kuman KY68-UK

kuman UPS Battery Pack Expansion Board User Manual

Model: KY68-UK | Brand: kuman

1. Introduction

The kuman UPS Battery Pack Expansion Board is designed to provide an uninterruptible power supply (UPS) solution for various Raspberry Pi models, including Pi 3 Model B, B+, Pi 2 Model B, and Pi 1 Model B+ A+ A. This board ensures continuous operation of your Raspberry Pi even during power interruptions, offering portability and enhanced reliability. It features a built-in lithium battery, battery detection interface, and convenient power management functions.

2. Safety Information

- Do not expose the device to water, moisture, or extreme temperatures.
- Avoid dropping or subjecting the board to severe impacts.
- Ensure correct polarity when connecting batteries or power sources.
- Do not attempt to disassemble or modify the board, as this may void the warranty and pose safety risks.
- Keep out of reach of children.
- Use only the specified charging voltage and current (5V/2A).

3. Package Contents

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

- 1 x Lithium Battery Expansion Board (with pre-installed lithium battery)
- 4 x Copper Standoffs
- 4 x Screws
- 4 x Nuts
- 1 x Micro USB Cable

Figure 3.1: Package contents of the kuman UPS Battery Pack.

4. Product Overview

The kuman UPS Battery Pack Expansion Board is compact and designed to integrate seamlessly with your Raspberry Pi. It provides reliable power and features for enhanced functionality.

4.1 Key Features

- **UPS Functionality:** Provides uninterrupted DC 5V output even while charging, ensuring continuous operation of your Raspberry Pi.
- **Battery Detection:** Includes an interface to monitor the battery's power level.
- **Automatic Load Detection:** Automatically detects load and starts output; turns off output when no load is detected.
- **Expandable Battery Capacity:** Features two parallel sockets for 3.7V Lithium batteries, allowing for capacity expansion.
- **Integrated Power Switch:** Conveniently power on/off the Raspberry Pi via a dedicated switch.
- **Raspberry Pi Fan Interface:** Dedicated interface for a Raspberry Pi fan, which does not occupy GPIO pins. Can also serve as a 5V power supply via DuPont line.
- **Battery Indicator:** Four LEDs indicate battery charge status (25%, 50%, 75%, 100%).

