

Walfront Wal frontprgbad3y45

Walfront Peltier Cooler Semiconductor Refrigeration Cooling System DIY Kit Instruction Manual

Model: Wal frontprgbad3y45

INTRODUCTION

This manual provides instructions for the Walfront Peltier Cooler Semiconductor Refrigeration Cooling System DIY Kit. This system utilizes advanced semiconductor technologies for solid-state cooling, suitable for various small-space cooling applications.

The refrigeration effect is influenced by factors such as cooling space size, ambient temperature, heat insulation, and sealing capabilities. This kit is designed for easy installation and offers efficient cooling with low noise.

SAFETY INFORMATION

- Ensure all electrical connections are secure and correctly polarized before applying power.
- Use a stable 12V 6A (or higher amperage) power supply. Incorrect voltage or current can damage the unit.
- Avoid touching the cooling and heating surfaces during operation, as temperatures can be extreme.
- Proper heat dissipation on the hot side is crucial for optimal performance and longevity.
- Keep the unit away from water or excessive moisture unless specifically designed for such environments.

Warning: This is a DIY kit and requires basic electrical and assembly knowledge. Improper installation can lead to damage or injury.

PACKAGE CONTENTS

Verify that all components are present before beginning assembly.

- 1 x Peltier Cooler Semiconductor Refrigeration Cooling System Unit (pre-assembled with fans, heatsinks, and heat pipes)

