

WINGONEER 1

WINGONEER FR120N MOS Module MOSFET Control Module User Manual

INTRODUCTION

The WINGONEER FR120N MOS Module is a field effect control module designed for various electronic applications. It features decoupled isolation, which significantly enhances interference immunity between the control signal and the controlled equipment. This module supports high-level start, low-level stop, and PWM (Pulse Width Modulation) for speed adjustment, making it versatile for controlling devices such as electric motors, solenoid valves, and other tributary equipment.

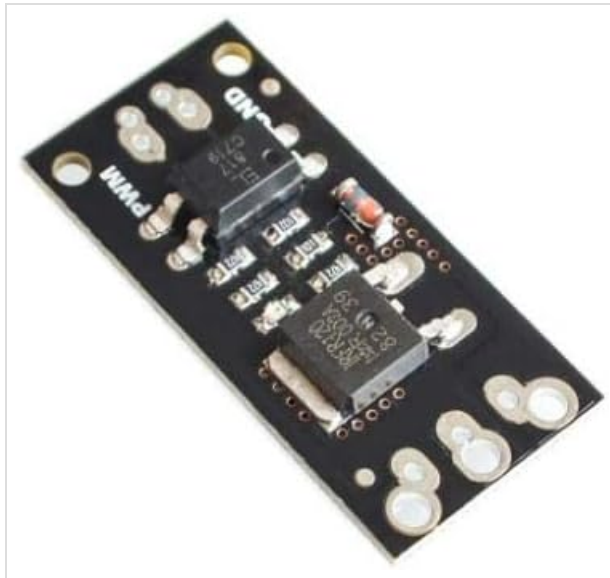
The signal input side offers flexibility with options to solder terminal blocks or pins, ensuring compatibility with breadboards. Similarly, the output can be connected via soldered terminals or direct wiring. The compact module measures 23mm x 16mm and includes two 2mm diameter screw holes with an 8mm spacing for easy mounting.

PRODUCT FEATURES

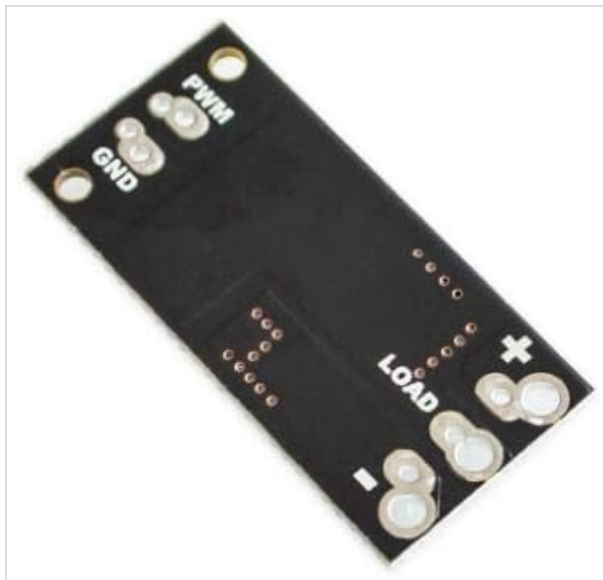
- **Voltage Rating:** 100V 9.4A
- **Control Signal Compatibility:** Compatible with single-chip microcontrollers and Arduino light control boards, supporting 3V or 5V signals.
- **Operation Modes:** High-level signal for activation (start), low-level signal for deactivation (stop).
- **Speed Adjustment:** Supports PWM for variable speed or intensity control.
- **Wide Application:** Suitable for controlling motor start/stop, solenoid valves, and other tributary equipment.
- **Flexible Input:** Signal input side can accommodate terminal blocks or pins, compatible with breadboards.

MODULE OVERVIEW

This section provides a visual guide to the WINGONEER FR120N MOS Module's components and connection points.



This image displays the top side of the FR120N module, highlighting the main MOSFET component, a diode, and clearly labeled connection points for PWM signal input, ground (GND), and load output (LOAD+, LOAD-). The module also features mounting holes.



This image shows the underside of the FR120N module, revealing the solder pads for the input and output connections, as well as the two 2mm diameter screw holes for mounting. The compact design is evident.

