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Strex SP127

Strex Raspberry Pi Starter Kit User Manual

Model: SP127

Your comprehensive guide to building electronic projects with Raspberry Pi.

1. Introduction

Welcome to the Strex Raspberry Pi Starter Kit! This extensive kit, featuring 189 components, is designed for both beginners and experienced enthusiasts eager to explore the world of electronics and programming with Raspberry Pi. It is fully compatible with Raspberry Pi OS (Linux) and includes a comprehensive tutorial on a CD-ROM to guide you through various projects.

This manual provides detailed instructions, component overviews, and essential information to help you get started and maximize your learning experience.

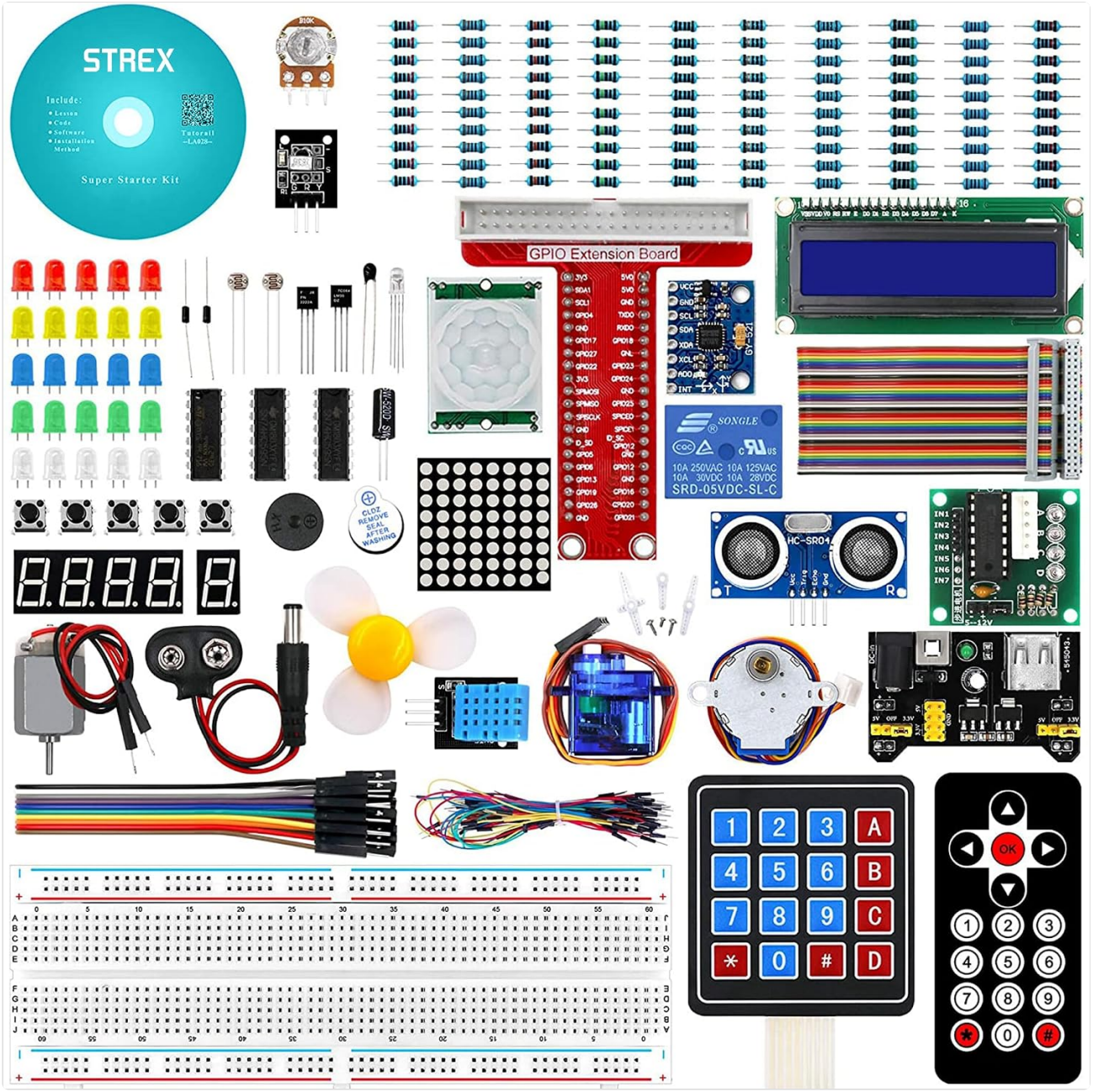

Image 1.1: Overview of all 189 components included in the Strex Raspberry Pi Starter Kit, showcasing various modules, sensors, LEDs, and wires.

