

Seeed Education

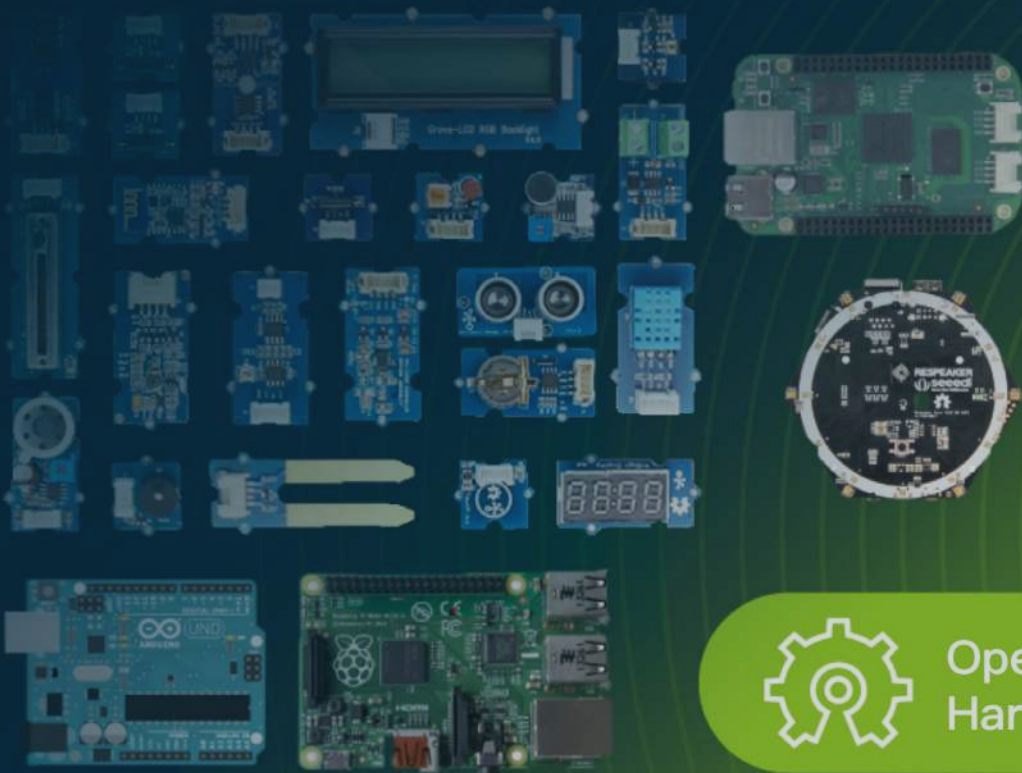
Catalog 2021





www.seedstudio.com

www.tinkergen.com



Open
Hardware

- Since 2008, developed **2,095+** kinds of modules
- In the year of 2020, sold **2,582,155** units
- Users in 7 continents **180+** countries
- Directly Served **350,000+** users
- Worldwide **200+** regional distributors



the hardware s



Ac
Ma

- Founded in 2008
- Headquarter in **Shenzhen**
- Branches: **US, Japan, Germany**
- **280 employees**



Seed studio
service platform

Agile
manufacture

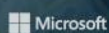
Total customers
1,000,000+

Complete prototype design for
150,000+ projects



AI/IoT
enabled
Devices

- Commercialized research projects
180+
- Strategic Partners
200+
in various industry market



Contents

01 Seed EDU Introduction.....	2
02 What is Grove?	4
Sensors	6
Actuators	10
Kit	12
Grove – Kit Customization Service	12
03 Arduino, Compatible Boards, Shields and Kits.....	14
Arduino Compatible Boards	14
Seeeduino V4.2.....	15
Seeeduino XIAO	15
Seeeduino Lotus.....	16
Seeeduino Nano	17
Seeeduino LoRaWAN.....	17
Shields.....	18
Base Shield V2.....	18
Seeeduino XIAO Expansion board	18
W5500 Ethernet Shield	19
Relay Shield.....	20
Solar Charger Shield.....	20
CAN-BUS Shield V2	21
Motor Shield.....	21
Kit	22
Grove Beginner Kit for Arduino & Course.....	22
Seeeduino XIAO Starter Kit for Arduino & Course	25
04 Micro:bit Collection	28
Add-Ons and Accessories.....	30
BitWearable Kit.....	30

BitPlayer & BitCar	32
BitCar & BitPlayer	34
BitMaker	35
Kit	36
BitStarter Kit and BitGadget Kit.....	36
Grove Inventor Kit for micro:bit	40
05 Raspberry Pi Collection.....	42
Raspberry Pi Shields and Hats.....	42
Grove Base Kit for Raspberry Pi	42
Grove Starter Kit for Raspberry Pi Pico	49
06 Robotics	54
M.A.R.K & Course	54
Bittle & Course	58
Crazyflie 2.1	61
GameGo & Course	62
07 Wio Terminal.....	66
Wio Terminal & TinyML Course.....	66
08 Abundant resources for teaching, learning and making	71
Wiki	70
Projects.....	71
Blog	72
09 Course/Project Platform and Software.....	74
Make2Learn	74
Codecraft.....	75

01

Seed EDU Introduction

Our Mission

Become the most reliable hardware platform and empower everyone to achieve their digital transformation goals



Education Ecosystem

Why choose our products and curriculum for education?

- **Highly user-friendly hardware**

Hardware that simplifies the connection, experimentation and creation by integrating fun in teaching & learning to improve classroom efficiency.

Curriculum support

- Curriculum that applies interdisciplinary pedagogy for STEAM, latest industry trends and international curriculum standards.

Technical Support

- Our dedicated support team is always available to assist you with training, troubleshooting, purchasing or any product-related questions.

02 What is Grove?



What is Grove?

Grove is an open source, modular, easy-to-use toolset optimized for simplicity and rapid prototyping.

Connecting is made much easier and faster with our plug-and-play Grove modules and this in turn makes breadboarding a thing of the past!

300+Grove modules to simplify your developing process and enhance your creativity.

Sensors



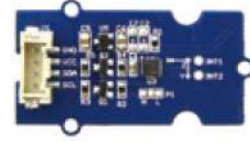
3-Axis Analog Accelerometer



3-Axis Digital Accelerometer($\pm 1.5g$)



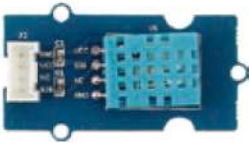
6-Axis Accelerometer & Gyroscope



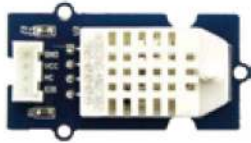
3-Axis Digital Accelerometer($\pm 400g$)



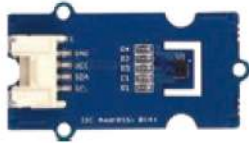
6-Axis Accelerometer & Compass v2.0



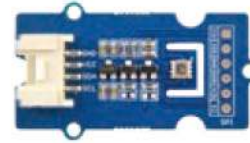
Temperature & Humidity Sensor (DHT11)



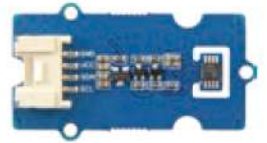
Temperature & Humidity Sensor Pro(AM2302)



Temperature & Humidity Sensor (SHT31)



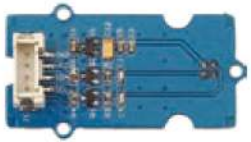
Temperature, Humidity, Pressure and Gas Sensor (BME680)



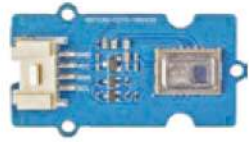
I2C High Accuracy Temperature Sensor (MCP9808)



High Temperature Sensor



Digital Infrared Temperature Sensor



Infrared Temperature Sensor Array (AMG8833)



Infrared Temperature Sensor



Barometer (High-Accuracy)



Gas Sensor(MQ5)



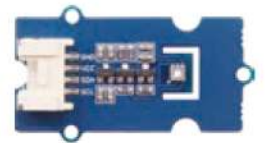
Gas Sensor(MQ9)



Oxygen Sensor (ME2-O2 Φ 20)



Multichannel Gas Sensor



voc and eCO₂ Gas Sensor(SGP30)



HCHO Sensor



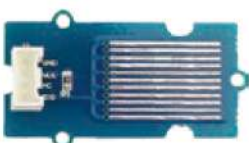
Alcohol Sensor



Air quality Sensor v1.3



Laser PM2.5 Sensor (HM3301)



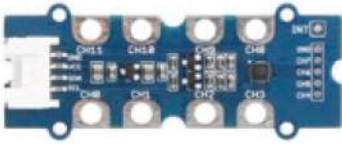
Water Sensor



Capacitive Moisture Sensor (Corrosion Resistant)



Moisture Sensor



12 Key Capacitive I2C Touch Sensor V2 (MPR121)



Capacitive Touch Slider Sensor (CY8C4014LQI)



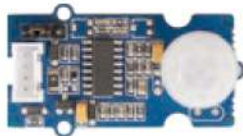
Touch Sensor



Round Force Sensor (FSR402)



Ultrasonic Ranger



PIR Motion Sensor



Mini PIR Motion Sensor



Collision Sensor



Digital Distance Interrupter 0.5 to 5cm (GP2Y0D805Z0F)



Digital Light Sensor



Luminance Sensor



UV Sensor (VEML6070)



Sunlight Sensor



I2C Color Sensor V2



Piezo Vibration Sensor



Vibration Sensor (SW-420)



Loudness Sensor



GSR Sensor



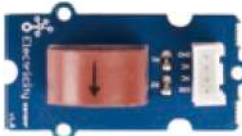
Finger-clip Heart Rate Sensor



RTC



High Precision RTC



Electricity Sensor



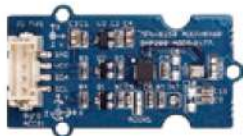
Optical Rotary Encoder (TCUT1600X01)



Speech Recognizer



IMU 9DOF v2.0



IMU 10DOF v2.0



2-Channel Inductive Sensor (LDC1612)

More

LEDs



Blue LED



Multi Color Flash LED (5mm)



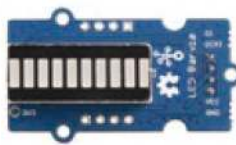
LED String Light



EL Driver



Chainable RGB LED V2.0



LED Bar v2.0



WS2813 RGB LED Strip
Waterproof – 60 LED/m – 1m

Inputs



Button (P)



Mech Keycap



Tilt Switch



Rotary Angle Sensor



Switch (P)

Wireless



UART WiFi (W600)



UART WiFi V2 (ESP8285)



FM Receiver



I2C FM Receiver



BLE



BLE (dual model)



Serial Bluetooth v3.0



GPS

www.seeedstudio.com



RGB LED Matrix w/Driver



Red LED Matrix w/Driver

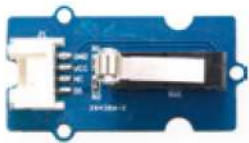


RGB LED Ring (20 - WS2813 Mini)

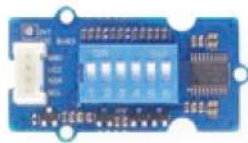
...
more



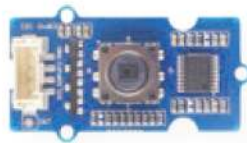
RGB LED Stick (10 - WS2813 Mini)



Micro Switch



6-Position DIP Switch



5-Way Switch

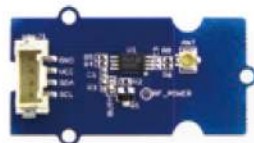


Yellow LED Button

...
More



Serial RF Pro



NFC TAG



Infrared Emitter



Infrared Receiver



LoRa Radio 868MHz



LoRa Radio 433MHz



315MHz Simple RF Link Kit



...
more

Displays



4-Digit Display



OLED Display 1.12" V2



Triple Color E-Ink Display 1.54"

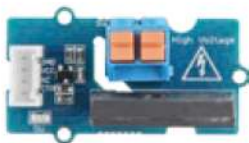


Triple Color E-Ink Display 2.13"

Actuators



Relay



Solid State Relay V2



Electromagnet



Speaker



4-Channel SPDT Relay



4-Channel Solid State Relay

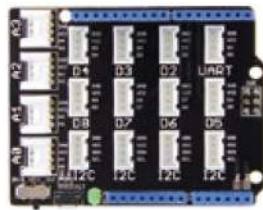


2-Coil Latching Relay



SPDT Relay(30A)

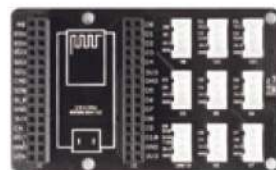
Breakouts



Base Shield V2



Grove Shield for micro:bit v2.0



Grove Base Shield for NodeMCU



Grove Base Hat for Raspberry Pi Zero



LCD RGB Backlight

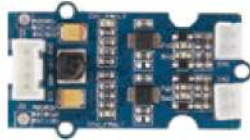


16 x 2 LCD (White on Blue)

• • •
more



Water Atomization v1.0



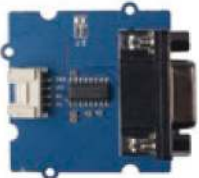
I2C Mini Motor Driver



MP3 v2.0



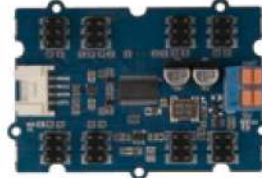
Recorder v3.0



RS232

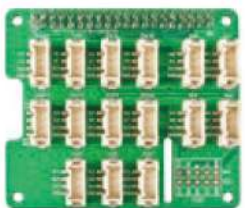


I2C Motor Driver

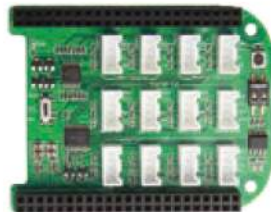


16-Channel PWM Driver (PCA9685)

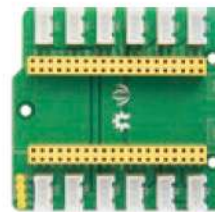
• • •
more



Grove Base Hat for Raspberry Pi



Grove Base Cape for Beaglebone v2.0



Grove Breakout for LinkIt Smart 7688 Duo

• • •
more

Kits



Grove Starter Kit for Arduino



Grove Beginner Kit for Arduino



Grove Starter Kit for SeeedStudio BeagleBone Green



Grove Speech Recognizer Kit for Arduino

Grove – Kit Customization Service

Customize your own kit at one stop

Celebrate the diversity in teaching and learning!

