D5-1A

Generic D5-1A 5W Solar Panel Kit User Manual

Model: D5-1A

1. Introduction

The Generic D5-1A 5W Solar Panel Kit is designed to provide reliable, off-grid power for various development boards, including Heltec LoRa32 V3, Meshtastic, and Meshcore ESP32 devices operating at 915MHz. This kit enables sustainable communication networks in remote or power-limited environments. It features a 5W monocrystalline silicon solar panel, a built-in battery slot for up to four 18650 batteries (not included), and a 360-degree adjustable mounting bracket for optimal sun exposure. The IP66 waterproof rating ensures durability in outdoor conditions.

2. Package Contents

Please verify that all components listed below are included in your package:

- Solar Panel (1 unit)
- 915MHz Antenna (1 unit)
- Tree Mount (1 unit)
- Module Mounting Bracket (1 unit)

Image: All components included in the D5-1A Solar Panel Kit. This includes the solar panel, 915MHz antenna, a tree mount, and a module mounting bracket. Note that batteries are not included.

3. Specifications

Model Number	D5-1A
Brand	Generic
Manufacturer	Keepteen
Maximum Power	5 Watts
Output Voltage	5 Volts (DC)
Material	Aluminum, Monocrystalline Silicon
Surface Material	Tempered Glass Surface
Conversion Rate	24.3%
Product Dimensions (L x W x H)	6.97" x 6.97" x 1.4" (17.7cm x 17.7cm x 3.5cm)

Weight	0.75 KG
Waterproof Rating	IP66
Battery Compatibility	Up to 4 x 18650 batteries (not included)