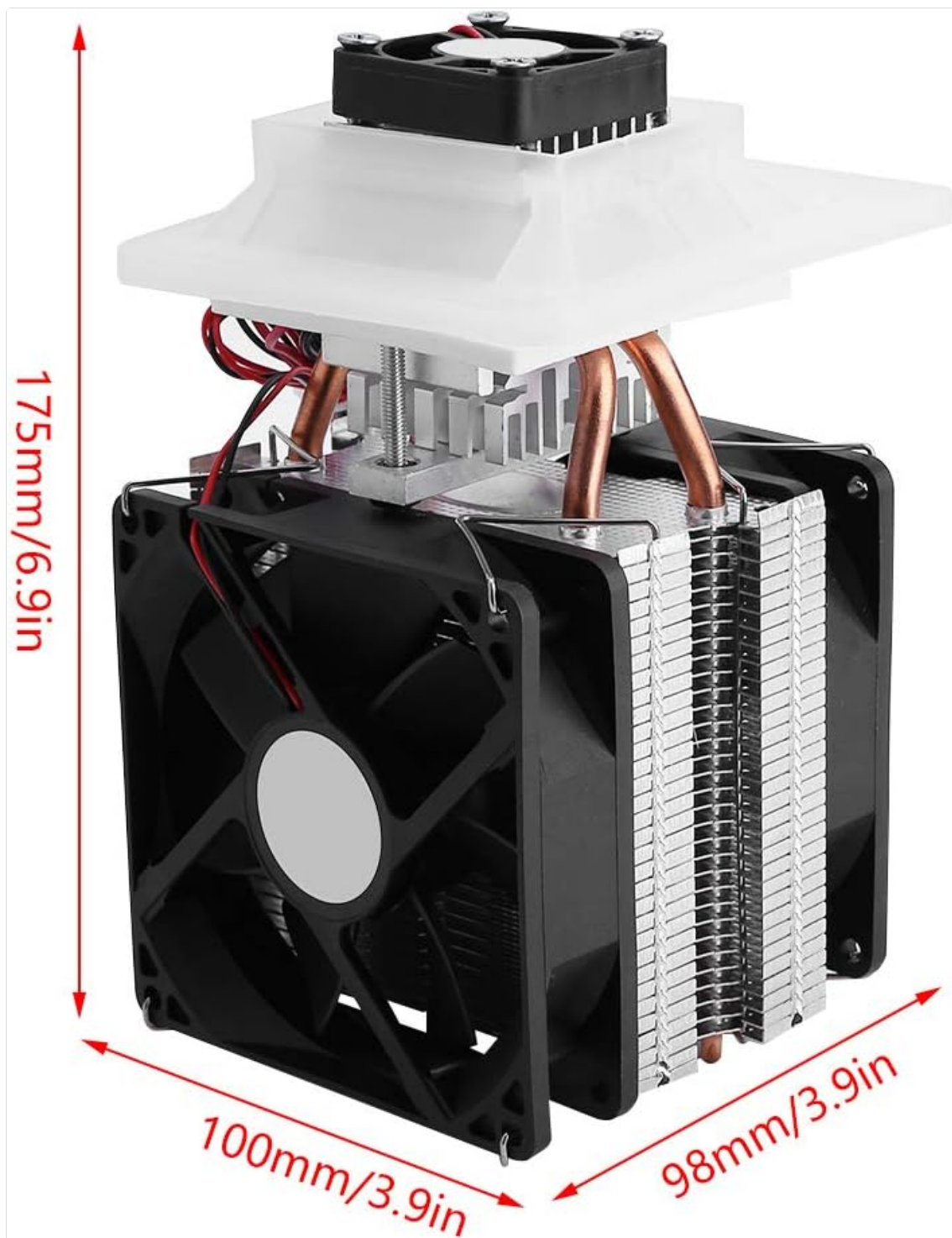


Image: The complete Peltier Cooler unit, showing its dimensions (175mm/6.9in height, 100mm/3.9in width, 98mm/3.9in depth). It features two fans, a heatsink, and copper heat pipes.

SETUP AND INSTALLATION

Component Overview



Image: A detailed view of the small DC fan motor, indicating its specifications (DC 12V, 0.08A).

Power Supply Connection

A stable 12V 10A power supply is recommended for optimal performance. Ensure correct polarity when connecting.

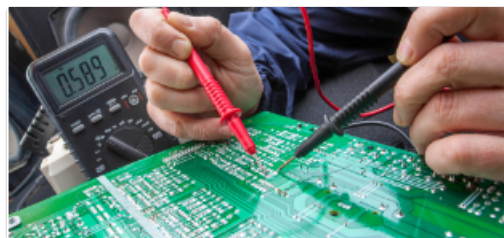


Image: Wiring diagram for connecting the Peltier cooler to a 12V 10A power supply and an optional thermostat. The positive terminal of the power supply connects to the first port, negative to the second. The positive pole of the refrigerator connects to the first port, and the negative end to the fourth end. The middle line loop connects to the second and third ports.

DIY Small Refrigerator Installation Steps

This unit can be integrated into a small insulated enclosure to create a mini-refrigerator.

300*200*250mm self-made small refrigerator cooling test

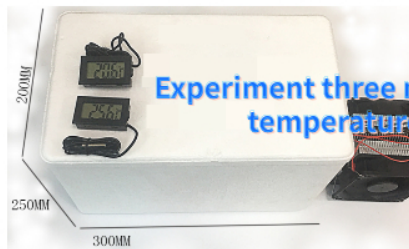


Temperature before experiment

Temperature before experiment

Temperature inside the box : 25.1°C

Ambient temperature : 25.6°C



Experiment three minutes temperature

3 minutes

Temperature inside the box : 20.6°C

Ambient temperature : 25.6°C

10 minutes

The temperature inside the box is 15.2°C

Constant ambient temperature

The experimental box is tested in the absence of heat preservation, can be wrapped in a layer of tin foil paper, heat preservation effect is better

40 minutes

The temperature inside the box is 12.5°C

This time the temperature does not fluctuate much, it is almost the lowest temperature. The reason for the time is too long. Frosting will occur on the cold end. Fans may freeze, loosen the screws on the cold end fan a little and lift the small fan up a little.

About 20-30 minutes or so, the cold end has been slowly frosting

Image: Visual guide for integrating the Peltier cooler into a small insulated box. Steps include drawing a line on the box, cutting holes, inserting the isolation board, and connecting the cold end of the refrigerator with the isolation plate.

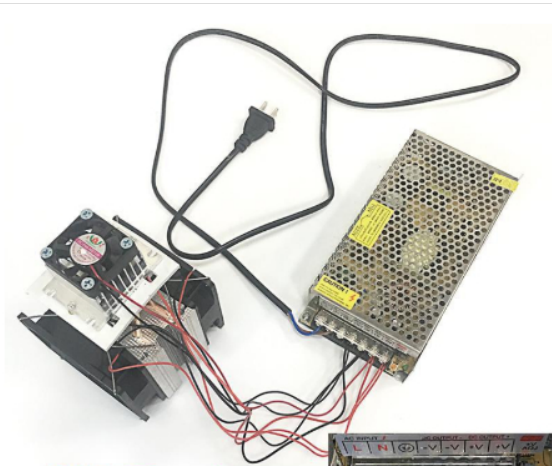
1. Draw a good line on the box body according to the size of the protruding part of the isolation board.
2. Cut holes along the drawn line with a box cutter.
3. Put the protruding part of the isolation board on the inside of the box.
4. Connect the cold end of the refrigerator with the hole of the isolation plate. Ensure the cold end extends as far as possible into the cooling space.