To meet the need of different teaching methods & strategies around the world, Seeed EDU offers customizable kitting service.

The Seeed Kitting Service is an electronic component kitting and assembly service which enables you to create your own personalized kit.

It comes complete with electronic packaging services to provide your kit with personalized packing and printing material.

www.seeedstudio.com



Grove Starter Kit for LinkIt 7688 Duo



Grove Base Kit for Raspberry Pi



Grove Starter Kit for Wio LTE



Grove Starter Kit for IoT based on Raspberry Pi

• • •
more

<https://www.seeedstudio.com/kitting-service.html>



03 Arduino, Compatible B

Grow the Difference

Part of Seeed Studio's company culture is to "grow the difference" by popularizing open source culture and our products. Ever since the company was founded, we have been continuously creating our own open platform to differentiate from the existing one.

Arduino

Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs – light on a sensor, a finger on a button, or a Twitter message – and turn it into an output – activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. It is like the brain of a project.

Because it is so flexible and open source, Arduino is the best solution if you are interested in creating interactive objects or environments no matter you are artists, designers or hobbyists

Arduino Compatible Boards

Here at Seeed, not only can you find Arduino boards, such as Arduino Nano and Arduino Mega, but also many boards that derived from Arduino such as Seeeduino, a joint effort by Seeed Studio and Arduino. Seeeduino is compatible with Arduino whilst with more powerful functions and lower price.

boards, Shields and Kits

Seeeduino V4.2

SKU 102010026



Seeeduino V4.2 is an Arduino-compatible board based on ATmega328P MCU.

Seeeduino V4.2 in a recognizable red design, is much more stable and easy-to-use.

Seeeduino V4.2 is based on the Arduino UNO bootloader, with an ATMEGA16U2 as a UART-to-USB converter, which means that the board can basically work like an FTDI chip. You can program the board via a micro-USB cable.

Seeeduino XIAO

SKU 102010328



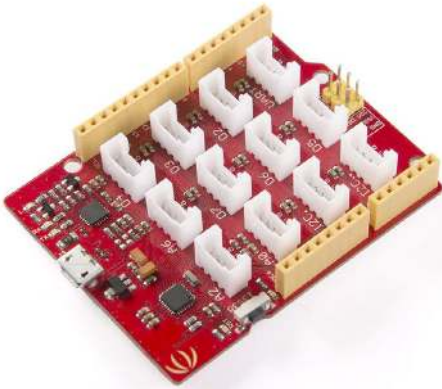
Tiny but mighty Seeeduino XIAO

Even being the smallest member of the Seeeduino family, Seeeduino XIAO still carries the powerful CPU-ARM® Cortex®-M0+(SAMD21G18) which is a low-power Arduino microcontroller.

This little board has good performance in processing and requires less power consumption. It is designed in a tiny size to be used for Arduino wearable devices and small projects.

Seeeduino Lotus

SKU 102010168

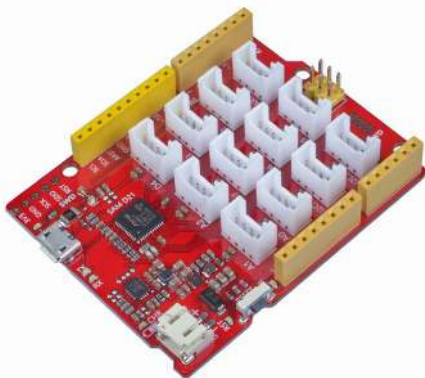


Seeeduino Lotus is an ATMEGA328 Microcontroller development board, a combination of Seeeduino and Base Shield.

Seeeduino Lotus is an ATMEGA328 Microcontroller development board. It is a combination of Seeeduino and Base Shield. Seeeduino Lotus v1.0 uses an Atmel ATMEGA328P–MU and CH340. ATMEGA328P–MU is a high performance, low power AVR 8–Bit Microcontroller. CH340 is a USB bus converter chip that can realize a USB to serial interface. Seeeduino Lotus v1.1 replace CH340 with CP2102N to enable the compatibility with MAC, there is nothing other change compared to Seeeduino Lotus v1.0. Seeeduino Lotus has 14 digital input/outputs (6 of which can output PWM) and 7 analog input/outputs, a micro USB connection, an ICSP header, 12 Grove connections, a reset button.

Seeeduino Lotus Cortex–M0+

SKU 102010228



Seeeduino Lotus Cortex–M0+ is an ATMEGA SAM D21 Microcontroller development board. The Atmel® | SMART™ SAM D21 is a series of low–power microcontrollers using the 32–bit ARM® Cortex®–M0+ processor with 256KB Flash and 32KB of SRAM. you can consider the Seeeduino Lotus Cortex–M0+ as a combination of Seeeduino and Base Shield. Seeeduino Lotus Cortex–M0+ has 14 digital input/outputs (10 of which support PWM) and 6 analog input/outputs, 3 Serial Communication Interface, a micro USB connector, a JST2.0 Li–Po connector, an ICSP header, 12 Grove connectors, a reset button.

Seeeduino Nano

SKU 102010268



The Seeeduino Nano is a compact board similar to the Seeeduino V4.2/Arduino UNO, and it is fully compatible with Arduino Nano on pinout and sizes. Compare to Arduino Nano, Seeeduino Nano use Type-C instead of Mini-USB, which is symmetrical and reversible.

Seeeduino LoRaWAN

SKU 102010128



Seeeduino LoRaWAN is an Arduino development board with LoRaWAN protocol embedded, through which you can get started quickly to experience LoRa's advantage in the field of IoT.

Based on the communication module RHF76-052AM, Seeeduino LoRaWAN is compatible with LoRaWAN Class A/C and supports a variety of communication frequencies.

The 4 onboard standard Grove connectors allow Seeeduino LoRaWAN to connect with hundreds of Grove sensors and actuators from

Seeedstudio conveniently. In addition, the board has embedded an integrated lithium battery management chip that allows the board to be charged by USB interface. In low consumption mode, a full charged lithium battery can power the board for several months.

If you want to build an IoT application quickly, Seeeduino LoRaWAN is the best choice.

Shields

Arduino Shields

Arduino Shields are boards that can be directly put on top of the Arduino boards to extend capabilities to different application needs.

You can find a wide range of Arduino shields on <https://www.seeedstudio.com/category/Shields-c-15.html>.

Based on the type of the motherboard, there are Arduino Uno shield, Arduino mega shield, Arduino MKR shield, and Arduino nano shield.

Based on function, it is divided into Arduino communication shield, Arduino Display shield, and Arduino Motor shield.

Base Shield V2

SKU 103030000



Base Shield provides a simple way to connect with Arduino boards and help you get rid of breadboard and jumper wires. With the 16 on-board Grove Connectors, you can easily connect with over 300 Grove modules! The pinout of Base Shield V2 is the same as Arduino Uno R3.

Seeeduino XIAO Expansion board

SKU 103030356



A powerful functional expansion board for Seeeduino XIAO of only half Raspberry Pi 4 size. It enables build prototype and project in easy and quick way. With its rich peripherals including OLED, RTC, expandable memory, passive buzzer, RESET/User button, 5V servo connector, multiple data interfaces... you could explore infinite possibilities of Seeeduino XIAO. Circuit python is also well supported by this board.

Grove Shield for Seeeduino XIAO

SKU 103020312



Grove Shield for Seeeduino XIAO is a plug-and-play Grove extension board for Seeeduino XIAO. With the on-board battery management chip and battery bonding pad, you could easily power your Seeeduino XIAO with lithium battery and recharge it. 8 Grove connectors onboard includes two Grove I2C and one UART. It acts as a bridge for Seeeduino XIAO and Seeed's Grove system. Flash SPI bonding pad allows you add Flash to Seeeduino XIAO to expand its memory space, providing Seeeduino XIAO with more possibilities.

W5500 Ethernet Shield

SKU 103030021

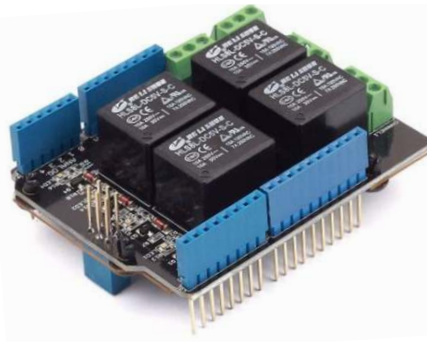


The W5500 Ethernet Shield v1.0 can be used to provide your projects with internet connectivity.

W5500 enables users to have the Internet connectivity in their applications just by using the single chip in which TCP/IP stack, 10/100 Ethernet MAC and PHY embedded. The shield also have two Grove connectors and a microSD card socket to support projects which require storing large amounts of data from Grove sensor. The RJ45 port (Where the Ethernet cable is connected to) is low enough to allow you to stack more shields on top of this one if needed.

Relay Shield

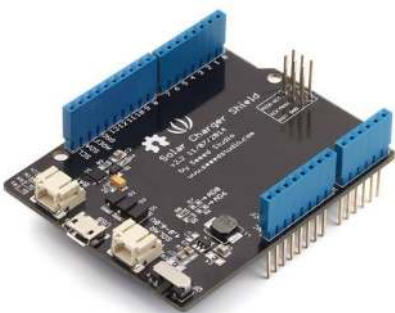
SKU 103030009



The Relay Shield provides four high-quality relay that can control high current loads to Arduino / Seeeduno boards. The onboard NO (Normally Open) / NC (Normally Closed) interface could be a nice solution for controlling devices that could not be directly controlled by Arduino's Digital I/Os.

Solar Charger Shield

SKU 106990020



The solar charger is a stackable shield to Arduino compatible platforms, enables adaptive battery power and act as energy harvester for in-field charging.

You may use various batteries that has the voltage of 3.0V–4.2V to shift up for 5V output, or put on Li-ion battery and solar panel to form an autonomous sensor unit. The maximum current provided by the board can get up to 600mA. An usb connector is also useful to charge the battery.

CAN-BUS Shield V2

SKU 103030215



CAN-BUS Shield V2 adopts MCP2515 and MCP2551 for controller and transceiver, it is compatible with Arduino which means it can switch an Arduino board like Arduino Uno to start your CAN-BUS project.

Motor Shield

SKU 105030001



The Motor Shield is a driver module for motors that allows you to use Arduino to control the working speed and direction of the motor. Based on the Dual Full-Bridge Drive Chip L298, it is able to drive two DC motors or a step motor. The Motor Shield can either be powered directly by Arduino or by an external 5V~15V power supply via the DC jack. This module can be used for the development of microrobots and intelligent vehicles, etc.

