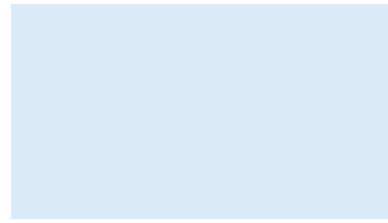


Cooling Fans

# Axial Flow Fans



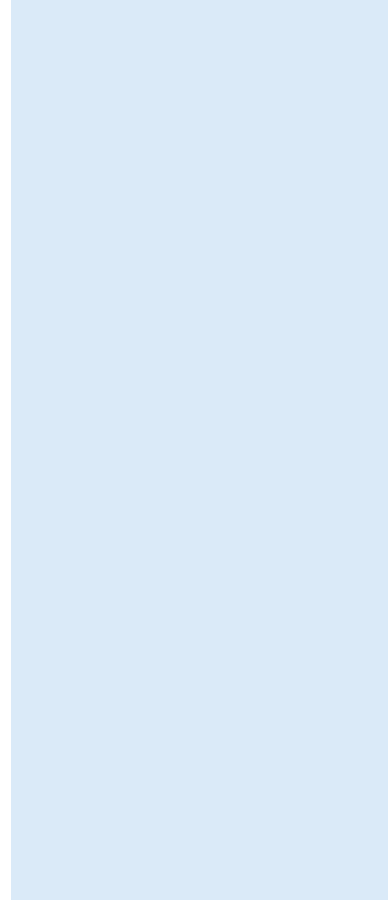
AC Input  
**MRS Series**

AC Input  
Variable Flow **MRS Series**

AC Input  
**MU Series**

DC Input  
Long-Life **MDE Series**

DC Input  
**MDS Series**  
**MD Series**



Introduction

**FM**  
Cooling Module

AC Input  
**MRS**

AC Input  
Variable Flow  
**MRS**

AC Input  
**MU**

DC Input  
Long-Life  
**MDE**

DC Input  
**MDS/MD**

AC Input  
**MB**

DC Input  
**MBD**

AC Input  
**MF**

DC Input  
**MFD**

Thermostats

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Installation

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<b>MRS Series</b> .....	E-54
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<b>MDE Series</b> .....	E-78
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<b>MD Series</b> .....	E-80

Axial flow fans use a propeller to generate air flow in the direction of the axis of rotation. Capable of generating a large air flow, axial flow fans are suited for applications requiring ventilation cooling.



## Features

### ● Extensive Lineup

Axial flow fans are available in a large number of sizes and voltage characteristics, from large air flow AC axial flow fans to extraordinarily compact DC axial flow fans.

### ● Connector Types are Available.






Connector Types are available for □180 mm (□7.09 in.) **MRS** Series, **MDS** Series and **MD** Series.

By terminating the leads with a connector, the wiring process is simplified and maintenance replacement is easy.

### ● Built-in Alarm Circuit

In addition to the standard type, built-in alarm types are also available which detect and signal fan rotation abnormalities.