2. Kit Contents

The Strex Starter Kit comes in a durable and convenient plastic storage box with separated compartments to keep all components organized and safe. The kit includes a wide array of components to facilitate diverse projects.



Image 2.1: The Strex Raspberry Pi Starter Kit neatly packed in its plastic storage box, highlighting the included CD-ROM for tutorials.

2.1. Included Components List

The kit contains 189 components, including but not limited to:

- 1x GPIO Expansion Board with Cables
- 1x LCD1602 Module (with pin header)
- 1x 8x8 Dot Matrix Display
- 1x Stepper Motor
- 1x ULN2003 Stepper Motor Driver Board
- 1x Servo Motor (SG90)
- 1x Membrane Switch Module
- 1x 9V Battery Connector
- 1x 3V Servo Motor (soldered wire)
- 1x Fan Blade
- 1x Joystick Module

- 1x GY-521 Module (MPU-6050 Accelerometer Gyro)
- 1x Power Supply Module
- 1x HC-SR501 PIR Motion Sensor
- 1x Remote Control
- 1x 5V Relay
- 1x IR Receiver Module
- 1x DHT11 Temperature and Humidity Module
- 1x 830-point Breadboard
- 65x Jumper Wires
- 20x Dupont Cables
- 1x 1-digit 7-segment Display
- 1x 4-digit 7-segment Display
- 1x Ultrasonic Sensor
- 20x Resistors (220R)
- 10x Resistors (1K)
- 10x Resistors (10K)
- 5x White LEDs
- 5x Yellow LEDs
- 5x Blue LEDs
- 5x Green LEDs
- 5x Red LEDs
- 1x RGB LED
- 1x Thermistor
- 2x Photoresistors (LDR)
- 1x Potentiometer (10K)
- 1x Active Buzzer
- 1x Passive Buzzer
- 2x Rectifier Diodes (1N4007)
- 2x NPN Transistors (PN2222)
- 1x IC L293D (DC / Stepper Motor Driver)
- 1x IC 74HC595 (Shift Register)
- 1x Tilt Switch
- 5x Small Buttons
- 1x CD with Manuals and Tutorials
- 1x Plastic Storage Box

Note: A Raspberry Pi board itself is NOT included in this starter kit. Raspberry Pi is a trademark of the Raspberry Pi Foundation.

