

# REX8



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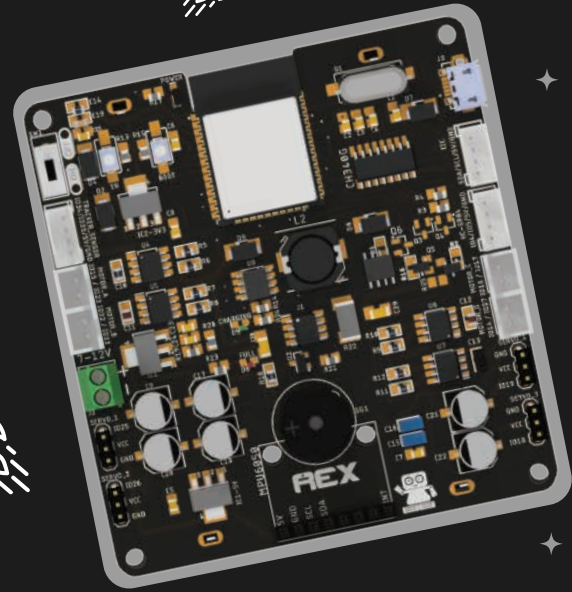


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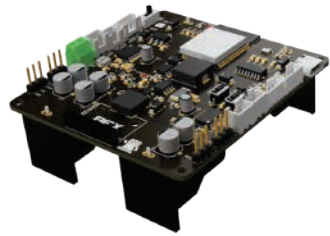
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## QUICK START GUIDE



### What Is REX 8 in 1 Robot Set?

REX is an educational robot set developed by the Robotistan R&D team. The REX 8 in 1 robot set eliminates difficulties in circuit setup, such as connection points and cable confusion, with the REX Main Board using ESP32 infrastructure. Additionally, Arduino IDE, Thonny IDE, and MicroBlocks IDE provide great flexibility for users in programming.



The REX main board is a special main board designed to facilitate the mechanical and electronic setup of robots in the 8 in 1 set. This board, which uses the ESP32E processor, has connectors to link all the components used in the REX 8 in 1 set to the circuit using cables.



#### ARMBOT

ArmBot is a REX robot that enables the movement of objects around it from one point to another using its robot arm through remote control. The robot arm on ArmBot comprises 3 servo motors. ArmBot, capable of movement in 4 different axes—up, down, right, and left—can effortlessly reach objects even in hard-to-access areas with its mobility.



#### BALANCEBOT

BalanceBot is a special robot that can maintain its balance despite physical interactions, thanks to the acceleration sensor on the REX board. You can utilize BalanceBot in situations where you require balanced object carrying.



#### OMNIBOT

OmniBot provides effortless access to every point without the need for any turning movements, all thanks to its specialized omni wheels. By using OmniBot, you can conveniently reach even the most inaccessible points. This robot is designed specifically to access such challenging points.



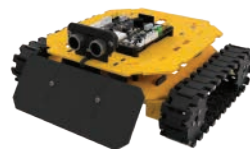
#### ROVERBOT

RoverBot is a REX robot that enables you to move comfortably in challenging terrain conditions, all thanks to its tracked structure. Like other REX 8in1 robots, you have the option to control RoverBot remotely or make it to move autonomously using specialized coding.



#### SONICBOT

SonicBot detects objects by emitting sound waves around itself, thanks to the distance sensor it has. It can perform various functions by utilizing its mechanical properties based on the values it detects. You can avoid obstacles by using SonicBot. Additionally, you can use SonicBot for tasks that involve detecting objects in the environment.



#### SUMOBOT

SumoBot detects other objects on the track thanks to the HC-SR04 distance sensor and the line tracking sensor. With the help of the line tracking sensor, SumoBot detects whether objects are on the track and, as a result, moves them away from the track.



#### TRACKERBOT

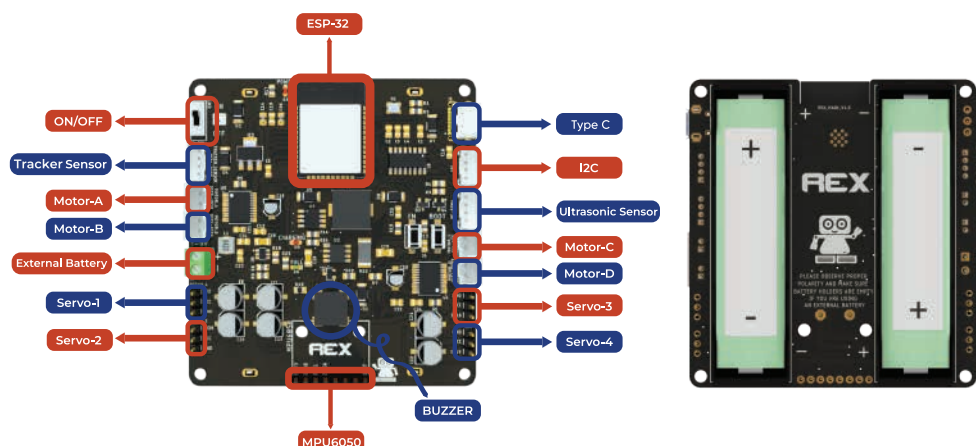
TrackerBot emits infrared light thanks to the line tracking sensor and follows the black lines in the environment. By utilizing the mechanical features of TrackerBot along the path we have established with lines, we can enable it to autonomously carry out the tasks we desire. Additionally, we can alter the color that TrackerBot tracks by making some changes to the code.



