

ORIX FAN





Cooling Fans

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Overview and Characteristics of Fans

Overview

A fan is a device that creates airflow by using a motor to rotate blades. Cooling fans are essential in the smooth operation of many sophisticated machines, such as electronic equipment. The **ORIX_{FAN}** line includes AC and DC axial flow fans for ventilation and cooling, centrifugal blowers for local cooling, and cross flow fans for a wide, uniform sheet of air. The **ORIX_{FAN}** line incorporates specially designed fan blades for increased air pressure, increased static pressure, high airflow and low noise.

Advanced functions are often needed to ensure equipment is cooled adequately, thereby improving the reliability of the equipment itself. Temperature sensors that can detect changes in internal temperature and adjust airflow, and alarms that can detect faults, are some of the functionalities offered with **ORIX_{FAN}** products. In addition, accessories such as thermostats are available for energy savings by only operating the fan when needed.



Axial Flow Fans



Centrifugal Blowers



Cross Flow Fans

Characteristics

Axial Flow Fans

Axial flow fans use a propeller to create a flow of air in the direction of the axis of rotation. These fans create a large airflow, making them optimal for use as ventilators for overall cooling of internal machinery components. In the **ORIX_{FAN}** line, axial flow fans are available in a wide variety of sizes and voltage characteristics.

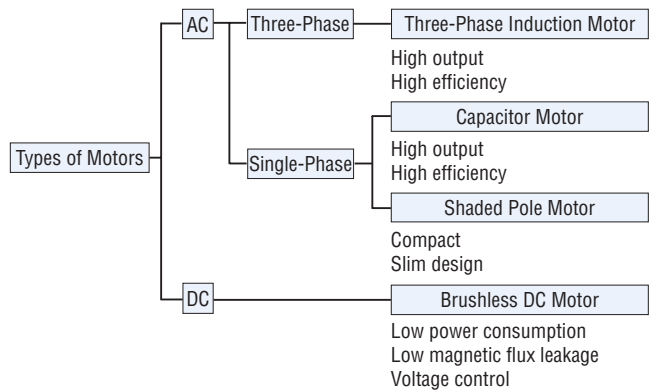
Centrifugal Blowers

Centrifugal blowers move air by means of the centrifugal force generated by rotating a cylindrical runner on which blades have been arranged. Centrifugal blowers have a small outlet, which concentrates air in a single direction, and are therefore suitable for local cooling. They also create large static pressure, making them optimal for cooling equipment through which air cannot flow easily and for airflow through ducts.

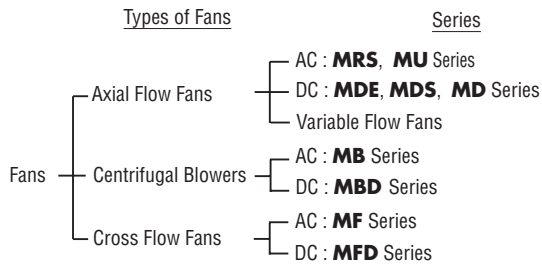
Cross Flow Fans

Cross flow fans create a wide flow of air using a long cylindrical-shaped impeller. Air is drawn in along the sides of the runner, flows along the circumference of the runner, and is blown out laterally, creating a uniform flow of air. Cross flow fans are used for cooling circuit boards installed in equipment, air curtains, and other applications. In addition, cross flow fans offer the advantages of right-angle air flow and rectangular shape which facilitates installation in corners and saves space.

Each of these types of fans is available with AC or DC input. Depending on the type of motor used, fans can also offer the following characteristics:



Types of Fans



AC Axial Flow Fans

MRS Series E-24

These high-efficiency, large airflow axial flow fans are available in mounting bases ranging from 5.51 inches to 9.84 inches and also meet UL, CSA, EN/IEC standards and CE Markings (LVD). Models are also available with built-in alarm circuits that can detect fan rotation abnormalities and respond by outputting alarm signals.



Frame sizes: 9.84 in. sq., 7.87 in. sq., 7.09 in. sq., 6.30 in. sq., 5.51 in. sq.
 Voltages: Single-Phase 100/115 VAC, Single-Phase 200/230 VAC, Three-Phase 200/230 VAC

MU Series E-36

These compact AC axial flow fans are available in mounting bases ranging from 3.15 inches to 4.69 inches. These fans are equipped with excellent safety features, meeting UL, CSA and EN/IEC standards, electrical appliance and material control law and CE Markings (LVD).



Frame sizes: 4.69 in. sq., 3.62 in. sq., 3.15 in. sq.
 Voltages: Single-Phase 115 VAC, Single-Phase 220/230 VAC

DC Axial Flow Fans

MDE • MDS • MD Series E-44

These compact axial flow fans use high-performance brushless DC motors. They are optimal for cooling DC equipment. The **MDE** Series long life fans have a 100,000-hour life expectancy lowering maintenance costs and reducing downtime. Built-in alarm types are also available that detect and signal fan rotation abnormalities or stoppages. These fans meet UL, CSA, EN/IEC standards and CE Markings (EMC).



Frame sizes: 6.77 in. dia., 4.69 in. sq., 3.62 in. sq., 3.15 in. sq., 2.44 in. sq., 2.05 in. sq., 1.65 in. sq.
Voltages: 5 VDC, 12 VDC, 24 VDC

Variable Flow Fans

VARIOFLOW E-34

An internal power control device allows adjustment of airflow to match the cooling requirements. These fans meet UL, CSA, EN/IEC standards and CE Markings (LVD).

MRS18V2-□

AC Axial Flow Fans
7.09 in. sq.

