Characteristics

| | | |
|---|---|---|
| **Motor type** | | Brushless DC motor |
| **Terminal type** | | Terminals |
| **Insulation class** | | Class E (UL class A) |
| **Insulation resistance** | | 10 MΩ min. (at 500 VDC)<br>Between lead wire conductor and frame |
| **Insulation withstand voltage** | | 1,500 VAC (1 minute)<br>Between input terminal and frame |
| **Ambient operating temperature** | | -20 to 75°C (with no icing) |
| **Ambient storage temperature** | | -30 to +75°C (no icing) |
| **Ambient humidity** | | 20% to 85% |
| **Protection** | | Restraint burnout protection<br>(Current blocking function) |
| **Materials** | **Frame** | PBT/PC alloy (UL94V-0) |
| | **Blades** | PPHOX (UL94V-1) |
| **Bearings** | | Ball bearings |
| **Weight** | | Approx. 290 g |
| **Compliant standards** | | EN/IEC62368-1<br>EN/IEC60335-2-80<br>(CE marking compliant)<br>RCM<br>PSE |
| **Certified standards** | | UL: UL507 (Recognition)<br>CSA: C22.2 No.113 |

### Flow Rate and Static Pressure Characteristics (Reference Value)

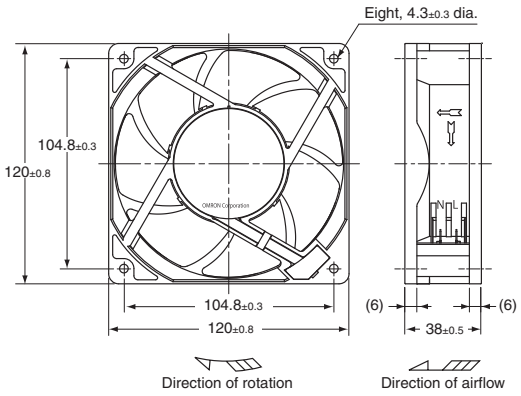
R89F-MS1238HP



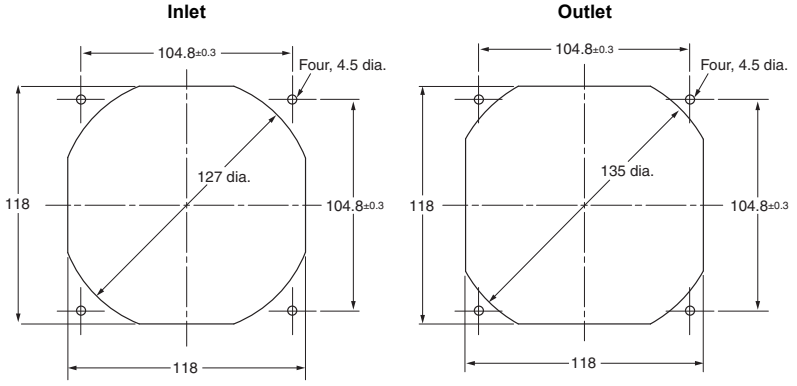

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

## Dimensions

**(Unit: mm)**




### Panel Cutouts




## Options

| Name | Model | Page |
|---|---|---|
| Plug Cord | R89F-PC-□ | 50 |
| Finger Guard | R87F-FG120 | 52 |
| Filter | R87F-FL120(S) | 53 |

# DC Axial Fans
# R89F-D

## Reducing required design work through unified power supply voltage

- Reduced time spent on replacement thanks to a longer service life.
- Selection of low-voltage input 24 VDC models.
- Available in set packages (including finger guards and mounting screws).
- CE marking compliant, and certified compliant with various standards including UL and CSA.

⚠ Be sure to read the *Safety Precautions for All Axial Fans* on page 12.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## Model Number Structure

### Model Number Legend

**R89F-D□□□□□□□-□□**

1 2 3 4 5 6 7 8

**1. Basic series**

| | |
|---|---|
| **R89F** | Plastic Blade Series |

**2. Rated voltage**

| | |
|---|---|
| **D** | 24 VDC |

**3. Frame shape**

| | |
|---|---|
| **S** | Square |

**4. Frame**

| | |
|---|---|
| **09** | 92 × 92 |
| **12** | 120 × 120 |

**5. Frame thickness**

| | |
|---|---|
| **25** | 25 |
| **38** | 38 |

**6. Rotational speed**

| | |
|---|---|
| **H** | High speed |
| **L** | Low speed |

**7. Terminal type**

| | |
|---|---|
| **No marking** | Lead wires |

**8. Delivered configuration**

| | |
|---|---|
| **No marking** | Standard |
| **S1** | Finger guard + Screw and nut set ✻ |
| **S2** | |

✻ Refer to *Set Model* on page 22 and 26 for details.

**Note:** These tables show only how to read model numbers. They do not indicate which products are available. Refer to *Ratings and Ordering Information* when ordering.

## Ordering Information

### DC Axial Fans

| Series | Size (mm) | Speed | Model | Page |
|---|---|---|---|---|
| R89F-D series | 92 × 92 × t25 | High | R89F-DS0925H | 23 |
| | 92 × 92 × t25 | Low | R89F-DS0925L | 23 |
| | 120 × 120 × t25 | High | R89F-DS1225H | 24 |
| | 120 × 120 × t25 | Low | R89F-DS1225L | 24 |
| | 120 × 120 × t38 | High | R89F-DS1238H | 25 |
| | 120 × 120 × t38 | Low | R89F-DS1238L | 25 |

### Options (Order Separately)

| Name | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG□ | 52 |
| Filter | R87F-FL□(S) | 53 |

**Note:** Mounting screws are not provided.

### Set Model

| Model | Set Contents |
|---|---|
| R89F-DS0925H-S1 | Fan, Finger guard × 1, M4 Screw (40 mm) × 4 and nut set × 4 |
| R89F-DS0925L-S1 | Fan, Finger guard × 1, M4 Screw (40 mm) × 4 and nut set × 4 |
| R89F-DS1225H-S1 | Fan, Finger guard × 1, M4 Screw (40 mm) × 4 and nut set × 4 |
| R89F-DS1225L-S1 | Fan, Finger guard × 1, M4 Screw (40 mm) × 4 and nut set × 4 |
| R89F-DS1238H-S1 | Fan, Finger guard × 1, M4 Screw (55 mm) × 4 and nut set × 4 |
| R89F-DS1238L-S1 | Fan, Finger guard × 1, M4 Screw (55 mm) × 4 and nut set × 4 |
| R89F-DS0925H-S2 | Fan, Finger guard × 2, M4 Screw (40 mm) × 4 and nut set × 4 |
| R89F-DS0925L-S2 | Fan, Finger guard × 2, M4 Screw (40 mm) × 4 and nut set × 4 |
| R89F-DS1225H-S2 | Fan, Finger guard × 2, M4 Screw (40 mm) × 4 and nut set × 4 |
| R89F-DS1225L-S2 | Fan, Finger guard × 2, M4 Screw (40 mm) × 4 and nut set × 4 |
| R89F-DS1238H-S2 | Fan, Finger guard × 2, M4 Screw (55 mm) × 4 and nut set × 4 |
| R89F-DS1238L-S2 | Fan, Finger guard × 2, M4 Screw (55 mm) × 4 and nut set × 4 |

## Safety Precautions

Refer to the *Safety Precautions for All Axial Fans* on page 12 to 14.

# R89F-DS0925□ DC Axial Fans (92 × 92 × t25 mm)

## Ratings and Ordering Information

| Item / Model | Rated voltage | Permitted voltage fluctuation range | Frequency [Hz] | Rated current [A] ✻ | Rated input [W] ✻ | Rated rotational speed [r/min$^{-1}$] ✻ | Maximum flow rate [m$^3$/min] ✻ | Maximum static pressure [Pa] ✻ | Noise [dB] ✻ |
|---|---|---|---|---|---|---|---|---|---|
| **R89F-DS0925H** | 24 VDC | 12 to 27.6 V | --- | 0.15 | 3.6 | 3550 | 1.66 | 56.1 | 39 |
| **R89F-DS0925L** | 24 VDC | 12 to 27.6 V | --- | 0.08 | 1.92 | 2650 | 1.24 | 32.2 | 30 |

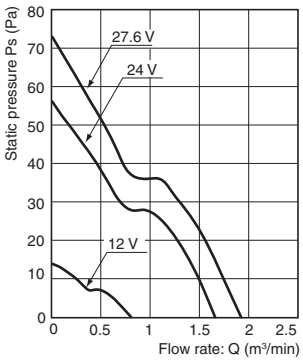
✻ An asterisk (✻) indicates a nominal value.

## Characteristics

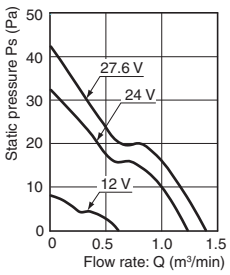
| | | |
|---|---|---|
| **Motor type** | | Brushless DC motor |
| **Terminal type** | | Lead wires |
| **Insulation class** | | Class E (UL class A) |
| **Insulation resistance** | | 10 MΩ min. (at 500 VDC)<br>Between lead wire conductor and frame |
| **Insulation withstand voltage** | | 500 VAC (1 minute)<br>Between lead wire conductor and frame |
| **Ambient operating temperature** | | -20 to +70°C (no icing) |
| **Ambient storage temperature** | | -30 to +70°C (no icing) |
| **Ambient humidity** | | 20% to 85% |
| **Protection** | | Restraint burnout protection<br>(Current blocking function)<br>Power supply lead wire reverse polarity protection |
| **Materials** | **Frame** | PBT/ABS alloy (UL94V-0) |
| | **Blades** | PBT/ABS alloy (UL94V-0) |
| **Bearings** | | Ball bearings |
| **Weight** | | Approx. 100 g |
| **Compliant standards** | | EN/IEC62368-1<br>EN/IEC60335-2-80<br>(CE marking compliant)<br>RCM |
| **Certified standards** | | UL: UL507 (Recognition)<br>CSA: C22.2 No.113 |

**Flow Rate and Static Pressure Characteristics (Reference Value)**

R89F-DS0925H



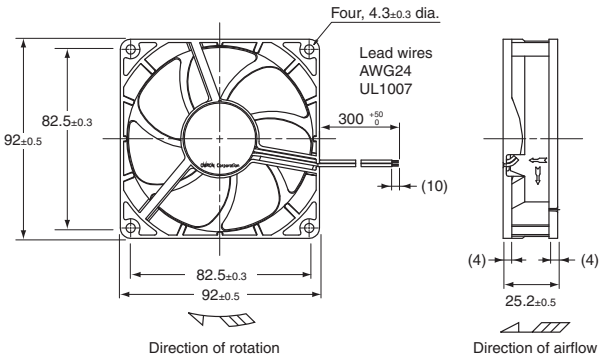

R89F-DS0925L



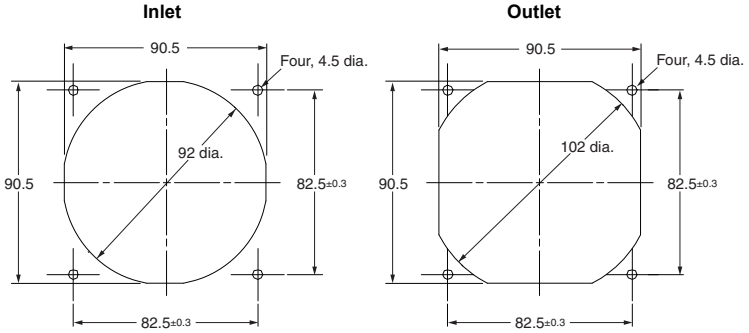

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

## Dimensions

**(Unit: mm)**




**Panel Cutouts**




## Options

| Name | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG90 | 52 |

# R89F-D
# R89F-DS1225□ DC Axial Fans (120 × 120 × t25 mm)

## Ratings and Ordering Information

| Item / Model | Rated voltage | Permitted voltage fluctuation range | Frequency [Hz] | Rated current [A] ✻ | Rated input [W] ✻ | Rated rotational speed [r/min$^{-1}$] ✻ | Maximum flow rate [m$^3$/min] ✻ | Maximum static pressure [Pa] ✻ | Noise [dB] ✻ |
|---|---|---|---|---|---|---|---|---|---|
| **R89F-DS1225H** | 24 VDC | 20.4 to 27.6 V | --- | 0.47 | 11.28 | 4100 | 3.68 | 120 | 51 |
| **R89F-DS1225L** | 24 VDC | 12 to 27.6 V | --- | 0.17 | 4.08 | 2850 | 2.5 | 64 | 40 |

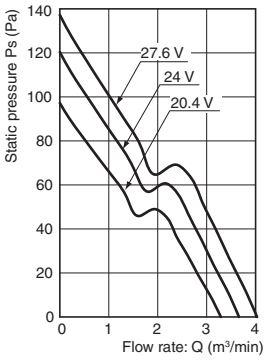
✻ An asterisk (✻) indicates a nominal value.