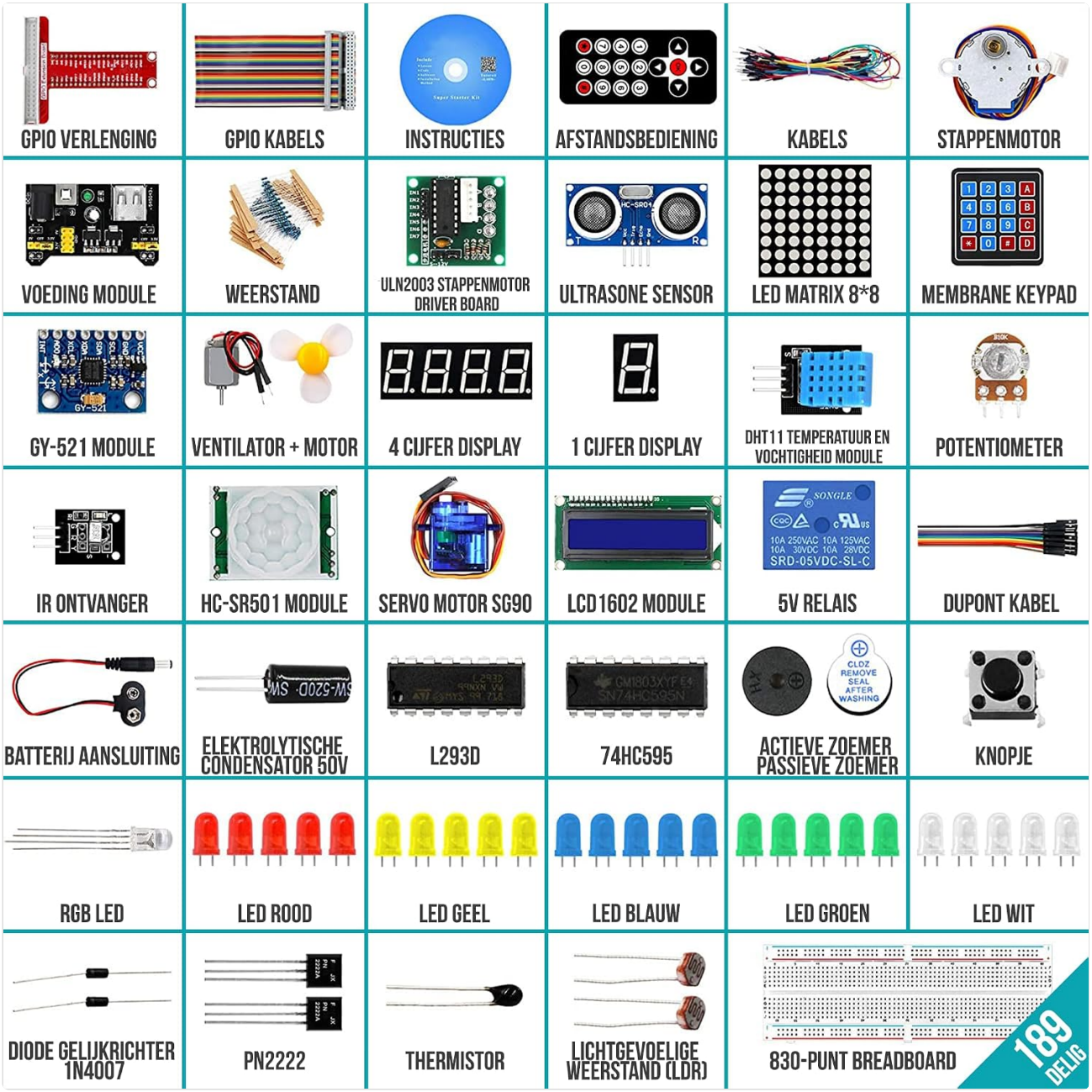

Image 2.2: A close-up view of some of the smaller electronic components, including various colored LEDs, resistors, and integrated circuits, demonstrating the variety of parts available.

3. Setup and Getting Started

This kit is designed for easy setup, even for those new to electronics. The included CD-ROM provides detailed tutorials and example code to guide you.

3.1. Software Installation (Raspberry Pi OS)

1. Ensure your Raspberry Pi has Raspberry Pi OS installed. If not, download the latest version from the official Raspberry Pi website and install it onto an SD card.
2. Connect your Raspberry Pi to a monitor, keyboard, and mouse.
3. Boot up your Raspberry Pi.
4. Insert the included CD-ROM into a computer with a CD drive. Copy the tutorial files, example code, and schematics to your Raspberry Pi or a USB drive.
5. Familiarize yourself with the development environment. Raspberry Pi OS provides various programming tools, including Python, which is commonly used for GPIO projects.

3.2. Basic Connections

Most projects will involve connecting components to the Raspberry Pi's GPIO (General Purpose Input/Output) pins via the provided GPIO Expansion Board and breadboard.

- **Breadboard:** Use the 830-point breadboard to prototype circuits without soldering. Components are inserted into the holes, and jumper wires connect them.
- **GPIO Expansion Board:** This board simplifies connecting the Raspberry Pi's GPIO pins to the breadboard using the ribbon cable. Ensure correct orientation to avoid damage.
- **Jumper Wires:** Use these to make connections between components on the breadboard and to the GPIO expansion board.