Voltages: Single-Phase 100/115 VAC, Single-Phase 200/230 VAC



Centrifugal Blowers

MB Series (for AC) E-66

MBD Series (for DC) E-78

By maximizing static pressure, these centrifugal blowers can deliver air exactly where needed, making them optimal for localized cooling and for airflow through ducts. They also can be used either from a fixed position or mounted on moving parts. The **MB** Series meets UL, CSA, EN/IEC standards and CE Markings (LVD).



Impeller diameters: 6.30 in., 4.72 in., 3.94 in., 3.15 in.,
2.36 in., 1.97 in.
Voltages: Single-Phase 100/115 VAC, Single-Phase 200/220/230 VAC,
Three-Phase 200/230 VAC, 24 VDC, 48 VDC

Cross Flow Fans

MF Series (for AC) E-88

MFD Series (for DC) E-94

These cross flow fans deliver a wide, uniform flow of air by means of 11.81 inch or 5.91 inch impellers. Cross flow fans offer the advantages of right-angle air flow and compact rectangular shape, facilitating installation in corners and saving space. The **MF** Series meet UL, CSA, EN/IEC standards and CE Markings (LVD).



MF Series

MFD Series

Length of impeller: 11.81 in., 5.91 in.
Voltages: Single-Phase 100/110/115 VAC,
Single-Phase 200/220/230 VAC,
24 VDC, 48 VDC

Selecting a Fan

There are many ways to select a fan. To find the fan best suited to meet your application needs, please review the options below.

Select a Fan Based on its Size

Page E-7

- For applications with limited mounting space
- Fan size: frame size, frame thickness, diameter of runner, etc.

Select a Fan Based on its Input Power Specification

Page E-8

- For applications where you would like the fan to run off the same power source as the rest of your equipment, or off of a built in power supply
- For applications where the equipment is being exported and must meet local power source specifications

Select a Fan Based on its Supplementary Functions

Page E-9

- For applications where you may need to adjust the airflow and static pressure
- For applications where you may want to reduce the airflow to reduce audible noise
- For applications that require alarms in case of any abnormalities

Select a Fan Based on How it Will be Used

Page E-10

- For applications where you need the most effective fan based on a specific use

Calculations for Selecting a Fan


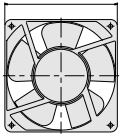
Page F-11


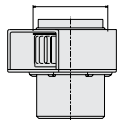
- An example of how calculations can be used to determine the most appropriate fan according to your application requirements.


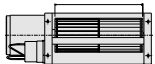
■ Accessory Guide

- Various accessories provide easier, more effective fan operation (→Page E-12)