## Types of Axial Flow Fans

Series	Features
AC Axial Flow Fans <b>MRS</b> Series → Pages E-54~E-67 	<ul style="list-style-type: none"> <li>● AC Axial Flow Fans</li> <li>● Large axial flow fans with large air flow, high static pressure and high efficiency.</li> <li>● The <b>MRS</b> Series is recognized by UL/CSA Standards and conforms to EN Standards. (Certification status differs according to the product.) CE Marking is used in accordance with the Low Voltage Directive.</li> <li>● RoHS-Compliant</li> </ul> The <b>MRS</b> Series conforms to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium.
AC Axial Flow Fans <b>MRS</b> Series Variable Flow Type → Pages E-68~E-69 	<ul style="list-style-type: none"> <li>● AC Axial Flow Fans</li> <li>● An internal power control device allows adjustment of airflow.</li> </ul>
AC Axial Flow Fans <b>MU</b> Series → Pages E-70~E-77 	<ul style="list-style-type: none"> <li>● Compact AC axial flow fans</li> <li>● The <b>MU</b> Series is recognized by UL/CSA Standards and the Electrical Appliance and Material Safety Law (Japan), and conforms to EN Standards. (Certification status differs according to the product.) CE Marking is used in accordance with the Low Voltage Directive.</li> <li>● RoHS-Compliant</li> </ul> The <b>MU</b> Series conforms to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium.
DC Long-Life Fans <b>MDE</b> Series → Pages E-78~E-79 	<ul style="list-style-type: none"> <li>● Compact DC axial flow fans</li> <li>● The <b>MDE</b> Series is recognized by UL/CSA Standards and conforms to EN Standards. CE Marking is used in accordance with the EMC Directive.</li> <li>● RoHS-Compliant</li> </ul> The <b>MDE</b> Series conforms to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium.
DC Axial Flow Fans <b>MDS</b> Series <b>MD</b> Series → Pages E-80~E-97 	<ul style="list-style-type: none"> <li>● DC axial flow fans</li> <li>● The <b>MDS</b> and <b>MD</b> Series is recognized by UL/CSA Standards and conforms to EN Standards. CE Marking is used in accordance with the EMC Directive. (Certification status differs according to the product.)</li> <li>● RoHS-Compliant</li> </ul> The <b>MDS</b> and <b>MD</b> Series conform to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium.

● Details of safety standards → Page G-2 ● List of safety standard approved products (Model, Standards, File No., Certification Body) → Page G-11 ● Details of RoHS Directive → Page G-38

## Lineup

●: Standard Type ■: Alarm Type ◆: Pulse Sensor Type

Series	Power Supply Voltage	Frame Size [mm (in.)]											
		□250 (□9.84)	□200 (□7.87)	□180 (□7.09)	φ172 (φ6.77)	□160 (□6.30)	□140 (□5.51)	□119 (□4.69)	□92 (□3.62)	□80 (□3.15)	□62 (□2.44)	□52 (□2.05)	□42 (□1.65)
AC Axial Flow Fans <b>MRS</b> Series → Pages E-54~E-67	Single-Phase 100/110/115 VAC	●■	●■	●■		●■							
	Single-Phase 200/220/230 VAC	●■	●■*	●■*		●■*							
	Three-Phase 200/220/230 VAC	●■	●■	●■		●■	●■						
AC Axial Flow Fans <b>MRS</b> Series Variable Flow Type → Pages E-68~E-69	Single-Phase 100/115 VAC			●									
	Single-Phase 220/230 VAC			●									
AC Axial Flow Fans <b>MU</b> Series → Pages E-70~E-77	Single-Phase 115 VAC							●	●	●			
	Single-Phase 220/230 VAC							●	●	●			
DC Long-Life Fans <b>MDE</b> Series → Pages E-78~E-79	12 VDC							■					
	24 VDC							■					
DC Axial Flow Fans <b>MDS</b> Series <b>MD</b> Series → Pages E-80~E-97	5 VDC											●	●
	12 VDC							●■	●■◆	●■◆	●■◆	●■	●■
	24 VDC				●■◆		●■◆	●■	●■◆	●■◆	●■◆	●■	●■
	48 VDC						●■◆						

\* The product for single-phase 220 VAC is not available.

Introduction

Cooling Module

FM

AC Input  
MRSAC Input  
Variable Flow  
MRS

Axial Flow Fans

AC Input  
MUDC Input  
Long-Life  
MDEDC Input  
MDS/MDAC Input  
MBDC Input  
MBDAC Input  
MFDC Input  
MFD

Thermostats

Accessories

Installation

## System Configuration

An example of a system configuration with the **MU** Series. A thermostat, finger guard and plug cord are used.

