GeeekPi K-0586

GeeekPi Micro Python Programming Kit for Raspberry Pi Pico

Model: K-0586

Your comprehensive guide to learning MicroPython with Raspberry Pi Pico.

1. Introduction

This manual provides essential information for setting up, operating, and exploring the GeeekPi Micro Python Programming Kit for Raspberry Pi Pico. The kit is designed for enthusiasts and engineers interested in Python programming and embedded systems, offering a variety of modules and components for experimental projects.

The kit includes a Raspberry Pi Pico, a Pico Breadboard Kit, an I2C 1602 LCD Display Module, and numerous other components to facilitate learning and development. Detailed tutorials and demo codes are available to guide users through various experiments.

Image 1.1: Overview of the GeeekPi Micro Python Programming Kit components.

2. Package Contents

The GeeekPi Micro Python Programming Kit includes a comprehensive selection of modules and components. Below is a list of the main items you will find in your kit:

Image 2.1: Detailed diagram of all components included in the kit.

- Raspberry Pi Pico
- Pico BreadBoard Kit
- I2C 1602 LCD Display Module
- 16 RGB NeoPixel Light Ring
- 9g Servo
- Half-sized Breadboard
- OLED 0.96 Module
- PIR Sensor
- Basic Red/Yellow/Blue LEDs (15x)
- 32x8 RGB LED Matrix
- 3 / 20 Pin Header (4x)
- Resistor 220Ω (15x)
- Ultrasonic Sensor
- Potentiometer
- Gyroscope & Accelerate Module
- Relay Module
- Sound Sensor
- Light Sensor

- Vibration Sensor
- 4-bit Digital Segment Display
- Tilt Switch
- Rotary Encoder Module
- Raindrops Sensor
- Dallas Temperature Module
- 5V Stepper Motor Driver Board
- Pressure Sensor
- Temperature Humidity Sensor Module
- PS2 JoyStick Module
- Jumper Wire Pack
- MicroUSB Cable

3. Specifications

Feature	Detail
Brand	GeeekPi
Model Number	K-0586
Operating System	MicroPython
CPU Manufacturer	ARM
Connectivity Technology	I2C
Wireless Type	Bluetooth
Item Weight	1.8 pounds
Package Dimensions	10.47 x 6.85 x 2.52 inches

4. Setup and Getting Started

To begin using your GeeekPi Micro Python Programming Kit, follow these general steps. For detailed, project-specific instructions, please refer to the official wiki.

4.1 Initial Hardware Setup

1. **Connect Raspberry Pi Pico:** Carefully insert the Raspberry Pi Pico into the Pico Breadboard Kit. Ensure all pins are correctly aligned.
2. **Attach Breadboard:** The Pico Breadboard Kit has a designated area for attaching the half-sized breadboard. Secure it firmly.
3. **Power Connection:** Connect the MicroUSB cable to the Raspberry Pi Pico and then to a power source (e.g., computer USB port or a 5V power adapter).

