www.codlai.com/en

CODLAI
TECHNOLOGIES

MINIBOT
USER GUIDE

"ROBOTIC CODING FOR EVERYONE"

MiniBot User Guide

2025 (v2.0)

Contents

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Who Are We?

CODLAI TECHNOLOGIES INC.

CODLAI Technology Inc. was founded during the pandemic, when the challenges and shortcomings of distance learning became apparent. During this period, it was observed that the existing infrastructure, particularly in robotics coding and similar practical courses, was inadequate, leading to significant decreases in productivity. To address these issues, in 2021, one of our founders and a graduate student, Samed Kaya, completed his thesis titled "Internet-Oriented Sensor Board Design and Production for Intermediate and Advanced Robotics Coding Education." This work laid the foundation for the CODROB brand and our first products, the IoTBot and sensor modules.

The resulting products have attracted attention with their innovative features as well as eliminating the deficiencies in the market. In 2022, with the partnership of Kule Mold Machinery and Industry INC. located in Gebze/Kocaeli, CODROB has gained wider opportunities and developed new generation programmable robots, advanced program called "CODROB Editor" and web platform.

The CODROB Project, awarded the "Seal of Excellence" in the first call of the 2025 TÜBİTAK 1812 (BIGG) Program, began its R&D and commercial activities under the name **"CODLAI TECHNOLOGY INC."** The company operates in the Teknopark Istanbul area.

CODLAI currently offers a wide range of products, including three different programmable IoT-based motherboards, more than 20 sensor modules, programmable cars, robotic arms, and drones. Furthermore, it aims to meet all needs in the field with its next-generation AI-powered products, coding editor, and training curriculum. Curricula and sample projects appropriate to the learning level have been created for all devices produced.

Our Future Vision

As CODLAI, we aim to focus on innovative topics such as new programmable motherboards, developable robots for robotics competitions, and robotic coding via virtual reality in the future. Our aim is to provide pioneering and innovative solutions in educational technologies and to ensure that students and educators have the best experience.

Our Mission

As CODLAI Technologies Inc., our mission is to provide innovative, accessible and effective solutions to students and educators by using technology in education in the most effective way. We aim to raise the technology leaders of the future by increasing the quality in robotic coding and applied courses. In this direction, with our constantly developing product range and educational materials, we aim to provide practical and advanced technology-based educational tools that are suitable for the needs of learners at all levels. Increasing efficiency in education, integrating technological innovations into the world of education and developing products that can compete on a global scale are among our basic principles.

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What Do We Offer?

STEM TRAINING KITS

You can learn robotics and electronics from scratch to advanced level with training sets consisting of CODLAI Products!

PROGRAMMABLE ROBOTIC KITS

You can reinforce the foundations established with training kits with robotic kits, and learn what, when, where and how you can use it in daily life!

CODLAI EDITOR

You can perform either block-based or text-based programming and simulation with the dual-language supported 'CODLAI Editor' program that you can use on all platforms. Moreover, a web editor that does not require installation is waiting for you! For more: www.editor.codlai.com

CURRENT CURRICULUM

CODLAI products are supported by course programs and sample applications prepared by leading instructors in the sector. Get a 1-0 head start on your training with its current and even future-visioned curriculum.

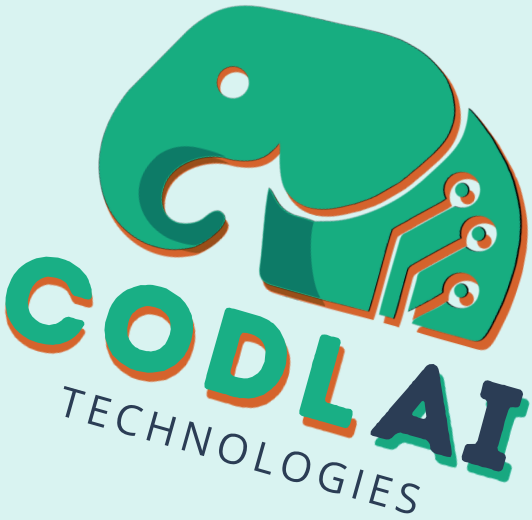
RELIABLE CONTENT

Our sample applications and programs on our CODLAI site have been prepared by expert trainers and checked by our engineer team. We take a firm stance against misinformation and misinformation!

