Proper installation of the EMI filter is critical for its performance. Improper installation may reduce the filtering effect and even introduce new interference issues. Below are the detailed steps and precautions for installing the EMI filter:

Ⅰ. Handling

When transporting the filter, please handle it by the housing or installation edges. Do not use the filter wires or terminals as points of force to avoid breakage, twisting, or loosening of the wires or terminals, which could lead to damage of the filter.

⚠ **Warning**: Handle carefully to avoid damage.

Ⅱ. Storage

The power filter should not be exposed to direct sunlight or rain. It should be stored in a well-ventilated area with an ambient temperature range of -30°C to +65°C, a maximum relative humidity of 90% (at 20°C ±5°C), and free from corrosive liquids or gases.

Tip: Store in a dry and cool environment to prevent degradation.

Ⅲ. Installation

Important Pre-installation Guidelines:

◆ Safety Precautions during Installation and Maintenance

Personal Protective Equipment (PPE):

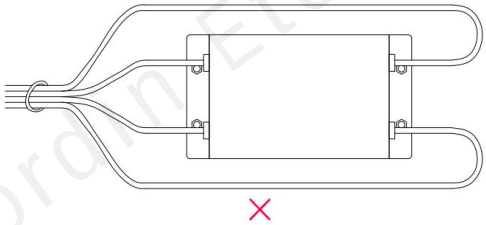
⚠ Ensure that appropriate protective gear is worn during the installation and maintenance of the filter to minimize the risk of injury.

Note: Always follow standard safety practices when handling electrical components.

◆ The filter should be installed at the power entry point, minimizing the length of the input wires inside the chassis to reduce radiated electromagnetic interference.

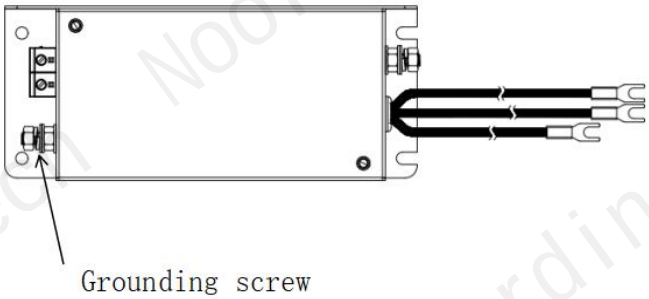
◆ It is recommended to use twisted-pair wires for the filter connections, as they can effectively reduce certain high-frequency interference signals.

◆ During installation, ensure that the input and output wires are kept separated. Do not run them parallel or bundle them together to prevent any coupling between the wires, which could degrade the filter's performance.



◆ The filter housing must be properly grounded over a large area, and the grounding wire should be kept as short as possible with low impedance.

⚠ **Warning**: Ensure proper grounding to avoid electrical hazards.



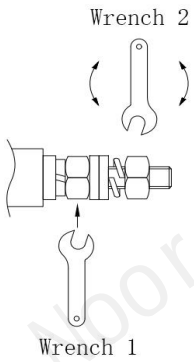
1. Fixing:

Install the filter body by securely fastening it with screws to the device's chassis or base, ensuring it is firmly and reliably fixed.

2. Wiring:

Connect the live wire (L) and neutral (N) wire from the power supply to the filter's input terminals.

Connect the live wire (L) and neutral (N) wire from the filter's output terminals to the internal circuitry of the device and ground the filter's grounding terminal to the device's ground point.



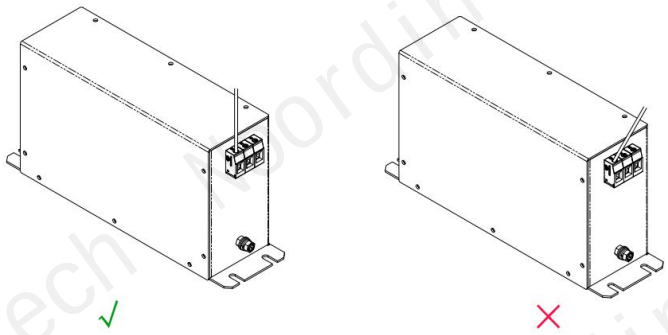
◆ If the filter's output terminal uses a bolt, two wrenches should be used to tighten the nuts. This prevents the bolt from rotating, which could cause internal circuit shifts, leading to sparks, short circuits, breakdowns, or reduced

filter performance. When tightening the screws, first use wrench 1 to secure the root nut, then use wrench 2 to tighten the nut (as shown in the diagram on the right). Failure to do so may damage the filter's terminals. The same method applies for other phase connections.

