Engino E20.1

Engino Education STEM & Robotics Mini Set (Model E20.1) Instruction Manual

Introduction

The Engino Education STEM & Robotics Mini Set, Model E20.1, is designed for students aged 6-9. This kit integrates STEM subjects with robotics, providing a hands-on learning experience. It includes Engino Qboidz plastic parts and robotic components such as the ERP MINI Controller, DC motors, an LED, a touch sensor, and IR sensors. The set supports the construction of 40 models with accompanying theoretical and experimental activities covering engineering design, coding, mechanics, and science. Two generations of robotic models can be built: simpler Qboidz models for younger students to introduce coding, and complex models using classic Engino parts for advanced users.

This image illustrates five different robotic models that can be constructed with the Engino STEM & Robotics Mini Set, demonstrating the versatility and range of projects possible. The models include a crane, a vehicle, and various robotic designs.

Safety Information

Choking Hazard: This product contains small parts. It is not suitable for children under 3 years of age. Adult supervision is recommended during assembly and play, especially for younger users.

What's in the Box

The Engino Education STEM & Robotics Mini Set includes the following components:

- Plastic storage tub (43 x 31 x 15 cm)
- 312 Plastic parts (Engino - Qboidz)
- 1596 Connecting points
- ERP MINI Controller with 4 input-output ports

- Battery compartment (requires 3xAAA batteries, not included)
- 2 IR sensors
- 1 Touch sensor
- 2 DC motors
- 1 Red LED
- Instruction Manual (digital and physical resources)

