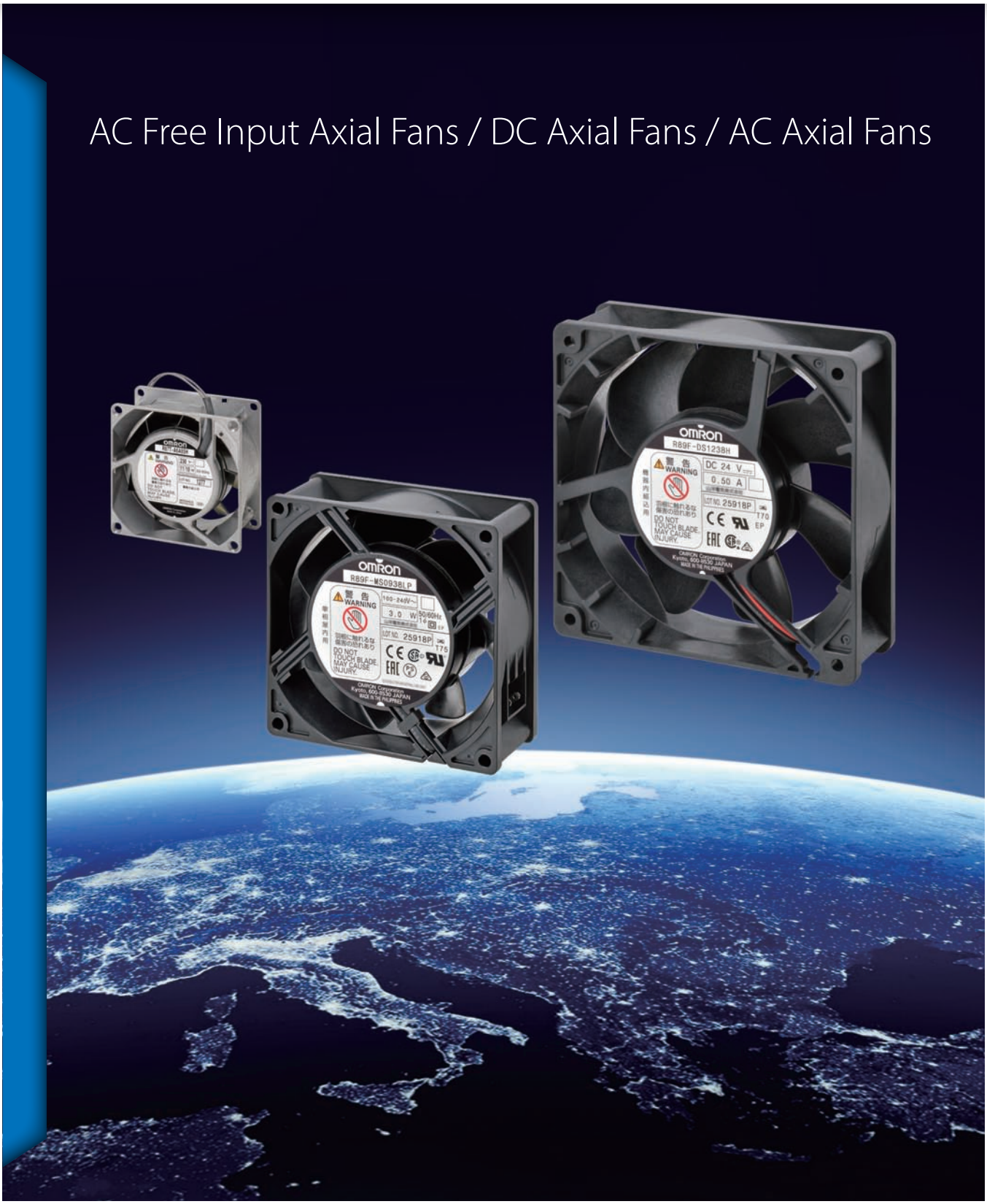
OMRON

Axial Fans Series Catalog



OMRON's rich and multiple lineup of axial fans

For less design effort

DC Axial Fans R89F-DS

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

AC Free Input Axial Fans R89-MS

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

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

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

AC Axial Fans

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

Configuration effort	Design effort	Application costs
Voltage selection	Design change Plan drawing Evaluation tests	Reapplication for standards certification

100,115, 200, or 230 VAC

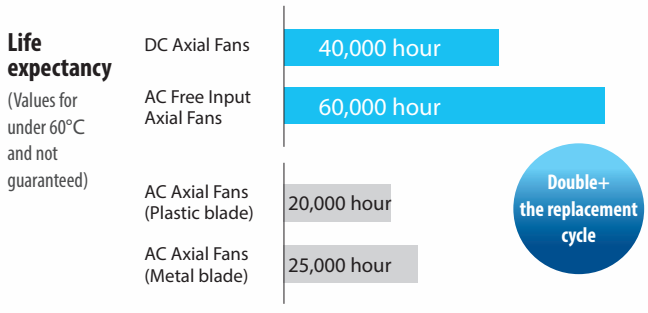
DC Axial Fans / AC Free Input Axial Fans

Reduce design and standards certification application efforts by unifying power specifications

Can be single common model

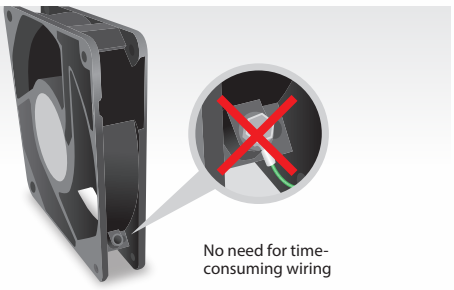
- DC Axial Fans 24 VDC
- AC Free Input Axial Fans 100 to 240 VAC

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

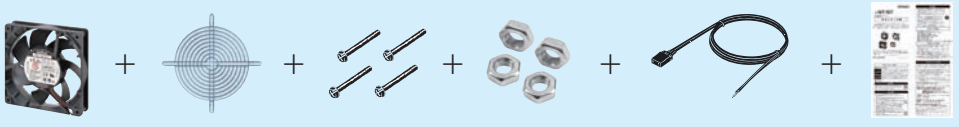


No need for time-consuming wiring

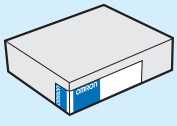
This Set Model allows you to purchase the necessary parts with a single order.

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

Set Contents

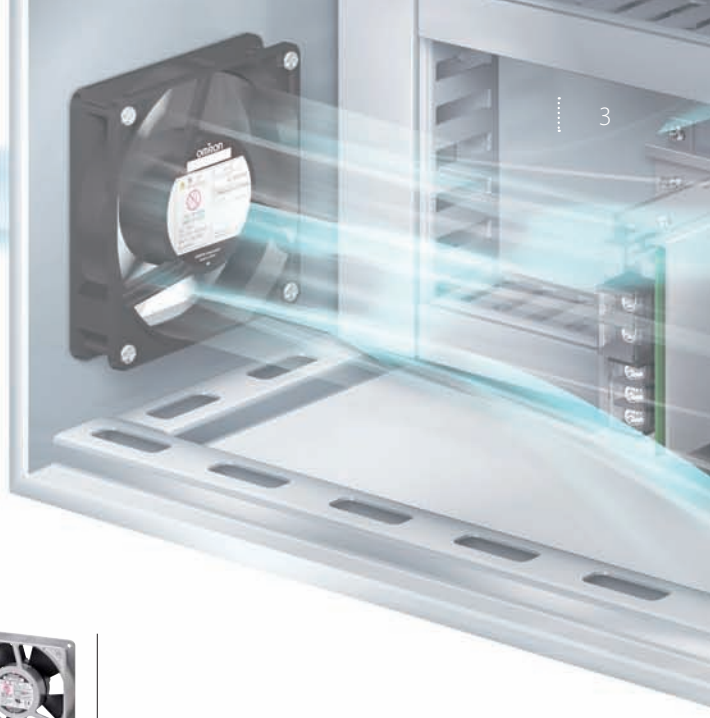


Fan + Finger guard×1 *2 + M4 Screw×4 + Hexagonal nuts×4 + Plug cord (1m) *3 + Instruction manual



* Packaging for illustrative purposes only

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



For economy type

AC Axial Fans R87F/R87T R87F Plastic blade type

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

For environmental resistance

AC Axial Fans R87T Metal blade type

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

Small ← Flow Rate · Size · Noise → Large

Metal blade models deliver high environmental resistance

Mist resistance

Wide range of operating temperatures

Also available are water-resistant models

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

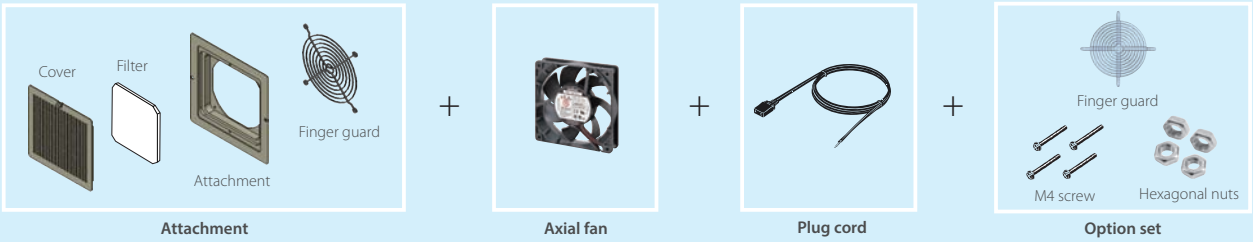
For less mounting effort

Box Fan R87B

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

Just open the cover to replace the filter

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



Attachment | Axial fan | Plug cord | Option set

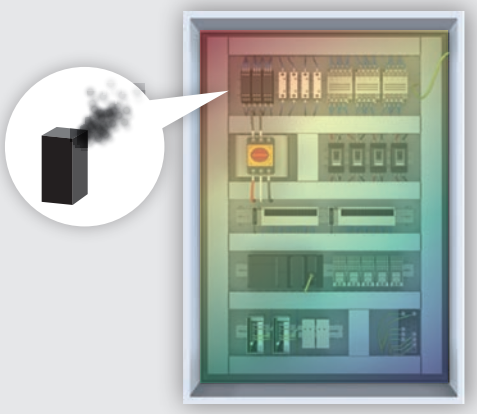
Note: Some specifications are available as set model. Refer to *Setting model* on page 57 for details.

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

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

Without the right fan...

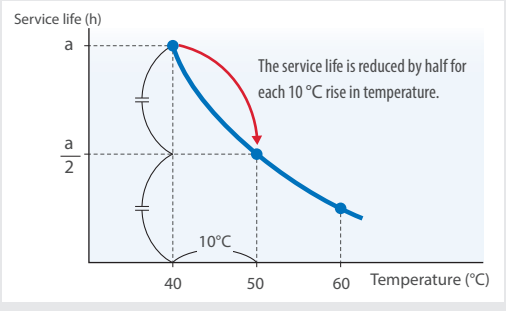
Temperatures in the panel go up, leading to device failure



Device service life is shortened, leading to additional replacement effort

Control devices has a service life.

