GeeekPi U2500

GeeekPi U2500 M.2 NVMe Dual USB3.0 to 2.5G Ethernet Adapter Instruction Manual

1. Introduction

This manual provides comprehensive instructions for the installation, operation, and maintenance of the GeeekPi U2500 M.2 NVMe Dual USB3.0 to 2.5G Ethernet Adapter. This adapter is designed to enhance the capabilities of your Raspberry Pi 5 by adding high-speed M.2 NVMe storage and dual 2.5 Gigabit Ethernet connectivity.

The U2500 integrates seamlessly with the Raspberry Pi 5, offering a compact solution for applications requiring fast data access and robust network performance, such as media servers, network-attached storage (NAS), or high-performance computing tasks.

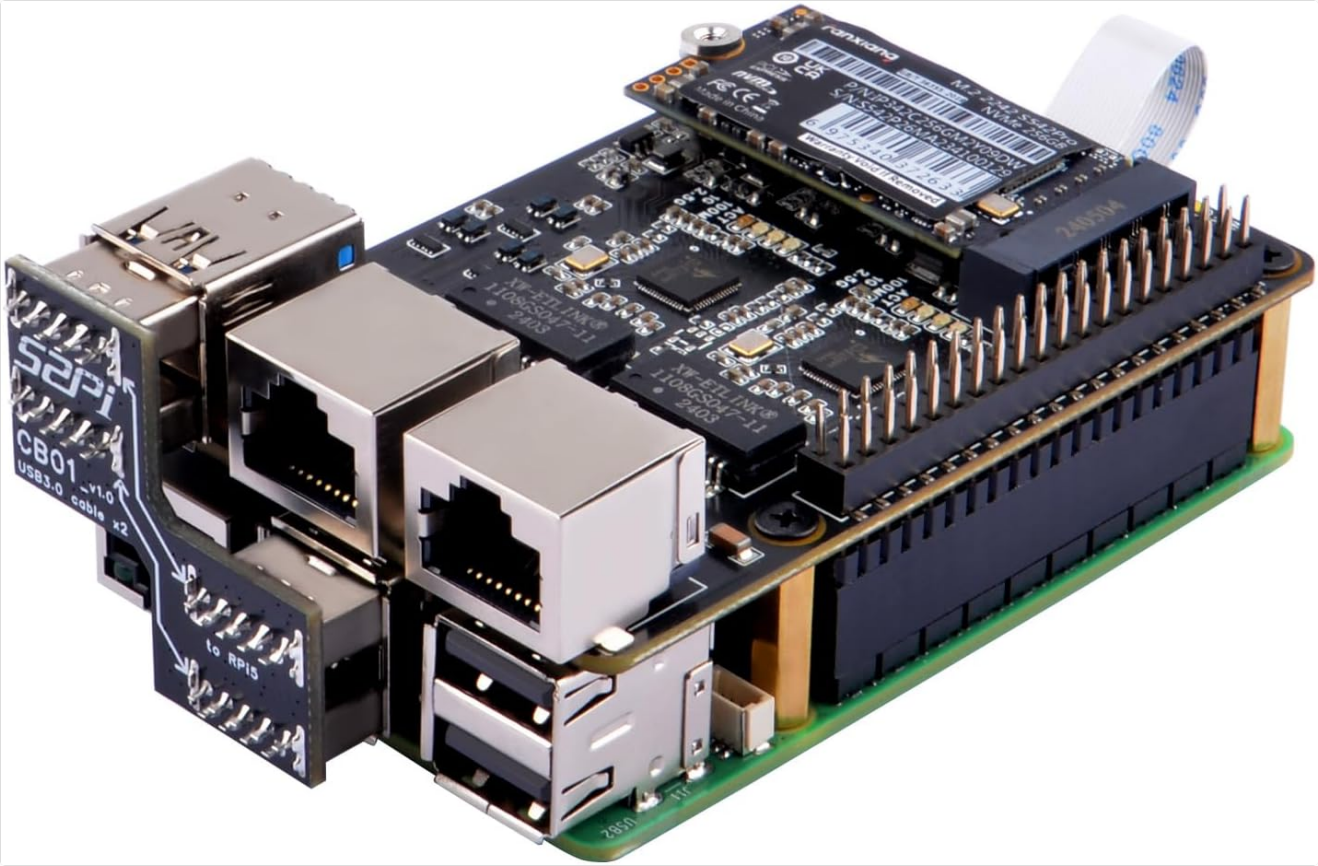


Image: The GeeekPi U2500 adapter shown mounted on a Raspberry Pi 5, highlighting its compact form factor and integrated design.

