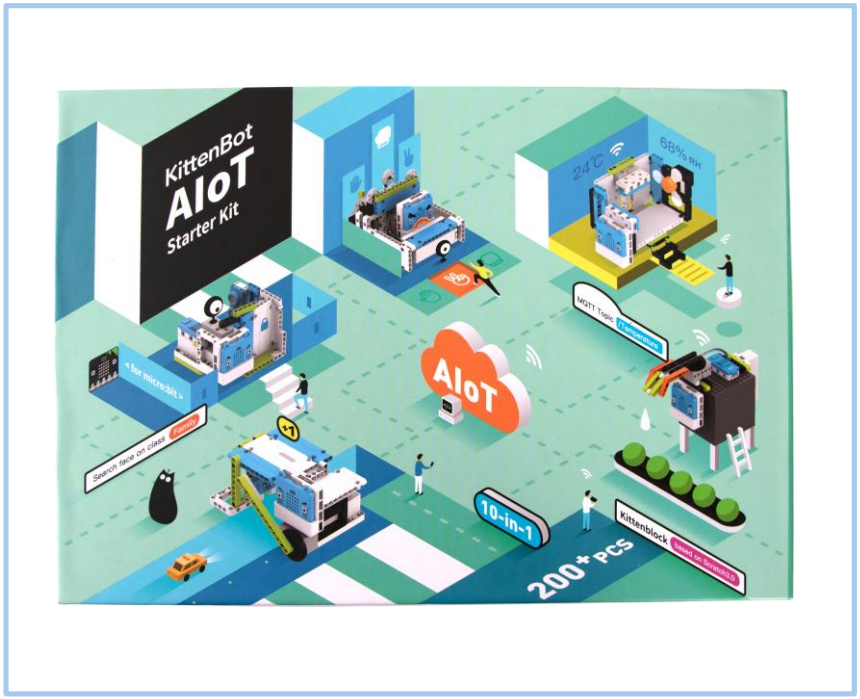
AIoT Starter Kit

DATASHEET

SKU：KBK9036B

Product Overview

AIoT kit combines the application of AI and the Internet of things. It is based on the rich function expansion of kittenblock software. It can realize voice recognition, face recognition, license plate recognition, machine learning, Internet of things data transmission and other advanced knowledge, which bring you rich experiment



Top Cover: 250 x 177 x 92 mm
Weight: 1.17kg

Contents

Microbit & Silicone Case	Armourbit (extension board)	battery case & 18650 lithium battery	wifi module(ESP8266)	Color gesture module	Temperature and humidity sensor
Ultrasonic sound module	Soil moisture sensor	Water level sensor	Water pump&water tank(LEGO compatible)	Fan	Geekservo 2KG steering gear
PH2.0 cable	Building pack	USB camera	1 meter MicroUSB	Manual(Chinese)	Building instructure & program (electronic file)

Product Parameter

Armourbit

- Armourbit can give the micro:bit board full protection, and is more suitable for the classroom environment.
- Armourbit is an extension accessory of micro:bit and the main control box of the PowerBrick system. It connects micro:bit with various PowerBrick modules.
- More interfaces and functions, port *7(4Pin anti reverse terminal port); I2C *1; buzzer *1;two-way motor drive; eight-way steering gear drive.

Voltage	3.3V (without 5V on board)
Overall dimension	61mm X 61mm X 23mm
Interface	PH2.0 4PIN terminal, the pins follow the GBAV standard
DC motor interface	Voltage does not exceed 5V, current is less than 1A, suitable for yellow TT motor or Geekservo motor
Servo interface	Voltage 3.7 ~ 6V, single current <100MA, total current < 1A, suitable for 9g servo or Geekservo servo

Product Parameter

Ultrasonic Mic

- The module uses ultrasound to detect the distance from the object.
- The microphone detects the instantaneous strength of the sound of the environment.
- Integrates ultrasound and microphone into one module, simplifying module wiring.

Support voltage	3V-5V
Overall dimension	56mm X 24mm X 24mm
Interface	PH2.0 4PIN terminal, the pins follow the GBAV standard
Ultrasonic detection distance	4cm-200cm (recommended range)
Sound analog value range	0-1023

Product Parameter

Temperature & humidity / Soil、water level sensor

- This module is used for sensors that measure ambient temperature, humidity and other analog values.
- It also contains a 3PIN interface, supporting two circuit boards.
- The capacitive soil sensor is used to detect the humidity of the soil. The wetter the soil, the larger the value.
- The rain point water level sensor is used to detect the level of the water level and whether there are raindrops. The higher the water level, the larger the value.

Support voltage	3V-5V
Overall dimension	56mm X 24mm X 19mm
Interface	PH2.0 4PIN terminal, the pins obey the GVAB arrangement; PH2.0 3PIN terminal is connected to the analog sensor.
Temperature measurement range	0-50 ° C, Measurement accuracy ± 2 ° C
Humidity measurement range	20-90% RH, measurement accuracy ± 5% RH
Analog value measurement range	(Soil、water level) 0-1023

Product Parameter

Color / Gesture sensor

- A multifunctional module that can recognize colors and gestures.
- In the color recognition mode, 4 LEDs are always on, and the color detection returns the angle value of the color circle.
- In the color recognition mode, the ambient light intensity can be detected.
- In gesture recognition mode, the movement direction of the hand will trigger the LED in the corresponding direction to blink.
- In distance detection mode, the farthest range is about 3cm. The closer you are, the brighter the 4 LEDs will be.
- When no mode is set, the brightness and on / off status of 4 LEDs can be controlled.

Support voltage	3V-5V
Overall dimension	56mm X 24mm X 16mm
Interface	PH2.0 4PIN terminal, the pins follow the GBAV standard
In gesture recognition mode	Up, down, left, and left, and the return values are 1, 2, 3, and 4, respectively. When no gesture is detected, the return value is 0.
In short-distance mode	The maximum detection distance is about 3cm, the return value is 0-255, the closer the value is, the larger the value is.
Brightness detection value range	0-255

Product Parameter

WiFi (ESP8266)

- The Wi-Fi module firmware is completely independently developed by kittenbot team, and it is not the same type of AT instruction firmware on the market.
- The Wi-Fi module has a convenient web configuration interface, which can independently define baud rate, name, find and access routers and other functions.
- It can realize IoT application projects such as MQTT.
- Support STA / AP / STA + AP mode, support Smart Config function (including Android and IOS devices)