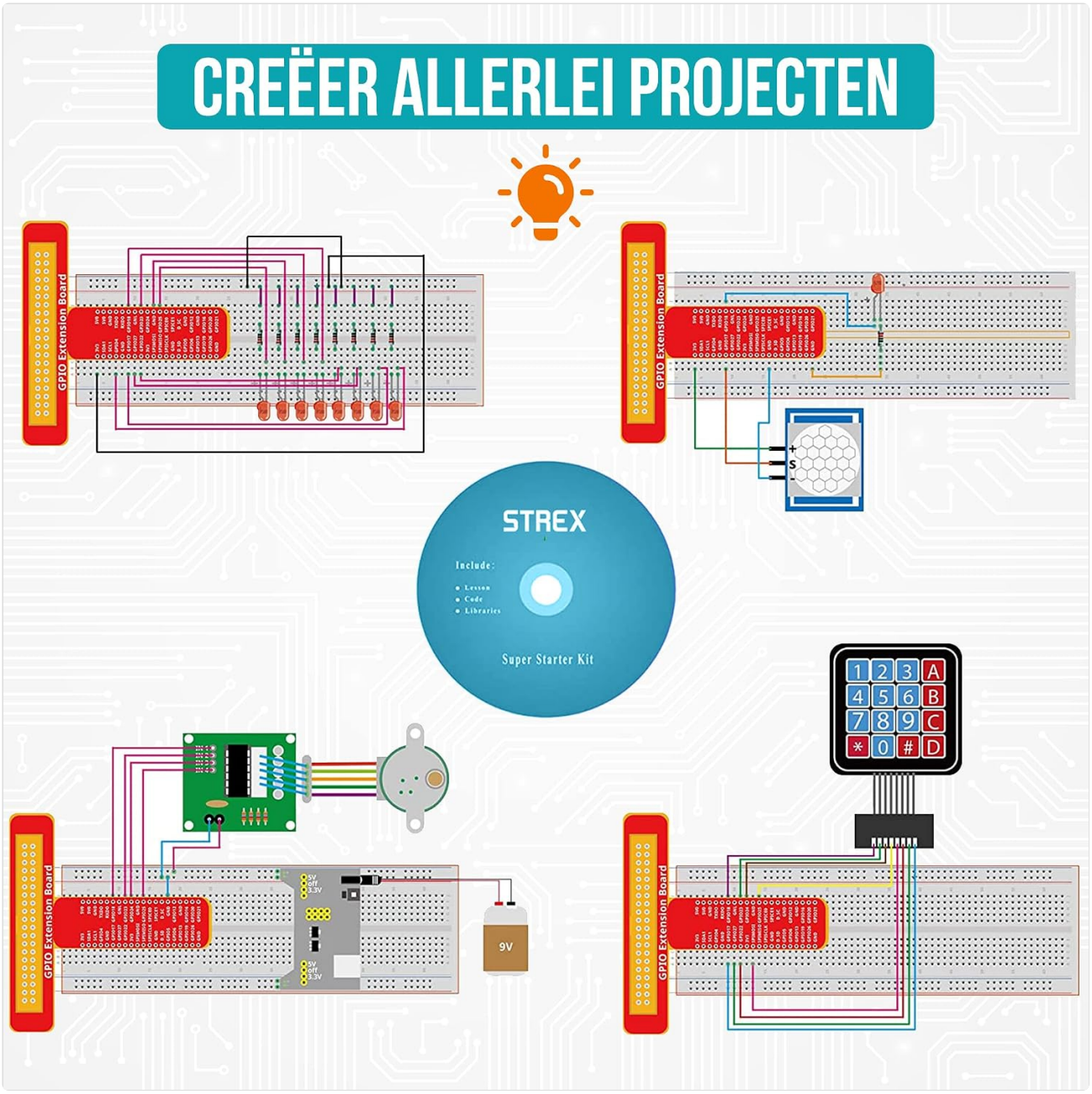

Image 3.1: Example circuit diagrams illustrating how to connect various components like LEDs, sensors, and motors to the Raspberry Pi via the GPIO expansion board and breadboard.

4. Operating the Kit and Project Examples

The strength of this kit lies in its versatility, allowing you to build a wide range of electronic projects. The CD-ROM contains detailed instructions, circuit diagrams, and example code to help you get started.