4.2 Board Layout and Components

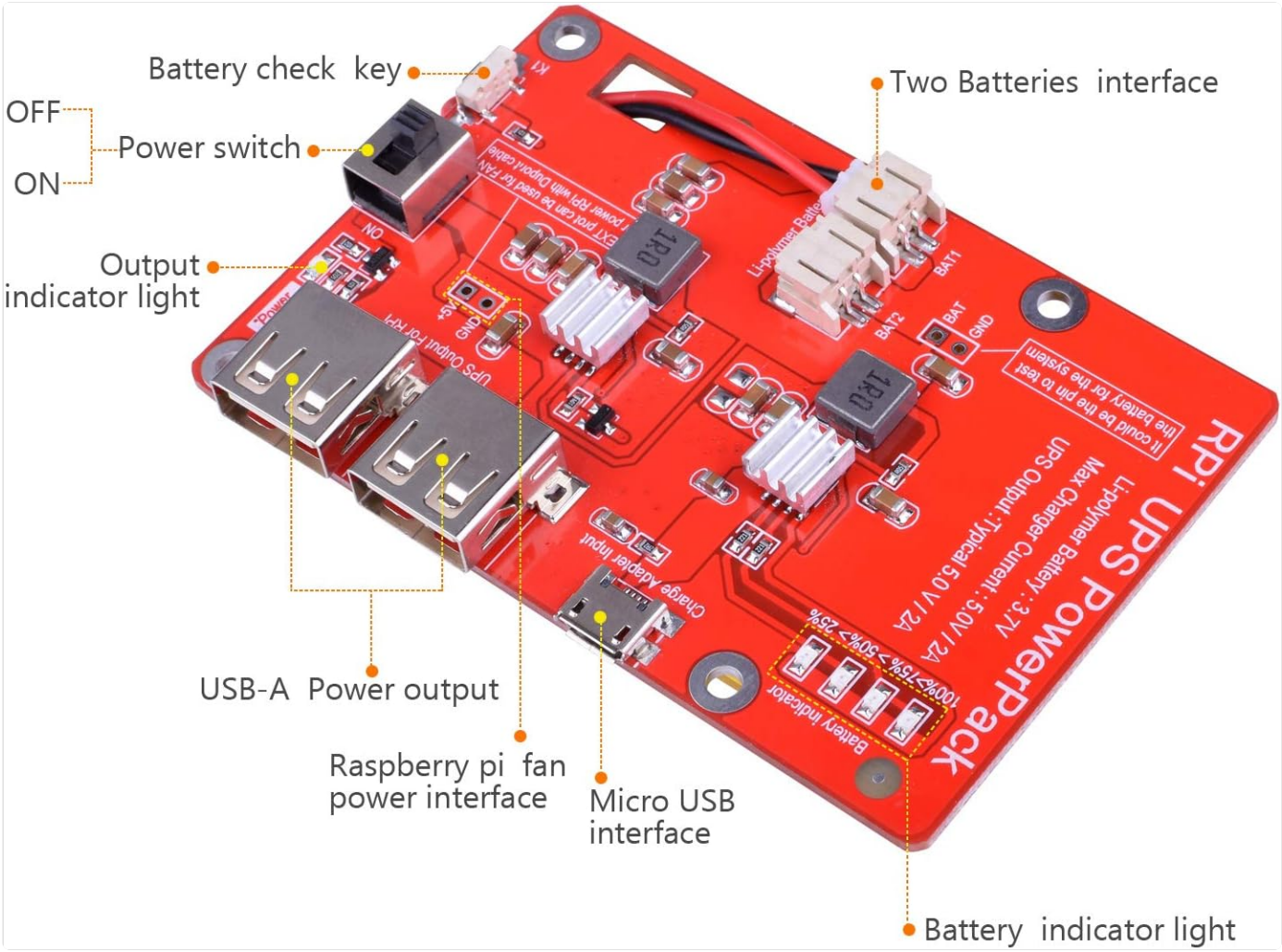

Figure 4.1: Detailed view of the UPS Battery Pack with labeled components.

- **Power Switch (ON/OFF):** Controls the power to the connected Raspberry Pi.
- **Output Indicator Light:** Illuminates when the board is providing power.
- **USB-A Power Output:** Standard USB port for connecting the Raspberry Pi or other devices.
- **Raspberry Pi Fan Power Interface:** Dedicated pins for connecting a cooling fan.
- **Micro USB Interface (Charge Adapter Input):** Used to charge the internal battery and power the board.
- **Battery Indicator Lights:** Four LEDs showing approximate battery charge level.
- **Battery Check Key (K1):** Button to momentarily display battery level.
- **Two Batteries Interface (BAT1, BAT2):** Connectors for additional 3.7V Li-polymer batteries to expand capacity.

5. Setup and Installation

Follow these steps to set up your kuman UPS Battery Pack with your Raspberry Pi:

1. **Charge the Battery:** Before first use, connect the Micro USB cable to the "Charge Adapter Input" port on the UPS board and plug the other end into a 5V/2A USB power adapter. The battery indicator lights will show charging progress. Charge until all four indicator lights are solid.
2. **Attach Standoffs:** Secure the four copper standoffs to the mounting holes on the UPS board using the provided screws.
3. **Mount Raspberry Pi:** Align the mounting holes of your Raspberry Pi with the standoffs on the UPS board. Carefully place the Raspberry Pi onto the standoffs and secure it with the remaining screws and nuts.