#### WIBOT

WiBot is a REX 8in1 robot that doesn't include any additional sensors for autonomous driving; it solely permits remote control. You can conveniently control WiBot using a smartphone.

### REX BOARD PIN DIAGRAM



To make the installation of 8-in-1 robots and circuit design, the REX Main Board has four motor drivers and servo motor connectors. It also includes connection points for HC-SR04, Line Tracker, and MPU6050 sensors to establish their connections. Additionally, there is an integrated buzzer and switch on the main board, as well as an external connection port for attaching a 12V battery to the circuit.

### The Connection Between The REX Main Board and Arduino IDE

#### What is Arduino?

The Integrated Development Environment (IDE) for Arduino is a cross-platform application written in C and C++ languages (for Linux, macOS, Windows). It is used to write and upload programs to Arduino compatible boards, but it can also be used in 3rd party cores and vendor development boards.

#### How to Use the Arduino IDE?

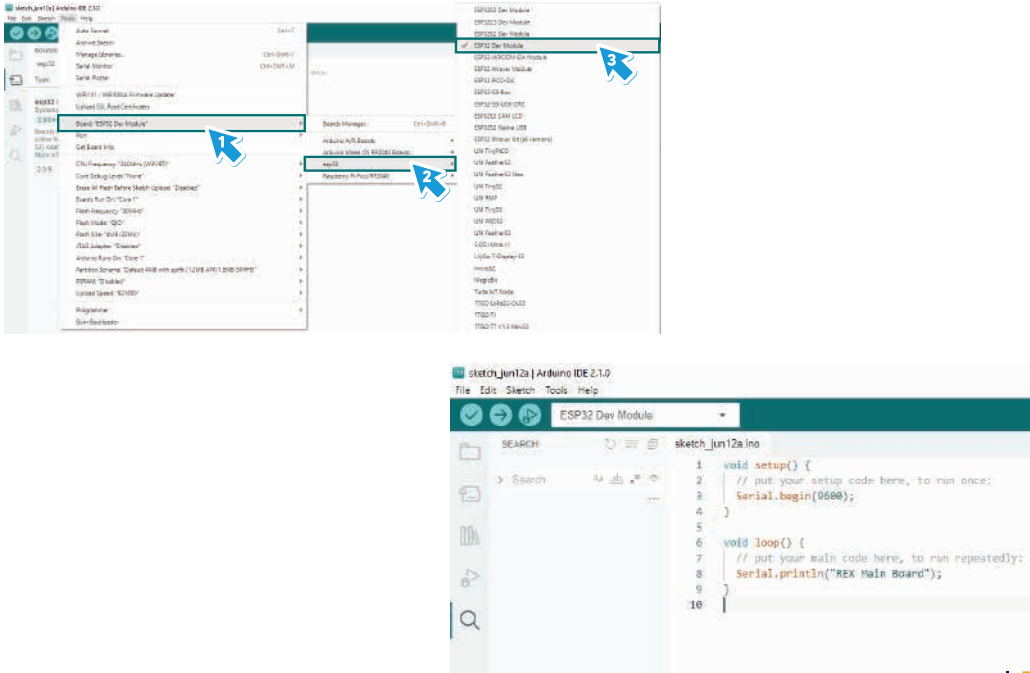
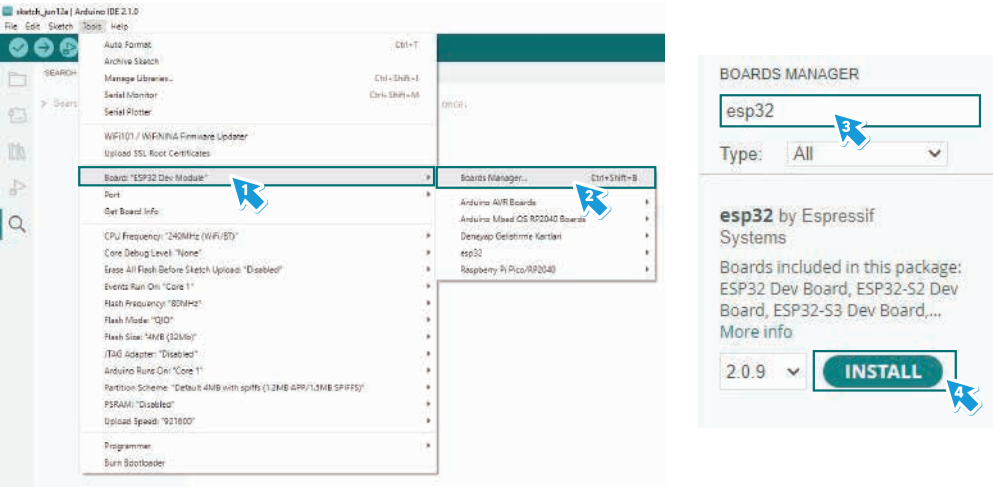
Let's open <https://www.arduino.cc/en/software> in the browser.