4.1. First Project: Blinking an LED

A classic first project to understand basic circuit building and programming:

1. Connect an LED (e.g., a red LED) and a 220R resistor in series to your breadboard.
2. Connect one end of the resistor to a GPIO pin on your Raspberry Pi (e.g., GPIO17 via the expansion board).
3. Connect the other end of the LED (the shorter leg, cathode) to a GND (Ground) pin on your Raspberry Pi.
4. Write a simple Python script to toggle the GPIO pin high and low, causing the LED to blink. Refer to the CD-ROM for example code.
5. Run the script on your Raspberry Pi.

4.2. Advanced Projects

Once you master the basics, you can move on to more complex projects such as:

- Building a light alarm using the Photoresistor and Buzzer.
- Controlling a servo motor with a joystick.
- Displaying sensor data (temperature, humidity) on the LCD1602 module.
- Creating a simple robot with the stepper motor and driver board.
- Interfacing with the remote control and IR receiver.



Image 4.1: An individual engaged in building an electronic project using the Strex Raspberry Pi Starter Kit, demonstrating the hands-on learning experience.

4.3. Using the CD-ROM

The included CD-ROM is your primary resource for learning. It contains:

- Detailed step-by-step tutorials for various components and projects.
- Comprehensive circuit diagrams (schematics).
- Example code in Python and other relevant languages.
- A library of useful content and tips for coding.



Image 4.2: A close-up of the Strex CD-ROM alongside pages from the included manual, showcasing detailed instructions, code snippets, and circuit diagrams.

5. Maintenance and Storage

Proper care and storage of your components will ensure their longevity and continued functionality.

- **Storage:** Always store components in the provided plastic storage box. Utilize the separated compartments to prevent damage and keep parts organized.
- **Handling:** Handle electronic components with care. Avoid bending pins excessively or applying undue force.
- **Cleanliness:** Keep components free from dust and moisture. If necessary, gently clean with a dry, soft cloth.
- **Power:** Always disconnect power from your Raspberry Pi and circuits before making or changing connections.
- **Static Electricity:** Be mindful of static electricity, which can damage sensitive components. Work on an anti-static mat if possible.

6. Troubleshooting

If you encounter issues, consider the following common troubleshooting steps:

- **Component Not Working:**
  - Double-check all connections on the breadboard and to the Raspberry Pi. Ensure wires are firmly seated.
  - Verify the component's polarity (e.g., for LEDs, diodes, electrolytic capacitors).
  - Ensure the correct voltage and current are supplied to the component.
  - Test the component in a simpler circuit if possible.
- **Code Errors:**
  - Review your code for typos, incorrect syntax, or logical errors.
  - Compare your code with the examples provided on the CD-ROM.
  - Ensure all necessary libraries are installed on your Raspberry Pi.
- **Raspberry Pi Not Responding:**
  - Check the power supply to your Raspberry Pi.
  - Ensure the SD card is properly inserted and the OS is not corrupted.
  - Disconnect all external components and try booting the Raspberry Pi alone.
- **Power Supply Module Issues:**
  - Ensure the input voltage is correct (e.g., 9V battery or appropriate DC adapter).
  - Verify the output voltage settings if adjustable.

For more specific troubleshooting, refer to the detailed guides and examples on the included CD-ROM.

7. Specifications

7.1. General Product Information

Brand	Strex
Model Name	Starter Kit for Raspberry Pi
Model Number	SP127
Part Number	SP0127-STREX
Connectivity Technology	USB (for Raspberry Pi connection)
Material Type	Plastic
Product Dimensions	23.3 x 16 x 6 cm; 700 g
Included Components	1x Raspberry Pi Starter Kit (189 components)

7.2. Key Components Overview



Image 7.1: A composite image displaying various component groups from the kit, including the storage box, breadboard setups, and individual sensors/actuators.



Image 7.2: The included CD-ROM, which contains comprehensive instructions, example code, diagrams, and project ideas to guide users.