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



Relationship between service life of a electrolytic capacitor and temperature

Selecting Fans

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

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

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

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

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

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

$Q(m3/min) = 50 \times W/\Delta T$

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

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

System impedance

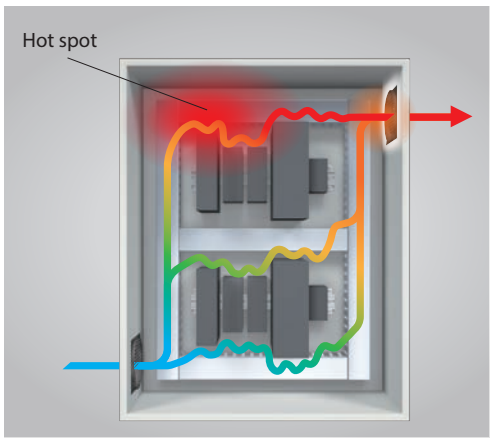
Represents the degree of airflow obstruction. Because system impedance is influenced by airflow, obstacles, and layout, cooling efficiency may vary while using fans with the same flow rate.

Additionally

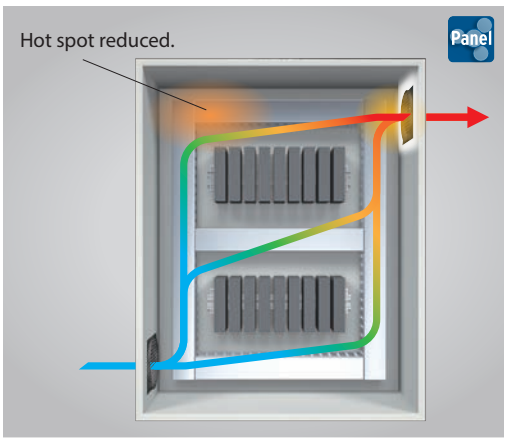
OMRON's Value Design products can improve airflow through uniform sizing

Boost the reliability of your devices by evening out heat radiation

Previously Differences in heights and depths create hot spots.



Now The unified heights and depths help reduce hot spots.



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

AC Free Input Axial Fans

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

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

DC Axial Fans

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

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

AC Axial Fans

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

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

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

Box Fans

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

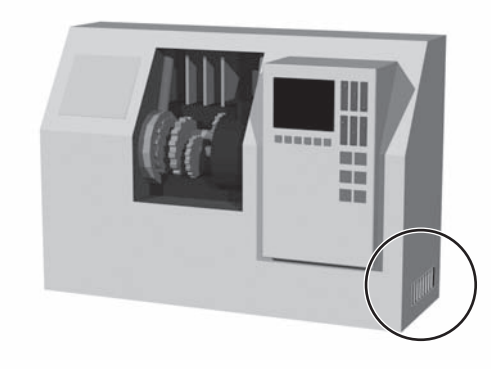
✻ The plug cord can be replaced with other model. Refer to page 56 for details. When you select another model, the qty required is the same as the one of R87F-PC-20 listed in the table above.

Applications for Axial Fans

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

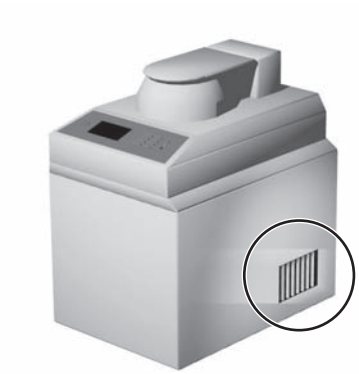
■ Control Panels

■ Machine Tools



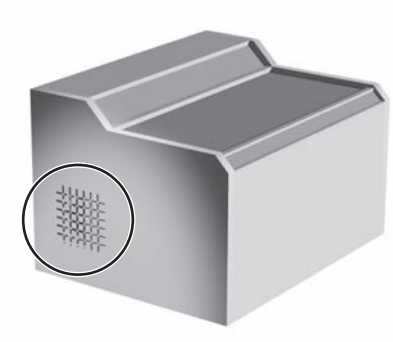
■ Measurement Devices

■ Medical Devices



■ Solder Fume Suction Equipment

■ Vending Machines and Showcases



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

Safety Precautions for All Axial Fans

Warning Indications

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

Meaning of Product Safety Symbols

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

⚠ WARNING

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

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

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

⚠ CAUTION

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

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

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

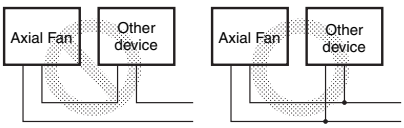
Do not use the Fan outside the rated temperature range or above the rated voltage. Do not use the Fan outside the operating temperature range and allowable voltage fluctuation range. Do not touch the motor section during operation or immediately after stopping operation.

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

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

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

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



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

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

Precautions for Safe Use

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

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

Precautions for Correct Use

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

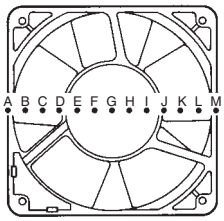
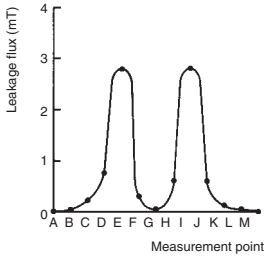
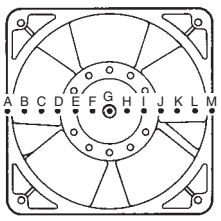
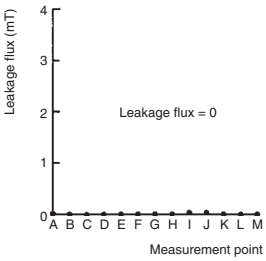
Precautions for Correct Use

Leakage Flux

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

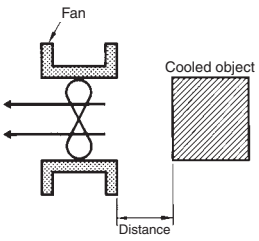
1. Keeping CRTs at least 30 cm away from the Axial Fan.
2. Shielding the Axial Fan side with metal mesh.
   The leakage flux from a Fan with metal blades is less than with plastic blades. The leakage flux distribution curves are shown below as examples.

R87T and Other AC Axial Fans

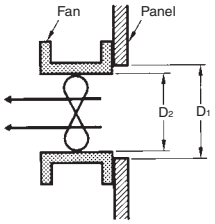
Inlet	Dimensions	
	Leakage flux distribution	
Outlet	Dimensions	
	Leakage flux distribution	

Noise Countermeasures

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

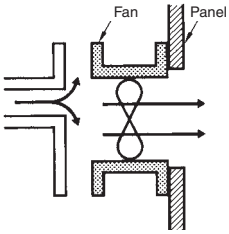


- The diameter of the Fan installation hole (D2) should be larger than the diameter of the Fan (D1).
  D_1:Fan installation hole diameter
  D_2:Fan diameter
  $D_1 > D_2$

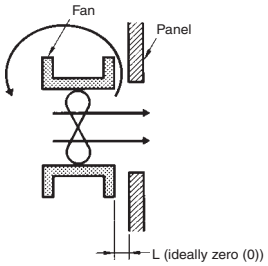


Cooling Effect

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



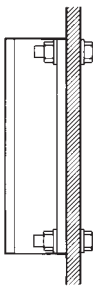
- When installing the Fan, keep the clearance at the outlet side as small as possible. (If there is a large clearance at the outlet side, it may not be possible to obtain a sufficient cooling effect.)

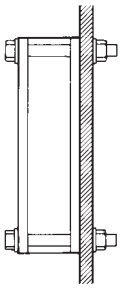


Axial Fan Installation

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

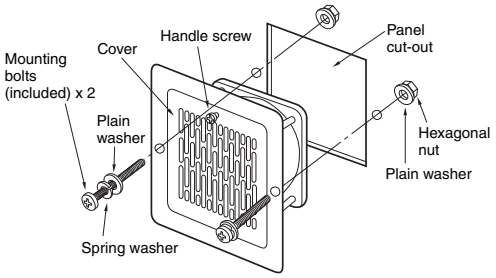
Single-flange mounting **Double-flange mounting**





Box Fan Installation

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



Precautions for Building Fans into Equipment

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

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

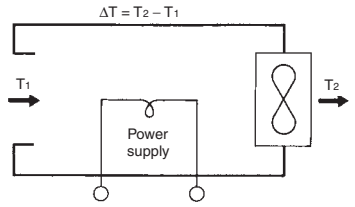
Technical Explanation for Axial Fans

Selecting a Fan

Procedure

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

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



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

(3) Calculate the required flow rate.

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

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

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

$\Delta P = KQ^n$

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

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

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

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

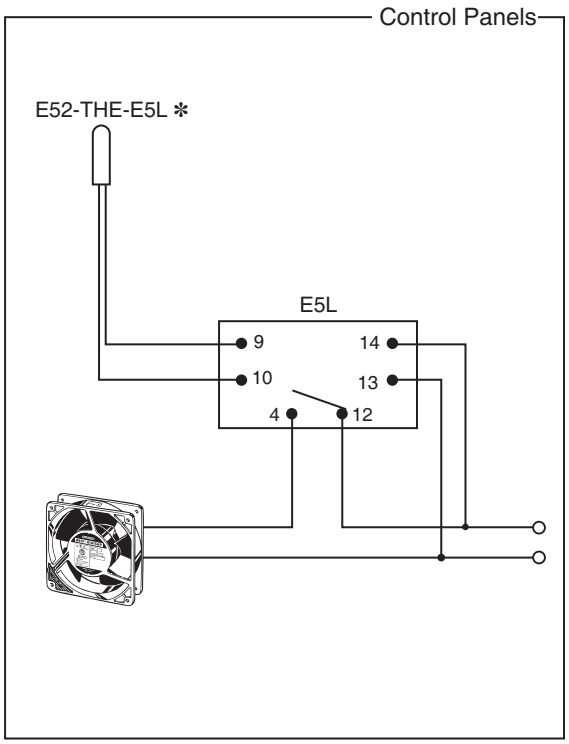
The procedure to select a Fan is described above. It is difficult, however, to obtain the actual system impedance. In general, therefore, select a Fan with a maximum flow rate of from 1.3 to 2 times the flow rate required.

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

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

Electronic Thermostat Connection Example

Connection example



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

Explanation of Terms

Nominal Value

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

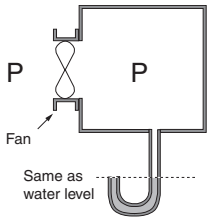
Flow Rate: Q (m^3/min.)

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

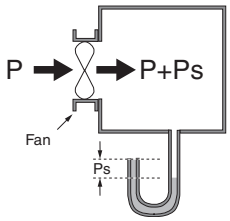
Static Pressure: Ps (Pa)

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

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



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

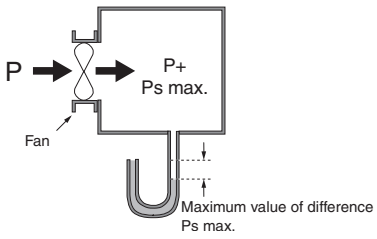


Maximum Flow Rate: Q max. (m^3/min.)

