

OPERATING MANUAL

DC Axial Flow Fans MD Series

P Type (splash proof)

Introduction

Before using the product

Only qualified personnel of electrical and mechanical engineering should work with the product. Use the product correctly after thoroughly reading the section "Safety precautions." In addition, be sure to observe the contents described in warning, caution, and note in this manual.

The product described in this document has been designed and manufactured to be incorporated in general industrial equipment. Do not use for any other purpose. For the power supply, use a DC power supply with reinforced insulation on its primary and secondary sides. Oriental Motor Co., Ltd. is not responsible for any damage caused through failure to observe this warning.

Safety precautions

The precautions described below are intended to ensure the safe and correct use of the product, and to prevent the user and other personnel from exposure to the risk of injury. Use the product only after carefully reading and fully understanding these instructions.

 WARNING	Handling the product without observing the instructions that accompany a "WARNING" symbol may result in serious injury or death.
 CAUTION	Handling the product without observing the instructions that accompany a "CAUTION" symbol may result in injury or property damage.
 Note	The items under this heading contain important handling instructions that the user should observe to ensure safe use of the product.

[Description of graphic symbols]

	Indicates "prohibited" actions that must not be performed.
	Indicates "compulsory" actions that must be performed.

 WARNING	
	• Do not use the product in explosive or corrosive environments, in the presence of flammable gases, locations subjected in water, or near combustibles. Doing so may cause fire or injury.
	• Do not transport, install, connect, or inspect the product while the power is supplied. Always turn off the power before carrying out these operations. Injury may result.
	• Do not forcibly bend, pull or pinch the lead wire. Doing so may result in fire.
	• Do not disassemble or modify the fan. Doing so may cause injury.
	• Assign qualified personnel to the task of installing, wiring, operating, inspecting, and troubleshooting the product. Handling by unqualified personnel may result in fire or injury.
	• Keep the input-power voltage within the specified range. Failure to do so may result in fire.

Thank you for purchasing an Oriental Motor product.

This Operating Manual describes product handling procedures and safety precautions.

- Please read it thoroughly to ensure safe operation.
- Always keep the manual where it is readily available.

 WARNING	
	• For the power supply, use a DC power supply with reinforced insulation on its primary and secondary sides. Failure to do so may result in electric shock.
	• Perform connections securely according to the connection diagram. Failure to do so may result in fire or a skin burn(s).
	• Shut off the power to the fan in the event the rotating part (blades) is locked during operation and the burnout prevention circuit is activated. Otherwise, the fan will start unexpectedly when released from the locked condition. This may cause injury or damage to equipment.
	• Turn off the power in the event of a power failure. Otherwise, the fan will start unexpectedly when the power is restored. This may cause injury or damage to equipment.

 CAUTION	
	• Do not use the fan beyond its specifications. Doing so may result in injury or damage to equipment.
	• Keep your fingers and objects out of the openings in the fan. This may cause injury.
	• Do not lift the fan by holding the rotating part (blades) or lead wires of the fan. Doing so may cause injury.
	• Do not remove the lead wire of the fan from the frame hook. Doing so may cause damage to the lead wire.
	• Keep the area around the fan free of combustible materials. Failure to do so may result in fire or a skin burn(s).
	• Do not leave anything around the fan that would obstruct ventilation. Doing so may result in damage to equipment.
	• Do not touch the rotating part (blades) while operating. Doing so may cause injury. The use of the finger guard is recommended to ensure protection.
	• Before installing the fan, take measures against static electricity. Failure to do so may result in damage to equipment.
	• When an abnormal condition has occurred, immediately stop operation to turn off the power supply. Failure to do so may result in fire or injury.
	• Securely install the fan in an enclosure. Failure to do so may result in injury or damage to equipment.

Checking the product

■ Package contents

Verify that the items listed below are included.

Report any missing or damaged items to the branch or sales office from which you purchased the product.

- ☐ Fan 1 unit
- ☐ Instructions and Precautions for Safe Use 1 copy

A finger guard and a mounting screw set are included with the fan kit products.

■ Checking the model name

Verify the model name of the purchased product against the model shown on the name plate of the product.

Tell us the model name, product serial number, and manufacturing date shown on the name plate when you contact us.

MD P 9 25 Y - 24 L

1 2 3 4 5 6 7

Fan size

1	Series name	MD: MD Series
2	Type	P: P type (splash proof)
3	Frame size	
4	Frame thickness	
5	Identification code	Y
6	Rated voltage	24: 24 VDC
7	Additional function	L: Stall alarm

Installation

■ Installation location

Install the product in the following location that provides easy access for inspection.

However, this fan cannot be used in the water.