OPERATING INSTRUCTIONS

Once properly installed and connected to a 12V power supply, the unit will begin to cool.

- The cooling effect is immediate on the cold side, while the hot side will dissipate heat.
- For optimal performance, ensure adequate ventilation around the hot side heatsink to allow for efficient heat rejection.
- The system is designed for continuous operation.

Performance Considerations



In addition to the refrigeration system of this product, you also need to prepare a power supply
If you want to pay close attention to the temperature, you can also prepare a digital display temperature device

DIY small refrigerator installation steps

1

A white rectangular box with a black line drawn on its front face, indicating the size of the protruding part of the isolation board.

Draw a good line on the box body according to the size of the protruding part of the isolation board

2

The white box with two rectangular holes cut into its front face, corresponding to the line drawn in step 1.

Cut holes in the drawing line with a box cutter

3

The white box with the isolation board placed inside, protruding from the front face.

Put the protruding part of the isolation board on the inside of the box

4

The white box with the refrigerator unit connected to the isolation board. The cold end of the refrigerator is inserted into the hole in the isolation plate.

Connect the cold end of the refrigerator with the hole of the isolation plate

The cold end goes as far in as you can

Image: A test showing temperature reduction in a 300x200x250mm insulated box. Initial temperature 25.1°C. After 3 minutes, 20.6°C. After 10 minutes, 15.2°C. After 40 minutes, 12.5°C. Notes indicate that frosting may occur on the cold end over time, and fans may freeze, suggesting slight adjustment of screws on the cold end fan if this occurs.

The cooling performance depends on the insulation of the cooling space. Good insulation, such as 1-inch foam or tin foil paper, significantly improves efficiency.

Over extended periods, the cold end may experience frosting. If the fan on the cold end freezes, slightly loosen its mounting screws to allow for proper operation.

MAINTENANCE

- Regularly inspect the fans for dust accumulation. Clean with compressed air or a soft brush to maintain airflow.
- Ensure all electrical connections remain secure.
- Check for any signs of damage to the heatsinks or fans.
- If the unit is used in a humid environment, periodically check for excessive condensation or ice buildup on the cold side.

TROUBLESHOOTING

Problem	Possible Cause	Solution
No cooling	No power, incorrect wiring, faulty power supply	Check power connections, ensure 12V supply, verify polarity.
Insufficient cooling	Poor insulation, inadequate heat dissipation, fan obstruction	Improve insulation of the cooling space. Ensure hot side fan is clear and operating. Clean heatsinks.
Cold side fan freezing	Excessive frosting	Slightly loosen the screws on the cold end fan to prevent obstruction.
Unit overheating	Blocked hot side fan, insufficient ventilation	Clear any obstructions from the hot side fan. Ensure ample space for airflow.

SPECIFICATIONS

Feature	Detail
Product Dimensions	6.89"L x 3.94"W x 3.86"H
Brand	Walfront
Power Connector Type	6-Pin
Voltage	12 Volts
Wattage	72 watts
Cooling Method	Thermoelectric
Compatible Devices	Refrigerator (DIY applications)
Material	Metal, Plastic
Item Weight	0.02 Kilograms
Model Number	Wal frontprgbad3y45

OFFICIAL PRODUCT VIDEO

The following video demonstrates the Thermoelectric Peltier for Mini Air Conditioner.

Your browser does not support the video tag.

Video: This video provides a visual overview of the Walfront Peltier Cooler Semiconductor Refrigeration Cooling System, demonstrating its components and potential applications as a thermoelectric Peltier for a mini air conditioner. It shows the unit from various angles and highlights its compact design.

WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the seller's policies or contact the manufacturer directly. Specific warranty details are not provided in this manual.

Manufacturer: Eujgoov

Brand: Walfront