## Characteristics

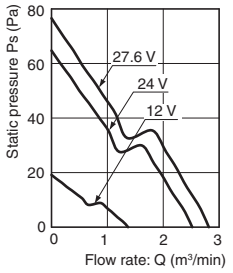
| | | |
|---|---|---|
| **Motor type** | | Brushless DC motor |
| **Terminal type** | | Lead wires |
| **Insulation class** | | Class E (UL class A) |
| **Insulation resistance** | | 10 MΩ min. (at 500 VDC)<br>Between lead wire conductor and frame |
| **Insulation withstand voltage** | | 500 VAC (1 minute)<br>Between lead wire conductor and frame |
| **Ambient operating temperature** | | -20 to +70°C (no icing) |
| **Ambient storage temperature** | | -30 to +70°C (no icing) |
| **Ambient humidity** | | 20% to 85% |
| **Protection** | | Restraint burnout protection<br>(Current blocking function)<br>Power supply lead wire reverse polarity protection |
| **Materials** | **Frame** | PBT/ABS alloy (UL94V-0) |
| | **Blades** | PPHOX (UL94V-1) |
| **Bearings** | | Ball bearings |
| **Weight** | | Approx. 280 g |
| **Compliant standards** | | EN/IEC62368-1<br>EN/IEC60335-2-80<br>(CE marking compliant)<br>RCM |
| **Certified standards** | | UL: UL507 (Recognition)<br>CSA: C22.2 No.113 |

**Flow Rate and Static Pressure Characteristics (Reference Value)**

R89F-DS1225H



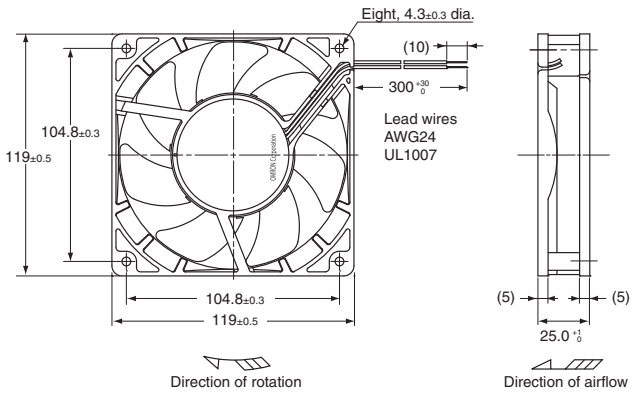

R89F-DS1225L



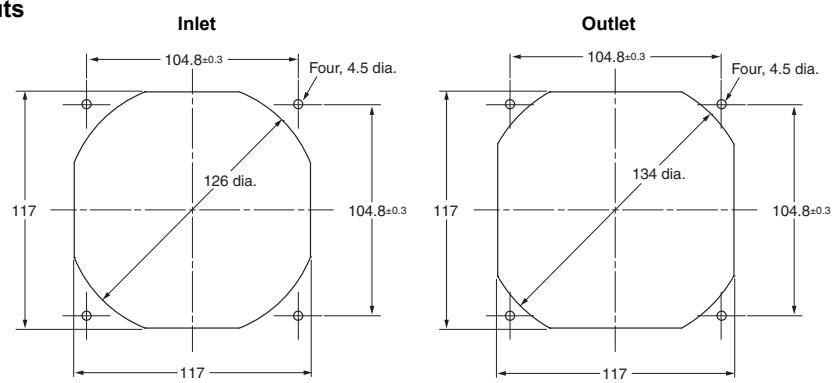

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

## Dimensions

**(Unit: mm)**




**Panel Cutouts**




## Options

| Name | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG120 | 52 |
| Filter | R87F-FL120(S) | 53 |

# R89F-DS1238□ DC Axial Fans (120 × 120 × t38 mm)

## Ratings and Ordering Information

| Item / Model | Rated voltage | Permitted voltage fluctuation range | Frequency [Hz] | Rated current [A] ✻ | Rated input [W] ✻ | Rated rotational speed [r/min$^{-1}$] ✻ | Maximum flow rate [m$^3$/min] ✻ | Maximum static pressure [Pa] ✻ | Noise [dB] ✻ |
|---|---|---|---|---|---|---|---|---|---|
| **R89F-DS1238H** | 24 VDC | 20.4 to 27.6 V | --- | 0.5 | 12 | 3600 | 3.88 | 135 | 49 |
| **R89F-DS1238L** | 24 VDC | 14 to 27.6 V | --- | 0.11 | 2.64 | 1950 | 2.1 | 39.6 | 32 |

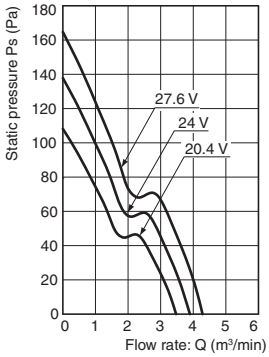
✻ An asterisk (✻) indicates a nominal value.

## Characteristics

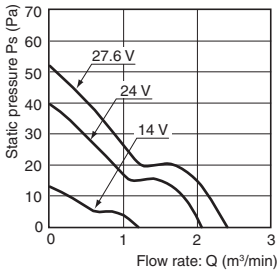
| | | |
|---|---|---|
| **Motor type** | | Brushless DC motor |
| **Terminal type** | | Lead wires |
| **Insulation class** | | Class E (UL class A) |
| **Insulation resistance** | | 10 MΩ min. (at 500 VDC)<br>Between lead wire conductor and frame |
| **Insulation withstand voltage** | | 500 VAC (1 minute)<br>Between lead wire conductor and frame |
| **Ambient operating temperature** | | -20 to +70°C (no icing) |
| **Ambient storage temperature** | | -30 to +70°C (no icing) |
| **Ambient humidity** | | 20% to 85% |
| **Protection** | | Restraint burnout protection<br>(Current blocking function)<br>Power supply lead wire reverse polarity protection |
| **Materials** | **Frame** | PBT/ABS alloy (UL94V-0) |
| | **Blades** | PPHOX (UL94V-1) |
| **Bearings** | | Ball bearings |
| **Weight** | | Approx. 330 g |
| **Compliant standards** | | EN/IEC62368-1<br>EN/IEC60335-2-80<br>(CE marking compliant)<br>RCM |
| **Certified standards** | | UL: UL507 (Recognition)<br>CSA: C22.2 No.113 |

### Flow Rate and Static Pressure Characteristics (Reference Value)

R89F-DS1238H



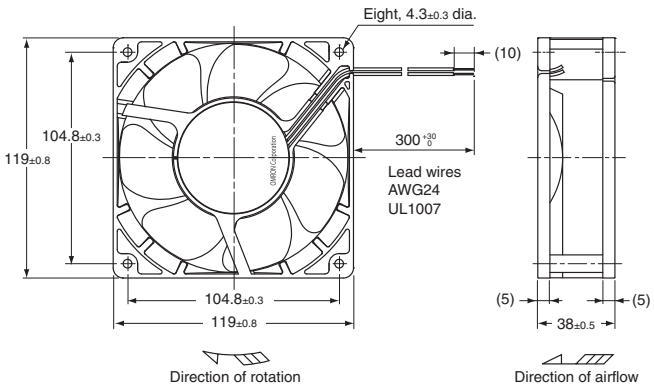

R89F-DS1238L



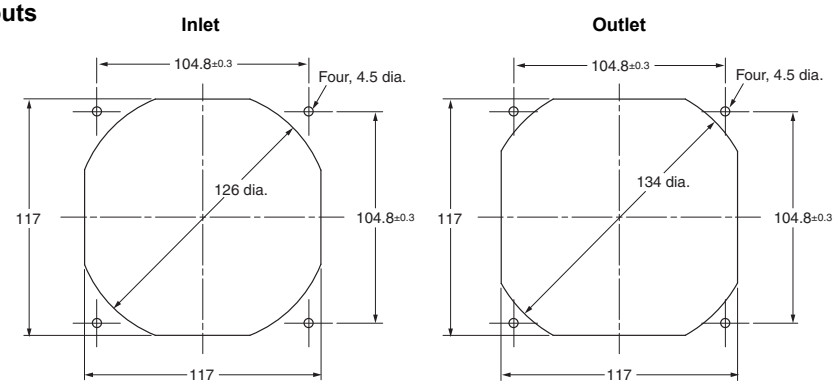

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

## Dimensions

**(Unit: mm)**




### Panel Cutouts




## Options

| Name | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG120 | 52 |
| Filter | R87F-FL120(S) | 53 |

# R89F
# Set Model

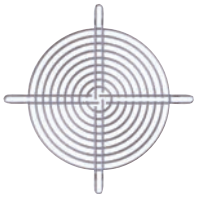
- Select the optimum size for a variety of control panels.
- All required parts can be ordered as a set, ideal for fan replacement.
- All required maintenance parts are included in one box, requiring less space and reduced parts management work.

**R89F-□□□□□□□□-S1 *Only applicable for DC Axial Fans and AC Free Input Axial Fans.**

## Set Contents

**Fan**

**Finger Guard × 1**



**Plug Cord (1 m)**

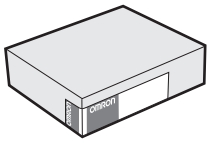
✻ AC Free Input Axial Fan only

**M4 screws × 4**

**Hexagonal nuts × 4**

**Instruction manual**

**All required parts included in one box**



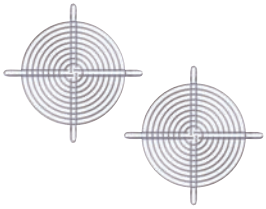
✻ Packaging for illustrative purposes only.

**R89F-□□□□□□□□-S2 *Only applicable for DC Axial Fans and AC Free Input Axial Fans.**

## Set Contents

**Fan**

**Finger Guard × 2**



**Plug Cord (1 m)**

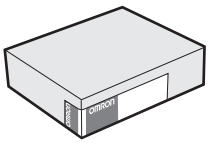
✻ AC Free Input Axial Fan only

**M4 screws × 4**

**Hexagonal nuts × 4**

**Instruction manual**

**All required parts included in one box**



✻ Packaging for illustrative purposes only.

# R87F/R87T

## Optimum Cooling with a Comprehensive Lineup of Axial Fans

- Low noise level, long service life, and resistance to the environment.
- Shaft supported by ball bearings for highly-reliable operation.
- Plastic-bladed models (40 type) and metal-bladed models (24 type) included in series.
- R87T-A□A15H-WR Water-resistant AC Axial Fans (IP X7 degree of protection) added to series.

**Note:** The compliant standards and certified safety standards depend on the product. Check the information in *Characteristics*.

⚠ Be sure to read the *Safety Precautions for All Axial Fans* on page 12.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## Model Number Structure

### Model Number Legend

R87□-□□ □□□□□□□-□

1 2 3 4 5 6 7 8

**1. Basic series**

R87F: Plastic blade
R87T: Metal blade

**2. Rated voltage**

A1: 100 VAC
A3: 115 VAC
A4: 200 VAC
A6: 230 VAC

**3. Frame material**

A: Die-cast aluminum

**4. Frame size**

8: 80 × 80
9: 92 × 92
1: 120 × 120
0: 150 dia.

**5. Frame thickness**

3: 25
5: 38
7: 55

**6. Rotational speed**

H: High
L: Low

**7. Terminal type**

No marking: Lead wires
P: Terminals (See note 1.)

**8. Type**

No marking: Standard
WR: Water-resistant

**Note: 1.** A Plug Cord (R87F-PC) is available as an option for models with terminals.
**2.** These tables show only how to read product markings. They do not indicate which products are available. Refer to "*Ratings and Ordering Information*" when ordering.

## Ordering Information

### Available Models

**AC Axial Fans**

| Series | Size (mm) | Model | Page |
|---|---|---|---|
| R87F (plastic blades) | 80 × 80 × t25 | R87F-A□A83 | 28 |
| | 80 × 80 × t38 | R87F-A□A85 | 30 |
| | 92 × 92 × t25 | R87F-A□A93 | 32 |
| | 120 × 120 × t25 | R87F-A□A13 | 34 |
| | 120 × 120 × t38 | R87F-A□A15 | 36 |
| R87T (metal blades) | 80 × 80 × t25 | R87T-A□A83 | 38 |
| | 80 × 80 × t38 | R87T-A□A85 | 40 |
| | 120 × 120 × t38 | R87T-A□A15 | 42 |
| | 150-dia. × t38 | R87T-A□A05 | 44 |
| | 150-dia. × t55 | R87T-A□A07 | 46 |
| | 120 × 120 × t38 | R87T-A□A15H-WR | 48 |

**Options (Order Separately)**

| Product name | Model | Page |
|---|---|---|
| Plug Cord | R87F-PC | 51 |
| Finger Guard | R87F-FG□ | 52 |
| Filter | R87F-FL□(S) | 53 |
| Set model | R87F-SET□□□□ | 52 |

**Note:** Mounting screws are not attached to Finger Guard. Order the Set model when the screws are needed.

## Safety Precautions

Refer to the *Safety Precautions for All Axial Fans* on page 12 to 14.