ALWAYS FULL SUPPORT

CODLAI products are always with you, not just until the first sale. We are waiting for you at www.codlai.com, where you can find all kinds of support and updated content about the products! You can also always get a response as quickly as possible with our Whatsapp live support line.

MiniBot User Guide



MiniBot User Guide

WARNING

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1. Entrance

1.1 Introduction to the Regulation

- ***CE Compliance***

This appliance is suitable for home and office use. The CE Mark confirms compliance with European Union regulations:

- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Low Voltage Directive 014/35/EU (equal to A2:2013)
- Radio & Telecommunications Terminal Equipment (R&TTE) Directive 1999/5/EC

This device can be operated at a maximum ambient temperature of 35 *C. Do not expose to temperatures below 5 *C or above 40 *C. THERE IS A RISK OF EXPLOSION IN CASE OF INCORRECT APPLICATION OF BATTERIES AND POWER ADAPTER. PLEASE USE THE BATTERIES AND ADAPTER SPECIFIED FOR THE PRODUCT IN ACCORDANCE WITH THE INSTRUCTIONS.

1.2 Safety Instructions

Do not use this device near magnetic fields as this may adversely affect the performance of the device.

If you think there is a problem with the device or any of its components, consult the technical service team. In case of malfunction, the device must be repaired by the technical service. Please do not repair it yourself.

Do not apply excessive pressure to the device by hitting, hitting, dropping or pushing it. This may damage or destroy the device and/or its components.

Do not expose the device to direct sunlight. Keep it away from high temperature ambient conditions and avoid contact with high temperature surfaces.

Do not expose your device directly to liquid. Do not leave it in rain or humid environments and prevent exposure to these. Do not leave the product's power adapter plugged in during conditions such as thunderstorms.

Use and keep the device, its accessories, components and packaging out of reach of babies and children to prevent the risk of suffocation and injury.

1.3 Guide Information

ATTENTION: This sign and warning message indicates special rules that must be observed for user safety.

Before using your device for the first time, read and follow this original user manual and the safety warnings provided with it. Keep this manual for later use or for future users.

2. Basic Information

2.1 Overview

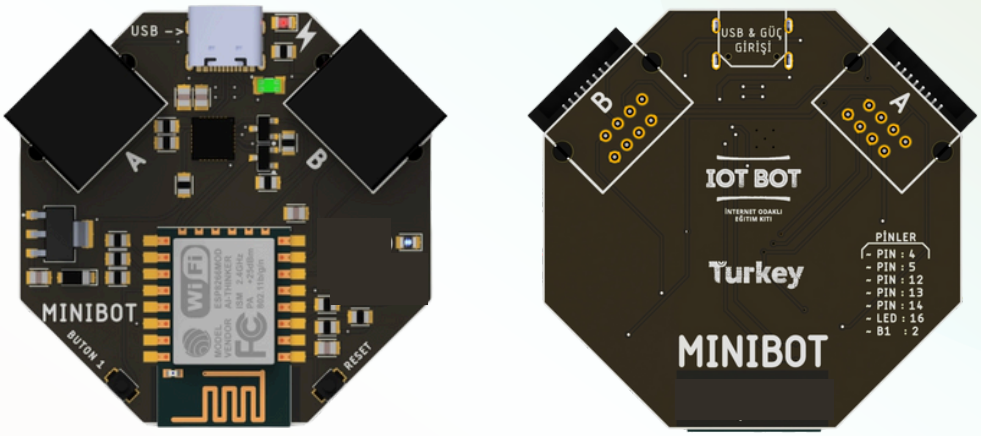


Figure 1 - MiniBot Top and Bottom View

MiniBot is an external motherboard with ESP8266 microcontroller. It has 2 RJ45 inputs, 1 programmable LED, 1 programmable button and 5 processor pins that we can use.

It is a development board that has two parallel communication ports, programmable buttons and LED lights to be used with MiniBot, IotBot and other modules. You can power the device with the Type-C input and program in C++ & Microphyton languages via Codlai Editor. It allows you to create internet-based applications with its built-in Wi-Fi connection. Wi-Fi connection can be used either in remote control mode or by creating a network locally. You can connect Codlai sensor modules to its two parallel ports and develop many different applications, either locally or between networks. In addition; You can use it as the host computer of other mechanical robots such as ArmBot and CarBot and create Wi-Fi networks to control such robots remotely. The applications to be made are completely limited by imagination. For more, visit our www.codlai.com platform.

