





SKU AKX00044 Barcode 7630049204003 [Show more](#) Weight 0.725 kg TARIC 847150

Create, collaborate, impact: teach students how to use IoT technologies and design thinking to solve real-world challenges.

Overview

Advanced high school and college students can now create their own connected devices - known as the Internet of Things - quickly and easily. They'll learn how to build Internet-connected objects with easy-access getting started activities and 10 sustainability projects, supported by technical and theoretical lessons. Each of these projects allows students to investigate and solve a real-world challenge linked to one of the UN's Sustainable Development Goals. Students learn design thinking methods that help them develop their own unique solutions to challenges such as urban farming, health monitoring, and water and waste conservation.

Empower your students with future technologies, design methodologies, and an in-depth understanding of real-world issues to build a sustainable future with the Arduino Explore IoT Kit Rev2.

Learning outcomes

The Arduino Explore IoT Kit Rev2 has been created to provide a comprehensive understanding of the Internet of Things, as well as to encourage students to think about solving global sustainability challenges, according to the UN's Sustainable Development Goals.

After looking into current academic and industrial standards, we have identified important concepts this kit should touch upon for students to learn how devices communicate and the tools used to facilitate communication, data management, analysis, and computational thinking by using real-world sensors to capture meaningful data from the environment and modify it by remotely controlling actuators such as LEDs, buzzers, displays, through the Cloud.

Tech specs

The kit includes:

- [Arduino MKR WiFi 1010](#)
- [Arduino MKR IoT Carrier Rev2](#) designed for this kit, includes:
 - Two 24V relays
 - SD card holder
 - Five Tactile buttons
 - Plug and play Grove connectors for different external sensors
 - Temperature sensor
 - Humidity sensor
 - Pressure sensor
 - Gas sensor (VOC)
 - Ambient light sensor
 - RGB color sensor

- Gesture sensor
- Accelerometer
- RGB 1.20" rounded display
- 18650 Li-Ion rechargeable battery holder
- Five RGB LEDs
- Buzzer
- Micro USB cable
- Moisture sensor
- PIR sensor
- Plug-and-play cables for the external sensors
- Plastic enclosure to attach and protect the hardware
- Access to the demo version of Arduino Cloud for Education, which includes a complete IoT getting started experience and three introductory activities and lessons.
- For a more comprehensive educational journey into the Internet of Things, access to 10 more step-by-step, hands-on projects, each linked to the UN's Sustainable Development Goals and covering the fundamentals of IoT, and to connect with Google Classroom, educators can subscribe to the Arduino Cloud for Education School Plan.
- Each of the 10 projects takes between 15-25 hours to complete, and can be completed over the course of a couple of weeks or a whole term or year.
- Each project contains five modules which can be completed in an order that makes sense for your classroom.
- To complete a project, students ideally need good programming skills and to have worked with sensor technologies.
- However, if your students are at more of a basic level, the kit also includes additional technical activities and lessons for beginners.

Get Inspired

BLOG



Automatically monitor and irrigate your raised garden bed with the Arduino Cloud

April 19, 2023

As a part of his new raised garden bed project, Shawn Murphy was looking for ways to improve his backyard even further with intelligent IoT systems. Apart from the existing 1800W solar panel array, he also wanted a device that could report current weather and soil conditions in real-time and even perform some watering tasks without the need for human intervention. Initially, Murphy had researched constructing a pump that could take water from a pair of rain storing barrels and deliver it to the garden

bed. However, this would have been costly to build and maintain, so he instead went with a gravity-fed setup. In this configuration, gravity would move water down-slope to a solenoid valve attached to the Arduino IoT Explorer Kit's 24V relay pin. Once wired together, he added a soil moisture sensor for measuring the water content of the soil, along with a 12V battery pack and solar charge controller for off-grid power. The resulting hardware was then loaded with a sketch that would continually read the moisture content of the soil, activate the solenoid valve if necessary, and even turn on a small fan if the enclosure were to get too hot. Best of all, the WiFi connectivity of the IoT Explorer Kit allowed Murphy to send the values remotely to an Arduino Cloud dashboard, complete with toggle switches for manually overriding the solenoid valve if necessary. For more information about this project, watch Murphy's videos below and read his write-up on Hackster.io.

[read more](#)

FAQs

What does the Explore IoT Kit Rev2 include?

The Explore IoT Kit Rev2 consists of four groups of components:

1. Content: A getting started guide, one real-world project, and foundational knowledge lessons & activities. (When you subscribe to the Arduino School Plan, you'll also get access to full content, including more activities and 10 real-world projects.)
2. Hardware: The Arduino MKR IoT Carrier Rev2, the Arduino MKR WiFi 1010, and additional sensors.
3. Software: The Arduino Web Editor, the Arduino IoT Cloud, and the Arduino IoT Cloud Remote app.
4. Management system for teachers: The Arduino Cloud ecosystem and subscription plans (free or paid, for the complete experience).

For a more complete learning experience, educators can subscribe to the Arduino Cloud for Education School plan. This plan provides a comprehensive educational journey into the Internet of Things.