Support voltage	3V-5V
Overall dimension	56mm X 24mm X 19mm
Interface	PH2.0 4PIN terminal, the pins follow the GBAV standard
Working current	62mA
Standby power consumption	≤1.0mW
Wireless network protocol	802.11b/g/n
Operating temperature	-40℃~125℃
Wi-Fi mode	@ 2.4GHz, support WPA / WPA2

Product Parameter

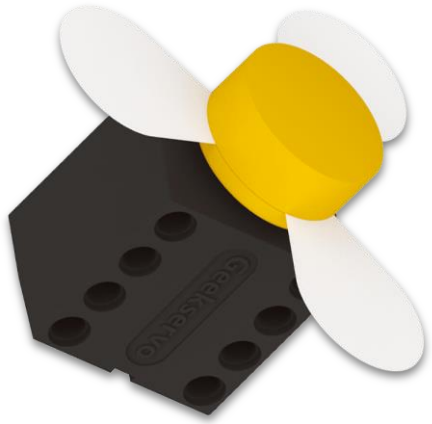
WiFi (ESP8266)

- A DC motor compatible with LEGO construction
- The output shaft is a standard Lego cross shaft.
- It is mainly used as for motion joint control.

Working voltage	3.3V ~ 6V
Rated voltage	4.8V
Rated current	70mA
Stall current	900mA
Slip current	700mA
Maximum torque	1.6 ± 0.2 KG-cm (4.8V)
Angle rotation speed	60 ° / 0.14s
Net weight	20g
Interface	brown to negative, red to positive, yellow to data pin (control pin)

Product Parameter

Fan

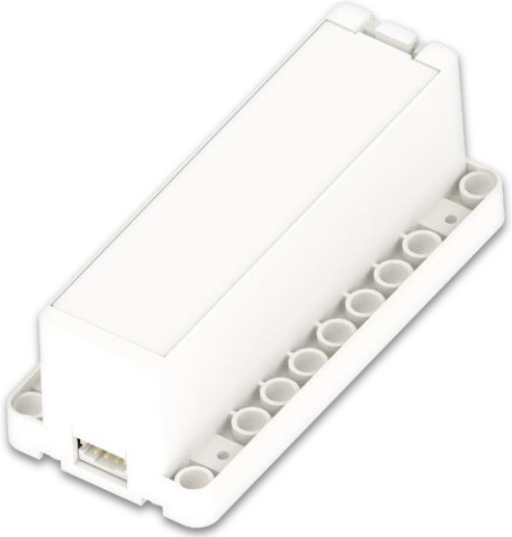


- Modules related to wind and air movement, the main function is blowing.
- Suitable for scene simulation of smart fire extinguishing and smart home.
- Because the wind speed is fast enough, it can even be used for radiators.
- Both sides of the module have Lego structure mounting holes for easy access to Lego blocks.

Working voltage	3.3V ~ 6V
Rated voltage	4.8V
Operating Temperature Range	-10℃～50℃
Operating speed (at no load)	3000±10%r/min
Operating speed (at no load)	130 ± 20mA
Stall torque (at locked)	60g
Stall current (at locked)	0.75±0.1A
Stall current (at locked)	≥200Hours
Limit angle	360°
Net weight	28±2g

Product Parameter

Li-ion battery case

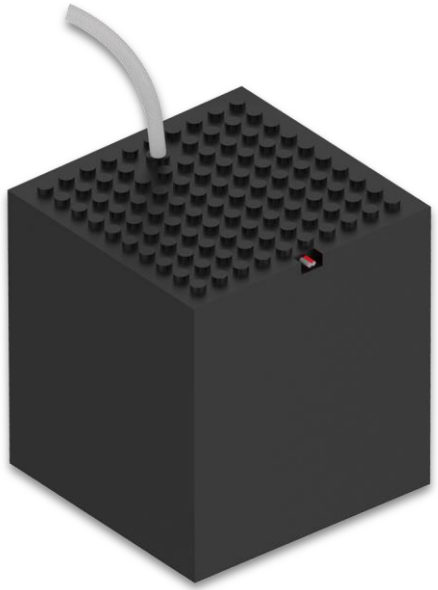


- Used for powering Armourbit and powering micro: bit with motors, servos and various modules.
- Supports DC 5V charging and has a short circuit overcurrent protection circuit.
- DC 5V output of standard USB interface can be provided to power other main control boards (such as rosbot, arduino uno)
- The internal battery is detachable and is compatible with standard 18650 li-on battery.

Output voltage	DC 3.7V (3PIN Armourbit power port) ;DC 5V (standard USB interface)
Output current:	Max. 1A
Overall dimension	88mm X 40mm X 32mm
Output interface	:PH2.0 3PIN terminal (Armourbit dedicated power supply port) ; standard USB output port
Charging interface	Micrusb, charging current up to 1A
Lion Battery protection	Built-in charge and discharge management chip ; over-current protection chip

Product Parameter

Water Pump & Tank



- Water-related modules, whose main functions are pumping and storage.
- Applicable to the realization of intelligent watering.
- There are LEGO standard connectors on the bottom and top of the water tank, so you can use more LEGO bricks.

Operating Voltage	3.3~6V
Overall dimension	86.5mm X 86.5mm X 98mm
Rated current	120mA(3.3V)
Maximum pump	0.35M
Maximum flow	80L/H
Net weight	140g
Hose length	60cm

Design Documents

Applications

1 *Rock-Paper-Scissors*

According to the feature recognition function in A-machine learning, train 3 gesture models of rock-scissors, and compare with the box-guessing box. It will be able to recognize what you have and compare winning and losing .

2 *IoT Streetlight*

Gradually change the brightness of street lights according to the level of ambient light to achieve the goal of energy conservation.

3 *IoT Garbage bin*

Many trash bins are drawn on the stage, an alarm is issued when the trash is full, and the alert is displayed on the stage.

Design Documents

Applications

4 *Unconscious Pay*

The license plate recognition function records the license plate database through a list and releases the vehicles with registered license plate numbers.

5 *Smart Clothes airer*

When the raindrop sensor detects rain, it will automatically retract the clothes to dry. If it is at night, the fan will automatically turn on to accelerate the drying of the clothes.

6 *Smart Access Control*

Through face recognition, open the door for family members. If strange faces linger for more than a period of time, take pictures to the owner.