4. **Connect Raspberry Pi:** Use the provided Micro USB cable or another suitable USB cable to connect the "UPS Output For RPI" USB-A port on the UPS board to the Micro USB power input port on your Raspberry Pi.
5. **Optional: Connect Fan (if applicable):** If using a Raspberry Pi cooling fan, connect its power cable to the "Raspberry Pi fan power interface" on the UPS board.
6. **Optional: Expand Battery Capacity:** If you wish to expand the battery capacity, connect additional 3.7V Li-polymer batteries to the BAT1 and BAT2 interfaces. Ensure correct polarity.

Figure 5.1: Example of the UPS Battery Pack connected to a Raspberry Pi with a display.

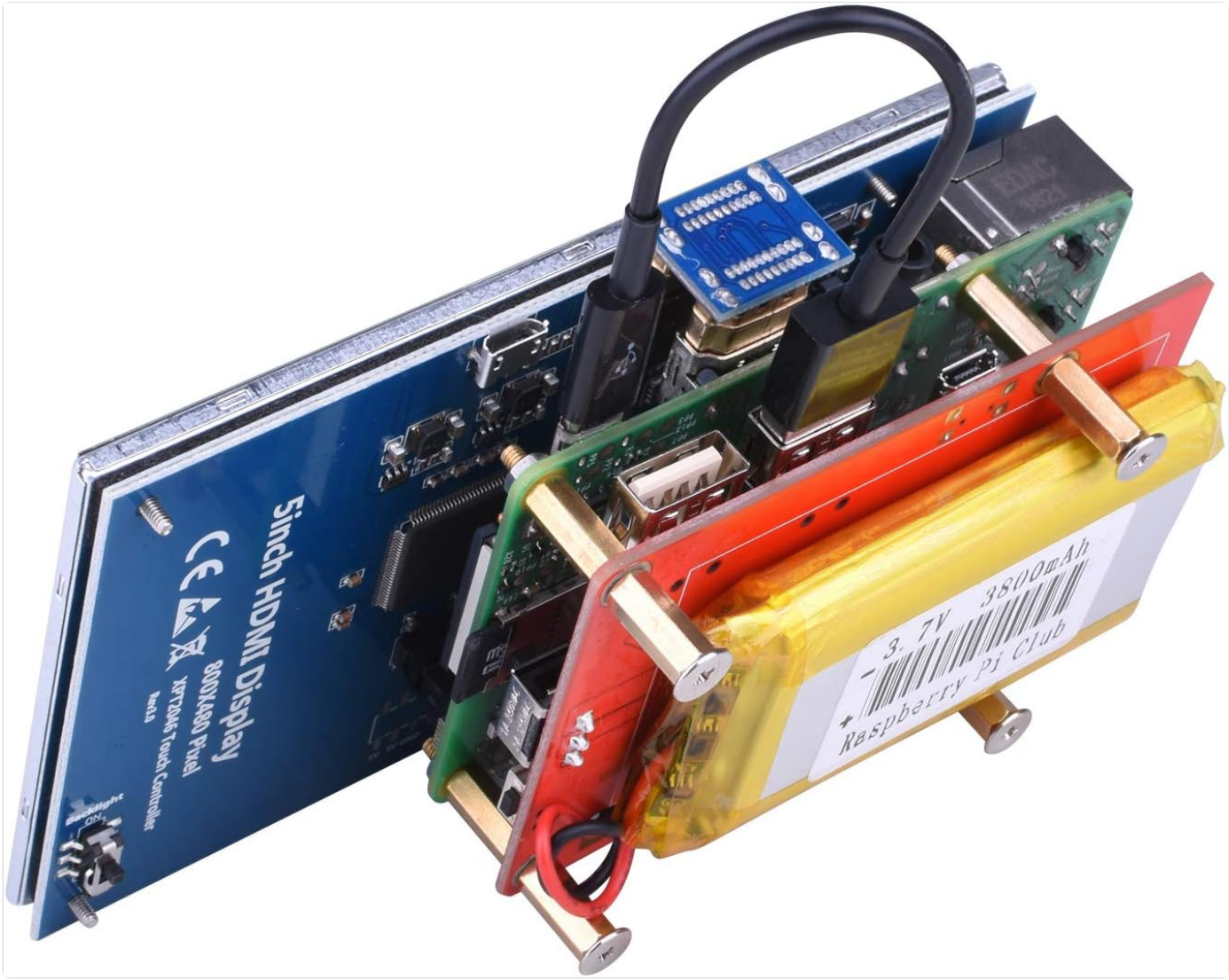

Figure 5.2: Side view of the assembled UPS Battery Pack and Raspberry Pi.