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

Maximum Static Pressure: Ps max. (Pa)

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



System Impedance

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

Impedance Protection

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

Thermal Protection

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

Current Blocking Function

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

Power Supply Lead Wire Reverse Connection Protection

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

Further Information

Flow Rate and Static Pressure

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

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

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

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

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

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

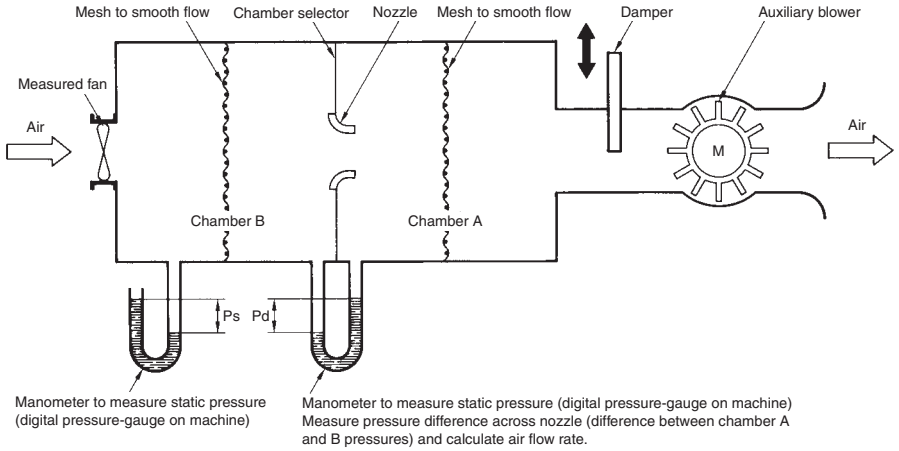
Fan Operating Point:
A Fan installed in equipment operates near the point where the Fan characteristic curve crosses the system impedance curve.

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

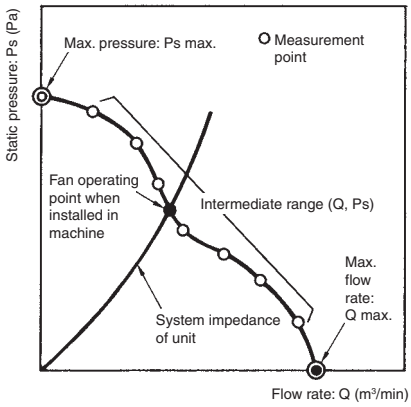
Measurement Conditions for R87□ Series

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

Flow Rate Measurement Device



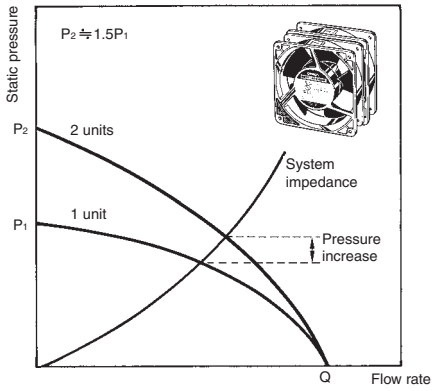
Flow Rate/Static Pressure Characteristic Model



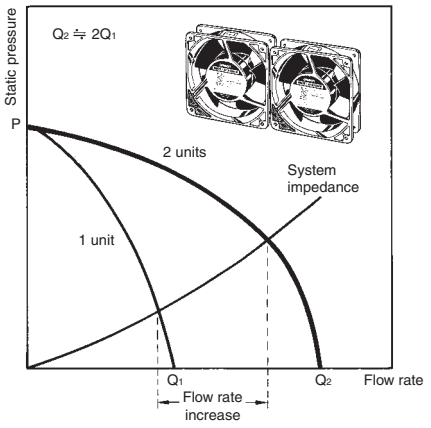
Serial and Parallel Fan Operation

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

Serial Operation:



Parallel Operation:

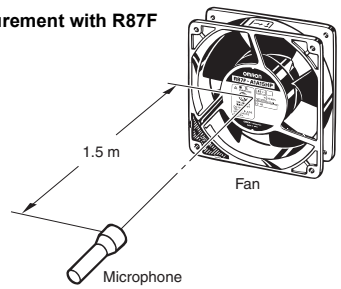


Noise Measurements

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

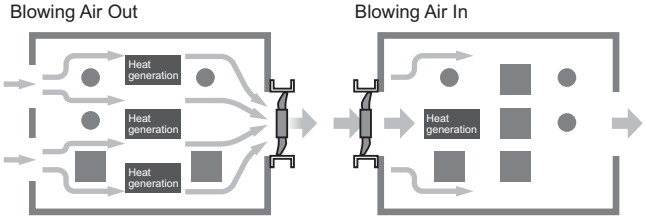
R87F: Measurement is performed at a position 1.5 m above the center line from the air inlet.
R89F: Measurement is performed at a position 1 m away from the air inlet.

Measurement with R87F



Cooling Effect

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



Many Heat-generating Elements in Various Locations

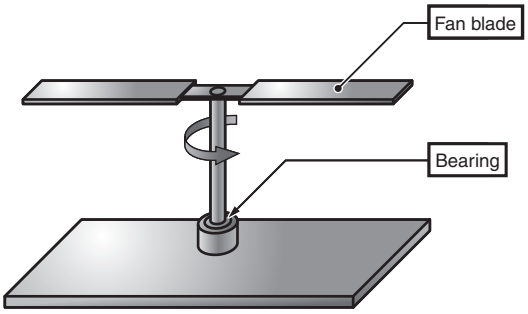
The pressure inside the box decreases, so dust can easily enter through other openings.

Heat-generating Elements in One Location

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

Service Life

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



A mechanical illustration of the Axial Fan structure

R89F-M

Reducing required design work through unified power supply voltage

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

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

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

Model Number Structure

Model Number Legend

R89F-M□□□□□□□-□□

1 2 3 4 5 6 7 8

1. Basic series

R89F	Plastic Blade Series

2. Rated voltage

M	100 to 240 VAC

3. Frame shape

S	Square

4. Frame

09	92 × 92
12	120 × 120

5. Frame thickness

38	38

6. Rotational speed

H	High speed
L	Low speed

7. Terminal type

P	Terminals ✻

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

8. Delivered configuration

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

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

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

Ordering Information

AC Free Input Axial Fans

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

Options (Order Separately)

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

Note: Mounting screws are not provided.

Set Model

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

Safety Precautions

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

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

Ratings and Ordering Information

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

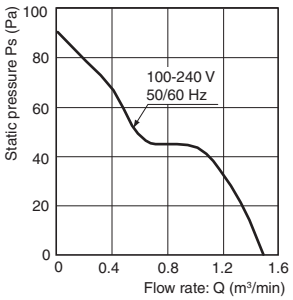
✻ An asterisk (✻) indicates a nominal value.

Characteristics

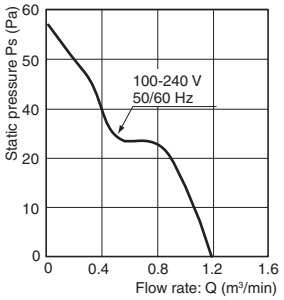
Motor type		Brushless DC motor
Terminal type		Terminals
Insulation class		Class E (UL class A)
Insulation resistance		10 MΩ min. (at 500 VDC) Between lead wire conductor and frame
Insulation withstand voltage		1,500 VAC (1 minute) Between input terminal and frame
Ambient operating temperature		-20 to 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/IEC62368-1 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



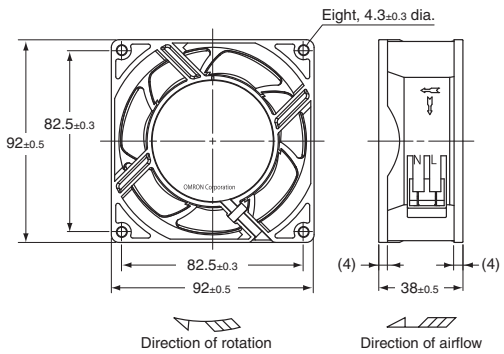
R89F-MS0938LP



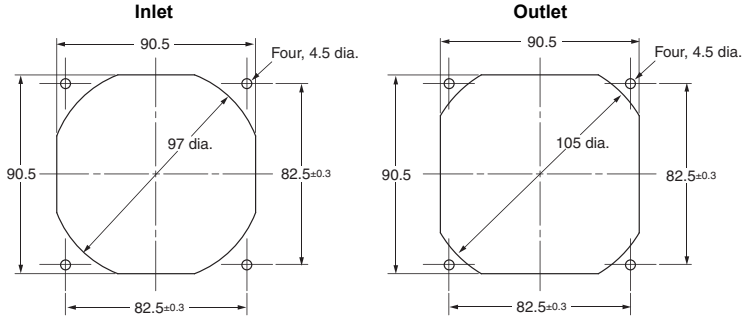
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)



Panel Cutouts



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

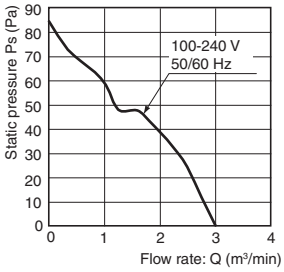
✻ An asterisk (✻) indicates a nominal value.

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/IEC62368-1 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)

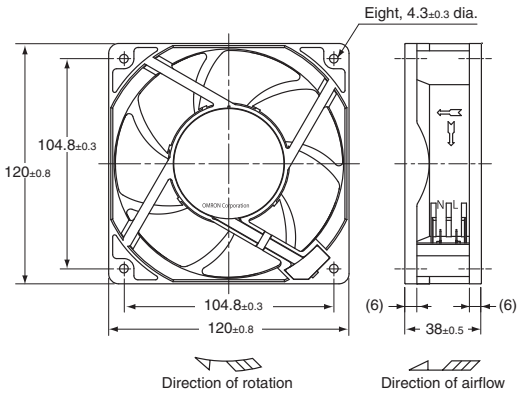
R89F-MS1238HP



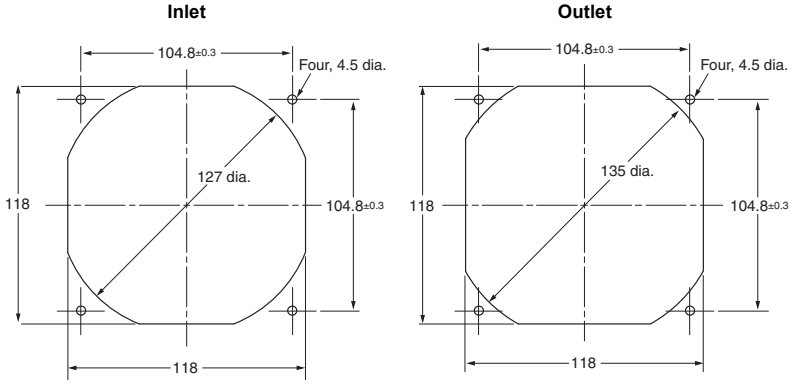
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

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

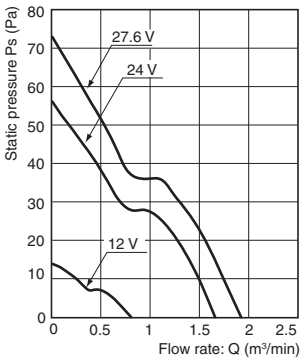
✻ An asterisk (✻) indicates a nominal value.