**MU Series**

**Peripheral Equipment (Sold separately)**

① **Thermostats**  
(→ Page E-133)

**AC Power Supply (Main Power Supply)**  
(Not supplied)

**Accessories (Sold separately)**

② **Finger Guards**  
(→ Page E-145)

③ **Plug Cords**  
(→ Page E-151)

No.	Product Name	Overview	Page
①	Thermostats	Contact is ON and OFF in accordance with thermostat's set temperature. Using a fan with a thermostat provides on/off control of the fan.	E-133
②	Finger Guards	This guard prevents fingers and foreign objects from entering the fan.	E-145
③	Plug Cords for Connection to Power Supply	Insertion-type plug cord that can be used with the <b>MU</b> Series.	E-151

### ● Example of System Configuration

+	Fan	(Sold separately)		
	<b>MU1238A-21B</b>	Thermostat	Finger Guard	Plug Cord [1 m (3.3 ft.)]
		<b>AM1-WA1</b>	<b>FG12D</b>	<b>PCA2B</b>

● The system configuration shown above is an example. Other combinations are available.

An example of a system configuration with the **MU** Series. A thermostat, filter and plug cord are used.

**MU Series**

**Peripheral Equipment (Sold separately)**

① **Thermostats**  
(→ Page E-133)

**AC Power Supply (Main Power Supply)**  
(Not supplied)

**Accessories (Sold separately)**

② **Filters**  
(→ Page E-147)

③ **Plug Cords**  
(→ Page E-151)

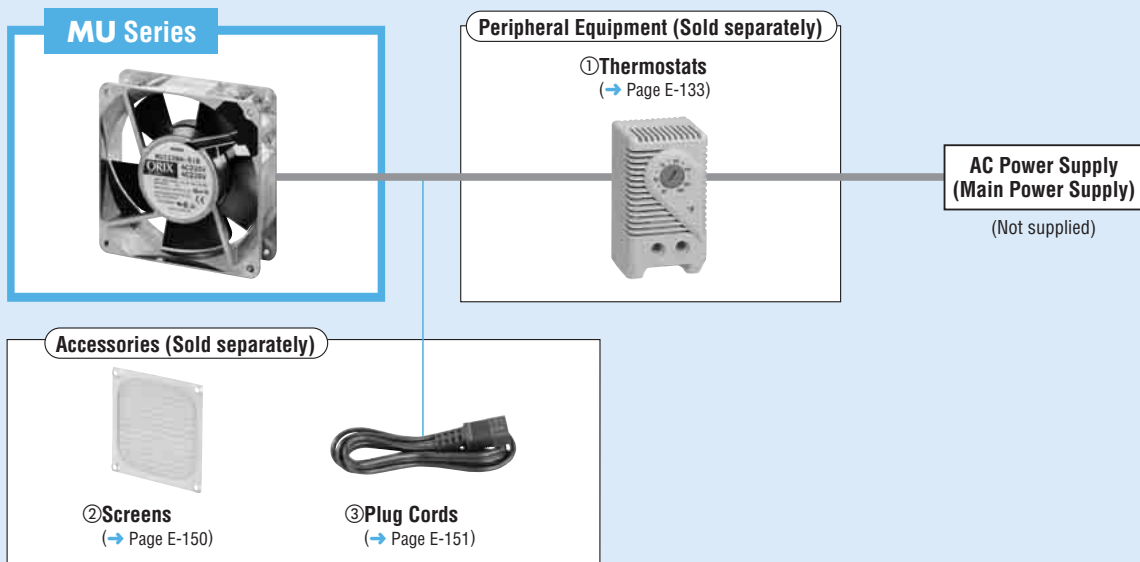
No.	Product Name	Overview	Page
①	Thermostats	Contact is ON and OFF in accordance with thermostat's set temperature. Using a fan with a thermostat provides on/off control of the fan.	E-133
②	Filters	This filter shuts out dust in the air.	E-147
③	Plug Cords for Connection to Power Supply	Insertion-type plug cord that can be used with the <b>MU</b> Series.	E-151

### ● Example of System Configuration

+	Fan	(Sold separately)		
	<b>MU1238A-21B</b>	Thermostat	Filter	Plug Cord [1 m (3.3 ft.)]
		<b>AM1-WA1</b>	<b>FL12</b>	<b>PCA2B</b>

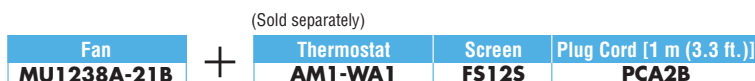
● The system configuration shown above is an example. Other combinations are available.

