

FREENOVE FNK0045A

Freenove Ultimate Starter Kit for BBC micro:bit (V2 Included) User Manual

Model: FNK0045A

1. INTRODUCTION

The Freenove Ultimate Starter Kit for BBC micro:bit is designed to provide a comprehensive learning experience in electronics and programming. This kit includes the BBC micro:bit V2 board, a pocket-sized programmable computer, along with a wide array of components, modules, and sensors. It is accompanied by a detailed 316-page tutorial featuring 44 projects, guiding users from basic concepts to complex applications using both block-based visual programming and Python code.

2. KIT CONTENTS

This kit contains 225 items in total, carefully selected to support the included projects and facilitate learning. The main components are:

- BBC micro:bit V2 Board (1x)
- micro:bit GPIO Extension Board (1x)
- LCD Module (1x)
- Ultrasonic Ranging Module (1x)
- Infrared Motion Sensor (1x)
- Joystick Module (1x)
- Temperature and Humidity Sensor (1x)
- Various LEDs (Red, Green, Blue, Yellow, RGB)
- Resistors (220Ω, 1KΩ, 10KΩ)
- Capacitors (0.1uF, 10uF)

- Push Buttons (various colors and sizes)
- Potentiometers
- Motors (DC Motor, Servo, Stepping Motor) and Drivers
- Buzzers (Passive, Active)
- Switches, Diodes, Transistors
- Keypad
- 7-segment display
- Project Board (Breadboard)
- Jumper Wires (M-M, F-F)
- USB Cables (15cm, 100cm)
- 3V Battery Cable
- Plastic Storage Box

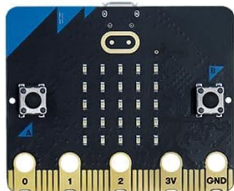
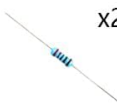
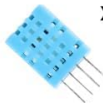
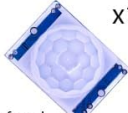
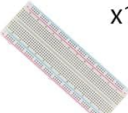
Download Needed: Tutorial and Code (No paper tutorial.)		Official BBC micro:bit V2x1 		LCD Modulex1 		Usb Cable 15cmx1 		Resistor-220x20 	
The download link can be found on the box!				micro:bit GPIO Extension Boardx1 		Usb Cable 100cmx1 		Resistor-1Kx10 	
Potentiometerx2 		Capacitor 0.1ufx2 		Capacitor 10ufx2 		Push Buttonx4 		Big Push Buttonx4 	
				Red Push Button Capx1 		Green Push Button Capx1 		Resistor-10Kx10 	
Switchx2 		Vibration Switchx1 		Keypadx1 		Rectifier Diodex2 		Switch Diodex2 	
				Blue Push Button Capx1 		Yellow Push Button Capx1 		Red LEDx10 	
Photoresistorx1 		9V Battery Cablex1 		Passive Buzzerx1 		Active Buzzerx1 		Motor Driver Chipx1 	
				Serial to Parallel Chipx1 		8 RGB LED Modulex1 		Green LEDx4 	
Temperature and humidity Sensorx1 		Thermistorx1 		7-Segment Displayx1 		Motorx1 		Servox1 	
				Stepping Motorx1 		RGB LEDx1 		Blue LEDx4 	
Joystickx1 		Infrared Motion Sensorex1 		Ultrasonic Ranging Modulex1 		Stepping Motor Driverx1 		Relayx1 	
				65 Jump Wire M-Mx1 		Project Boardx1 		Yellow LEDx4 	
20 Jump Wire F-Fx1 		20Jump Wire F-Mx1 		NPN Transistorx2 		PNP Transistorx2 		LED Bar Graphx1 	
				Resistor Color Code Cardx1 		Plastic Boxx1 			

Image: A comprehensive layout of all components included in the Freenove Ultimate Starter Kit, showing various electronic parts, wires, and the micro:bit board itself.



Image: The Freenove Ultimate Starter Kit components neatly organized within its transparent plastic storage box, demonstrating the compact and accessible packaging.