The School plan includes unlimited features in the Arduino Cloud, such as unlimited projects and variables and a teacher view of all student projects. There's also Google Classroom™ integration, improving the teacher experience by making everything simpler, shareable, and collaborative.

Here's what you get with the School plan:

- Unlimited storage and compilation time for all your students' sketches
- Dashboards that visualize without any restrictions
- Easier troubleshooting and grading with Google Classroom™ integration
- Deeper student knowledge with exclusive guides on using the hardware and help with coding
- Boost students' creativity and innovation with more lessons and projects
- Stay organized with easy management and student enrolment

What is the Arduino Cloud School plan?

The School plan is a one-stop-shop for facilitating STEM projects in the classroom.

It gives you access to an enhanced classroom environment in the Arduino Cloud where you and your students can benefit from the full learning content, access to additional resources, shared spaces to work on shared projects, and further integration with Google Classroom™.

How does the Arduino Cloud School plan work?

The School plan works on a pay-per-member basis. As long as you have active slots, you can easily invite, change, or remove members when you need to. Admin members have access to the management plan section, and can easily modify and customize the plan or review invoices and billing information.

How do I activate the Arduino School plan subscription?

From the [Arduino Cloud](#), click on your Avatar (top right), then on My Plan, and purchase the plan that best suits you.

You can also go to the School plan website: <https://cloud.arduino.cc/plans/>

How are the Arduino Cloud and Explore IoT Kit Rev2 related?

Using the Explore IoT Kit Rev2 with the School plan allows you to unlock more features and access the full content. For example, you get access to 10 real-world projects and additional sensor activities to study sustainability issues using data analysis, and build solutions using advanced IoT systems.

How do my students access the full content that comes with the School plan?

Students get access to the full content by invitation from the teacher to join a “shared space”. Once you [purchase the School plan that best suits you](#), you can create a “shared space”. A space is an environment where all members of the group can benefit from the same plan and the features of that plan.

In a School Shared Space, members can access extra courses, use Arduino Cloud tools (including the Web Editor and IoT Cloud) with no limitations, and access Arduino useful resources and documentation.

As a teacher, you can either set up a space or join a space via email invitation. Once in, you will be able to explore your school’s shared space features.

Do I have to purchase the Explore IoT Kit Rev2 to access lessons and activities?

When you purchase the Explore IoT Kit Rev2, you get access to basic content consisting of teacher, onboarding and troubleshooting guides, one real-world sustainability project and two sensor activities. You do this by using the kit with the Arduino Cloud Free Plan.

When you subscribe to the School plan, you get access to the full content, which includes 10 real-world sustainability projects, 11 sensor activities, and foundational content.

Whether you use the free plan or subscribe to the School plan, you'll need the Explore IoT Kit Rev2 to complete the activities and projects

How do I access the basic content?

Go to the [Arduino Cloud website](#) and sign in to your Arduino account. If you have the free plan, you'll be able to see the basic content in the Courses section on the menu on the left. To access the full content, you'll need to [purchase the School plan](#).

Who can use the kit?

This kit is designed for high school and college students who are taking their first steps into the world of the Internet of Things. Students should already have some knowledge of programming, as basic concepts are not explained in the content of this kit. However, students don't need any prior knowledge of the IoT or how to use, for example, cloud services, APIs, and different sensors for data collection.

What are the minimum knowledge requirements for using the kit?

Students are expected to know basic programming. This kit only includes plug-and-play components and doesn't require students to build complex circuits. Sensor activities include step-by-step instructions for assembly and programming, however some of the basic programming concepts and code structures are not explained.

How many students can use the kit?

The Explore IoT Kit Rev2 is designed for students to work in groups of two or three, but it is also suitable for a single student. The kit includes all the components required to experiment with one project at a time. To get access to the tools with unlimited features and the full content, each student needs to have a seat in the teacher's School plan.

What languages does the online platform support?

At the moment, the Explore IoT Kit Rev2 is available in English. More languages will become available.

What topics does the Explore IoT Kit Rev2 cover?

The Arduino Explore IoT Kit Rev2 enhances students' understanding of real-world applied technology, and is an industry-standard IoT tool that will help prepare them for their future careers and challenges.

With the Explore IoT Kit Rev2 you can empower your students on two fronts:

- Understanding and using IoT and Cloud technologies
- Adopting technology as a tool to study and solve real-world challenges

The projects included in the kit focus on out of the 17 real-world [UN SDGs goals](#).

What are the minimum requirements for using the kit in the classroom?

To go through the activities and program the board, each group needs a computer and an internet connection. Students also need to have a WiFi (2.4GHz) connection with its credentials (SSID and password). Read more about how to configure your network for the Arduino IoT Cloud [here](#).

The kit is compatible with Windows/iOS and Chromebooks.

Can I see the online content of the Explore IoT Kit Rev2, if I have the Explore IoT Kit?

You can see the full content for Rev2 if you subscribe to the Arduino School plan. The Explore IoT Kit Rev1 is compatible 90% with the Explore IoT Kit Rev2 content.

There is only one project that can't be completed with the hardware of the Rev1, as this kit does not include the BME688 sensor.