Characteristics

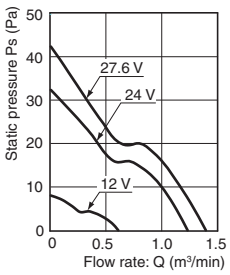
Motor type		Brushless DC motor
Terminal type		Lead wires
Insulation class		Class E (UL class A)
Insulation resistance		10 MΩ min. (at 500 VDC) Between lead wire conductor and frame
Insulation withstand voltage		500 VAC (1 minute) Between lead wire conductor and frame
Ambient operating temperature		-20 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/IEC62368-1 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



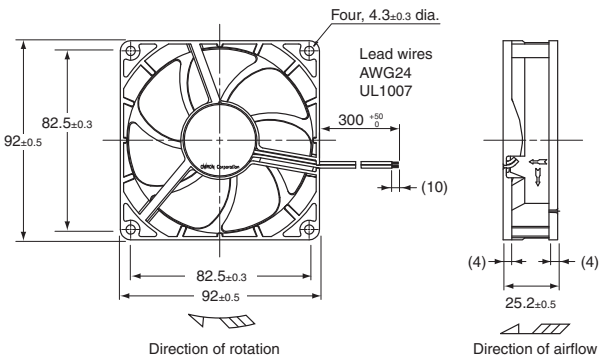
R89F-DS0925L



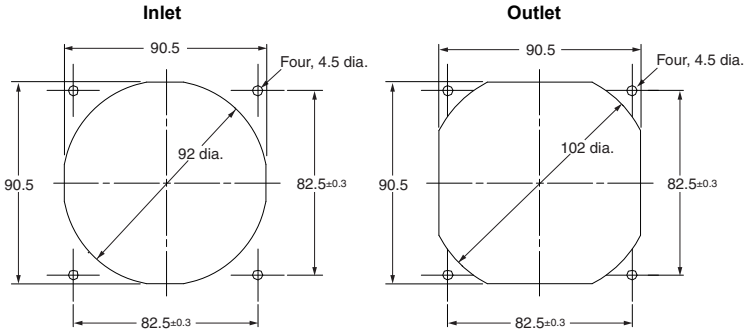
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

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

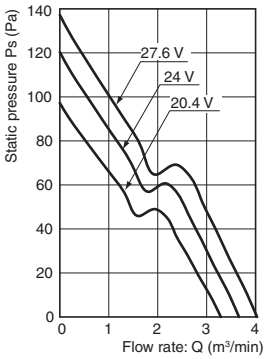
✻ An asterisk (✻) indicates a nominal value.

Characteristics

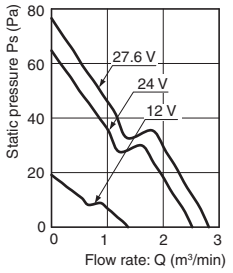
Motor type		Brushless DC motor
Terminal type		Lead wires
Insulation class		Class E (UL class A)
Insulation resistance		10 MΩ min. (at 500 VDC) Between lead wire conductor and frame
Insulation withstand voltage		500 VAC (1 minute) Between lead wire conductor and frame
Ambient operating temperature		-20 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/IEC62368-1 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



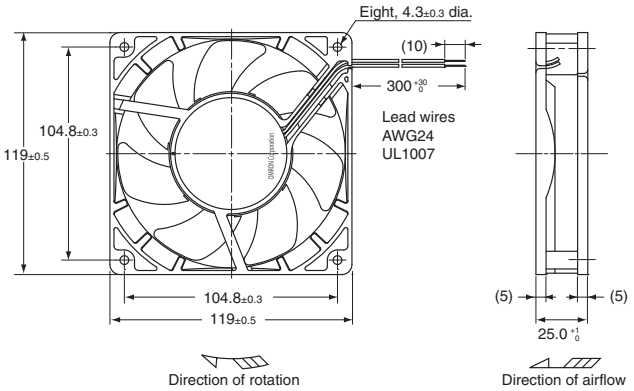
R89F-DS1225L



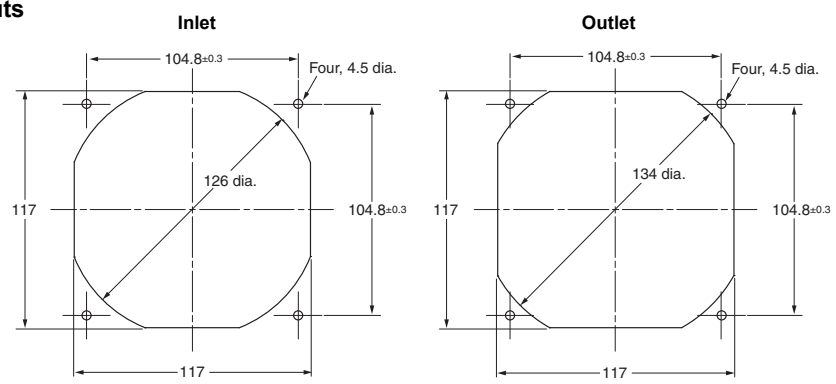
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

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

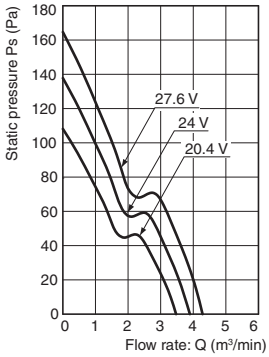
✻ An asterisk (✻) indicates a nominal value.

Characteristics

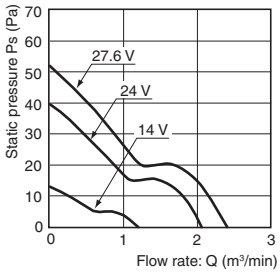
Motor type		Brushless DC motor
Terminal type		Lead wires
Insulation class		Class E (UL class A)
Insulation resistance		10 MΩ min. (at 500 VDC) Between lead wire conductor and frame
Insulation withstand voltage		500 VAC (1 minute) Between lead wire conductor and frame
Ambient operating temperature		-20 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/IEC62368-1 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



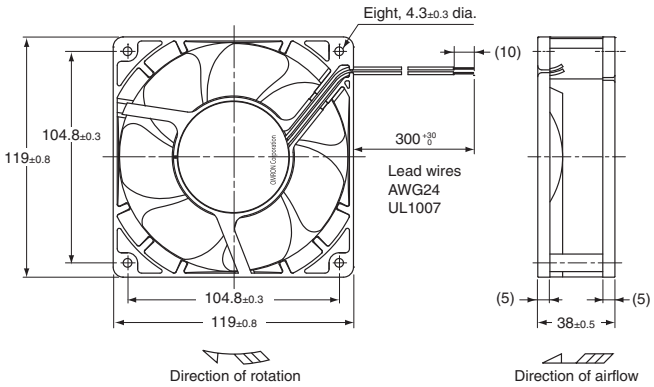
R89F-DS1238L



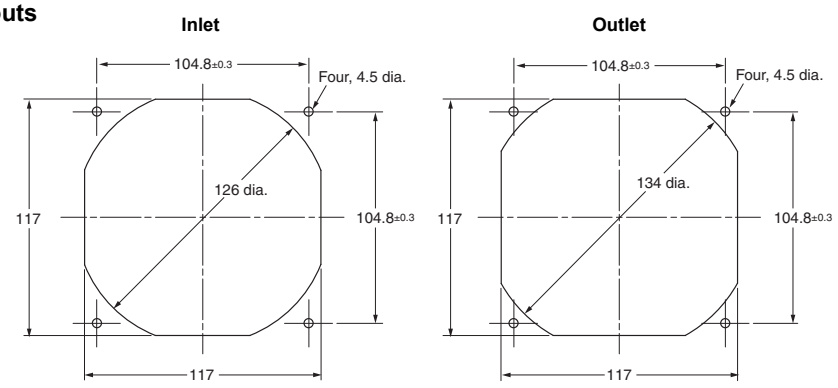
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)



Panel Cutouts



Options

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

R89F
Set Model

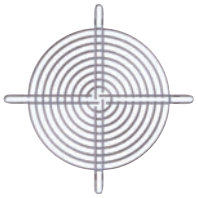
- Select the optimum size for a variety of control panels.
- All required parts can be ordered as a set, ideal for fan replacement.
- All required maintenance parts are included in one box, requiring less space and reduced parts management work.

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

Set Contents

Fan

Finger Guard × 1



Plug Cord (1 m)

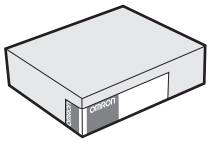
✻ AC Free Input Axial Fan only

M4 screws × 4

Hexagonal nuts × 4

Instruction manual

All required parts included in one box



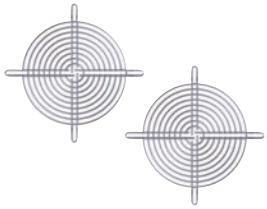
✻ Packaging for illustrative purposes only.

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

Set Contents

Fan

Finger Guard × 2



Plug Cord (1 m)

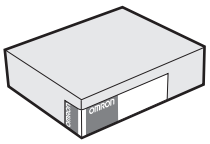
✻ AC Free Input Axial Fan only

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 (40 type) and metal-bladed models (24 type) included in series.
- R87T-A□A15H-WR Water-resistant AC Axial Fans (IP X7 degree of protection) added to series.

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

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

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

Model Number Structure

Model Number Legend

R87□-□□ □□□□□□-□

1 2 3 4 5 6 7 8

1. Basic series

R87F: Plastic blade
R87T: Metal blade

2. Rated voltage

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

3. Frame material

A: Die-cast aluminum

4. Frame size

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

5. Frame thickness

3: 25
5: 38
7: 55

6. Rotational speed

H: High
L: Low

7. Terminal type

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

8. Type

No marking: Standard
WR: Water-resistant

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

Ordering Information

Available Models

AC Axial Fans

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

Options (Order Separately)

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

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

Safety Precautions

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

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

Specifications

Ratings and Ordering Information

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

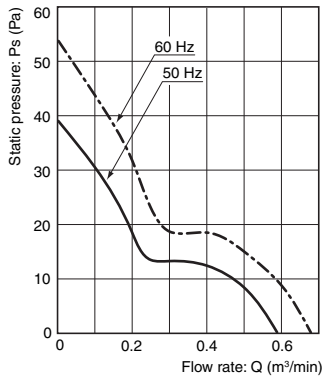
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

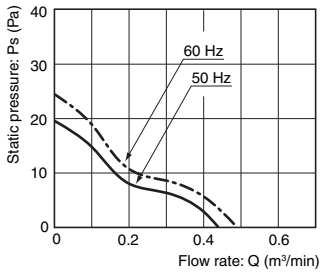
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Lead wires
Insulation class	IEC class B (130°C) UL class A (105°C) CSA class A (105°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand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



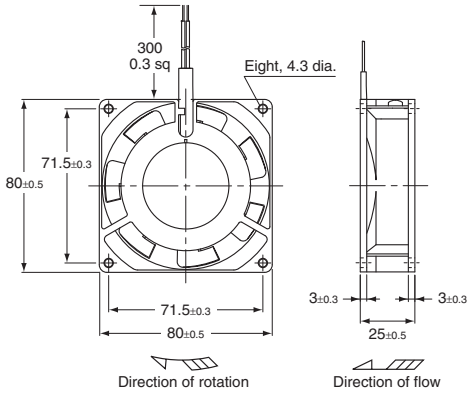
R87F-A□A83L



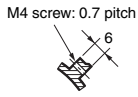
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)