Design Documents

Applications

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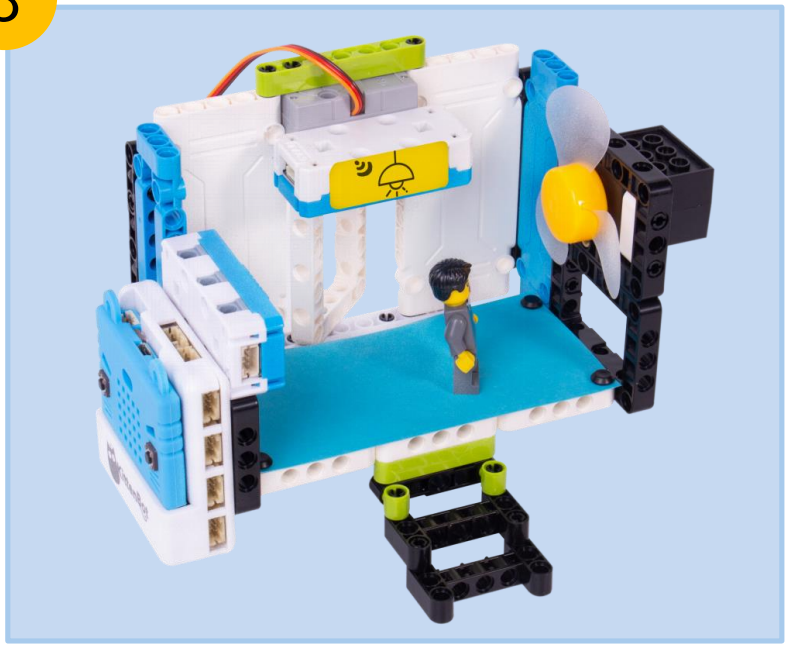
Weather station

According to the network weather forecast data, it is mapped to the temperature and humidity value of the dial, and today's weather is indicated by an indicator.

8

Smart bedroom



Smart home scene simulation, covering temperature and humidity detection, noise detection. If the temperature is relatively high, the fan and window ventilation can be automatically turned on. When there is too much noise outside the door, the window will be automatically closed. Even you can change the automatic mode to voice control mode.

Design Documents

Applications

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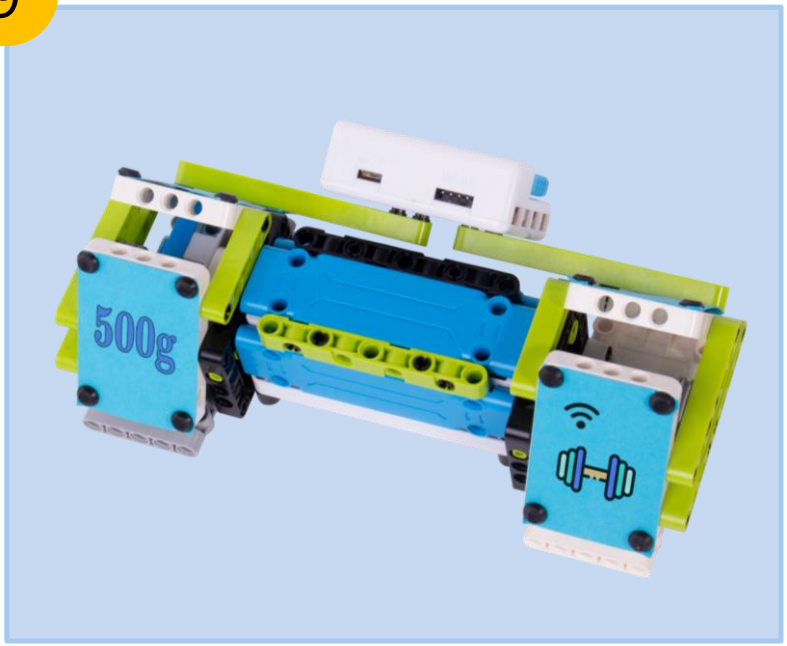
IoT Dumbbell



You can set the number of training targets, detect the number of dumbbell lifts through the gyro sensor, and transmit them to the server through the Internet of Things. At the same time, when the target is reached, the buzzer will sound a sound.