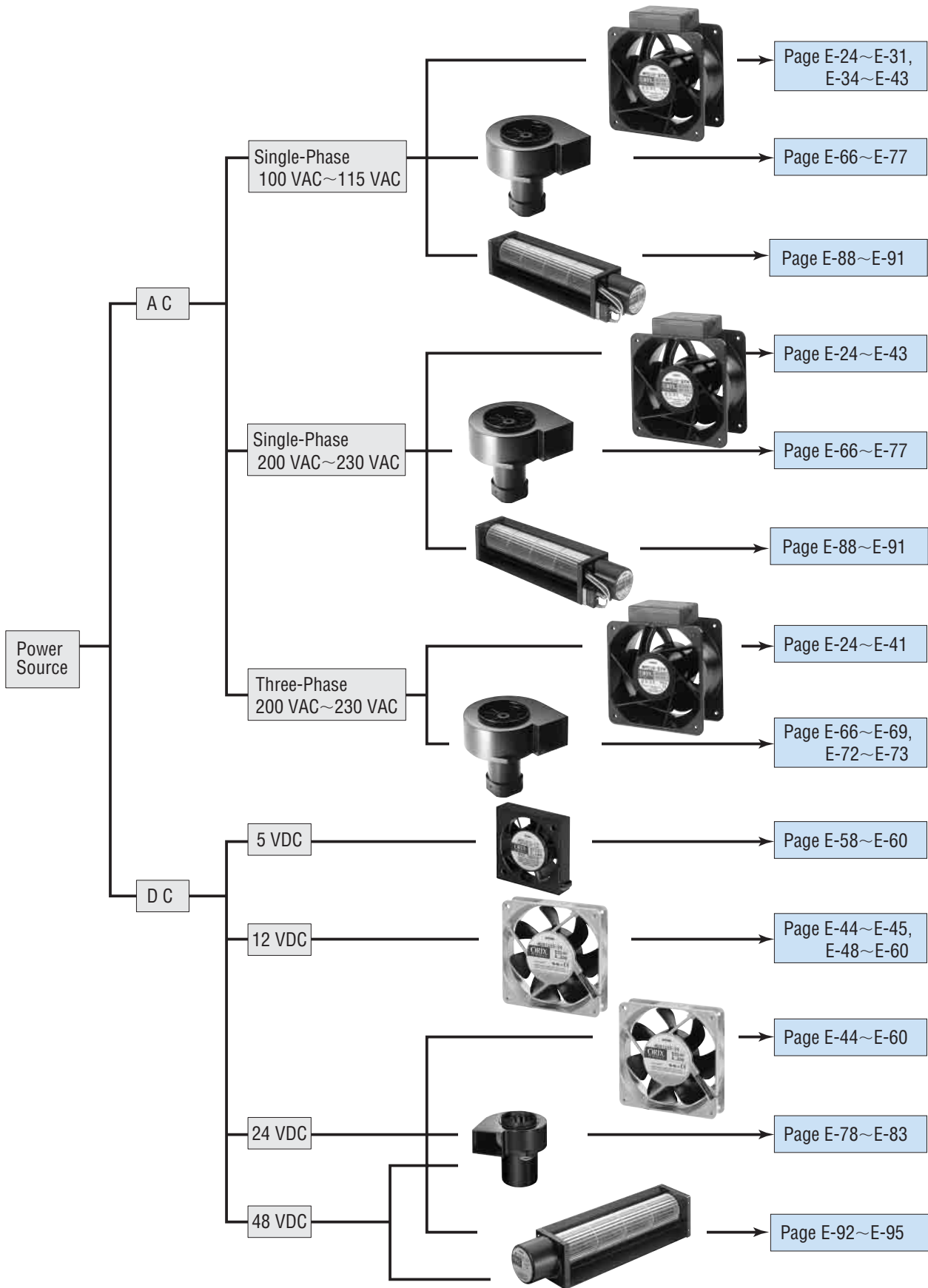
Select a Fan Based on its Size

	Frame Size	Frame Thickness	AC Input	DC Input
Axial Flow Fans  Frame Size 	□ 9.84 in.	4.72 in.	Page E-24	DC Input Page E-46 Page E-44, E-48, E-50 Page E-52 Page E-54 Page E-56 Page E-58 Page E-60
	□ 7.87 in.	3.54 in.	Page E-26	
	□ 7.09 in.	3.54 in.	Page E-28, E-34	
	φ 6.77 in.	2.01 in.		
	□ 6.30 in.	2.44 in.	Page E-30	
	□ 5.51 in.	1.85 in.	Page E-32	
	□ 4.69 in.	1.50 in.	Page E-36	
		0.98 in.	Page E-38	
	□ 3.62 in.	1.00 in.		
		0.98 in.	Page E-40	
	□ 3.15 in.	1.00 in.		
		0.98 in.	Page E-42	
	□ 2.44 in.	1.00 in.		
□ 2.05 in.	0.39 in.			
□ 1.65 in.	0.39 in.			

	Impeller Diameter	AC Input	DC Input
Centrifugal Blowers  Impeller Diameter 	φ 6.30 in.	Page E-66	DC Input Page E-78 Page E-80 Page E-82
	φ 4.72 in.	Page E-68	
	φ 3.94 in.	Page E-70	
	φ 3.15 in.	Page E-72	
	φ 2.36 in.	Page E-74	
	φ 1.97 in.	Page E-76	

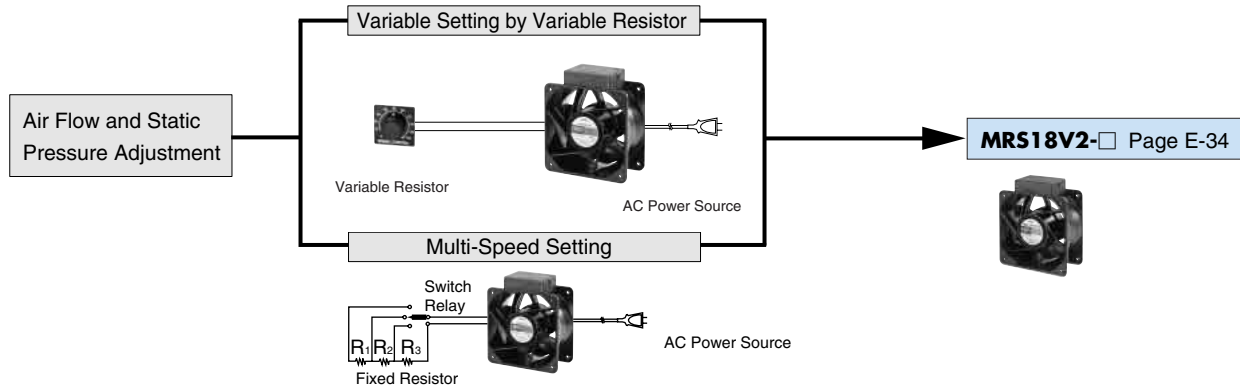
	Length of Impeller	AC Input	DC Input
Cross Flow Fans  Length of impeller 	11.81 in.	Page E-88	Page E-92
	5.91 in.	Page E-90	Page E-94

Select a Fan Based on its Input Power Specification



Select a Fan Based on its Supplementary Functions

Variable Flow Fans



Fans with Alarm

Fans with an alarm indicate when its cooling capability has dropped due to an abnormality in the power supply or air channel, the entry of foreign matter, or other factors. Alarms enhance the reliability of your equipment.