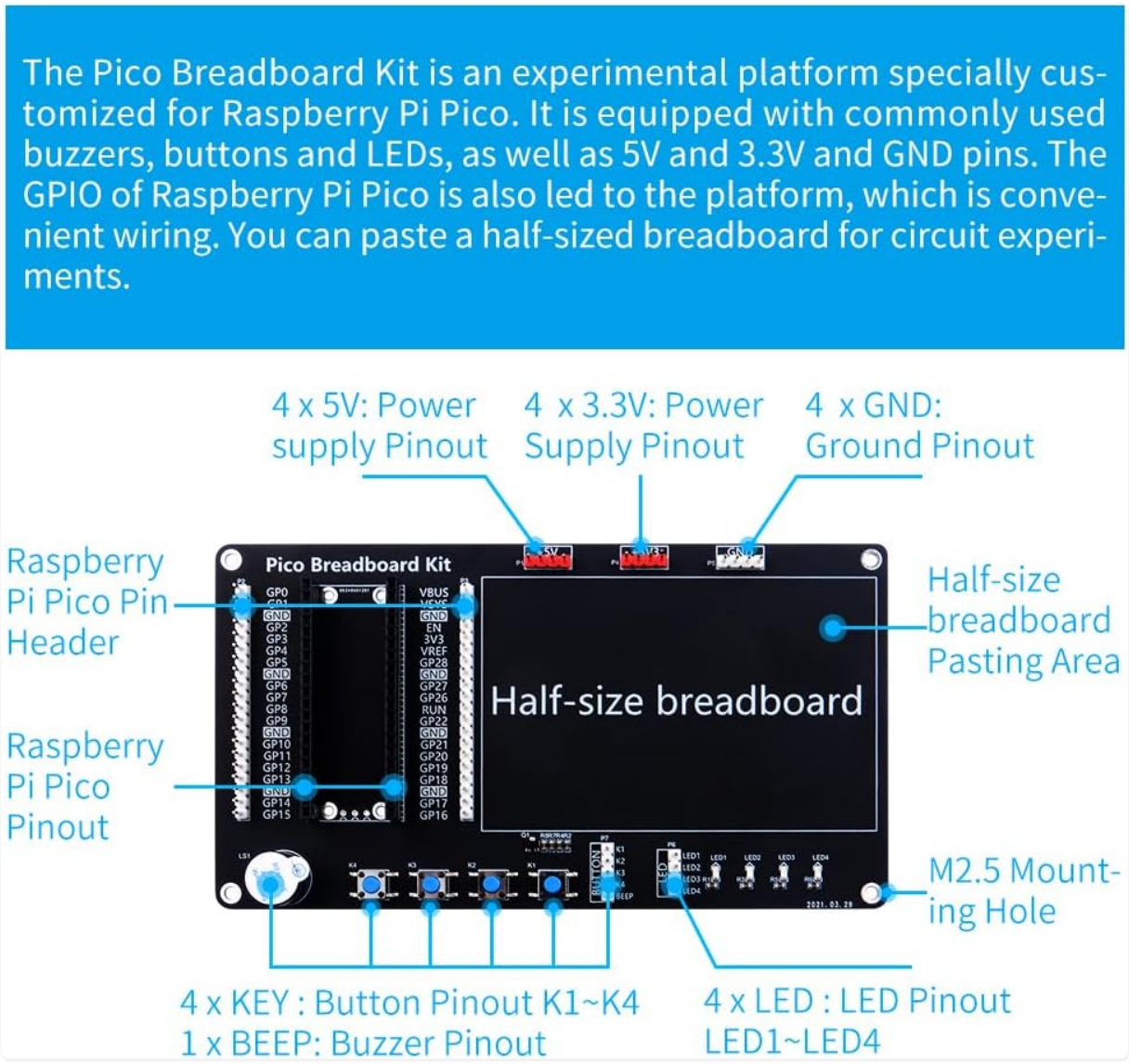

Image 4.1: Detailed pinout and features of the Pico Breadboard Kit.

4.2 Software Setup (MicroPython)

1. **Install Thonny IDE:** Thonny is a user-friendly Python IDE recommended for MicroPython development. Download and install it from the official Thonny website.
2. **Flash MicroPython Firmware:** Connect your Raspberry Pi Pico to your computer while holding down the BOOTSEL button. Drag and drop the MicroPython UF2 firmware file onto the RPI-RP2 drive that appears. The Pico will reboot running MicroPython.
3. **Connect Thonny to Pico:** In Thonny, select *Tools* > *Options* > *Interpreter* and choose 'MicroPython (Raspberry Pi Pico)' as the interpreter. Select the correct port.

For detailed instructions on firmware flashing and Thonny setup, please visit the official GeeekPi wiki: wiki.52pi.com/index.php?title=K-0586

5. Operating Instructions and Project Examples

The kit provides 28 kinds of experimental project tutorials, allowing you to easily learn and develop applications using MicroPython. Each experiment includes detailed wiring diagrams and demo code.

Image 5.1: Overview of the 28 experimental project tutorials.

5.1 Example Project: Ultrasonic Sensor

This project demonstrates how to use the ultrasonic sensor to measure distance and display the results on the I2C 1602 LCD module.