3. SETUP AND GETTING STARTED

To begin using your Freenove Ultimate Starter Kit, follow these steps:

1. **Unpack the Kit:** Carefully remove all components from the plastic storage box. Familiarize yourself with the different parts by referring to the Kit Contents section.
2. **Download the Tutorial:** The detailed tutorial (316 pages) and code examples are provided digitally. The download link can be found on the product box. Accessing this tutorial is crucial for all projects and learning.
3. **Connect the micro:bit:** Connect your BBC micro:bit V2 board to your computer using one of the provided USB cables. This will power the board and allow for program uploads.
4. **Initial Test:** The micro:bit typically comes with a pre-configured program. You can test its basic functionality by simply plugging it into a power source (computer USB or 9V battery with adapter, not

included).

- 5. Start with Basic Projects:** The tutorial is structured to guide you from simple projects to more complex ones. It is recommended to follow the tutorial sequentially to build foundational knowledge.

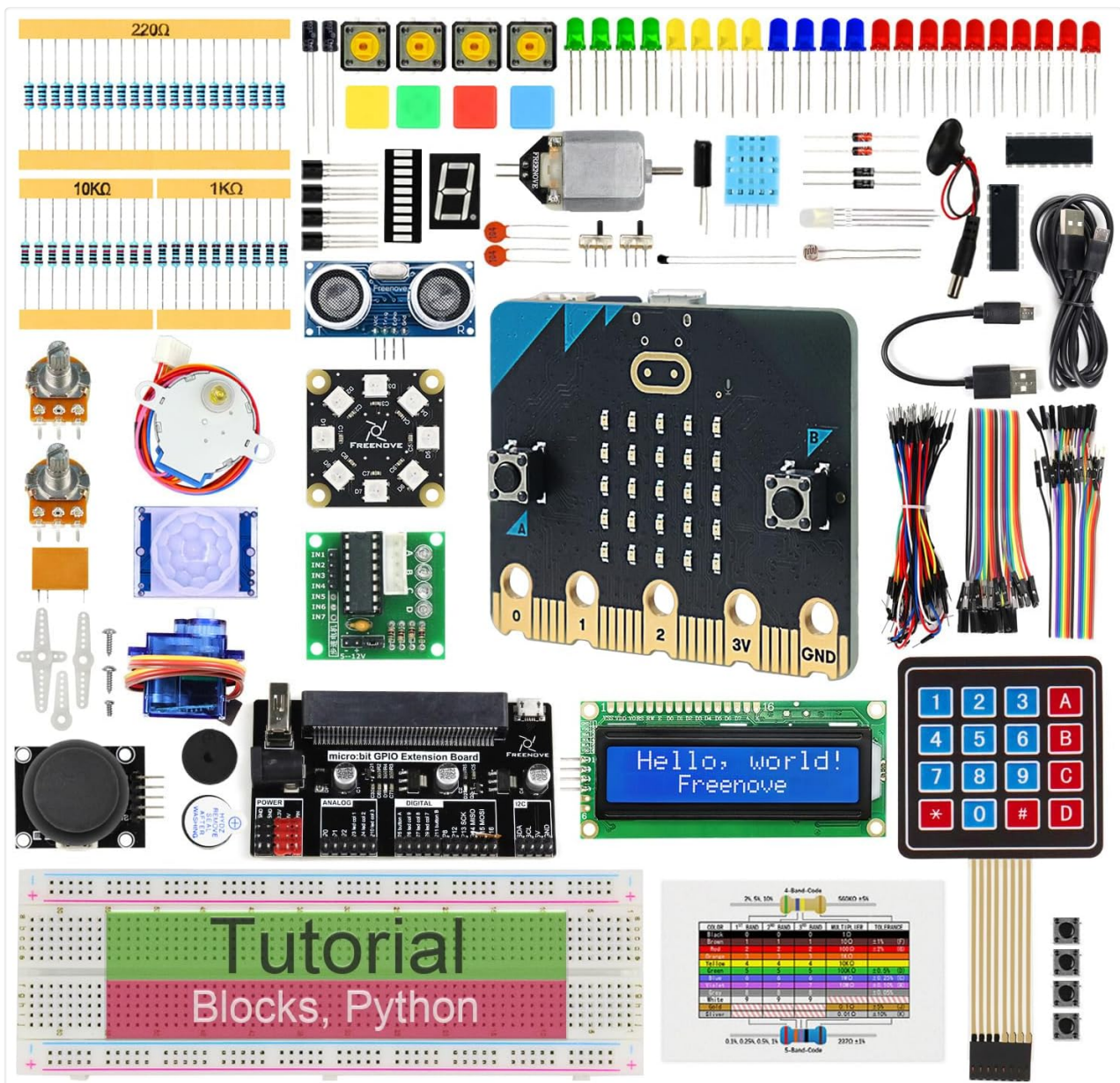


Image: An overhead view of the Freenove Ultimate Starter Kit, showcasing the BBC micro:bit board centrally, surrounded by a wide assortment of electronic components and wires, ready for assembly.

4. OPERATING AND PROGRAMMING

The Freenove Ultimate Starter Kit supports two primary programming environments:

4.1. Block-based Visual Programming

This method uses a drag-and-drop interface, making it ideal for beginners to understand programming logic without complex syntax. The tutorial provides detailed instructions and examples for using block-based code.

4.2. Python Code

For users ready to delve into text-based programming, the kit also supports Python, a widely popular and versatile language. The tutorial includes Python code examples for all projects, allowing for a deeper understanding of programming concepts.

2 Sets of Codes

Includes code for easy and popular programming languages.



Blocks

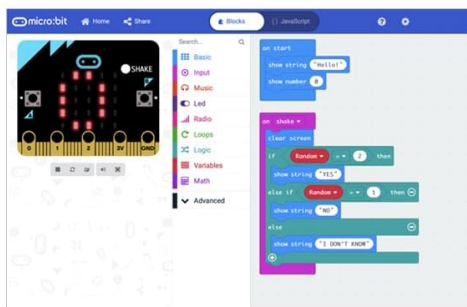
Block-based
visual programming code



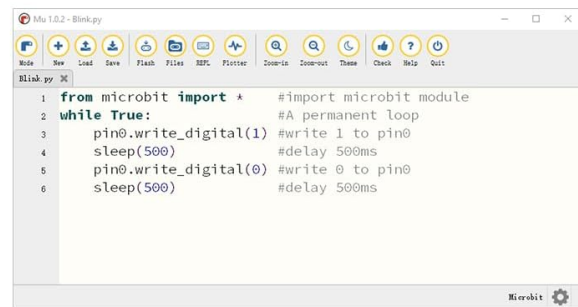
python™

Text-based
popular Python code

Examples:



Blocks code



Python code

The download link can be found on the box! (No paper tutorial.)

Image: A visual comparison demonstrating the two programming methods supported by the kit: block-based visual programming on the left and Python text-based code on the right, highlighting their distinct interfaces.

4.3. Project Examples

The kit includes 44 projects, ranging from simple LED control to more advanced sensor applications. Each project in the tutorial comes with:

- Schematics
- Wiring diagrams
- Complete code (Blocks and Python)
- Detailed explanations

Project Examples

Includes dozens of projects from simple to complex.