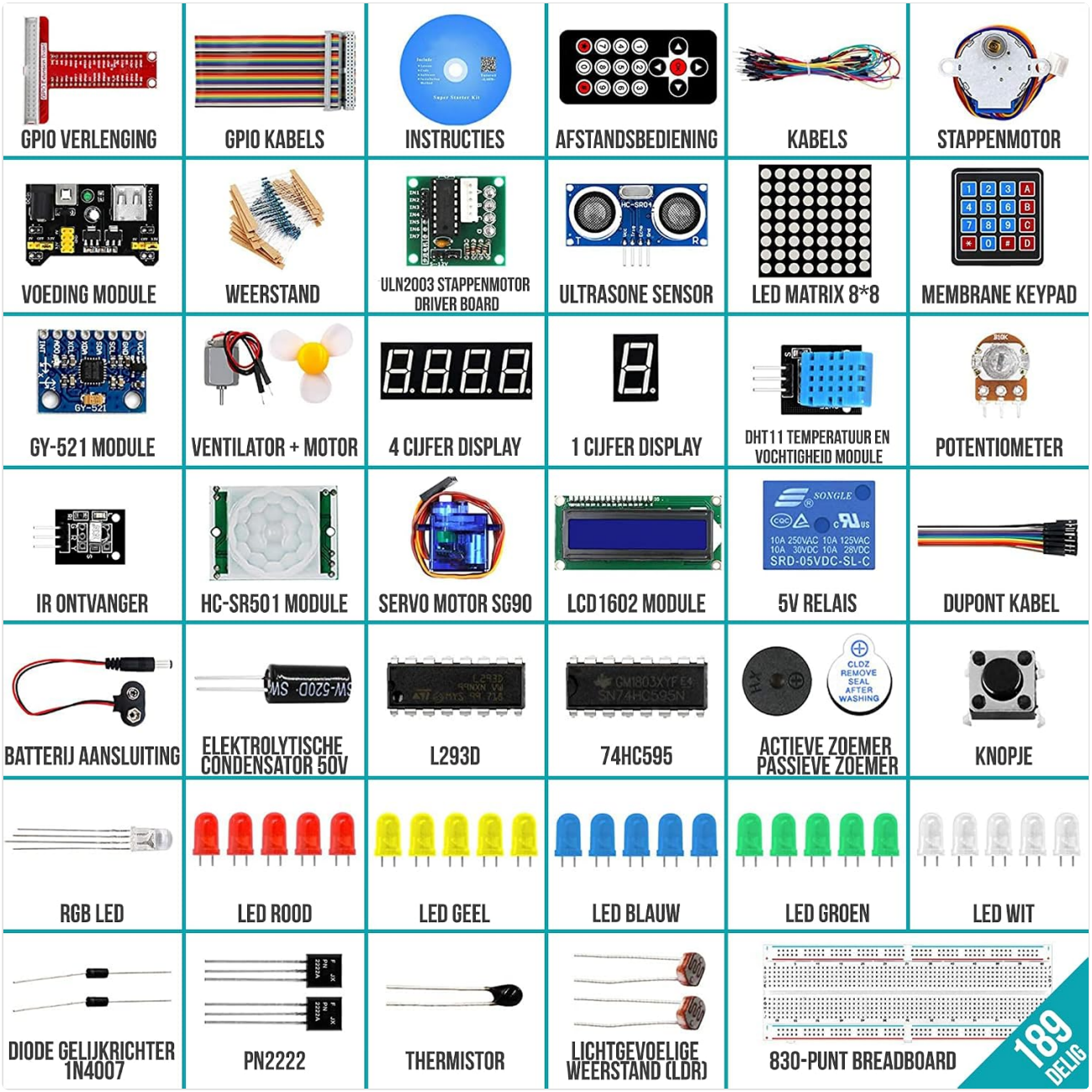

Image 7.3: A detailed visual representation of the diverse range of electronic components provided in the kit, from basic resistors and LEDs to more complex integrated circuits and sensors.

8. Warranty and Support

For any questions, technical support, or warranty inquiries regarding your Strex Raspberry Pi Starter Kit, please refer to the contact information provided on the packaging or the official Strex website. The included CD-ROM also serves as a primary resource for detailed guidance and troubleshooting.

Please note that specific warranty terms may vary. Keep your proof of purchase for any warranty claims.

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