2. Product Features

- **PCIe Interface Support:** Includes a single PCIe interface for expanding the system with an M.2 NVMe SSD, supporting 2230 and 2242 form factors for high-speed storage.
- **M.2 NVMe SSD Compatibility:** Supports M.2 NVMe Solid State Drives, providing high-speed data transfer rates and low latency for data-intensive applications.
- **Dual 2.5G Ethernet Conversion:** Utilizes two USB 3.0 ports to provide two 2.5 Gigabit Ethernet interfaces, enhancing network connectivity for various applications.
- **Compact and Integrated Design:** Engineered for seamless integration with the Raspberry Pi 5, minimizing the need for additional cables or adapters.
- **Enhanced Functionality:** Combines high-speed storage and network capabilities to significantly expand the Raspberry Pi's utility.

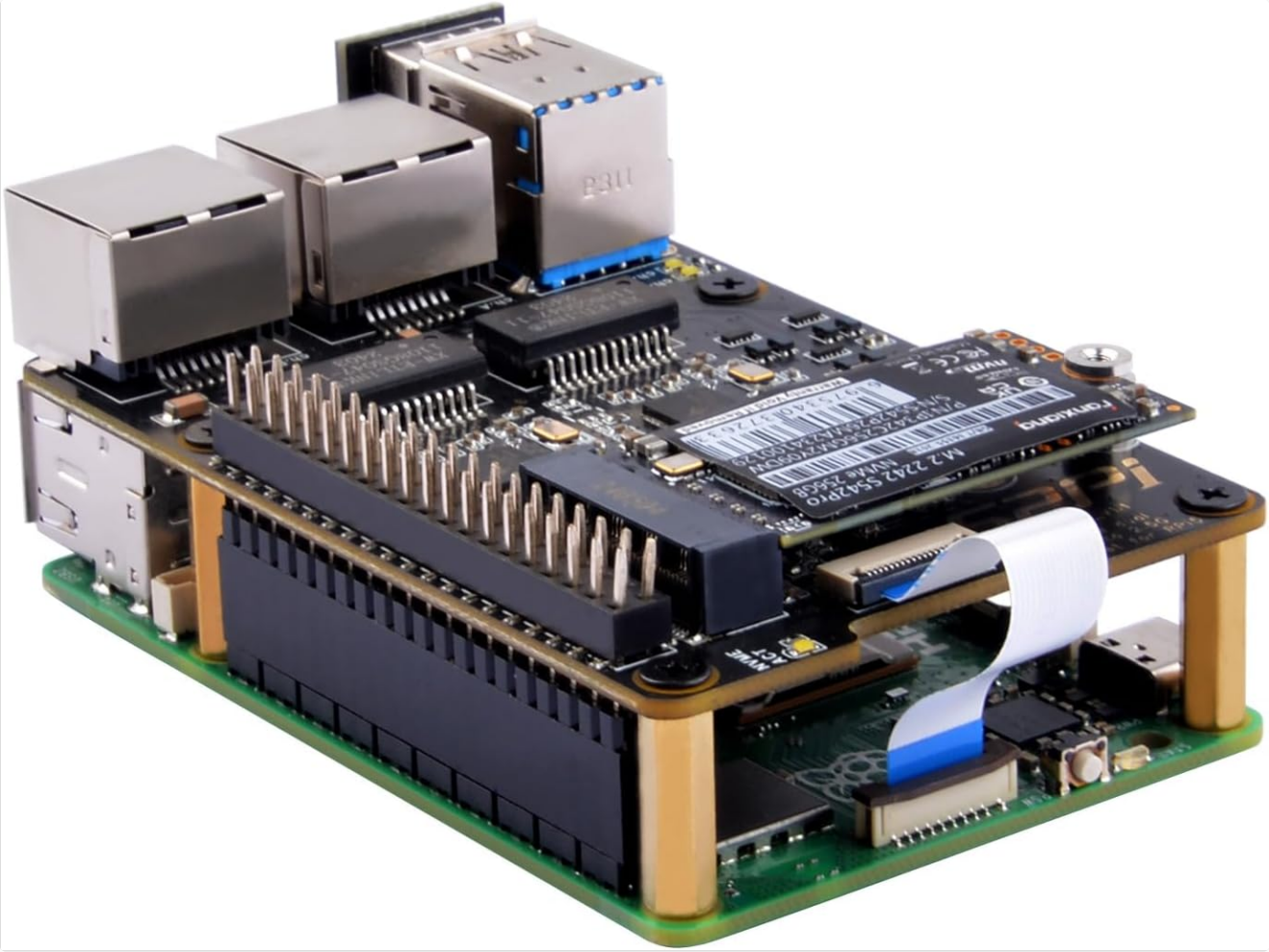


Image: An angled view of the GeeekPi U2500 adapter, showcasing an installed M.2 NVMe SSD and the dual Ethernet ports.

