DROK 090198AFA

DROK Adjustable Voltage Regulator User Manual

Model: 090198AFA | Brand: DROK

1. Introduction

This user manual provides comprehensive instructions for the safe and efficient operation of your DROK Adjustable Voltage Regulator. This device is a non-isolated DC to DC buck converter designed to step down an input voltage within the range of 8V to 35V to an adjustable output voltage of 3V to 24V, with a maximum output current of 5A. Its robust design, featuring an aluminum shell and organic silicone packaging, ensures durability and protection against environmental factors.

2. Safety Information

Please read all safety warnings and instructions carefully before installing or operating this device. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- Ensure the input voltage does not exceed 35V DC.
- The output voltage must be at least 2V lower than the input voltage for proper operation.
- Do not exceed the maximum output current of 5A.
- Always disconnect power before making any connections or adjustments.
- This device is waterproof (IP67), but proper wiring and sealing of connections are crucial to maintain this rating.
- Avoid short circuits on the output. The device has over-current protection, but repeated short circuits can cause damage.
- Operate within the specified working temperature range (-40°C to 85°C).

3. Product Overview and Features

The DROK Adjustable Voltage Regulator is designed for various applications requiring a stable, stepped-down DC voltage. Its compact and robust construction makes it suitable for demanding environments.

Key Features:

- **Adjustable Output:** Output voltage can be adjusted from 3V to 24V.

- **Wide Input Range:** Accepts DC input from 8V to 35V.
- **High Efficiency:** Conversion efficiency greater than 95%.
- **Robust Protection:** Features over-current and over-temperature protection.
- **Durable Construction:** Aluminum shell for better heat dissipation and organic silicone packaging for IP67 waterproof rating.
- **Easy Mounting:** U-shape fixing card slot for secure installation.
- **Quality Wiring:** Anaerobic copper core wire for less resistance and better conductivity.

Product Components:

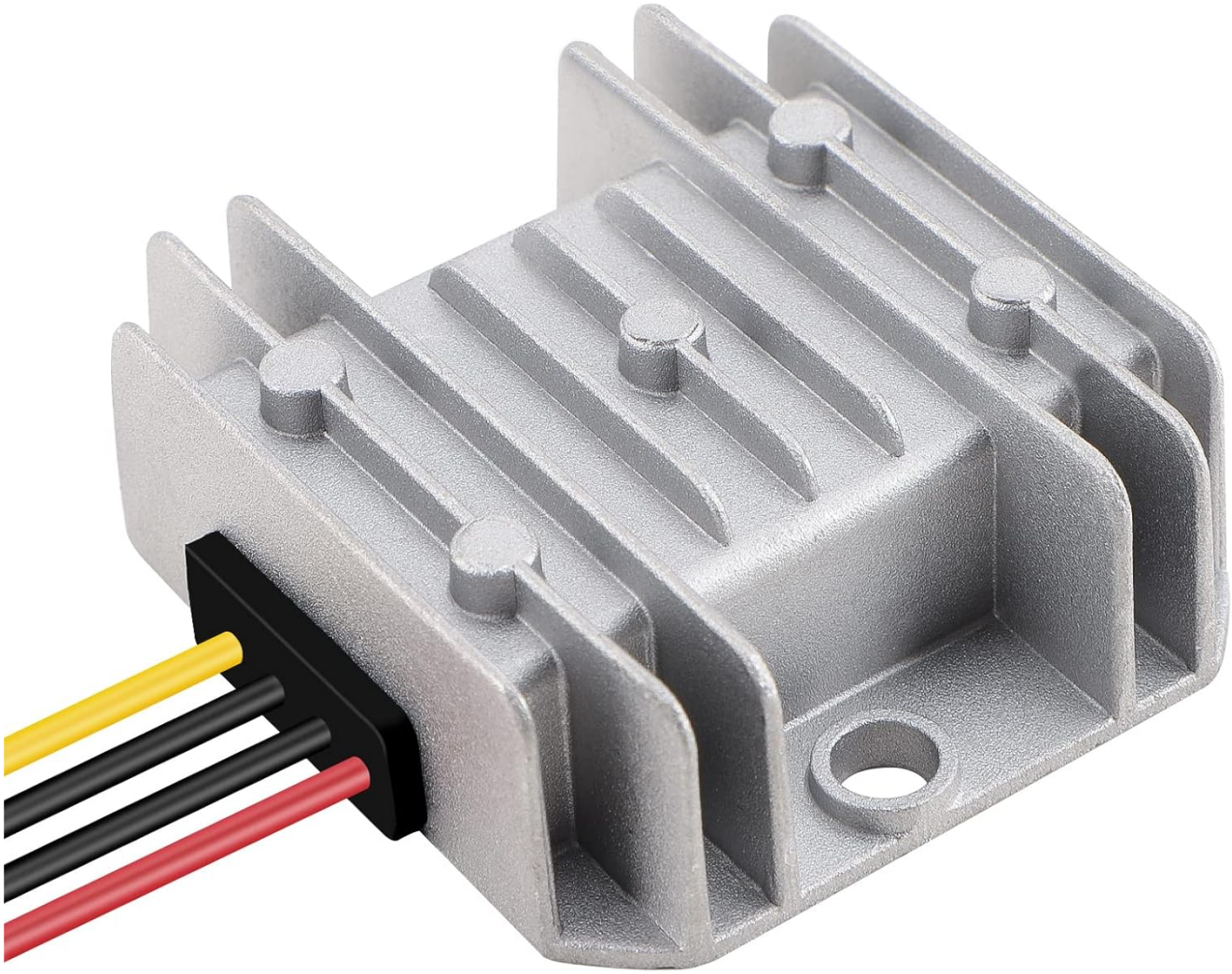

Figure 3.1: Front view of the DROK Adjustable Voltage Regulator, showing the aluminum casing and the input/output wires connected to the side.

Figure 3.2: Bottom view of the regulator, displaying the product label with input/output voltage ranges and current ratings.

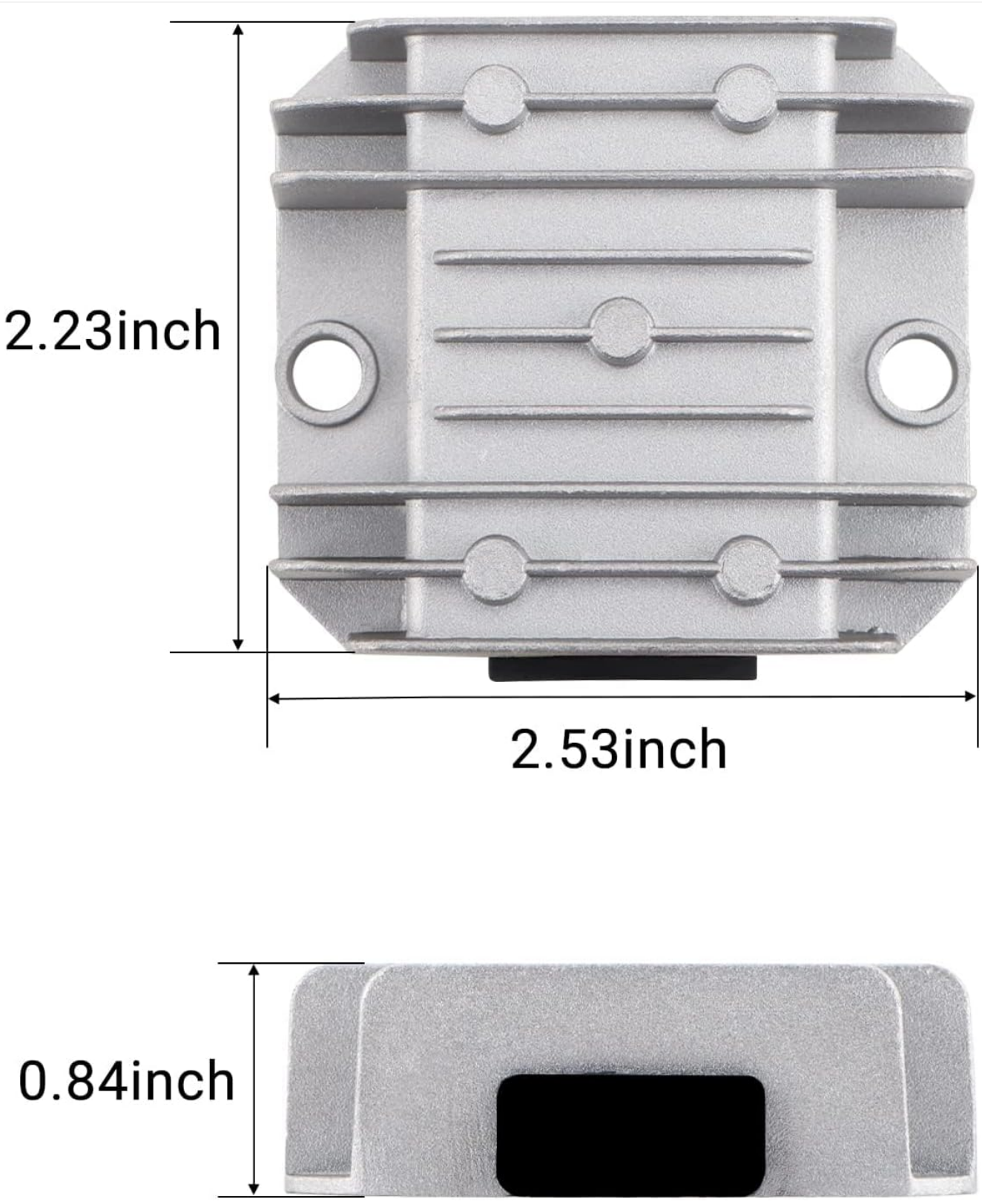

Figure 3.3: Diagram illustrating the physical dimensions of the voltage regulator in inches.