An example of a system configuration with the **MU** Series. A thermostat, screen and plug cord are used.



No.	Product Name	Overview	Page
①	Thermostats	Contact is ON and OFF in accordance with thermostat's set temperature. Using a fan with a thermostat provides on/off control of the fan.	E-133
②	Screens	Allows the passage of air, but blocks electromagnetic waves.	E-150
③	Plug Cords for Connection to Power Supply	Insertion-type plug cord that can be used with the <b>MU</b> Series.	E-151

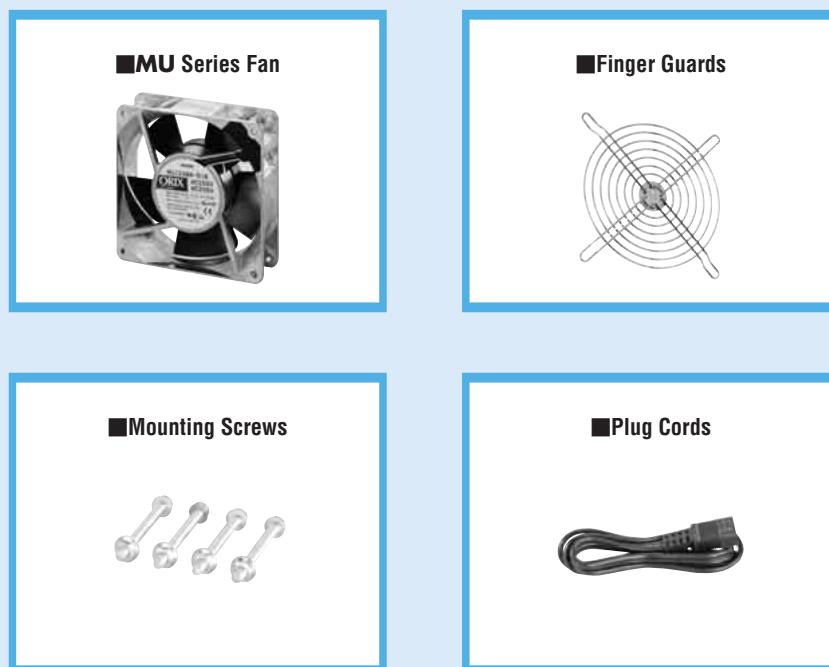
● **Example of System Configuration**



● The system configuration shown above is an example. Other combinations are available.

A fan kit containing all necessary accessories in one package is available.

● Details of fan kits → Page E-140



Fan Kit	Package Contents			
	Fan	Finger Guard	Plug Cord [1 m (3.3 ft.)]	Mounting Screws
<b>T-MU1238A-21-GP</b>	<b>MU1238A-21B</b>	<b>FG12D</b>	<b>PCA2B</b>	M4×55

## General Specifications

### AC Axial Flow Fans

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the frame after continuous operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz applied between the windings and the frame for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	30°C (54°F) or less measured by the thermometer method after the temperature of the case has stabilized after continuous operation under normal ambient temperature and humidity.
Operating Voltage Range	±10% of the rated voltage
Insulation Class	UL, CSA: Class A [105°C (221°F)], EN: Class E [120°C (248°F)]
Overheat Protection	<b>MRS</b> Series has built-in thermal protector. (automatic return type) Open: 120±5°C (248±9°F), Close: 77±15°C (170.6±27°F) <b>MU</b> Series is impedance protected.
Ambient Temperature	-10~+60°C (+14~+140°F)
Ambient Humidity	85% or less (non-condensing)
Color	<b>MRS</b> Series Frame: Black Blades: Black <b>MU</b> Series Frame: Unpainted (Aluminum) Blades: Black
Materials	Frame: Die cast aluminum Blades: Polycarbonate (Flammability grade: V-0)