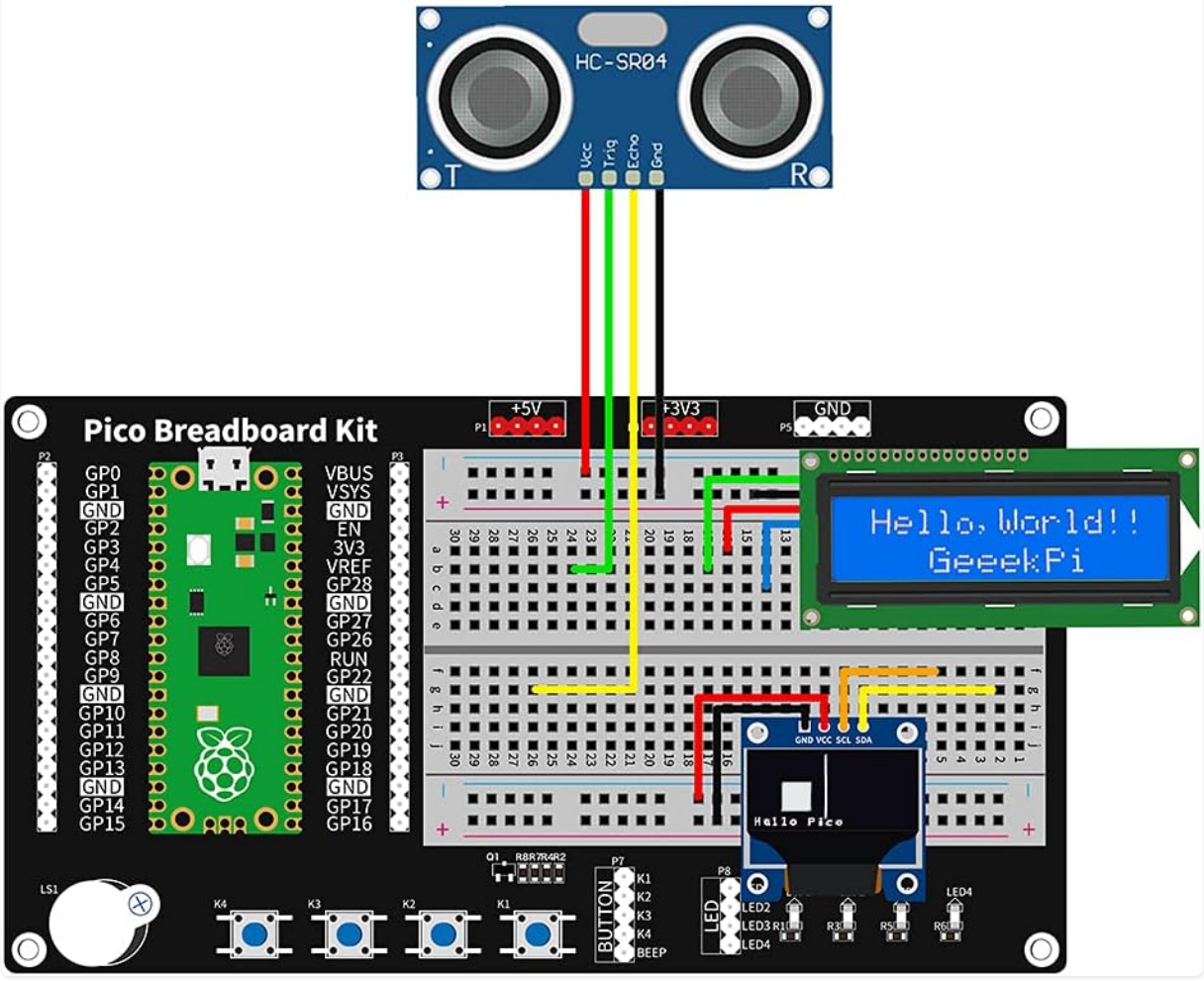

Image 5.2: Wiring diagram for connecting an ultrasonic sensor and LCD to Raspberry Pi Pico.

5.2 General Programming Workflow

1. **Assemble Circuit:** Follow the wiring diagram provided in the tutorial for your chosen project.
2. **Download Demo Code:** Access the demo code files from the GeeekPi wiki or GitHub repository.
3. **Upload Code:** Open the demo code in Thonny IDE, connect your Raspberry Pi Pico, and upload the code to the Pico.
4. **Run and Observe:** Execute the code and observe the behavior of your circuit.

The kit encourages exploration and creativity. After completing the provided tutorials, you can modify the code or combine modules to create your own unique projects.

Image 5.3: A user learning and experimenting with the kit.

5.3 Official Product Videos

Watch these official videos from GeeekPi for additional guidance and project demonstrations:

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Video 5.4: GeeekPi MicroPython Programming Kit for Raspberry Pi Pico. This video provides an overview of the kit and its capabilities.

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Video 5.5: GeeekPi Raspberry Pi Pico Basic Starter Kit. This video demonstrates basic functionalities and projects for a similar kit.

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Video 5.6: GeeekPi Ultimate Kit for Raspberry Pi Pico 2 W. This video showcases an ultimate kit, providing insight into advanced projects.

