OMRON

Axial Fans Series Catalog

OMRON's rich and multiple lineup of axial fans

For less design effort

NEW DC Axial Fans R89F-DS



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

NEW 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 Plan drawing Evaluation tests	Reapplication for standards certification

100,115, 200, or 230 VAC

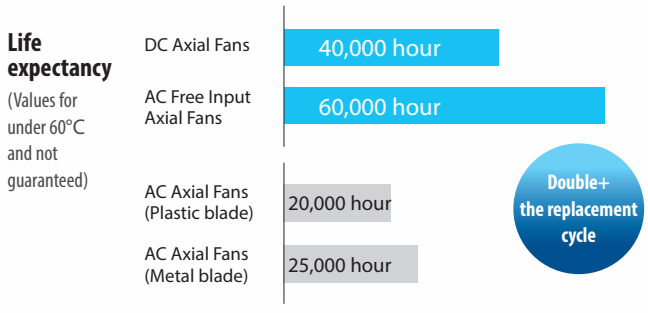
DC Axial Fans / AC Free Input Axial Fans

Reduce design and standards certification application efforts by unifying power specifications

Can be single common model

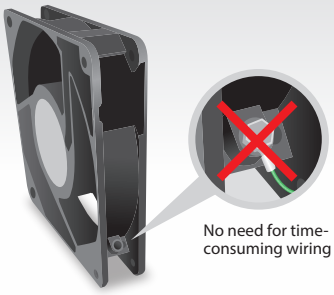
- DC Axial Fans 24 VDC
- AC Free Input Axial Fans 100 to 240 VAC

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



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

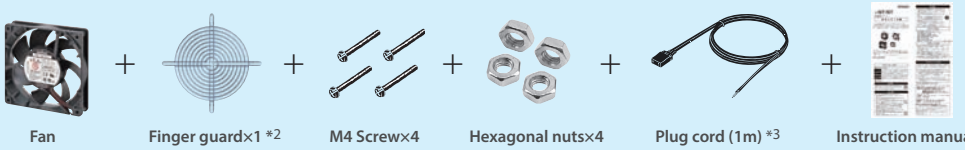
No need to connect ground lines



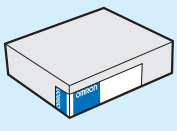
This Set Model allows you to purchase the necessary parts with a single order.

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

Set Contents

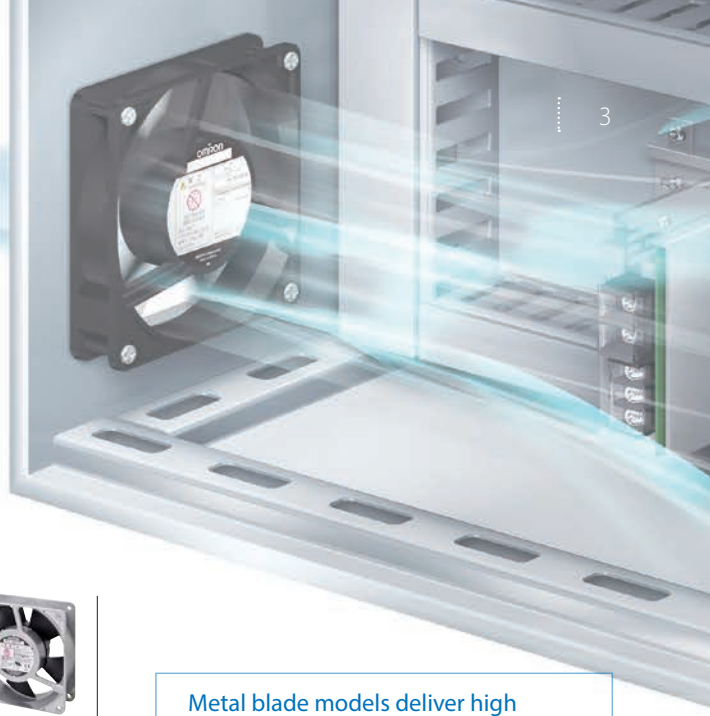


Fan + Finger guard×1 *2 + M4 Screw×4 + Hexagonal nuts×4 + Plug cord (1m) *3 + Instruction manual



* 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

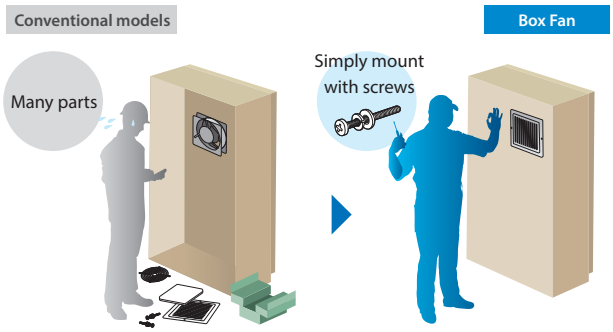
size(mm)	□120×t38
Rated voltage	100, 115, 200, or 230 VAC

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

All-in-one structure makes it easier to install accessories



Just open the cover to replace the filter

Conserves energy by responding to temperatures inside the panel

Electronic Thermostat E5L Series

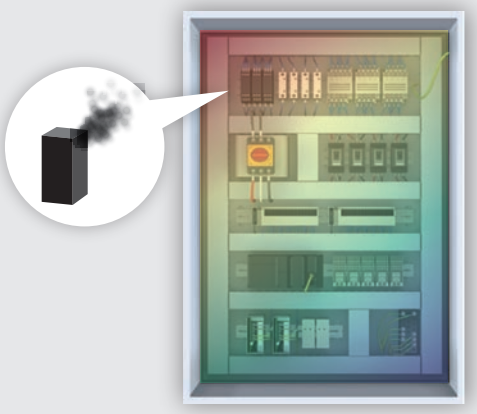
Fan can be turned on when temperatures inside the panel go up and turned off when they go down

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...

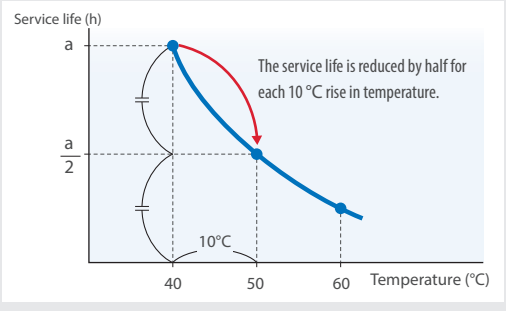
Temperatures in the panel go up, leading to device failure



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

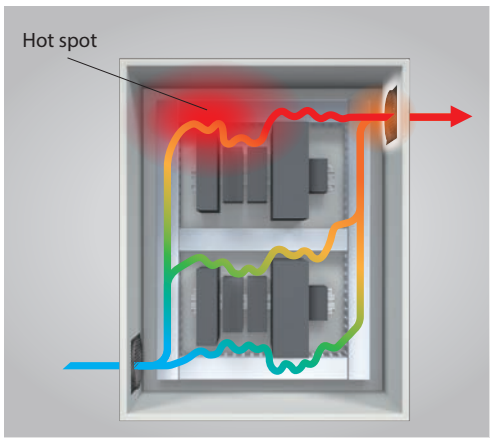
Represents the degree of airflow obstruction. Because system impedance is influenced by airflow, obstacles, and layout, cooling efficiency may vary while using fans with the same flow rate.

Additionally

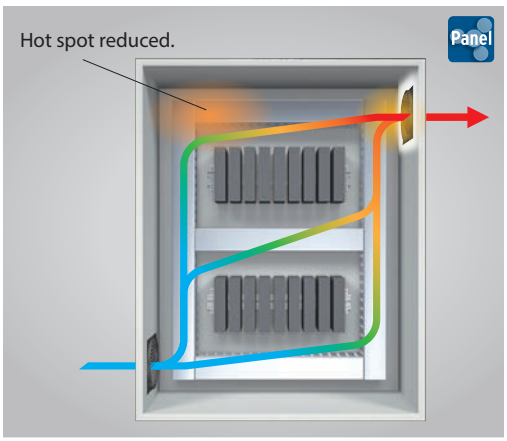
OMRON's Value Design products can improve airflow through uniform sizing

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

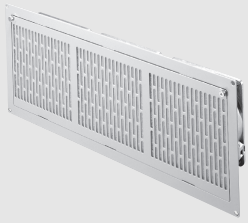
AC Axial Fans

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-A1A15MP	100 VAC	Medium						
		R87F-A3A15MP	115 VAC							
		R87F-A4A15MP	200 VAC							
		R87F-A6A15MP	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							
		R87T-A1A15MP	100 VAC	Medium						
		R87T-A3A15MP	115 VAC							
		R87T-A4A15MP	200 VAC							
		R87T-A6A15MP	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

Series	Size (mm)	Model	Power supply voltage (V)	Rotational speed	Safety standards*				Terminal type	Page
					Compliant standards		Certified standards			
					CE mark	PSE	UL	CSA		
R87B Box Fans		**R87B-FA1A15HPF(R)**	100 VAC	High	---	---	---	---	Terminals only	57
		R87B-FA3A15HPF(R)	115 VAC							
		R87B-FA4A15HPF(R)	200 VAC							
		R87B-FA6A15HPF(R)	230 VAC							
		R87B-FA1A15LPF(R)	100 VAC	Low						
		R87B-FA3A15LPF(R)	115 VAC							
		R87B-FA4A15LPF(R)	200 VAC							
		R87B-FA6A15LPF(R)	230 VAC							
		R87B-TA1A15HPF(R)	100 VAC	High	---	---	---	---		
		R87B-TA3A15HPF(R)	115 VAC							
		R87B-TA4A15HPF(R)	200 VAC							
		R87B-TA6A15HPF(R)	230 VAC							
		R87B-TA1A15MPF(R)	100 VAC	Medium						
		R87B-TA3A15MPF(R)	115 VAC							
		R87B-TA4A15MPF(R)	200 VAC							
		R87B-TA6A15MPF(R)	230 VAC							
		**R87B-FA1A16HPF(R)2**	100 VAC	High	---	---	---	---	Terminals only	59
		R87B-FA3A16HPF(R)2	115 VAC							
		R87B-FA4A16HPF(R)2	200 VAC							
		R87B-FA6A16HPF(R)2	230 VAC							
		R87B-FA1A16LPF(R)2	100 VAC	Low						
		R87B-FA3A16LPF(R)2	115 VAC							
		R87B-FA4A16LPF(R)2	200 VAC							
		R87B-FA6A16LPF(R)2	230 VAC							
		R87B-TA1A16HPF(R)2	100 VAC	High	---	---	---	---		
		R87B-TA3A16HPF(R)2	115 VAC							
		R87B-TA4A16HPF(R)2	200 VAC							
		R87B-TA6A16HPF(R)2	230 VAC							
		R87B-TA1A16MPF(R)2	100 VAC	Medium						
		R87B-TA3A16MPF(R)2	115 VAC							
		R87B-TA4A16MPF(R)2	200 VAC							
		R87B-TA6A16MPF(R)2	230 VAC							
		**R87B-FA1A16HPF(R)3**	100 VAC	High	---	---	---	---	Terminals only	61
		R87B-FA3A16HPF(R)3	115 VAC							
		R87B-FA4A16HPF(R)3	200 VAC							
		R87B-FA6A16HPF(R)3	230 VAC							
		R87B-FA1A16LPF(R)3	100 VAC	Low						
		R87B-FA3A16LPF(R)3	115 VAC							
		R87B-FA4A16LPF(R)3	200 VAC							
		R87B-FA6A16LPF(R)3	230 VAC							
		R87B-TA1A16HPF(R)3	100 VAC	High	---	---	---	---		
		R87B-TA3A16HPF(R)3	115 VAC							
		R87B-TA4A16HPF(R)3	200 VAC							
		R87B-TA6A16HPF(R)3	230 VAC							
		R87B-TA1A16MPF(R)3	100 VAC	Medium						
		R87B-TA3A16MPF(R)3	115 VAC							
		R87B-TA4A16MPF(R)3	200 VAC							
		R87B-TA6A16MPF(R)3	230 VAC							
Attachments		**R87B-N□**	---		---	---	---	---	---	63
Replacement Filter		**R87B-PF01**								

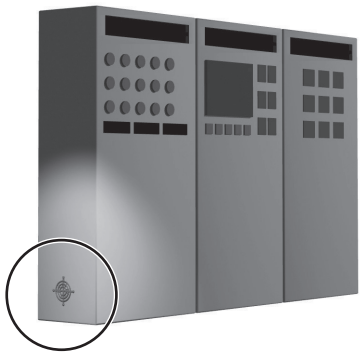
* An R87B Box Fan consists of an AC Axial-flow Fan in a square mounting attachment.
The safety standards apply to the AC Axial-flow Fan in the Box Fan. For details, refer to the safety standards for the AC Axial-flow Fan.
The model number of the AC Axial-flow Fan in the Box Fan can be determined from the model number of the Box Fan as follows:

R87B-FA1A15HPF → R87F-A1A15HP
The model number of the Axial-flow Fan can be determined by extracting the underlined portions from the model number of the Box Fan as shown.

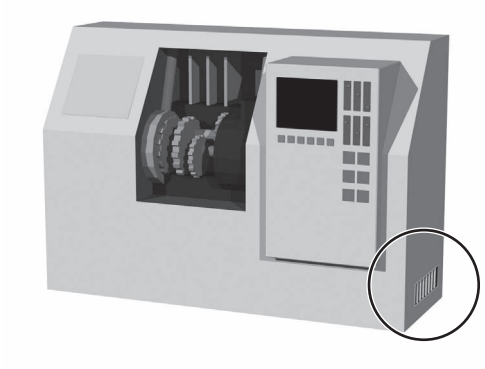
Applications for Axial Fans

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

■ Control Panels



■ Machine Tools

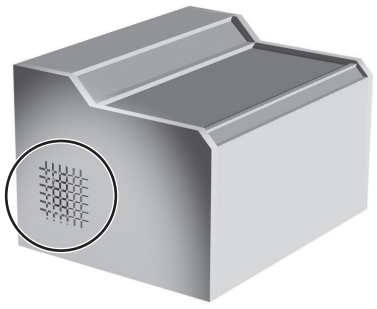


■ Measurement Devices

■ 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.

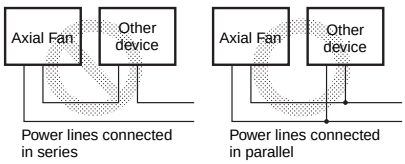
Do not use the Fan outside the rated temperature range or above the rated voltage. Do not use the Fan outside the operating temperature range and allowable voltage fluctuation range. Do not touch the motor section during operation or immediately after stopping operation.

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.

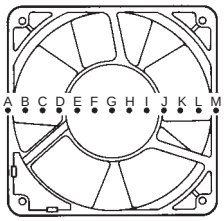
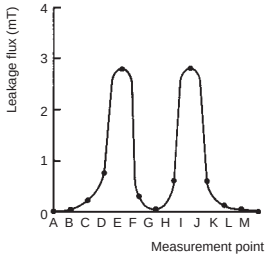
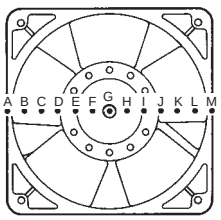
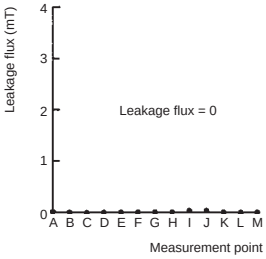
Precautions for Correct Use

Leakage Flux

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

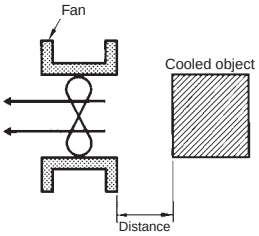
1. Keeping CRTs at least 30 cm away from the Axial Fan.
2. Shielding the Axial Fan side with metal mesh.
   The leakage flux from a Fan with metal blades is less than with plastic blades. The leakage flux distribution curves are shown below as examples.