⚠ **Warning**: Improper tightening may damage the filter's terminals.

◆ When installing terminal block filter products, ensure that the screwdriver used for tightening the screws is as perpendicular to the housing as possible. Do not tilt the tool to avoid damaging the terminal block (as shown in the diagram below).

Tip: Keep screwdriver perpendicular to avoid terminal block damage.



3. Inspection:

◆ Before powering on, check all filter connections and installation positions with particular attention to the grounding wire connection. After confirming that everything is correct, you may power up the equipment.

◆ Inspect cable routing: input and output wires should be routed separately. Minimize the length of the connection between the filter and the device load to reduce the impact of parasitic inductance and capacitance on filtering performance.

◆ Filter shielding: If the filter housing is not in direct contact with the chassis, use a shielded cable to ground the housing to enhance the shielding effectiveness.

⚠ **Warning**: Improper shielding may reduce filtering performance.

Ⅳ. Cautions and Warnings:

◆ Before installing and using the EMI filter, carefully read all relevant safety and warning information, as well as the warnings provided on the filter itself. Failure to follow proper safety operations and the filter's safety warnings may pose a risk to personal safety and equipment.

◆ Always install the protective grounding wire first during installation, as the filter may have a certain leakage current. Ensure it is properly grounded before use.

◆ For filters with leakage currents greater than 0.5mA, the system must have reliable grounding and protective measures in place before use. Simply grounding through the housing is not sufficient, as there is a risk of electric shock.

◆ The operating conditions of the filter should not exceed the technical specifications and parameters listed on the datasheet and label. Overvoltage or overload may cause damage to the filter. It is recommended to implement appropriate overload protection measures.

◆ Risk of electric shock: EMI filters contain capacitors that store voltage, so all testing and disassembly work should only be performed after cutting off the power for at least 5 minutes to allow the filter's internal components to fully discharge.

⚠ **Warning**: Follow safety instructions to avoid electric shock.

Ⅴ. Common Issues and Solutions

Issue	Possible Cause	Solution
Poor filtering performance	1. Input and output wires are crossed.	Separate the input and output wires, increasing the distance between them.
	2. Poor grounding of the filter.	Ensure the grounding wire is short, thick, and securely connected.
	3. Incorrect filter parameter selection.	Replace with a filter that meets the specifications.
Filter overheating or failure	1. Current exceeds the filter's rated value.	Choose a filter with a higher current rating.
	2. Poor ventilation in the installation location.	Improve ventilation to ensure proper heat dissipation for the filter.
Device instability or increased interference	1. The filter is connected in reverse	Check the input (LINE) and output (LOAD) connection directions.

Ⅵ. Maintenance Instructions

To ensure the optimal performance and longevity of the EMI filter, it is essential to perform regular maintenance and inspections. Please follow the guidelines below:

◆ Inspect the filter regularly for any signs of wear, damage, or corrosion, especially after prolonged use or exposure to harsh environments.

◆ Ensure the filter is free of dust or debris that may hinder proper cooling or affect its filtering performance.

◆ Regularly clean the filter to prevent any buildup that could impact its functionality.

⚠If the filter is damaged, immediately disconnect the power and contact the manufacturer for a replacement.

4. Environmental Impact and Recycling

At the end of the product's life, please ensure proper recycling and disposal of the filter in accordance with local environmental regulations. Filters may contain electronic components and materials that should be recycled responsibly.

5. Symbols and Markings Explanation

Below are the symbols used in this manual:

- ⚠ - Warning: Indicates potential hazards that may cause injury or damage if not followed.
- 💡 - Tip: Provides helpful advice for better performance or safety.

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