# R87F-A□A83 Axial Fans with Lead Wires (80 × 80 × t25 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

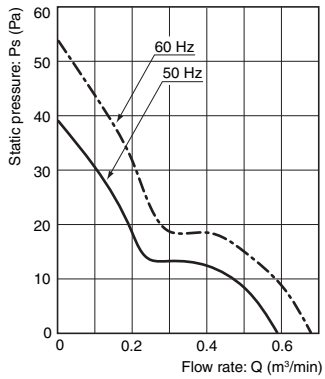
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87F-A1A83H | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.097 | 0.080 | 7 | 6 | 2,600 | 3,000 | 0.6 | 0.7 | 39.2 | 53.9 | 32 | 36 |
| R87F-A3A83H | 115 VAC | | | 0.085 | 0.070 | | | | | | | | | | |
| R87F-A4A83H | 200 VAC | | | 0.048 | 0.041 | | | | | | | | | | |
| R87F-A6A83H | 230 VAC | | | 0.046 | 0.039 | | | | | | | | | | |
| R87F-A1A83L | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.063 | 0.055 | 5 | 4 | 1,900 | 2,100 | 0.4 | 0.5 | 19.5 | 23.5 | 28 | 30 |
| R87F-A3A83L | 115 VAC | | | 0.055 | 0.048 | | | | | | | | | | |
| R87F-A4A83L | 200 VAC | | | 0.033 | 0.030 | | | | | | | | | | |
| R87F-A6A83L | 230 VAC | | | 0.028 | 0.024 | | | | | | | | | | |

### Characteristics

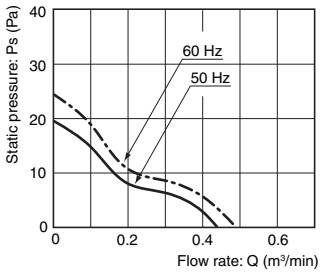
| | |
|---|---|
| **Motor type** | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | Lead wires |
| **Insulation class** | IEC class B (130°C)<br>UL class A (105°C)<br>CSA class A (105°C) |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | −30 to 70°C (no icing) |
| **Ambient storage temperature** | −40 to 85°C (no icing) |
| **Ambient humidity** | 25% to 85% |
| **Protection** | Impedance protection |
| **Materials** | Frame: Die-cast aluminum<br>Blades: Glass polycarbonate |
| **Bearings** | Ball bearings |
| **Weight** | Approx. 230 g |
| **Compliant standards** | EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | UL/CSA |

## Flow Rate and Static Pressure Characteristics (Reference Values)

**R87F-A□A83H**



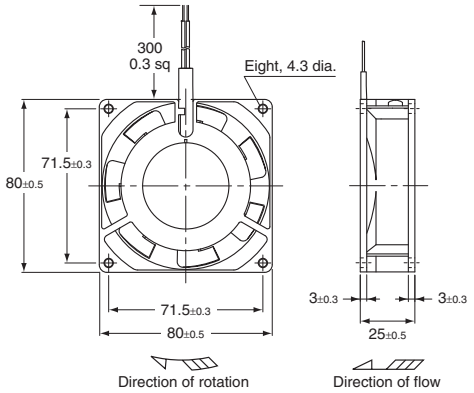

**R87F-A□A83L**



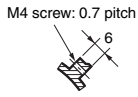

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

# Dimensions

**(Unit: mm)**

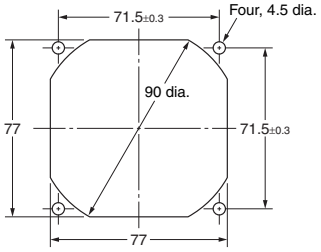



**Screw hole for grounding**

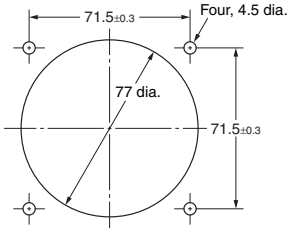



**Panel Cutouts**

**Outlet**




**Inlet**




# Options

| Names | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG80 | 52 |
| Filter | R87F-FL80 | 53 |
| Set model | R87F-SET8025 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87F-A□A85 AC Axial Fans with Terminals (80 × 80 × t38 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

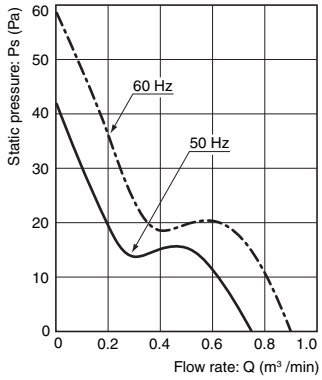
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87F-A1A85HP | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.140 | 0.115 | 10 | 9 | 2,700 | 3,200 | 0.8 | 0.9 | 42.1 | 58.8 | 32 | 36 |
| R87F-A3A85HP | 115 VAC | | | 0.120 | 0.100 | | | | | | | | | | |
| R87F-A4A85HP | 200 VAC | | | 0.080 | 0.060 | | | | | | | | | | |
| R87F-A6A85HP | 230 VAC | | | 0.060 | 0.050 | | | | | | | | | | |
| R87F-A1A85LP | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.090 | 0.080 | 7 | 6 | 2,200 | 2,500 | 0.6 | 0.7 | 25.0 | 32.0 | 26 | 29 |
| R87F-A3A85LP | 115 VAC | | | 0.080 | 0.070 | | | | | | | | | | |
| R87F-A4A85LP | 200 VAC | | | 0.050 | 0.040 | | | | | | | | | | |
| R87F-A6A85LP | 230 VAC | | | 0.040 | 0.040 | | | | | | | | | | |

### Characteristics

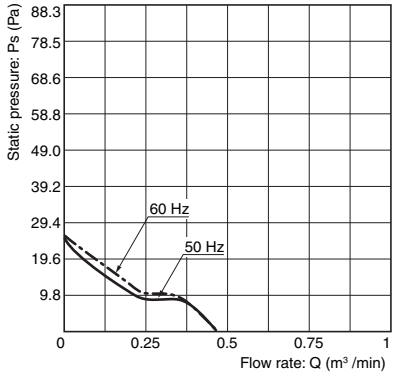
| | |
|---|---|
| **Motor type** | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | Terminals |
| **Insulation class** | IEC class B (130°C)<br>UL class A (105°C)<br>CSA class A (105°C) |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | –30 to 70°C (no icing) |
| **Ambient storage temperature** | –40 to 85°C (no icing) |
| **Ambient humidity** | 25% to 85% |
| **Protection** | Impedance protection |
| **Materials** | Frame: Die-cast aluminum<br>Blades: Glass polycarbonate |
| **Bearings** | Ball bearings |
| **Weight** | Approx. 280 g |
| **Compliant standards** | PSE, EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | UL/CSA |

## Flow Rate and Static Pressure Characteristics (Reference Values)

**R87F-A□A85HP**



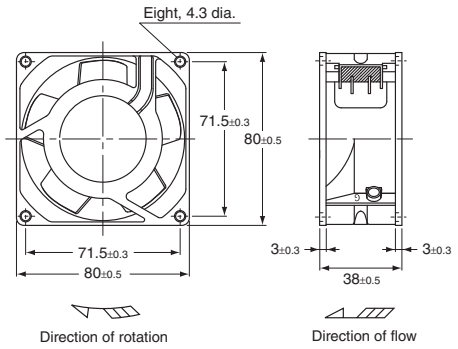

**R87F-A□A85LP**



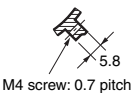

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

# Dimensions

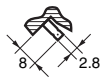
**(Unit: mm)**




**Screw hole for grounding**



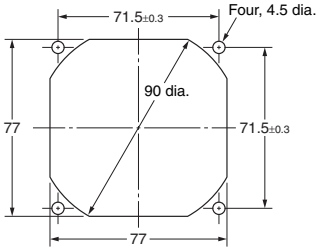

**Terminal shape**



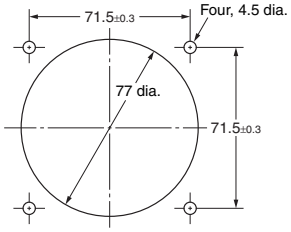

Faston #110 terminal
(or equivalent)

**Panel Cutouts**

**Outlet**




**Inlet**




# Options

| Name | Model | Page |
|---|---|---|
| Plug Cord | R87F-PC | 51 |
| Finger Guard | R87F-FG80 | 52 |
| Filter | R87F-FL80 | 53 |
| Set model | R87F-SET8038 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87F-A□A93 AC Axial Fans with Terminals (92 × 92 × t25 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

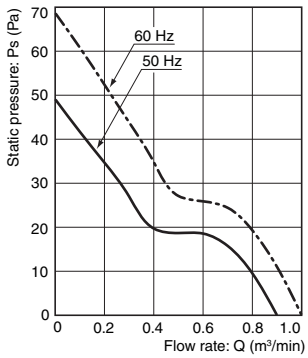
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87F-A1A93HP | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.150 | 0.130 | 13 | 11 | 2,550 | 3,050 | 0.9 | 1.0 | 49.0 | 68.6 | 33 | 36 |
| R87F-A3A93HP | 115 VAC | | | 0.125 | 0.100 | | | | | | | | | | |
| R87F-A4A93HP | 200 VAC | | | 0.070 | 0.060 | | | | | | | | | | |
| R87F-A6A93HP | 230 VAC | | | 0.055 | 0.050 | | | | | | | | | | |
| R87F-A1A93LP | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.100 | 0.085 | 7 | 6 | 1,900 | 2,200 | 0.7 | 0.8 | 24.5 | 34.3 | 29 | 32 |
| R87F-A3A93LP | 115 VAC | | | 0.090 | 0.075 | | | | | | | | | | |
| R87F-A4A93LP | 200 VAC | | | 0.050 | 0.043 | | | | | | | | | | |
| R87F-A6A93LP | 230 VAC | | | 0.045 | 0.040 | | | | | | | | | | |

### Characteristics

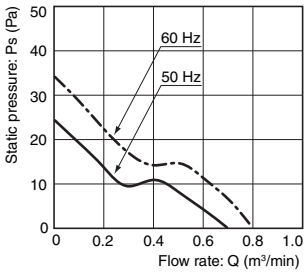
| | |
|---|---|
| **Motor type** | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | Terminals |
| **Insulation class** | IEC class B (130°C)<br>UL class A (105°C)<br>CSA class A (105°C) |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | –30 to 70°C (no icing) |
| **Ambient storage temperature** | –40 to 85°C (no icing) |
| **Ambient humidity** | 25% to 85% |
| **Protection** | Impedance protection |
| **Materials** | Frame: Die-cast aluminum<br>Blades: Glass polycarbonate |
| **Bearings** | Ball bearings |
| **Weight** | Approx. 300 g |
| **Compliant standards** | PSE, EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | UL/CSA |

## Flow Rate and Static Pressure Characteristics (Reference Values)

**R87F-A□A93HP**



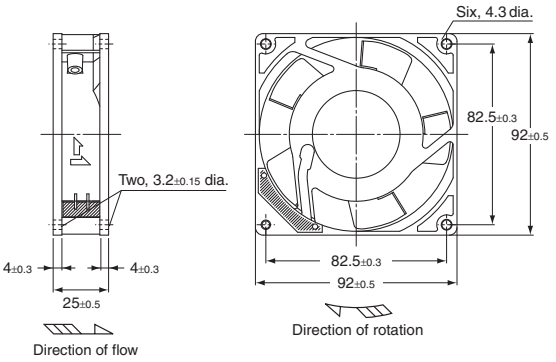

**R87F-A□A93LP**



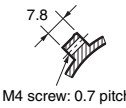

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

## Dimensions

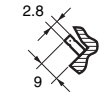
**(Unit: mm)**




**Screw hole for grounding**



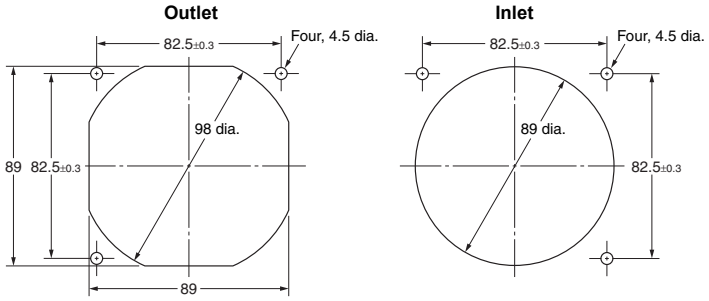

**Terminal shape**




Faston #110 terminal
(or equivalent)

### Panel Cutouts

Panel cutting reference dimensions (note 3 mounting holes)




## Options

| Name | Model | Page |
|---|---|---|
| Plug Cord | R87F-PC | 51 |
| Finger Guard | R87F-FG90 | 52 |
| Filter | R87F-FL90 | 53 |
| Set model | R87F-SET9025 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87F-A□A13 AC Axial Fans with Terminals (120 × 120 × t25 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