R87T and Other AC Axial Fans

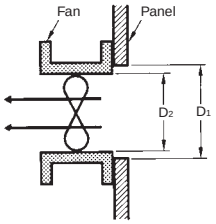
Inlet	**Dimensions**	
	Leakage flux distribution	
Outlet	**Dimensions**	
	Leakage flux distribution	

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.)

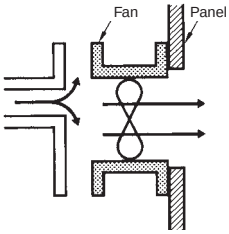


- The diameter of the Fan installation hole (D2) should be larger than the diameter of the Fan (D1).
  D_1:Fan installation hole diameter
  D_2:Fan diameter
  $D_1 > D_2$

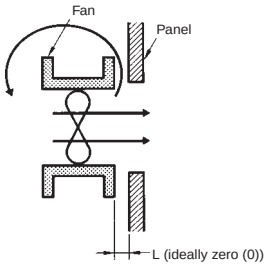


Cooling Effect

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



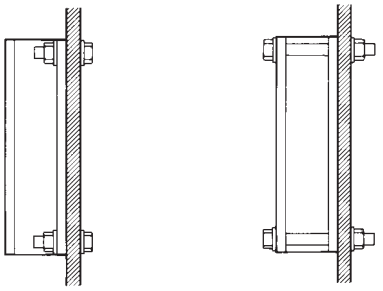
- When installing the Fan, keep the clearance at the outlet side as small as possible. (If there is a large clearance at the outlet side, it may not be possible to obtain a sufficient cooling effect.)



Axial Fan Installation

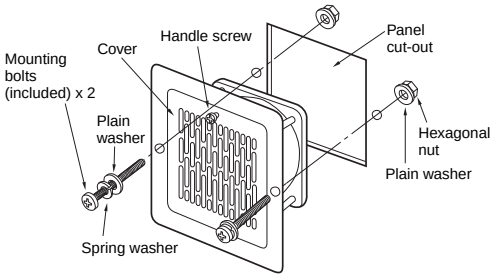
- The Fan can be mounted with bolts through only one flange (single-flange mounting) or with through-bolts through both flanges (double-flange mounting). Take care not to distort the frame when using double-flange mounting.
  The appropriate tightening torques are indicated below.
  R87□: 0.44 N·m
 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

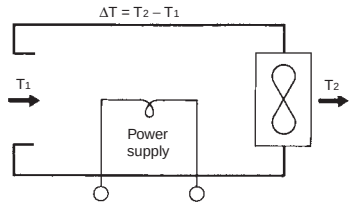
Technical Explanation for Axial Fans

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.

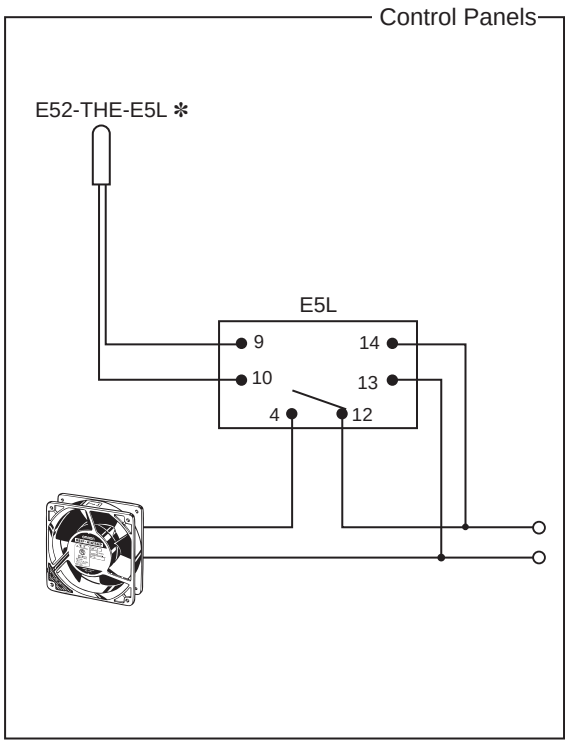
The procedure to select a Fan is described above. It is difficult, however, to obtain the actual system impedance. In general, therefore, select a Fan with a maximum flow rate of from 1.3 to 2 times the flow rate required.

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.

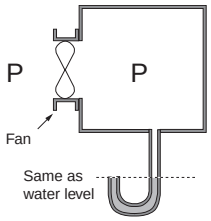
Flow Rate: Q (m^3/min.)

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

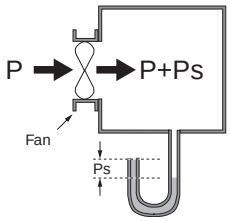
Static Pressure: Ps (Pa)

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.

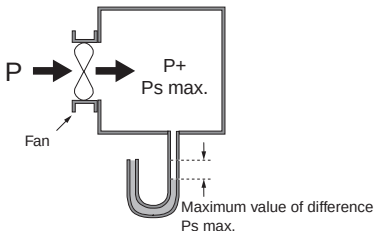


Maximum Flow Rate: Q max. (m^3/min.)

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.).

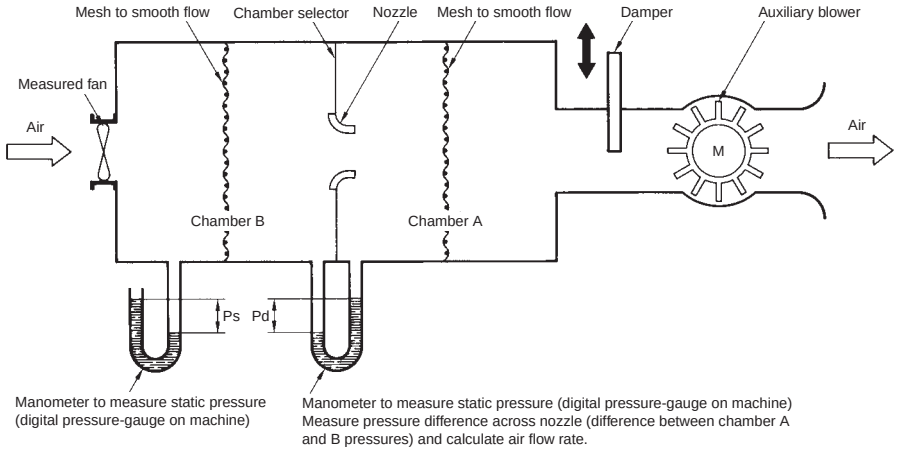
Fan Operating Point:
A Fan installed in equipment operates near the point where the Fan characteristic curve crosses the system impedance curve.

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.

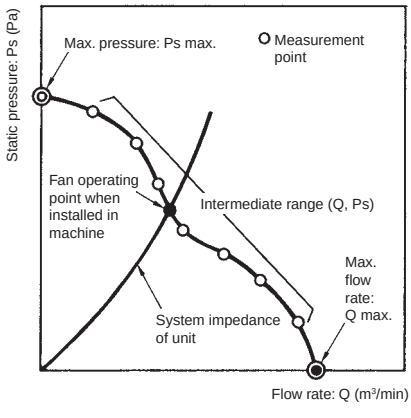
Measurement Conditions for R87□ Series

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



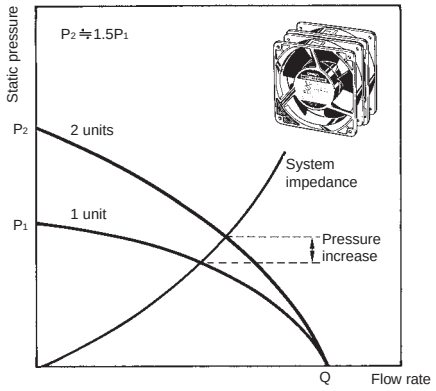
Flow Rate/Static Pressure Characteristic Model



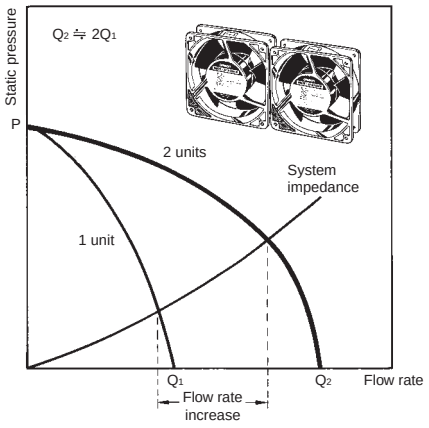
Serial and Parallel Fan Operation

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

Serial Operation:



Parallel Operation:

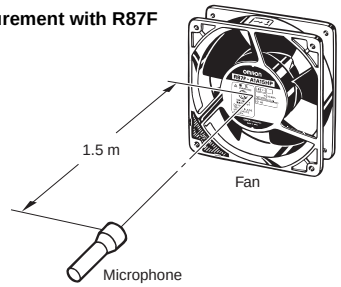


Noise Measurements

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.

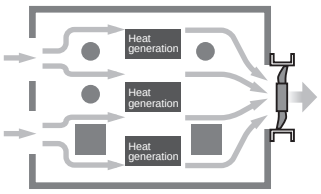
Measurement with R87F



Cooling Effect

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

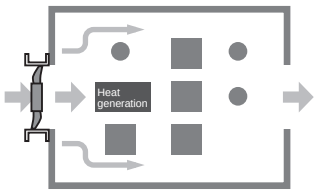
● Blowing Air Out



Many Heat-generating Elements in Various Locations

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

● Blowing Air In

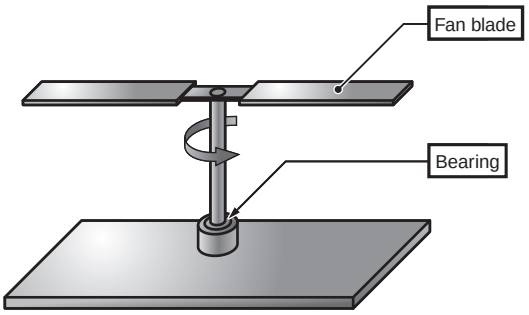


Heat-generating Elements in One Location

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

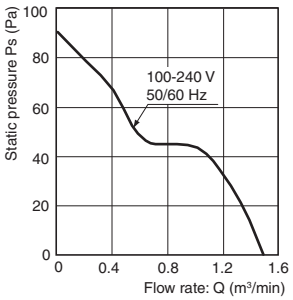
✻ An asterisk (✻) indicates a nominal value.

Characteristics

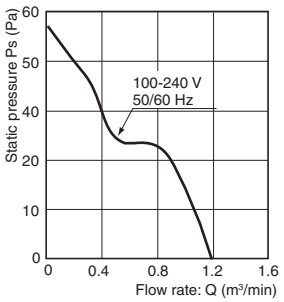
Motor type		Brushless DC motor
Terminal type		Terminals
Insulation class		Class E (UL class A)
Insulation resistance		10 MΩ min. (at 500 VDC) Between lead wire conductor and frame
Insulation withstand voltage		1,500 VAC (1 minute) Between input terminal and frame
Ambient operating temperature		-20 to 75°C (with no icing)
Ambient storage temperature		-30 to +75°C (no icing)
Ambient humidity		20% to 85%
Protection		Restraint burnout protection (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/IEC60950-1 EN/IEC60335-2-80 (CE marking compliant) EAC, RCM PSE
Certified standards		UL: UL507 (Recognition) CSA: C22.2 No.113

Flow Rate and Static Pressure Characteristics (Reference Value)

R89F-MS0938HP



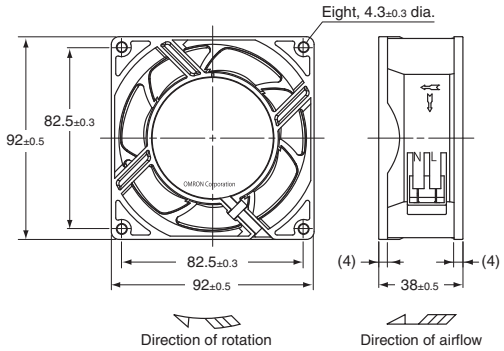
R89F-MS0938LP



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

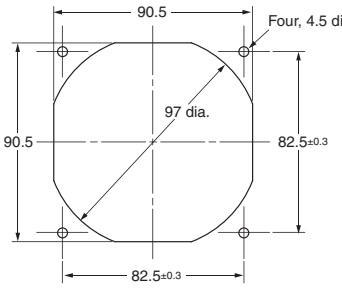
Dimensions

(Unit: mm)

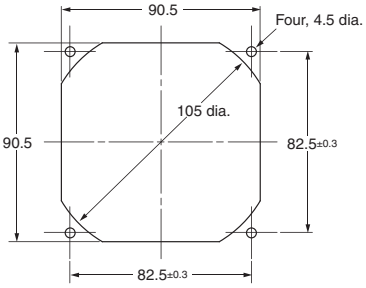


Panel Cutouts

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

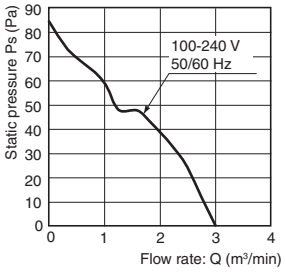
✻ An asterisk (✻) indicates a nominal value.

Characteristics

Motor type		Brushless DC motor
Terminal type		Terminals
Insulation class		Class E (UL class A)
Insulation resistance		10 MΩ min. (at 500 VDC) Between lead wire conductor and frame
Insulation withstand voltage		1,500 VAC (1 minute) 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 (Current blocking function)
Materials	**Frame**	PBT/PC alloy (UL94V-0)
	Blades	PPHOX (UL94V-1)
Bearings		Ball bearings
Weight		Approx. 290 g
Compliant standards		EN/IEC60950-1 EN/IEC60335-2-80 (CE marking compliant) EAC, RCM PSE
Certified standards		UL: UL507 (Recognition) CSA: C22.2 No.113

Flow Rate and Static Pressure Characteristics (Reference Value)

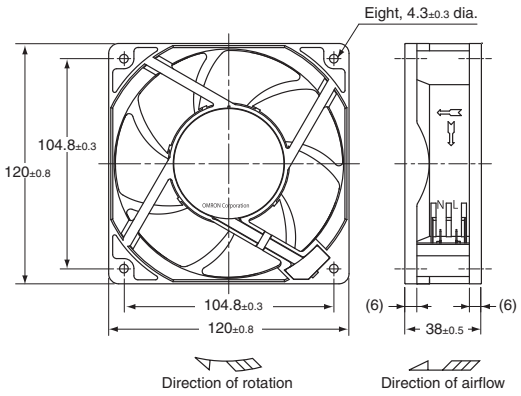
R89F-MS1238HP



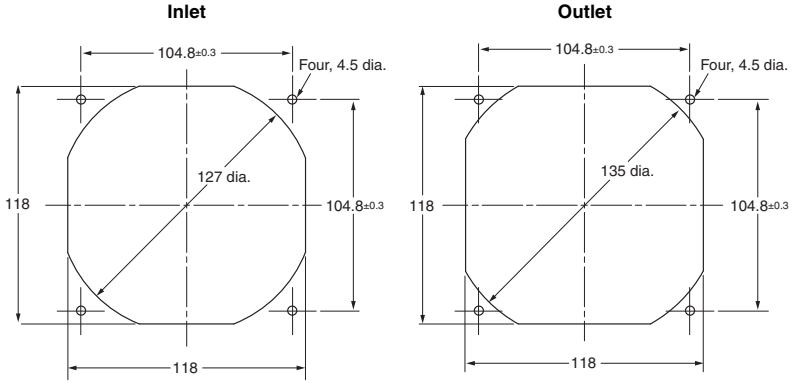
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

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.