Grove Beginner Kit for Arduino & Course

Grove Beginner Kit for Arduino

SKU 110061162

All-in-one Arduino Compatible Board with 10 Sensors and 12 Projects

- Arduino UNO compatible board(ATmega328p based Seeeduno Lotus) + 10 most commonly used Arduino modules
- All modules are pre-wired, no breadboard and jumper cables required
- 74 pages PDF wiki + 12 step by step project tutorials + 1 book +1 course
- Super friendly to beginner and STEAM education
- Compatible with over 300 Grove modules

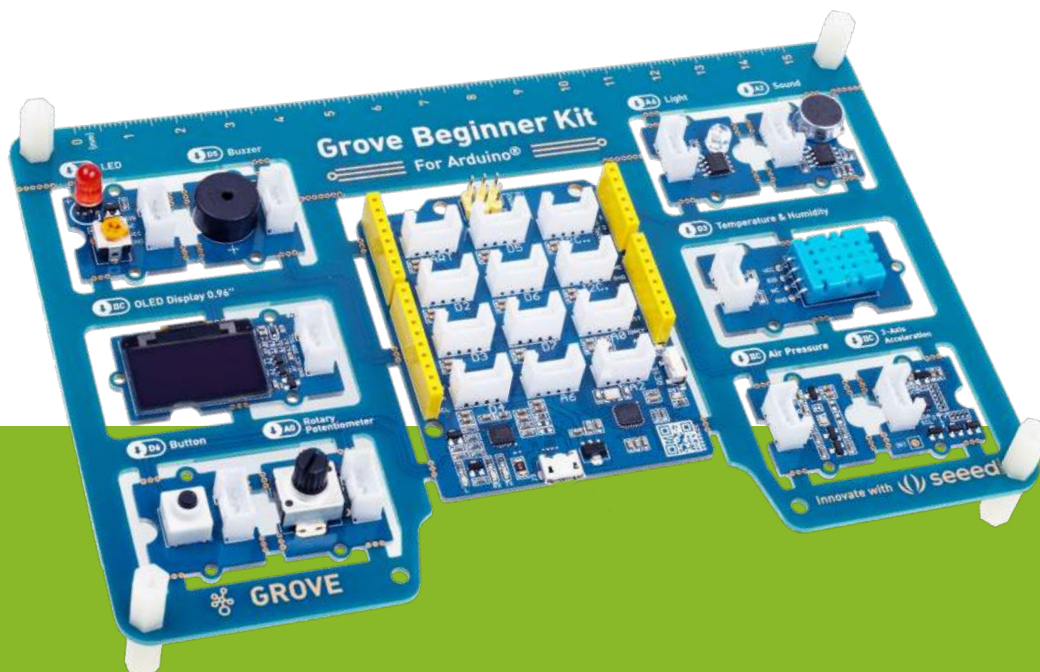
Part List

Included in Kit:

- Grove Beginner Kit For Arduino Board x 1
- Micro USB Cable x 1
- Grove Cables x 6
- Grove – Button x 1
- Grove – Rotary Potentiometer x 1
- Grove – Light x 1
- Grove – Sound x 1
- Grove – Temperature & Humidity Sensor x 1
- Grove – Air Pressure Sensor x 1
- Grove – 3-Axis Accelerator x 1
- Seeeduno Lotus x 1

Included onboard:

- Grove – LED x 1
- Grove – Buzzer x 1
- Grove – OLED Display 0.96" x 1



Grove Beginner Kit for Arduino Education Add-on Pack

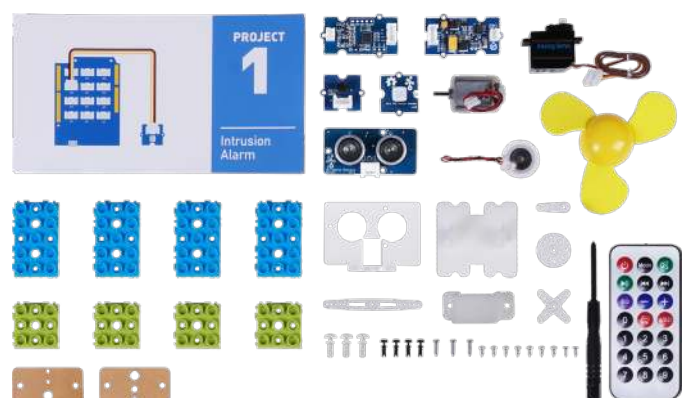
SKU 110020328

Taking Arduino beginners to the next level of learning!

What to do if you have learned all the lessons of the Grove Beginner Kit for Arduino – an All-in-one Arduino Compatible Board and you are not satisfied? The Education Add-on pack kit fully compatible with the Grove beginner kit.

Part List

- Grove – Water Atomization x1
- Grove – Mini Fan x1
- Grove – Servo x1
- Grove – Ultrasonic Distance Sensor x1
- Grove – Infrared Receiver x1
- Grove – Mini PIR Motion Sensor x1
- Grove – Green Wrapper 1*1(4 PCS pack) x1
- Grove – Blue Wrapper 1*2(4 PCS pack) x1
- Grove Cable x5
- Infrared Remote Control Key x1
- Ultrasonic Sensor Bracket Set x1
- Motor Bracket Set x1
- Servo Base x1





16 lessons

Grove Beginner Kit For Arduino – Codecraft Graphical Programming Course

Contents

Preface

Grove Beginner Kit Course

- Lesson 01 Blink
- Lesson 02 The Lights Go Down
- Lesson 03 Enter the Loop
- Lesson 04 Under One Condition
- Lesson 05 The Potentiometer Keeps on Turning
- Lesson 06 Morse Code
- Lesson 07 Motion Picture
- Lesson 08 Direct Access
- Lesson 09 See the Sound
- Lesson 10 Speed of Light
- Lesson 11 Gaining Altitude
- Lesson 12 Rain and Shine
- Lesson 13 What Goes Around



Additional Projects With Grove Beginner Kit Expansion Pack

- Lesson 14 Humidity Control
- Lesson 15 Turning Fan
- Lesson 16 Burglar Alarm
- Afterword

Seeeduino XIAO Starter Kit for Arduino & Course

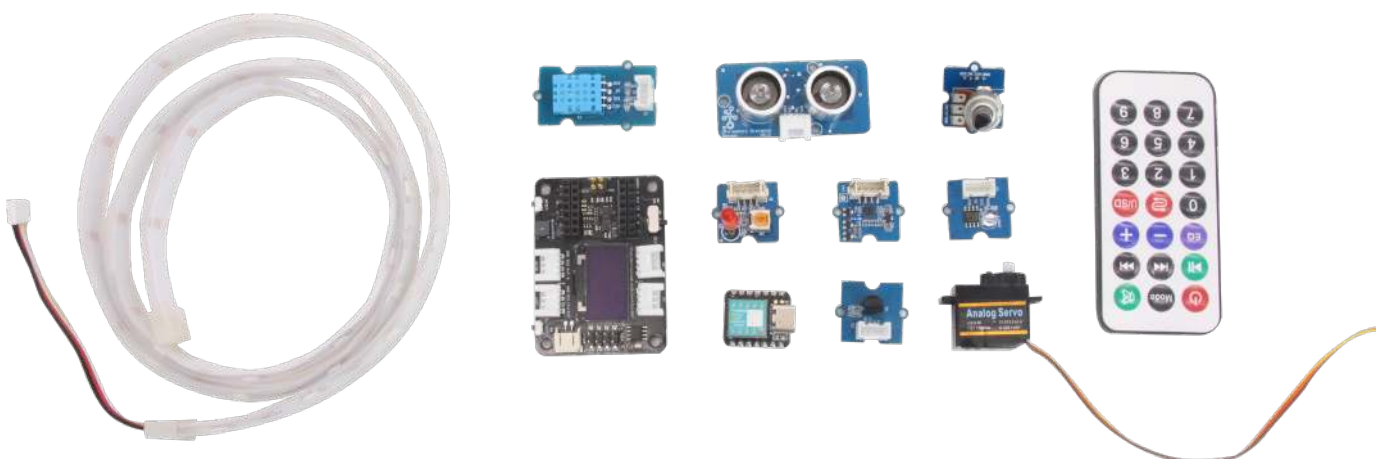
Seeeduino XIAO Starter Kit for Arduino

This is a starter Kit for Arduino Learning.

It's based on Seeeduino XIAO, along with a shield and several sensors/actuators. With this kit, you can get started with Arduino programming easily. And then you can make your wearable project with everything you just learned.

Part List

- Seeeduino XIAO ×1
- Seeeduino XIAO expansion board ×1
- Grove – LED Pack ×1
- Grove – Light Sensor ×1
- Grove – Servo ×1
- Grove – Temperature & Humidity Sensor ×1
- Grove – Rotary Angle Sensor ×1
- Grove – RGB LED Strip ×1
- Grove – IR (Infrared) Receiver ×1
- Grove – Ultrasonic Distance Sensor ×1
- Grove – 3–Axis Digital Accelerometer ×1
- Cables ×6





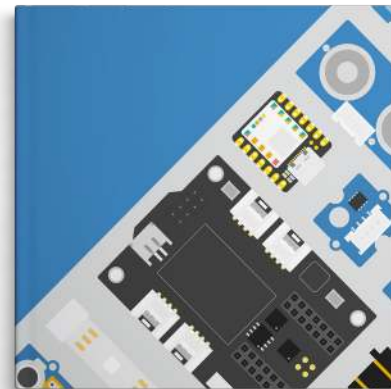
16 lessons

Seeedduino XIAO Starter Kit for Arduino Course

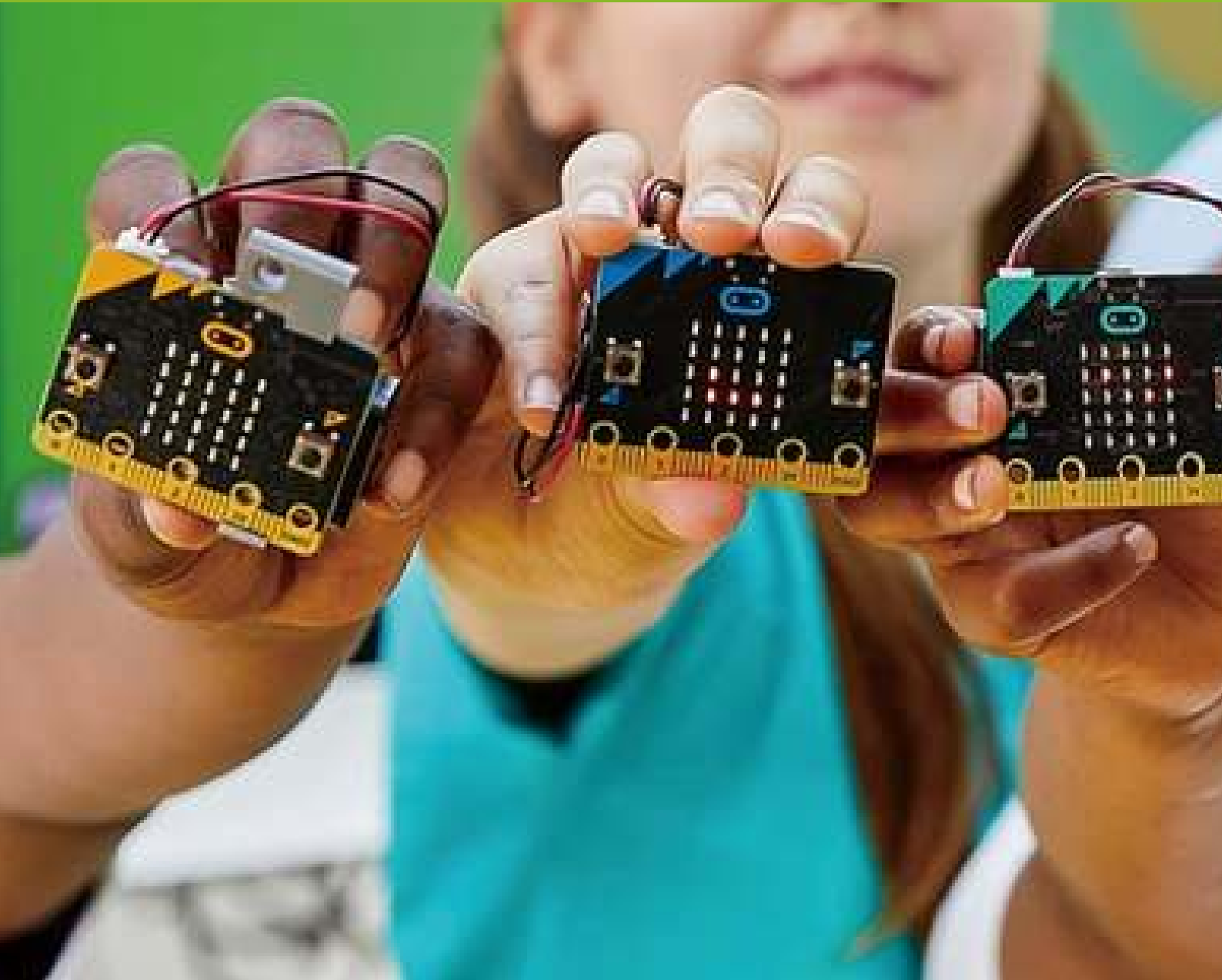
This course will take you step by step to learn how to use Seeedduino XIAO to learn Arduino from scratch, from simple lighting of LED lights to building complex Arduino wearable and miniaturized projects. In addition, you will learn how to quickly create a usable electronic product prototype from the course. This course does not require Arduino programming or electronics knowledge. The course will take you step by step to understand and learn these necessary knowledge, and quickly practice in each project.