10

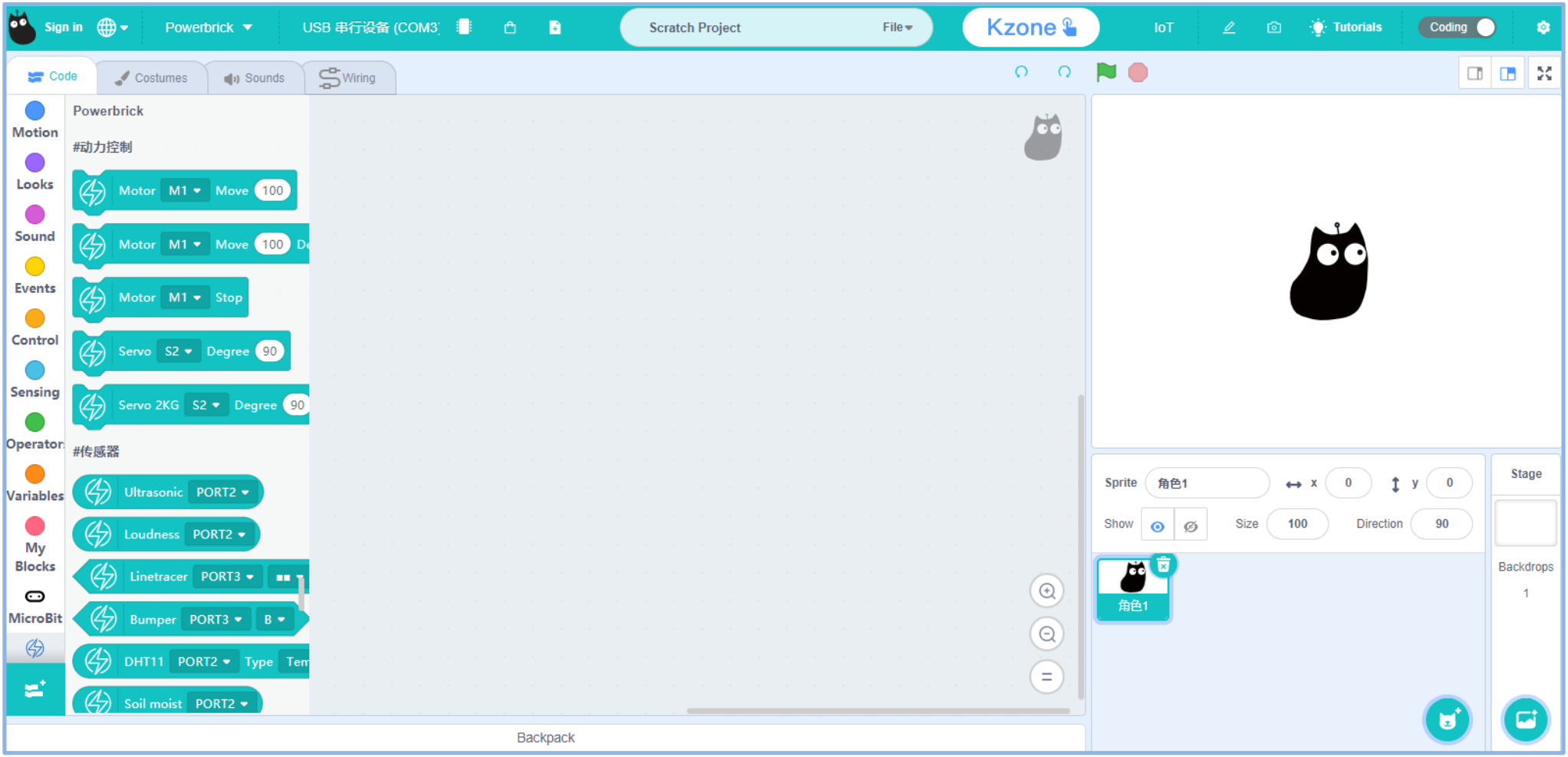
Automatic Watering

Remotely view the dry and wet conditions of the potted plants, which can be automatically watered. At the same time, the soil moisture sensor can be added. The built-in steering gear can be used to water multiple potted plants.

Design Documents

Quick start

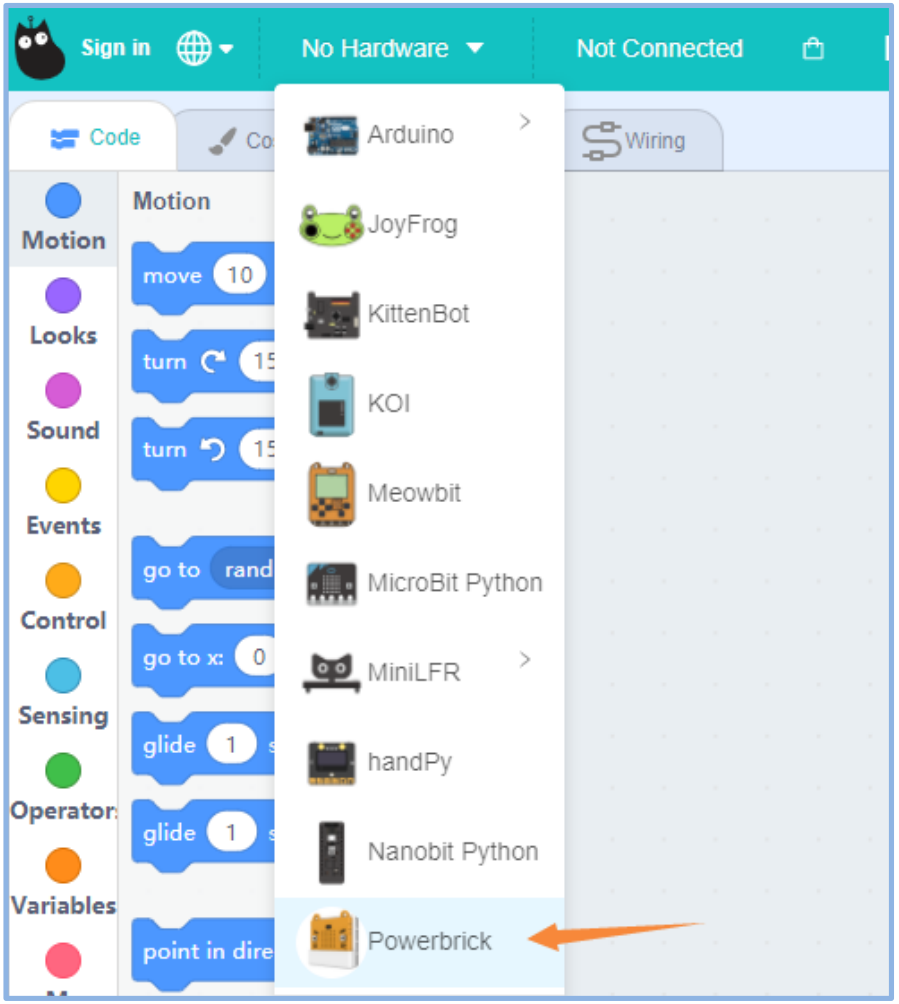
- Go to www.kittenbot.cc to install and learn more about usage of kittenblock