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

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

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

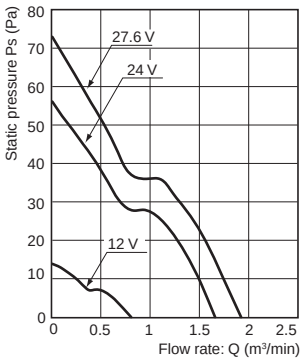
✻ An asterisk (✻) indicates a nominal value.

Characteristics

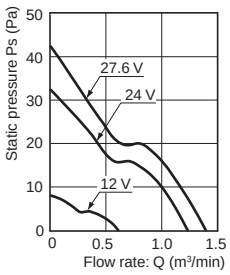
Motor type		Brushless DC motor
Terminal type		Lead wires
Insulation class		Class E (UL class A)
Insulation resistance		10 MΩ min. (at 500 VDC) Between lead wire conductor and frame
Insulation withstand voltage		500 VAC (1 minute) Between lead wire conductor and frame
Ambient operating temperature		-20 to +70°C (no icing)
Ambient storage temperature		-30 to +70°C (no icing)
Ambient humidity		20% to 85%
Protection		Restraint burnout protection (Current blocking function) 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/IEC60950-1 EN/IEC60335-2-80 (CE marking compliant) EAC RCM
Certified standards		UL: UL507 (Recognition) CSA: C22.2 No.113

Flow Rate and Static Pressure Characteristics (Reference Value)

R89F-DS0925H



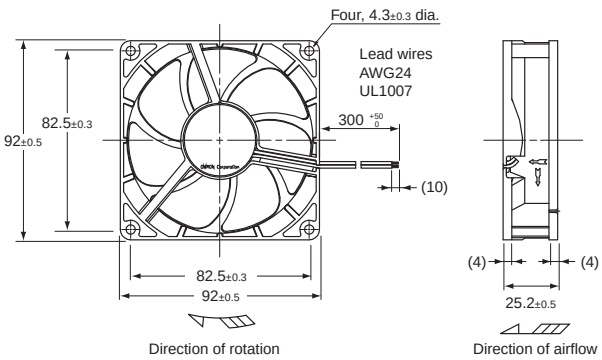
R89F-DS0925L



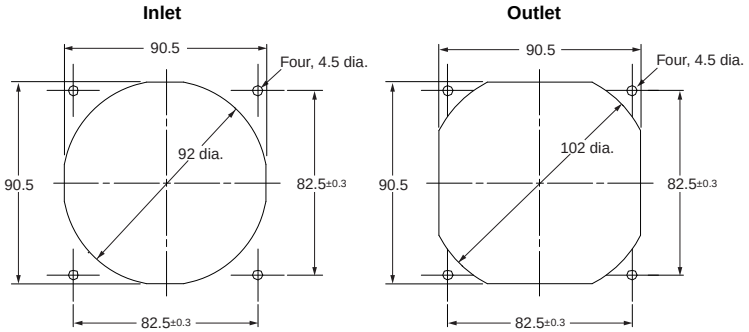
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

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

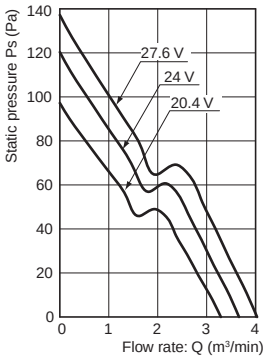
✻ An asterisk (✻) indicates a nominal value.

Characteristics

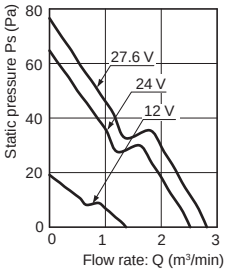
Motor type		Brushless DC motor
Terminal type		Lead wires
Insulation class		Class E (UL class A)
Insulation resistance		10 MΩ min. (at 500 VDC) Between lead wire conductor and frame
Insulation withstand voltage		500 VAC (1 minute) Between lead wire conductor and frame
Ambient operating temperature		-20 to +70°C (no icing)
Ambient storage temperature		-30 to +70°C (no icing)
Ambient humidity		20% to 85%
Protection		Restraint burnout protection (Current blocking function) 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/IEC60950-1 EN/IEC60335-2-80 (CE marking compliant) EAC RCM
Certified standards		UL: UL507 (Recognition) CSA: C22.2 No.113

Flow Rate and Static Pressure Characteristics (Reference Value)

R89F-DS1225H



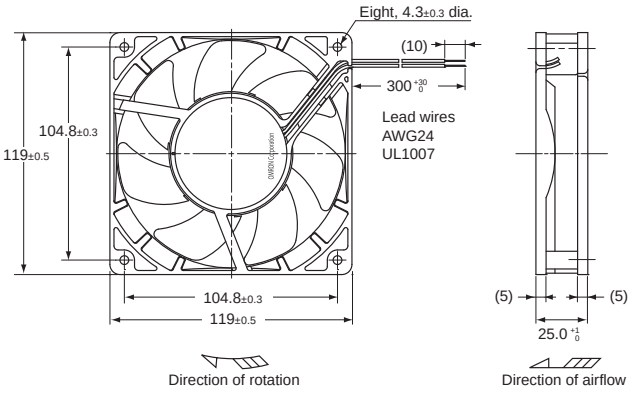
R89F-DS1225L



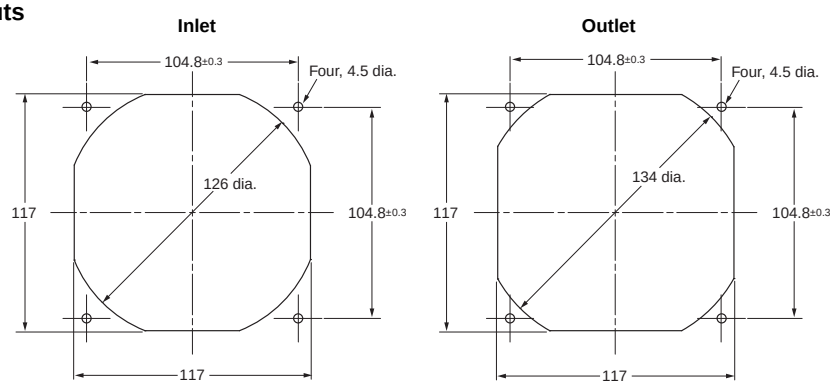
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

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

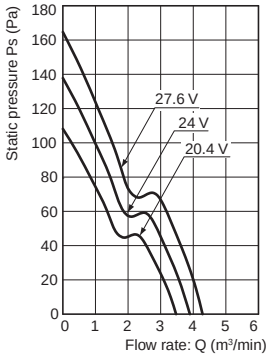
✻ An asterisk (✻) indicates a nominal value.

Characteristics

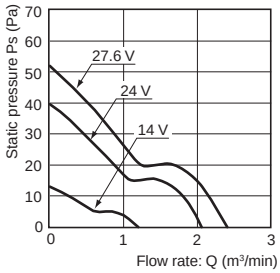
Motor type		Brushless DC motor
Terminal type		Lead wires
Insulation class		Class E (UL class A)
Insulation resistance		10 MΩ min. (at 500 VDC) Between lead wire conductor and frame
Insulation withstand voltage		500 VAC (1 minute) Between lead wire conductor and frame
Ambient operating temperature		-20 to +70°C (no icing)
Ambient storage temperature		-30 to +70°C (no icing)
Ambient humidity		20% to 85%
Protection		Restraint burnout protection (Current blocking function) 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/IEC60950-1 EN/IEC60335-2-80 (CE marking compliant) EAC RCM
Certified standards		UL: UL507 (Recognition) CSA: C22.2 No.113

Flow Rate and Static Pressure Characteristics (Reference Value)

R89F-DS1238H



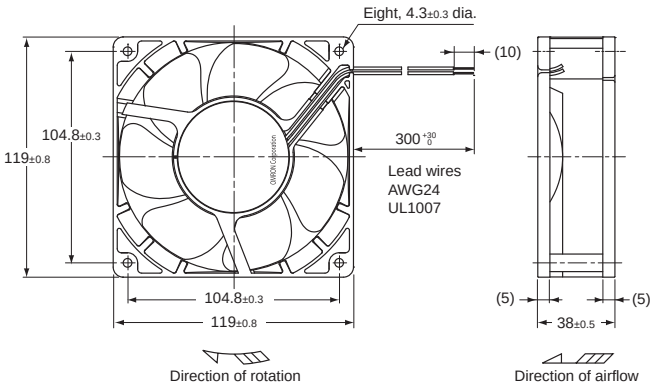
R89F-DS1238L



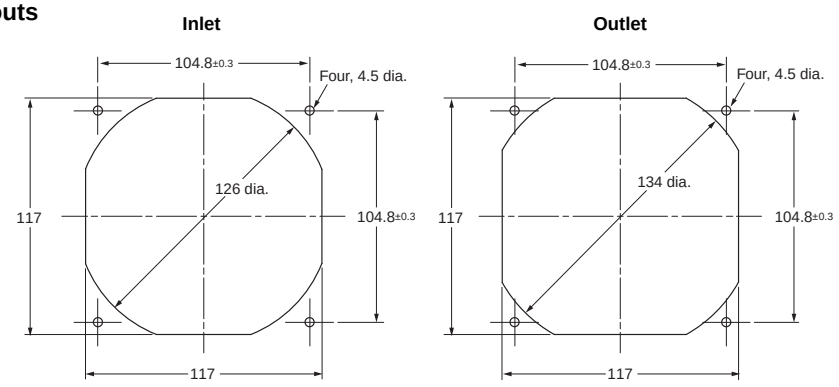
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)



Panel Cutouts



Options

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

R89F
Set Model

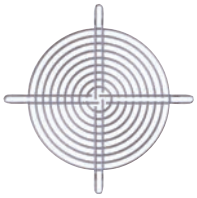
- Select the optimum size for a variety of control panels.
- All required parts can be ordered as a set, ideal for fan replacement.
- All required maintenance parts are included in one box, requiring less space and reduced parts management work.

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

Set Contents

Fan

Finger Guard × 1



Plug Cord (1 m)

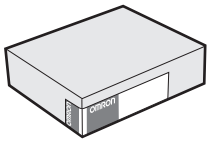
✻ AC Free Input Axial Fan only

M4 screws × 4

Hexagonal nuts × 4

Instruction manual

All required parts included in one box



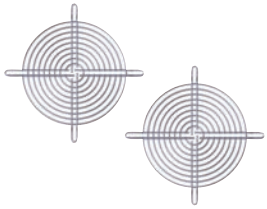
✻ Packaging for illustrative purposes only.

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

Set Contents

Fan

Finger Guard × 2



Plug Cord (1 m)

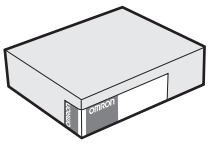
✻ AC Free Input Axial Fan only

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 (44 type) and metal-bladed models (28 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
M: Medium
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

Note: Mounting screws are not provided.

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.

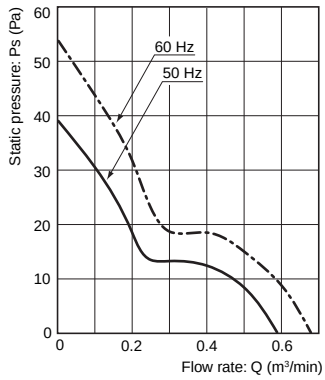
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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

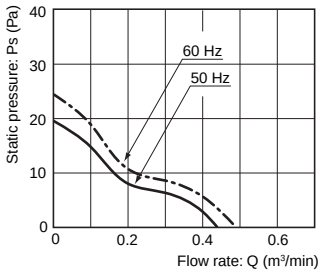
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Lead wires
Insulation class	IEC class B (130°C) UL class A (105°C) CSA class A (105°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand 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 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



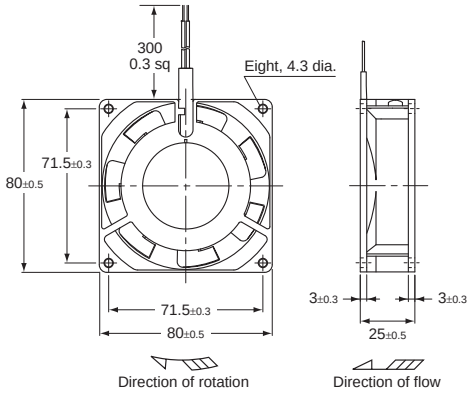
R87F-A□A83L



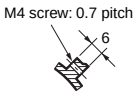
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)

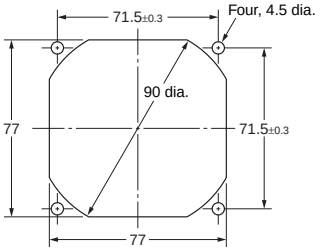


Screw hole for grounding

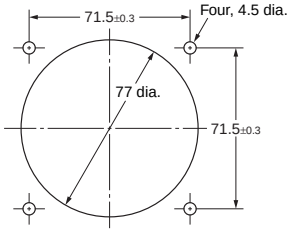


Panel Cutouts

Outlet



Inlet



Options

Names	Model	Page
Finger Guard	R87F-FG80	52
Filter	R87F-FL80	53

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.

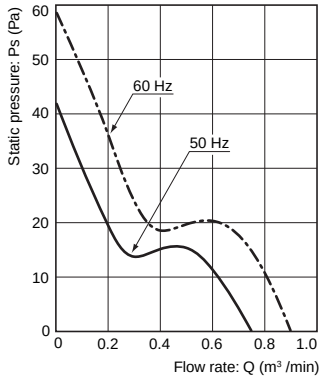
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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

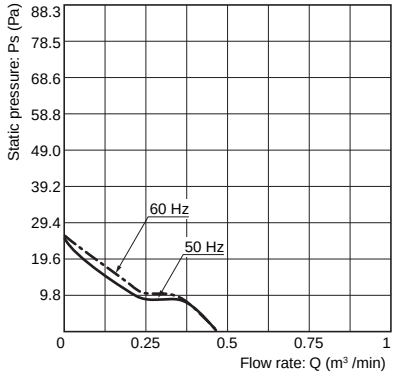
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) UL class A (105°C) CSA class A (105°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand 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 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



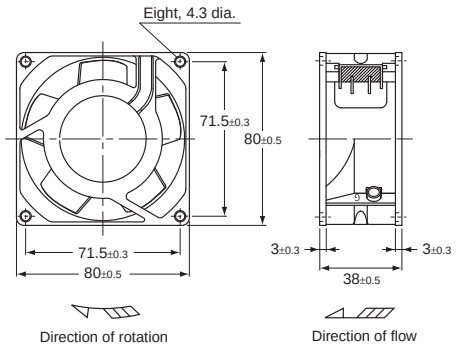
R87F-A□A85LP



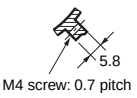
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

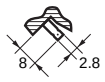
(Unit: mm)



Screw hole for grounding



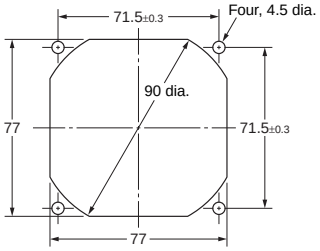
Terminal shape



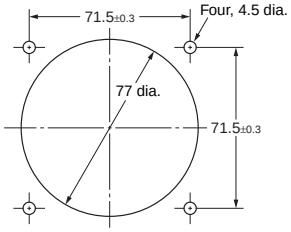
Faston #110 terminal
(or equivalent)

Panel Cutouts

Outlet



Inlet



Options

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

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.