Contents

- Lesson 01 The First Arduino Program: Blink
- Lesson 02 Button Control LED Light
- Lesson 03 Morse Code Transmitter
- Lesson 04 The Use of Serial Monitor
- Lesson 05 The Magical Effect of Rotary Potentiometer
- Lesson 06 OLED Displays Hello World!
- Lesson 07 Getting Started with Product Prototyping
- Lesson 08 Intelligent Temperature and Humidity Meter
- Lesson 09 Surprise Gift Box
- Lesson 10 Rhythmic Dance
- Lesson 11 Smart Remote Control Door
- Lesson 12 Smart Watch
- Lesson 13 Air Piano
- Lesson 14 Challenge Renovation Project
- Lesson 15 Self–Study Project Planning
- Lesson 16 Self–Research Project Sharing and Display

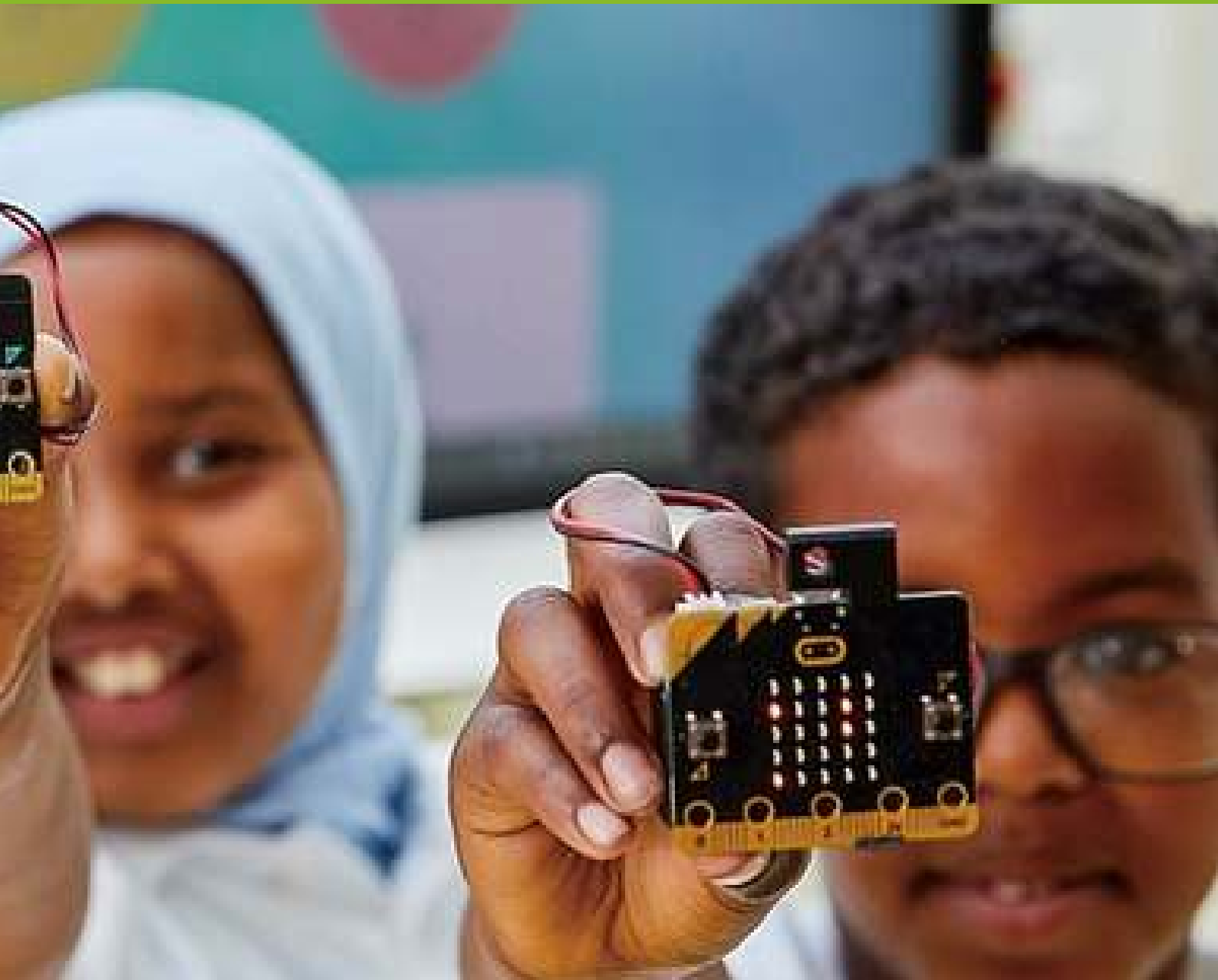


04 Micro:bit Collection



What is micro:bit?

The BBC micro:bit is a handheld, programmable micro-computer that can be used for all sorts of cool creations, from robots to musical instruments – the possibilities are endless.



We provide a wide range of BBC micro:bit products, to spark kids' imaginations and allow them to further develop their curious minds.

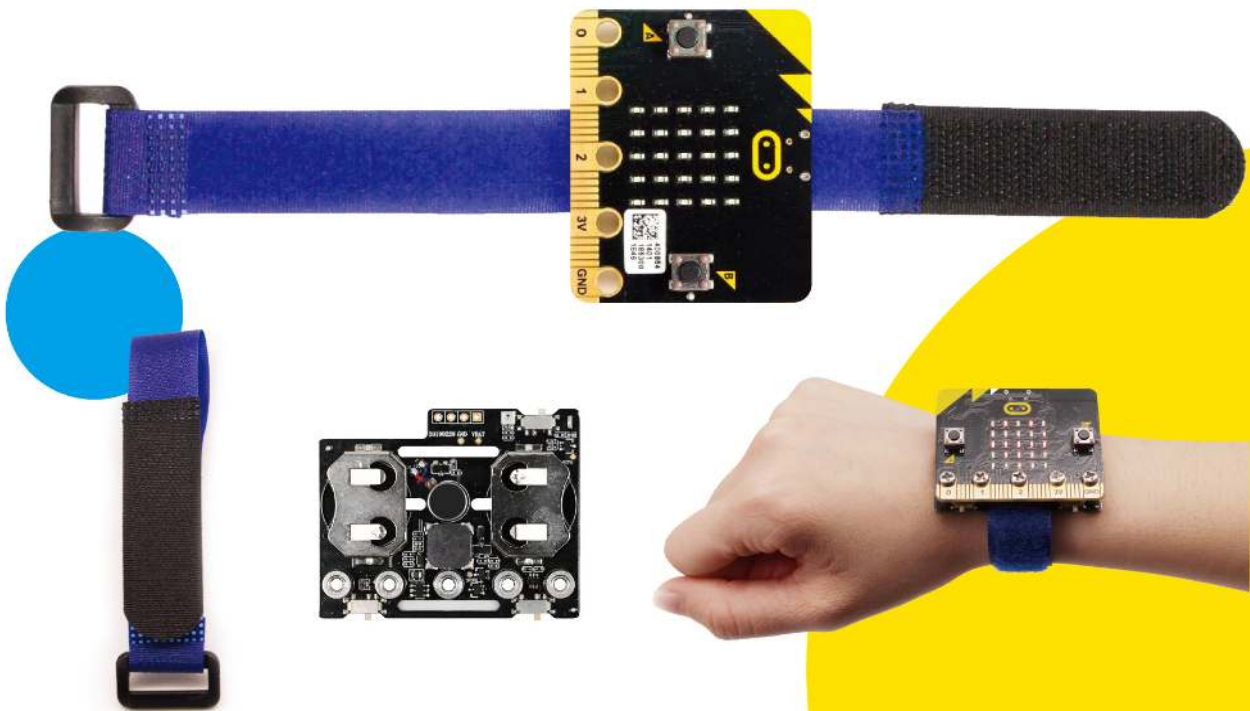
BitWearable Kit

SKU 114991969

BitWearable kit

This kit includes a 22cm long, 20mm wide watch strap and a BitWear. You can easily turn your micro:bit into a real watch! How cool is that!

The strap is easy to use; simply slide one end of it through the buckle of BitWear, connect the BitWear to your micro:bit with screws, then strap your 'BitWatch' on your wrist and you're ready to go. Program your micro:bit using Microsoft Makecode to make it display the time or custom images.





6 lessons

Micro:bit Associated Course Materials – BitWearable kit

This coursework is developed based on students' cognitive development and learning ability. It builds scenes taken from real life which stimulate students to look deep at a problem. With the combined use of micro:bit, BitWear and MakeCode, students will be able to create realistic solutions for those real-world problems.

Contents

- Lesson 01 Who Are We?
- Lesson 02 See! It Tells My Mood
- Lesson 03 Always Be Awake in Class
- Lesson 04 Human or Ape?
- Lesson 05 Exercise Brings You Health
- Lesson 06 BitWear Fashion Show

<https://make2learn.tinkergen.com/course/?sku=604190001>



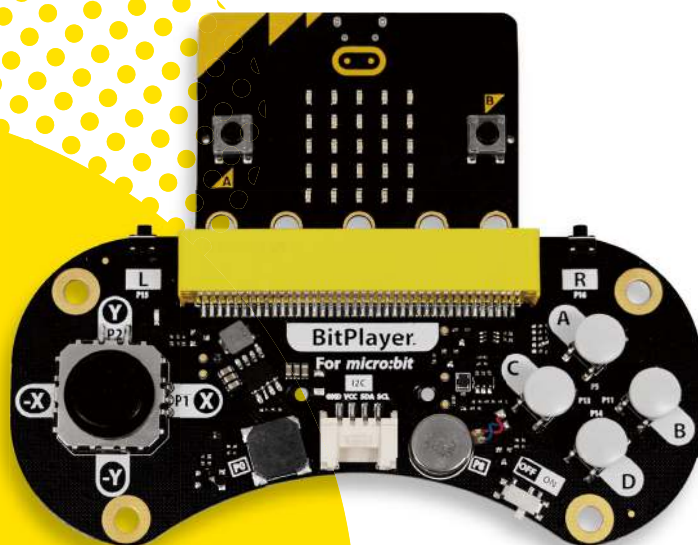
BitPlayer & BitCar

Bit Player SKU 114991857

BitPlayer plus micro:bit; make a cool wireless remote controller and a game console all by yourself.

To provide a comfortable gaming experience, the product uses a 2-axis joystick that just feels like any joystick on any popular handheld gaming device. There are 6 programmable push-buttons: top left, top right, and A,B,C,D buttons. With the built-in vibration motor and buzzer, you get quite an immersive and interactive gaming experience.

Some people may feel that the 5x5 LED matrix is not enough for making games, so we have the I2C Grove port on board for Grove peripherals, like the OLED Display.

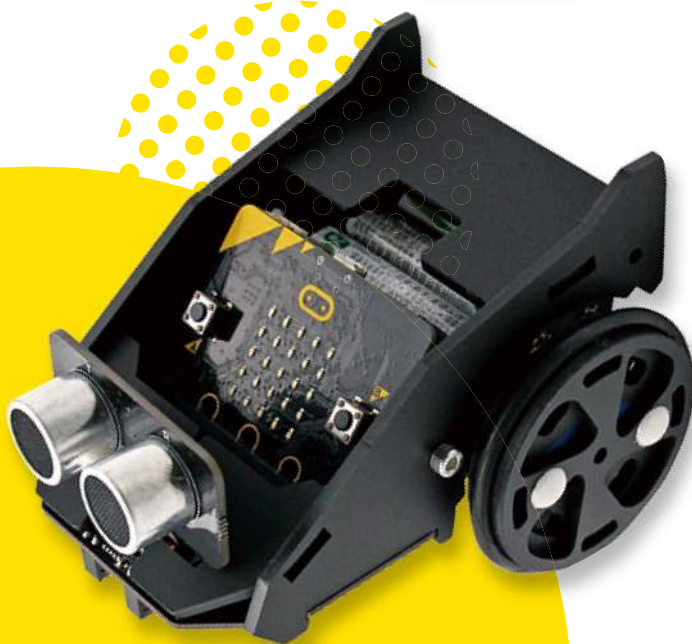


BitCar SKU 114991884

BitCar is a micro:bit based do-it-yourself robot designed for STEM education. It's easy to assemble, easy to code and fun to play with.

The car uses two high quality metal-gear-motors to drive the wheels, which have a stronger force and longer lifespan than normal plastic-gear-motors. The car board integrates a buzzer for music or audio signals, 2 line-follow-sensors for tracking lines, and 4 addressable LEDs on the bottom that can be used as indicators, highlights or simply for cool decorations. There are also Grove connectors for add-ons like the ultrasonic sensor, AI camera, recognizer or screen(s).

All features of BitCar can be easily controlled with Microsoft MakeCode editor.



**14 lessons**

A Guide to RC Car Project for micro:bit – BitCar & BitPlayer

This coursework does not require students to have prior mathematical or computational knowledge; rather, it helps them develop their hardware knowledge and programming skills, empowering them to learn systematically from the start. With the competitive and gamified learning, students' creativity and hands-on skills are nurtured.

Contents

- Lesson 01 Game Controller
- Lesson 02 Everybody Is a Musician
- Lesson 03 Fun Coding: Addition
- Lesson 04 Fun Coding: Multiplication & Division
- Lesson 05 I Have a Nimble Mind
- Lesson 06 I Have Fast Fingers
- Lesson 07 Game Designers I
- Lesson 08 This Is BitCar!
- Lesson 09 Get It Moving
- Lesson 10 Obstacle Avoidance
- Lesson 11 RC Car
- Lesson 12 RC Car (Advanced)
- Lesson 13 Game Designers II
- Lesson 14 It's Show Time



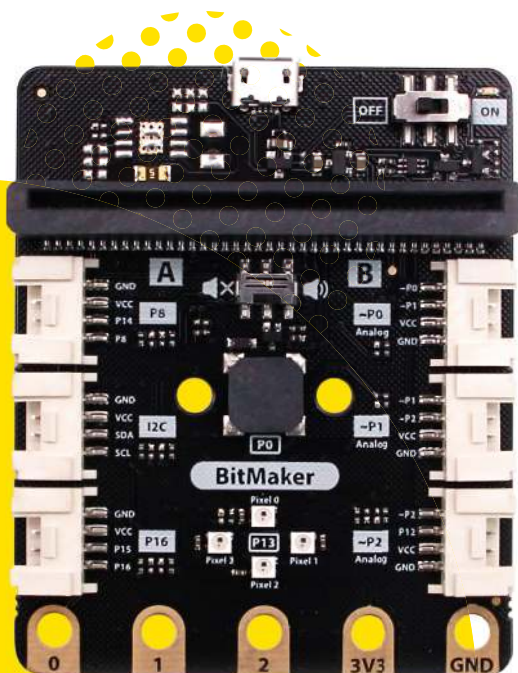
<https://make2learn.tinkergen.com/course/?sku=604190004>

BitMaker

SKU 114991848

BitMaker is a Grove expansion board especially designed for the BBC micro:bit. Users can insert the micro:bit into the micro:bit slot on the expansion board, and use it to control the Grove module connected to the any of Grove ports. In addition to the large range of Grove modules available, the BitMaker board itself includes programmable RGB LEDs and a buzzer, both components which will come in handy in many projects.