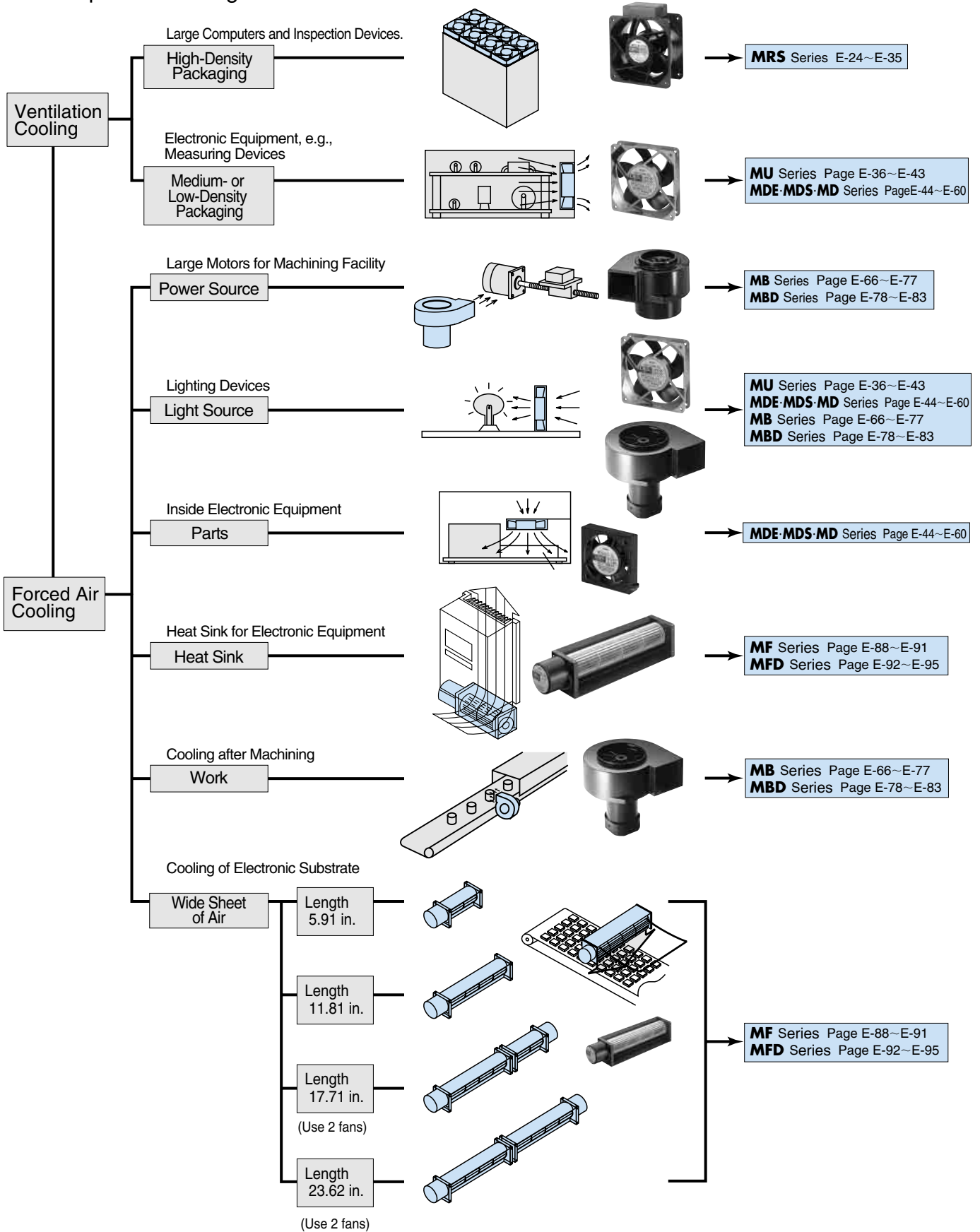
		Model	Size [in. (mm)]	Type	Page		
Fan with alarm	An alarm is output when the fan has stopped.	Stall Alarm Electronic Alarm Type	Axial Flow Fans DC Input	□4.69 (□119)	MDE1225	E-44	
				□3.62 (□92)	MD925	E-52	
				□3.15 (□80)	MD825	E-54	
				□2.44 (□62)	MD625	E-56	
				□2.05 (□52)	MDS510	E-58	
	□1.65 (□42)	MDS410	E-60				
	An alarm is output when the fan speed has dropped below a specific level.	Low-Speed Alarm Electronic Alarm Type	Axial Flow Fans AC Input	□9.84 (□250)	MRS25	E-24	
				□7.87 (□200)	MRS20	E-26	
				□7.09 (□180)	MRS18	E-28	
				□6.30 (□160)	MRS16	E-30	
□5.51 (□140)				MRS14	E-32		
Axial Flow Fans DC Input		□4.69 (□119)	MDS1225	E-48			
Low-Speed Alarm Contact Alarm Type	Centrifugal Blowers DC Input	Cross Flow Fans DC Input	φ6.77 (φ172)	MDS1751	E-46		
			φ3.94 (φ100)	MBD10	E-80		
			φ3.15 (φ80)	MBD8	E-82		
			11.81 (300)	MFD930	E-92		
			5.91 (150)	MFD915	E-94		
A pulse signal is output to monitor fan speed.*	Pulse-Sensor Type	Axial Flow Fans DC Input	Centrifugal Blowers DC Input	Cross Flow Fans DC Input	φ6.77 (φ172)	MDS1751	E-46
					□3.62 (□92)	MD925	E-52
					□3.15 (□80)	MD825	E-54
					□2.44 (□62)	MD625	E-56
					φ3.94 (φ100)	MBD10	E-80
		φ3.15 (φ80)	MBD8	E-82			
		11.81 (300)	MFD930	E-92			
		5.91 (150)	MFD915	E-94			

* Two pulses are output per revolution of the fan. Fan speed is monitored as the host controller, etc., reads the output pulses. This function helps you set a desired output speed for alarm activation.