### DC Axial Flow Fans

Item	Specifications
Insulation Resistance	10 MΩ or more when 250 VDC megger (For <b>MDS1751-24B</b> , <b>-24S</b> , <b>MDS1451</b> : 500 VDC megger) is applied between the windings and the frame after continuous operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 500 V at 50 Hz applied between the windings and the frame for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	10°C (18°F) or less measured by the thermometer method after the temperature of the case has stabilized after continuous operation under normal ambient temperature and humidity. ( <b>MDS1751</b> : 5°C [9°F] or less, <b>MDS1451</b> : 15°C [27°F] or less)
Operating Voltage Range	±15% of the rated voltage <b>MDS510</b> , <b>MDS410</b> , <b>MDS1225-12M</b> , <b>-24M</b> : ±10% of the rated voltage
Insulation Class	UL, CSA: Class A [105°C (221°F)], EN: Class E [120°C (248°F)]
Overheat Protection	Built-in overheat protection circuit
Ambient Temperature	-10~+60°C (+14~+140°F)
Ambient Humidity	85% or less (non-condensing)
Color	Frame: Black: <b>MD925</b> , <b>MD825</b> , <b>MD625</b> , <b>MDS510</b> , <b>MDS410</b> , <b>MDE1225</b> Unpainted (Aluminum): <b>MDS1751</b> , <b>MDS1451</b> , <b>MDS1225</b> , <b>MD1225</b> Blades: Black
Materials	Fan Frame: Die cast aluminum: <b>MDS1751</b> , <b>MDS1451</b> , <b>MDS1225</b> , <b>MDE1225</b> , <b>MD1225</b> Polycarbonate (Flammability grade V-0): <b>MD925</b> , <b>MD825</b> , <b>MD625</b> , <b>MDS510</b> , <b>MDS410</b> Blades: Polycarbonate (Flammability grade V-0): <b>MDS1751</b> , <b>MDS1451</b> , <b>MDS1225</b> , <b>MDE1225</b> , <b>MD1225</b> , <b>MD925</b> , <b>MD825</b> , <b>MD625</b> PBT (Flammability grade: V-0): <b>MDS510</b> , <b>MDS410</b>

## Product Number Code

### AC Axial Flow Fans

#### ◇ MRS Series

# MRS 18 □ - B M H

① ② ③ ④ ⑤ ⑥

①	Series	<b>MRS: MRS Series</b>
②	Frame Size	<b>14:</b> 140 mm (5.51 in.) <b>16:</b> 160 mm (6.30 in.) <b>18:</b> 180 mm (7.09 in.) <b>20:</b> 200 mm (7.87 in.) <b>25:</b> 250 mm (9.84 in.)
③		<b>V:</b> Variable Flow
④	Power Supply Voltage	<b>B:</b> Single-Phase 100/110/115 VAC <b>D:</b> Single-Phase 200/220/230 VAC <b>T:</b> Three-phase 200/220/230 VAC
⑤	Additional Functions	<b>M:</b> Low-Speed Alarm, Electronic Alarm Type <b>B:</b> Low-Speed Alarm, Contact Alarm Type <b>TM:</b> Low-Speed Alarm, Electronic Alarm Type <b>TA:</b> Low-Speed Alarm, Contact Alarm Type <b>UL:</b> Standard Type
⑥	Connection Type	Blank: Connection with lead wire type or terminal box type <b>H:</b> Connector Type

#### ◇ MU Series

# MU 12 38 A - 2 1 B

① ② ③ ④ ⑤ ⑥ ⑦

①	Series	<b>MU: MU Series</b>
②	Frame Size	<b>8:</b> 80 mm (3.15 in.) <b>9:</b> 92 mm (3.62 in.) <b>12:</b> 119 mm (4.69 in.)
③	Frame Thickness	<b>25:</b> 25 mm (0.98 in.) <b>38:</b> 38 mm (1.50 in.)
④	Speed Type	<b>A, S:</b> Standard Speed <b>M, B:</b> Middle Speed <b>L:</b> Low Speed
⑤	Power Supply Voltage	<b>2:</b> Single-Phase 115 VAC <b>5:</b> Single-Phase 220/230 VAC
⑥	Power Connection	<b>1:</b> 2-Terminal <b>3:</b> Lead Wire Type
⑦	Reference Number	