SETUP

Follow these steps to correctly set up your WINGONEER FR120N MOS Module:

1. **Identify Input and Output:** Locate the PWM, GND, LOAD+, and LOAD- terminals on the module. These are clearly labeled on the module's surface.
2. **Connect Control Signal:** Connect your control signal source (e.g., microcontroller, Arduino) to the **PWM** pin. Connect the ground of your control source to the **GND** pin on the module. Ensure your control signal is 3V or 5V compatible.
3. **Connect Load:** Connect the positive terminal of your load (e.g., motor, LED strip, solenoid valve) to the **LOAD+** terminal. Connect the negative terminal of your load to the **LOAD-** terminal.
4. **Power Supply:** Ensure your load's power supply is connected and within the module's specifications (up to 100V, 9.4A). The module itself draws minimal power from the control signal.
5. **Mounting:** If permanent installation is required, secure the module using the two 2mm diameter screw holes.

OPERATING INSTRUCTIONS

The WINGONEER FR120N MOS Module operates based on the input signal provided to the PWM pin. Understanding these modes is crucial for proper control:

- **High Level Start / Low Level Stop:** When the PWM input receives a high-level signal (typically 3V or 5V), the internal MOSFET will turn on, allowing current to flow through the connected load. Conversely, when the PWM input receives a low-level signal (0V), the MOSFET will turn off, stopping current flow to the load.
- **PWM Speed Adjustment:** For applications requiring variable control, such as adjusting motor speed or LED brightness, apply a Pulse Width Modulation (PWM) signal to the PWM input. By varying the duty cycle of the PWM signal (the ratio of ON time to total period), you can control the average power delivered to the load. A higher duty cycle results in more power, while a lower duty cycle results in less power.
- **Isolation:** The module provides decoupled isolation between the control signal and the controlled equipment, which helps to prevent interference and protect your control circuitry from the load's power circuit.

MAINTENANCE

The WINGONEER FR120N MOS Module is designed for reliability and requires minimal maintenance. Adhering to these guidelines will help ensure its longevity:

- **Cleaning:** Keep the module free from dust, dirt, and debris. If cleaning is necessary, use a soft, dry brush or compressed air. Avoid using liquids or abrasive cleaners.
- **Environmental Conditions:** Operate and store the module in a dry environment, away from extreme temperatures, high humidity, and corrosive substances. These conditions can damage electronic components.
- **Physical Inspection:** Periodically inspect the module for any signs of physical damage, such as cracked solder joints, burnt components, or loose connections. Address any issues promptly.

TROUBLESHOOTING

If you encounter issues with your WINGONEER FR120N MOS Module, refer to the following troubleshooting guide:

Issue: Load does not turn on.

Possible Causes & Solutions:

- **No control signal:** Verify that a high-level signal (3V or 5V) is being sent to the PWM pin from your control source.
- **Incorrect wiring:** Double-check all connections, especially PWM, GND, LOAD+, and LOAD-. Ensure correct polarity for the load.
- **Insufficient power to load:** Confirm that the load's power supply is connected and providing adequate voltage and current within the module's specifications.
- **Faulty load:** Test the load independently to ensure it is functional and not drawing excessive current.
- **Module damage:** Inspect the module for any visible damage or signs of overheating.

Issue: Load does not turn off.

Possible Causes & Solutions:

- **No low-level signal:** Ensure the PWM pin is receiving a low-level signal (0V) to turn off the

MOSFET. The control pin might be floating or stuck high.

- **Short circuit:** Check for any short circuits in the wiring or on the module itself that might be bypassing the MOSFET.

Issue: Inconsistent or no PWM control.

Possible Causes & Solutions:

- **Incorrect PWM signal:** Verify the frequency and duty cycle of the PWM signal from your control source. Ensure it's within expected ranges for your application.
- **Signal compatibility:** Ensure your control signal voltage (3V or 5V) is compatible with the module's input requirements.

SPECIFICATIONS

Feature	Value
Voltage Rating	100V 9.4A
Control Signal Compatibility	3V or 5V
Module Dimensions	23mm x 16mm
Mounting Hole Diameter	2mm
Mounting Hole Spacing	8mm
Package Dimensions	3.86 x 2.64 x 1.1 inches
Item Weight	1.76 ounces
ASIN	B07HBS91V9
Model Number	1
Manufacturer	WINGONEER
Date First Available	October 18, 2018

WARRANTY AND SUPPORT

Specific warranty information for the WINGONEER FR120N MOS Module is not provided in the product details. For support or warranty inquiries, please contact your retailer or the manufacturer, WINGONEER, directly. Refer to your purchase documentation for contact details and any applicable return policies.