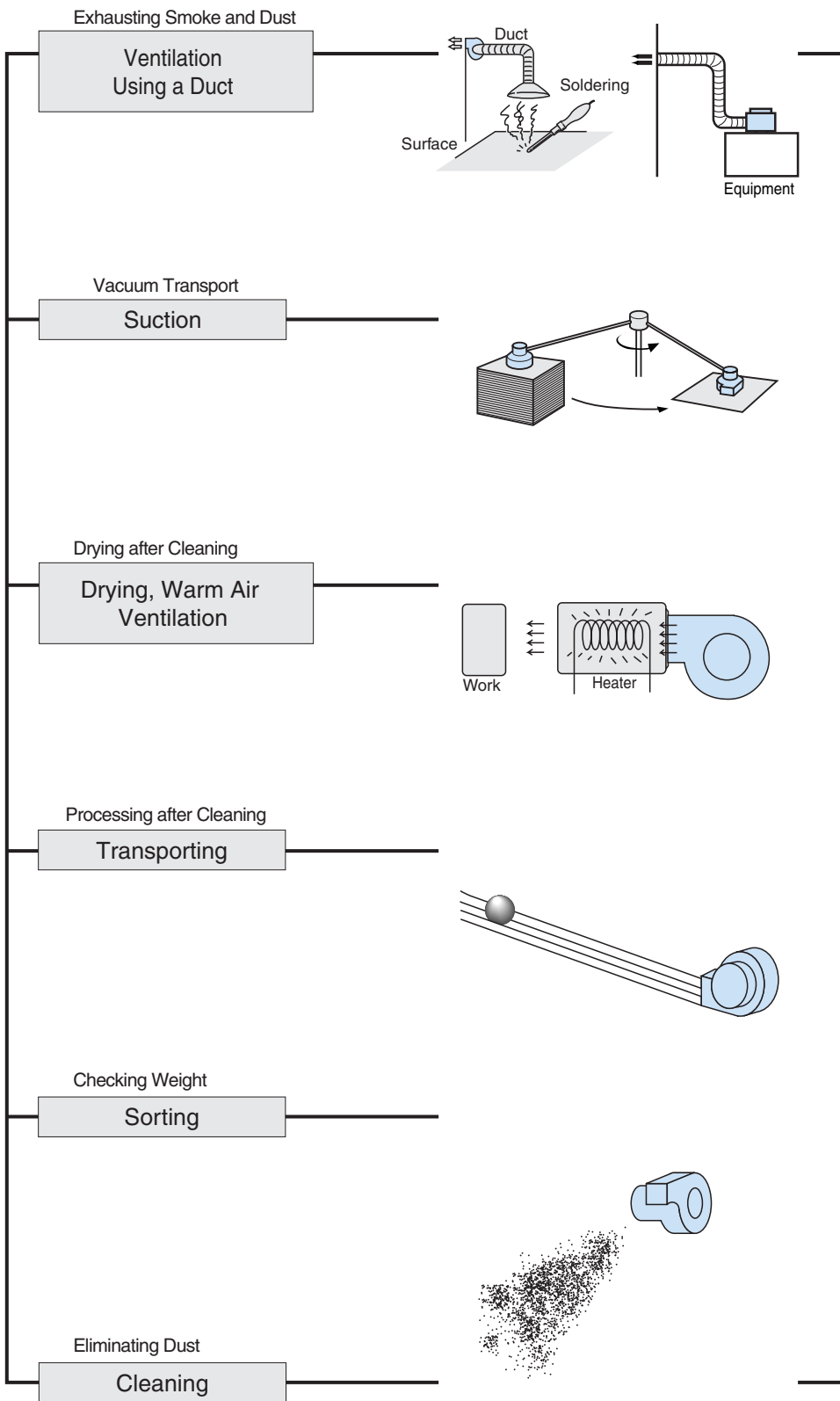
• See page E-14 for a detailed alarm specification of each product.

Select a Fan Based on How it Will be Used

Examples of Cooling Use

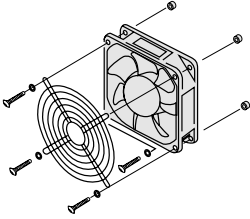
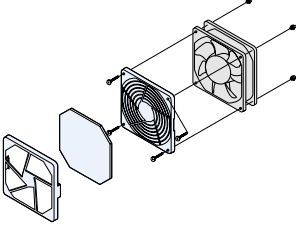
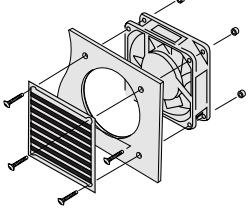
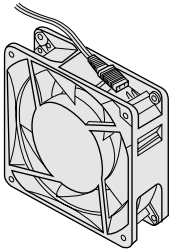
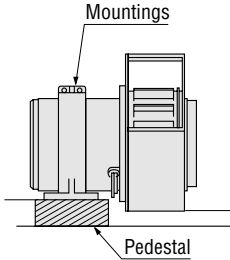
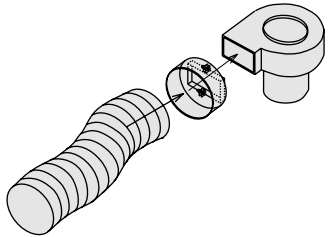


Examples of Non-Cooling Use



MB Series E-66~E-77
MBD Series E-78~E-83

Accessory Guide

Accessory	Finger Guards E-102	Filters E-105	Screens E-107
Fan			
Axial Flow Fans	✓	✓	✓
Centrifugal Blowers	✓	✓	×
Cross Flow Fans	✓	×	×
Overview of Accessories	<p>Protect against the hazards posed by rotating fan blades. All fan guards conform to safety standards. *</p> 	<p>Fans intake airborne dust into the machine, where it may accumulate. Filters block the dust while allowing the air to pass through.</p> 	<p>Electronic devices can leak electromagnetic waves from their cooling ports, possibly damaging other equipment. Screens partially block the electromagnetic waves while allowing air to pass through.</p> 
Accessory	Plug Cords E-108	Mounting Brackets for Centrifugal Blowers E-109	Duct Joints E-110
Fan			
Axial Flow Fans	✓	×	×
Centrifugal Blowers	×	✓	✓
Cross Flow Fans	×	×	×
Overview of Accessories	<p>These plug cords are used with MU Series fans, providing terminals for connection to the power supply.</p> 	<p>Used to mount centrifugal blowers in place.</p> 	<p>Duct joints are used to connect the centrifugal blower outlet with the duct.</p> 

* Standards: These products have been designed to pass tests set forth under the UL and CSA standards for equipment used in fans. They conform to these standards only when used with an **ORIX FAN** Product.