Download the Arduino IDE program by selecting your system



How Is Arduino IDE Used with REX Main Board?



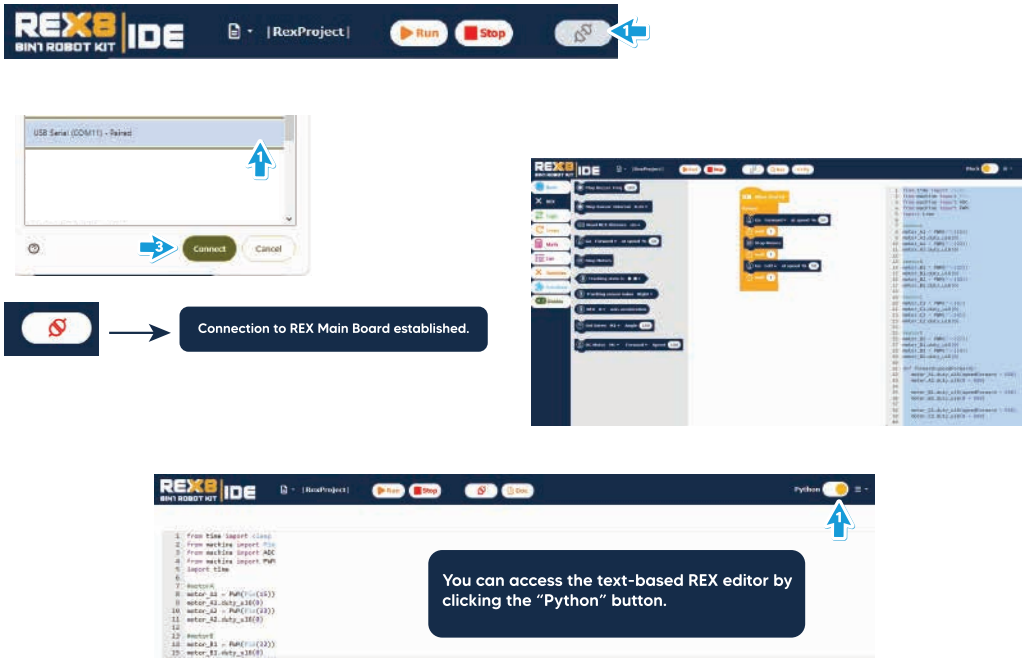
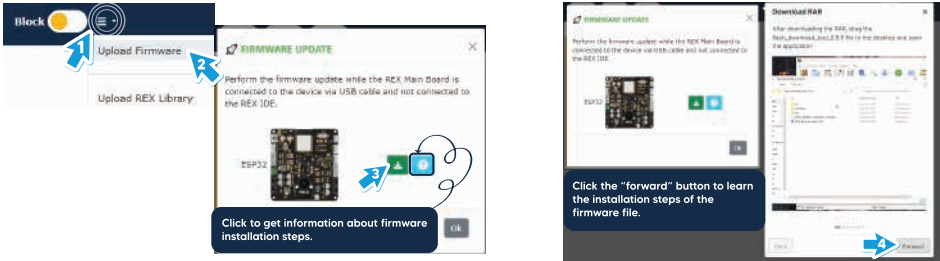
The Connection Between The REX Main Board and REX IDE

What Is REX IDE?

REX IDE is a programming editor that you can create some projects by writing code with blocks before switching to the MicroPython programming language. You can get the MicroPython equivalent of every code you create by dragging blocks in REX IDE. In addition, you can make some projects in Python language by entering the Python editor from the REX IDE without being dependent on offline editors.



How to Use REX IDE With The REX Main Board?



CHECKLIST

If REX Robots are not working properly after completing the installation, you can check the steps below.

- ☐ Are you sure that the batteries you use are fully charged?
- ☐ Did you insert the batteries by paying attention to their polarities?
- ☐ Make sure that you have placed the REX main board correctly.
- ☐ Did you complete the servo motors calibration steps correctly before you place them?
- ☐ Make sure that Nyloc Nuts are not so tight, otherwise mechanical parts won't be working properly.
- ☐ Make sure that moving parts are correctly attached to the servo motor use the servo horn mounting screw while attaching the that has servo horns on them.
- ☐ Did you connect the DC motor and servo motor to the pin specified in the code?
- ☐ Make sure to connect the cables as shown in the pin diagram.
- ☐ If OmniBot's wheels appear to be unlevelled and are not making proper contact with the surface, flip the referenced parts and try again (R1 or R2). Flipping one of these parts should resolve the issue. Please note that if the Omni wheels are not level with the surface, they may not function correctly.



By scanning the QR code, you can access sample code for the project, STEM activity examples, and educational content. The REX Project Book includes the REX IDE, Thonny, and Arduino code, necessary for the project.



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