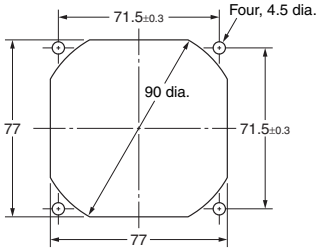


Screw hole for grounding

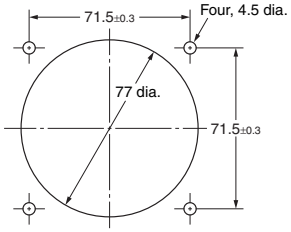


Panel Cutouts

Outlet



Inlet



Options

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

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

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

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

Specifications

Ratings and Ordering Information

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

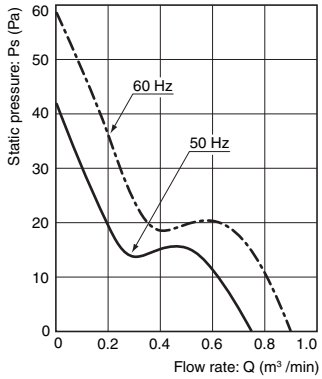
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

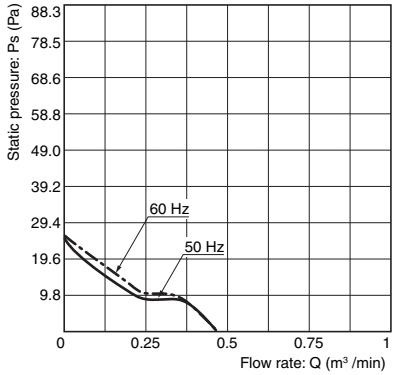
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) UL class A (105°C) CSA class A (105°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand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



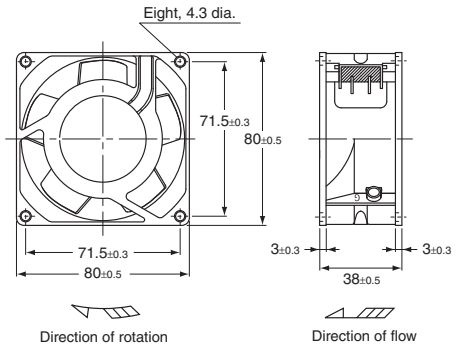
R87F-A□A85LP



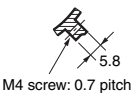
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

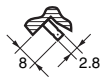
(Unit: mm)



Screw hole for grounding



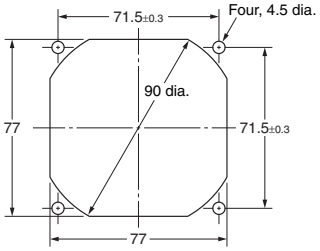
Terminal shape



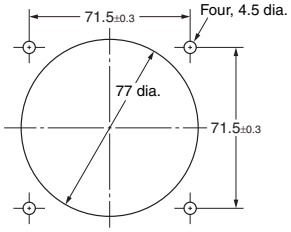
Faston #110 terminal
(or equivalent)

Panel Cutouts

Outlet



Inlet



Options

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

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

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

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

Specifications

Ratings and Ordering Information

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

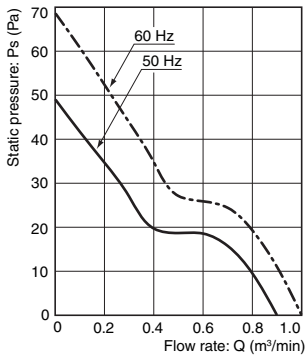
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

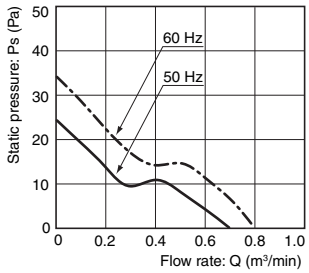
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) UL class A (105°C) CSA class A (105°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand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



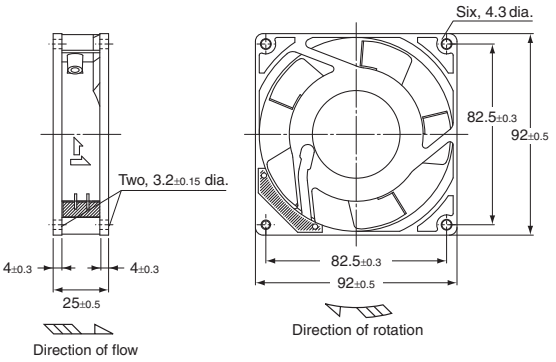
R87F-A□A93LP



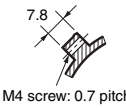
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

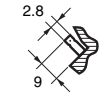
(Unit: mm)



Screw hole for grounding



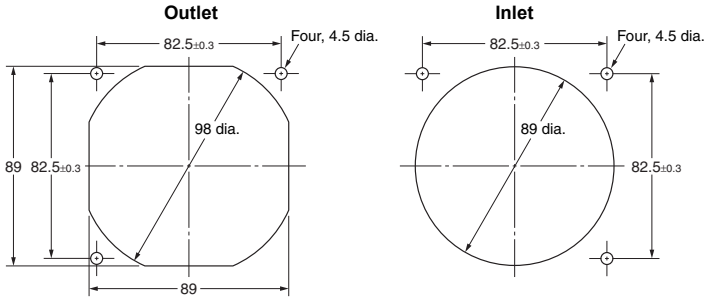
Terminal shape



Faston #110 terminal
(or equivalent)

Panel Cutouts

Panel cutting reference dimensions (note 3 mounting holes)



Options

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

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

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

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

Specifications

Ratings and Ordering Information

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

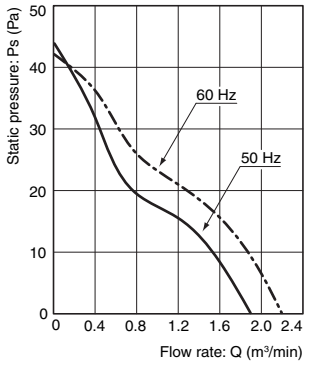
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

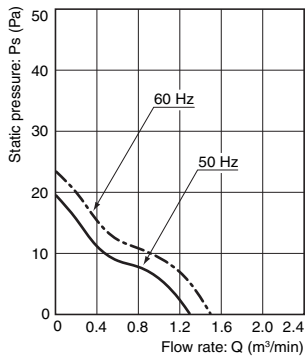
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) cULus class B (130°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand voltage	2,000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



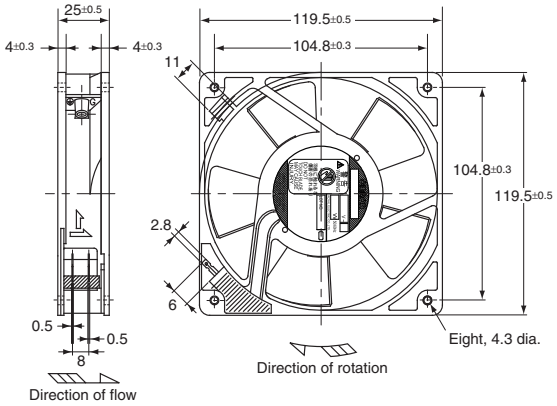
R87F-A□A13LP



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

Dimensions

(Unit: mm)



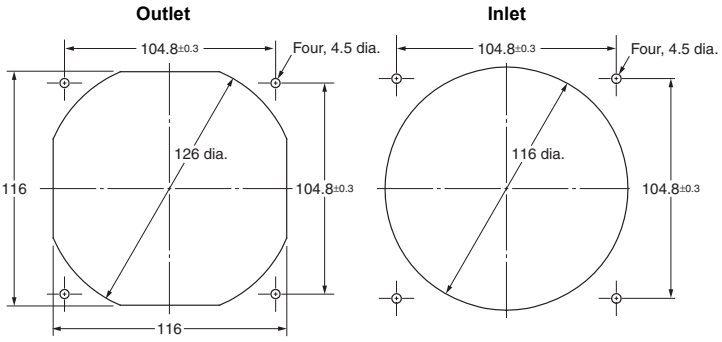
Screw hole for grounding

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
Set model	R87F-SET1225	52

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

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

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

Specifications

Ratings and Ordering Information

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

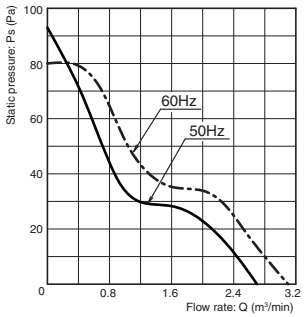
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

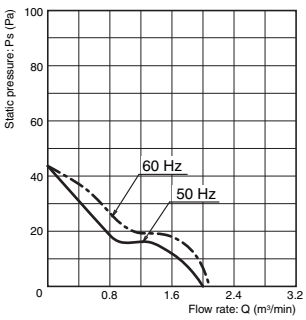
Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) cULus class B (130°C)
Insulation resistance	100 MΩ min. (at 500 VDC) between all power supply connections and uncharged metal parts.
Insulation withstand voltage	2,000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



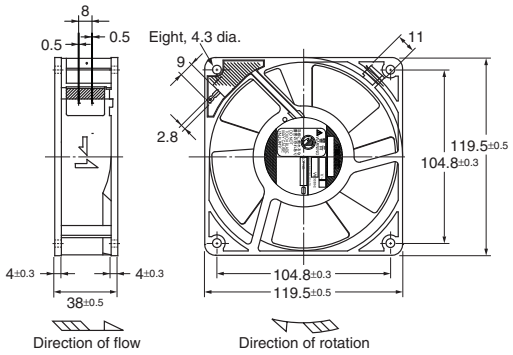
R87F-A□A15LP



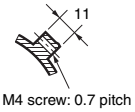
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)



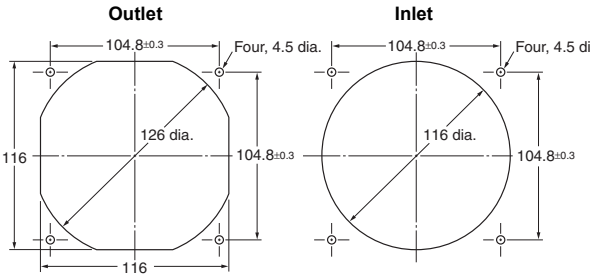
Screw hole for grounding



Terminal shape

Faston #110 terminals
(or equivalent)

Panel Cutouts



Options

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

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

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

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

Specifications

Ratings and Ordering Information

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

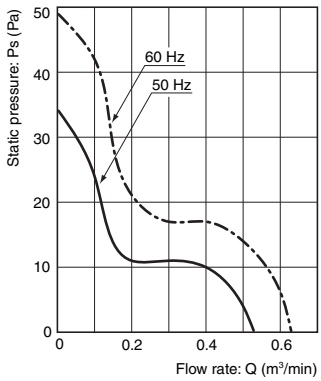
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A)*		Rated input (W)*		Rated rotational speed (r/min)*		Maximum flow rate (m^3/min)*		Maximum static pressure (Pa)*		Noise (dB)*	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz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