2.2 MiniBot Technical Specifications

Processor	: ESP8266EX - 160 MHz Tensilica L106 32-bit RISC 32-bit LX6 microprocessor
Wireless connectivity	: 2 .4 GHz WiFi
Programming Languages	: C++, Micropython (Text and Block Based)
Internal Sensors	: 2x Relay (5V DC 100mA), Digital Button, Digital Led
Input/Output	: 1 x Type-C Socket (Programming + Power) 2 x RJ45 Type Module Port (Digital)

Additional Features	: Remote control of 220V AC devices via Wi-Fi
	Visual feedback LEDs parallel to sensors
	Reset button
	Impact-resistant outer shell
	Codlai editor support
	Codlai platform support
	Information sections on the device
	Programmability with open source editors
	Documentation required to create IoT applications
	Remotely control supported smart devices via Wi-Fi
Security	: Hardware accelerators for AES and SSL/TLS
Certificates	: CE, ROSH, EMC
Working Voltage	: 5VDC

3. MiniBot Hardware Components

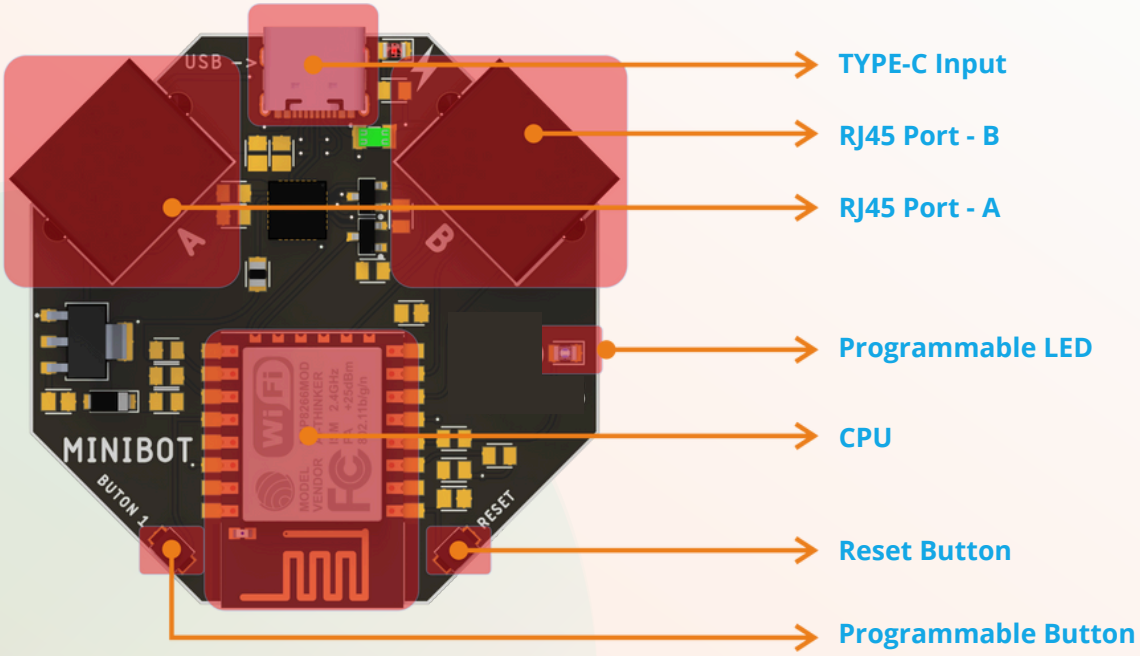


Figure 2 - MiniBot Hardware Components

3.1 ESP8266 Microcontroller

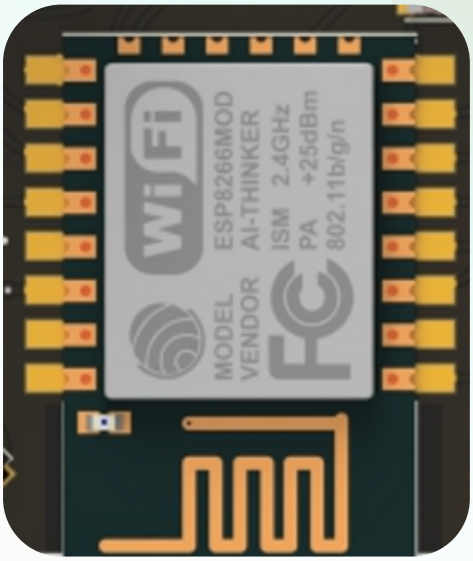
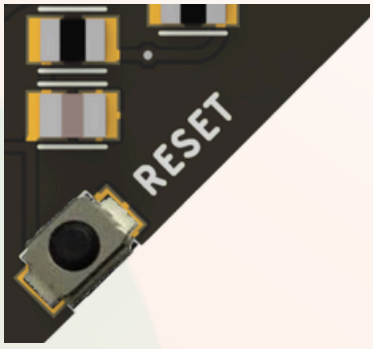