This not only eliminates the need to procure extra components, but enables novice users to experience hardware features without connecting extra components.



BitStarter Kit and BitGadget Kit

BitStarter Kit SKU 114991972

This kit includes 1 BitMaker Lite and 3 Grove modules. All modules are easy to use and fun to play with. The ultrasonic sensor can be used to measure distance and trigger the alarm if something approaches, while the slider can be used to control light or servo movement. It's suitable for beginners to explore fun projects and see what they can achieve with micro:bit.

Part List

- BitMaker Lite x1
- Analog Servo (180°) x1
- Ultrasonic Sensor x1
- Grove Cable x2
- Slider x1
- 50cm USB Cable x1
- Projects Guide x1



**12 lessons**

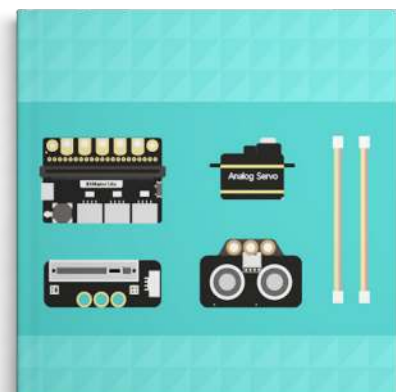
Beginner's Guide: micro:bit projects with the BitStarter Kit

It utilizes three technological tools, including the micro:bit which works with a self-made expansion board, the easy-to-use electronics and a graphical programming software, MakeCode, to steer students to complete creative projects independently and discover scientific and intriguing adventures which adopt both the software and hardware knowledge.

Contents

- Lesson 01 This Is micro:bit
- Lesson 02 Introduce Yourself
- Lesson 03 Feel the Temperature
- Lesson 04 Magical Music
- Lesson 05 Fun with Accelerometer
- Lesson 06 Rock Paper Scissors
- Lesson 07 How Far Is It?
- Lesson 08 Zip It Up!
- Lesson 09 Flap the Wings
- Lesson 10 Radio Communication
- Lesson 11 Design & Make
- Lesson 12 It's Show Time

<https://make2learn.tinkergen.com/course/?sku=604190002>

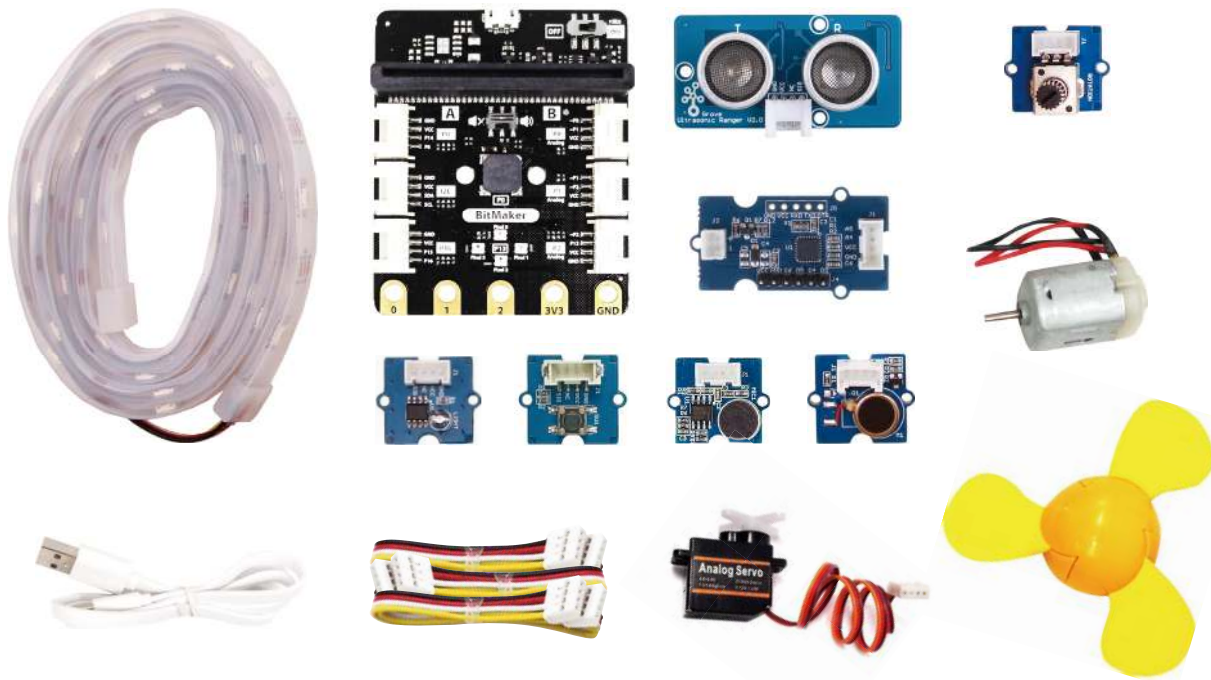


BitGadget Kit SKU 114991970

Sensors, motors, a speaker and colorful lights; this kit includes everything you need to build fun and cool micro:bit projects that shine, move and make sounds. It includes a BitMaker and up to 9 different Grove modules. All modules are plug-n-play and easy to code with Microsoft MakeCode editor.

Part List

- BitMaker x1
- Rotary Angle Sensor x1
- Sound Sensor x1
- Light Sensor x1
- Button x1
- Ultrasonic Sensor x1
- Mini fan x1
- Vibration Motor x1
- Servo x1
- RGB LED Strip x1
- Grove Cables x7
- Projects Guide x1





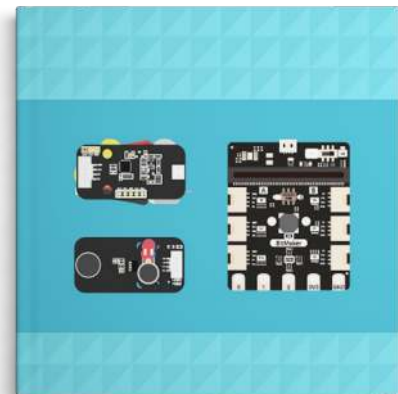
12 lessons

Advanced Guide: micro:bit projects with the BitGadget Kit

This coursework, featured with real-life applications, is developed based on students' cognitive development, learning ability and study interest.

Contents

- Lesson 1 Mini Music Player
- Lesson 2 Ultrasonic Distance Meter
- Lesson 3 LED Controller
- Lesson 4 Noise Level Meter
- Lesson 5 The Secret Box
- Lesson 6 The Light-sensing Fan
- Lesson 7 Automatic Door
- Lesson 8 Rainbow Musical Box
- Lesson 9 Discover Fun in the LED Strip
- Lesson 10 LED Gadgets Fashion Show
- Lesson 11 Mini Maker Lab
- Lesson 12 It's Show Time



<https://make2learn.tinkergen.com/course/?sku=604190003>

Grove Inventor Kit for micro:bit

SKU 110060762

The Grove Inventor Kit for micro:bit brings endless possibilities to your micro:bit.

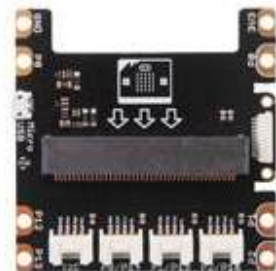
The core board in this kit is the Grove shield for micro:bit v2.0, with which you can use plenty of Grove modules including sensors, display, actuator to interact with micro:bit. If you never used and have no idea what grove is, check out previous [page 4](#) of the catalog. All you need to know is that with Grove, there is no need of soldering or jump wires any more. Prototyping is easier and much more convenient.

Features:

- Cool extension shield with rich and convenient peripherals;
- 8 well selected Grove modules for working with micro:bit;
- 12 awesome projects to let you get started quickly
(available in https://wiki.seeedstudio.com/Grove_Inventor_Kit_for_microbit/);
- Well documented instruction.

Part List

- Grove Shield for micro:bit v2 x1
- Grove – Rotary Angle Sensor(P) x1
- Grove – Speaker x1
- Grove – Ultrasonic Ranger x1
- Grove – Light Sensor v1.2 x1
- Grove – WS2812 Waterproof LED Strip – 30 LEDs 1 meter x1
- Grove – Gesture x1
- Grove – 4-Digit Display x1
- Grove – Red LED x1
- Micro USB Cable – 48cm x1
- 12 Projects Manual x1
- Alligator Cable x10
- Grove Cable x7



05 Raspberry Pi Collection

What is Raspberry Pi?

A tiny and affordable computer that you can use to learn programming through fun, practical projects, Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation in association with Broadcom.

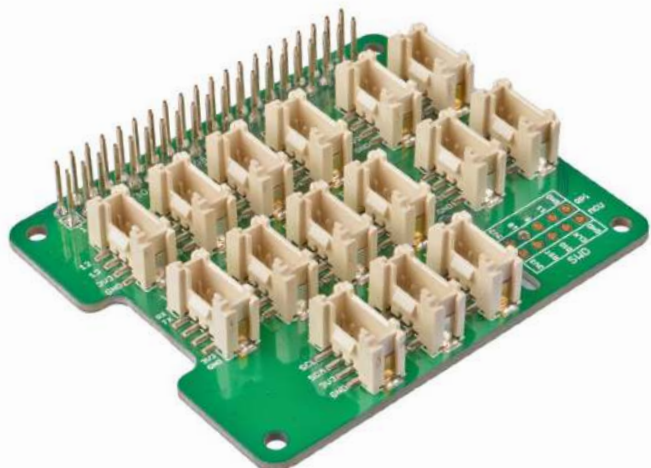
Raspberry Pi Shields and Hats

Grove Base Hat for Raspberry Pi SKU 103030275

The Grove Base Hat for Raspberry Pi provide Digital/Analog/I2C/PWM/UART port to meet all your needs. With the help of the build-in MCU, a 12-bit 8 channel ADC is also available for Raspberry Pi.

Features

- Support Raspberry pi 2/ 3B/3B+/4/Zero
- build-in MCU STM32
- 12-bit ADC
- Multi-type Grove port
- Compatible : Raspberry Pi 4
- Cost-effective



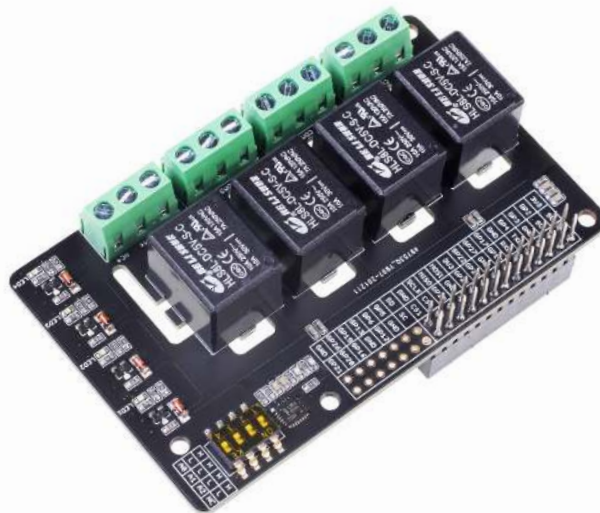
4-Channel SPDT Relay HAT for Raspberry Pi

SKU 114992543

The 4-Channel SPDT Relay HAT for Raspberry Pi utilizes four high-quality SPDT (single pole – double throw) relays and provides NO/NC (Normally Open/ Normally Closed) interfaces that can control the load of high current. This means it could be a nice solution for controlling devices that can't be directly controlled by the I2C bus. The standardized shield form factor enables smooth connection with the Raspberry Pi and it also has four LED indicators that show the on/off state of each relay.

Features

- High-quality SPDT (single pole – double throw) relays
- Compatible with Raspberry Pi 1/2/3/4
- I2C interface with three hardware SW1 (1, 2, 3) to select the fixed I2C-bus address
- Relay screw terminals for easy connection
- Standardized shield shape and design
- LED working status indicators for each relay
- COM, NO (Normally Open), and NC (Normally Closed) relay pins for each relay



2-Channel CAN-BUS(FD) Shield for Raspberry Pi (MCP2518FD) SKU 103990563

This shield is a 2-Channel CAN-BUS(FD) Shield for Raspberry Pi (MCP2518FD), supports the CAN FD protocol and supports transmission speed up to 8 Mbps.

Features

- Support CAN FD
- Support Jetson Nano
- High-speed transfer rate:
 - 8Mbps@10m 20AWG shielded cable
 - 1Mbps@40m 20AWG shielded cable
- Stable power supply, selectable Raspberry Pi power supply or DC power supply
- One-button configuration of 120Ω terminating resistor
- Compatible with Raspberry Pi 2, Raspberry Pi 3, Raspberry Pi Zero, Raspberry Pi 4



4-Channel 16-Bit ADC for Raspberry Pi (ADS1115) SKU 103030279

For Raspberry Pi without an analog-to-digital converter, or when you need a more accurate ADC. We provide 4-channel 16-bit ADC for Raspberry Pi (ADS1115), a 4-channel ADC based on Texas Instrument ADS1115, which is a high-precision, low-power, 16-bit ADC chip.