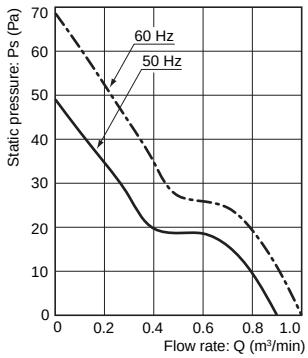
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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

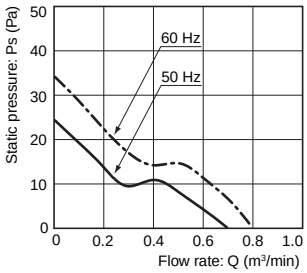
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) UL class A (105°C) CSA class A (105°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand 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 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



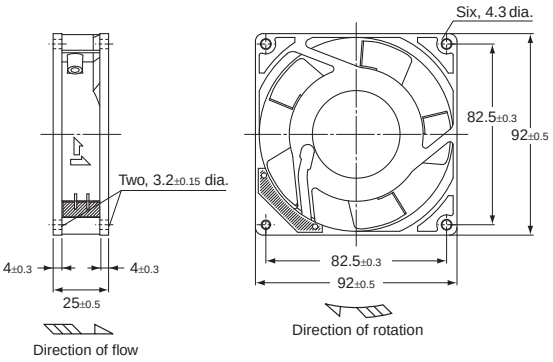
R87F-A□A93LP



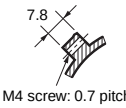
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

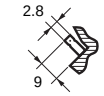
(Unit: mm)



Screw hole for grounding



Terminal shape

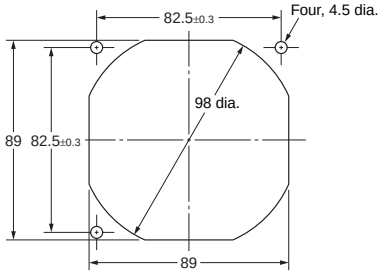


Faston #110 terminal
(or equivalent)

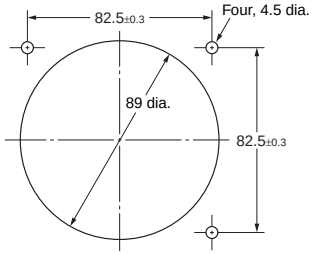
Panel Cutouts

Panel cutting reference dimensions (note 3 mounting holes)

Outlet



Inlet



Options

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

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.

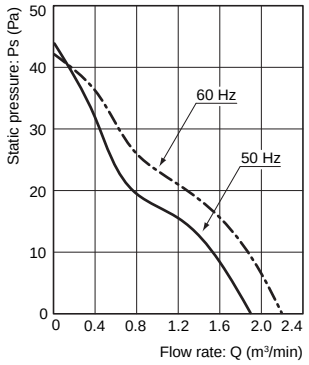
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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

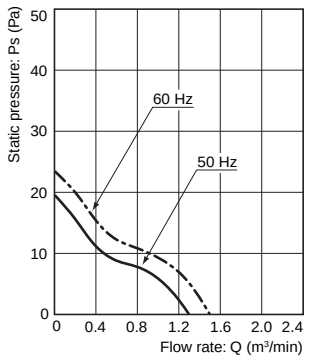
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) cULus class B (130°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand voltage	2,000 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 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



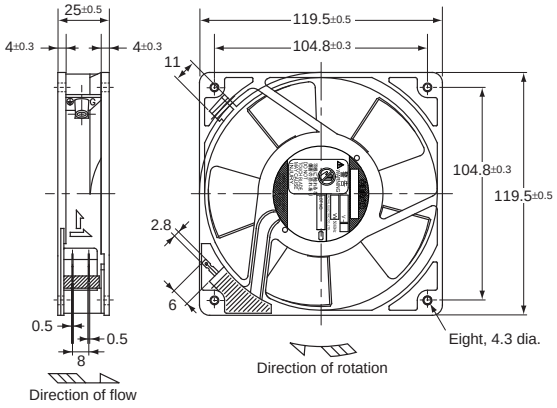
R87F-A□A13LP



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

Dimensions

(Unit: mm)



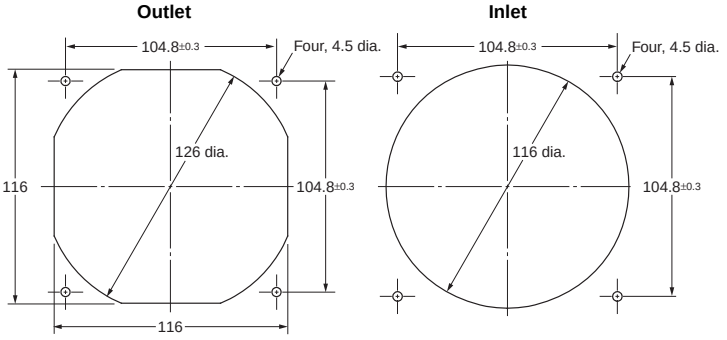
Screw hole for grounding

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

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.

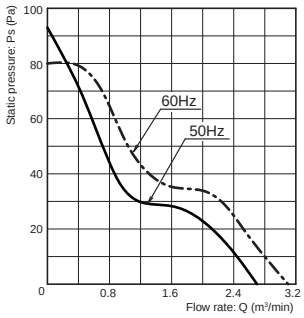
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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-A1A15MP	100 VAC	85% to 110% rated voltage	50/60	0.220	0.180	15	14	2,450	2,700	2.2	2.5	64	64	39	42
R87F-A3A15MP	115 VAC			0.180	0.160										
R87F-A4A15MP	200 VAC			0.110	0.090										
R87F-A6A15MP	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

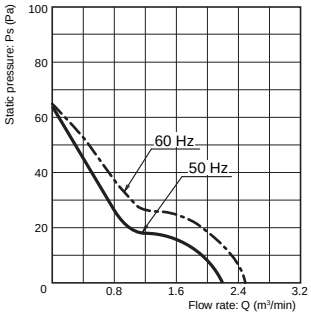
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) cULus class B (130°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand voltage	2,000 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 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)

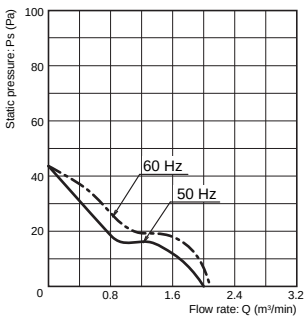
R87F-A□A15HP



R87F-A□A15MP



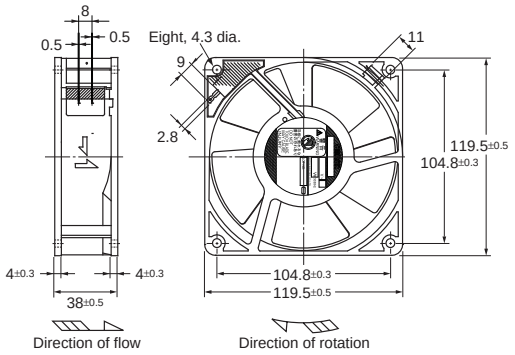
R87F-A□A15LP



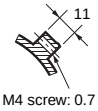
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)



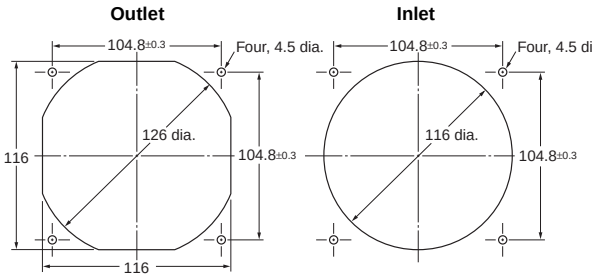
Screw hole for grounding



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

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.

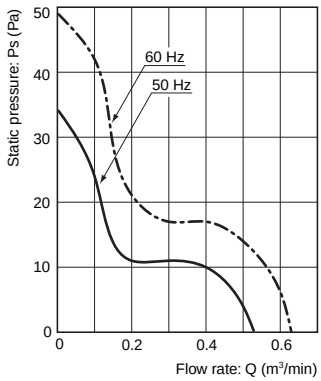
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A)*		Rated input (W)*		Rated rotational speed (r/min)*		Maximum flow rate (m^3/min)*		Maximum static pressure (Pa)*		Noise (dB)*	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	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) 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)

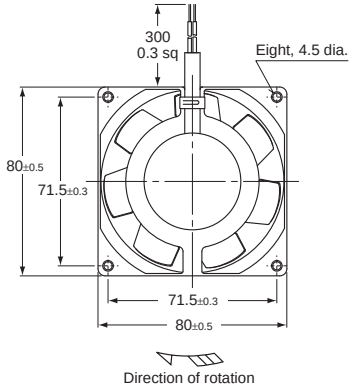
R87T-A□A83H

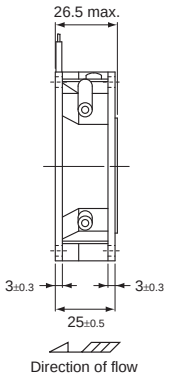


Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

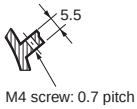
Dimensions

(Unit: mm)



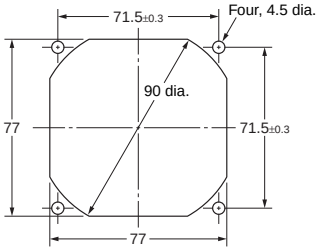


Screw hole for grounding

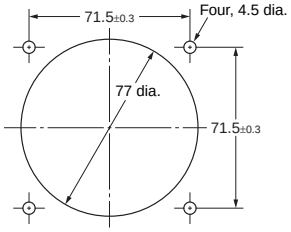


Panel Cutouts

Outlet



Inlet



Options

Name	Model	Page
Finger Guard	R87F-FG80	52
Filter	R87F-FL80	53

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.

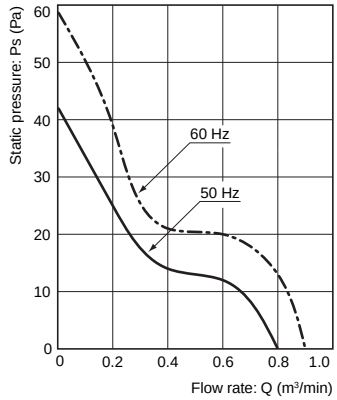
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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) 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. 440 g
Compliant standards	EN/IEC 60335 (CE marking compliant)
Certified standards	UL

Flow Rate and Static Pressure Characteristics (Reference Values)

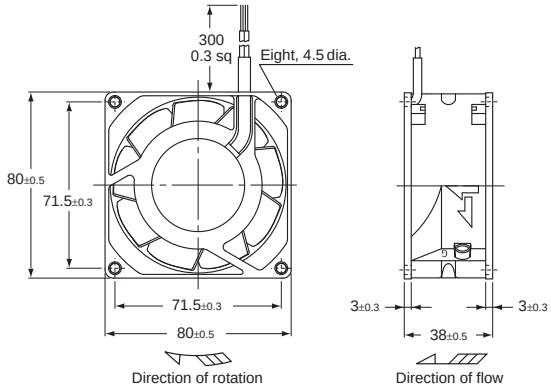
R87T-A□A85H



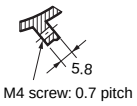
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)

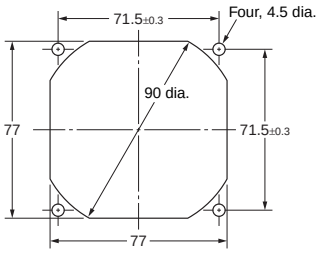


Screw hole for grounding

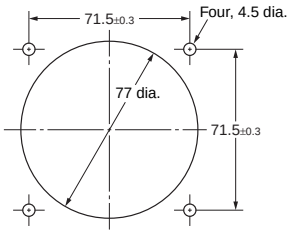


Panel Cutouts

Outlet



Inlet



Options

Name	Model	Page
Finger Guard	R87F-FG80	52
Filter	R87F-FL80	53

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.

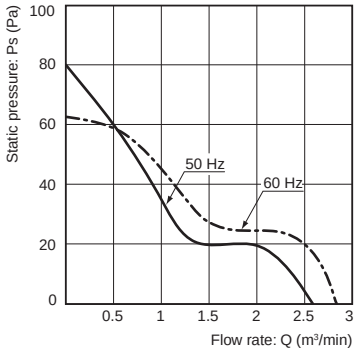
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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										
R87T-A1A15MP	100 VAC	85% to 110% rated voltage	50/60	0.170	0.150	12	11	2,350	2,600	1.8	2.1	42	40	36	40
R87T-A3A15MP	115 VAC			0.140	0.120										
R87T-A4A15MP	200 VAC			0.080	0.070										
R87T-A6A15MP	230 VAC			0.070	0.060										

Characteristics

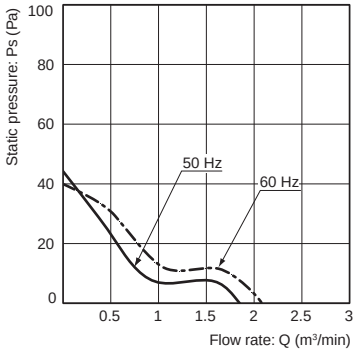
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) cULus class B (130°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand voltage	2,000 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 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



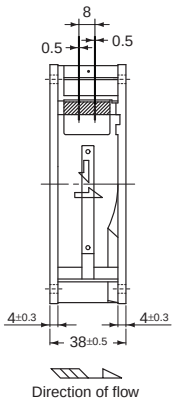
R87T-A□A15MP

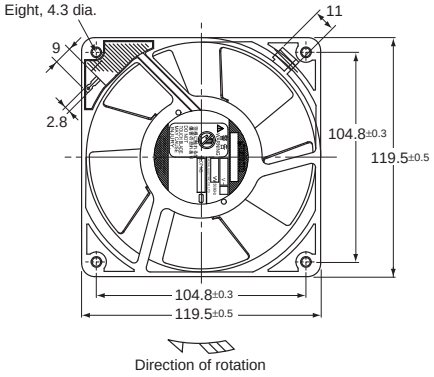


Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

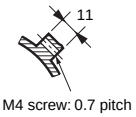
Dimensions

(Unit: mm)

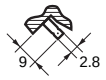




Screw hole for grounding

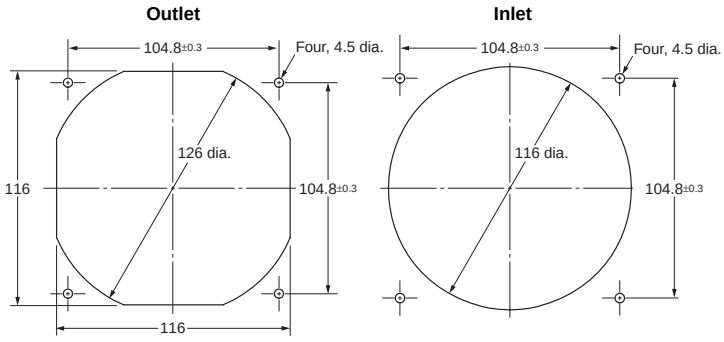


Terminal shape



Faston #110 terminal
(or equivalent)

Panel Cutouts



Options

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

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.