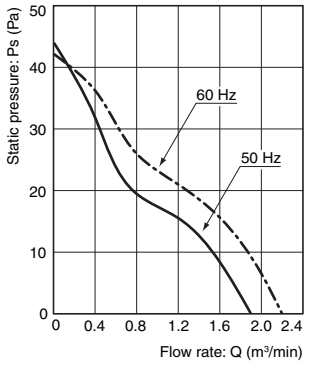
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87F-A1A13HP | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.180 | 0.150 | 14 | 12 | 2,400 | 2,800 | 1.9 | 2.2 | 44 | 42 | 39 | 43 |
| R87F-A3A13HP | 115 VAC | | | 0.160 | 0.130 | | | | | | | | | | |
| R87F-A4A13HP | 200 VAC | | | 0.090 | 0.075 | | | | | | | | | | |
| R87F-A6A13HP | 230 VAC | | | 0.080 | 0.070 | | | | | | | | | | |
| R87F-A1A13LP | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.140 | 0.120 | 12 | 10 | 1,700 | 2,000 | 1.3 | 1.5 | 20 | 24 | 32 | 34 |
| R87F-A3A13LP | 115 VAC | | | 0.130 | 0.110 | | | | | | | | | | |
| R87F-A4A13LP | 200 VAC | | | 0.080 | 0.060 | | | | | | | | | | |
| R87F-A6A13LP | 230 VAC | | | 0.060 | 0.050 | | | | | | | | | | |

### Characteristics

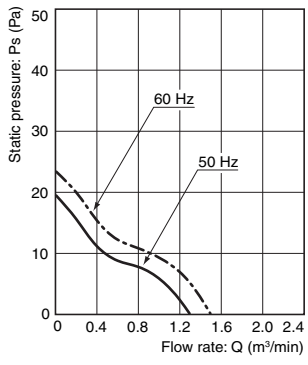
| | |
|---|---|
| **Motor type** | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | Terminals |
| **Insulation class** | IEC class B (130°C)<br>cULus class B (130°C) |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | –30 to 70°C (no icing) |
| **Ambient storage temperature** | –40 to 85°C (no icing) |
| **Ambient humidity** | 25% to 85% |
| **Protection** | Impedance protection |
| **Materials** | Frame: Die-cast aluminum<br>Blades: Glass polycarbonate |
| **Bearings** | Ball bearings |
| **Weight** | Approx. 350 g |
| **Compliant standards** | PSE, EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | cULus |

## Flow Rate and Static Pressure Characteristics (Reference Values)

**R87F-A□A13HP**



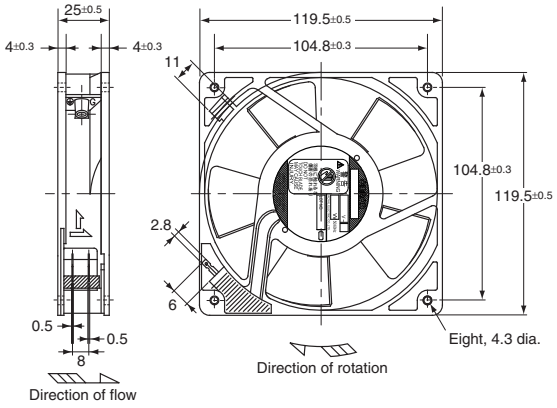

**R87F-A□A13LP**




**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

## Dimensions

**(Unit: mm)**



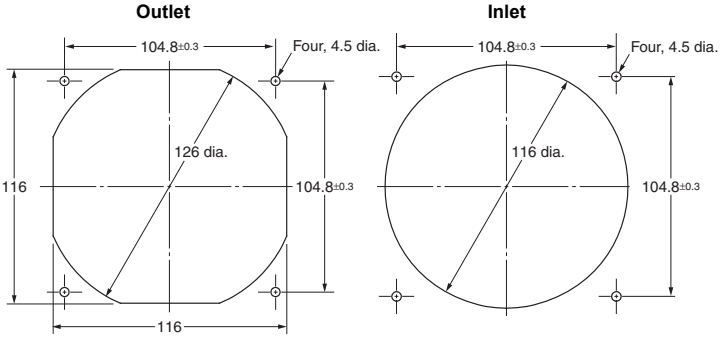

**Screw hole for grounding**


M4 screw: 0.7 pitch

**Terminal shape**


Faston #110 terminal
(or equivalent)

**Panel Cutouts**




## Options

| Name | Model | Page |
|---|---|---|
| Plug Cord | R87F-PC | 51 |
| Finger Guard | R87F-FG120 | 52 |
| Filter | R87F-FL120(S) | 53 |
| Set model | R87F-SET1225 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87F-A□A15 AC Axial Fans with Terminals (120 × 120 × t38 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

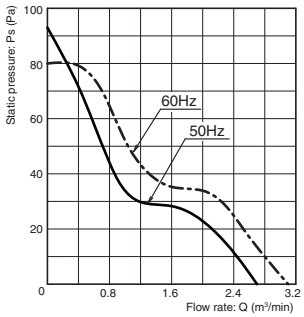
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87F-A1A15HP | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.230 | 0.200 | 15 | 14 | 2,750 | 3,200 | 2.7 | 3.1 | 93 | 80 | 42 | 46 |
| R87F-A3A15HP | 115 VAC | | | 0.190 | 0.170 | | | | | | | | | | |
| R87F-A4A15HP | 200 VAC | | | 0.110 | 0.100 | | | | | | | | | | |
| R87F-A6A15HP | 230 VAC | | | 0.090 | 0.080 | | | | | | | | | | |
| R87F-A1A15LP | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.170 | 0.150 | 11 | 10 | 2,100 | 2,250 | 2.0 | 2.1 | 44 | 44 | 36 | 38 |
| R87F-A3A15LP | 115 VAC | | | 0.140 | 0.120 | | | | | | | | | | |
| R87F-A4A15LP | 200 VAC | | | 0.080 | 0.070 | | | | | | | | | | |
| R87F-A6A15LP | 230 VAC | | | 0.070 | 0.060 | | | | | | | | | | |

### Characteristics

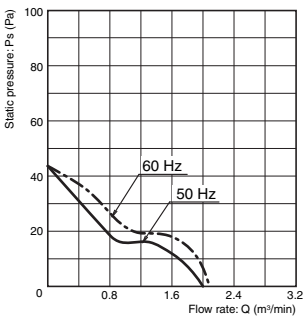
| | |
|---|---|
| **Motor type** | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | Terminals |
| **Insulation class** | IEC class B (130°C)<br>cULus class B (130°C) |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | –30 to 70°C (no icing) |
| **Ambient storage temperature** | –40 to 85°C (no icing) |
| **Ambient humidity** | 25% to 85% |
| **Protection** | Impedance protection |
| **Materials** | Frame: Die-cast aluminum<br>Blades: Glass polycarbonate |
| **Bearings** | Ball bearings |
| **Weight** | Approx. 540 g |
| **Compliant standards** | PSE, EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | cULus |

## Flow Rate and Static Pressure Characteristics (Reference Values)

**R87F-A□A15HP**



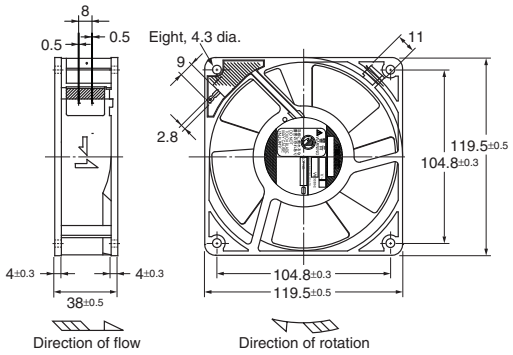

**R87F-A□A15LP**



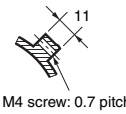

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

# Dimensions

**(Unit: mm)**



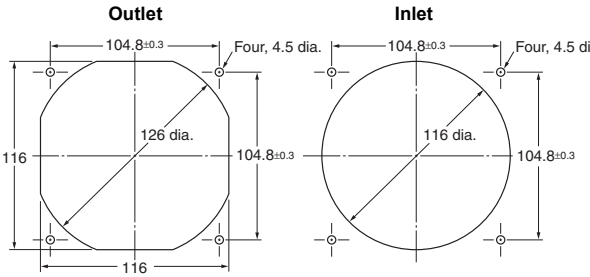

**Screw hole for grounding**




**Terminal shape**


Faston #110 terminals
(or equivalent)

**Panel Cutouts**




# Options

| Name | Model | Page |
|---|---|---|
| Plug Cord | R87F-PC | 51 |
| Finger Guard | R87F-FG120 | 52 |
| Filter | R87F-FL120(S) | 53 |
| Set model | R87F-SET1238 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87T-A□A83 AC Axial Fans with Lead Wires (80 × 80 × t25 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (*) indicates a nominal value.

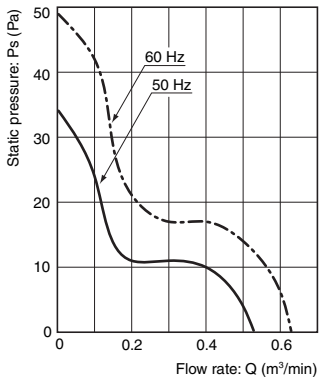
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A)* | | Rated input (W)* | | Rated rotational speed (r/min)* | | Maximum flow rate ($m^3$/min)* | | Maximum static pressure (Pa)* | | Noise (dB)* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87T-A1A83H | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.180 | 0.150 | 12 | 11 | 2,500 | 3,000 | 0.5 | 0.6 | 34.0 | 49.0 | 33 | 36 |
| R87T-A3A83H | 115 VAC | | | 0.150 | 0.130 | | | | | | | | | | |
| R87T-A4A83H | 200 VAC | | | 0.087 | 0.075 | | | | | | | | | | |
| R87T-A6A83H | 230 VAC | | | 0.075 | 0.065 | | | | | | | | | | |

### Characteristics

| | | |
|---|---|---|
| **Motor type** | | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | | Lead wires |
| **Insulation class** | | IEC class B (130°C)<br>UL class A (105°C) |
| **Insulation resistance** | | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | | –20 to 70°C (no icing) |
| **Ambient storage temperature** | | –40 to 85°C (no icing) |
| **Ambient humidity** | | 25% to 85% |
| **Protection** | | Impedance protection |
| **Materials** | **Frame** | Die-cast aluminum |
| | **Blades** | Steel plate (black coating) |
| **Bearings** | | Ball bearings |
| **Weight** | | Approx. 330 g |
| **Standards** | | EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | | UL |

## Flow Rate and Static Pressure Characteristics (Reference Values)

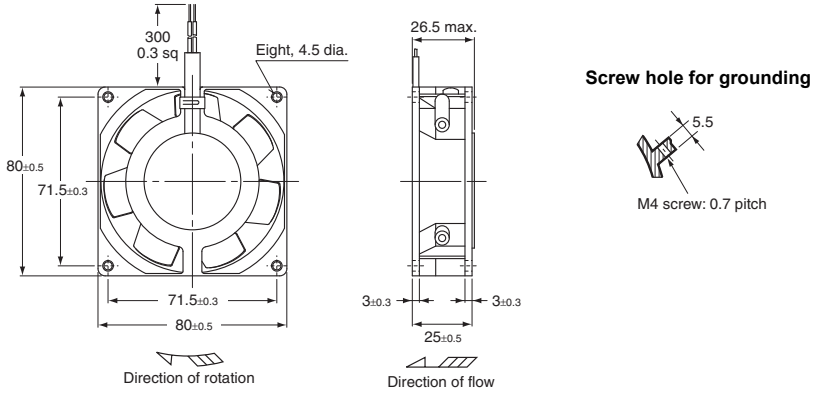
**R87T-A□A83H**



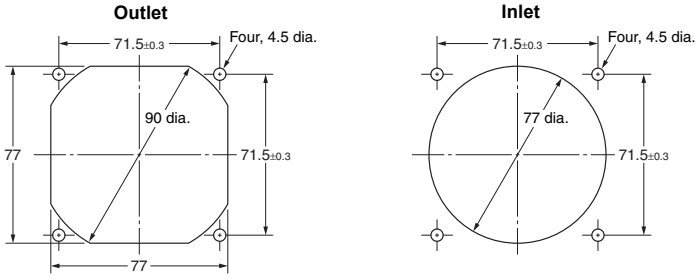

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

# Dimensions

**(Unit: mm)**




**Panel Cutouts**




# Options

| Name | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG80 | 52 |
| Filter | R87F-FL80 | 53 |
| Set model | R87F-SET8025 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87T-A□A85 AC Axial Fans with Lead Wires (80 × 80 × t38 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