### DC Axial Flow Fans

#### ◇ MDE, MDS and MD Series

# MD 9 25 A - 12 L H

① ② ③ ④ ⑤ ⑥ ⑦

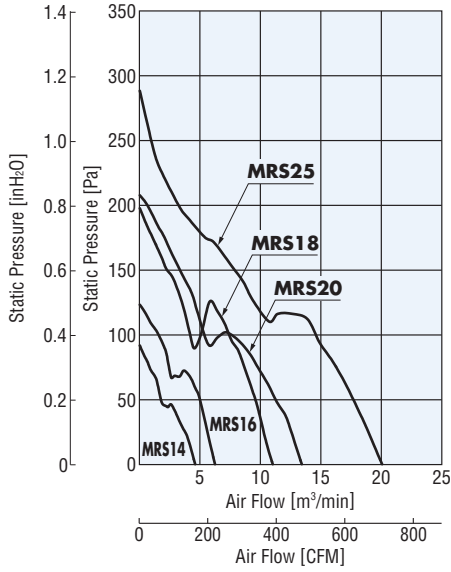
①	Series	<b>MDE: MDE Series</b> <b>MDS: MDS Series</b> <b>MD: MD Series</b>
②	Frame Size	<b>4:</b> 42 mm (1.65 in.) <b>5:</b> 52 mm (2.05 in.) <b>6:</b> 62 mm (2.44 in.) <b>8:</b> 80 mm (3.15 in.) <b>9:</b> 92 mm (3.62 in.) <b>12:</b> 119 mm (4.69 in.) <b>14:</b> 140 mm (5.51 in.) <b>17:</b> $\phi$ 172 mm ( $\phi$ 6.77 in.)
③	Frame Thickness	<b>10:</b> 10 mm (0.39 in.) <b>25:</b> 25.4 mm (1.00 in.) <b>51:</b> 51 mm (2.01 in.)
④	Speed Type	Blank, <b>A, B:</b> Standard Speed <b>AM, BM:</b> Middle Speed <b>AL, BL:</b> Low Speed
⑤	Power Supply Voltage	<b>5:</b> 5 VDC <b>12:</b> 12 VDC <b>24:</b> 24 VDC <b>48:</b> 48 VDC
⑥	Additional Functions	<b>B:</b> Low-Speed Alarm, Contact Alarm Type <b>M:</b> Low-Speed Alarm, Electronic Alarm Type <b>L:</b> Stall Alarm, Electronic Alarm Type <b>S:</b> Pulse Sensor Type
⑦	Connection Type	Blank: Lead wire type <b>H:</b> Connector Type