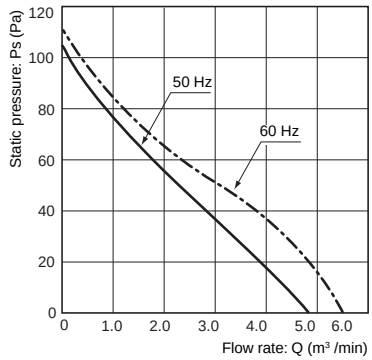
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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) 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 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)

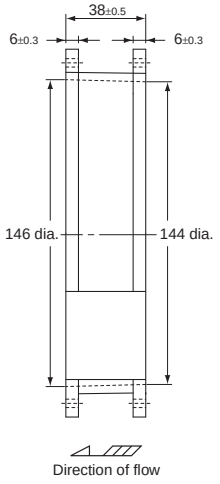
R87T-A□A05H

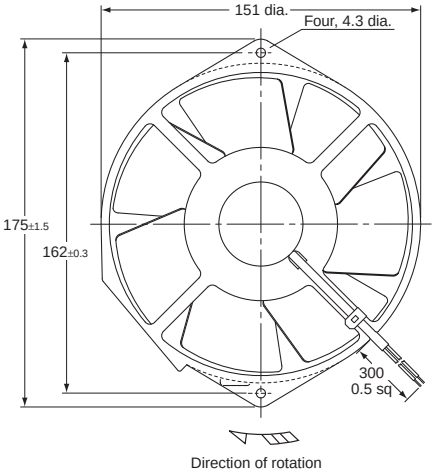


Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)

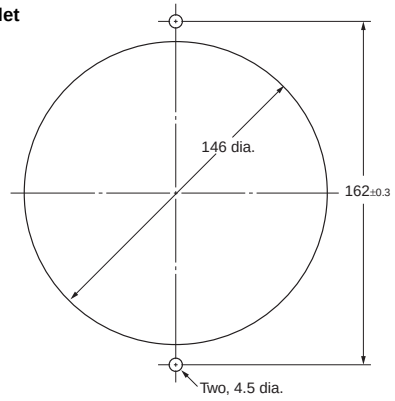




Ground Screw Section

Panel Cutouts

Outlet and Inlet



Options

Name	Model	Page
Finger Guard	R87F-FG150	52

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

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.

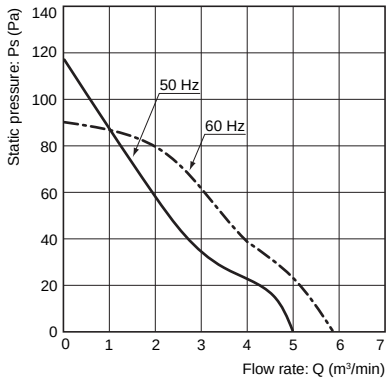
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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) 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 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)

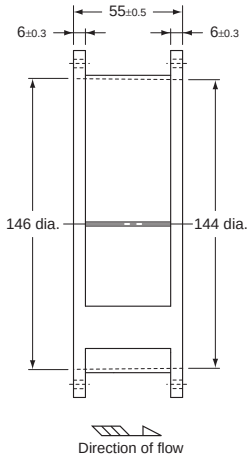
R87T-A□A07H

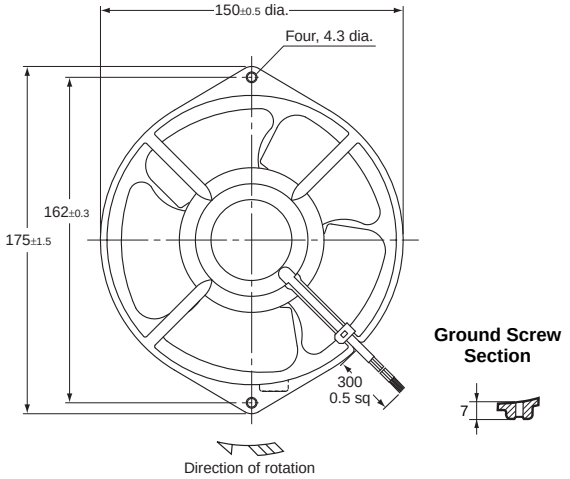


Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

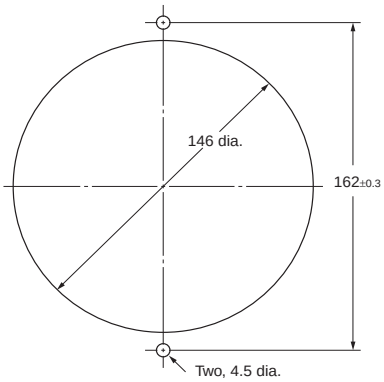
(Unit: mm)





Panel Cutouts

Outlet and Inlet



Options

Name	Model	Page
Finger Guard	R87F-FG150	52

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.

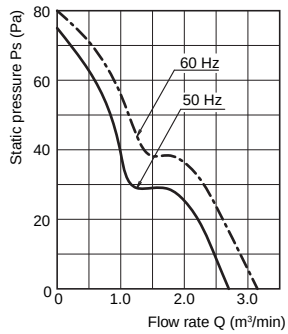
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	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) UL class A (105°C) 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 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)

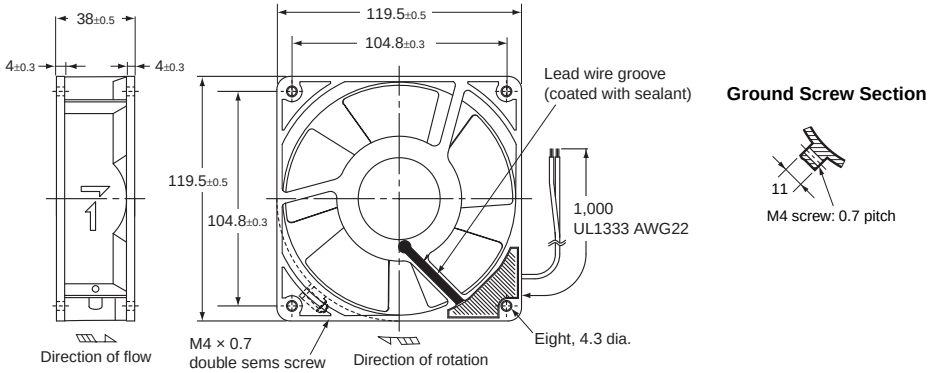
R87T-A□A15H-WR



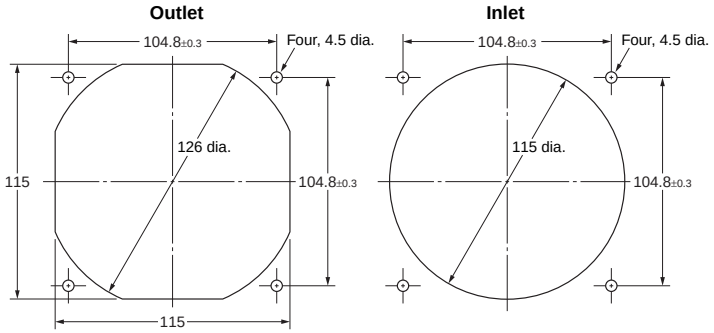
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)



Panel Cutouts



Options

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

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

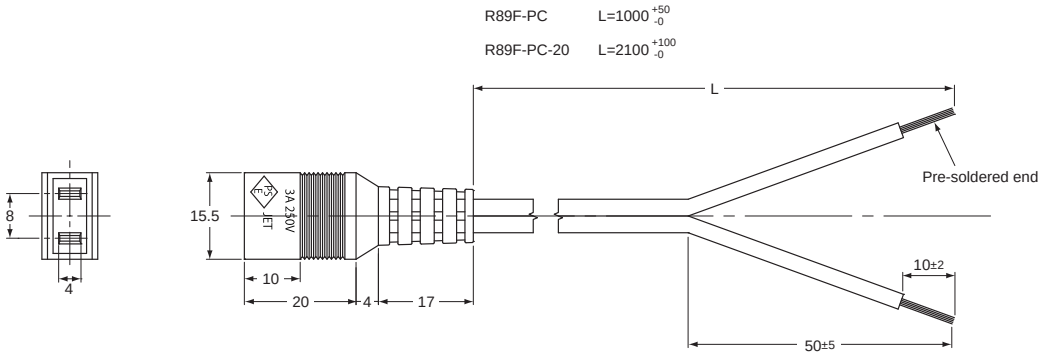
R89F-PC Rating: 3 A, 250 V

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.

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

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

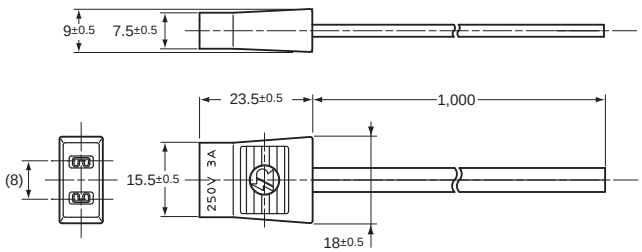
R87F-PC Rating: 250 VAC, 3 A

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

AC Axial Fan		Finger Guard
Size	Model	
150 dia.	R87T-A□A0 Series	R87F-FG150
120 × 120	R89F-DS1225□ series R89F-DS1238□ series R89F-MS1238HP	R87F-FG120
	R87F-A□A1 Series R87T-A□A1 Series	
92 × 92	R89F-DS0925□ series R89F-MS0938□P series R87F-A□A9 Series	R87F-FG90
80 × 80	R87F-A□A8 Series R87T-A□A8 Series	R87F-FG80

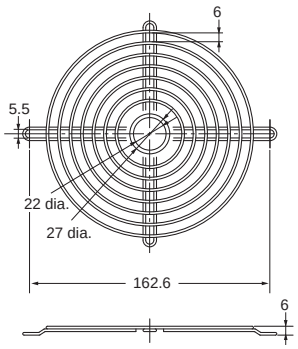
Note: Finger Guards reduce the flow rate by approximately 2% to 5%.

Dimensions

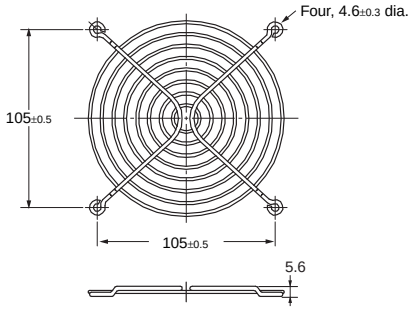
(Unit: mm)

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

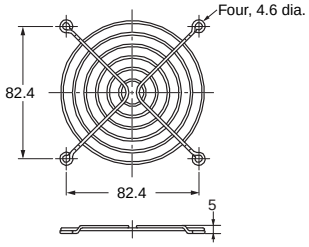
R87F-FG150



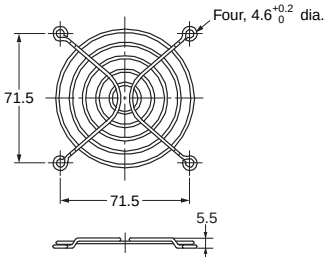
R87F-FG120



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

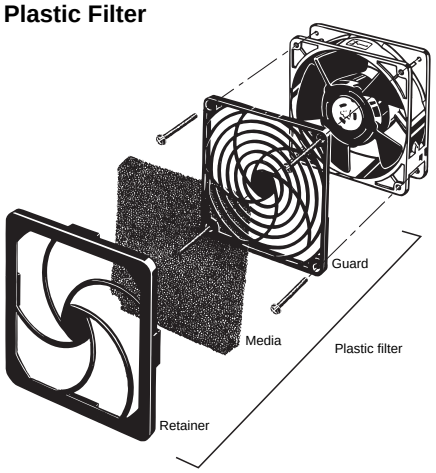
Note: Use the following model number to order the Media only.
R87F-FL□-M□ (□: 120, 90, or 80)
(One set containing five Media, weight: 5 g max.)

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 R87T-A□A1 Series		
92 × 92	R87F-A□A9 Series	R87F-FL90	---
80 × 80	R87F-A□A8 Series R87T-A□A8 Series	R87F-FL80	---

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

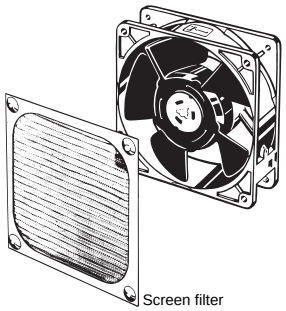
R87F-FL□
Plastic Filter



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.)

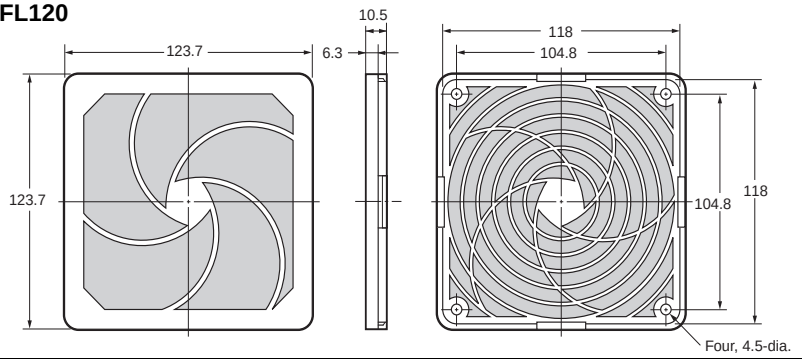
R87F-FL120S
Screen Filter



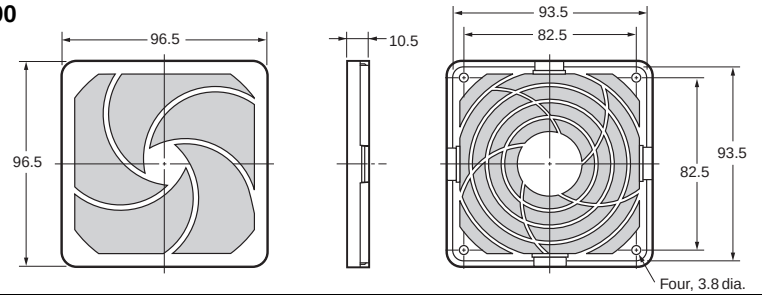
Dimensions

(Unit: mm)

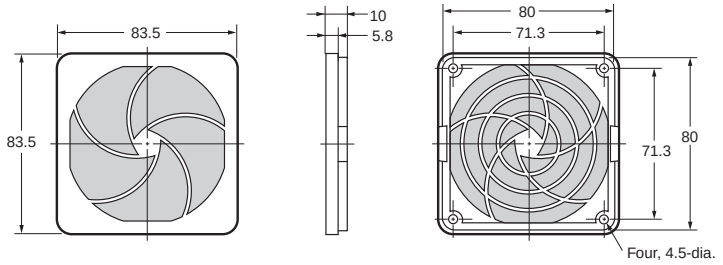
R87F-FL120



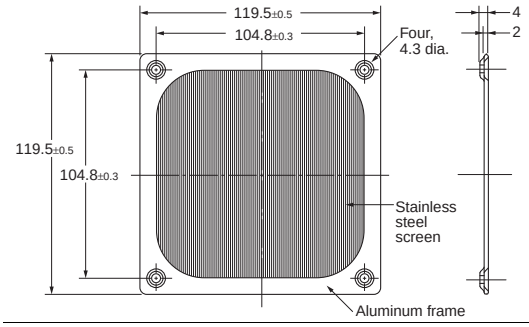
R87F-FL90



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.
- Enhanced accessories (finger guard, filter, plug cord, mounting screws).
- Optional Replacement Filter and Vent Attachment.
- The lineup includes Single, Double, and Triple Box Fans with eight models with plastic blades and eight models with metal blades.

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

Model Number Structure

Model Number Legend

R87B-□□□A15□PF□□
1 2 3 4 5

Attachment

R87B-N□
1 5

Options and Accessories

R87B-P□□□
1 6 7

Number	Category	Symbol	Meaning of symbol
1	Fan (blade material)	F T N	R87F Axial Fan (with plastic blades) R87T Axial Fan (with metal blades) No fan
	Optional parts	P	Options and accessories
2	Power supply classification	A1 A3 A4 A6	100 VAC 115 VAC 200 VAC 230 VAC
3	Speed classification	H M L	High speed Middle speed Low speed
4	Airflow direction ✻	None R	In Out
5	Number of fans	None 2 3	1 2 3
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.