Features

- Support Raspberry Pi 3B/3B+/4
- I2C-compatible serial interface
- LOW current consumption:
 - Continuous Mode: Only 150 μ A
 - Single-Shot Mode: Auto Shut-Down
- Internal low-drift voltage reference and oscillator
- Input multiplexer (MUX) that provides two differential or four single-ended inputs.
- Programmable comparator



2.13” Triple-Color E-Ink Display for Raspberry Pi

SKU 104990448

This module is high contrast, wide viewing angle triple-color e ink Display for Raspberry Pi which can display the image without electricity.

Features

- High contrast
- Ultra wide viewing angle
- Ultra low power consumption
- Compatible with Raspberry pi 2 serial, Raspberry pi 3 serial, Raspberry pi 4 serial and Raspberry pi zero

Applications

- Shelf label
- Industrial instrument
- Outdoor display scene
- Low power display scene



Grove Base Kit for Raspberry Pi

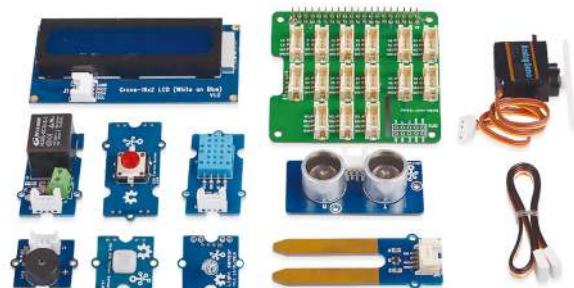
SKU 110020169

The Grove Base Kit for Raspberry Pi is one of the best kits for beginners to get started with Raspberry Pi.

No troublesome soldering and no complicated wiring. You can focus on learning Raspberry Pi. This kit includes a Grove Base Hat for Raspberry Pi and 10 Grove modules, which covering sensor, actuator and display. All you need to do is following the demo, plug the module into the Grove Base Hat, truly plug and play.

Part List

- Grove Base Hat for Raspberry Pi
- Grove – Red LED Button
- Grove – Buzzer
- Grove – Moisture Sensor
- Grove – Temperature & Humidity Sensor (DHT11)
- Grove – Light Sensor
- Grove – mini PIR motion sensor
- Grove – Ultrasonic Ranger
- Grove – Relay
- Grove – Servo
- Grove – 16 x 2 LCD (White on Blue)

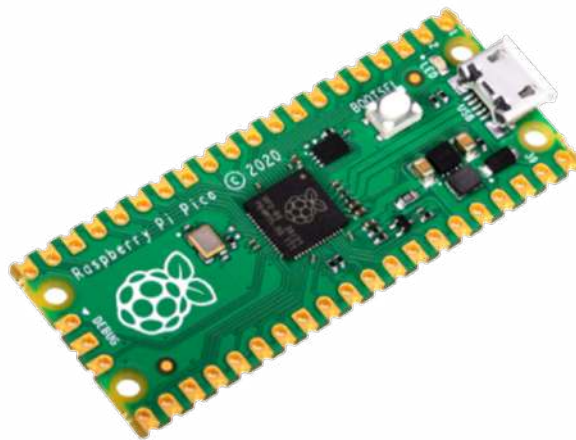


Raspberry Pi Pico

Raspberry Pi Pico SKU 102110537

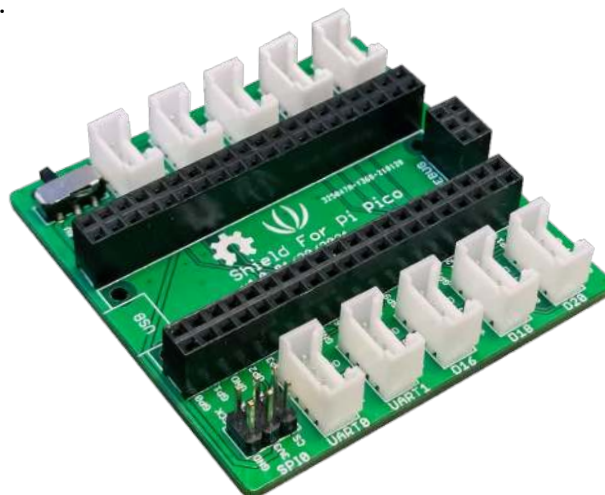
The Raspberry Pi Pico is a new flexible microcontroller board based on the Raspberry Pi RP2040 microcontroller chip. It featured with Dual-core ARM Cortex M0+ processor, flexible clock running up to 133 MHz.

Find out more about RP2040 microcontrollers: <https://www.seeedstudio.com/rp2040.html>



Grove Shield for Raspberry Pi Pico SKU 103100142

The Grove Shield for Pi Pico v1.0 is a plug-and-play shield for Raspberry Pi Pico which integrates with various kinds of Grove connectors, such as I2C, UART, Digital, Analog ports. This makes building prototypes and projects in an easy and quick way without solder and jumper wire , you could explore infinite possibilities of Pico.



Grove Starter Kit for Raspberry Pi Pico SKU 110061283

This is a Grove starter kit designed for Raspberry Pi Pico. It includes 5 sensors/ 5 actuators/ 2LEDs/ 1 LCD display/ 1 Grove shield, it will help you get started with Raspberry Pi Pico quickly and comprehensively.



lessons

Grove Starter Kit for Raspberry Pi Pico — Get started with MicroPython

The Raspberry Pico is a microcontroller board based on the Raspberry Pi RP2040 microcontroller chip. Designed as a low-cost, high-performance microcontroller board with a flexible digital interface, Raspberry Pi Pico has become one of the hottest topics in the MCU field recently. Grove is a powerful and rich ecosystem. After more than a decade of development, the Grove ecosystem has a large number of sensors, actuators, and displays. The no-jumper and soldering features make prototyping easy and simple. So how do Raspberry Pi Pico and Grove fit together? Grove Shield for Pi Pico is a perfect solution to this problem.

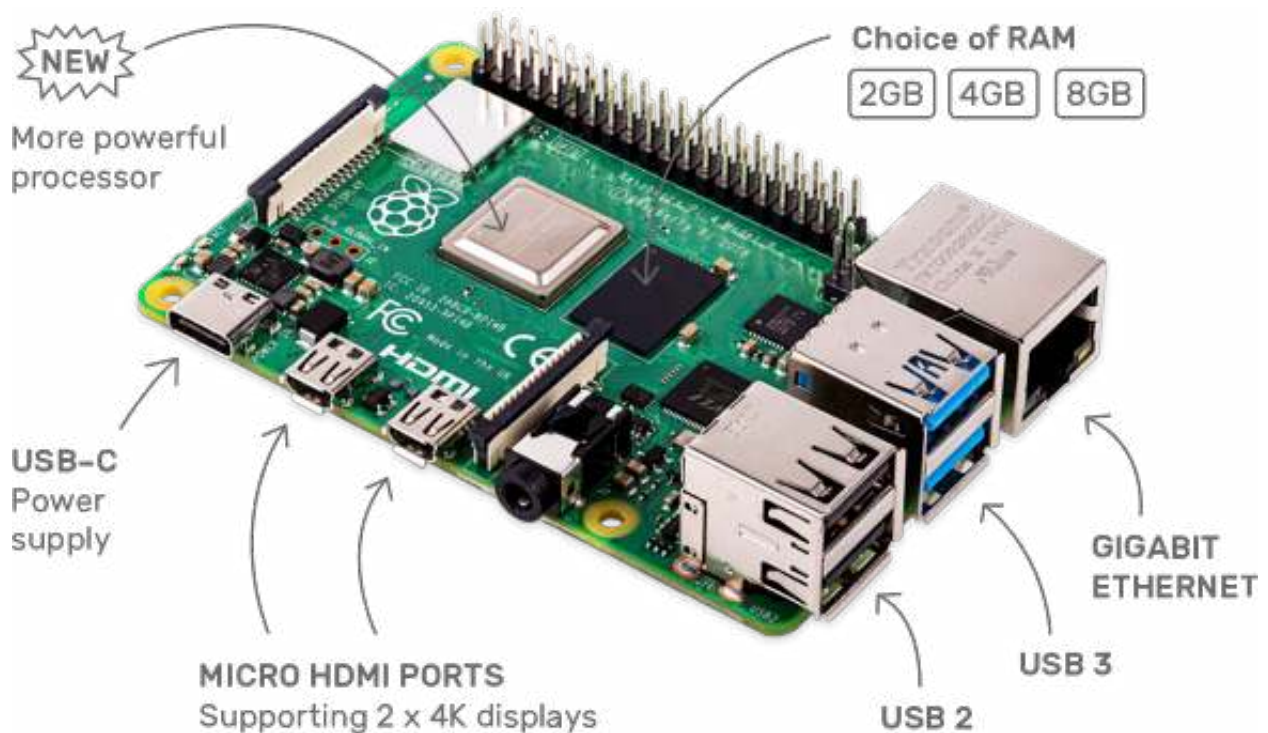
This is a four-chapter, 16-hour course that will help you get started with Raspberry Pi Pico and learn MicroPython from scratch, step by step, to build some interesting projects beyond your imagination.

No prior knowledge of MicroPython programming or electronics is required before starting the course. The course will take you to step by step to learn this knowledge and quickly put it into practice on each project.

Raspberry Pi 4 Computer Model

What is Raspberry Pi 4 Computer Model?

Your tiny, dual-display, desktop computer
...and robot brains, smart home hub, media centre, networked AI core, factory controller, and much more



Grove shield for Raspberry Pi 4 SKU 103030275

The Grove Base Hat for Raspberry Pi provide Digital/Analog/I2C/PWM/UART port to meet all your needs. With the help of the build-in MCU, a 12-bit 8 channel ADC is also available for Raspberry Pi.

See previous [page 42](#) about shields & hats for Raspberry Pi.

Grove Smart Agriculture Kit for Raspberry Pi 4 – designed for Microsoft FarmBeats for Students

SKU 110061284

What is FarmBeats?

Developed by Microsoft. Using FarmBeats for Students, students learn about **AI, Machine Learning**, and the **Internet of Things (IoT)** by building a garden monitoring system. They assemble a Raspberry Pi equipped with atmospheric and environmental sensors to understand their soil's health, analyze data, and make decisions. The student-built IoT devices connect to custom Excel workbooks that collect real-time data using **Excel's Data Streamer**. Using **Lobe.ai**, students are introduced to building their own Machine Learning models, applying the technique to predict nutrient deficiencies in their plants, and identifying pests in their garden. The course ends by introducing a **responsible AI framework**, engaging students with some of the social and ethical challenges raised by this new technology.



Features:

- **Easy-to-use and low-cost hardware kit:**
combines an affordable hardware kit with FREE curriculums and activities for students' hands-on experience in precision agriculture techniques to food production.
- **New tools for STEAM Education learners:**
students learn about AI, Machine learning, and IoT by building a garden monitoring system.
- **Easily use with Raspberry Pi 4:**
with atmospheric and environmental sensors to understand their soil's health, analyze data, and make decisions.
- **Real-time data collection:**
The student-built IoT devices connect to custom Microsoft Excel workbooks that collect real-time data using Excel's Data Streamer.
- **Building your own Machine Learning models:**
using Lobe.ai, students apply the technique to predict nutrient deficiencies in their plants and identifying pests in their garden.
- **Introducing Microsoft responsible AI framework:**
engaging students with some of the social and ethical challenges raised by this new technology.

Part List

- Grove Base Hat for Raspberry Pi with a Fan x1
- One Wire Temperature Sensor x1
- Grove – Capacitive Soil Moisture Sensor x1
- Grove – Sunlight Sensor x1
- Grove Temperature & Humidity Sensor x1
- Grove – Relay x1
- Grove – Dual Button x1
- micro SD Card with Card Reader – 32GB x1
- USB to TTL Serial Cable x1
- Screwdriver x1



5 lessons

Course of Farmbeats for students

Today's farms are beginning to look a lot more like smart cities. Growers are using modern techniques like sensors, computer vision, and artificial intelligence to acquire a more complete view of their crops. These methods help them make better decisions, discover inefficiencies, and unlock new insights into improving food production. The FarmBeats for Students program brings these modern tools into the hands of today's learners.

The program combines an affordable hardware kit with curriculum and activities designed to give students hands-on experience in applying precision agriculture techniques to food production. Using an array of sensors, students stream and analyze data in Excel. With Lobe.ai, they build, train, and apply machine learning models to track and inform plant health. There are activities where students setup an agent, and others where they work with a curated big data set. The learning progression enables students to easily see the connections between these modern agriculture tools and the opportunities they afford.

Contents

- Lesson 01 Perception
- Lesson 02 Representation & Reasoning
- Lesson 03 Learning
- Lesson 04 Natural Interaction
- Lesson 05 Societal Impact

<https://education.microsoft.com/en-us/lesson/5d991297>



06 Robotics

What is M.A.R.K ?

SKU 114992076

Make A Robot Kit, aka M.A.R.K is a versatile intelligent robotic platform designed for studying Artificial Intelligence. Using the AI controller which powers M.A.R.K, students can implement lane following, traffic sign identification, and other computer vision functions to put together a self-driving car.

Features:



Easy Assembly

The kit has a wide variety of documentation, including a step-by-step assembly guide with video instructions.



Magnetic Car Roof

The top cover can be easily detached and reattached at any time.



Easy to Modify

The front of MARK is equipped with a mounting platform to make it easy to install a robotic arm or camera attachment, allowing you to extend MARK AI application possibilities.



Suitable for a Variety of AI Applications

Self-driving, Image recognition, Object detection, Computer vision line following.