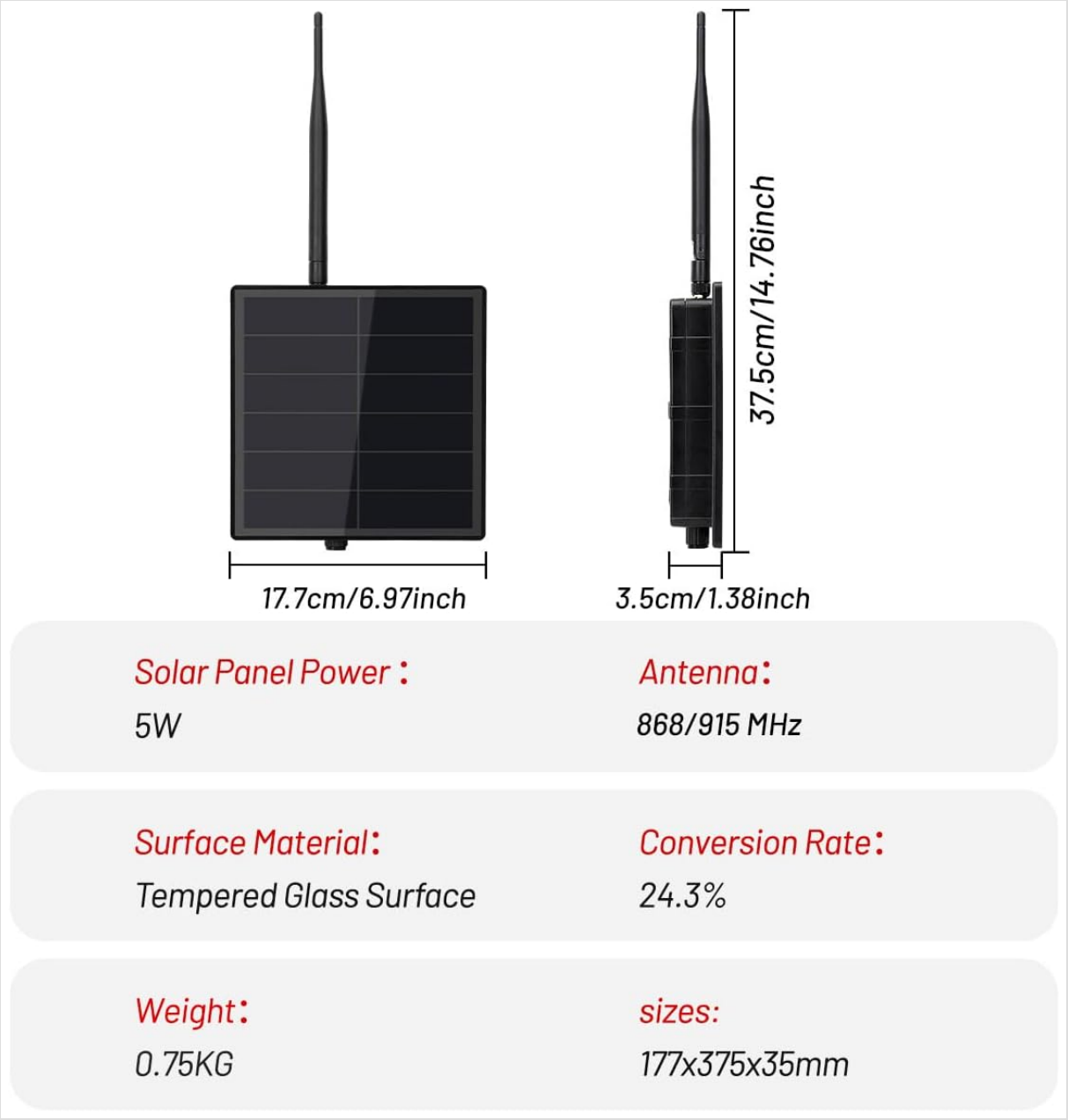

Image: Visual representation of the D5-1A Solar Panel Kit's dimensions and key specifications, including power, antenna frequency, surface material, conversion rate, and weight.

4. Setup Instructions

4.1 Battery Installation

1. Open the battery compartment on the back of the solar panel unit.
2. Insert up to four 18650 lithium-ion batteries (not included) into the designated slots, ensuring correct polarity.
3. Securely close the battery compartment cover.

Image: The internal battery compartment of the D5-1A solar panel, illustrating the four slots for 18650 batteries. Batteries must be inserted with correct polarity.

4.2 Mounting the Solar Panel

1. Attach the module mounting bracket to the back of the solar panel.
2. Select a mounting location that receives maximum direct sunlight throughout the day. The 360-degree adjustable bracket allows for flexible positioning.
3. Use the provided tree mount or other suitable hardware to securely fasten the bracket to a pole, wall, or tree. Ensure the mount is stable and can support the weight of the solar panel.
4. Adjust the angle of the solar panel to face the sun directly for optimal charging efficiency.

Image: A visual guide demonstrating the installation process of the solar panel. Steps include screwing in the bracket, attaching the device, and powering it on.

4.3 Antenna Connection

Connect the provided 915MHz antenna to the designated antenna port on the solar panel unit. Ensure it is securely tightened to maintain a stable connection for optimal signal transmission.

4.4 Connecting a Dev-Board (e.g., Heltec V3)

The D5-1A solar panel kit is designed to integrate with compatible development boards such as the Heltec LoRa32 V3. Connect your dev-board to the appropriate power output port on the solar panel unit. Ensure the connection is secure. (Note: The Heltec V3 module or other dev-boards are not included with this kit and must be purchased separately.)