6. Operating Instructions

6.1 Powering On/Off

To power on your Raspberry Pi using the UPS board, slide the "Power Switch" to the**ON** position. The output indicator light will illuminate, and your Raspberry Pi will begin to boot. To power off, slide the switch to the **OFF** position. It is recommended to properly shut down your Raspberry Pi's operating system before cutting power.

6.2 UPS Functionality

When the UPS board is connected to an external 5V power source via its Micro USB input, it will charge the internal battery while simultaneously powering the connected Raspberry Pi. If the external power source is disconnected (e.g., during a power outage), the UPS board will automatically switch to battery power without interrupting the Raspberry Pi's operation.

6.3 Battery Indicator

The four LED lights on the board indicate the approximate battery charge level:

- **One LED:** 0-25% charge
- **Two LEDs:** 25-50% charge
- **Three LEDs:** 50-75% charge
- **Four LEDs:** 75-100% charge

Press the "Battery Check Key" (K1) to momentarily display the current battery level.

7. Maintenance

- **Charging:** Regularly charge the battery pack to maintain its health. It is recommended to keep the battery charged when not in use for extended periods.
- **Cleaning:** Use a dry, soft cloth to clean the board. Do not use liquid cleaners or solvents.
- **Storage:** If storing the device for a long time, ensure the battery is charged to about 50-70% and store in a cool, dry place.
- **Battery Replacement:** The internal lithium battery is designed for long-term use. If battery performance significantly degrades over time, consult kuman support for replacement options.

8. Troubleshooting

Problem	Possible Cause	Solution
Raspberry Pi not powering on.	Power switch is OFF; Battery is depleted; Incorrect connection; Faulty USB cable.	Ensure power switch is ON. Charge the battery pack. Verify all connections are secure. Try a different Micro USB cable.
Battery indicator LEDs not lighting up.	Battery is fully charged or completely depleted; Battery Check Key not pressed; Board is off.	Press the Battery Check Key (K1). Ensure the board is powered on. Connect to charger to see if charging indicators appear.
Raspberry Pi shows low power warning (lightning bolt icon).	Insufficient current from UPS; High power consumption by Pi/peripherals.	Ensure the UPS is fully charged. Reduce the number of power-hungry peripherals connected to the Raspberry Pi. Note that the maximum output is 2A, which might be insufficient for some Pi models (e.g., Pi 3B+, Pi 4) under heavy load.
UPS not charging.	Faulty Micro USB cable or power adapter; Charging port issue.	Try a different Micro USB cable and a known good 5V/2A power adapter. Ensure the cable is fully inserted into the "Charge Adapter Input" port.
Battery drains quickly.	High power consumption; Battery degradation.	Reduce power consumption of connected devices. If the battery is old, its capacity may have diminished. Consider adding an additional battery via the expansion ports if supported.

9. Specifications

Feature	Specification
Battery Type	Li-polymer (3.7V)
Battery Capacity	3800mAh (typical)
Maximum Output Current	2A

Feature	Specification
Output Voltage	5.1V ± 0.1V
Standard Charging Current/Voltage	2A / 5.0V
Dimensions (L x W x H)	3.35 x 2.17 x 0.71 inches (8.5 x 5.5 x 1.8 cm)
Item Weight	1 pound (approx. 450g)
Model Number	KY68-UK