3. Package Contents

Verify that all items listed below are present in your package:

- 1 x U2500 NVMe & Dual 2.5G Ethernet Expansion Board
- 8 x M2.5*4mm Screws
- 4 x M2.5*16mm Spacers

- 1 x 40Pin PC104 Pin Header
- 2 x 8.5*40mm PCIe FFC Cables
- 1 x M2.5 Screwdriver
- 1 x Dual USB Connector

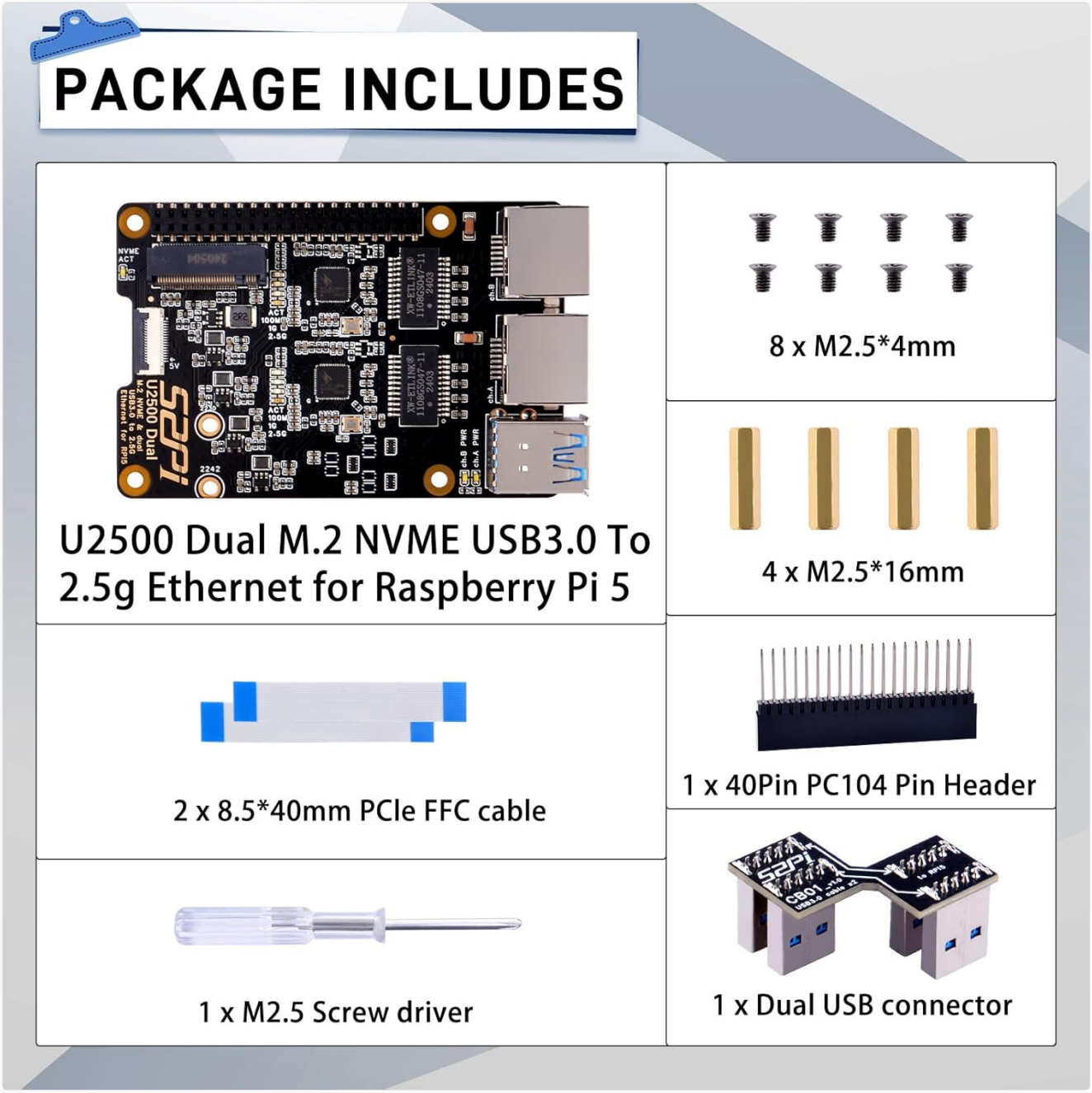


Image: A visual representation of all components included in the GeeekPi U2500 product package.