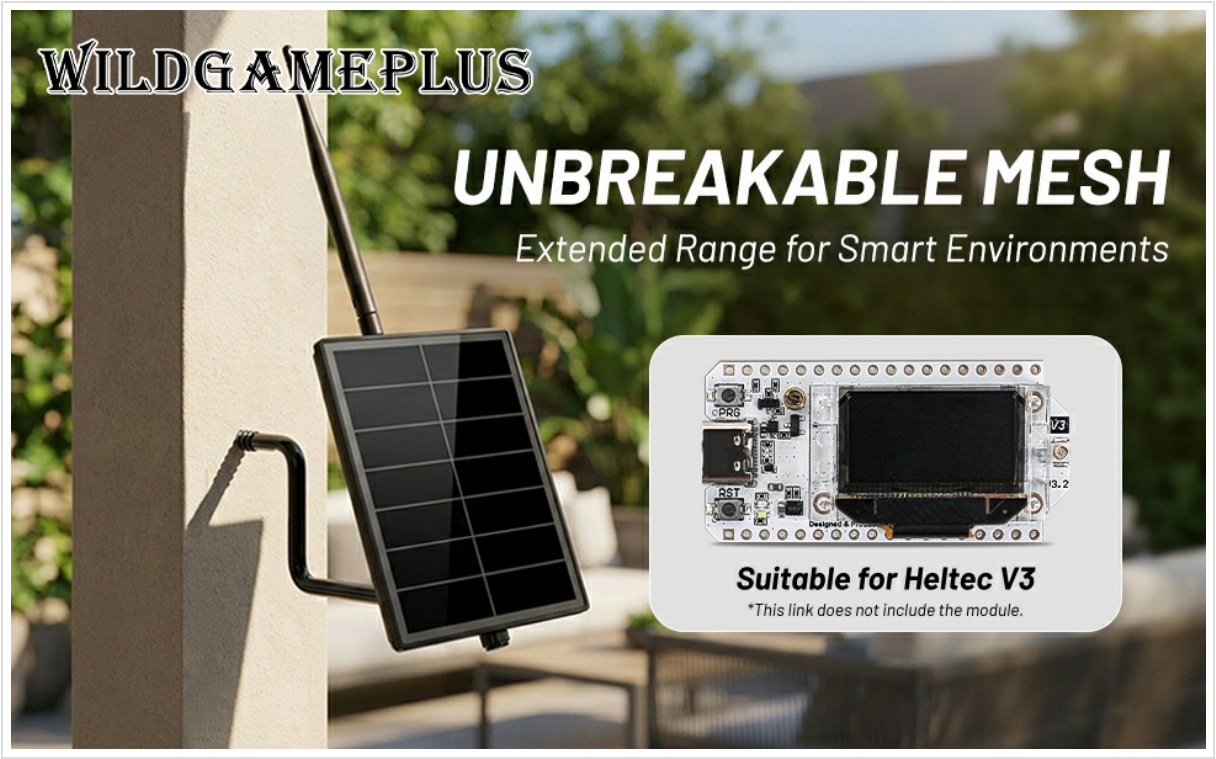

Image: The D5-1A solar panel kit is shown alongside a Heltec V3 module, highlighting its suitability for powering such devices. The module itself is not included.

5. Operating Instructions

5.1 Solar Charging

Once installed, the solar panel will automatically begin charging the installed 18650 batteries when exposed to sunlight. The 24.3% conversion rate ensures efficient power generation. The built-in battery slot design provides a continuous power supply to your connected device, even during periods of low light or at night, utilizing the stored energy.

Image: The D5-1A solar panel kit, highlighting its 5W power output, 24.3% conversion rate, and IP67 waterproof rating, ensuring 24-hour power supply.

5.2 Network Communication

When connected to a compatible LoRa dev-board (e.g., Heltec LoRa32 V3 with Meshtastic firmware), the D5-1A kit facilitates long-range, low-power mesh network communication. The 915MHz antenna is optimized for this purpose, enabling reliable data transmission across extended distances, suitable for applications in smart agriculture, smart cities, water management, and industrial remote control.