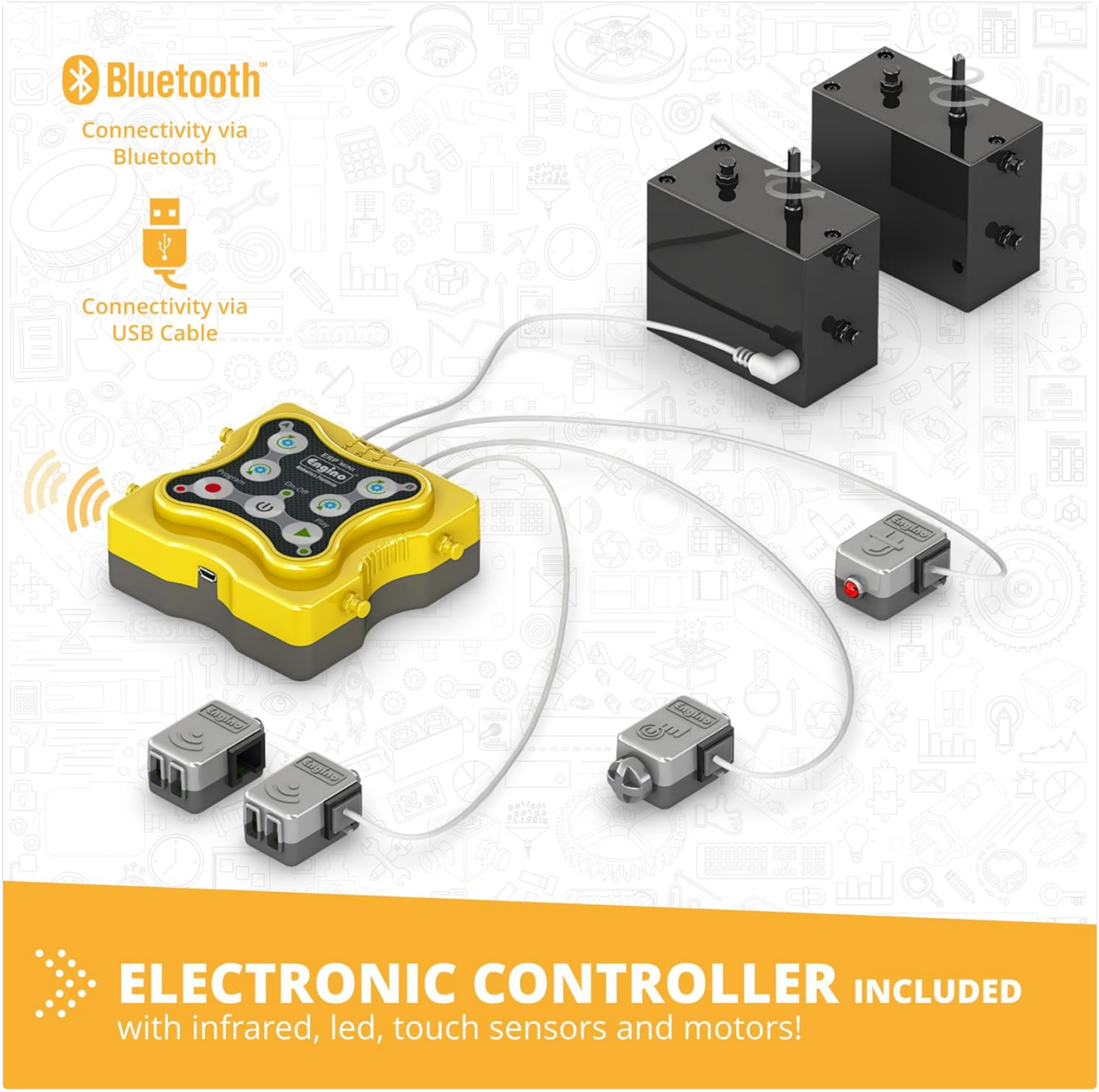
Setup

1. Powering the ERP MINI Controller

Locate the battery compartment on the ERP MINI Controller. Insert 3xAAA batteries (not included) according to the polarity indicators. Ensure the compartment cover is securely closed.

2. Connecting Components

The ERP MINI Controller features 4 input-output ports. Connect the DC motors, IR sensors, and touch sensor to these ports as required for your model. The LED can also be connected to an available port.



This image shows the ERP MINI Controller connected to various electronic components, including two DC motors, two IR sensors, and one touch sensor. The controller features Bluetooth and USB connectivity options.

3. Connectivity Options

The ERP MINI Controller supports connectivity via USB cable for direct connection to a computer and Bluetooth for wireless communication with compatible devices.

4. Accessing Building Instructions

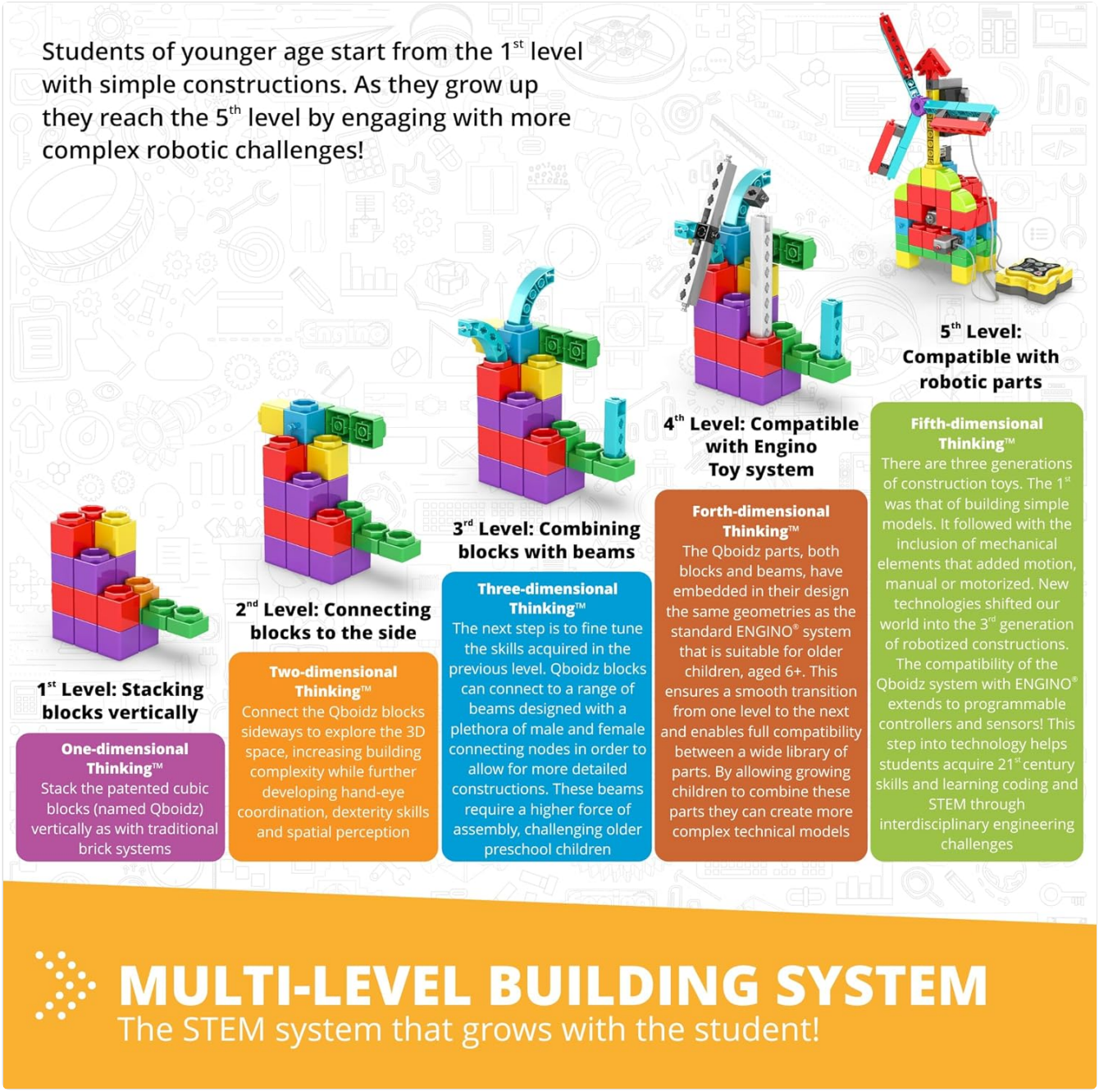
Detailed, interactive 3D building instructions are available through the Engino KidCAD application. Download the app on your smart device (compatible with Android and iOS) for step-by-step guidance on constructing various models.