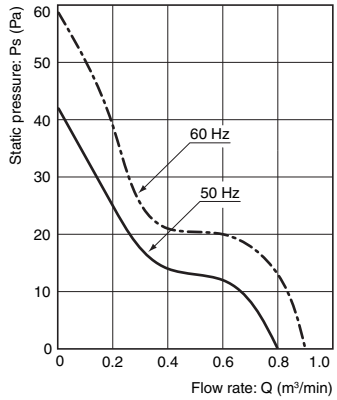
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87T-A1A85H | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.180 | 0.160 | 12 | 10 | 2,800 | 3,300 | 0.80 | 0.90 | 42 | 58 | 37 | 40 |
| R87T-A3A85H | 115 VAC | | | 0.155 | 0.135 | | | | | | | | | | |
| R87T-A4A85H | 200 VAC | | | 0.085 | 0.075 | | | | | | | | | | |
| R87T-A6A85H | 230 VAC | | | 0.080 | 0.070 | | | | | | | | | | |

### Characteristics

| | |
|---|---|
| **Motor type** | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | Lead wires |
| **Insulation class** | IEC class B (130°C)<br>UL class A (105°C) |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | –20 to 70°C (no icing) |
| **Ambient storage temperature** | –40 to 85°C (no icing) |
| **Ambient humidity** | 25% to 85% |
| **Protection** | Impedance protection |
| **Materials** | Frame: Die-cast aluminum<br>Blades: Steel plate (black coating) |
| **Bearings** | Ball bearings |
| **Weight** | Approx. 440 g |
| **Compliant standards** | EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | UL |

## Flow Rate and Static Pressure Characteristics (Reference Values)

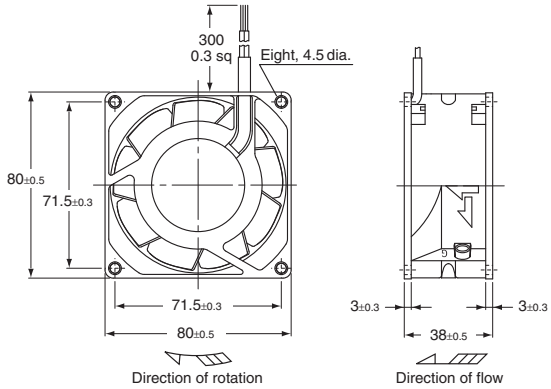
**R87T-A□A85H**



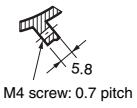

**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

## Dimensions

**(Unit: mm)**

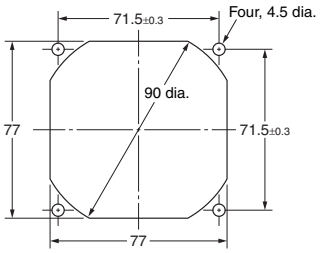



**Screw hole for grounding**

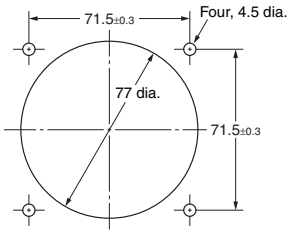



**Panel Cutouts**

**Outlet**




**Inlet**




## Options

| Name | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG80 | 52 |
| Filter | R87F-FL80 | 53 |
| Set model | R87F-SET8038 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87T-A□A15 AC Axial Fans with Terminals (120 × 120 × t38 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

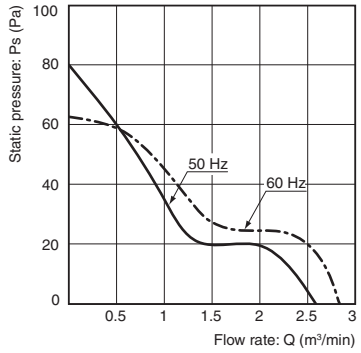
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87T-A1A15HP | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.240 | 0.210 | 17 | 16 | 2,700 | 3,100 | 2.6 | 2.9 | 80 | 62 | 42 | 46 |
| R87T-A3A15HP | 115 VAC | | | 0.210 | 0.180 | | | | | | | | | | |
| R87T-A4A15HP | 200 VAC | | | 0.120 | 0.110 | | | | | | | | | | |
| R87T-A6A15HP | 230 VAC | | | 0.110 | 0.090 | | | | | | | | | | |

### Characteristics

| | |
|---|---|
| **Motor type** | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | Terminals |
| **Insulation class** | IEC class B (130°C)<br>cULus class B(130°C) |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | –20 to 70°C (no icing) |
| **Ambient storage temperature** | –40 to 85°C (no icing) |
| **Ambient humidity** | 25% to 85% |
| **Protection** | Impedance protection |
| **Materials** | Frame: Die-cast aluminum<br>Blades: Steel plate (black coating) |
| **Bearings** | Ball bearings |
| **Weight** | Approx. 540 g |
| **Compliant standards** | PSE, EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | cULus |

## Flow Rate and Static Pressure Characteristics (Reference Values)

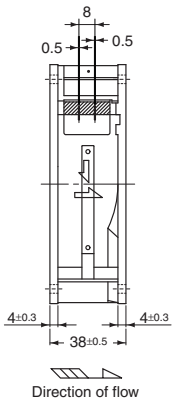
**R87T-A□A15HP**

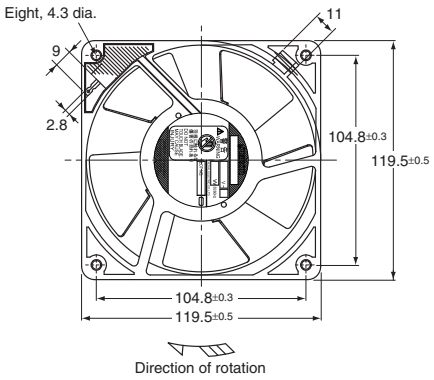



**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

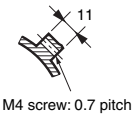
# Dimensions

**(Unit: mm)**




**Screw hole for grounding**

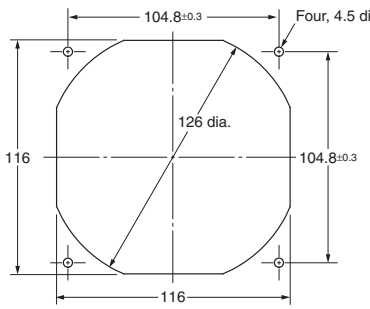



**Terminal shape**

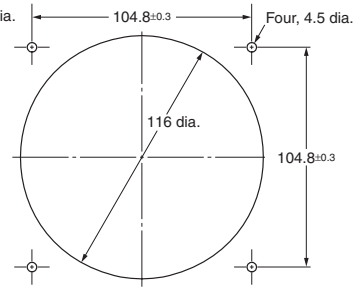

Faston #110 terminal
(or equivalent)

**Panel Cutouts**

**Outlet**




**Inlet**




# Options

| Name | Model | Page |
|---|---|---|
| Plug Cord | R87F-PC | 51 |
| Finger Guard | R87F-FG120 | 52 |
| Filter | R87F-FL120(S) | 53 |
| Set model | R87F-SET1238 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87T-A□A05 AC Axial Fans with Lead Wires (150-dia. × t38 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

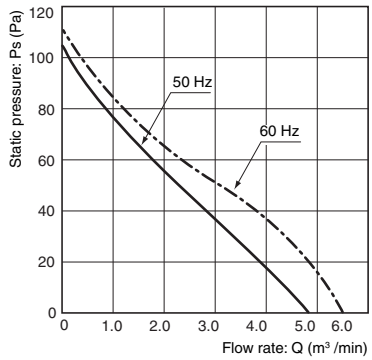
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87T-A1A05H | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.550 | 0.460 | 50 | 48 | 2,650 | 3,100 | 4.8 | 5.7 | 104 | 107 | 56 | 58 |
| R87T-A3A05H | 115 VAC | | | 0.470 | 0.390 | | | | | | | | | | |
| R87T-A4A05H | 200 VAC | | | 0.260 | 0.220 | | | | | | | | | | |
| R87T-A6A05H | 230 VAC | | | 0.220 | 0.190 | | | | | | | | | | |

### Characteristics

| | |
|---|---|
| **Motor type** | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | Lead wires |
| **Insulation class** | IEC class B (130°C)<br>UL class A (105°C) |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | –20 to 70°C (no icing) |
| **Ambient storage temperature** | –40 to 85°C (no icing) |
| **Ambient humidity** | 25% to 85% |
| **Protection** | Thermal protection |
| **Materials** | Frame: Die-cast aluminum<br>Blades: Steel plate (mat black baked coating) |
| **Bearings** | Ball bearings |
| **Weight** | Approx. 840 g |
| **Compliant standards** | EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | UL |

## Flow Rate and Static Pressure Characteristics (Reference Value)

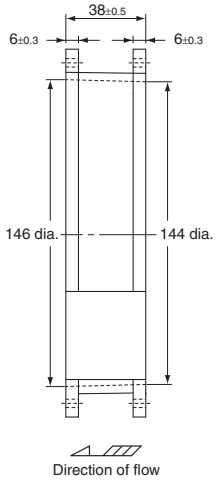
**R87T-A□A05H**

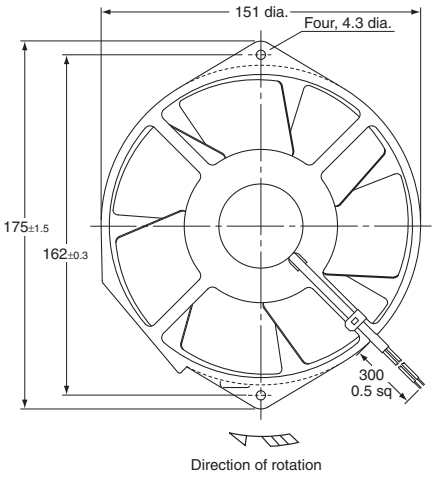



**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

# Dimensions

**(Unit: mm)**

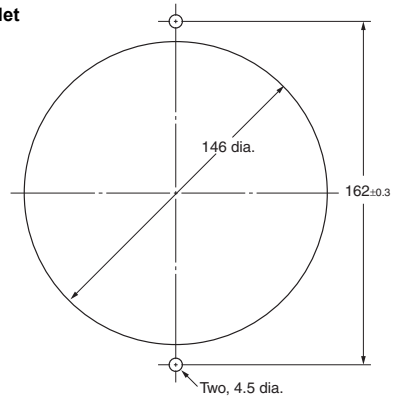



**Ground Screw Section**


**Panel Cutouts**

**Outlet and Inlet**




# Options

| Name | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG150 | 52 |
| Set model | R87F-SET1538 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87T-A□A07 AC Axial Fans with Lead Wires (150-dia. × t55 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

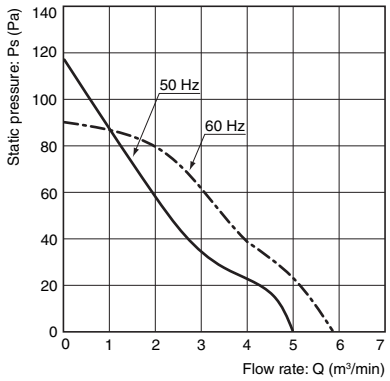
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87T-A1A07H | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.480 | 0.420 | 43 | 40 | 2,800 | 3,250 | 5.0 | 5.8 | 118 | 88 | 52 | 56 |
| R87T-A3A07H | 115 VAC | | | 0.420 | 0.370 | | | | | | | | | | |
| R87T-A4A07H | 200 VAC | | | 0.240 | 0.210 | | | | | | | | | | |
| R87T-A6A07H | 230 VAC | | | 0.210 | 0.190 | | | | | | | | | | |

### Characteristics

| | |
|---|---|
| **Motor type** | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | Lead wires |
| **Insulation class** | IEC class B (130°C)<br>UL class A (105°C) |
| **Insulation resistance** | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Ambient operating temperature** | –20 to 70°C (no icing) |
| **Ambient storage temperature** | –40 to 85°C (no icing) |
| **Ambient humidity** | 25% to 85% |
| **Protection** | Thermal protection |
| **Materials** | Frame: Die-cast aluminum<br>Blades: Steel plate (black coating) |
| **Bearings** | Ball bearings |
| **Weight** | Approx. 1,200 g |
| **Compliant standards** | EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | UL |