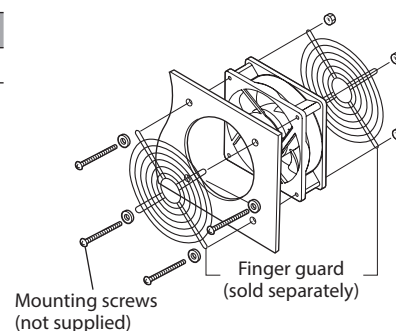
- Inside an enclosure installed indoors
- Operating ambient temperature: -20 to $+70$ °C [-4 to $+158$ °F]
(non-freezing, non-condensing)
- Operating ambient humidity: 85% or less (non-condensing)
- Area that is free of explosive atmosphere or toxic gas (such as sulfuric gas) or liquid
- Area not exposed to direct sun
- Area free of excessive amount of dust, iron particles or the like
- Area not subject to oil (oil droplets) or other liquids
- Area not subject to continuous vibration or excessive shocks
- Area free of radioactive materials, magnetic fields or vacuum
- Area free of excessive electromagnetic noise (from welders, power machinery, etc.)

When using near a switching circuit or high-frequency power supply, the induced current may flow inside the fan due to electromagnetic noise (conductive noise, radiative noise). If the induced current flows, the electric corrosion is caused in the bearings of the fan. As a result, it may generate the noise or shorten the service life of the products. Use the fan in the environment that the electromagnetic noise does not cause.

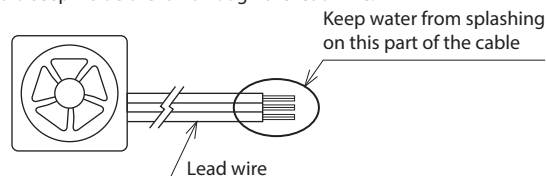
■ Installation method

- Install the fan onto an appropriate flat metal plate having excellent vibration resistance and heat conductivity.
- Drill mounting holes in equipment, and secure the fan using screws.
- For directions of the air flow and blades rotation, see the arrow indicated on the side of the fan frame.
- Finger guards that can prevent fingers and foreign particles from entering are available as peripheral equipment (sold separately). Install as shown in the figure when using.

Screw size	Tightening torque
M4	0.6 N·m (5.3 lb-in)



Note Be sure not to splash water on the lead wire terminal, otherwise water could seep inside the fan through the lead wire.



Connection

■ Connecting the power supply

The fan starts rotating when the DC power supply is turned on. Verify the voltage specification with the nameplate of the product, and input the suitable voltage.

Note

A voltage applied to the fan may be higher than the output voltage of the DC power supply depending on the wiring distance between the fan and the DC power supply. Use the fan in a state where a voltage applied to the fan does not exceed the voltage specification.

[Connection diagram]



• Lead wire size: AWG24*

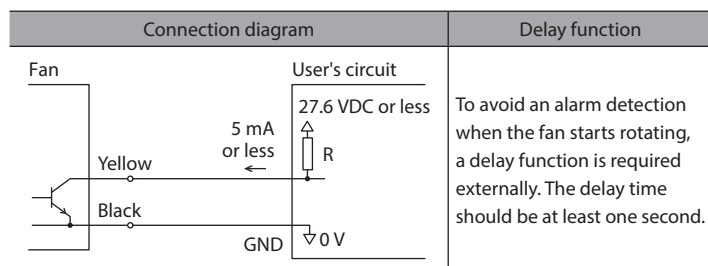
* **MDP925Y-24L** Lead wire size: AWG26

■ Connecting the alarm circuit

● Stall alarm

If the fan stops rotating while the power is supplied, an alarm signal is output. The yellow lead wire is for alarm signal. GND of the DC power supply for driving and that of the alarm signal are common.

- Output circuit: Open-collector output
- Output status: L level when the fan rotates (internal transistor ON)
H level when the fan stops (internal transistor OFF)



Overheat protection for locked condition

This fan is equipped with a built-in burnout prevention circuit. Since this circuit automatically controls the current flow to the windings when a locked condition is detected, it prevents the fan from burning out. The fan resumes operation automatically as soon as it is released from the locked condition. Turn off the power at the time of inspections.

Inspection and maintenance

■ Inspection

It is recommended that periodic inspections for the items listed below are conducted after each operation.

If an abnormal condition is noted, discontinue any use and contact your nearest Oriental Motor sales office.

● Inspection item

- Check if any of the mounting screws of the fan is loose.
- Check if the fan generates unusual noises.

■ Warranty

Check on the Oriental Motor Website for the product warranty.

■ Disposal

Dispose the product correctly in accordance with laws and regulations, or instructions of local governments.

Specifications

Check on the Oriental Motor Website for the product specifications.

Regulations and standards

■ UL Standards, CSA Standards, EN Standards

This product is recognized by UL under the UL, CSA and EN Standards.
Thermal class UL/CSA Standards: 105(A) EN Standards: 120 (E)

● Installation conditions (EN/IEC Standards)

For incorporating in equipment

Overvoltage category: I

Pollution degree: 2

Protection against electric shock: Class III equipment

Degree of protection: IP68*

* This product has been evaluated in accordance with EN/IEC 60529 and EN/IEC 60034-5.

■ RoHS Directive

This products do not contain the substances exceeding the restriction values.

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- Please contact your nearest Oriental Motor office for further information.

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