How to Read Specifications

MRS Series (Example)

□ 7.87 in. × 3.54 in. thick

(□ 200 mm × 90 mm thick)

Ambient Temperature: 14°F to 140°F (–10°C to +60°C)
Operating Voltage Range: ±10% of the rated voltage

Materials

Frame: Die Cast Aluminum

Blades: Resin

Flammability Grade: V-0

Overheat Protection: Built-in Thermal Protector → ⑪

Bearings: Ball Bearings



Specifications

Model		①	②	③	④	⑤	⑥		⑦		⑧	⑨
Low Speed Alarm, Electronic Alarm Type ②	Standard Type	Voltage VAC	Frequency Hz	Current A	Input Power W	Speed r/min	Max. Air Flow		Max. Static Pressure		Noise Level dB (A)	Capacitor μF
							CFM	m ³ /min	inH ₂ O	Pa		
⑩ MRS20-BM	MRS20-BUL	Single-Phase 100	50	0.8	75	2850	466	13.2	0.886	221	56	6.0
		Single-Phase 115	60	1.0	95	3350	547	15.5	0.746	186	60	
MRS20-DM	MRS20-DUL	Single-Phase 200	50	0.4	75	2850	466	13.2	0.886	221	56	6.0
		Single-Phase 200	60	0.5	95	3350	547	15.5	0.746	186	60	
		Single-Phase 230	60	0.5	95	3400	547	15.5	1.06	265	61	
MRS20-TM	MRS20-TUL	Single-Phase 200	50	0.4	75	2850	466	13.2	0.886	221	56	–
		Single-Phase 200	60	0.4	95	3350	547	15.5	1.06	265	60	
		Single-Phase 230	60	0.4	95	3400	547	15.5	1.06	265	61	

① Voltage: Power supply voltage needed to operate the fans. Varies with the type of fan: single-phase 100 VAC, 115 VAC, 200 VAC, 230 VAC and three-phase 200 VAC, 230 VAC for AC power supply, and 5 VDC, 12 VDC, 24 VDC and 48 VDC for DC power supply.

② Frequency: For AC fans, rotation speed varies depending on the frequency.

③ Current: The current when the fan is at rated rotation speed.

④ Input Power: The input power when the fan is at rated rotation speed.

⑤ Speed: The fan's rated rotation speed.

⑥ Max. Air Flow: Maximum air flow that the fan can produce when at rated rotation speed. *1

⑦ Max. Static Pressure: Maximum static pressure that the fan can produce when at rated rotation speed. *2

⑧ Noise Level: Noise level when the fan is at rated rotation speed. *3

⑨ Capacitor: Capacitance required to operate Single-phase 100 VAC and 200 VAC fans.
(Capacitor is included or built-in for all single-phase products.)

⑩ Alarm Specifications: Indicates the types of fan alarm. Types of fan alarms include: Stall Alarm (Electronic Alarm Type), Low-Speed Alarm (Contact Alarm Type, Electronic Alarm Type), Pulse Sensor Type. There are nine alarm specifications, which are described by the numbers ① to ⑨ <> in the specifications tables. These numbers correspond to the numbers in the "Specifications for Fans with Alarms" (Pages E-14 to E-16). Refer to these pages for detail.

*1, 2 Values for maximum air flow and maximum static pressure are measured by the double-chamber method.

*3 Noise level is measured in the A range, at a distance of 3.3 feet (1 m) from the fan intake side.

⑪ Overheat Protection:

- Built-in thermal protector → The fan uses a thermal protector for overheat protection. Once the temperature reaches a specified level, the internal thermal protector has an automatic-return feature is triggered to stop the fan operation. Be sure to turn off the power when checking the thermal protector.
- Impedance protection → These products are impedance-protected to prevent the windings from burning.
- Built-in overheat protection → A function for overheat protection is installed to prevent the windings from burning.

⑫ **CE Marking:** Fans bearing the CE mark should only be used with class I equipment. When installing into equipment, either ground the fan or ensure that there is no contact with bare hands. (See page G-2 for details on safety standards)

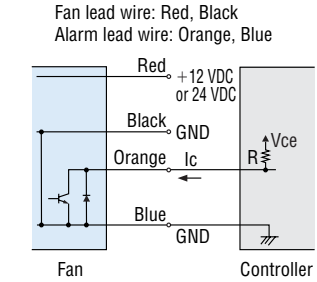
Fan Operation: Do not touch the fan blades when the fan is in operation. The use of a finger guard (accessory) is recommended to ensure protection.

Air Flow–Static Pressure Characteristics

→Page F-58

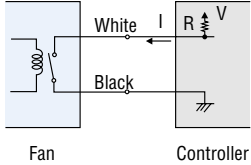
Frequency–Audible Noise Level (dB)