## Flow Rate and Static Pressure Characteristics (Reference Value)

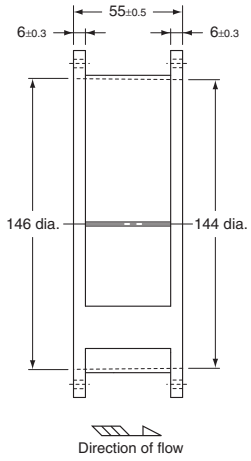
**R87T-A□A07H**

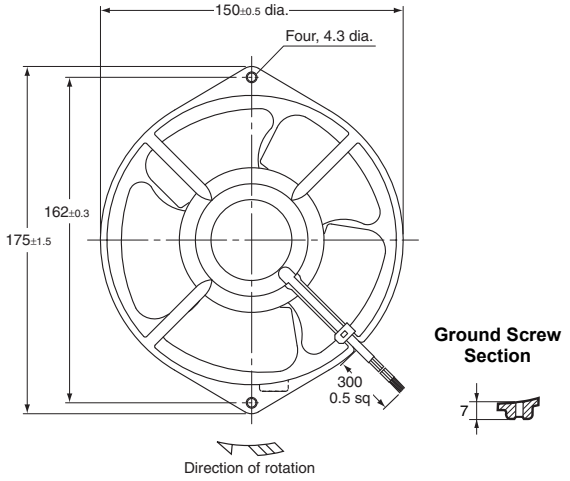



**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

## Dimensions

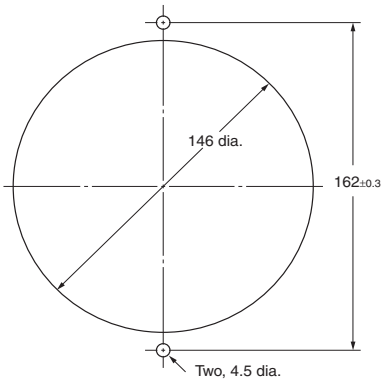
**(Unit: mm)**




**Panel Cutouts**

**Outlet and Inlet**




## Options

| Name | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG150 | 52 |
| Set model | R87F-SET1555 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87T-A□A15H-WR Water-resistant AC Axial Fans with Lead Wires (120 × 120 × t38 mm)



## Specifications

### Ratings and Ordering Information

**Note:** An asterisk (✻) indicates a nominal value.

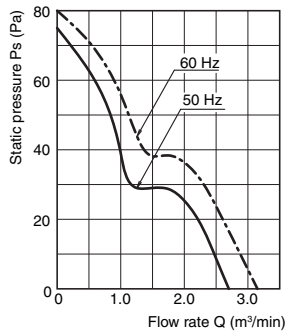
| Item / Model | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated current (A) ✻ | | Rated input (W) ✻ | | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz |
| R87T-A1A15H-WR | 100 VAC | 85% to 110% rated voltage | 50/60 | 0.350 | 0.280 | 22 | 20 | 2,550 | 2,900 | 2.7 | 3.2 | 75.0 | 80.0 | 42 | 46 |
| R87T-A3A15H-WR | 115 VAC | | | 0.300 | 0.240 | | | | | | | | | | |
| R87T-A4A15H-WR | 200 VAC | | | 0.170 | 0.135 | | | | | | | | | | |
| R87T-A6A15H-WR | 200 to 230 VAC | | | 0.145 | 0.115 | 15 to 22 | | | | | | | | | |

### Characteristics

| | | |
|---|---|---|
| **Motor type** | | Single-phase shading coil induction motor (2-pole, open type) |
| **Terminal type** | | Lead wires |
| **Insulation class** | | IEC class B (130°C)<br>UL class A (105°C)<br>CSA class A (105°C) |
| **Insulation resistance** | | 100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts. |
| **Insulation withstand voltage** | | 2,000 VAC (1 minute) between all power supply connections and uncharged metal parts. |
| **Degree of protection** | | IP X7 |
| **Ambient operating temperature** | | –40 to 70°C (no icing) |
| **Ambient storage temperature** | | –40 to 85°C (no icing) |
| **Ambient humidity** | | 95% max. |
| **Protection** | | Impedance protection |
| **Materials** | **Frame** | Die-cast aluminum<br>Black coating |
| | **Blades** | Zinc die-cast |
| **Bearings** | | Ball bearings |
| **Weight** | | Approx. 650 g |
| **Standards** | | EN/IEC 60335 (CE marking compliant) |
| **Certified standards** | | cUL |

## Flow Rate and Static Pressure Characteristics (Reference Values)

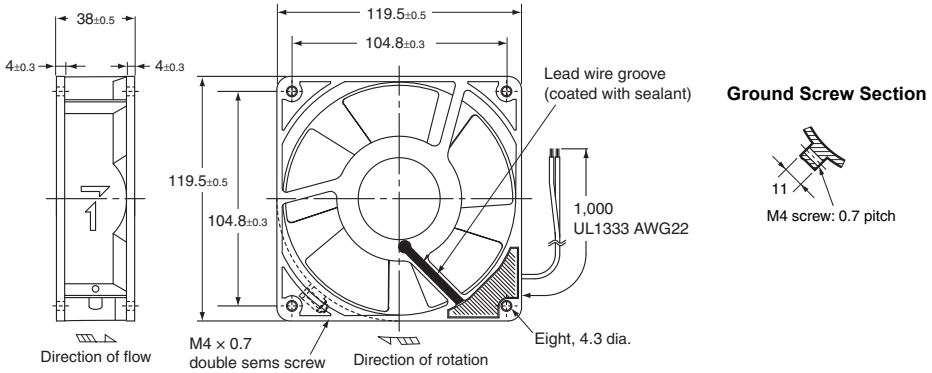
**R87T-A□A15H-WR**




**Note:** For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

## Dimensions

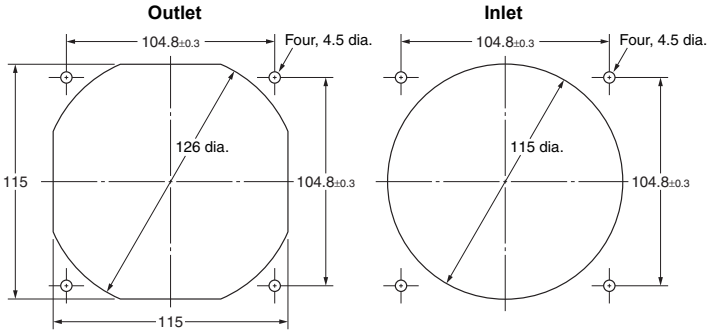
**(Unit: mm)**




**Ground Screw Section**




**Panel Cutouts**




## Options

| Name | Model | Page |
|---|---|---|
| Finger Guard | R87F-FG120 | 52 |
| Filter | R87F-FL120(S) | 53 |
| Set model | R87F-SET1238 | 52 |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

## Ratings and Ordering Information

| Cable length | Model | Weight |
|---|---|---|
| 1 m | **R89F-PC** | Approx. 38 g |
| 2 m | **R89F-PC-20** | Approx. 74 g |

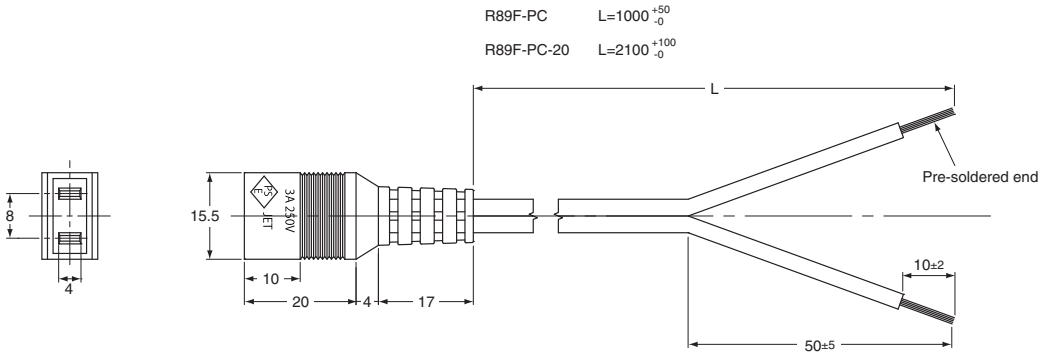
**R89F-PC** Rating: 3 A, 250 V

**UL-certified / Electrical Appliances and Materials Safety Act-compliant**

## Dimensions

**(Unit: mm)**

**R89F-PC**




**Note:** This Plug Cord is used for Axial Fans with terminals.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

# R87F-PC Plug Cord

## Ratings and Ordering Information

| Cord length | Model number | Weight (g) |
|---|---|---|
| 1 m | R87F-PC | 39 |
| 2 m | R87F-PC-20 | 69 |

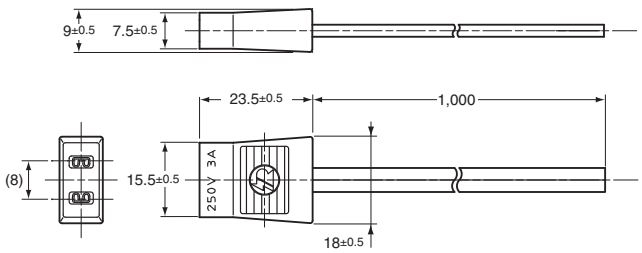
**R87F-PC** Rating: 250 VAC, 3 A

**UL-certified Plug Cord**

## Dimensions

**(Unit: mm)**

**R87F-PC**




Connectable to Faston #110 terminals (or equivalent).

**Note:** This Plug Cord is used for Axial Fans with terminals.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

# R87F-FG Finger Guards



## Ratings and Ordering Information

| Size | Model number | Weight (g) |
|---|---|---|
| 150 dia. | R87F-FG150 | Approx. 58 |
| 120 × 120 | R87F-FG120 | Approx. 45 |
| 92 × 92 | R87F-FG90 | Approx. 25 |
| 80 × 80 | R87F-FG80 | Approx. 20 |

## Applicable Axial Fans

| Axial Fans | Set model | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Model | Contents | | | | | | |
| | | Finger Guard | | | Hexagonal nuts | | Screws | |
| | | size | Qty | Model | size | Qty | size | Qty |
| R87F-A□A83 | R87F-SET8025 | 80 x 80 | 1 | R87F-FG80 | M4 | 4 | M4 x L38 | 4 |
| R87T-A□A83 | | | | | | | | |
| R87F-A□A85 | R87F-SET8038 | 80 x 80 | 1 | R87F-FG80 | M4 | 4 | M4 x L50 | 4 |
| R87T-A□A85 | | | | | | | | |
| R87F-A□A93 | R87F-SET9025 | 92 x 92 | 1 | R87F-FG90 | M4 | 3 | M4 x L38 | 3 |
| | | | | | M3 | 1 | M3 x L38 | 1 |
| R87F-A□A13 | R87F-SET1225 | 120 x 120 | 1 | R87F-FG120 | M4 | 4 | M4 x L38 | 4 |
| R87F-A□A15 | R87F-SET1238 | 120 x 120 | 1 | R87F-FG120 | M4 | 4 | M4 x L50 | 4 |
| R87T-A□A15 | | | | | | | | |
| R87T-A□A15H-WR | | | | | | | | |
| R87T-A□A05 | R87F-SET1538 | 150 dia. | 1 | R87F-FG150 | M4 | 2 | M4 x L50 | 2 |
| R87T-A□A07 | R87F-SET1555 | 150 dia. | 1 | R87F-FG150 | M4 | 2 | M4 x L70 | 2 |

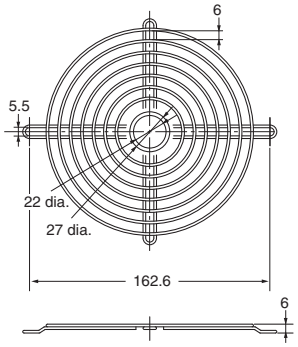
**Note:** Finger Guards reduce the flow rate by approximately 2% to 5%.

## Dimensions

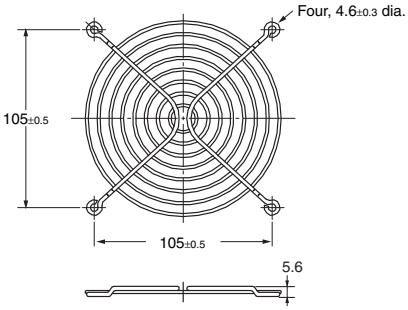
**(Unit: mm)**

Material: steel, Joints: spot welded, Surface: nickel-chrome plated

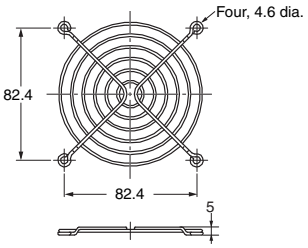
**R87F-FG150**



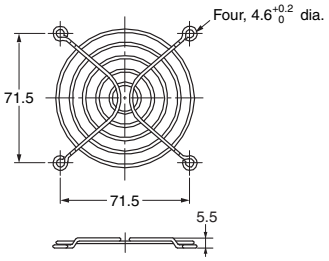

**R87F-FG120**




**R87F-FG90**




**R87F-FG80**




ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

# R87F-FL Filters

## Ratings and Ordering Information

### Filter

| Size | Model number | Weight (g) |
|---|---|---|
| 120 × 120 | R87F-FL120 | Approx. 43 |
| 92 × 92 | R87F-FL90 | Approx. 30 |
| 80 × 80 | R87F-FL80 | Approx. 21 |
| 120 × 120 | R87F-FL120S | Approx. 19 |

**Note:** The filter contains one medium.

### Media

| Size | Model number |
|---|---|
| 120 × 120 | R87F-FL120-M120 |
| 92 × 92 | R87F-FL90-M90 |
| 80 × 80 | R87F-FL80-M80 |

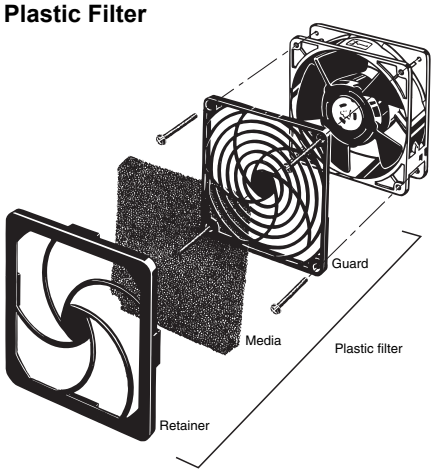
**Note:** Use the following model number to order the Media only.
R87F-FL□-M□ (□: 120, 90, or 80)
(One set containing five Media, weight: 5 g max.)