4. Product Diagram and Components

Familiarize yourself with the various components and connection points of the GeeekPi U2500 adapter:

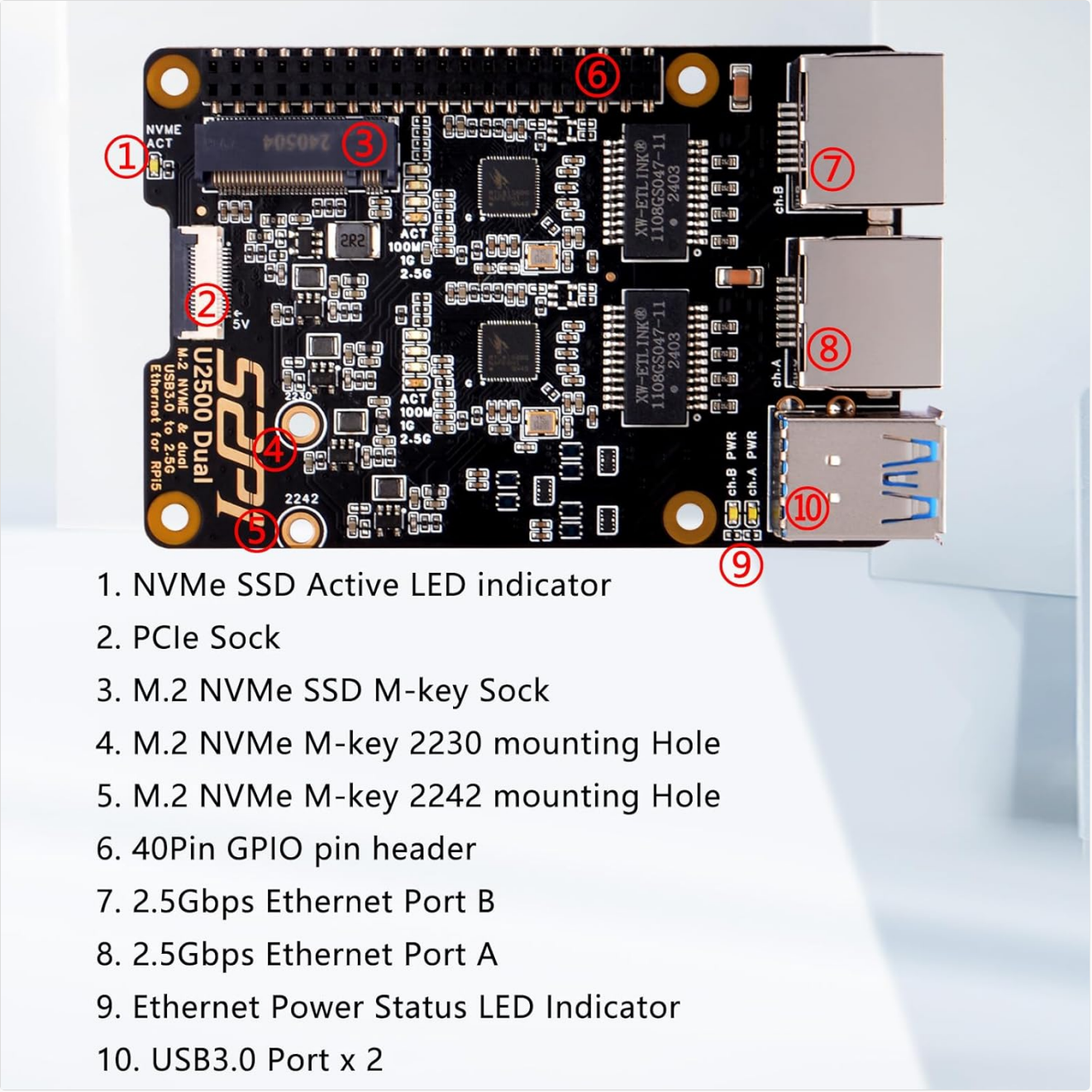


Image: A detailed diagram of the U2500 board with numbered callouts indicating key components.

1. NVMe SSD Active LED indicator
2. PCIe Sock
3. M.2 NVMe SSD M-key Sock
4. M.2 NVMe M-key 2230 mounting Hole
5. M.2 NVMe M-key 2242 mounting Hole
6. 40Pin GPIO pin header
7. 2.5Gbps Ethernet Port B
8. 2.5Gbps Ethernet Port A
9. Ethernet Power Status LED Indicator
10. USB3.0 Port x 2

5. Supported M.2 NVMe SSD Types

The GeeekPi U2500 adapter is designed to support M.2 NVMe SSDs with an M-Key interface. It is compatible with

both 2230 and 2242 form factors. Please ensure your SSD matches these specifications for proper functionality.