Ordering Information

Type	Number of fans	Model	Accessories
Plastic blades High speed	1	R87B-FA□A15HPF(R)	Filter Finger guard Plug cord Mounting bolts
	2	R87B-FA□A15HPF(R)2	
	3	R87B-FA□A15HPF(R)3	
Plastic blades Low speed	1	R87B-FA□A15LPF(R)	
	2	R87B-FA□A15LPF(R)2	
	3	R87B-FA□A15LPF(R)3	
Metal blades High speed	1	R87B-TA□A15HPF(R)	
	2	R87B-TA□A15HPF(R)2	
	3	R87B-TA□A15HPF(R)3	
Metal blades Medium speed	1	R87B-TA□A15MPF(R)	
	2	R87B-TA□A15MPF(R)2	
	3	R87B-TA□A15MPF(R)3	
Attachment	For 1	R87B-N	Filter Finger guard Mounting screws
	For 2	R87B-N2	
	For 3	R87B-N3	
Replacement Filter	Any	R87B-PF01	Set of two filters

R87B
Ratings and Ordering Information

Item	Model	R87B-F	R87B-T
Motor type		Single-phase shading coil induction motor (2-pole, open type)	
Terminal type		Terminals	
Insulation class		IEC class B (130°C) UL class A (105°C) CSA class A (105°C) cULus class B (130°C)	IEC class B (130°C) UL class A (105°C) cULus class B (130°C)
Insulation resistance		100 MΩ min. (at 500 VDC) Between all power supply connection parts and non-current carrying metal parts	
Dielectric strength		2,000 VAC for 1 min 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.

Safety Precautions

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

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-□A□A15□PF(R) Single Box Fan

Ratings and Ordering Information

Airflow Direction: In

Item / Model	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	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-FA3A15HPF	115 VAC											
R87B-FA4A15HPF	200 VAC											
R87B-FA6A15HPF	230 VAC											
R87B-FA1A15LPF	100 VAC	85% to 110% rated voltage	50/60	2,100	2,200	0.9	1.0	43	42	42	43	
R87B-FA3A15LPF	115 VAC											
R87B-FA4A15LPF	200 VAC											
R87B-FA6A15LPF	230 VAC											
R87B-TA1A15HPF	100 VAC	85% to 110% rated voltage	50/60	2,700	3,000	1.1	1.3	70	63	45	48	Approx. 1,150 g
R87B-TA3A15HPF	115 VAC											
R87B-TA4A15HPF	200 VAC											
R87B-TA6A15HPF	230 VAC											
R87B-TA1A15MPF	100 VAC	85% to 110% rated voltage	50/60	2,400	2,700	0.8	0.9	41	40	41	44	
R87B-TA3A15MPF	115 VAC											
R87B-TA4A15MPF	200 VAC											
R87B-TA6A15MPF	230 VAC											

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

Airflow Direction: Out

Item / Model	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	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-FA3A15HPFR	115 VAC											
R87B-FA4A15HPFR	200 VAC											
R87B-FA6A15HPFR	230 VAC											
R87B-FA1A15LPFR	100 VAC	85% to 110% rated voltage	50/60	2,100	2,200	0.9	1.0	43	42	42	43	
R87B-FA3A15LPFR	115 VAC											
R87B-FA4A15LPFR	200 VAC											
R87B-FA6A15LPFR	230 VAC											
R87B-TA1A15HPFR	100 VAC	85% to 110% rated voltage	50/60	2,700	3,000	1.1	1.3	70	63	45	48	Approx. 1,150 g
R87B-TA3A15HPFR	115 VAC											
R87B-TA4A15HPFR	200 VAC											
R87B-TA6A15HPFR	230 VAC											
R87B-TA1A15MPFR	100 VAC	85% to 110% rated voltage	50/60	2,400	2,700	0.8	0.9	41	40	41	44	
R87B-TA3A15MPFR	115 VAC											
R87B-TA4A15MPFR	200 VAC											
R87B-TA6A15MPFR	230 VAC											

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

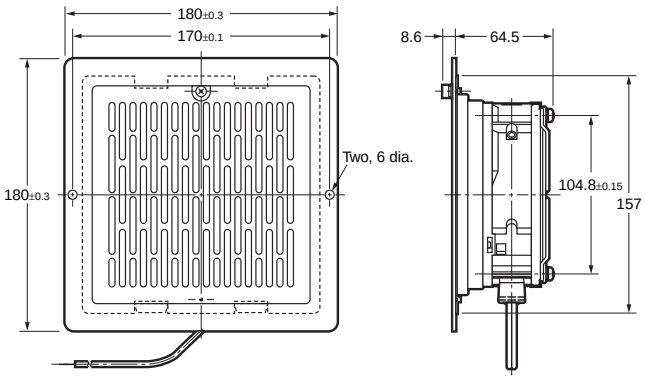
- The data in this table comes from measurements that were taken with the filter and cover attached.
- The model number of the AC Axial Fan in the Box Fan can be determined from the model number of the Box Fan as follows:

R87B-FA1A15HPF→R87F-A1A15HP

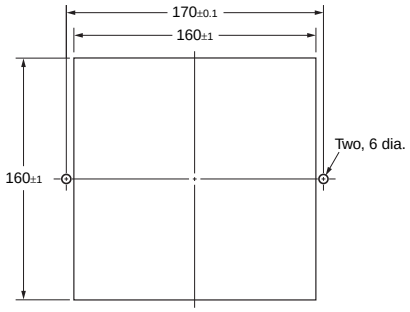
The model number of the Axial Fan can be determined by extracting the underlined portions from the model number of the Box Fan as shown.

R87B
Dimensions

(Unit: mm)



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-□A□A15□PF(R)2 Double Box Fan

Ratings and Ordering Information

Airflow Direction: In

Item / Model	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-FA1A15HPF2	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-FA3A15HPF2	115 VAC											
R87B-FA4A15HPF2	200 VAC											
R87B-FA6A15HPF2	230 VAC											
R87B-FA1A15LPF2	100 VAC	85% to 110% rated voltage	50/60	2,100	2,200	2.0	2.1	44	42	45	46	
R87B-FA3A15LPF2	115 VAC											
R87B-FA4A15LPF2	200 VAC											
R87B-FA6A15LPF2	230 VAC											
R87B-TA1A15HPF2	100 VAC	85% to 110% rated voltage	50/60	2,700	3,000	2.5	2.9	68	63	49	52	Approx. 1,800 g
R87B-TA3A15HPF2	115 VAC											
R87B-TA4A15HPF2	200 VAC											
R87B-TA6A15HPF2	230 VAC											
R87B-TA1A15MPF2	100 VAC	85% to 110% rated voltage	50/60	2,400	2,700	1.6	1.8	41	43	44	47	
R87B-TA3A15MPF2	115 VAC											
R87B-TA4A15MPF2	200 VAC											
R87B-TA6A15MPF2	230 VAC											

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

Airflow Direction: Out

Item / Model	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-FA1A15HPFR2	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-FA3A15HPFR2	115 VAC											
R87B-FA4A15HPFR2	200 VAC											
R87B-FA6A15HPFR2	230 VAC											
R87B-FA1A15LPFR2	100 VAC	85% to 110% rated voltage	50/60	2,100	2,200	2.0	2.1	44	42	45	46	
R87B-FA3A15LPFR2	115 VAC											
R87B-FA4A15LPFR2	200 VAC											
R87B-FA6A15LPFR2	230 VAC											
R87B-TA1A15HPFR2	100 VAC	85% to 110% rated voltage	50/60	2,700	3,000	2.5	2.9	68	63	49	52	Approx. 1,800 g
R87B-TA3A15HPFR2	115 VAC											
R87B-TA4A15HPFR2	200 VAC											
R87B-TA6A15HPFR2	230 VAC											
R87B-TA1A15MPFR2	100 VAC	85% to 110% rated voltage	50/60	2,400	2,700	1.6	1.8	41	43	44	47	
R87B-TA3A15MPFR2	115 VAC											
R87B-TA4A15MPFR2	200 VAC											
R87B-TA6A15MPFR2	230 VAC											

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

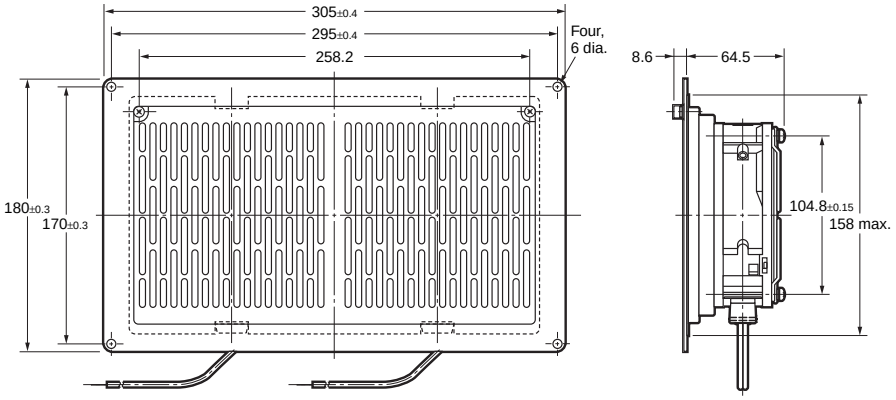
- The data in this table comes from measurements that were taken with the filter and cover attached.
- The model number of the AC Axial Fan in the Box Fan can be determined from the model number of the Box Fan as follows:

R87B-FA1A15HPF→R87F-A1A15HP

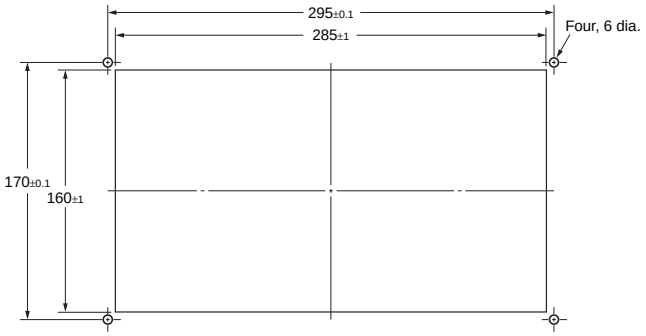
The model number of the Axial Fan can be determined by extracting the underlined portions from the model number of the Box Fan as shown.

Dimensions

(Unit: mm)



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-□A□A15□PF(R)3 Triple Box Fan

Ratings and Ordering Information

Airflow Direction: In

Item / Model	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-FA1A15HPF3	100 VAC	85% to 110% rated voltage	50/60	2,700	3,100	3.9	4.5	82	60	56	58	Approx. 2,700 g
R87B-FA3A15HPF3	115 VAC											
R87B-FA4A15HPF3	200 VAC											
R87B-FA6A15HPF3	230 VAC											
R87B-FA1A15LPF3	100 VAC	85% to 110% rated voltage	50/60	2,100	2,200	2.9	3.1	40	39	47	48	
R87B-FA3A15LPF3	115 VAC											
R87B-FA4A15LPF3	200 VAC											
R87B-FA6A15LPF3	230 VAC											
R87B-TA1A15HPF3	100 VAC	85% to 110% rated voltage	50/60	2,700	3,000	3.8	4.0	68	63	50	53	Approx. 2,800 g
R87B-TA3A15HPF3	115 VAC											
R87B-TA4A15HPF3	200 VAC											
R87B-TA6A15HPF3	230 VAC											
R87B-TA1A15MPF3	100 VAC	85% to 110% rated voltage	50/60	2,400	2,700	2.4	2.8	41	40	45	48	
R87B-TA3A15MPF3	115 VAC											
R87B-TA4A15MPF3	200 VAC											
R87B-TA6A15MPF3	230 VAC											

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

Airflow Direction: Out

Item / Model	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-FA1A15HPFR3	100 VAC	85% to 110% rated voltage	50/60	2,700	3,100	3.9	4.5	82	60	56	58	Approx. 2,700 g
R87B-FA3A15HPFR3	115 VAC											
R87B-FA4A15HPFR3	200 VAC											
R87B-FA6A15HPFR3	230 VAC											
R87B-FA1A15LPFR3	100 VAC	85% to 110% rated voltage	50/60	2,100	2,200	2.9	3.1	40	39	47	48	
R87B-FA3A15LPFR3	115 VAC											
R87B-FA4A15LPFR3	200 VAC											
R87B-FA6A15LPFR3	230 VAC											
R87B-TA1A15HPFR3	100 VAC	85% to 110% rated voltage	50/60	2,700	3,000	3.8	4.0	68	63	50	53	Approx. 2,800 g
R87B-TA3A15HPFR3	115 VAC											
R87B-TA4A15HPFR3	200 VAC											
R87B-TA6A15HPFR3	230 VAC											
R87B-TA1A15MPFR3	100 VAC	85% to 110% rated voltage	50/60	2,400	2,700	2.4	2.8	41	40	45	48	
R87B-TA3A15MPFR3	115 VAC											
R87B-TA4A15MPFR3	200 VAC											
R87B-TA6A15MPFR3	230 VAC											

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

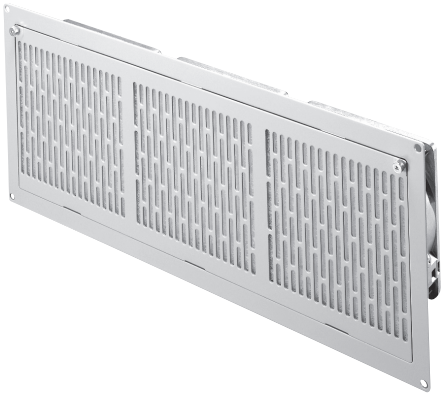
- The data in this table comes from measurements that were taken with the filter and cover attached.
- The model number of the AC Axial Fan in the Box Fan can be determined from the model number of the Box Fan as follows:

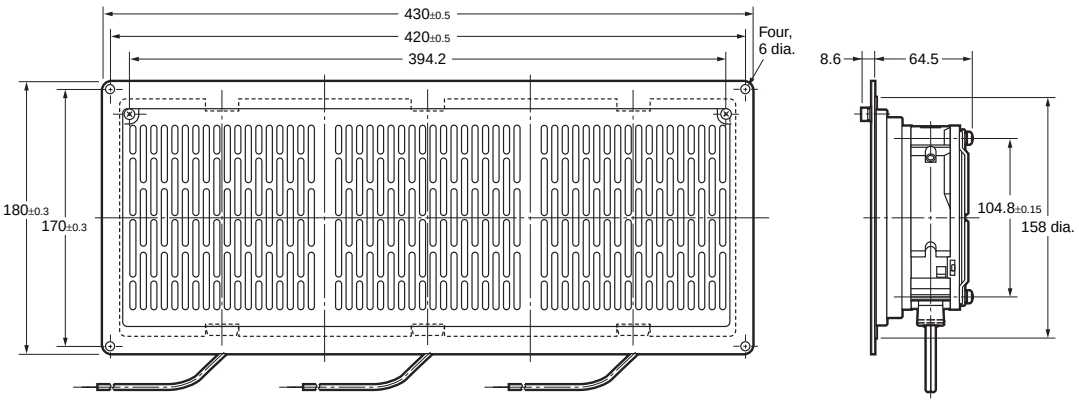
R87B-FA1A15HPF→R87F-A1A15HP

The model number of the Axial Fan can be determined by extracting the underlined portions from the model number of the Box Fan as shown.