This image displays a tablet screen showing the Engino KidCAD 3D Viewer application, which provides interactive, step-by-step building instructions. The app allows users to rotate, zoom, explode, and implode models for detailed viewing.

Operating

1. Building Models with the Multi-Level System

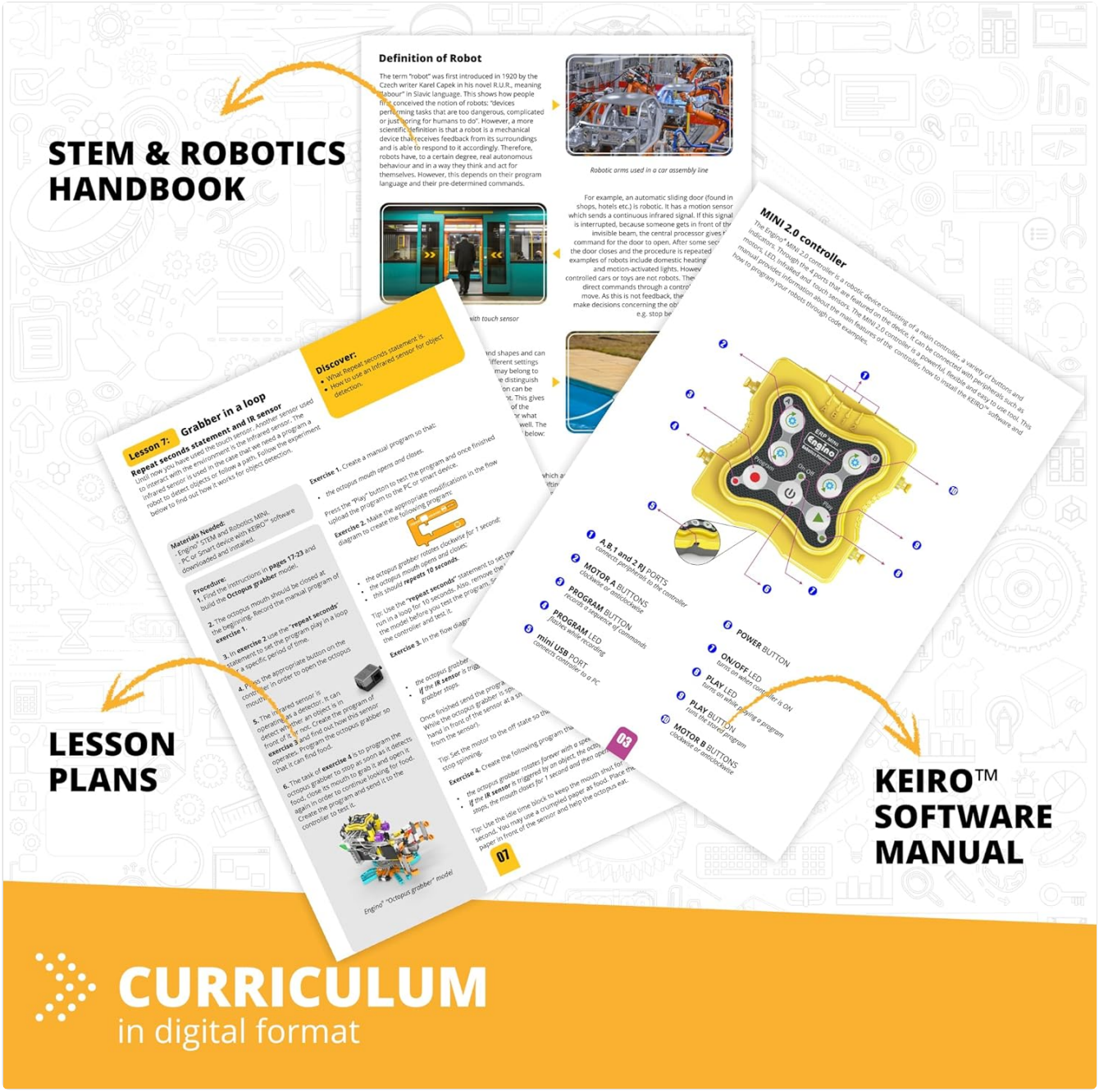
The Engino set utilizes a multi-level building system. Younger students can begin with simpler constructions using Qboidz parts, while more advanced users can engage with complex robotic challenges using classic Engino parts. The kit supports the creation of 40 experimental models.



