# ■Introduction

## ●Before using the fan

Only qualified personnel should work with the product.

Use the product correctly after thoroughly reading the section "Safety precautions."

The product described in this manual has been designed and manufactured for use in general industrial machinery, and must not be used for any other purpose. NITTO KOGYO CORPORATION and Oriental Motor Co., Ltd. are not responsible for any damage caused through failure to observe this warning.

## ●Installation conditions (For EN Standards)

Overvoltage category II, Pollution degree 2, Class I equipment

When connecting to a power supply of overvoltage category III, supply power via the insulation transformer.

# ■Safety precautions

The precautions described below are intended to prevent danger or injury to the user and other personnel through safe, correct use of the product. 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.

- 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, electric shock 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, electric shock or injury.
- Do not transport, install the product, perform connections or inspections when the power is on. Always turn the power off before carrying out these operations. Failure to do so may result in electric shock.
- To prevent the risk of electric shock, use the fan for class I equipment only. Lüfter zur Verwendung in Geräten der Schutzklasse I.
- Install the fan in an enclosure in order to prevent electric shock or injury.
- Install the fan so as to avoid contact with hands, or ground it to prevent the risk of electric shock. Die Gehäuse der Lüfter sind mit einer Schraube und Zahnscheibe sicher mit dem geerdeten Gehäuse des Gerätes zu verbinden.
- Keep the input-power voltage within the specified range to avoid fire and electric shock.
- Connect the cables securely according to the wiring diagram in order to prevent fire and electric shock.
- Do not forcibly bend, pull or pinch the cable. Doing so may fire and electric shock.
- 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.
- Do not disassemble or modify the fan. This may cause electric shock or injury. Refer all such internal inspections and repairs to the branch or sales office from which you purchased the product.

## ⚠CAUTION

Handling the product without observing the instructions that accompany a "Caution" symbol may result in injury or property damage.

- Do not use the fan beyond its specifications, or electric shock, 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 (blades) of the fan or lead wire. This may cause injury.
- Keep the area around the fan free of combustible materials in order to prevent fire or a skin burn(s).
- To prevent the risk of damage to equipment, leave nothing around the fan that would obstruct ventilation.
- Do not touch the rotating parts (blades) when the fan is in operation. This may cause injury. The use of the optional fingerguard is recommended to ensure protection. Wegen der Verletzungsgefahr dürfen die Lüfterflügel bei Ventilatorbetrieb nicht berührt werden. Der Gebrauch des als Sonderzubehör erhältlichen Fingerschutzes ist empfehlenswert, um erhöhte Sicherheit zu gewährleisten.
- When an abnormality is noted, stop the operation immediately, or fire, electric shock or injury may occur.
- The motor's surface temperature may exceed 70 ℃ (158 °F) even under normal operating conditions. If a fan is accessible during operation, post the warning label shown in the figure in a conspicuous position to prevent the risk of skin burn(s).

Warning label

- To dispose of the fan, disassemble it into parts and components as much as possible and dispose of individual parts/components as industrial waste.

# ■Installation

## ●Location for installation

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

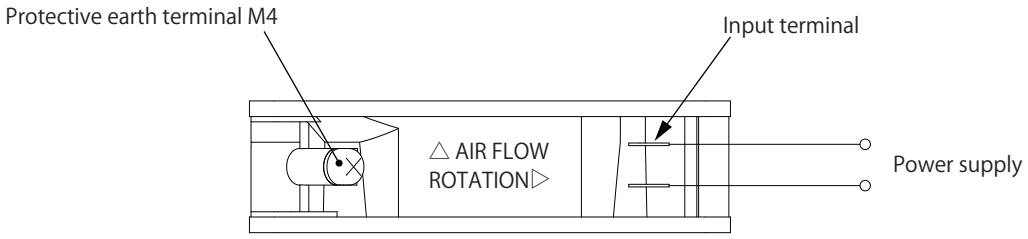
- Inside an enclosure that is installed indoors (provide vent holes)
- Operating ambient temperature
  −30 to +60 ℃(−22 to +140 °F) (non-freezing)
- Operating ambient humidity 85% or less (non-condensing)
- Area that is free of explosive atmosphere or toxic gas (such as sulfuric gas) or liquid
- Area not exposed to direct sun
- Area free of excessive amount of dust, iron particles or the like
- Area not subject to splashing water (rains, water droplets), 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.

## ●How to install the fan

- Install the fan onto an appropriate flat metal plate having excellent vibration resistance and heat conductivity.
  For air orientation and rotational direction, see the indications shown on the fan's side frame.
- Drill holes on the mounting plate and fix the fun on the plate using screws (not supplied).

| Model | Screw size | Tightening torque |
|---|---|---|
| PF-091CT(-2)<br>PF-121T(-2)A | M4 | 0.6 N・m (5.3 lb-in) |

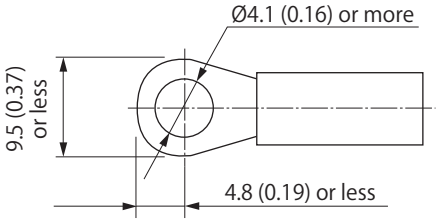
# ■Connection




## ●Connecting Protective Earth Terminal

Ground the fan using the Protective Earth Terminal ⏚.
Applicable crimp terminal:Insulated round crimp terminal
Terminal screw size: M4
Tightening torque:1.0 to 1.3 N・m (8.8 to 11.5 lb-in)
Applicable lead wire:AWG18 (0.75 $mm^2$) or thicker

[Unit: mm (in.)]




Note Do not use screws other than the Protective Earth Terminal screws attached on the product.