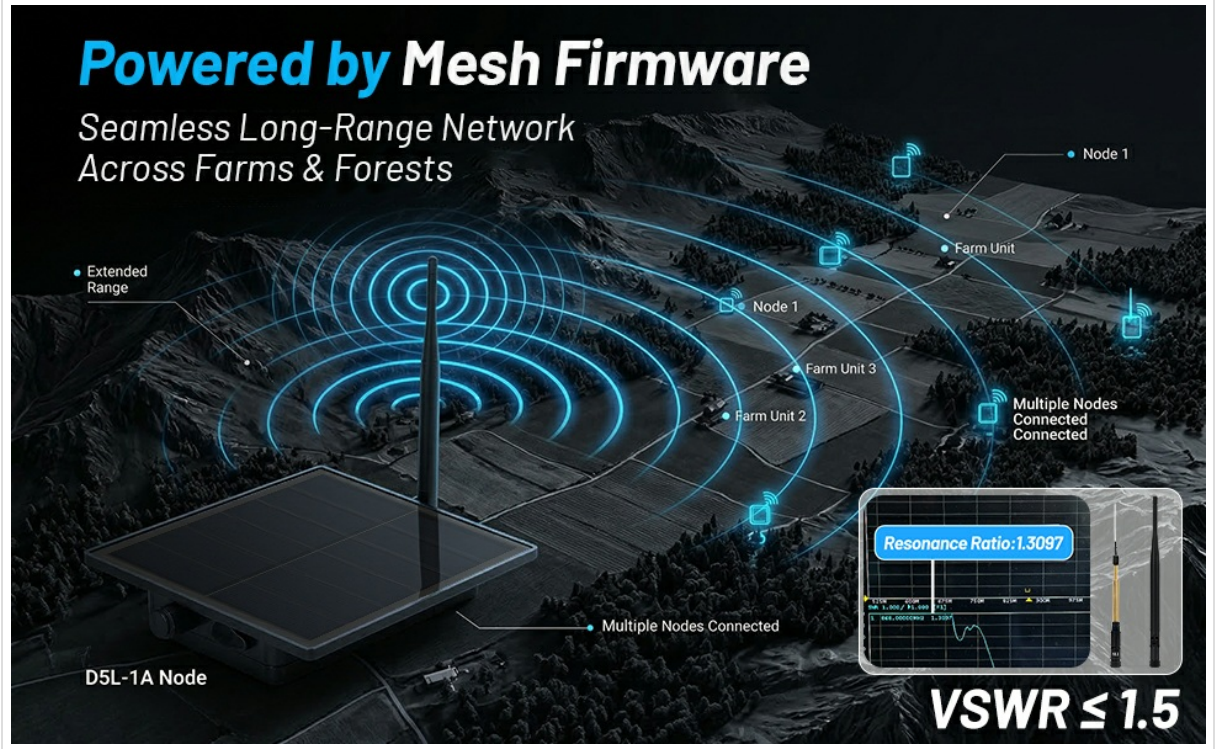

Image: A conceptual diagram showing how the D5-1A solar panel kit powers a mesh network, enabling seamless long-range communication across various environments like farms and forests.

6. Maintenance

Regular maintenance ensures the longevity and optimal performance of your D5-1A Solar Panel Kit.

- **Cleaning:** Periodically clean the surface of the solar panel with a soft, damp cloth to remove dust, dirt, or debris that may reduce charging efficiency. Avoid abrasive cleaners.
- **Inspection:** Regularly check all connections, including the antenna and power cables, to ensure they are secure and free from corrosion or damage.
- **Battery Check:** If using rechargeable 18650 batteries, inspect them periodically for any signs of swelling or leakage. Replace damaged batteries immediately.
- **Mounting Stability:** Verify that the mounting bracket remains securely fastened and the panel's angle is still optimized for sunlight exposure.