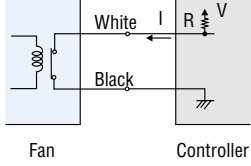
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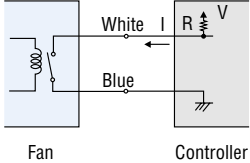
Alarm Specification Number	<ul style="list-style-type: none"> Models MDS Series: MDS1225-□M Alarm Specifications 									
	<table border="1"> <tr> <td>Alarm Activation Speed</td> <td>2100±400 r/min</td> </tr> <tr> <td>Output Mode</td> <td>Open Collector Output</td> </tr> <tr> <td>Output Condition</td> <td>Normal Operation: L Level (Internal Transistor ON) Alarm Output: H Level (Internal Transistor OFF)</td> </tr> <tr> <td>Maximum Rating</td> <td>Maximum Applied Voltage Vce: 30 VDC Max. Maximum Current Ic: 15 mA Max.</td> </tr> <tr> <td>Delay Function</td> <td>Built-in Starting Delay Time: 10 sec. Max. (The alarm function starts monitoring within 10 seconds after the power is turned on.)</td> </tr> </table>	Alarm Activation Speed	2100±400 r/min	Output Mode	Open Collector Output	Output Condition	Normal Operation: L Level (Internal Transistor ON) Alarm Output: H Level (Internal Transistor OFF)	Maximum Rating	Maximum Applied Voltage Vce: 30 VDC Max. Maximum Current Ic: 15 mA Max.	Delay Function
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Output Mode	Open Collector Output									
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Maximum Rating	Maximum Applied Voltage Vce: 30 VDC Max. Maximum Current Ic: 15 mA Max.									
Delay Function	Built-in Starting Delay Time: 10 sec. Max. (The alarm function starts monitoring within 10 seconds after the power is turned on.)									
④	<p>● Example of Alarm Circuit Connection</p> 									

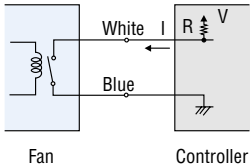
Low-Speed Alarm Contact Alarm Type

An alarm is output if the fan speed drops to a specific level.

Alarm Specification Number	<ul style="list-style-type: none"> Models MRS Series: MRS25-□B Alarm Specifications 									
	<table border="1"> <tr> <td>Alarm Activation Speed</td> <td>1800±300 r/min</td> </tr> <tr> <td>Output Mode</td> <td>Relay Output</td> </tr> <tr> <td>Output Condition</td> <td>Normal Operation: Contact ON Alarm Output: Contact OFF</td> </tr> <tr> <td>Maximum Rating</td> <td>Contact Capacity Resistive Load 10 VA Max. (100 V Max. / 0.5 A Max.)</td> </tr> <tr> <td>Delay Function</td> <td>Not built-in External delay circuit is required to prevent alarm detection when starting the fan. The delay time should be at least 10 seconds.</td> </tr> </table>	Alarm Activation Speed	1800±300 r/min	Output Mode	Relay Output	Output Condition	Normal Operation: Contact ON Alarm Output: Contact OFF	Maximum Rating	Contact Capacity Resistive Load 10 VA Max. (100 V Max. / 0.5 A Max.)	Delay Function
Alarm Activation Speed	1800±300 r/min									
Output Mode	Relay Output									
Output Condition	Normal Operation: Contact ON Alarm Output: Contact OFF									
Maximum Rating	Contact Capacity Resistive Load 10 VA Max. (100 V Max. / 0.5 A Max.)									
Delay Function	Not built-in External delay circuit is required to prevent alarm detection when starting the fan. The delay time should be at least 10 seconds.									
⑤	<p>● Example of Alarm Circuit Connection</p> 									

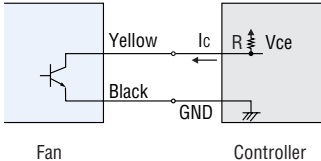
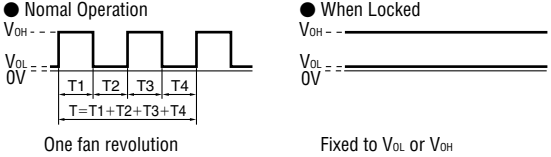
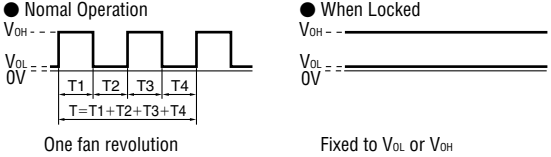
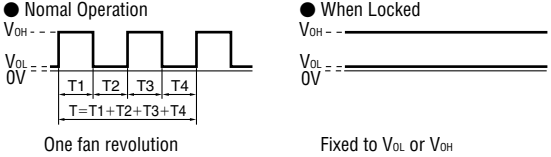
Alarm Specification Number	<ul style="list-style-type: none"> Models MRS Series: MRS16-□TA Alarm Specifications 									
	<table border="1"> <tr> <td>Alarm Activation Speed</td> <td>1800±300 r/min</td> </tr> <tr> <td>Output Mode</td> <td>Relay Output</td> </tr> <tr> <td>Output Condition</td> <td>Normal Operation: Contact OFF Alarm Output: Contact ON</td> </tr> <tr> <td>Maximum Rating</td> <td>Contact Capacity Resistive Load 10 VA Max. (100 V Max. / 0.5 A Max.)</td> </tr> <tr> <td>Delay Function</td> <td>Not built-in External delay circuit is required to prevent alarm detection when starting the fan. The delay time should be at least 10 seconds.</td> </tr> </table>	Alarm Activation Speed	1800±300 r/min	Output Mode	Relay Output	Output Condition	Normal Operation: Contact OFF Alarm Output: Contact ON	Maximum Rating	Contact Capacity Resistive Load 10 VA Max. (100 V Max. / 0.5 A Max.)	Delay Function
Alarm Activation Speed	1800±300 r/min									
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Delay Function	Not built-in External delay circuit is required to prevent alarm detection when starting the fan. The delay time should be at least 10 seconds.									
⑥	<p>● Example of Alarm Circuit Connection</p> 									