## Applicable Axial Fans

| AC Axial Fan | | Filter | |
|---|---|---|---|
| Size | Model | Plastic | Aluminum |
| 150 dia. | R87T-A□A0 Series | --- | --- |
| 120 × 120 | R89F-DS1225□ series | R87F-FL120 | R87F-FL120S |
| | R89F-DS1238□ series | | |
| | R89F-MS1238HP | | |
| | R87F-A□A1 Series<br>R87T-A□A1 Series | | |
| 92 × 92 | R87F-A□A9 Series | R87F-FL90 | --- |
| 80 × 80 | R87F-A□A8 Series<br>R87T-A□A8 Series | R87F-FL80 | --- |

**Note:** Filters reduce the flow rate by approximately 20% to 40%. Ensure that there is no clogging.

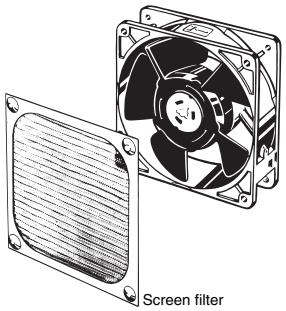
**R87F-FL□**
**Plastic Filter**




**Mounting Method**

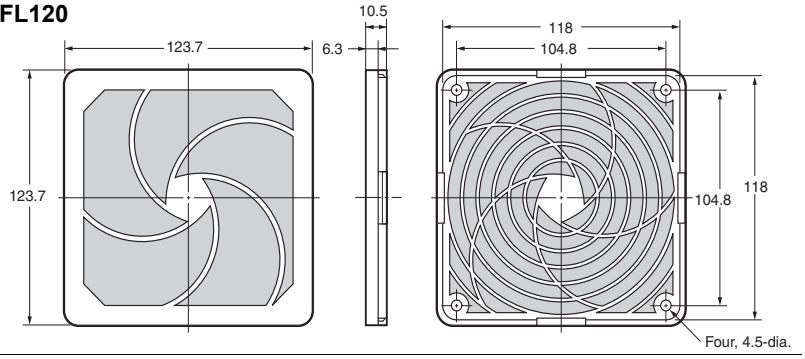
1. Attach the guard to the Fan using the mounting bolts. (There are no mounting bolts provided with the Plastic Filter.)
2. With the media held between the retainer and the guard, hook the retainer to the guard. (The Media and retainer can be one-touch mounted/dismounted.)

**R87F-FL120S**
**Screen Filter**

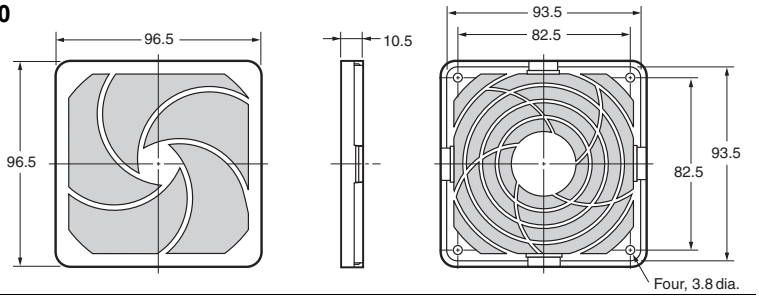



## Dimensions (Unit: mm)

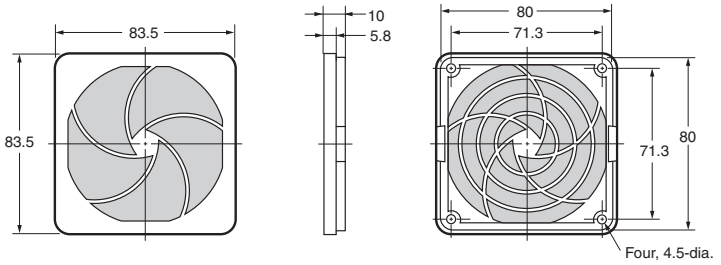
**R87F-FL120**



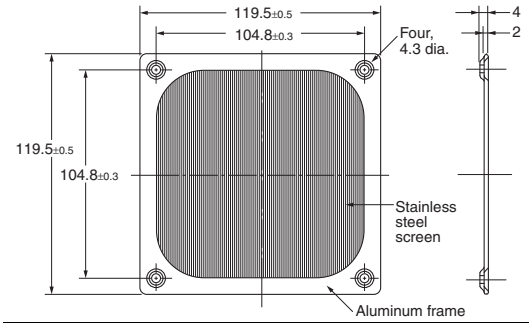

**R87F-FL90**




**R87F-FL80**




**R87F-FL120S**




**Note: 1.** The Screen Filter is made using aluminium and has an EMI/RFI shielding effect.
**2.** When mounting the Screen Filter, make sure that it does not come in contact with the fan blades.
**3.** The screen is a 30 × 30 aluminum mesh.
(30 aluminum wires per inch)

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

## Comprehensive Lineup of Single, Double, and Triple Axial Fans with Easy One-step Mounting

- Mounts in a square cutout and conceals the hole-cut to simplify installation work.
- Cover can be set to open either upward or downward for convenience in confined spaces.
- Optional Replacement Filter and Vent Attachment.
- The lineup includes Single, Double, and Triple Box Fans with eight models with plastic blades and four models with metal blades.

⚠ Be sure to read the *Safety Precautions for All Axial Fans* on page 12.

## Model Number Structure

### Model Number Legend for subassemblies

**Note:** The tables show only how to read product markings. They do not indicate which products are available. Refer to *Ratings and Ordering Information* when ordering.

**Attachment**
**R87B-N□**
1

**Axial Fan**
**R87□-□A15□P**
2 3 4 5 6 7 8

**Plug Cord**
**R87-PC-□**
9 10

**Option set**
**R87F-SET1238**
11

| Number | Category | Type | Details |
|---|---|---|---|
| 1 | Attachment | None<br>2<br>3 | Single box<br>Double box<br>Triple box |
| 2 | Fan material | F<br>T | Plastic blades<br>Metal blades |
| 3 | Power supply Voltage (VAC) | A1<br>A3<br>A4<br>A6 | 100 VAC<br>115 VAC<br>200 VAC<br>230 VAC |
| 4 | Frame material | A | Die-cast aluminum |
| 5 | Frame size | 1 | 120 × 120 |
| 6 | Frame thickness | 5 | 38 mm |
| 7 | Rotational speed | H<br>L | High<br>Low |
| 8 | Terminal type | P | Terminals |
| 9 | Standards | PC | UL-certified |
| 10 | Cable length | None<br>20 | 1 m<br>2 m |
| 11 | Contents | 1238 | Finger guard 120 × 120<br>Hexagonal nuts 4 pcs<br>Screws M4 × L50 4 pcs |

# R87B
# Ratings and Ordering Information for subassemblies

Order Axial fan, attachment, plug cord, and option set respectively.
e.g. 2 pieces of axial fans, plug cords, and option sets in each are required when you order a R87B-2N.

## Attachment

| Type | Number of fans | Weight | Model | Accessories |
|---|---|---|---|---|
| Attachment | For 1 | Approx. 570 g | **R87B-N** | Filter<br>Finger guard<br>Mounting screws |
| | For 2 | Approx. 1,100 g | **R87B-N2** | |
| | For 3 | Approx. 1,700 g | **R87B-N3** | |

## Axial Fan

| Fan material | Power Supply Voltage | Rotational speed | Model | Page |
|---|---|---|---|---|
| Plastic blade | 100 VAC | High | **R87F-A1A15HP** | 36 |
| | 115 VAC | | **R87F-A3A15HP** | |
| | 200 VAC | | **R87F-A4A15HP** | |
| | 230 VAC | | **R87F-A6A15HP** | |
| Metal blade | 100 VAC | | **R87T-A1A15HP** | 42 |
| | 115 VAC | | **R87T-A3A15HP** | |
| | 200 VAC | | **R87T-A4A15HP** | |
| | 230 VAC | | **R87T-A6A15HP** | |
| Plastic blade | 100 VAC | Low | **R87F-A1A15LP** | 36 |
| | 115 VAC | | **R87F-A3A15LP** | |
| | 200 VAC | | **R87F-A4A15LP** | |
| | 230 VAC | | **R87F-A6A15LP** | |

**Note:** Refer to each page for the details of the models.

## Plug Cord

| Rating | Standard | Cord length | Weight | Model |
|---|---|---|---|---|
| 250 VAC, 3 A | UL-certified | 1 m | Approx. 37 g | **R87F-PC** |
| | | 2 m | Approx. 70 g | **R87F-PC-20** |

## Option set

| Set model | | | | | | | Model | Page |
|---|---|---|---|---|---|---|---|---|
| Finger guard | | | Hexagonal nuts | | Screws | | | |
| Size | Model | Qty | Size | Qty | Size | Qty | | |
| 120 × 120 | **R87F-FG120** | 1 | M4 | 4 | M4 × L50 | 4 | **R87F-SET1238** | 52 |

# Characteristics

| Item | AC axial fan model | R87F/R87B-F for set model | R87T |
|---|---|---|---|
| **Motor type** | | Single-phase shading coil induction motor (2-pole, open type) | |
| **Terminal type** | | Terminals | |
| **Insulation class** | | IEC class B (130°C)<br>UL class A (105°C)<br>CSA class A (105°C)<br>cULus class B (130°C) | IEC class B (130°C)<br>UL class A (105°C)<br>cULus class B (130°C) |
| **Insulation resistance** | | 100 MΩ min. (at 500 VDC)<br>Between all power supply connection parts and non-current carrying metal parts | |
| **Dielectric strength** | | 2,000 VAC for 1 min<br>Between all power supply connection parts and non-current carrying metal parts | |
| **Ambient operating temperature** | | –30 to 70°C (with no icing) | –20 to 70°C (with no icing) |
| **Storage temperature** | | –40 to 85°C (with no icing) | |
| **Ambient humidity** | | 25% to 85% | |
| **Protection** | | Impedance protection | |
| **Materials** | **Frame** | Die-cast aluminum | |
| | **Blades** | Glass polycarbonate | Steel plate (black coating) |
| **Bearings** | | Ball bearings | |
| **Compliant standards*** | | PSE, EN/IEC 60335 (CE self-declaration) | |
| **Certified standards*** | | cULus | |

**Note:** The rated current is the total for all fans.
✻ The compliant standards and certified standards apply to the listed Axial Fans.

# Model Number Structure

## Model Number Legend for set model

**R87B-F□□A15HPF□□**
**1 2 3 4 5**

### Attachment
**R87B-N□**
**5**

### Options and Accessories
**R87B-P□□□**
**1 6 7**

| Number | Category | Symbol | Meaning of symbol |
|---|---|---|---|
| 1 | Fan (blade material) | F | R87F Axial Fan (with plastic blades) |
| | Optional parts | P | Options and accessories |
| 2 | Power supply classification | A1<br>A4 | 100 VAC<br>200 VAC |
| 3 | Speed classification | H | High speed |
| 4 | Airflow direction ✻ | None<br>R | In<br>Out |
| 5 | Number of fans | None<br>2 | 1<br>2 |
| 6 | Part type | F | Filter |
| 7 | Reference number | 01 | --- |

**Note:** These tables show only how to read model numbers.
They do not indicate which products are available.
Refer to *Ratings and Ordering Information* when placing an order.
✻"In" is the direction of external air flowing in.
"Out" is the direction of internal air flowing out.