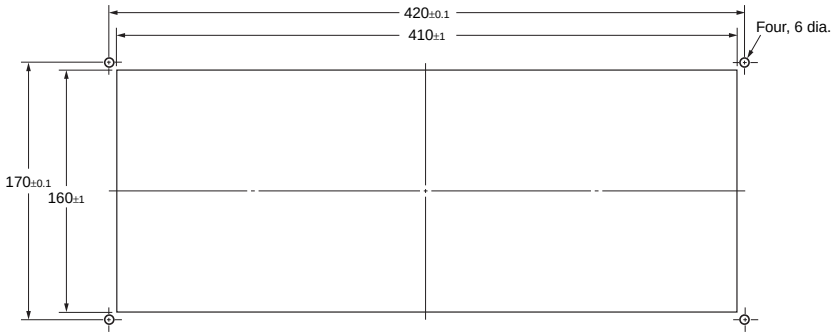
R87B
Dimensions

(Unit: mm)





Panel Cutout Dimensions



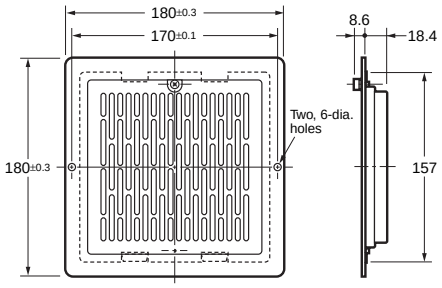
ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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

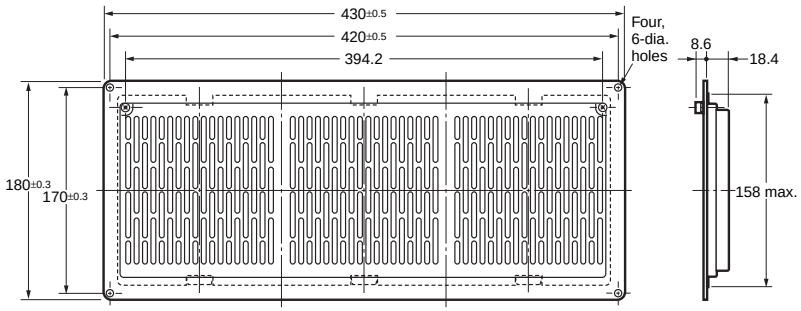
R87B-N□/R87B-PF Optional Parts

R87B-N□ (Attachment)

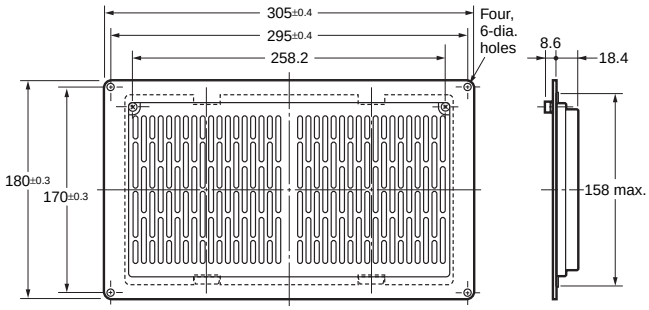
Single Box



Triple Box



Double Box

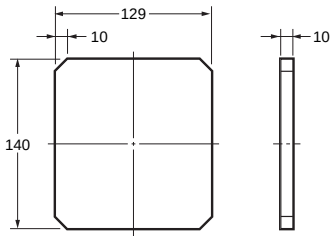


Ratings and Ordering Information

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)

Accessories

Model / Item	Mounting bolts (M4)	Hexagonal nuts (M4)	Plain washers	Spring washers	Cable with plug	Finger Guard (See note.)	Filter (See note.)
R87B-□A□A1□□PF(R) (Single, with fan)	2	2	4	2	1	2	1
R87B-□A□A1□□PF(R)2 (Double, with fan)	4	4	8	4	2	4	2
R87B-□A□A1□□PF(R)3 (Triple, with fan)	4	4	8	4	3	6	3
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.

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

Electronic Thermostat
E5L

Ideal for Simple Built-in Control.

- A high switching capacity of 10 A at 250 VAC enables direct load switching.
- A sensor is provided to enable immediate application.
- Sockets with finger protection (PTF14A-E), without finger protection (PTF14A) and Socket with Push-In Plus technology (PTF-14-PU-L) can be used.
- Simple operation and settings. Even simpler with digital models.

Model Number Structure

Model Number Legend

E5L-□□
1 2

1. Setting and Indication Methods
A: Analog setting, no display
C: Digital setting, display

2. Set temperature
–30-20 : –30 to +20°C
0-50 : 0 to +50°C
0-100 : 0 to +100°C
100-200 : +100 to +200°C

Ordering Information

Electronic Thermostats

E5L-A□

Size	Type	Control method	Control output	Model
45 × 35 mm	Plug-in	ON/OFF operation	Relay	**E5L-A -30-20**
				E5L-A 0-50
				E5L-A 0-100
				E5L-A 100-200

E5L-C□

Size	Type	Control method	Control output	Model
45 × 35 mm	Plug-in	ON/OFF operation	Relay	**E5L-C -30-20**
				E5L-C 0-100
				E5L-C 100-200

Note: The E5L-C is not available with a set temperature range of 0 to 50°C.

Options (Order Separately)

Mounting Brackets

Model
Y92H-10

Note: This Mounting Brackets is provided with the Electronic Thermostat.

Sockets

Type	Model
Front-connecting Socket	**PTF14A**
	PTF14A-E
	PTF-14-PU-L

Ratings and Characteristics

Ratings

Item / Model	E5L-A□	E5L-C□
Power supply voltage	100 to 240 VAC, 50/60 Hz	
Operating voltage range	85% to 110% of the rated supply voltage	
Power consumption	Approx. 3 VA	
Inputs	Element-interchangeable thermistor	
Control method	ON/OFF control	
Control output	SPDT contacts, 250 VAC, 10 A, cosϕ = 1 (resistive load)	SPST-NO contacts, 250 VAC, 10 A, cosϕ = 1 (resistive load)
Setting method	Analog setting	Digital settings using keys on front panel
Indication method	No display	LCD digital display (character height: 12 mm)
Other functions		• Setting protection (key protection) • Input shift • Direct/reverse operation
Ambient temperature	−10 to 55°C (with no icing or condensation)	
Ambient humidity	25% to 85%	
Storage temperature	−25°C to 65°C (with no icing or condensation)	

Note: Do not use the output from an Inverter as the power supply.

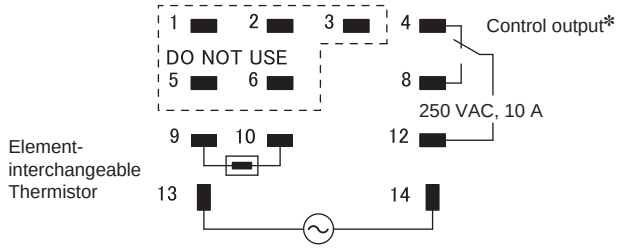
Characteristics

Item / Model	E5L-A□	E5L-C□
Indication accuracy	---	±(1°C + 1 digit) max.*1
Setting accuracy	---	±(1°C + 1 digit) max.*1
Hysteresis	−30 to 20°C models: Approx. 0.5 to 2.5°C (variable) 0 to 50°C models: Approx. 0.5 to 4°C (variable) 0 to 100°C models: Approx. 0.5 to 4°C (variable) 100 to 200°C models: Approx. 0.7 to 4°C (variable)	1 to 9°C (in increments of 1°C)
Repeat accuracy	1% FS max.	---
Minimum scale (standard scale)	−30 to 20°C models and 0 to 50°C models: 5°C 0 to 100°C models and 100 to 200°C models: 10°C	---
Influence of temperature	---	±((1% of PV or 2°C, whichever is greater) +1 digit) max.
Influence of voltage	---	
Influence of EMS. (at EN61326-1)	---	
Sampling period	---	2 s
Insulation resistance	100 MΩ max. (at 500 VDC)	
Dielectric strength	2,810 VAC, 50/60 Hz for 1 min (between charged terminals and uncharged metallic parts, between power supply terminals and input terminals, between power supply terminals and output terminals, and between input terminals and output terminals)	
Vibration (malfunction)	Frequency of 10 to 55 Hz, 0.5-mm double amplitude for 10 min each in X, Y, and Z directions	
Vibration (destruction)	Frequency of 10 to 55-Hz, 0.75-mm double amplitude for 2 h each in X, Y, and Z directions	
Shock (malfunction)	150 m/s^2, 3 times each in 6 directions	100 m/s^2, 3 times each in 6 directions
Shock (destruction)	300 m/s^2, 3 times each in 6 directions	
Electrical life expectancy (control output relay)	100,000 operations min (at maximum applicable load)	
Memory protection	---	Non-volatile memory (100,000 write operations)
Weight (Thermostat)	Approx. 80 g (Thermostat only)	
Degree of protection	Front panel: IP40, Terminals: IP00	
Approved standards	---	
Conformed standards	EN 61010-1 (IEC 61010-1), Pollution Degree 2, Overvoltage Category II	
EMC Directives	EMI: EN61326-1*2 Radiated EMI: EN55011 Group1 ClassA Conducted EMI: EN55011 Group1 ClassA EMS: EN61326-1*2 Electrostatic discharge immunity: EN61000-4-2 Electromagnetic field strength immunity: EN61000-4-3 Burst noise immunity: EN61000-4-4 Conducted disturbance immunity: EN61000-4-6 Surge immunity: EN61000-4-5 Voltage dip and power interruption immunity: EN6100-4-11	

✻1. The accuracy of the accessory thermistor is not included.
✻2. Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)

External Connections

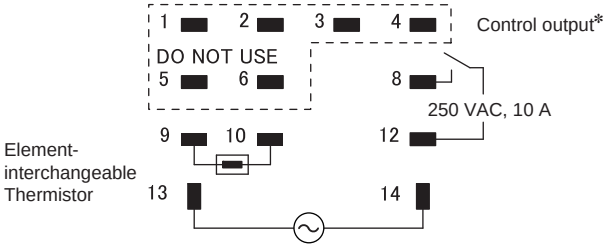
E5L-A□



Input power supply: 100 to 240 VAC

✻Control output Heating load: Terminals 8 and 12
Cooling load: Terminals 4 and 12
Be careful of the cooling load contacts, because they will be electrically charged even when the E5L input power supply is OFF.

E5L-C□



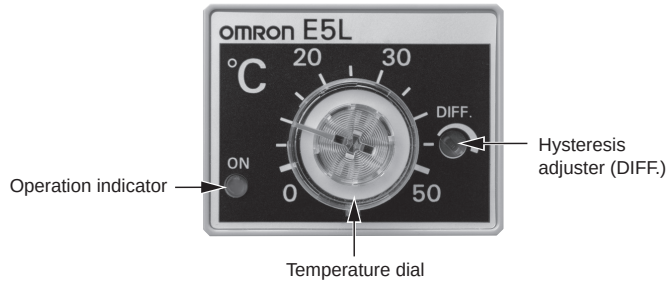
Input power supply: 100 to 240 VAC

✻ Control outputs: Terminals 8 and 12
Use the keys on the front panel to set direct/reverse operation.

Note: For thermistor wiring, separate the input power supply and load lines as much as possible to avoid the influence of inductive noise.

Nomenclature

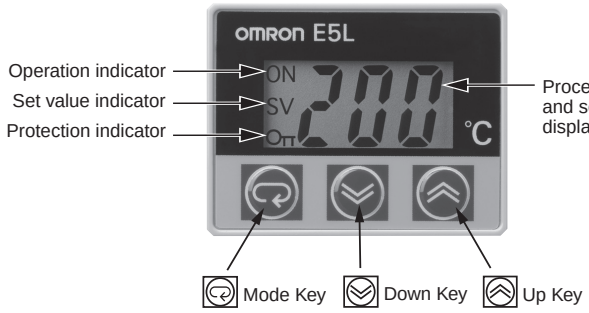
E5L-A□



Operation Indicator

Operation indicator	Output status	
	Heating load	Cooling load
Lit red.	ON	OFF
Not lit.	OFF	ON

E5L-C□



Operation Indicator: ON

Operation indicator	Output status	
	Reverse operation	Direct operation
Lit	ON	ON
Not lit	OFF	OFF

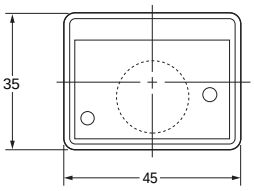
Set Value Indicator: SV
Lit when the set value is displayed.

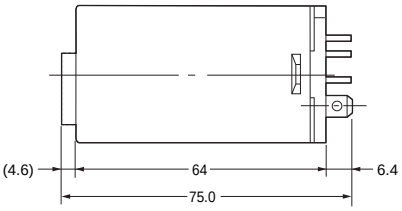
Setting Protection Indicator: O$_{TT}$
Lit when setting protection is set.

(Unit: mm)

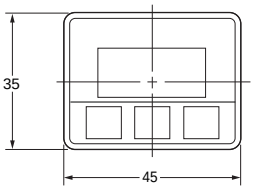
Thermostats

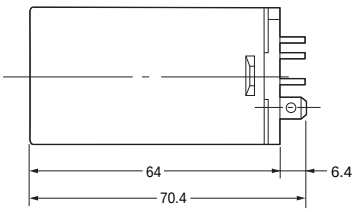
E5L-A□



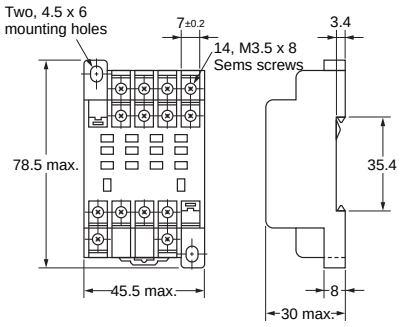
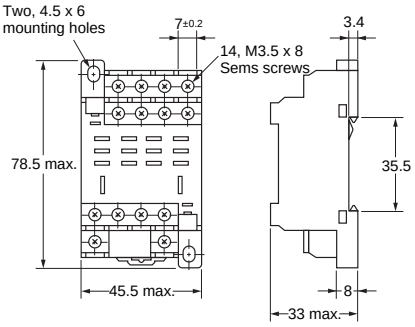
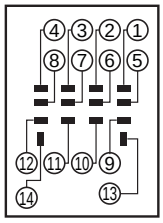
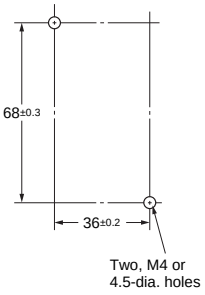
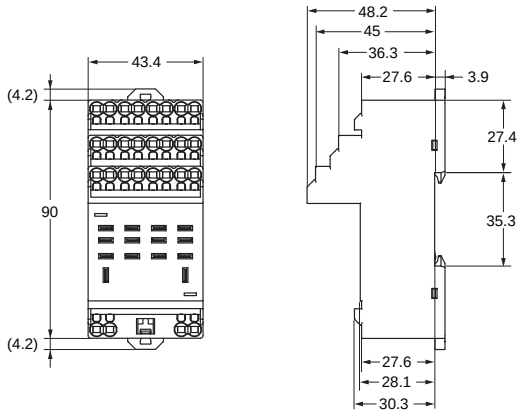
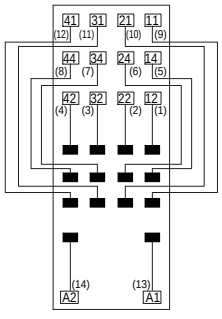
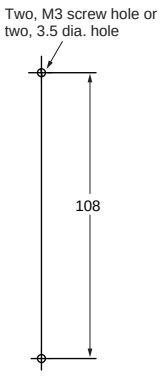


E5L-C□





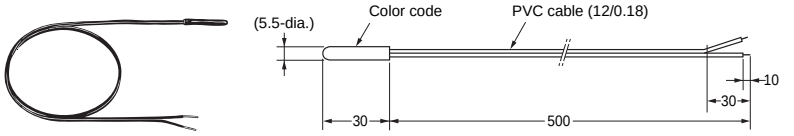
Wiring Connection Sockets (Order Separately)

Dimensions	Terminal Arrangement and Internal Connections	Mounting Hole Dimensions
PTF14A  **PTF14A-E Socket with Finger Protection** 	(TOP VIEW) 	(TOP VIEW) **Note:** Can be mounted to a DIN Track. 
PTF-14-PU-L Socket with Push-In Plus technology 	(TOP VIEW)  **Note:** The numbers in parentheses are traditionally used terminal numbers.	(TOP VIEW)  **Note:** Pull out the hooks to mount the Relay with screws.