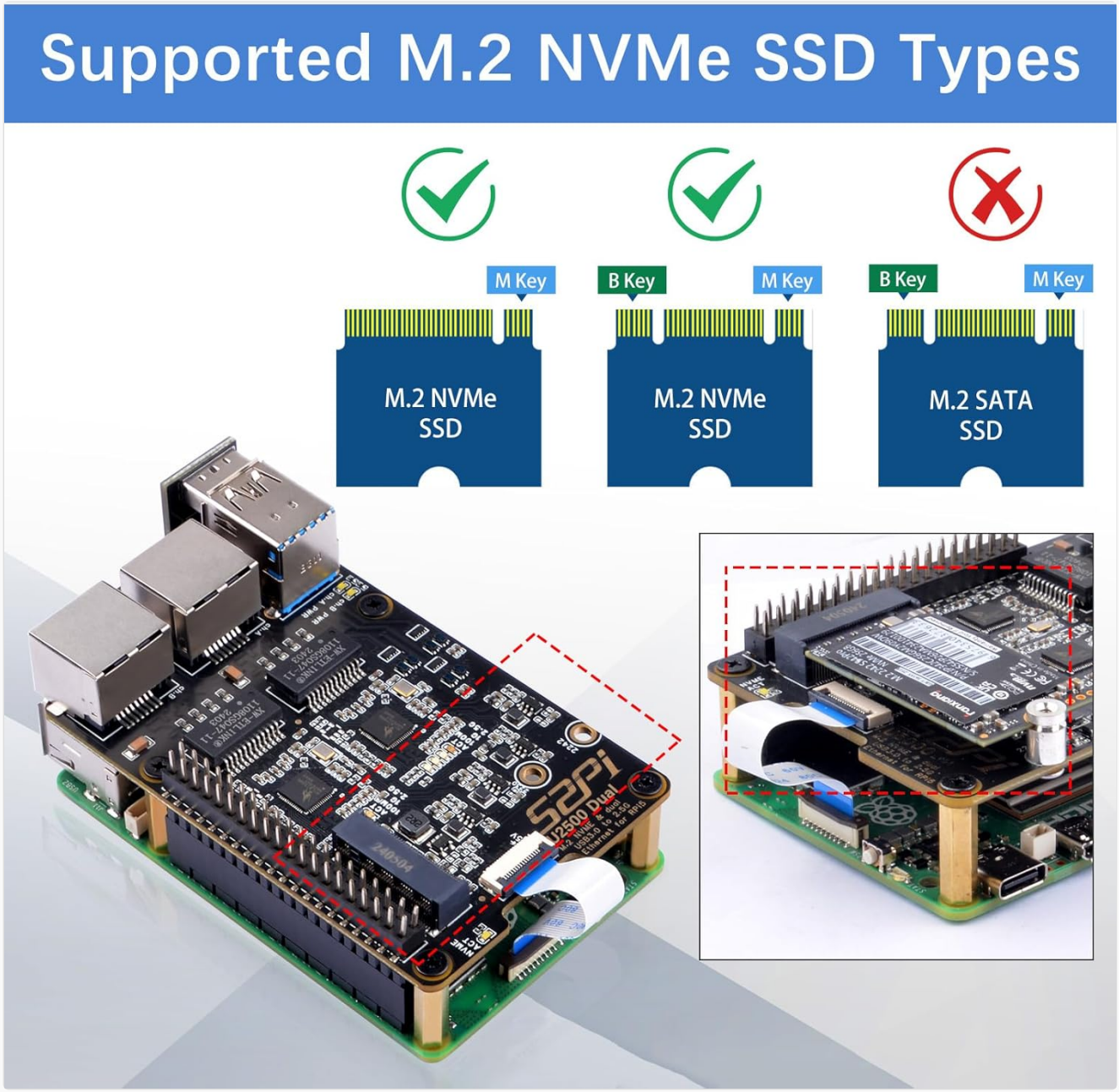


Image: A visual guide indicating compatibility with M-Key M.2 NVMe SSDs and incompatibility with B-Key M.2 SATA SSDs.

6. Product Dimensions

The following diagram provides the physical dimensions of the U2500 adapter and its included components for reference during installation and enclosure selection.

