Cooling Fans

Axial Flow Fans

Axial Flow Fans

<Additional Information>
● Technical reference ➜ Page H-1

Features

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.

Types of Axial Flow Fans

	Series Name		Features
AC Input	Low-Power Consumption **EMU** Series ➜ Page G-22～G-25		・Low Power Consumption ・These axial flow fans have achieved an expected life of 60,000 hours. ・They can be used in a wide voltage range (single-phase 100～240 VAC, 50/60 Hz). ・Lightweight
	Compact Size **MU** Series ➜ Page G-26～G-35		・Items in this series conform to the UL, CSA and EN Standards, as well as the Electrical Appliance and Material Safety Law (Japan), and also have the CE Marking (Low Voltage Directive) affixed. (The conformity differs according to the product.)
	Large Size, Large Air Flow **MRS** Series ➜ Page G-36～G-51		・Items in this series conform to the UL, CSA and EN Standards, and also have the CE Marking (Low Voltage Directive) affixed. (The conformity differs according to the product.)
	Long-Life **MRE** Series ➜ Page G-52～G-55		・These axial flow fans have achieved an expected life of 100,000 hours. ・Items in this series conform to the UL and CSA Standards, and also have the CE Marking (Low Voltage Directive) affixed. (The conformity differs according to the product.)
DC Input	**MDS** Series **MD** Series ➜ Page G-56～G-75		・There is also a type that has a mounted stall alarm. ・Items in this series conform to the UL, CSA and EN Standards, and also have the CE Marking (EMC Directive) affixed. (The conformity differs according to the product.) ・Lead wire type and connector type are available.
	Alarm **MDA** Series ➜ Page G-76～G-79		・These are equipped with a low-speed alarm function that outputs a signal when the cooling fan speed drops. ・Items in this series conform to the UL and CSA Standards, and also have the CE Marking (EMC Directive) affixed. ・Lead wire type and connector type are available.
	Variable Flow **MDV** Series ➜ Page G-80～G-81		・Speed can be adjusted by arranging a PWM control circuit.
	Long-Life **MDE** Series ➜ Page G-82～G-83		・These axial flow fans have achieved an expected life of 100,000 hours. ・These are equipped with a stall alarm. ・Items in this series conform to the UL, CSA and EN Standards, and also have the CE Marking (EMC Directive) affixed. (The conformity differs according to the product.)
	Splash Proof **MDP** Series ➜ Page G-84～G-86		・Degree of Protection IP55. Can even be used in places that are splashed with water. ・These are equipped with a stall alarm.

● Details of regulations and standards ➜ Page I-2
● For detailed information about regulations and standards, please see the Oriental Motor website.

●: Standard Type ■: Low Speed Alarm Type □: Stall Alarm Type ◆: Pulse Sensor Type

	Power Supply Voltage	Frame Size [mm (in.)]											
		□42 (□1.65)	□52 (□2.05)	□62 (60) [□2.44 (2.36)]	□80 (□3.15)	□92 (□3.62)	□119 (120) [□4.69 (4.72)]	□140 (□5.51)	□160 (□6.30)	ϕ172 (ϕ6.77)	□180 (□7.09)	□200 (□7.87)	□250 (□9.84)
	Single-Phase 100～240 VAC						●						
	Single-Phase 115 VAC				●	●	●						
	Single-Phase 220/230 VAC				●	●	●						
	Three-Phase 220/230 VAC							●■	●■		●■	●■	●■
	Single-Phase 110/115 VAC								●■		●■	●■	●■
	Single-Phase 220/230 VAC								●■*		●■	●■*	●■
	Three-Phase 220/230 VAC								●■		●■	●■	
	Single-Phase 110/115 VAC								●■		●■		
	Single-Phase 220/230/240 VAC								●■		●■		
	5 VDC	●	●										
	12 VDC	●□	●□	●□	●□	●□	●						
	24 VDC	●□	●□	●□	●□	●□	●□	●□		●			
	48 VDC							●□					
	12 VDC			■	■	■	■						
	24 VDC			■	■	■	■	■		■			
	48 VDC							■					
	24 VDC			◆	◆	◆	◆						
	12 VDC						□						
	24 VDC			□	□	□	□	□		□			
	48 VDC							□					
	24 VDC				□	□	□						

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

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.
Thermal Class	UL/CSA standards: 105 (A), EN standards: 120 (E)
Operating Environment	Provided in a separate box.
Storage Condition	Provided in a separate box.