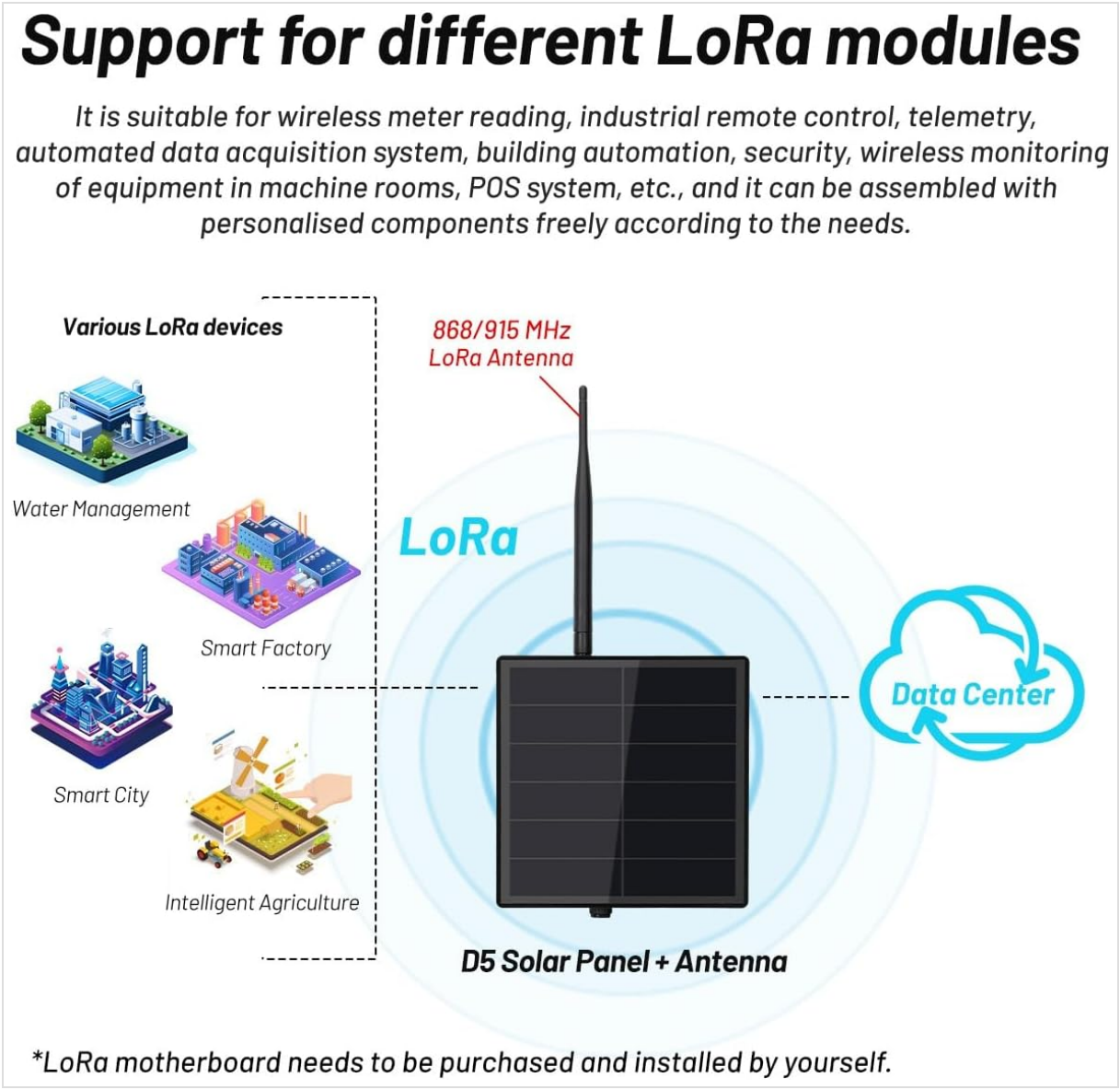

Image: The D5-1A solar panel kit is shown enduring various weather conditions, emphasizing its multi-year use design and protection against sunburn, rain, wind, and snow.

7. Troubleshooting

If you encounter issues with your D5-1A Solar Panel Kit, consider the following troubleshooting steps:

- **No Power Output:**
  - Ensure the solar panel is receiving direct sunlight.
  - Check that 18650 batteries are correctly installed and charged.
  - Verify all power connections to the dev-board are secure.
- **Poor Charging Performance:**
  - Clean the solar panel surface to remove any obstructions.
  - Adjust the panel's angle to optimize sun exposure.
  - Ensure no shadows are cast on the panel during peak sunlight hours.
- **Weak Network Signal:**
  - Confirm the 915MHz antenna is securely attached.
  - Check for any physical obstructions between your device and other network nodes.

- Ensure the connected dev-board's firmware is correctly configured for the 915MHz frequency.

8. Warranty and Support

Specific warranty information for the Generic D5-1A Solar Panel Kit is not provided in this manual. For warranty details, technical support, or service inquiries, please refer to the product packaging or contact the retailer from whom the product was purchased.