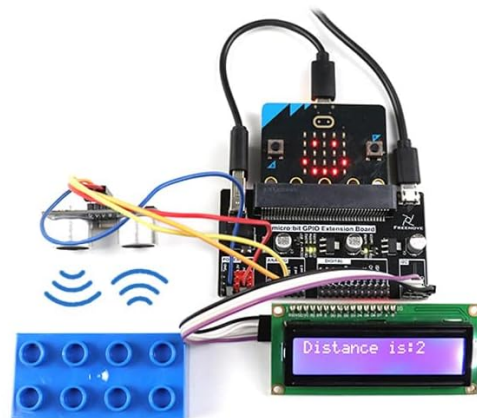
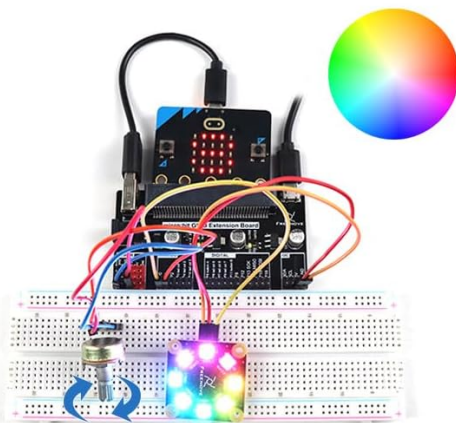
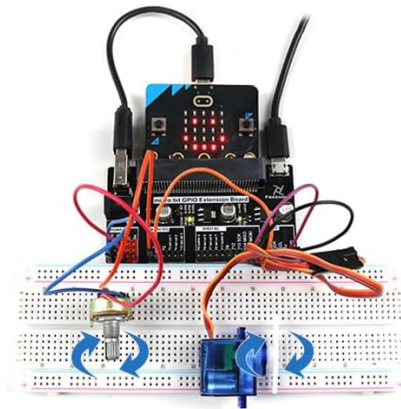
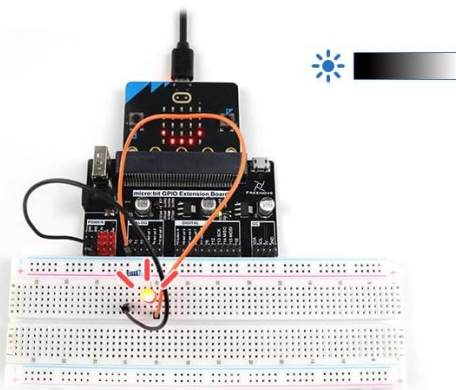


Image: A collage of four different project setups using the Freenove micro:bit kit, illustrating diverse applications such as light sensing, motor control, RGB LED effects, and ultrasonic ranging with an LCD display.

4.4. Detailed Tutorial Overview

The 316-page tutorial provides a step-by-step guide, covering basic electronics and component knowledge. It is designed to be comprehensive and easy to follow.

Detailed Tutorial

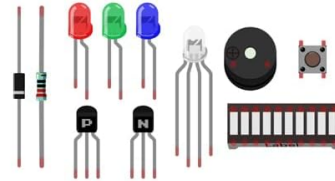
Shows you how to program micro:bit board.



Blocks

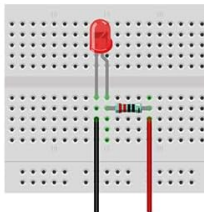


python™



Includes block-based visual programming code,
and text-based popular Python code.

Knowledge of electronics and components is included.
Start by lighting up an LED.



Dozens of projects from simple to complex are included.
Each has wiring diagrams, code and explanations.



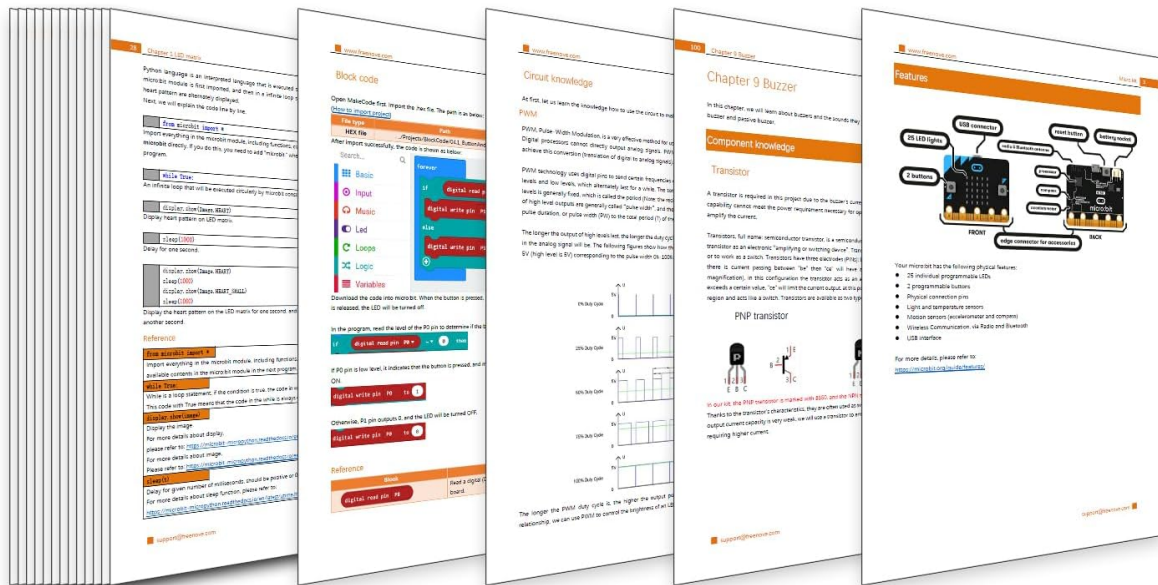
Provide free and timely technical support services.
Feel free to contact us if you need any help.