Graphical Programming / Micropython Coding



In addition to graphical programming, MARK also supports uploading Micropython code with the help of easy-to-use IDE. That makes MARK a good choice for students who are transitioning to the more advanced stages of programming lessons.



Plug&Play Sensor Modules

The kit comes with an ultrasonic distance sensor, a line follower and an electromagnet module. Because MARK uses standardized Grove connectors, there are hundreds of modules available for purchase from Seeed studio and other retailers, that can easily be interfaced with MARK expansion board.





16 lessons

Autonomous Driving Course Materials of the Artificial Intelligence Series

This coursework is a beginner's level course for students aged 13–15 years old (recommended for Grades 7–9). It guides students to assemble a M.A.R.K robot car on their own, which familiarizes themselves with the components and purpose of the hardware, and teaches them hardware skills.

Contents

- Lesson 01 The Introduction to Self-Driving
- Lesson 02 Hardware in Self-Driving
- Lesson 03 Assemble the M.A.R.K
- Lesson 04 All about Software Programming
- Lesson 05 Basic Program Design
- Lesson 06 Using IR Sensors for Line Following
- Lesson 07 Using Ultrasonic Sensor for Obstacle Avoidance
- Lesson 08 Using Computer Vision Sensor for Line Following
- Lesson 09 Using Computer Vision Sensor for Shapes, Color Recognition
- Lesson 10 Using Computer Vision Sensor for Object Detection
- Lesson 11 Task Completion 1: Driving along the Road with Signs
- Lesson 12 Task Completion 2: Patrolling the Scene
- Lesson 13 Task Completion 3: Delivery Task
- Lesson 14 Challenge: Fastest Delivery Time I
- Lesson 15 Challenge: Fastest Delivery Time II
- Lesson 16 Student Work Display



<https://make2learn.tinkergen.com/course/?sku=604180020>



17 lessons

Machine Learning Course Materials of the Artificial Intelligence Series

Machine Learning Course is an advanced level course for students aged 15–18 (recommended for grades 9–12). The course introduces learners to the concepts of machine learning and how it is used for machine vision applications. The tools and software used in this course are widely used in AI industry, thus making it a perfect first step for students who want to continue their education in Computer Science as data analysts, robotics software engineers and so on.

Contents

- Lesson 01 Preface
- Lesson 02 Introduction to AI and Machine Learning
- Lesson 03 Hardware Basics: M.A.R.K Robot
- Lesson 04 Software Basics: Python and MicroPython
- Lesson 05 M.A.R.K Robot Assembly
- Lesson 06 Theory I: Self-Driving Technology
- Lesson 07 Practice I: Building a Self-Driving Car Using Traditional Sensors
- Lesson 08 Practice I: Enhancing Self-Driving Car with Machine Vision
- Lesson 09 Theory II: Core Algorithms of Machine Learning
- Lesson 10 Practice II: Linear Regression and Diabetes Dataset
- Lesson 11 Practice II: K-means Clustering and Customer Dataset
- Lesson 12 Theory III: Artificial Neural Networks and Deep Learning
- Lesson 13 Practice III: Using a Pre-Trained Model with M.A.R.K Robot
- Lesson 14 Practice III: Re-Training an Image Classification Model with Transfer Learning
- Lesson 15 Challenge I: Preparation for the Competition
- Lesson 16 Challenge I: Robotics Competition
- Lesson 17 It's Show Time

<https://make2learn.tinkergen.com/course/?sku=604182000>



What is Bittle ?

SKU 114992499

Petoi Bittle is a tiny but powerful robot pet that fits in your palm. Legged motion gives it more freedom to navigate unstructured terrains. Previously such dynamic maneuverability was only seen on a few luxury robots from the best labs or tycoon companies. That's why we made it into the compact and affordable system consisting of five major components: body frame, actuator, electronics, battery, and the software to coordinate all the hardware to perform a variety of tasks.

Features:

Actuator



P1S is a slim, fast servo with a controllable angle of 270 degrees. These custom made servos outperform most of the market competitors and ensure a longer life-time and higher durability for Bittle.

Design



Bittle is designed to be durable, light and flexible, all at the same time. The Lightweight frame made of high quality plastic allows it to be very strong while weighing less than 280g. Furthermore, spring-loaded legs help Bittle to be stable and soft, and at the same time protecting the gears from external shock damage.

Software



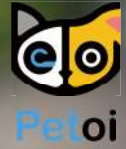
You can program Bittle with C in Arduino IDE or even connect additional boards using UART. But, the most exciting part, is that you can use Codecraft to enhance its capabilities as a unique teaching tool! With a wide spectrum of curriculum that is updated regularly, kids can start learning learning programming with Bittle.

Unlimited capabilities



Bittle is an open platform to fuse multiple makers' gadgets into one organic system. It supports various customization ideas. As an example, installing Raspberry Pi gives Bittle the ability to analyze more sensory data, get connected to the Internet, and and run Robot Operating System.

Made in collaboration with





16 lessons

Getting Started with Bittle course

Getting Started with Bittle course introduces the students to wide array of concepts, including open source hardware, the inner workings of common sensors and modules used in open source hardware projects and basics of block programming. At the core of this course is Bittle – a robotic dog kit, made by Petoï in collaboration with TinkerGen. Petoï Bittle is a tiny, but powerful robot that can play tricks like real animals. Bittle is an open platform to fuse multiple makers' gadgets into one organic system. With our customized Arduino board coordinating all instinctive and sophisticated movements, users can clip on various sensors to bring in perception. It is also possible to make Bittle into a full-fledged AI robot by mounting a Raspberry Pi or other AI chips through wired/wireless connections. This makes Bittle a perfect tool for learning, teaching and research!

Contents

Getting Started with Bittle Basic Kit Course

- Lesson 01 Introduction to Robotics and Bionics
- Lesson 02 Programming with Codecraft
- Lesson 03 Getting familiar with hardware
- Lesson 04 Basic movement coding guide
- Lesson 05 IR Sensor – Remote Control
- Lesson 06 Buzzer – Playing sounds
- Lesson 07 Advanced movement coding guide + Bluetooth
- Lesson 08 Student project I

Getting Started with Bittle Sensor Pack Course

- Lesson 01 Getting familiar with Sensor Pack modules
- Lesson 02 Speech Recognizer – Sound activation
- Lesson 03 OLED screen – displaying messages
- Lesson 04 Ultrasonic Sensor – Maze challenge
- Lesson 05 Vision sensor – Object following
- Lesson 06 PIR motion sensor – Always on Guard
- Lesson 07 Vision sensor – Gesture detection
- Lesson 08 Student project II

https://www.yuque.com/tinkergen_helper/bittle/preface_en



Crazyflie 2.1

SKU 114991551

Palm size drone for education, research, and swarming.

Crazyflie 2.1 is the latest version of the successful Crazyflie development platform.

Features

- Durable & compact design: only weighs 27g, fits in the palm of your hand.
- Easy to assemble and no soldering required
- Supports expansion decks with automatic detection
- Supports flying from iOS and Android with Bluetooth LE, as well as from Windows/Mac OSX/Linux with the Crazyradio or Crazyradio PA
- Tested to further than 1 km radio range line-of-sight (LOS) with the Crazyradio PA
- Wireless firmware updates
- On-board charging via standard USB
- Dual-MCU architecture with dedicated radio/power management SoC for advanced applications
- Real-time logging, graphing, and variable setting in addition to full use of expansion decks when using a Crazyradio or Crazyradio PA and a computer



What is GameGo?

SKU 114992404

GameGo is a programmable game console that supports game programming on MakeCode Arcade, bringing your retro game ideas to life. It provides you with programming knowledge and creativity to make games. GameGo's design makes it easy for kids to share their projects to take it with them on the go. Thanks to the TileCode, kids can even create their games on GameGo directly, without having to reach for a computer.

Features:



All-in-One Minimalism

Playing, programming, learning and discovering. Everything in one handy device.



Sleek and Safe Design

No sharp edges. Under the BPA free silicon case, the mainboard is covered with protective panels.



Learning Capabilities

More than 50 lessons. Suitable for everyone, from beginners using visual programming to advanced learners using JavaScript.



Interaction via Sounds & Emojis

A wide range of speech sound effects and emojis. A creative, fun and interactive experience.



Close Cooperation With Microsoft

Fully supports MakeCode Arcade from Microsoft. Featured in the officially supported MakeCode Arcade hardware.





17 lessons

GameGo–Game Programming Courses Beginner’s Guide

This is a collection of game programming tutorials to develop kids’ graphical programming skills with TinkerGen’s GameGo and Microsoft MakeCode Arcade as teaching tools. Games always hold an irresistible fascination for a lot of kids. In our courses, the process of learning game programming serves as a series of ‘wizard lessons’, from which kids will unlock their wizard gears step by step to become a more powerful and stronger ‘wizard’ in the end.

Contents

- Lesson 01 Preface
- Lesson 02 The Wandering Swordsman
- Lesson 03 All about Sprites
- Lesson 04 From Gameplay to Variable
- Lesson 05 Clicker Heroes
- Lesson 06 Explore Coordinate from Battleship
- Lesson 07 Storytelling in Games
- Lesson 08 The Soaring Starship
- Lesson 09 Pizza Chaser 1.0
- Lesson 10 Randomness Everywhere
- Lesson 11 Pizza Chaser 2.0: From Blueprint to Reality
- Lesson 12 The Infinity of Game Loop
- Lesson 13 Gunfire in Space
- Lesson 14 Fancy Bullet Hell Boss Fight
- Lesson 15 Physics in Arcade Games
- Lesson 16 Independent Game Development
- Lesson 17 Junior Wizards’ Graduate Projects

<https://make2learn.tinkergen.com/course/?sku=604182007>





13 lessons

GameGo—Game Programming Courses Intermediate Learners' Guide—Preface

GameGo—Game Programming Courses is a collection of game programming tutorials to develop kids' graphical programming skills with TinkerGen's GameGo and Microsoft MakeCode Arcade as teaching tools. Games always hold an irresistible fascination for a lot of kids. In our courses, the process of learning game programming serves as a series of 'wizard lessons', from which kids will unlock their wizard gears step by step to become a more powerful and stronger 'wizard' in the end.

Contents

- Lesson 01 Preface
- Lesson 02 Functions and the Sound of Music
- Lesson 03 Use "Darts" Extension to Make "Angry Birds"
- Lesson 04 Animation! Animation!
- Lesson 05 Harder and Harder Interstellar
- Lesson 06 Game Development: Multiplayer Game—Pong
- Lesson 07 My First Game Map—Dungeon Secrets
- Lesson 08 Walk in Four Directions
- Lesson 09 Basic Knowledge for Level Designers
- Lesson 10 Master of Memorizing Numbers and Dialogue Scripts for NPC
- Lesson 11 Sprite Arrays Game Examples Analysis: Space Destroyer
- Lesson 12 Introduction to Excellent Arcade Games
- Lesson 13 Intermediate Wizards' Graduate Projects



<https://make2learn.tinkergen.com/course/?sku=604182003>

07 Wio Terminal

Hello World of AI

SKU 102991299

Wio Terminal is a perfect tool to get started with IoT and Machine Learning on Embedded Devices (TinyML)

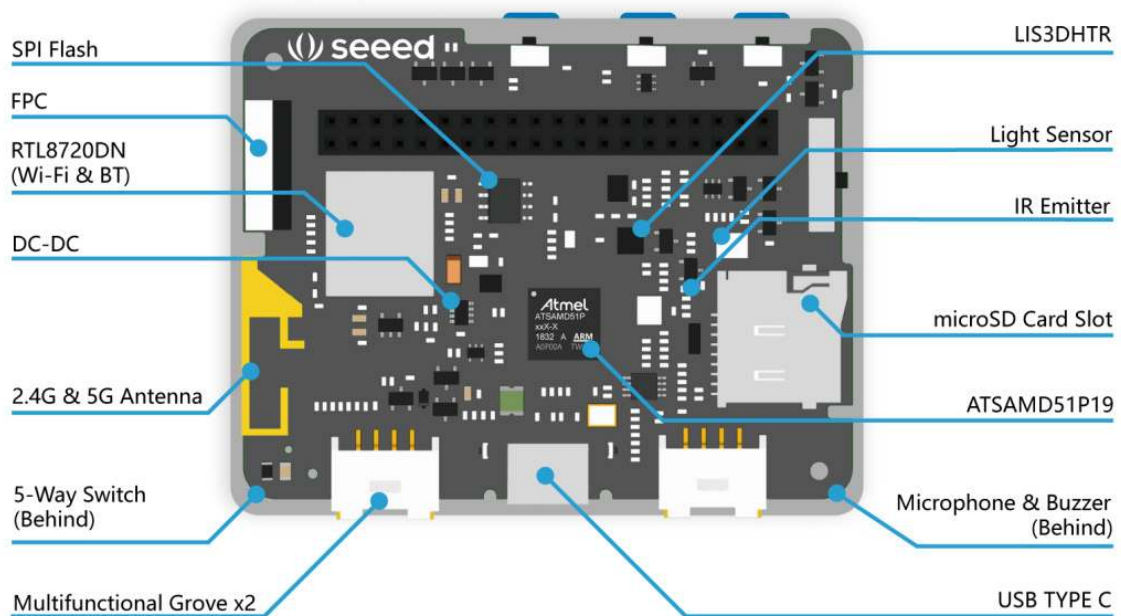
It is built around ATSAM51P19 chip with ARM Cortex-M4F core running at 120MHz, which is very well supported by various frameworks for Machine Learning inference on microcontrollers, including Tensorflow Lite for Microcontrollers and Edge Impulse Platform.