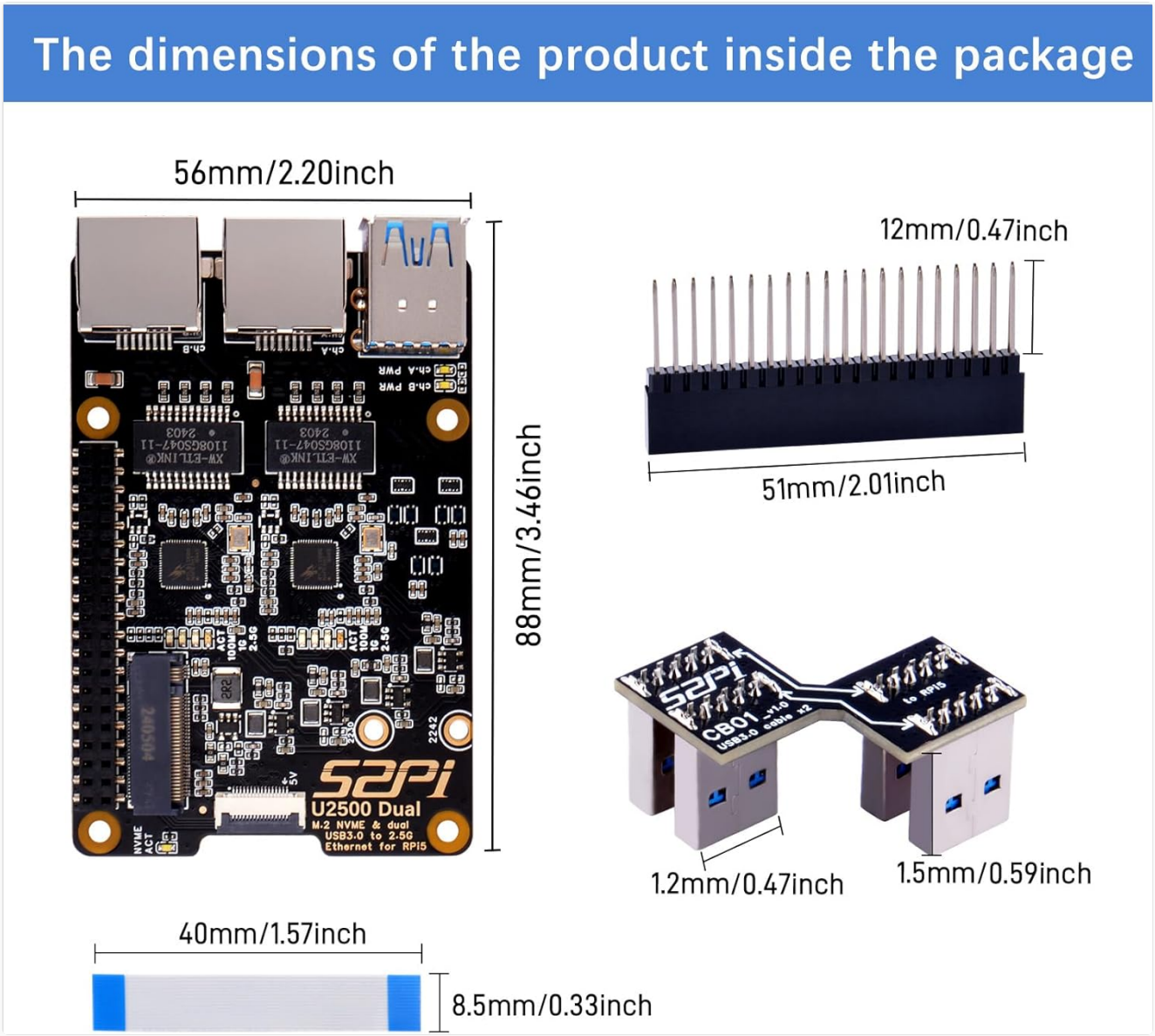


Image: Detailed measurements of the U2500 board, 40-pin header, dual USB connector, and FFC cable in millimeters and inches.

7. Setup and Installation

Follow these steps to properly install the GeeekPi U2500 adapter with your Raspberry Pi 5 and M.2 NVMe SSD.