Design Documents

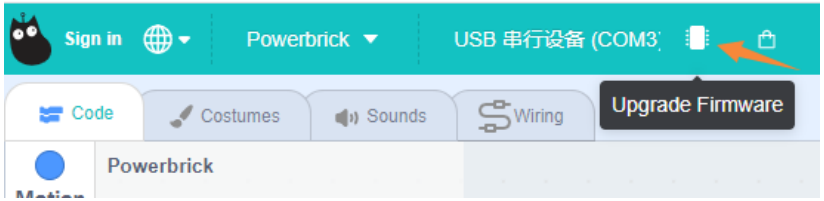
Quick start

1. Select the hardware as Powerbrick



2. Connect Micro:bit with USB and connect serial port

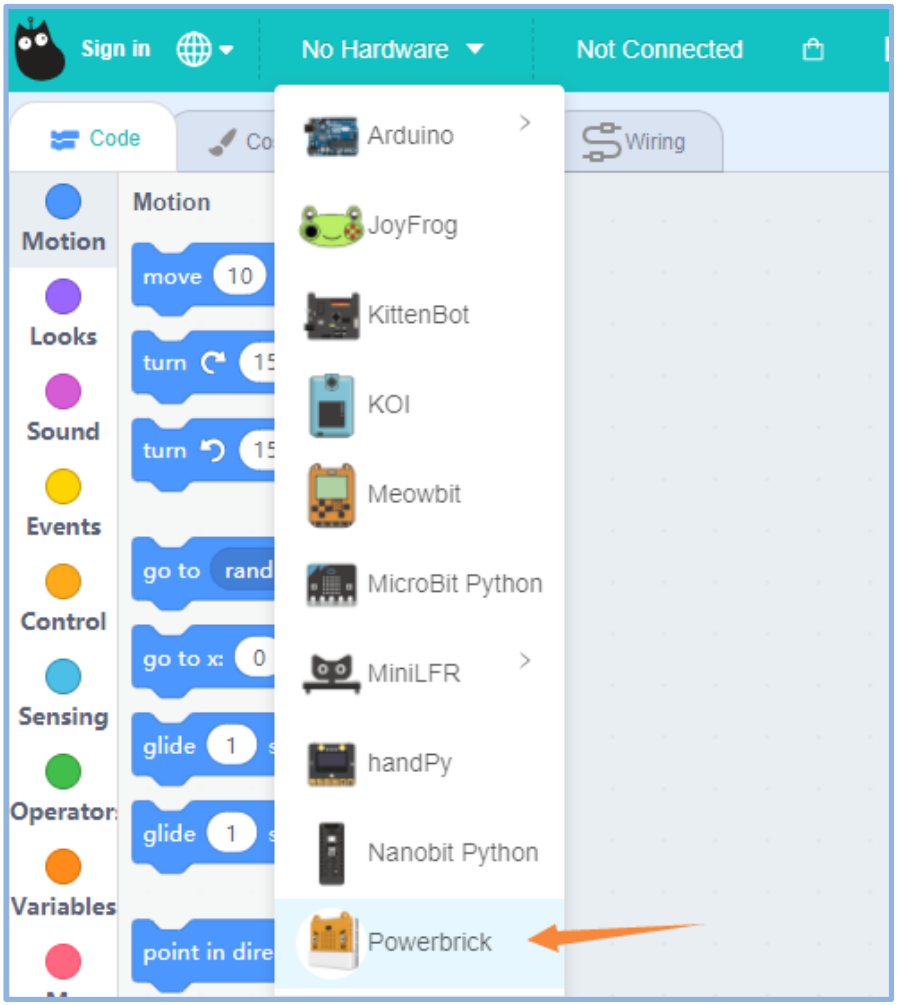
2. Click the Upgradxe Firmware



Design Documents

Quick start—Connect Micro:bit

1. Select the hardware as Powerbrick



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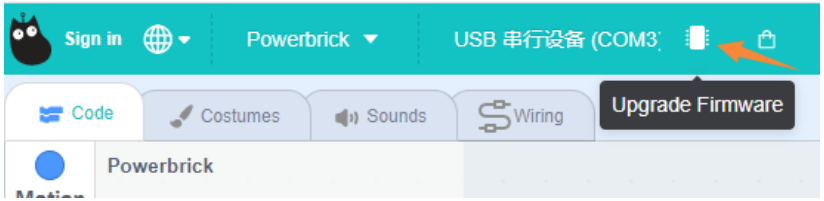
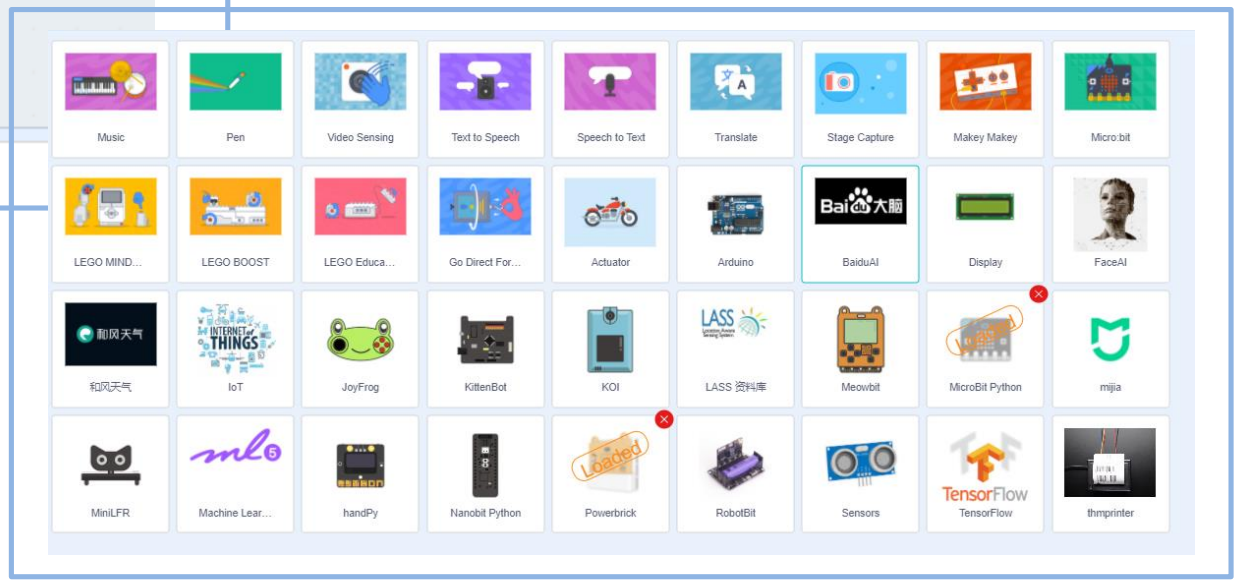