# Ratings and Ordering Information for set model

### Airflow Direction: In

| Item / Model | Number of fans | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | |
| **R87B-FA1A15HPF** | 1 | 100 VAC | 85% to 110% rated voltage | 50/60 | 2,700 | 3,100 | 1.3 | 1.5 | 86 | 85 | 49 | 52 | Approx. 1,120 g |
| **R87B-FA4A15HPF** | | 200 VAC | | | | | | | | | | | |
| **R87B-FA1A15HPF2** | 2 | 100 VAC | 85% to 110% rated voltage | 50/60 | 2,700 | 3,100 | 2.6 | 3.0 | 82 | 45 | 55 | 56 | Approx. 1,800 g |
| **R87B-FA4A15HPF2** | | 200 VAC | | | | | | | | | | | |

### Airflow Direction: Out

| Item / Model | Number of fans | Rated voltage (V) | Permitted voltage fluctuation range (%) | Frequency (Hz) | Rated rotational speed (r/min) ✻ | | Maximum flow rate ($m^3$/min) ✻ | | Maximum static pressure (Pa) ✻ | | Noise (dB) ✻ | | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | 50 Hz | 60 Hz | |
| **R87B-FA1A15HPFR** | 1 | 100 VAC | 85% to 110% rated voltage | 50/60 | 2,700 | 3,100 | 1.3 | 1.5 | 86 | 85 | 49 | 52 | Approx. 1,120 g |
| **R87B-FA4A15HPFR** | | 200 VAC | | | | | | | | | | | |
| **R87B-FA1A15HPFR2** | 2 | 100 VAC | 85% to 110% rated voltage | 50/60 | 2,700 | 3,100 | 2.6 | 3.0 | 82 | 45 | 55 | 56 | Approx. 1,800 g |
| **R87B-FA4A15HPFR2** | | 200 VAC | | | | | | | | | | | |

**Note:** An asterisk (✻) indicates a nominal value.
- The data in this table comes from measurements that were taken with the filter and cover attached.

# Characteristics

The characteristics of the set models are the same as the one of subassemblies. Refer to the Characteristics on the page 56.

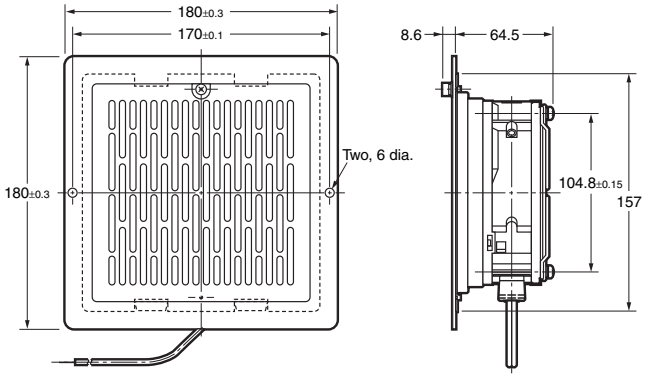
# Safety Precautions

Refer to the *Safety Precautions for All Axial Fans* on page 12 to 14.

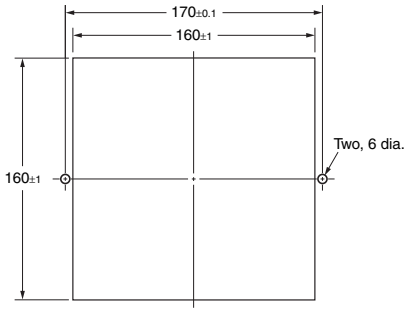
# R87B
# Dimensions

(Unit: mm)

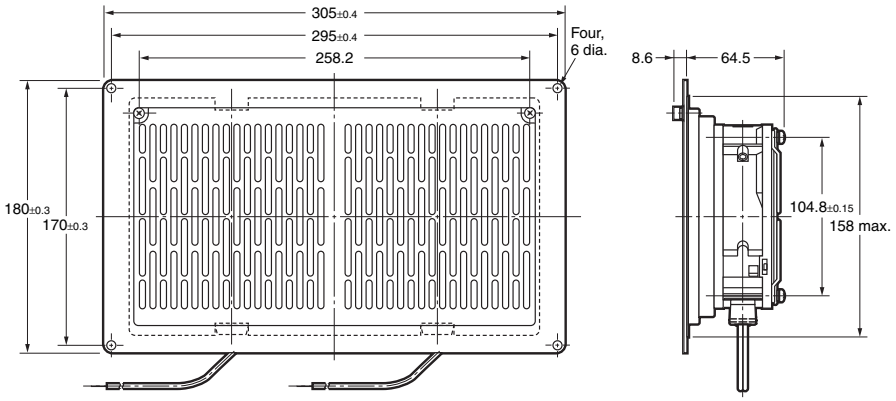
## Single Box Fan



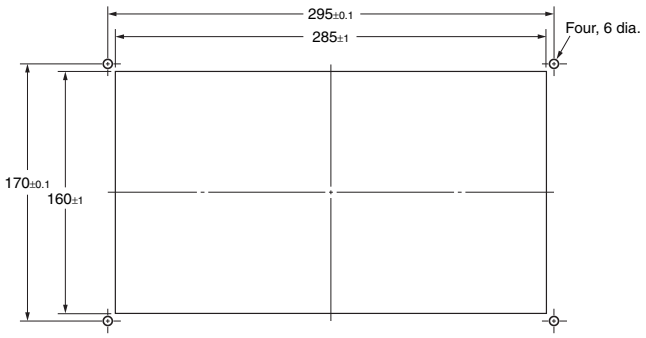

### Panel Cutout Dimensions




## Double Box Fan



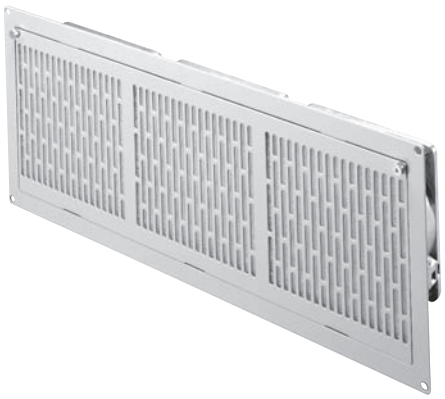

### Panel Cutout Dimensions

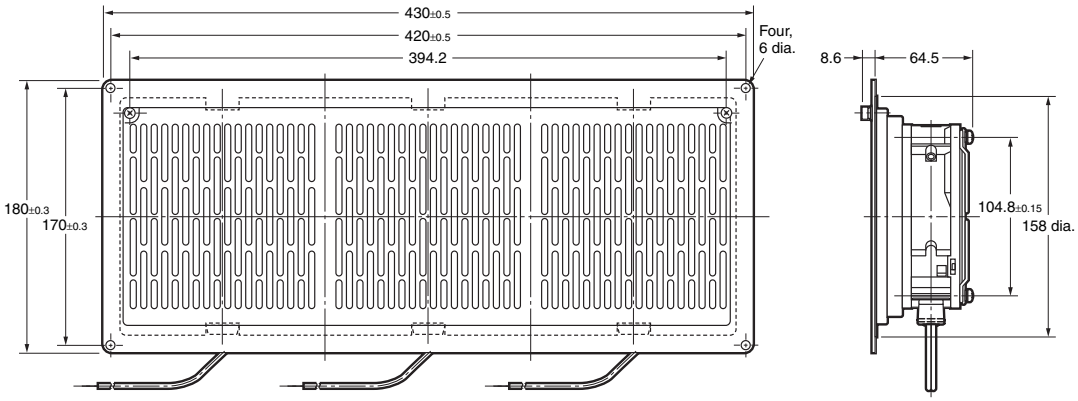



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

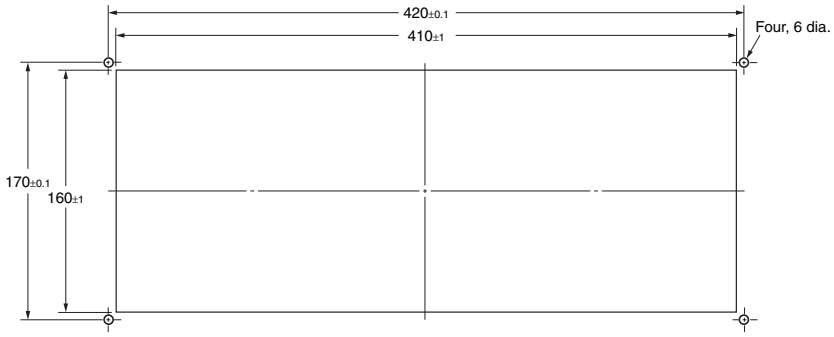
In the interest of product improvement, specifications are subject to change without notice.

**Triple Box Fan**






**Panel Cutout Dimensions**




ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

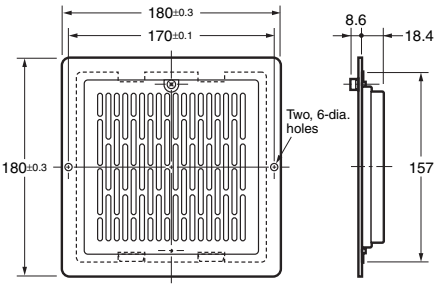
In the interest of product improvement, specifications are subject to change without notice.

# R87B-N□/R87B-PF Optional Parts

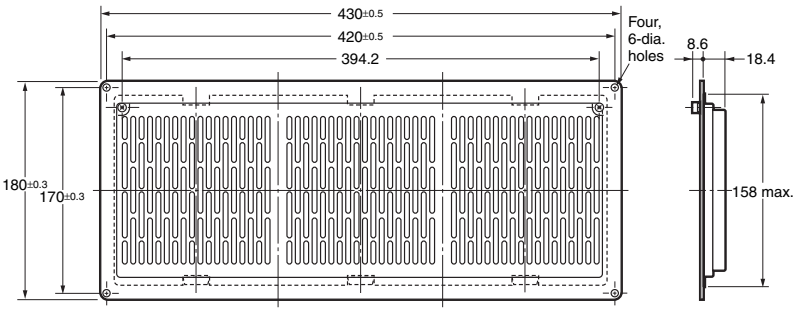


## R87B-N□ (Attachment)

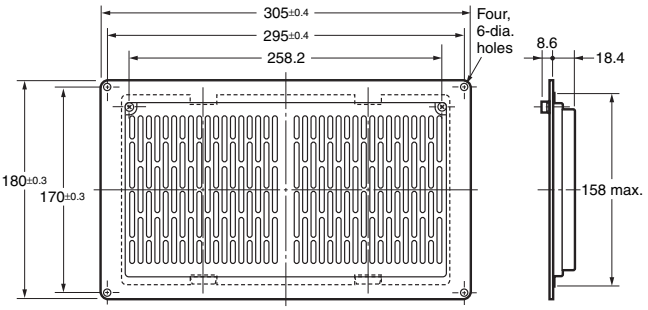
### Single Box




### Triple Box




### Double Box

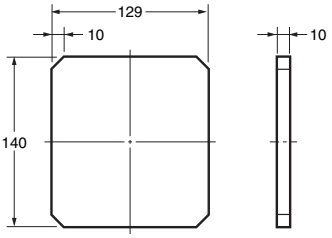



### Ratings and Ordering Information

| Model Item | Type | Weight |
|---|---|---|
| **R87B-N** | Single | Approx. 570 g |
| **R87B-N2** | Double | Approx. 1,100 g |
| **R87B-N3** | Triple | Approx. 1,700 g |

**Note:** The panel cut-out dimensions are the same as those for the Box Fan.

## R87B-PF01 (Replacement Filter)




### Ratings and Ordering Information

| Model Item | Qty. | Weight (grams per filter) |
|---|---|---|
| **R87B-PF01** | 2 | 6 |

### Filter Performance

| Heat resistance (°C) | Filtration wind velocity (m/s) | Pressure drop (Pa) | | Dust removal (%) | Dust suction amount (g/mm²) |
|---|---|---|---|---|---|
| | | Initial | Final | | |
| 100 | 2.5 | 49 | 70 | 70 min. | 300 |

- Pay careful attention to clogging in the filter. A clogged filter will prevent the Fan from providing a cooling effect.

### Replacing the Filter

1. Turn OFF the power, wait approximately one minute, and then open the cover. Remove the filter, replace it with a new filter, close the cover, and then firmly tighten the handle screw. This completes the filter replacement.
2. As a general guide to the replacement frequency, check the color of the filter regularly and replace it when the color shows a noticeable change.
3. It is recommended that the filter be replaced soon after the color changes noticeably in order to maintain the Fan's performance. (Replacement Filter: R87B-PF01)

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

## Accessories

| Model / Item | Mounting bolts (M4) | Hexagonal nuts (M4) | Plain washers | Spring washers | Cable with plug | Finger Guard (See note.) | Filter (See note.) |
|---|---|---|---|---|---|---|---|
| R87B-FA□A15HPF(R) (Single, with fan) | 2 | 2 | 4 | 2 | 1 | 2 | 1 |
| R87B-FA□A15HPF(R)2 (Double, with fan) | 4 | 4 | 8 | 4 | 2 | 4 | 2 |
| R87B-N (Single, without fan) | 2 | 2 | 4 | 2 | None | 1 | 1 |
| R87B-N2 (Double, without fan) | 4 | 4 | 8 | 4 | None | 2 | 2 |
| R87B-N3 (Triple, without fan) | 4 | 4 | 8 | 4 | None | 3 | 3 |

**Note:** The Finger Guard and Filter are to be assembled into the Box Fan.

MEMO

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