Characteristics

Motor type		Single-phase shading coil induction motor (2-pole, open type)
Terminal type		Lead wires
Insulation class		IEC class B (130°C) 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)

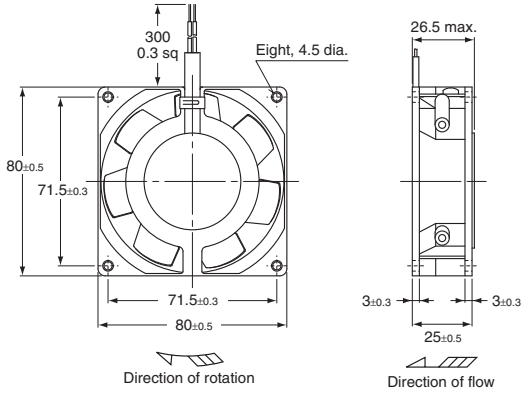
R87T-A□A83H



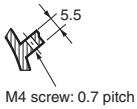
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

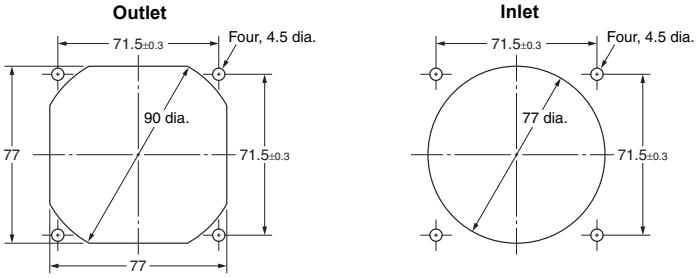
(Unit: mm)



Screw hole for grounding



Panel Cutouts



Options

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

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

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

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

Specifications

Ratings and Ordering Information

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

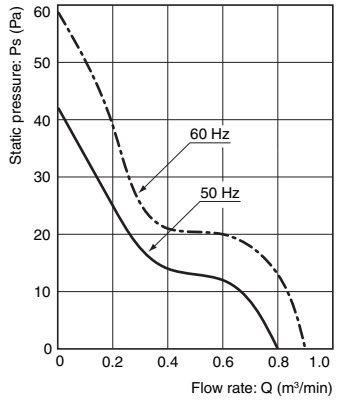
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Lead wires
Insulation class	IEC class B (130°C) 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)

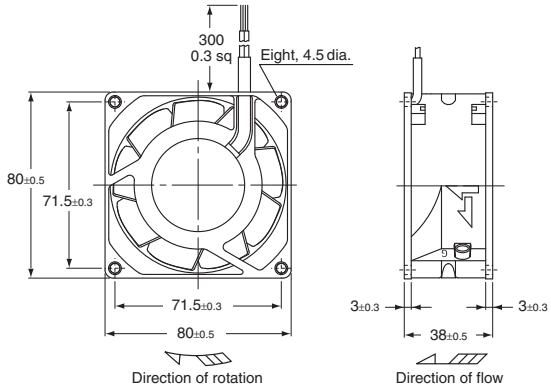
R87T-A□A85H



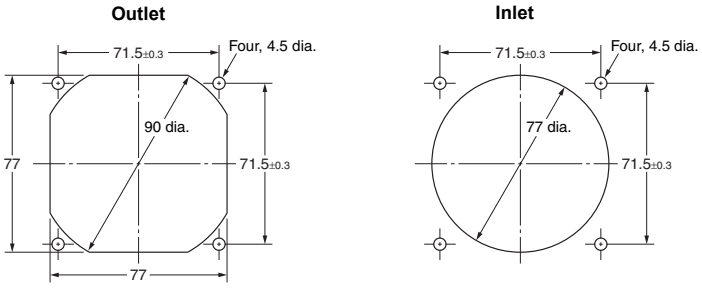
Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)



Panel Cutouts



Options

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

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

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

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

Specifications

Ratings and Ordering Information

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

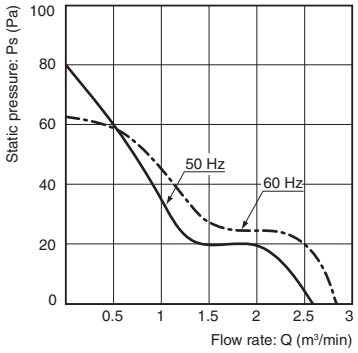
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Terminals
Insulation class	IEC class B (130°C) 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)

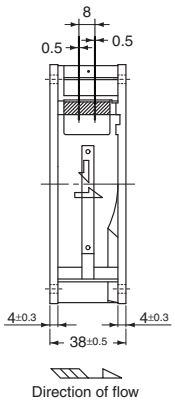
R87T-A□A15HP

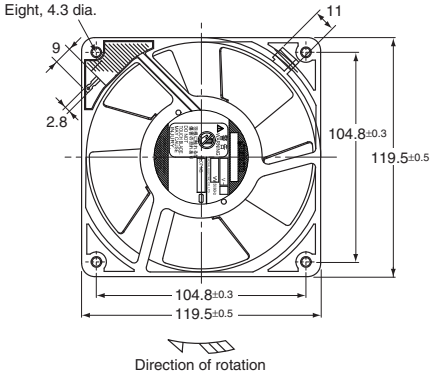


Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

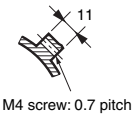
Dimensions

(Unit: mm)





Screw hole for grounding

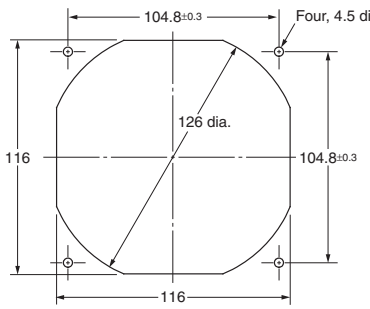


Terminal shape

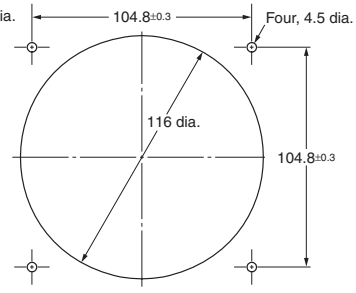
Faston #110 terminal
(or equivalent)

Panel Cutouts

Outlet



Inlet



Options

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

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

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

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

Specifications

Ratings and Ordering Information

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

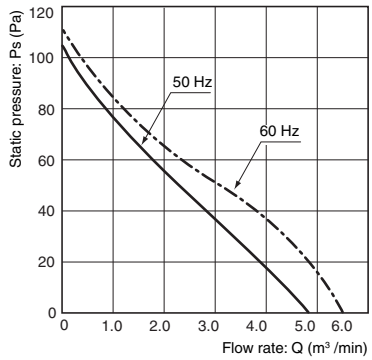
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Lead wires
Insulation class	IEC class B (130°C) 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)

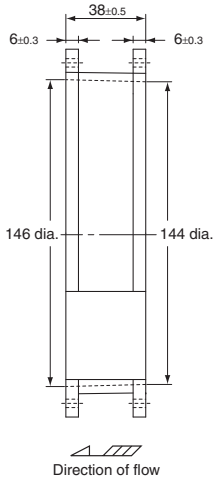
R87T-A□A05H

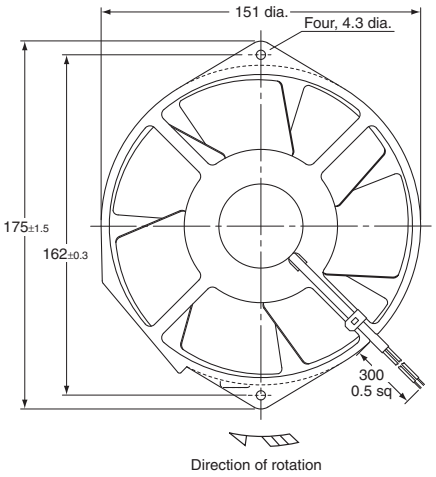


Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

(Unit: mm)

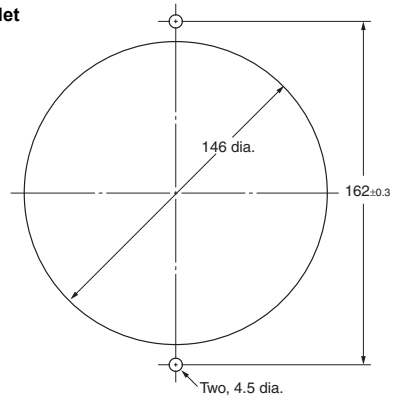




Ground Screw Section

Panel Cutouts

Outlet and Inlet



Options

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

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

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

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

Specifications

Ratings and Ordering Information

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

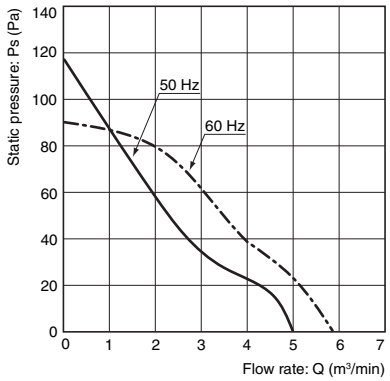
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

Motor type	Single-phase shading coil induction motor (2-pole, open type)
Terminal type	Lead wires
Insulation class	IEC class B (130°C) 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)

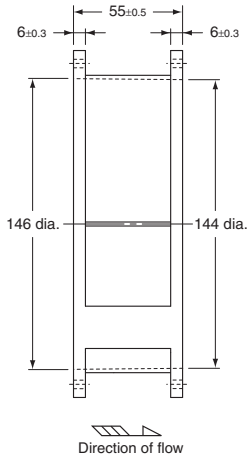
R87T-A□A07H

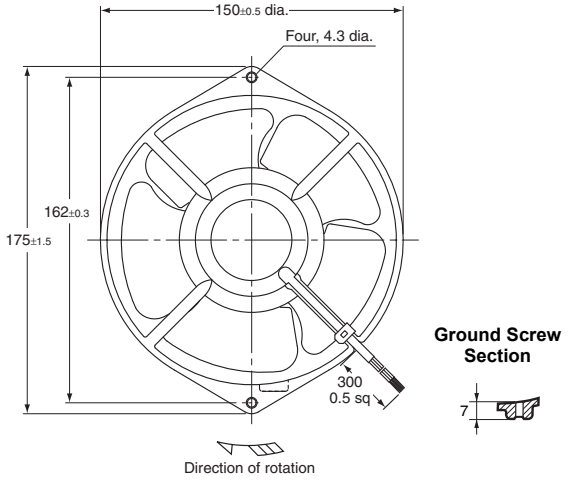


Note: For details on measurement conditions, refer to *Flow Rate and Static Pressure* on page 17.