Design Documents

Quick start—Add extension

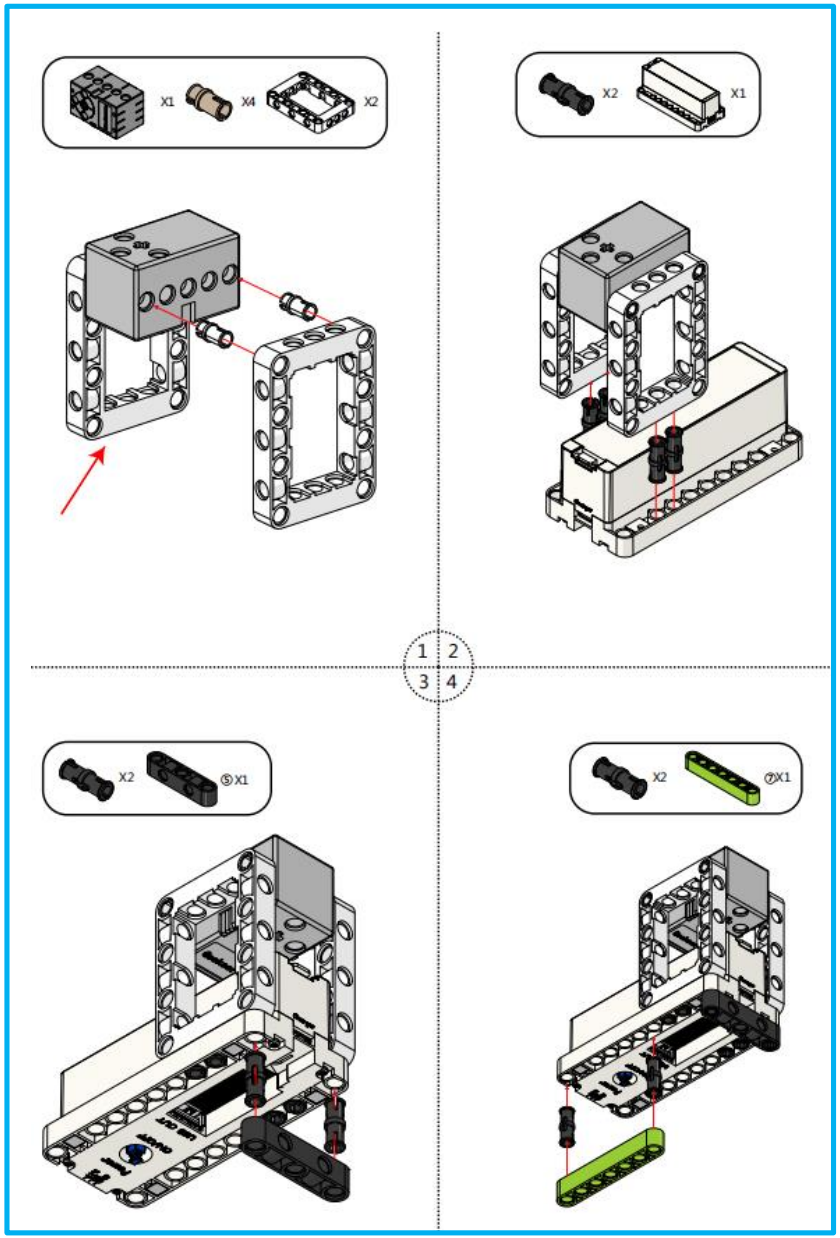
1. Click Add extension

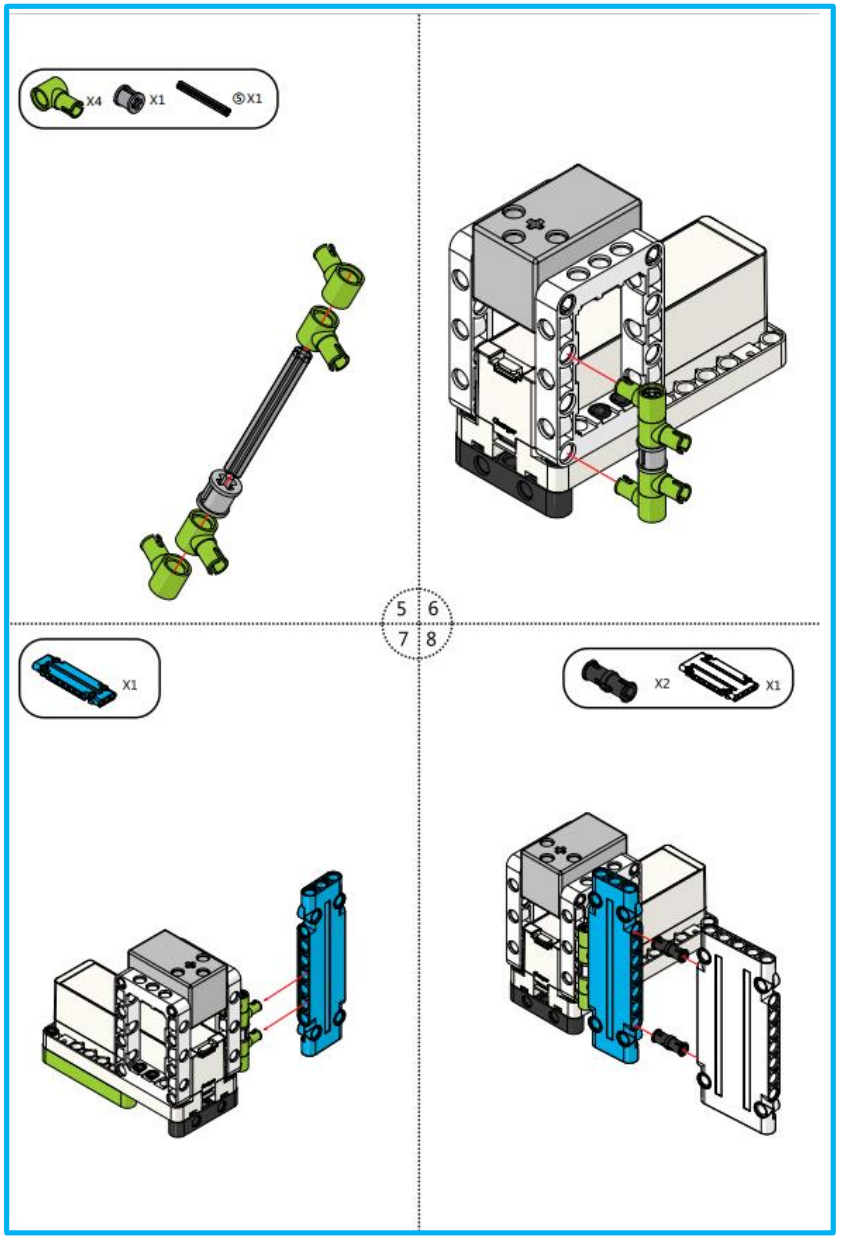
2. Select and click the extension you need