## Comparison of Characteristics

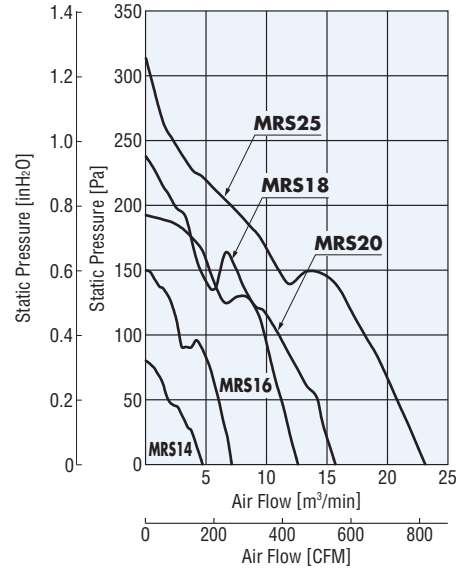
### AC Axial Flow Fans

#### ◇ MRS Series

##### • 50 Hz

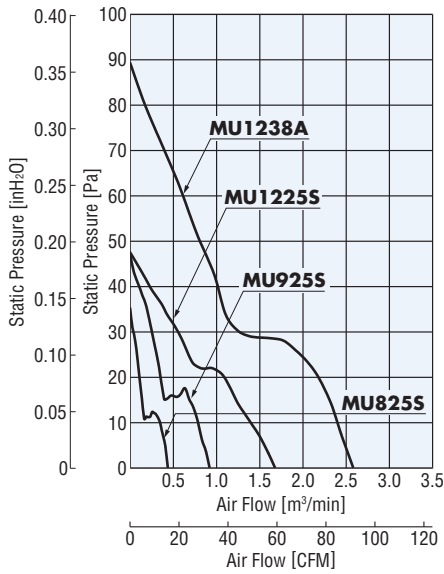


##### • 60 Hz

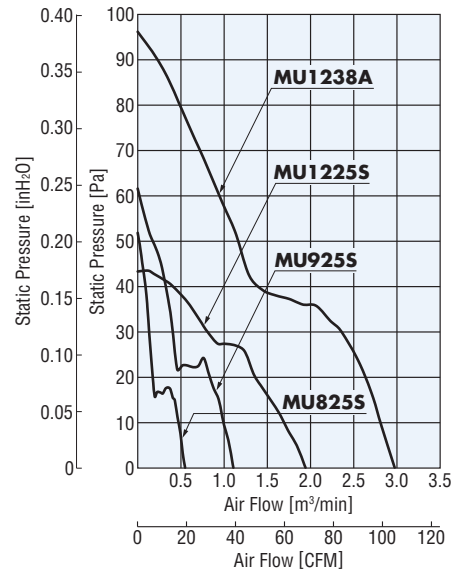


#### ◇ MU Series

##### • 50 Hz



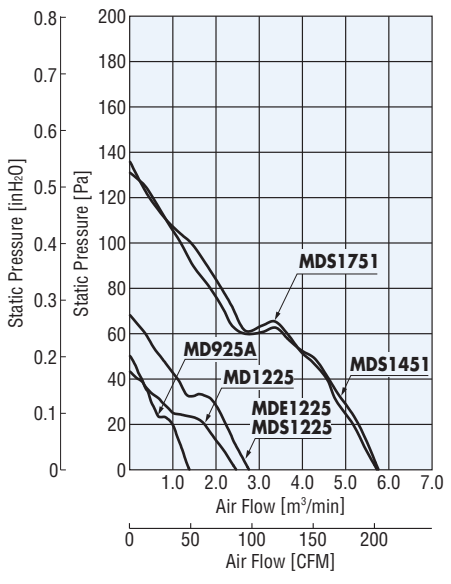
##### • 60 Hz



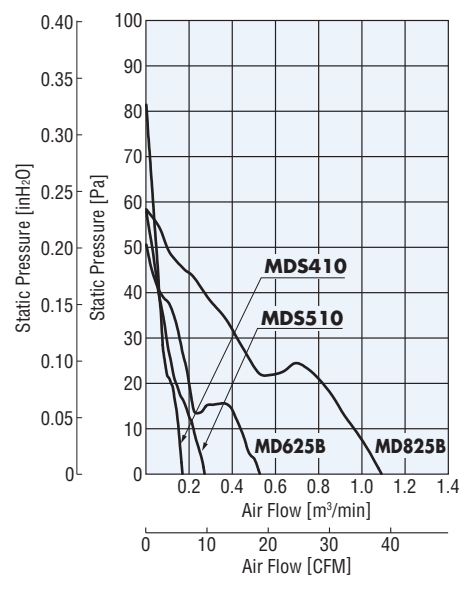


● DC Axial Flow Fans

- **MDS1751**
- **MDS1451**
- **MDS1225**
- **MDE1225**
- **MD1225**
- **MD925A**



- **MD825B**
- **MD625B**
- **MDS510**
- **MDS410**



Introduction

Cooling Module

AC Input MRS

Variable Flow MRS

AC Input MU

DC Input Long-Life MDE

DC Input MDS/MD

AC Input MB

DC Input MBD

AC Input MF

DC Input MFD

Thermostats

Accessories

Installation