This image explains the Engino multi-level building system, showing how constructions progress from simple block stacking (1st level) to complex robotic challenges (5th level) using Qboidz and classic Engino parts.

2. Understanding the ERP MINI Controller

The ERP MINI Controller features onboard membrane buttons for manual programming. These buttons allow for direct interaction and control of the connected motors and sensors. Refer to the KEIRO™ Software Manual for detailed button functions and programming instructions.



This image shows the STEM & Robotics Handbook, lesson plans, and the KEIRO Software Manual, along with a detailed diagram of the ERP MINI Controller's buttons and ports. These resources provide theoretical background, experimental activities, and programming guidance.

3. Programming with KEIRO™ Software

For advanced programming and complex functionalities, utilize the KEIRO™ Software. This software is compatible with Windows, Android, Apple, and Linux operating systems. It supports various programming methods including manual programming, flow diagrams, and a KEIRO Code Viewer.

This image depicts a tablet displaying the KEIRO™ Software interface, which allows users to program the robotic models using a visual block-based coding environment. The interface supports manual programming, flow diagrams, and code viewing.

4. Advanced Building Features

The set includes an advanced snap-fit system, extendable rods, and an extraction tool. These features facilitate quick assembly, disassembly, and the creation of various models with adjustable lengths, enhancing the building experience.

This image details the advanced snap-fit system, extendable rods, and an extraction tool. These features facilitate quick assembly, disassembly, and the creation of various models with adjustable lengths.

Maintenance

To ensure the longevity and proper functioning of your Engino STEM & Robotics Mini Set, follow these maintenance guidelines:

- **Cleaning:** Keep all plastic parts and electronic components clean and dry. Use a soft, dry cloth to wipe surfaces. Avoid using harsh chemicals or abrasive materials.
- **Storage:** Store all components in the provided plastic tub when not in use. This prevents loss of small parts and protects them from dust and damage.
- **Electronics Care:** Avoid exposing the ERP MINI Controller, sensors, and motors to moisture, direct sunlight, or extreme temperatures. Remove batteries from the controller if the set will not be used for an extended period to prevent leakage and corrosion.
- **Battery Check:** Periodically inspect the battery contacts in the controller for any signs of corrosion. Clean contacts with a cotton swab if necessary.

Troubleshooting

If you encounter issues with your Engino STEM & Robotics Mini Set, refer to the following troubleshooting tips:

- **Model not moving or responding:**
  - Ensure batteries are correctly inserted and fully charged.
  - Check all cable connections between the ERP MINI Controller, motors, and sensors for secure fit.
  - Verify that the program is correctly uploaded and running on the ERP MINI Controller.
- **Connectivity issues (Bluetooth/USB):**
  - Ensure the ERP MINI Controller is powered on.
  - For Bluetooth, confirm that the controller is discoverable and correctly paired with your device.
  - For USB, ensure the cable is securely connected to both the controller and your computer. If necessary, check for required drivers on the Engino website.
- **Parts not fitting or assembly difficulties:**
  - Refer to the digital instructions in the Engino KidCAD app for detailed 3D views and step-by-step assembly guidance.
  - Ensure correct orientation of parts as shown in the instructions.
  - Use the provided extraction tool for easy disassembly if parts are stuck.
- **Sensors not detecting:**
  - Check sensor connections to the controller.
  - Ensure sensors are clean and unobstructed.
  - Verify that the programming code correctly utilizes the sensor inputs.

Specifications

Feature	Detail
Product Dimensions	16.93 x 12.21 x 5.91 inches
Item Weight	6.4 pounds
Model Number	E20.1
Manufacturer Recommended Age	6 - 18 years
Controller	ERP MINI Controller (4 input-output ports)
Connectivity	USB, Bluetooth
Sensors	2 IR sensors, 1 Touch sensor
Actuators	2 DC motors, 1 Red LED
Power Source	3xAAA batteries (not included)

Feature	Detail
Plastic Parts	312 Engino - Qboidz parts
Connecting Points	1596

Warranty

For information regarding product warranty, please contact Engino customer support directly or refer to the official Engino website. It is recommended to retain your proof of purchase for any warranty claims.

Support

For further assistance, technical support, or to explore additional Engino products and educational resources, please visit the official Engino Store online:

Engino Store on Amazon