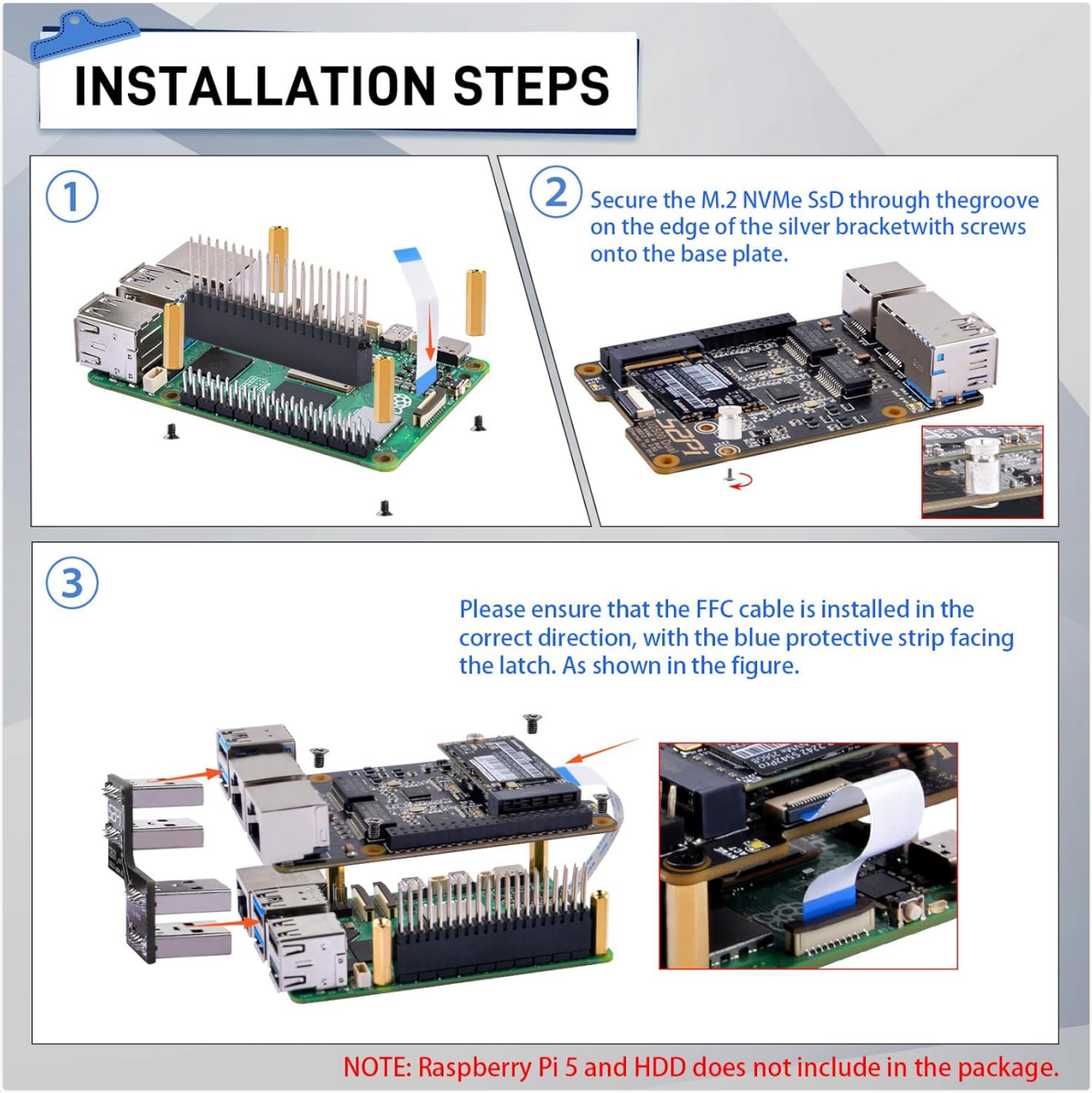


Image: Visual instructions for mounting the adapter and connecting the FFC cable.

1. **Step 1: Prepare the Raspberry Pi 5.** Ensure your Raspberry Pi 5 is powered off and disconnected from all peripherals.
2. **Step 2: Mount the U2500 Board.** Carefully align the 40-pin header of the U2500 board with the GPIO pins on your Raspberry Pi 5 and gently press down to secure it. Use the provided M2.5*16mm spacers and M2.5*4mm screws to secure the U2500 board to the Raspberry Pi.
3. **Step 3: Install the M.2 NVMe SSD.** Insert your M.2 NVMe SSD into the M-key socket (3) on the U2500 board. Secure the SSD using the provided M2.5*4mm screw through the groove on the edge of the SSD onto the appropriate mounting hole (4 or 5) on the base plate.
4. **Step 4: Connect the PCIe FFC Cable.** Connect one end of the PCIe FFC cable to the PCIe Sock (2) on the U2500 board and the other end to the corresponding PCIe connector on the Raspberry Pi 5. **Important:** Ensure the FFC cable is installed in the correct direction, with the blue protective strip facing the latch, as shown in the installation diagram.
5. **Step 5: Connect the Dual USB Connector.** Attach the dual USB connector to the two USB3.0 ports (10) on the U2500 board. This connector will then be plugged into the USB3.0 ports of the Raspberry Pi 5 to enable the 2.5G Ethernet functionality.

