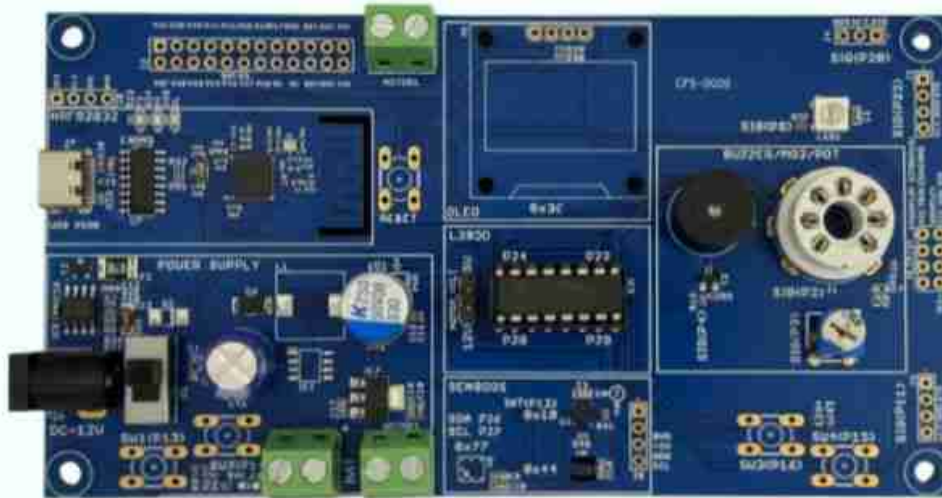


# nRF52832-Based Robotic Kit

## Overview

The nRF52832-Based Robotic Kit is a high-tech development platform designed for students, hobbyists, and researchers to explore advanced robotics and IoT applications. Powered by the nRF52832 MCU (ARM Cortex-M4F) with Bluetooth 5.0, it integrates an L293D motor driver, OLED display, and sensor interfaces. USB Type-C programming, onboard power regulation, and modular connectivity make it perfect for hands-on learning, prototyping, and smart robotic projects.



**Fig:Robotic Kit**

## Key Features

- High-Performance MCU: Powerful ARM Cortex-M4F processor for smooth and fast robot control
- Advanced Bluetooth 5.0: Reliable wireless connectivity for real-time robot operation and IoT integration
- Versatile Motor Control: Supports multiple motors for building dynamic robotic systems
- Live Data Display: Onboard OLED interface for real-time feedback and visualization
- Expandable Sensor Support: Easy connection for gas, ultrasonic, and analog sensors
- Flexible Power Options: USB-C and external power support with built-in protection
- Modular I/O & PWM: Expandable pins for connecting additional sensors, servos, and peripherals
- Interactive Feedback: Buzzer and LEDs for alerts and system status
- Educational & Prototype Ready: Ideal for learning, experimentation, and advanced student robotics projects

## **Technical Specifications**

- Microcontroller: Nordic nRF52832 (ARM Cortex-M4F, 64 MHz, 512 KB Flash, 64 KB SRAM)
  - Wireless Connectivity: Integrated BLE 5.0 for fast, reliable Bluetooth communication
  - Motor Driver: L293D Dual H-Bridge, 2 DC motors or 1 stepper, 4.5–36V, 600 mA/channel, 1.2 A peak
  - Display: 0.96" OLED (I<sup>2</sup>C) for live data and sensor feedback
  - Sensors: MQ gas sensor header, ultrasonic sensor interface, potentiometer for analog calibration
  - Power: USB Type-C programming/power, 7–12V DC input, onboard 3.3V/5V regulators, reverse-polarity protection
  - Expansion: Multiple GPIO, PWM, and ADC pins, motor terminal blocks for extra motors
  - Extras: Onboard buzzer, reset button, and power/user LEDs for real-time feedback
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## **Applications**

- Smart Robotics Projects: Build line followers, obstacle-avoiding, and Bluetooth-controlled robots
- IoT & Mobile Robots: Integrate sensors and wireless control for smart projects
- STEM Learning Platform: Hands-on education for students in embedded systems, programming, and electronics
- Sensor-Based Experiments: Gas detection, distance sensing, and environmental monitoring
- Prototyping & Innovation: Rapid development of smart automation systems and robotic prototypes
- Educational Competitions: Perfect for robotics contests, STEM workshops, and lab exercises