◇Operating Environment and Storage Condition

Series	Operating Environment*1		Storage Condition*1 *3		Environmental Standards
	Ambient Temperature*2	Ambient Humidity	Ambient Temperature*2	Ambient Humidity	
EMU Series	−20～+75˚C (−4～+167°F)	20～85% (non-condensing)	−30～+75˚C (−22～+167°F)	20～85% (non-condensing)	–
MU, **MRS** Series	−30～+60˚C (−22～+140°F)	85% or less (non-condensing)	−40～+70˚C (−40～+158°F)	85% or less (non-condensing)	Compliant with ETSI Standards*4
MRE Series					
MRS Series (Low Speed Alarm Type)	−20～+60˚C (−4～+140°F)		−20～+70˚C (−4～+158°F)		

*1 The operating environment and storage conditions require no condensation, no freezing and no vibration or external force other from the fan.
*2 AC axial flow fans cannot be used in an environment where the temperature is modified to -10˚C (14°F) or lower, such as the freezer.
*3 The storage condition applies to a short period such as a period during transportation.
*4 The operating environment and storage condition are compliant with the following environmental standards:
ETSI EN 300 019-2-1 V2.1.2 (2000-09) Class 1.3E Storage
ETSI EN 300 019-2-2 V2.1.2 (1999-09) Class 2.3 Transportation
ETSI EN 300 019-2-3 V2.2.2 (2003-04) Class 3.4 Stationary use

Test Name	Environmental Standards	Conditions and Test Details
Heat Cycle Test	ETSI EN 300 019-2-1 ETSI EN 300 019-2-2 ETSI EN 300 019-2-3	5 cycles at −40～+30˚C (−40～+86°F), temperature gradient: 1.0˚C (1.8°F)/min. Low temperature: [−40˚C (−40°F)], High temperature: [+30˚C (+86°F)]. Shelf time: 3 hours No abnormality after the test.
Low-Temperature Shelf Test		−45˚C (−49°F). Shelf time: 72 hours. No abnormality after the test.

● Environmental Standards: ETSI
ETSI is the abbreviation for the European Telecommunications Standards Institute, and is a standardization organization established to formulate standard models for telecommunications in Europe. The ETSI EN 300 019 series are standards based on IEC 60721, established for environmental conditions for devices, and provide specific definitions of environmental conditions along with test conditions.

DC Axial Flow Fans

Item	Specifications
Insulation Resistance	10 MΩ or more when 250 VDC megger (For **MDS625**, **MDS825**, **MDS925**, **MDS1238**, **MDS1451**, **MDS1751(F)H** [except for **MDS1751-24(H)**], **MDA1238**, **MDA1451**, **MDA1751**, **MDE** Series (except for **MDE1225**), **MDP** Series and **MDV** Series: 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	10ºC (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. (**MDS1751** (except for **MDS1751(F)H**) and **MDA1751**: 5˚C [9°F] or less, **MDS1451**: 15˚C [27°F] or less) The winding temperature rise measured by thermometer method is 40˚C (72°F) or less for **MDS625**, **MDS825**, **MDS925**, **MDS1238**, **MDS1751(F)H**, **MDA1238**, **MDE625**, **MDE825**, **MDE925**, **MDE1238**, **MDE1751** and **MDP** Series. **MDV** Series: 45°C (81°F) or less
Thermal Class	UL/CSA standards: 105 (A), EN standards: 120 (E)
Ambient Temperature	−10～+60˚C (+14～+140°F) [For **MDA1238**: −10～+70˚C (+14～+158°F)]
Ambient Humidity	85% or less (non-condensing)