The download link can be found on the box! (No paper tutorial.)

Image: A visual representation of the Freenove micro:bit detailed tutorial, showing various pages with circuit diagrams, code snippets, and explanations, emphasizing its comprehensive nature.

Tutorial Examples

Provides step-by-step guide and detailed explanations.



The download link can be found on the box! (No paper tutorial.)

Image: Multiple pages from the Freenove micro:bit tutorial fanned out, showcasing the step-by-step guides, detailed explanations, and code examples provided for various projects.

5. MAINTENANCE

The Freenove Ultimate Starter Kit requires minimal maintenance. To ensure longevity and proper function of the components:

- **Storage:** Store all components in the provided plastic box when not in use to prevent loss or damage. Keep the kit in a dry, cool environment away from direct sunlight and extreme temperatures.
- **Handling:** Handle electronic components with care. Avoid bending pins excessively or applying undue force.
- **Cleaning:** If necessary, gently wipe components with a dry, soft cloth. Do not use liquid cleaners or solvents.
- **Power:** Always ensure correct power connections and voltage levels as specified in the tutorial to prevent damage to the micro:bit or other components.

6. TROUBLESHOOTING

If you encounter issues while using your Freenove Ultimate Starter Kit, consider the following common troubleshooting tips:

- **Code Not Uploading:** Ensure the micro:bit is correctly connected to your computer via USB. Verify that the USB cable is functional; some cables are for charging only and do not support data transfer. Try a different USB port or cable.
- **Component Not Responding:** Double-check all wiring connections against the schematic and wiring diagram in the tutorial. Ensure components are inserted correctly (e.g., LEDs, diodes). Verify that the correct code is uploaded for the specific component.
- **Power Issues:** Confirm that the micro:bit is receiving adequate power. If using a battery, ensure it is charged and correctly connected.
- **Software/IDE Problems:** Ensure your programming environment (e.g., MakeCode editor, Python editor) is up to date and correctly configured. Clear browser cache if using web-based editors.
- **General Malfunction:** If a specific component appears to be defective, or if you experience persistent issues not resolved by the above steps, please contact Freenove technical support.

7. SPECIFICATIONS

Feature	Specification
Brand	FREENOVE
Model Name	micro:bit V2
Item Model Number	FNK0045A
Processor	16 MHz 1.2GHz Cortex A9
RAM	16 KB LPDDR2 (micro:bit V2 has 128KB RAM)
Hard Drive (Flash Memory)	256 KB (micro:bit V2 has 512KB Flash)
Wireless Type	2.4 GHz Radio Frequency, Bluetooth 5.0
Operating System	FreeRTOS
Voltage	3.3 Volts
Item Weight	1.19 pounds (approx. 0.54 kg)
Package Dimensions	8.15 x 5.79 x 1.93 inches (approx. 20.7 x 14.7 x 4.9 cm)

Feature	Specification
Date First Available	November 13, 2019

8. WARRANTY AND SUPPORT

Freenove is committed to providing high-quality products and excellent customer service. While specific warranty details are not provided in this manual, Freenove offers free technical support to assist with any questions or problems you may encounter with your kit.

8.1. Technical Support

For technical assistance, questions about projects, or troubleshooting, please contact Freenove directly:

- **Email:** support@freenove.com
- **Website:** Visit the official Freenove support page at <http://freenove.com/support>

The download link for the tutorial and additional support information can also be found on the label pasted on the product box.