Design Documents

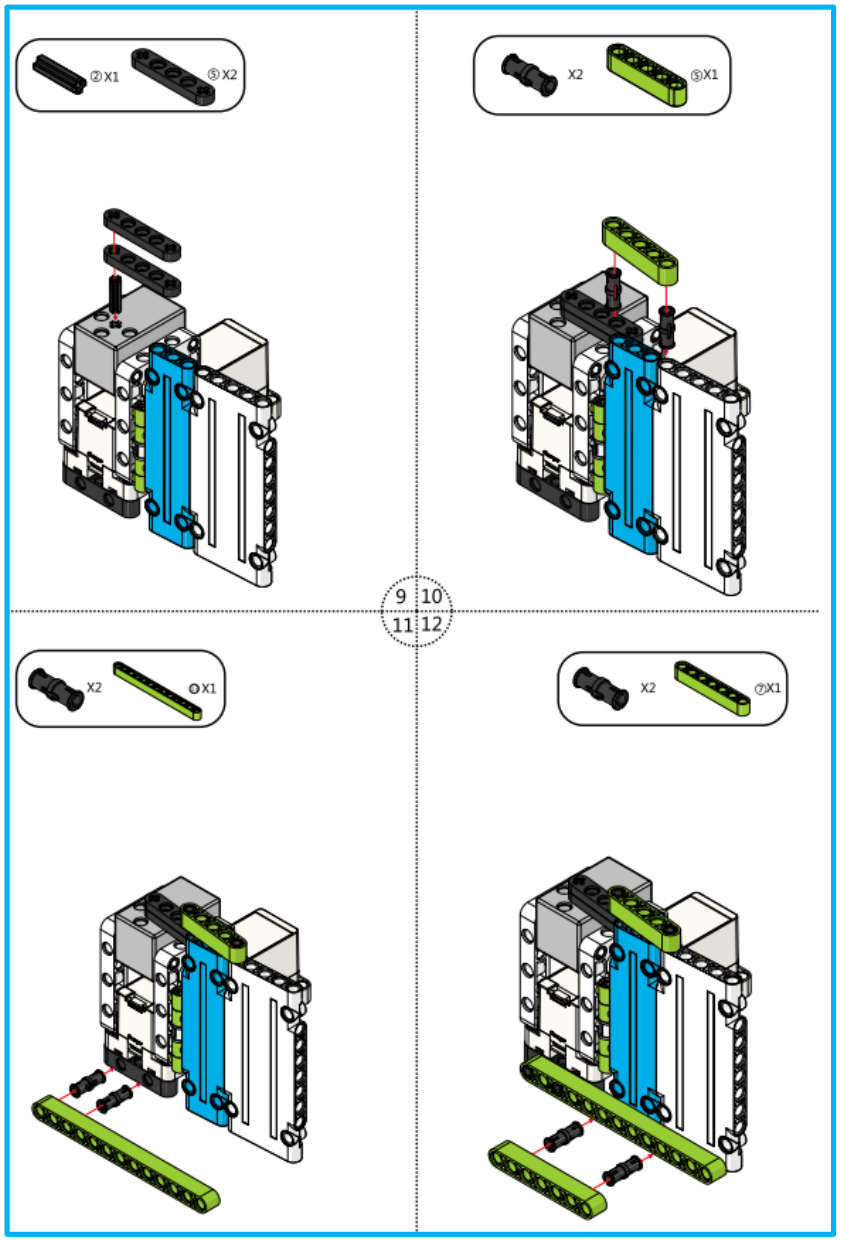
Example—Smart Access Control

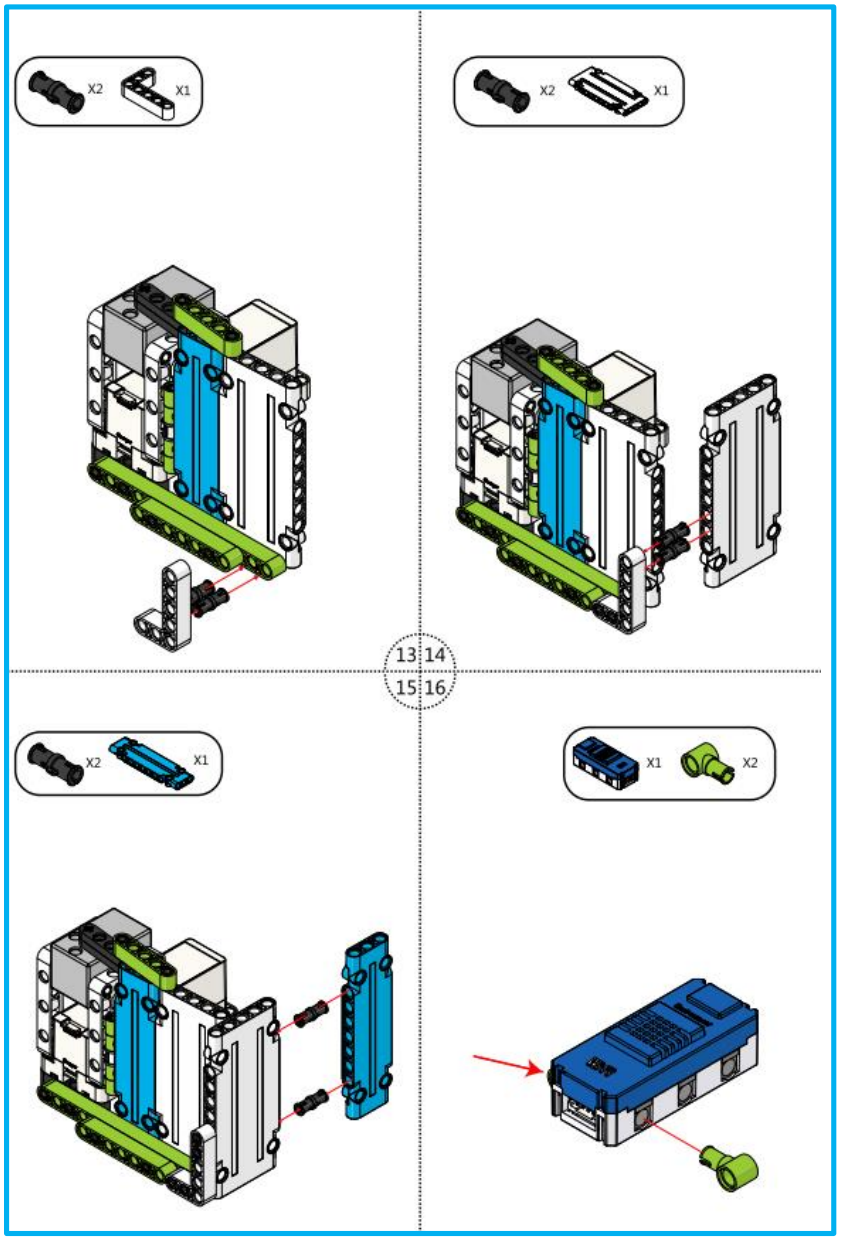




Design Documents

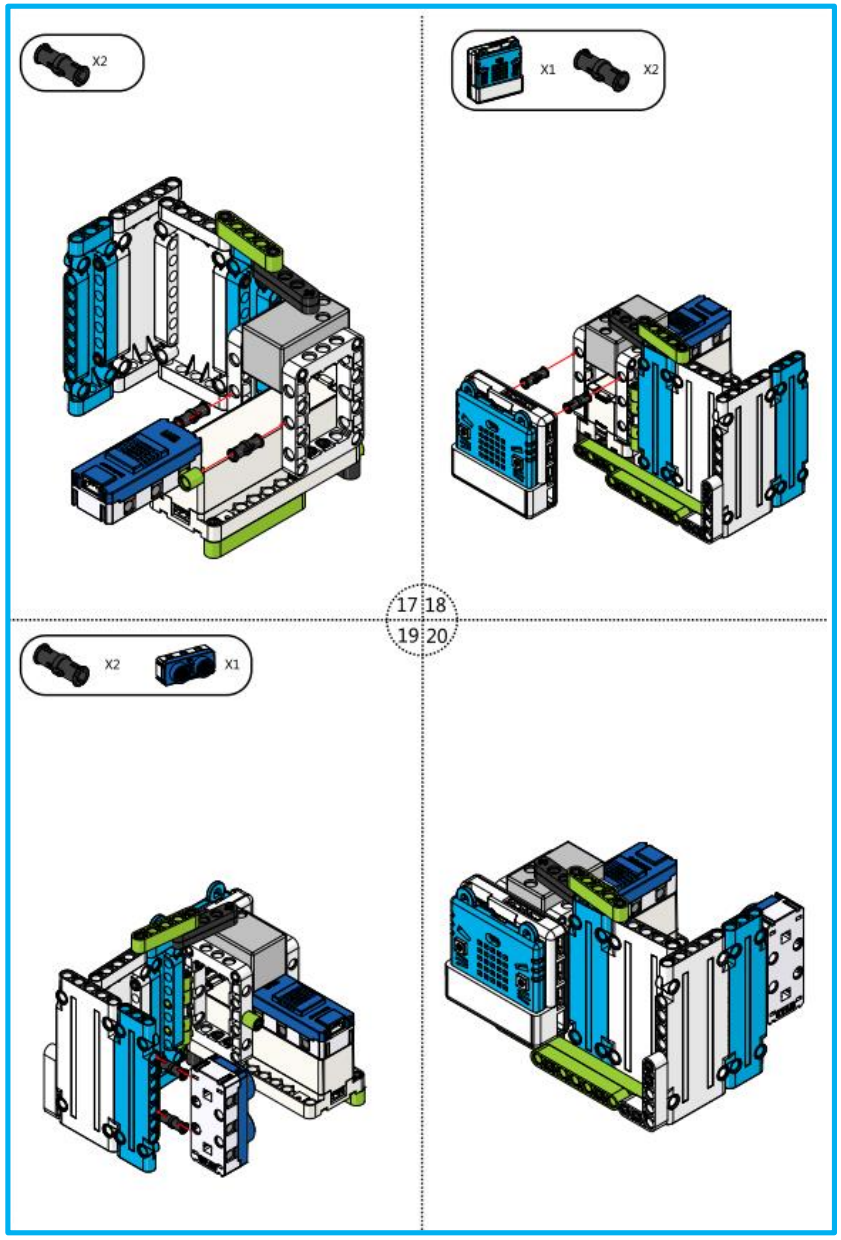
Example—Smart Access Control





Design Documents

Example—Smart Access Control

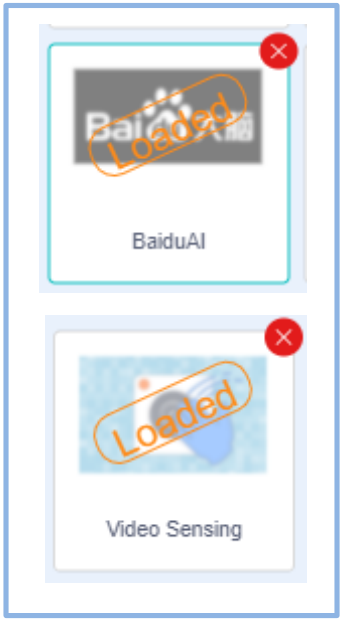