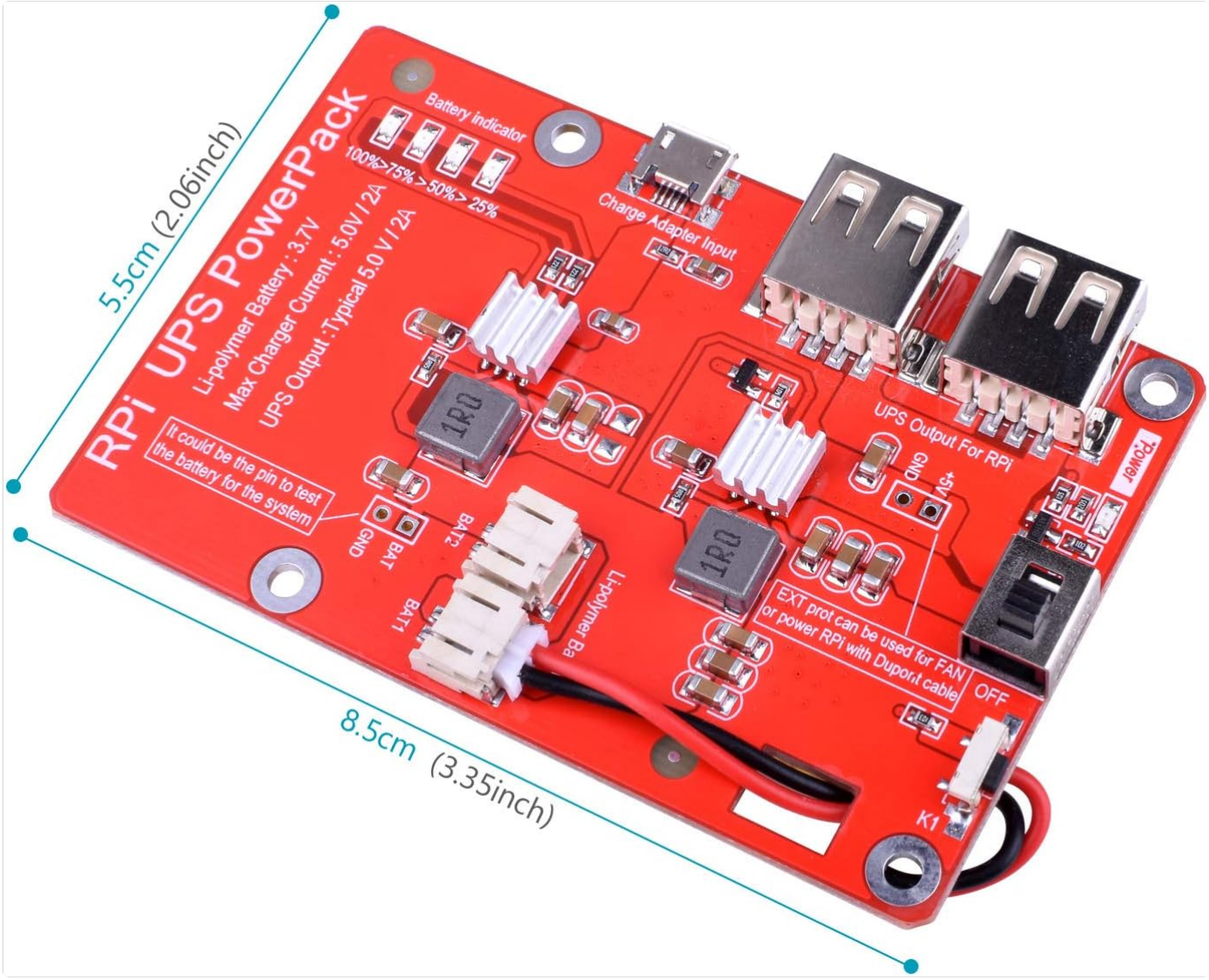

Figure 9.1: Dimensions of the UPS Battery Pack.

10. Warranty and Support

kuman products are designed for reliability and performance. For warranty information, technical support, or assistance with your UPS Battery Pack Expansion Board, please contact kuman customer service through their official website or the platform where you purchased the product. Please have your model number (KY68-UK) and purchase details ready when contacting support.

For more information and product updates, visit the official kuman store:kuman Store on Amazon