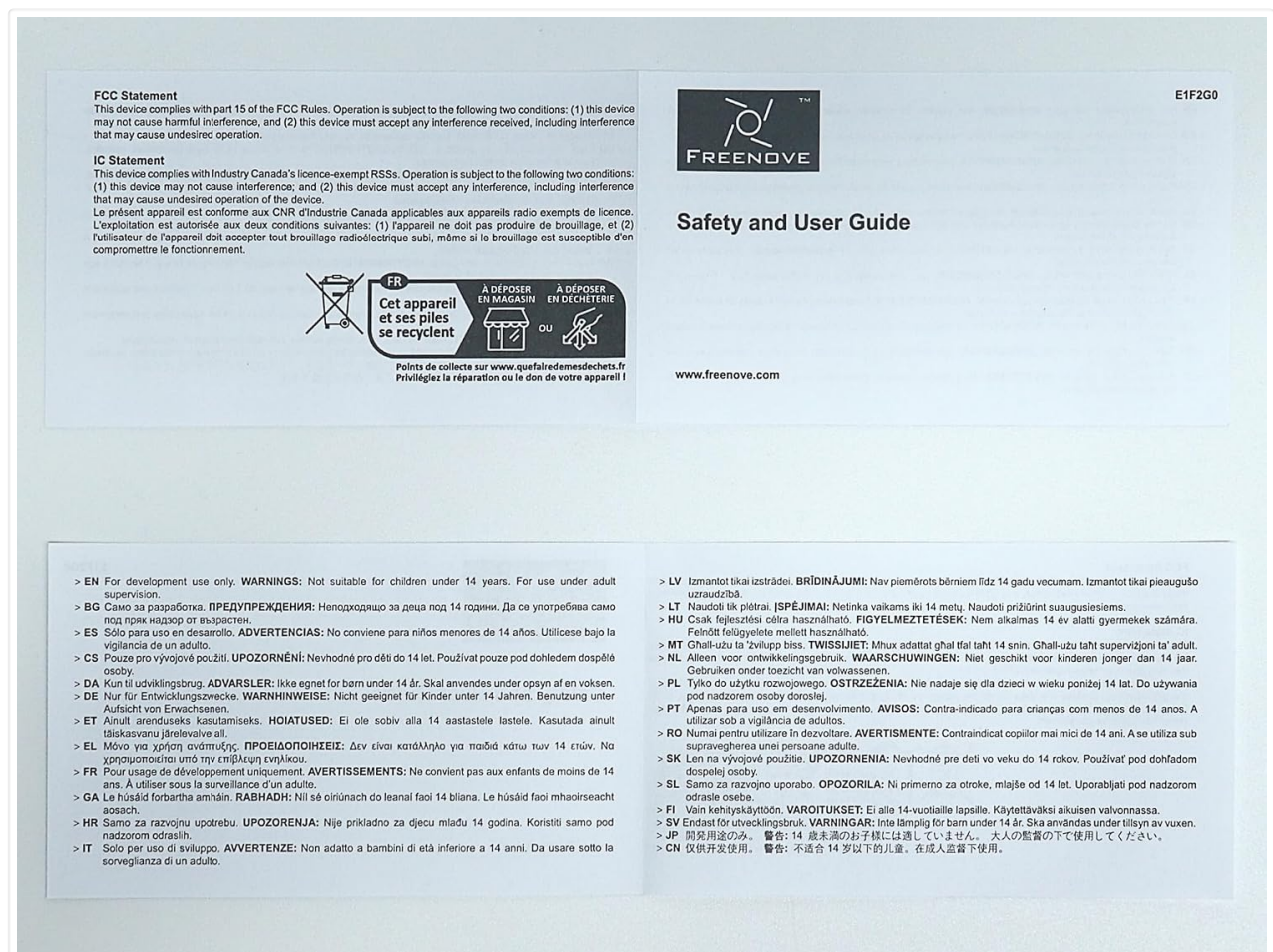


Image: The back of the Freenove Starter Kit box, displaying important information such as the tutorial download link, support email address, and manufacturer details.