Dimensions

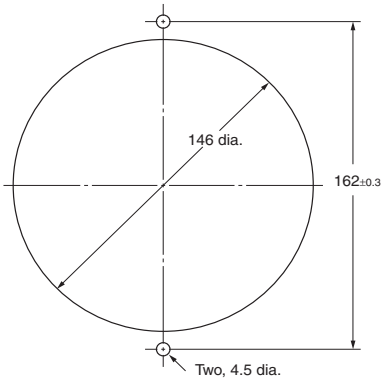
(Unit: mm)





Panel Cutouts

Outlet and Inlet



Options

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

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

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

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

Specifications

Ratings and Ordering Information

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

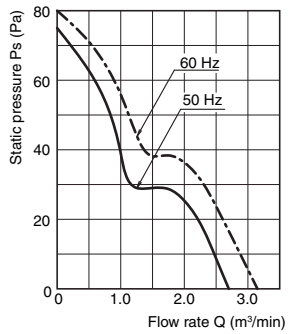
Item / Model	Rated voltage (V)	Permitted voltage fluctuation range (%)	Frequency (Hz)	Rated current (A) ✻		Rated input (W) ✻		Rated rotational speed (r/min) ✻		Maximum flow rate (m^3/min) ✻		Maximum static pressure (Pa) ✻		Noise (dB) ✻	
				50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz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

Characteristics

Motor type		Single-phase shading coil induction motor (2-pole, open type)
Terminal type		Lead wires
Insulation class		IEC class B (130°C) 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)

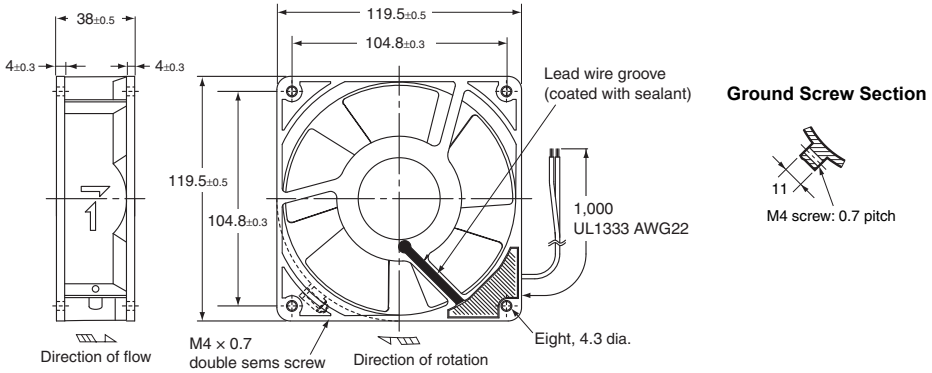
R87T-A□A15H-WR



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

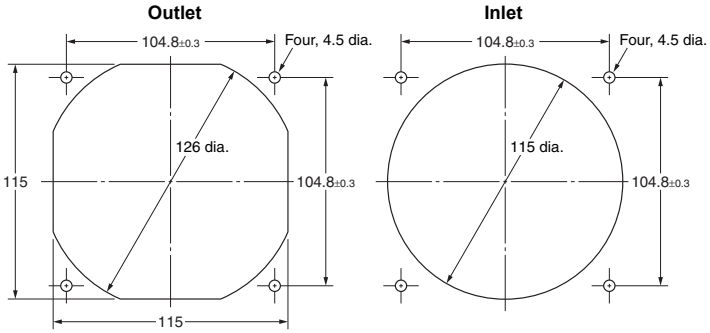
Dimensions

(Unit: mm)



Ground Screw Section

Panel Cutouts



Options

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

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

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

R89F-PC Plug Cord

Ratings and Ordering Information

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

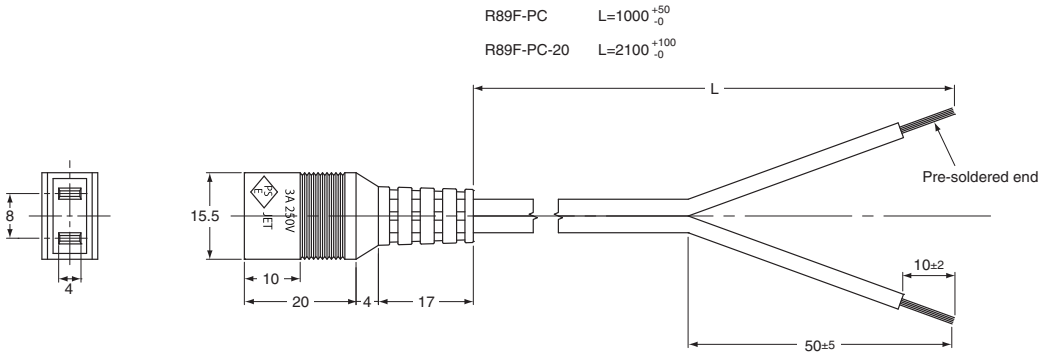
R89F-PC Rating: 3 A, 250 V

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

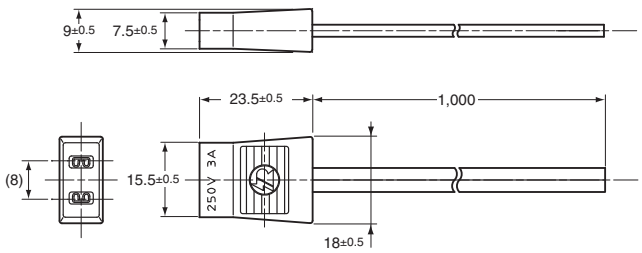
R87F-PC Rating: 250 VAC, 3 A

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.

Accessories

R87F-FG Finger Guards

Ratings and Ordering Information

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

Applicable Axial Fans

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

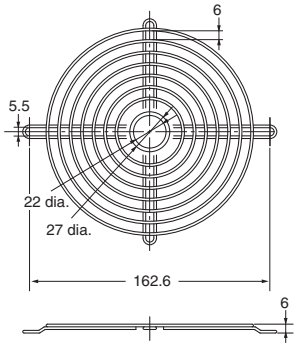
Note: Finger Guards reduce the flow rate by approximately 2% to 5%.

Dimensions

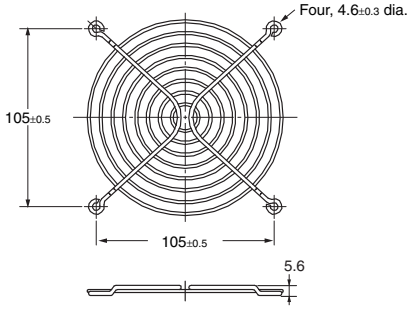
(Unit: mm)

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

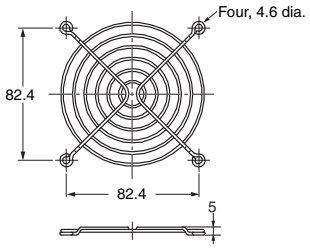
R87F-FG150



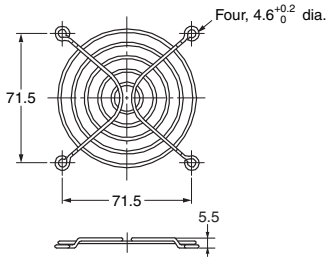
R87F-FG120



R87F-FG90



R87F-FG80



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

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

R87F-FL Filters

Ratings and Ordering Information

Filter

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

Note: The filter contains one medium.

Media

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

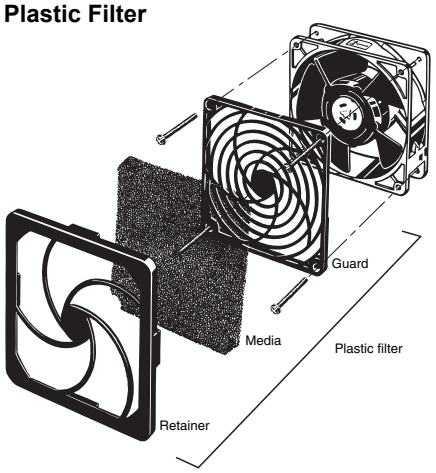
Note: Use the following model number to order the Media only.
R87F-FL□-M□ (□: 120, 90, or 80)
(One set containing five Media, weight: 5 g max.)

Applicable Axial Fans

AC Axial Fan		Filter	
Size	Model	Plastic	Aluminum
150 dia.	R87T-A□A0 Series	---	---
120 × 120	R89F-DS1225□ series	R87F-FL120	R87F-FL120S
	R89F-DS1238□ series		
	R89F-MS1238HP		
	R87F-A□A1 Series 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.

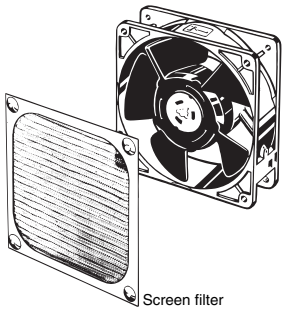
R87F-FL□
Plastic Filter



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.)

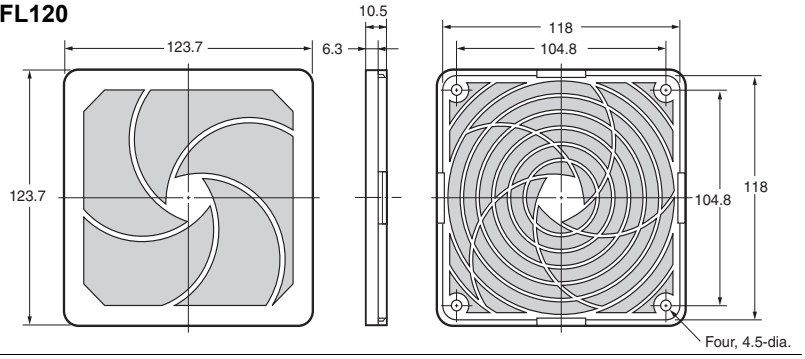
R87F-FL120S
Screen Filter



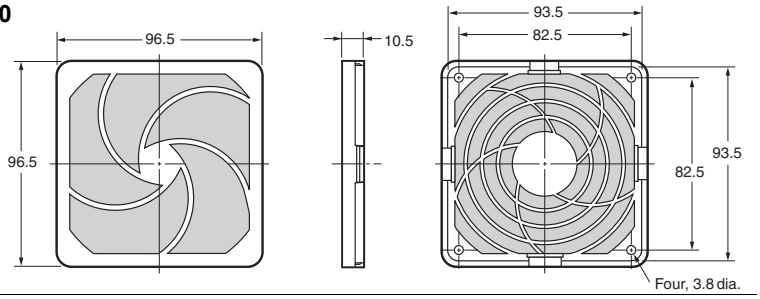
Dimensions

(Unit: mm)

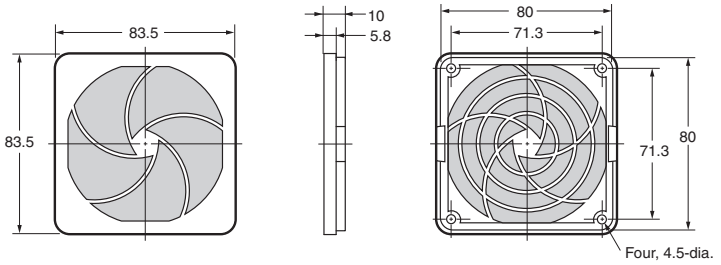
R87F-FL120



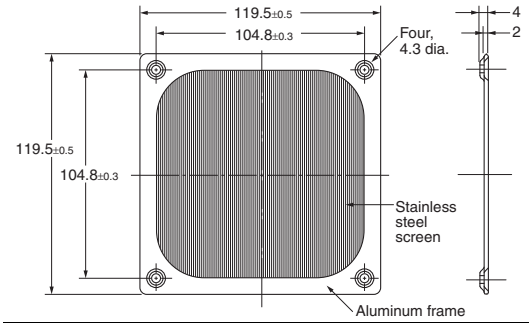
R87F-FL90



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)

Accessories

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.