6. **Step 6: Power On.** Once all connections are secure, power on your Raspberry Pi 5.

NOTE: Raspberry Pi 5 and HDD/SSD are not included in the package.

8. Operating Instructions

After successful physical installation, the GeeekPi U2500 adapter requires software configuration on your Raspberry Pi 5 operating system (e.g., Raspberry Pi OS, based on Linux).

- **NVMe SSD Recognition:** Upon booting, the Raspberry Pi OS should detect the M.2 NVMe SSD. You may need to format and mount the SSD before it can be used for storage. Refer to standard Linux disk management utilities (e.g., fdisk, mkfs, mount) for this process.
- **2.5G Ethernet Configuration:** The dual 2.5G Ethernet ports, connected via USB 3.0, should be recognized by the operating system as network interfaces. You may need to configure network settings (IP address, gateway, DNS) through your OS's network manager or command-line tools (e.g., ip a, ifconfig, netplan). Drivers for the Ethernet chipsets are typically included in modern Linux kernels.
- **LED Indicators:**
  - The NVMe SSD Active LED indicator (1) will illuminate or blink to show SSD activity.
  - The Ethernet Power Status LED Indicator (9) will show the status of the Ethernet connection.

For detailed software configuration, consult the official Raspberry Pi documentation and relevant Linux network configuration guides.

9. Troubleshooting

- **SSD Not Detected:**
  - Ensure the M.2 NVMe SSD is correctly seated in the M-key socket.
  - Verify that the PCIe FFC cable is securely connected at both ends (U2500 board and Raspberry Pi 5) and oriented correctly (blue strip facing latch).
  - Confirm that your SSD is an M-Key NVMe type and not a B-Key SATA type.
  - Check the Raspberry Pi 5's PCIe settings in the boot configuration if necessary.
- **Ethernet Ports Not Functioning:**
  - Ensure the dual USB connector is firmly plugged into both the U2500 board and the Raspberry Pi 5's USB 3.0 ports.
  - Verify that Ethernet cables are properly connected to the 2.5Gbps Ethernet Ports (7, 8) and to your network devices.
  - Check the Ethernet Power Status LED Indicator (9) for activity.
  - Confirm network interface recognition and configuration within your Raspberry Pi OS.
- **Physical Installation Issues:**
  - If screws seem too short for the NVMe pillar, ensure you are using the correct screws from the package. If issues persist, contact support.
  - Ensure the 40-pin header is fully seated on the Raspberry Pi's GPIO pins.

10. Specifications

Feature	Description
Brand	GeeekPi
Model Number	U2500
Compatible Devices	Raspberry Pi 5
Hardware Interface	PCIe, USB 3.0
M.2 NVMe SSD Support	M-Key 2230/2242 form factors
Ethernet Ports	Dual 2.5 Gigabit Ethernet (via USB 3.0)
Operating System	Linux (e.g., Raspberry Pi OS)
Item Weight	0.11 Kilograms (approx. 3.84 ounces)
Package Dimensions	4.65 x 4.21 x 1.65 inches

11. Warranty and Support

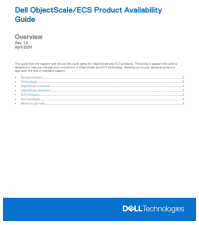
GeeekPi products are designed for reliability and performance. For warranty information, technical support, or further assistance, please visit the official GeeekPi website or contact their customer service department. Keep your purchase receipt for warranty claims.

Manufacturer: GeeekPi

Date First Available: June 21, 2024

Related Documents - U2500

	Ultimea Technology Product Certification Authorization Letter for U2500, U2502 Authorization letter from Ultimea Technology (Shenzhen) Limited appointing QAI Laboratories Ltd. as their representative for product certification activities for models U2500 and U2502.

	[ULTIMEA Poseidon D50 5.1 Channel Virtual Surround Soundbar User Manual] This user manual provides detailed instructions for setting up and using the ULTIMEA Poseidon D50 5.1 Channel Virtual Surround Soundbar. It covers accessories, soundbar controls, remote control functions, connection methods (HDMI ARC, Optical, AUX, Bluetooth), subwoofer and surround speaker pairing, placement options, wall mounting, and technical specifications.
	[Dell ObjectScale and ECS Product Availability and Support Lifecycle Guide] This guide provides essential support and service life-cycle dates for Dell ObjectScale and ECS products, enabling users to effectively manage their technology investments and plan for future support needs.
	[KFI Winch Mount Compatibility Guide] A comprehensive guide to KFI winch mount compatibility with various winch models from brands like Superwinch, Warn, Champion, Smittybilt, and others. Includes part numbers and specifications.