Alarm Specification Number	<ul style="list-style-type: none"> Models MBD Series: MBD10-24A, MBD8-24A MFD Series: MFD930-24A, MFD930B-24A, MFD915-24A, MFD915B-24A Alarm Specifications 	<ul style="list-style-type: none"> Example of Alarm Circuit Connection 									
	⑦		<table border="1"> <tr> <td>Alarm Activation Speed</td> <td>MBD Series, MFD915-24A, MFD915B-24A: 1500±400 r/min MFD930-24A, MFD930B-24A: 1300±400 r/min</td> </tr> <tr> <td>Output Mode</td> <td>Relay Output</td> </tr> <tr> <td>Output Condition</td> <td>Normal Operation: Contact ON Alarm Output: Contact OFF</td> </tr> <tr> <td>Maximum Rating</td> <td>Maximum Applied Voltage V: 30 VDC Max. Maximum Current I: 30 mA Max.</td> </tr> <tr> <td>Delay Function</td> <td>Built-in Starting Delay Time: 10 sec. Max. (The alarm function starts monitoring within 10 seconds after the power is turned on.)</td> </tr> </table>	Alarm Activation Speed	MBD Series, MFD915-24A, MFD915B-24A: 1500±400 r/min MFD930-24A, MFD930B-24A: 1300±400 r/min	Output Mode	Relay Output	Output Condition	Normal Operation: Contact ON Alarm Output: Contact OFF	Maximum Rating	Maximum Applied Voltage V: 30 VDC Max. Maximum Current I: 30 mA Max.
Alarm Activation Speed	MBD Series, MFD915-24A, MFD915B-24A: 1500±400 r/min MFD930-24A, MFD930B-24A: 1300±400 r/min										
Output Mode	Relay Output										
Output Condition	Normal Operation: Contact ON Alarm Output: Contact OFF										
Maximum Rating	Maximum Applied Voltage V: 30 VDC Max. Maximum Current I: 30 mA Max.										
Delay Function	Built-in Starting Delay Time: 10 sec. Max. (The alarm function starts monitoring within 10 seconds after the power is turned on.)										

Alarm Specification Number	<ul style="list-style-type: none"> Models MDS Series: MDS1751-24B Alarm Specifications 	<ul style="list-style-type: none"> Example of Alarm Circuit Connection 									
	⑧		<table border="1"> <tr> <td>Alarm Activation Speed</td> <td>1800±400 r/min</td> </tr> <tr> <td>Output Mode</td> <td>Relay Output</td> </tr> <tr> <td>Output Condition</td> <td>Normal Operation: Contact ON Alarm Output: Contact OFF</td> </tr> <tr> <td>Maximum Rating</td> <td>Maximum Applied Voltage V: 30 VDC Max. Maximum Current I: 30 mA Max.</td> </tr> <tr> <td>Delay Function</td> <td>Built-in Starting Delay Time: 10 sec. Max. (The alarm function starts monitoring within 10 seconds after the power is turned on.)</td> </tr> </table>	Alarm Activation Speed	1800±400 r/min	Output Mode	Relay Output	Output Condition	Normal Operation: Contact ON Alarm Output: Contact OFF	Maximum Rating	Maximum Applied Voltage V: 30 VDC Max. Maximum Current I: 30 mA Max.
Alarm Activation Speed	1800±400 r/min										
Output Mode	Relay Output										
Output Condition	Normal Operation: Contact ON Alarm Output: Contact OFF										
Maximum Rating	Maximum Applied Voltage V: 30 VDC Max. Maximum Current I: 30 mA Max.										
Delay Function	Built-in Starting Delay Time: 10 sec. Max. (The alarm function starts monitoring within 10 seconds after the power is turned on.)										

Pulse Sensor Type

Two pulses are output per fan revolution. Fan speed is monitored as the host controller reads the output pulses. This function helps you set a desired output speed for alarm activation.

Alarm Specification Number	<ul style="list-style-type: none"> Models MDS·MD Series: MDS1751-24S, MD925A-□S, MD825B-□S, MD625B-□S MBD Series: MBD10-□S, MBD8-□S MFD Series: MFD930-48S, MFD930B-48S, MFD915-48S, MFD915B-48S Alarm Specifications 	<ul style="list-style-type: none"> Example of Alarm Circuit Connection 							
	⑨		<table border="1"> <tr> <td>Output Pulse</td> <td>Two pulses per fan revolution</td> </tr> <tr> <td>Output Mode</td> <td>Open Collector Output</td> </tr> <tr> <td>Output Condition</td> <td> <ul style="list-style-type: none"> ● Nomal Operation ● When Locked  <p>One fan revolution</p> <p>$\frac{T}{4} = T1 \sim T4 = \frac{60}{4N}$ [a] N: Speed [r/min]</p> <p>Pulse width duty = $\frac{T1}{T1+T2} = 50 \pm 10\%$</p> </td> </tr> <tr> <td>Maximum Rating</td> <td>Maximum Applied Voltage Vce: 30 VDC Max. Maximum Current Ic: MD925-□S, MD825-□S, MD625-□S 5 mA Max. MD1751-24S, MBD Series, MFD Series 10 mA Max.</td> </tr> </table>	Output Pulse	Two pulses per fan revolution	Output Mode	Open Collector Output	Output Condition	<ul style="list-style-type: none"> ● Nomal Operation ● When Locked  <p>One fan revolution</p> <p>$\frac{T}{4} = T1 \sim T4 = \frac{60}{4N}$ [a] N: Speed [r/min]</p> <p>Pulse width duty = $\frac{T1}{T1+T2} = 50 \pm 10\%$</p>
Output Pulse	Two pulses per fan revolution								
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