4. Specifications

Parameter	Value
Property	Non-isolated power supply step-down module
Input Voltage	DC 8V ~ 35V

Parameter	Value
Output Voltage	3V ~ 24V adjustable (Output must be at least 2V lower than input)
Output Current	5A (max)
Conversion Efficiency	> 95% (max)
Over-current Protection	7A
Working Temperature	-40°C ~ 85°C
Operating Frequency	300KHz
Protection Features	Over-current protection, Over-temperature protection
Protection Level	IP67 (Waterproof)
Dimensions (L x W x H)	Approx. 2.53 x 2.23 x 0.84 inches
Weight	Approx. 2.39 ounces

5. Setup and Installation

Follow these steps for proper installation of the voltage regulator:

1. **Identify Wires:** The regulator comes with three wires: Red (Input Positive), Black (Common Ground), Yellow (Output Positive).
2. **Mounting:** Use the U-shape fixing card slots on the aluminum casing to securely mount the regulator in a stable location. Ensure adequate ventilation around the unit, although its aluminum casing aids in heat dissipation.
3. **Input Connection:** Connect your DC power source (8V-35V) to the input wires. Connect the positive (+) terminal of your power source to the **Red** input wire. Connect the negative (-) terminal of your power source to the **Black** common ground wire.
4. **Output Connection:** Connect your load (device to be powered) to the output wires. Connect the positive (+) terminal of your load to the **Yellow** output wire. Connect the negative (-) terminal of your load to the **Black** common ground wire.
5. **Voltage Adjustment:** Before connecting your load, apply input power. Locate the small adjustment screw (potentiometer) on the unit (often visible on the side or top, sometimes under a protective cap). Use a small screwdriver to carefully turn this screw clockwise to increase the output voltage or counter-clockwise to decrease it. Use a multimeter to measure the output voltage and set it to your desired level (3V-24V), ensuring it is at least 2V lower than your input voltage.
6. **Final Check:** Double-check all connections for polarity and security before applying full power to your load.