Figure 3 - ESP8266 Microcontroller

MiniBot uses the powerful and flexible ESP8266 microcontroller, which provides Wi-Fi connectivity. This microcontroller is widely used in various IoT (Internet of Things) projects and provides users with wireless networking features. The general features of ESP8266 are as follows:

- ESP8266 has Tensilica L106 32-bit RISC CPU core and can operate at 80 MHz or 160 MHz.
- It supports 2.4 GHz Wi-Fi 802.11 b/g/n protocols. It can work with Soft Access Point and Station modes, meaning it can both connect to a Wi-Fi network and create its own Wi-Fi network.
- 17 GPIO pins support various interfaces such as PWM, I2C, I2S, UART and SPI. This makes ESP8266 a flexible and versatile microcontroller.
- It supports 64 KB of instruction memory (IRAM), 96 KB of data memory (DRAM) and external SPI Flash memory.

3.2 Restart Button



Picture 4 - Restart Button

If pressed, the system will be restarted. (Does not delete the software) This restart is done by momentarily connecting the ‘ENEABLE’ (Activation) pin on the ESP8266 to ground.

3.3 Programmable Button and Programmable LED

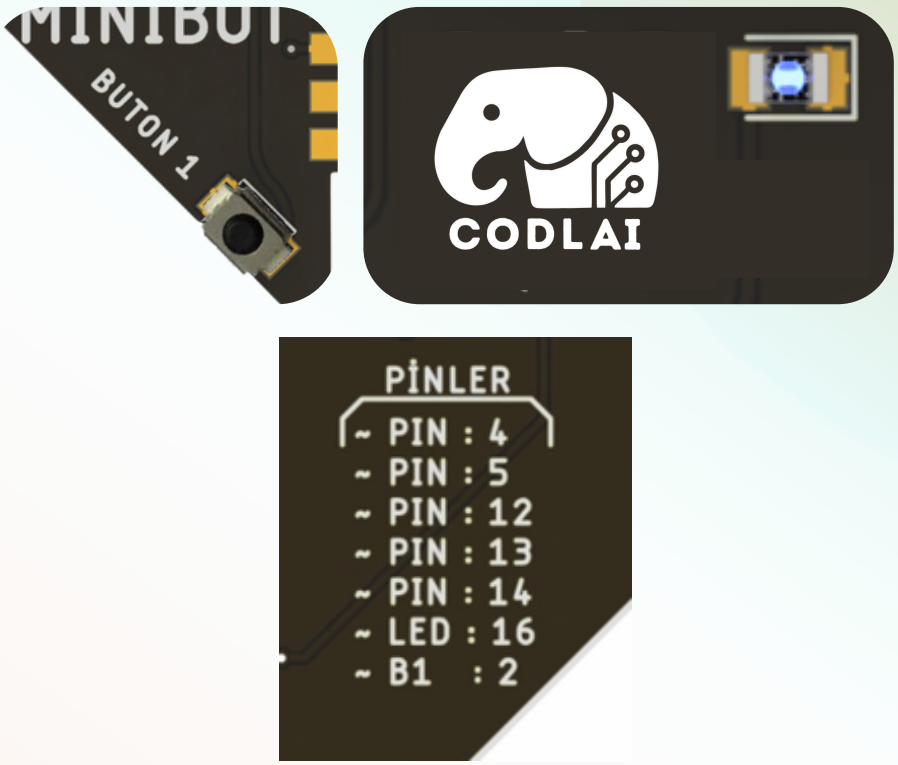


Figure 5 - Programmable Button - Programmable LED and Pin Numbers

MiniBot has a programmable button and an LED connected to the ESP8266 microcontroller. The programmable button is connected to pin 2 of the microcontroller, and the programmable LED is connected to pin 16 of the microcontroller. These components provide users with the opportunity to control and learn input and output operations.

