

OPERATING MANUAL

DC Cross Flow Fans
MFD Series

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 manual is designed and manufactured to be incorporated into general industrial equipment. Do not use it for any other purpose. Oriental Motor Co., Ltd. is not responsible for any compensation for damage caused through failure to observe this warning.

■ RoHS Directive

This product does not contain the substances exceeding the restriction values.

Safety precautions

The precautions described below are intended to ensure the safe and proper 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.

WARNING

- Do not use the product in explosive or corrosive environments, in the presence of flammable gases, locations subjected to splashing water, or near combustibles. Doing so may result in fire or injury.
- Assign qualified personnel the task of installing, wiring, operating/controlling, inspecting and troubleshooting the product. Failure to do so may result in fire or injury.
- Shut off the power to the fan in the event the lock-protection circuit is activated. Otherwise, the fan will start unexpectedly when released from the locked condition, causing bodily injury or equipment damage.
- Install the fan in an enclosure in order to prevent injury.
- Keep the input-power voltage within the specified range to avoid fire.
- Connect the cables securely according to the wiring diagram in order to prevent fire.
- Do not forcibly bend, pull or pinch the cable. Doing so may fire.
- Keep the area around the fan free of combustible materials in order to prevent fire or a skin burn(s).
- 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.
- Immediately when trouble has occurred, stop running and turn off the fan power. Failure to do so may result in fire, electric shock or injury.
- Do not disassemble or modify the fan. This may cause injury. Refer all such internal inspections and repairs to the branch or sales office from which you purchased the product.

Thank you for purchasing an Oriental Motor product. This operating manual describes product handling procedures and safety precautions.

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

CAUTION

- Do not use the fan beyond its specifications, or injury or damage to equipment may result.
- Keep your fingers and objects out of the openings in the fan. This may cause injury.
- Do not touch the motor during operation or immediately after stopping. The surface is hot and may cause a skin burn(s).
- Do not hold the rotating parts (runner) of the fan or lead wire. This may cause injury.
- To prevent the risk of damage to equipment, leave nothing around the fan that would obstruct ventilation.
- Provide anti-static measures before installing the fan. Failure to do so may result in equipment damage.
- Do not touch the rotating parts (runner) when the fan is in operation. This may cause injury. The use of the optional fingerguard is recommended to ensure protection.
- Turn off the power in the event of a power failure, or the fan will suddenly start when the power is restored and may cause injury or damage to equipment.

■ 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

■ How to identify the product model

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

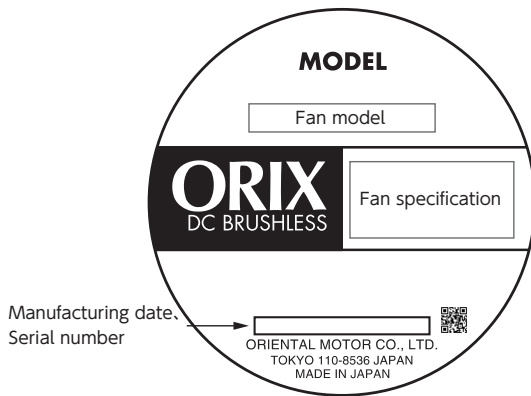
MFD **9** **15** **B** - **24** **A**
 1 2 3 4 5 6

1	Series name	MFD: MFD Series
2		9: Fan side shape □90 mm (3.54 in.)
3	Runner length	15: 150 mm (5.91 in.) 30: 300 mm (11.81 in.)
4	Rotating direction*	Blank: counterclock wise B: clock wise
5	Power Supply Voltage	24: 24 VDC
6	Additional Function	Blank: No additional functions A: Low speed alarm

* Rotation direction is as seen from the motor side

Information about nameplate

The figure shows an example.



Installation

Installation location

The fan is designed and manufactured to be incorporated in equipment. Install it in a well-ventilated location that provides easy access for inspection. The location must also satisfy the following conditions:

- Inside an enclosure that is installed indoors (provide vent holes)
- Operating ambient temperature -10 to $+60$ °C ($+14$ to $+140$ °F) (non-freezing)
- 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 splashing water (rain, water droplets), oil (oil droplets) or other liquids
- Area free of excessive salt
- Area not subject to continuous vibration or excessive shocks
- Area free of excessive electromagnetic noise (from welders, power machinery, etc.)
- Area free of radioactive materials, magnetic fields or vacuum

Installation method

Install the fan onto an appropriate flat metal plate having excellent vibration resistance and heat conductivity.

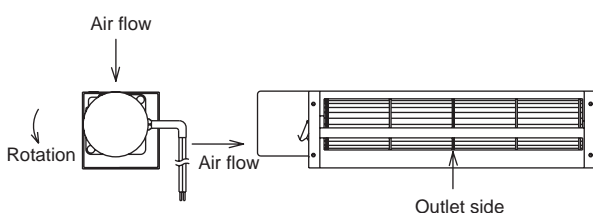
See the panel cut-out, mounting-hall reference drawing for information on how to provide mounting holes on the equipment used and secure the fan with screws (not supplied).

Screw size: M4

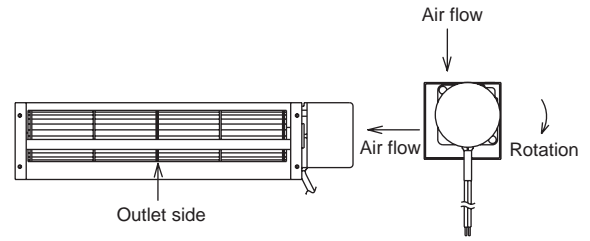
Tightening torque: 1.4 N·m (12.4 lb-in)

Air flow, rotation

MFD930 type, MFD915 type



MFD930B type, MFD915B type

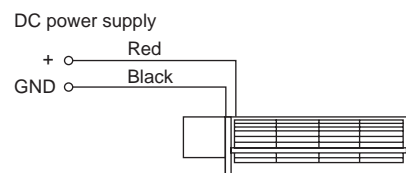


Connection

Connecting the power supply

Connect the red wire to the positive (+) power supply and the black wire to the ground connection.

Check the voltage specification on the product identification plate and input the correct voltage.

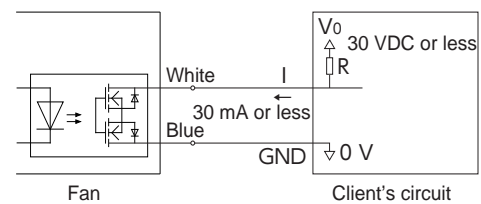


Low speed alarm

An alarm signal is output when the fan's rotation speed falls below 1300 ± 400 r/min (MFD930 type) or 1500 ± 400 r/min (MFD915 type).

Alarm specifications

	Speed		PhotoMOS relay output
	MFD915 type	MFD930 type	
Normal rotation	1900 r/min or more	1700 r/min or more	output ON (close)
Alarm output	1100 r/min or less	900 r/min or less	output OFF (open)



Note

The low speed alarm type of fan is equipped with an internal delayed-start alarm circuit. The alarm function becomes effective within 10 seconds of the fan start.

Operation

The fan starts rotating when the power supply is turned on.

For protection against electric shock, do not turn on the power supply until the wiring is completed.

Burning protection for locked condition

This fan is equipped with a built-in overheat protection 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.

Maintenance and inspection

■ Inspection

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

If any abnormality occurs, stop using the product and contact your nearest Oriental Motor sales office.

● Inspection items

- Check to see if any of the mounting screws of the fan are loose.
- Check to see if the fan is making 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.

General specifications

Check on the Oriental Motor Website for the product specifications.

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

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