6. Maintenance

Proper care and maintenance will ensure the longevity and optimal performance of your programming kit:

- **Handle Components Carefully:** The electronic components are delicate. Avoid excessive force when inserting or removing them from the breadboard.
- **Store Properly:** Use the provided storage box to keep components organized and protected from dust and damage when not in use.

- **Avoid Static Discharge:** Handle electronic components on an anti-static surface or by grounding yourself to prevent damage from static electricity.
- **Keep Dry:** Protect all components from moisture and liquids, which can cause short circuits and damage.
- **Power Off When Not in Use:** Always disconnect power from the Raspberry Pi Pico and other modules when not actively working on a project.

Image 6.1: Referencing the detailed manual for project guidance.

7. Troubleshooting

If you encounter issues while using your kit, consider the following troubleshooting steps:

- **Check Connections:** Ensure all wires and components are correctly connected according to the wiring diagrams. Loose or incorrect connections are common causes of problems.
- **Verify Power Supply:** Confirm that the Raspberry Pi Pico is receiving adequate power (5V). Check the MicroUSB cable and power source.
- **Review Code:** Double-check your MicroPython code for any syntax errors or logical mistakes. Compare it with the provided demo code.
- **Consult Wiki/Tutorials:** The GeeekPi wiki provides extensive resources, including detailed tutorials

and troubleshooting guides for each project.

- **Re-flash Firmware:** If software issues persist, try re-flashing the MicroPython firmware to your Raspberry Pi Pico.
- **Isolate Components:** If a complex circuit isn't working, try testing individual components or smaller parts of the circuit to identify the faulty element.

8. Warranty and Support

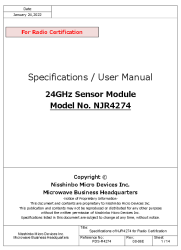
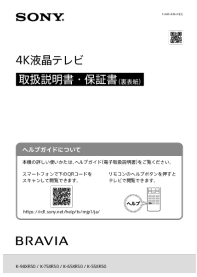
For any technical assistance, questions, or feedback regarding your GeeekPi Micro Python Programming Kit, please utilize the following resources:

- **Official Wiki:** The most comprehensive resource for tutorials, demo code, and detailed information is available at wiki.52pi.com/index.php?title=K-0586.
- **Email Support:** You can contact GeeekPi directly via email for personalized support. Refer to the product packaging or official website for the most current contact information.

Specific warranty details are typically provided with your purchase documentation. Please retain your proof of purchase for any warranty claims.

Related Documents - K-0586

	The MagPi Magazine Issue 111: Raspberry Pi Zero 2 W and Maker Projects Explore the latest Raspberry Pi Zero 2 W, discover exciting maker projects, tutorials, and reviews in The MagPi magazine's November 2021 issue, covering everything from robotics to retro gaming and home automation.
	Kohler DTV+ Conversion Kit K-97170: Upgrade Your DTV II Interface Discover the Kohler DTV+ Conversion Kit (K-97170), designed to seamlessly upgrade your existing DTV II interface. This kit provides essential components for a modern DTV+ system, including necessary cables and a cover plate, ensuring compatibility and enhanced functionality for Kohler faucets.
	PiCAN-M User Guide: NMEA 0183 and NMEA 2000 CAN Bus Interface for Raspberry Pi Comprehensive user guide for the SK Pang Electronics PiCAN-M, detailing hardware installation, software setup, NMEA 0183 and NMEA 2000 connections, and integration with third-party applications like OpenCPN and Signal K.

	Nisshinbo NJR4274 24GHz Sensor Module Specifications and User Manual Explore the Nisshinbo NJR4274, a K-band (24GHz) Doppler sensor module designed for advanced motion sensing applications. This user manual details its specifications, operation, and features for precise distance and velocity measurement.
	Barbie™ Pet Vet Teacher Guide: A Tynker Hour of Code Activity A comprehensive teacher's guide for the Barbie™ Pet Vet Hour of Code activity by Tynker. Learn how to introduce basic programming concepts like sequencing, loops, and conditionals to students using visual blocks, Python, and JavaScript.
	SONY BRAVIA 4K　K-98XR50/75XR50/65XR50/55XR50 for SONY BRAVIA 4K LCD TVs (Models K-98XR50, K-75XR50, K-65XR50, K-55XR50). Covers setup, remote control, connections, viewing, recording, troubleshooting, safety, and specifications.