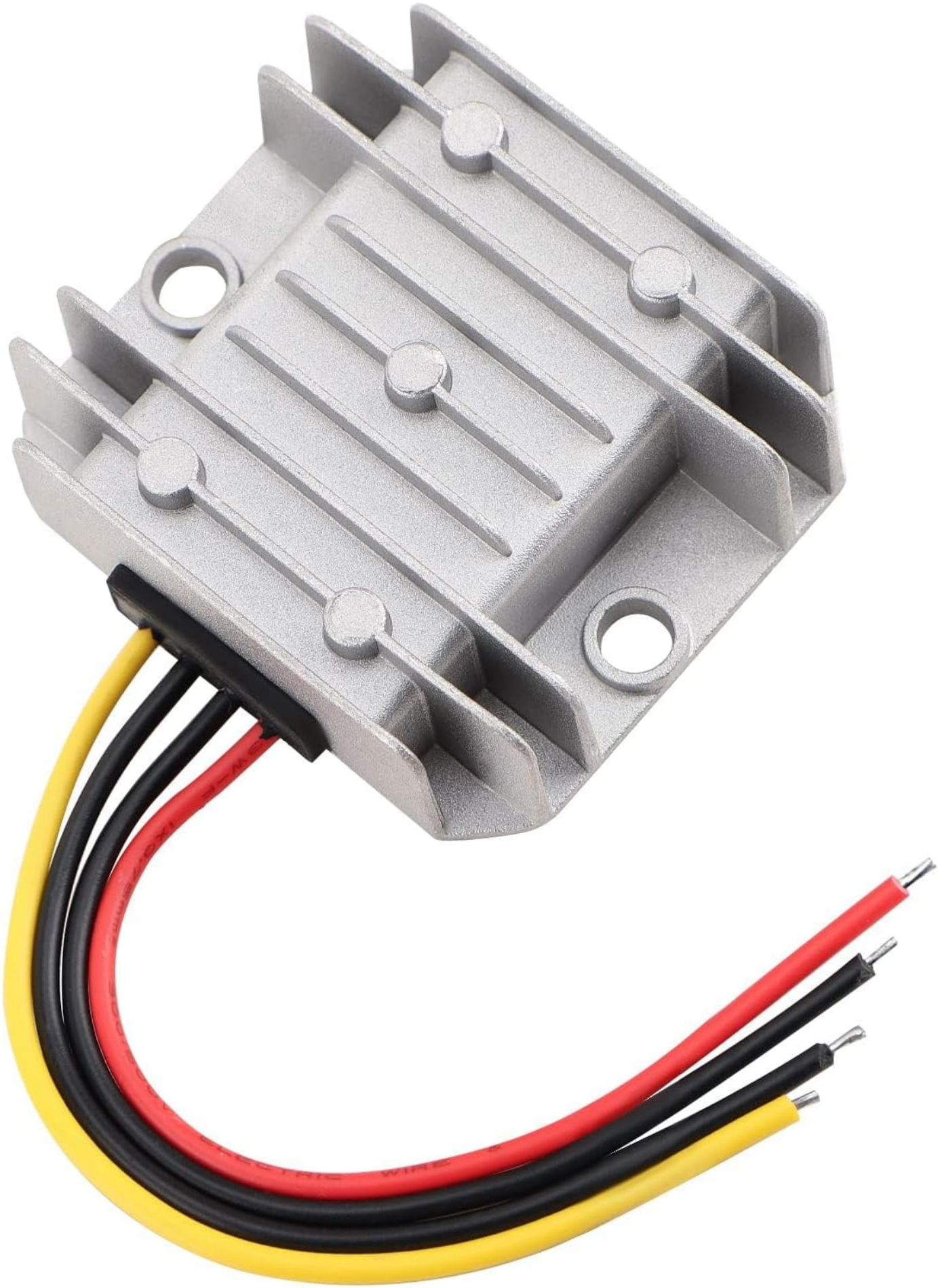

Figure 5.1: Top view of the regulator showing the input (red/black) and output (yellow/black) wires, and the location of the voltage adjustment potentiometer.

6. Operating Instructions

Once installed and the output voltage is set, the DROK Adjustable Voltage Regulator operates automatically. It will maintain the set output voltage as long as the input voltage is within the specified range and the load current does not exceed 5A.

- **Power On:** Apply power to the input terminals. The regulator will immediately begin converting the voltage.
- **Monitoring:** While the device is designed for stable operation, it is good practice to periodically monitor the output voltage with a multimeter, especially during initial setup or if the load characteristics change.
- **Overload Protection:** If the output current exceeds 7A, the built-in over-current protection will activate, potentially shutting down the output to prevent damage. Reduce the load or check for short circuits if this occurs.
- **Over-temperature Protection:** The unit also features over-temperature protection. If the internal temperature becomes too high, the device may reduce output or shut down. Ensure adequate airflow and avoid enclosing the unit in poorly ventilated spaces.

7. Maintenance

The DROK Adjustable Voltage Regulator is designed for low maintenance. However, following these guidelines will ensure its longevity and reliable performance:

- **Cleaning:** Periodically clean the exterior of the unit with a dry, soft cloth to remove dust and debris. Do not use harsh chemicals or abrasive cleaners.
- **Connections:** Regularly inspect all wire connections to ensure they are secure and free from corrosion. Loose connections can lead to poor performance or overheating.
- **Environment:** While waterproof, avoid prolonged submersion or exposure to extreme conditions beyond its IP67 rating. Ensure the operating environment remains within the specified temperature range.
- **Ventilation:** Ensure that the heat sink fins are not obstructed, allowing for proper heat dissipation.

8. Troubleshooting

If you encounter issues with your voltage regulator, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No output voltage	No input power; Incorrect wiring; Over-current protection activated; Faulty unit.	Check input power source; Verify input/output wiring polarity; Reduce load or check for short circuits; Test unit with a known good load/source.
Output voltage is unstable or fluctuating	Input voltage is unstable; Load is too high; Loose connections.	Ensure stable input power; Reduce load to within 5A; Check and secure all wire connections.
Unit is overheating	Excessive load; Poor ventilation; High ambient temperature.	Reduce load; Ensure adequate airflow around the unit; Operate within specified temperature range.
Cannot adjust output voltage	Potentiometer damaged; Output voltage already at min/max limit.	Ensure input voltage is applied; Check if the adjustment screw is turning; Verify output is not already at 3V or 24V.

9. Warranty and Support

DROK products are manufactured to high-quality standards. For specific warranty information, please refer to the product packaging or contact DROK customer support directly. Typically, DROK offers a one-year service period for products, including replacements for quality issues.

If you require technical assistance or have questions not covered in this manual, please visit the official DROK store or contact their customer service department. Contact information can usually be found on the product packaging or the brand's official website.

DROK Store: Visit the DROK Store on Amazon