Wio Terminal is a complete system equipped with Screen + Development Board + Input/Output Interface + Enclosure, making it an efficient and Product-Ready Product.

*Wio: The Wio (Wireless Input and Output) platform by Seeed

Features:

- Powerful MCU: Microchip ATSAM51P19 with ARM Cortex-M4F core running at 120MHz
- Reliable Wireless Connectivity: Equipped with Realtek RTL8720DN, dual-band 2.4GHz / 5GHz Wi-Fi (supported only by Arduino)
- Highly Integrated Design: 2.4" LCD Screen, IMU and more practical add-ons housed in a compact enclosure with built-in magnets & mounting holes
- Raspberry Pi 40-pin Compatible GPIO
- Compatible with over 300 plug&play Grove modules to explore with IoT
- USB OTG Support
- Support Arduino, CircuitPython, Micropython, AT Firmware, Visual Studio Code
- TELEC certificated



**16 lessons**

In-depth Course about TinyML with Wio Terminal

Learn how to train and deploy deep neural network models on Cortex-M core microcontroller devices from Seeed studio. Course content features seven detailed step-by-step projects, that will allow students to grasp basic ideas about modern Machine Learning and how it can be used in low-power and footprint microcontrollers to create intelligent and connected systems.

The specific content includes:

- Machine Learning, TinyML overview
- Recognizing gestures with light sensor
- Classifying exercise movements with accelerometer
- Audio scene recognition with microphone
- People counting with Ultrasonic sensor
- Intelligent meteorostation with DHT11/pressure sensor
- Smart assistant with microphone
- Lie detector with Heart rate/GSR sensors
- Student project



Contents

- Lesson 01 Introduction to TinyML with Wio Terminal
- Lesson 02 Project I: Recognizing gestures with light sensor: theory and data collection
- Lesson 03 Project I: Recognizing gestures with light sensor: model training and deployment
- Lesson 04 Project II: Classifying exercise movements with accelerometer: theory and data collection
- Lesson 05 Project II: Classifying exercise movements with accelerometer: model training and deployment
- Lesson 06 Project III: Audio scene recognition with microphone: theory and data collection
- Lesson 07 Project III: Audio scene recognition with microphone: model training and deployment
- Lesson 08 Project IV: People counting with Ultrasonic sensor: theory and data collection
- Lesson 09 Project IV: People counting with Ultrasonic sensor: model training and deployment
- Lesson 10 Project V: Intelligent meteorostation with DHT11/pressure sensor: theory and data collection
- Lesson 11 Project V: Intelligent meteorostation with DHT11/pressure sensor: model training and deployment (tf.keras)
- Lesson 12 Project VI: Smart assistant with microphone: theory and data collection
- Lesson 13 Project VI: Smart assistant with microphone: model training and deployment
- Lesson 14 Project VII: Lie detector with Heart rate/GSR sensors: theory and data collection
- Lesson 15 Project VII: Lie detector with Heart rate/GSR sensors: model training and deployment (tf.keras)
- Lesson 16 Student project

08 Abundant resources for

Wiki

More ... <https://wiki.seeedstudio.com/>



Wio Terminal Getting Started

This is the wiki page for this product, which will show you how to use the product, as well as details about the software and hardware.



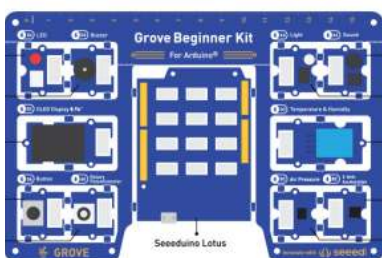
Seeeduino XIAO Wiki Page

This little board has good performance in processing but needs less power. It is designed in a tiny size and can be used for wearable devices and small projects.



Bittle Online Help

Documentation for using Bittle with Codecraft and Sensor Pack.



Wiki Page of Grove Beginner Kit for Arduino

Grove Beginner Kit for Arduino is one of the best Arduino Beginner Kit for beginners. It includes one Arduino compatible Board and 10 additional Arduino sensors and all in one-piece of PCB design.

teaching, learning and making

Projects

More ... <https://www.seeedstudio.com/blog/category/project/>



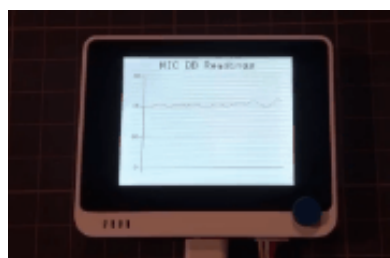
The Game of "Statue" – Wio Terminal and Grove – Mini Lidar Challenge

Let's see who could be the "Statue" in front of Wio Terminal and Grove – Mini Lidar Challenge of high degree of accuracy and precision.



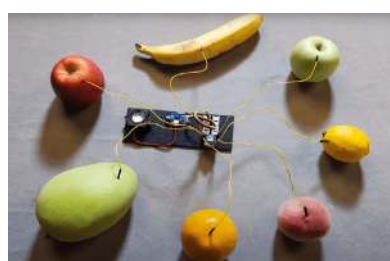
Pocket Distance Alarm V2 – Seeduino XIAO

Pocket Distance Alarm using Grove Shield for Seeduino XIAO, no jumper wire soldering any more!



Play Grove – Analog Microphone with Wio Terminal

This project is going to introduce how this Grove–Analog Microphone works via Serial Port and Wio Terminal!



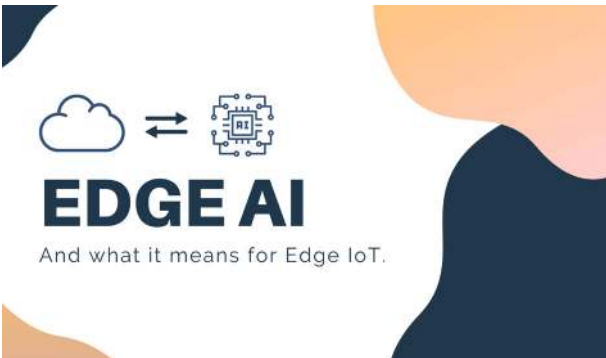
Make a Fruit Piano on Seeduino XIAO's Q-Touch Function

Could you imagine you could even play the piano on the fruit? Seeduino XIAO could help you! Simple steps, simple materials, everyone can make it.

Blog

More ... <https://www.seeedstudio.com/blog/>

STEAM Education



Seeed Partners with OPEN in the Global IoT Education Initiative to Promote Global Sustainable Agriculture.



MARK Face Recognition, Face Landmark Detection.



All about STEM Education for K12 to Educators: STEM Kits, Projects, Courses and Resource.

Sustainable Development Goals



Enterprise & Academic Cooperation
- Smart Agriculture Competition as an Example

seed

Preliminary Competition

Ranking	Team name	Background score	Technical score	Comprehensiveness score	Total score
01	AEU	17.00	47.00	17.00	81.00
02	WFR	18.00	36.00	18.00	71.00
03	ELAB	17.50	46.75	16.25	80.50
04	EWKlight	17.00	47.00	16.00	80.00
05	Eyer-Process	18.00	47.00	15.00	80.00

Pinduoduo & China Agricultural University co-organized the competition, to look for optimal & transferable methods in growing strawberries.

Duration: 120 days
Teams: 8 (4 adopting traditional methods; 4 adopting sensors, AI and other new technologies)

Seed IoT Products SenseCAP Shortlisted for Green Tech Catalog 2020

A Glance of Agricultural Innovation in China

Global Developers Community



Searching for Seed Rangers in These Countries!



Seed for the SDGs



Submit Your Project for the COVID-19 Detect & Protect Challenge!

Meanwhile in Shenzhen



Top 5 Featured Seeduino/Arduino Grove Projects of the Week – June 11



Seed collaborated with Conservation X Labs in the “Make For The Planet” event in Borneo Malaysia.



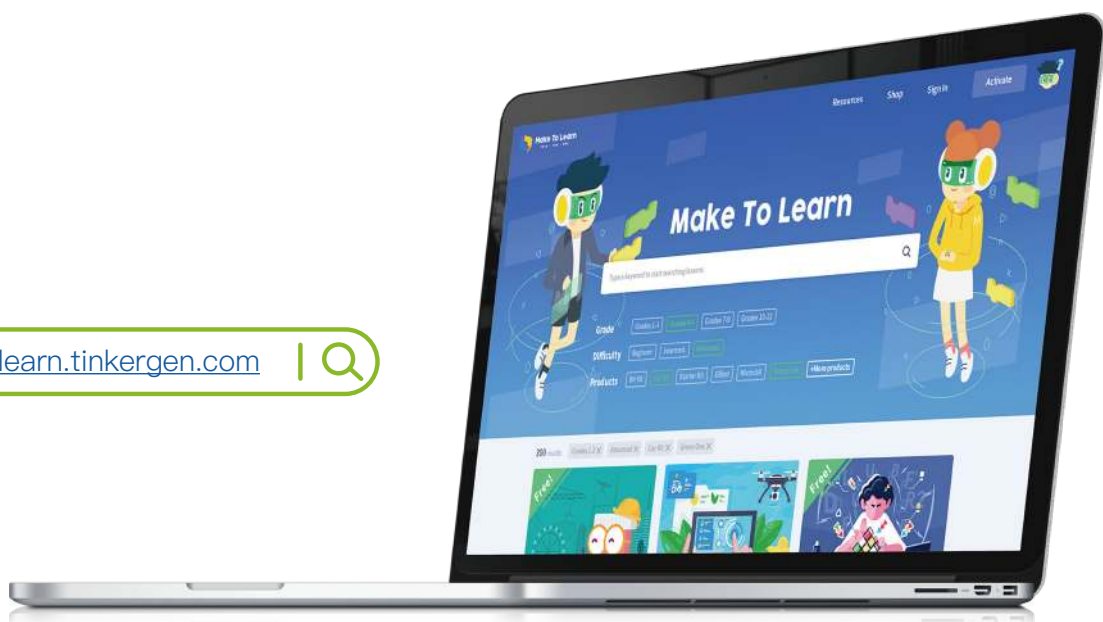
Announcement: Top 30 winners of Nanshan Entrepreneurs Star Contest

09 Course/Project Platform

Make2Learn

- Open Educational Platform for Teachers, Students and Parents.
- Make2Learn provides a rich online library of courses and projects for Sseed EDU products.
- The entire curriculum is filled with detailed guides and instructions making studying STEM great and easy for teachers and parents.
- All lessons are available both for online viewing.

make2learn.tinkergen.com | 🔍



Codecraft

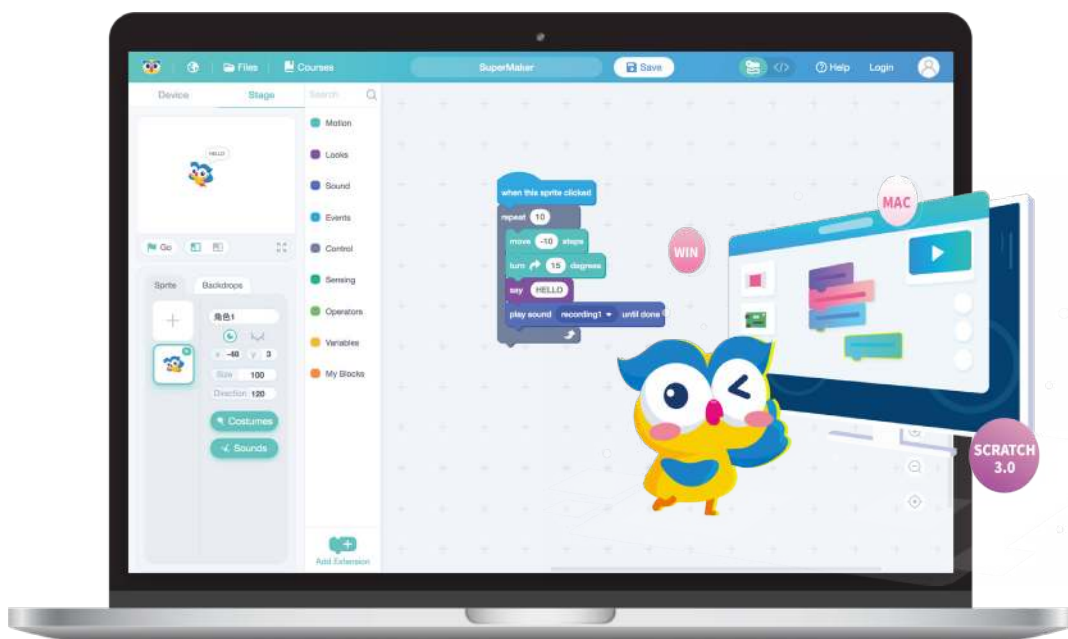
Codecraft is a graphical programming environment based on Scratch 3.0 which allows you to easily program Bittle, M.A.R.K, BBC micro:bit, Grove Beginner Kit and many other hardware devices. Scratch language can make interactive games, arts and any of the other creative projects that you have in mind. Furthermore, when you are ready, you can always convert the code blocks to Arduino, Python, or JavaScript to learn about the most popular programming language(s).

ide.tinkergen.com | 🔍

Win

Mac

applicable OS: WIN/MAC





Contact Us: ✉ contact@chaihuo.org

☎ 0755-86716703

🌐 www.seeedstudio.com