3.4 USB Type-C Power and Data Input

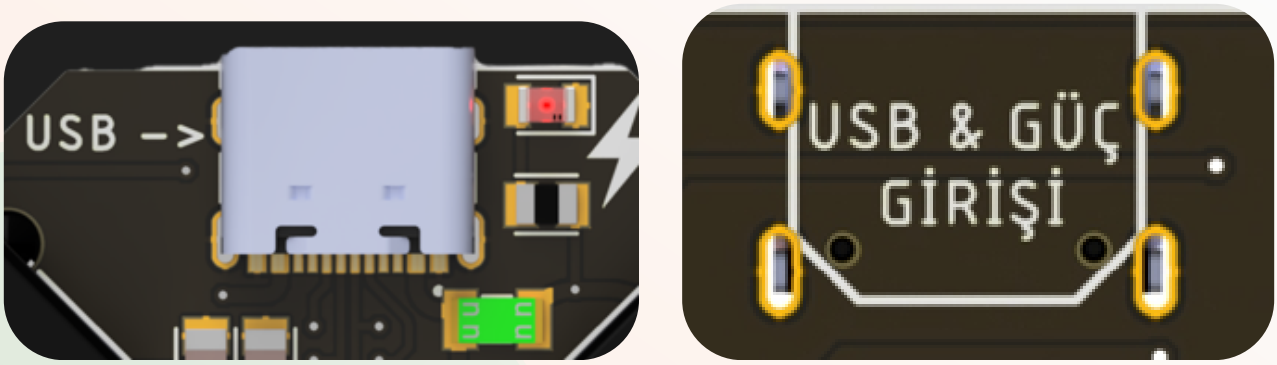


Figure 6 - USB Type-C Power and Data Input Front and Rear View

USB Type-C is a type of USB (Universal Serial Bus) connection standard and is widely used among newer generation devices. It provides power to MiniBot and allows us to transfer data to the processor. MiniBot requires 5VDC voltage to operate.

3.5 Input Ports

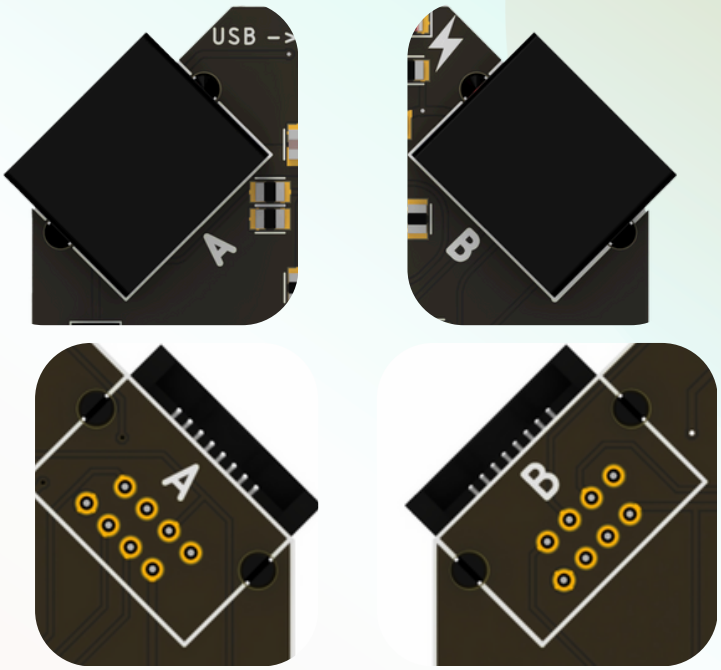


Figure 6 - USB Type-C Power and Data Input Front and Rear View

RJ45 internet sockets used in input ports are a widely used connection standard. It allows you to easily connect MiniBot to modules. You can communicate with CODLAI modules that can provide digital outputs through these ports without any problems.

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CODLAI TECHNOLOGIES INC.

In this period when technology is advancing Decently, robotics and coding skills are among the most valuable competencies of the future. CODLAI Technologies A.Sh. as such, we invite you to step into this exciting world.

Encode the Future with CODLAI
Our mission is to provide innovative, accessible and effective solutions to students and educators by using technology in education in the most effective way.

Be the Technology Leaders of the Future
We aim to educate the technology leaders of the future by increasing the quality in robotic coding and applied courses. With our constantly developing product range and educational materials, we offer practical and advanced technology-based educational tools that are suitable for the needs of students at all levels.

CODLAI Technologies INC.
"Innovative Solutions in Education, Strong Steps to the Future"

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