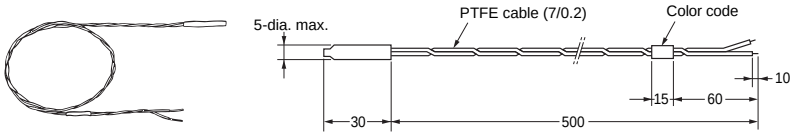
Accessories

E52-THE-E5L Element-interchangeable Thermistor

Included with the following models: –30 to 20°C, 0 to 50°C, and 0 to 100°C.



Included with 100 to 200°C Models.



Temperature Range

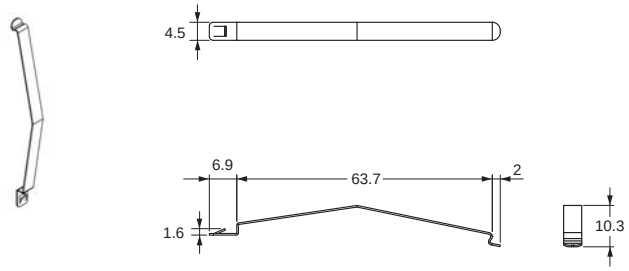
Temperature range	Color code	Nominal resistance	Thermistor constant	Lead wires
–30 to 20°C	Blue	6 kΩ (0°C)	3,390 K	Heat-resistant PVC cable
0 to 100°C✻	Black	6 kΩ (0°C)	3,390 K	
100 to 200°C	Yellow	0.55 kΩ (200°C)	4,300 K	PTFE

Note: PVC cable is heat resistant from –40 to 105°C.
PTFE cable is heat resistant from –40 to 250°C.
✻ Use a 0 to 100°C thermistor for 0 to 50°C applications.

Tolerance

Measured temperature	Tolerance
–30 to 100°C	±2°C max.
100 to 200°C	Measured temperature ±2% max.

Y92H-10 Mounting Brackets (Two)

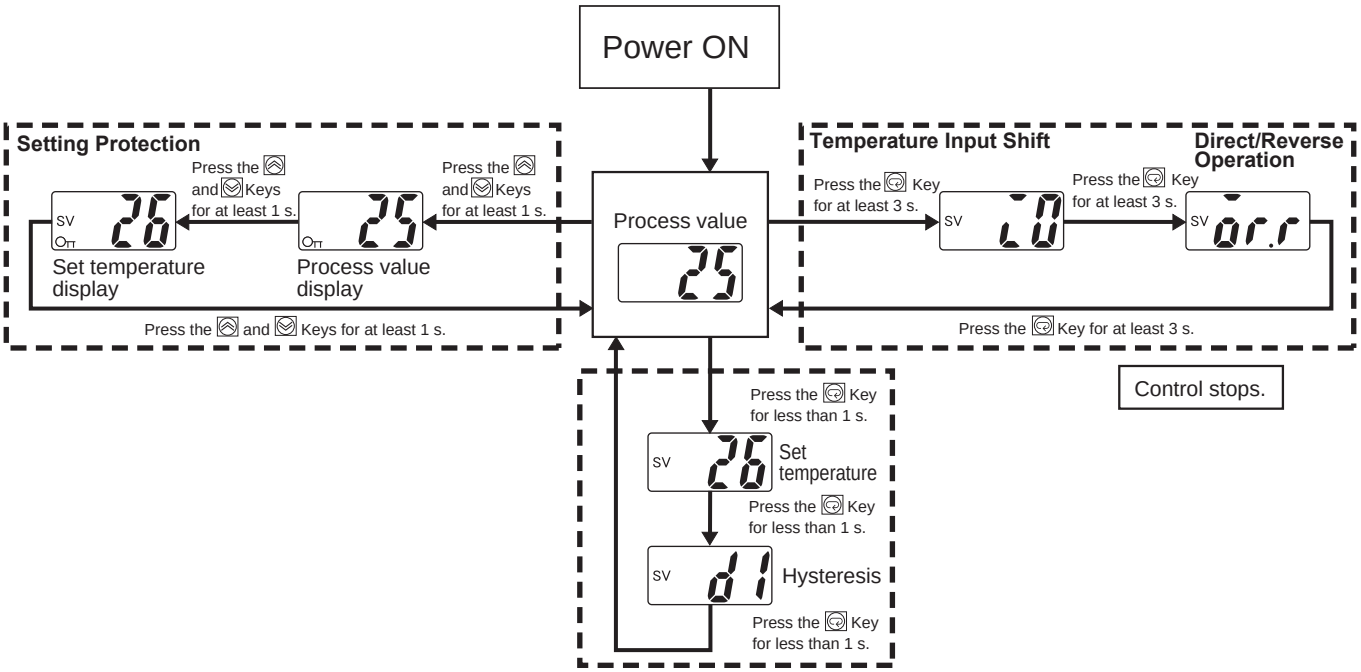


Note: Included with product.
If a mounting bracket is missing or damaged, order a new bracket separately.

Temperature Sensors (Order Separately)

E52-THE5A, E52-THE6D, and E52-THE6F Temperature Sensors can be ordered separately. For details, refer to an *OMRON Web site*.

Operating the E5L-C□



Set temperature

1. Press the Key to enter the Set Temperature Mode.
2. Press the and Keys to set the temperature. The display will continue to change for as long as the key is held down.

Note: The default setting is the lowest temperature in the range.

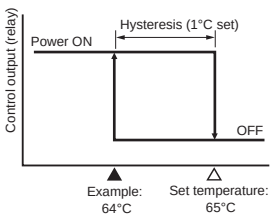
Setting the Hysteresis

1. Press the Key to enter the Hysteresis Mode.
2. Press the and Keys to set the value. Each time the key is pressed, the setting will change by 1°C. The setting will not continue to change even if the key is held down. The key must be released after each change. The hysteresis can be set from 1 to 9°C, in increments of 1°C.

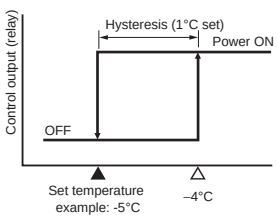
Note: The default setting is 1°C.

Hysteresis	Display
+1°C	SV d1
+5°C	SV d5
+9°C	SV d9

Reverse Operation (Heating Control)



Direct Operation (Cooling Control)



Setting the Temperature Input Shift

1. Press the Key for at least 3 s to enter the Temperature Input Shift Mode.
2. Press the and Keys to set the value. Each time the key is pressed, the setting will change by 1°C. The setting will not continue to change as the key is held down. The key must be released after each change.
   The input shift can be set from –9 to 9°C, in increments of 1°C.

Note: 1. The default setting is 0°C.
2. The control output turns OFF while this setting is being made.

Input shift display	Thermistor measured temperature	Temperature display
SV -0 (No shift)	25°C	25°C
SV 9 (+9°C shift)	25°C	34°C
SV -9 (-9°C shift)	25°C	16°C

Setting Direct or Reverse Operation

1. Press the Key for at least 3 s to enter the Direct/Reverse Selection Mode.
2. Press the and Keys to set the value. Direct operation can be set by pressing the Key, and reverse operation can be set by pressing the Key.

Note: 1. The default setting is for reverse operation.
2. The control output turns OFF while this setting is being made.

Direct/reverse operation	Display
Reverse operation	SV or.r
Direct operation	SV or.d

Setting Protection

1. Setting Protection (Process Value Display)
   Press the ▲ and ▼ Keys simultaneously while the process value is being displayed to change to the setting protection state.
2. Setting Protection (Set Temperature Display)
   From the Setting Protection (process value display) Mode, press the ▲ and ▼ Keys simultaneously to change to the setting protection (set temperature display) state.
3. From the Setting Protection (set temperature display) Mode, press the ▲ and ▼ Keys simultaneously to return to the process value display with no setting protection.

Display example	Display
Process value display	ON, OTT, 25
Set temperature display	ON, SV, OTT, 25

Note: 1. Setting protection disables key operations to prevent the settings from being changed accidentally. OTT will be lit while protection is in effect.
2. Protection will be maintained even when the power supply is turned OFF and ON.

Error Displays and Causes

E5L-A□

When a thermistor disconnection occurs, the built-in relay operates at the OFF side (when NO contacts are used).

Thermistor	NO contacts (Terminal numbers 8 and 12) ✻ Heating load	NC contacts (Terminal numbers 4 and 12) ✻ Cooling load
Disconnection	OFF	ON
Short-circuit	OFF	ON

E5L-C□

When an error occurs, the display shows the error code. Take the necessary measures, referring to the following table.

Display	Meaning	Cause	Control output
FFF (lit)	Overflow	The process value is higher than the set temperature range.	Reverse operation: OFF Direct operation: ON
--- (lit)	Underflow	The process value is lower than the set temperature range	Reverse operation: ON Direct operation: OFF
FFF (flashing)	Thermistor short-circuited	The thermistor is short-circuited.	Reverse operation: OFF Direct operation: OFF
--- (flashing)	Thermistor disconnected	The thermistor is disconnected.	Reverse operation: OFF Direct operation: OFF
E11 (lit)	Memory error	The thermostat has failed.	OFF

Note: 1. Errors are not displayed while settings are being changed, except for memory errors. The control output status will be as shown in the above table while the set temperature or hysteresis is being set. The control output will be OFF while the temperature input shift or direct/reverse operation setting is being set. Key operations will be possible when an error occurs, except for a memory error.
2. The setting protection indicator (OTT) and set value indicator ("SV") will be continued even when settings are protected, except when a memory error occurs.

Safety Precautions

⚠ CAUTION

Do not touch the terminals while power is being supplied. Doing so may occasionally result in minor injury due to electric shock.

Do not allow pieces of metal, wire clippings, or fine metallic shavings or filings from installation to enter the Product. Doing so may occasionally result in electric shock, fire, or malfunction.

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

Never disassemble, modify, or repair the Product or touch any of the internal parts. Minor electric shock, fire, or malfunction may occasionally occur.

If the output relays are used past their life expectancy, contact fusing or burning may occasionally occur. Always consider the application conditions and use the output relays within their rated load and electrical life expectancy. The life expectancy of output relays varies considerably with the output load and switching conditions.

Tighten the terminal screws to between 0.74 and 0.90 N·m. Loose screws may occasionally result in fire.

Set the parameters and wiring of the Product so that they are suitable for the system being controlled. Unexpected operation may occasionally result in property damage or accidents.

A malfunction in the Product may occasionally make control operations impossible or prevent alarm outputs, resulting in property damage. To maintain safety in the event of malfunction of the Product, take appropriate safety measures, such as installing a monitoring device on a separate line.

Precautions for Safe Use

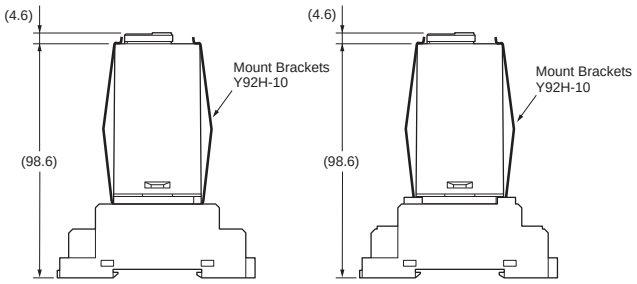
Be sure to observe the following precautions to prevent failure to operate, malfunction, or adverse effects on the performance and functions of the Thermostat. Not doing so may occasionally result in unexpected events.

1. The Product is designed for indoor use only.
   Do not use the Product outdoors or in any of the following locations.
   - Locations directly subject to heat radiated from heating equipment
   - Locations subject to water or oil
   - Locations subject to direct sunlight
   - Locations subject to dust or corrosive gas (in particular, sulfide gas and ammonia gas)
   - Locations subject to sudden or extreme temperature changes
   - Locations subject to icing or condensation
   - Locations subject to vibration or shock
2. Use and store the Product within the rated temperature and humidity ranges. Provide forced cooling if required.
3. To allow heat to escape, do not block the area around the Product.
4. Be sure to wire the Product properly with the correct terminal polarity.
5. Use the specified size of crimped terminals for wiring (M3.5, width of 6.8 mm or less). To connect bare wires to the terminals, use copper wires with a gauge of AWG24 to AWG14 (equal to a cross-sectional area of 0.205 to 2.081 mm^2). (The stripping length is 5 to 6 mm.) Do not connect more than two wires or two crimp terminals to one terminal. When connecting two wires, they must be of the same size and type.
6. Do not connect anything to terminals that are not used.
7. Allow as much space as possible between the Thermostat and devices that generate powerful high frequencies or surges. Separate the wiring to the Thermostat from high-voltage or high-current lines, and do not place the wiring to the Thermostat in parallel with or in the same wiring paths as power lines.
8. Use this Product within the rated load and power supply specifications.
9. Turn ON the power supply at least 30 minutes prior to starting control operations.
10. A switch or circuit breaker must be provided close to the Thermostat. The switch or circuit breaker must be within easy reach of the operator, and must be marked as a disconnecting means for the Thermostat.
11. Do not use paint thinner or similar solvents to clean the Thermostat. Use standard grade alcohol.
12. Design the system (e.g., the control panel) considering the 2.5 second of delay between turning ON the Thermostat and stabilization of the Thermostat's output.

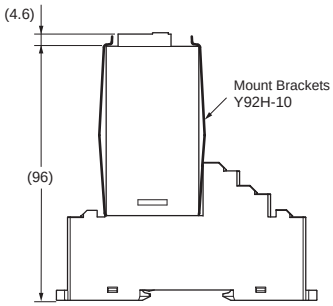
Precautions for Correct Use

Mounting the Thermostat

1. Using the PTF14A Socket, PTF14A-E Socket with Finger Protection and PTF-14-PU-L Socket with Push-In Plus technology, mount the Thermostat to the bracket (Y92H-10) that is provided.



E5L+PTF14A **E5L+PTF14A-E**



E5L+PTF-14-PU-L

2. The structure does not allow the case to be removed. Do not apply excessive force when mounting the Thermostat.

Settings

1. E5L-A□ Temperature Dial

- The temperature dial has some backlash. To adjust the temperature more accurately, turn the dial clockwise when adjusting the temperature.
- Do not change the setting of the temperature dial more than 20 times.
- Do not attempt to turn the dial past the range of the setting scale. Applying excessive force may damage the Thermostat.

2. E5L-A□ Hysteresis Dial

- This dial can be used to set hysteresis for the ON/OFF operation. Turn the dial clockwise to increase the hysteresis and counterclockwise to reduce the hysteresis. Increase the hysteresis to extend the life of the relay by preventing relay chattering caused by the control output turning ON and OFF frequently.
- Do not change the setting of the temperature dial more than 20 times.

Mounting the Thermistor

- Select a location for the temperature sensor of the thermistor where the temperature distribution of sensing objects will not be changed by installation.
- Insert the temperature sensor as far in as possible.
- When measuring fluid temperature, the thermistor should be installed against the current. Before mounting, take factors such as the bending moment of inertia and vibration into consideration.
- Do not apply mechanical force to the temperature-sensing part of the thermistor.
- The E52-THE□□ Thermistor can be used for applications that require metal protective tubing. Consult with your OMRON representative.

Other Precautions

- Do not use the E5L-C□ if the front sheet is peeling or torn.
- Use appropriate tools to disassemble the Thermostat for disposal.

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