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

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

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

Model Number Structure

Model Number Legend for subassemblies

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

Attachment
R87B-N□
1

Axial Fan
R87□-□A15□P
2 3 4 5 6 7 8

Plug Cord
R87-PC-□
9 10

Option set
R87F-SET1238
11

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

R87B
Ratings and Ordering Information for subassemblies

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

Attachment

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

Axial Fan

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

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

Plug Cord

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

Option set

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

Characteristics

Item	AC axial fan model	R87F/R87B-F for set model	R87T
Motor type		Single-phase shading coil induction motor (2-pole, open type)	
Terminal type		Terminals	
Insulation class		IEC class B (130°C) 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.

Model Number Structure

Model Number Legend for set model

R87B-F□□A15HPF□□
1 2 3 4 5

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

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

Attachment

R87B-N□
5

Options and Accessories

R87B-P□□□
1 6 7

Ratings and Ordering Information for set model

Airflow Direction: In

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

Airflow Direction: Out

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

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

Characteristics

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

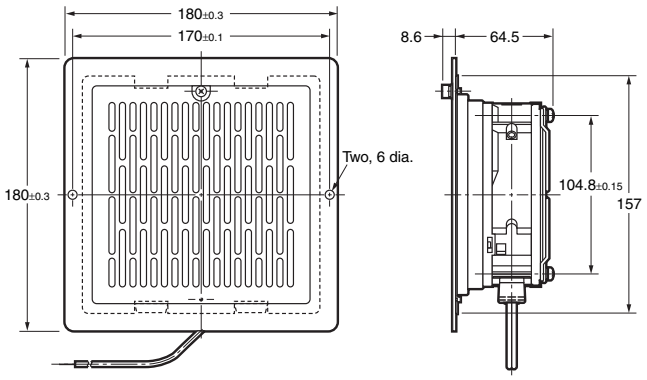
Safety Precautions

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

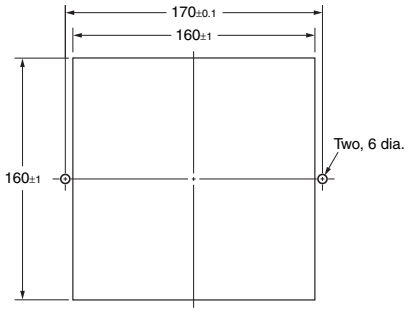
R87B
Dimensions

(Unit: mm)

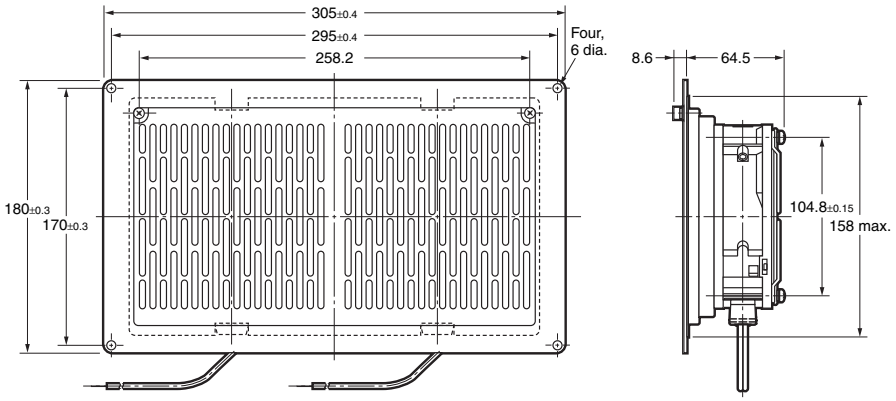
Single Box Fan



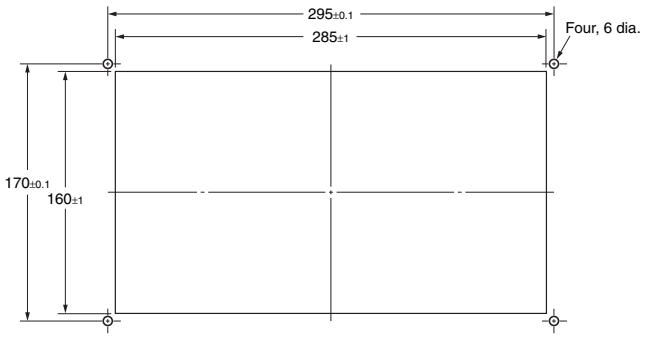
Panel Cutout Dimensions



Double Box Fan



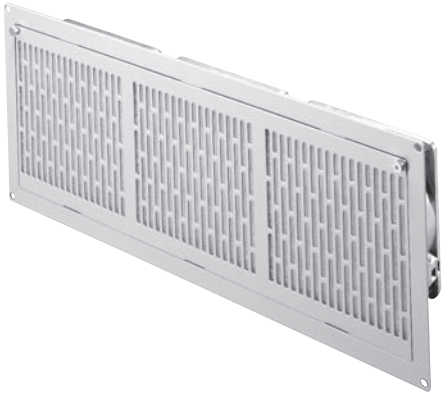
Panel Cutout Dimensions

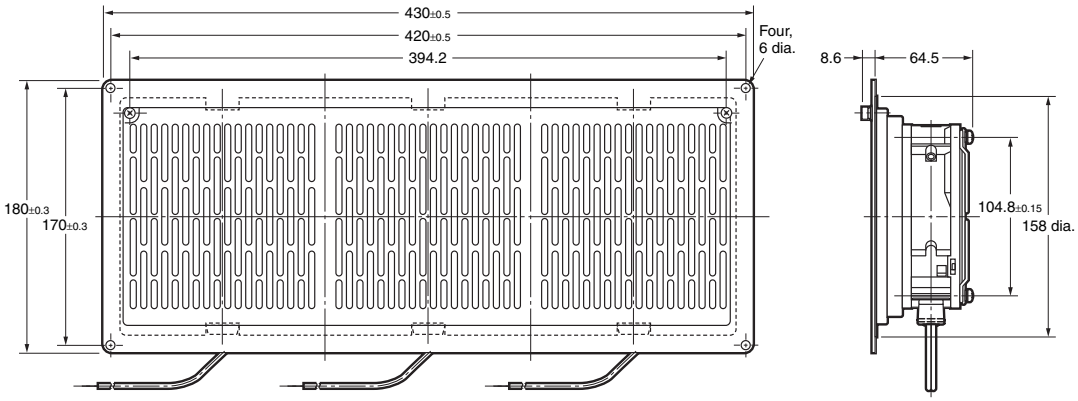


ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

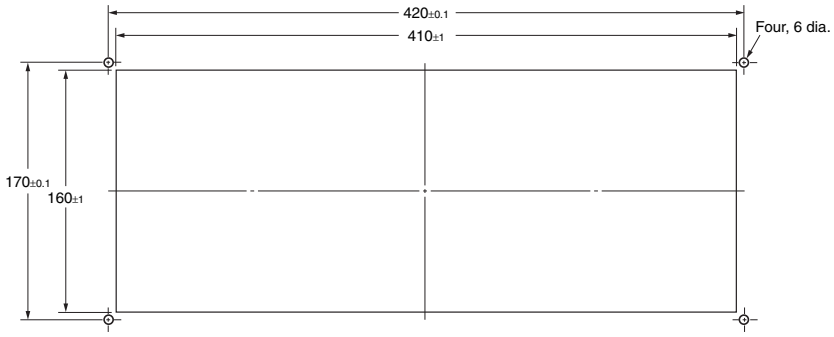
In the interest of product improvement, specifications are subject to change without notice.

Triple Box Fan





Panel Cutout Dimensions



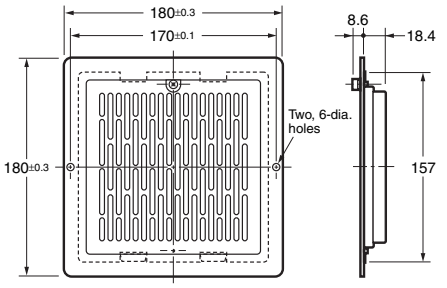
ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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

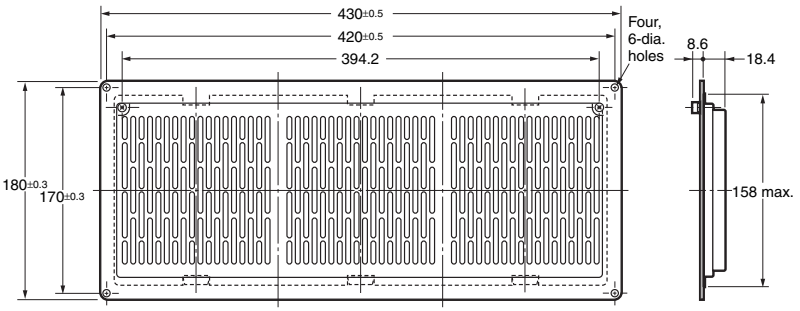
R87B-N□/R87B-PF Optional Parts

R87B-N□ (Attachment)

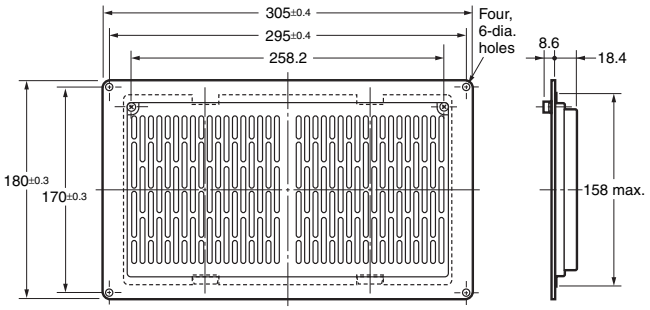
Single Box



Triple Box



Double Box

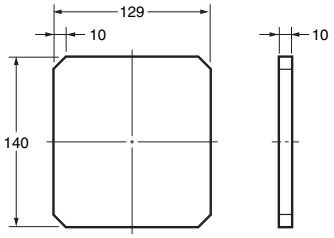


Ratings and Ordering Information

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

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

R87B-PF01 (Replacement Filter)



Ratings and Ordering Information

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

Filter Performance

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

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

Replacing the Filter

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

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

Accessories

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

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

MEMO

Terms and Conditions Agreement

Read and understand this catalog.

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranties.

(a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.

(b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See http://www.omron.com/global/ or contact your Omron representative for published information.

Limitation on Liability; Etc.

OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

Performance Data.

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

Note: Do not use this document to operate the Unit.

OMRON Corporation **Industrial Automation Company**

Kyoto, JAPAN **Contact : www.ia.omron.com**

Regional Headquarters

OMRON EUROPE B.V.
Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31) 2356-81-300 Fax: (31) 2356-81-388

OMRON ELECTRONICS LLC
2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900 Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.
438B Alexandra Road, #08-01/02 Alexandra
Technopark, Singapore 119968
Tel: (65) 6835-3011 Fax: (65) 6835-2711

OMRON (CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-5037-2222 Fax: (86) 21-5037-2200

Authorized Distributor:

CSM_5_1
Cat. No. X076-E1-09 0323 (1207)