Completed the building instructure, Let's begin the next step — programming

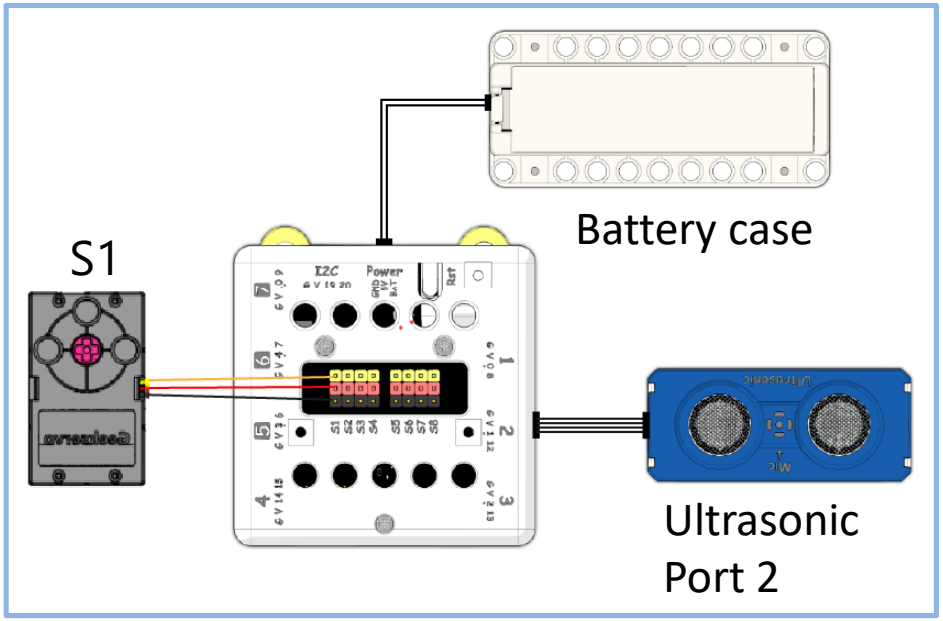
Design Documents

Example—Smart Access Control

1. Add extension

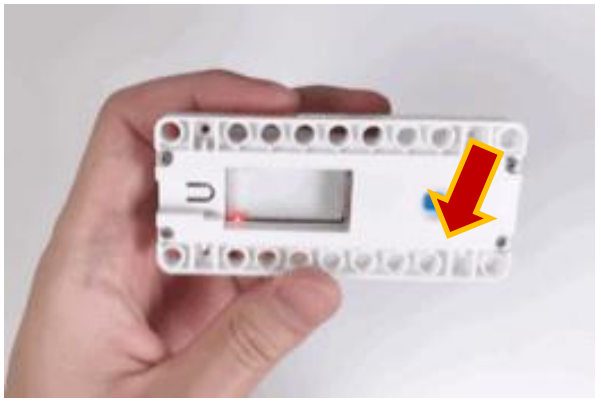


2. Connecting hardware



3. Power Tips

- Turn on the power

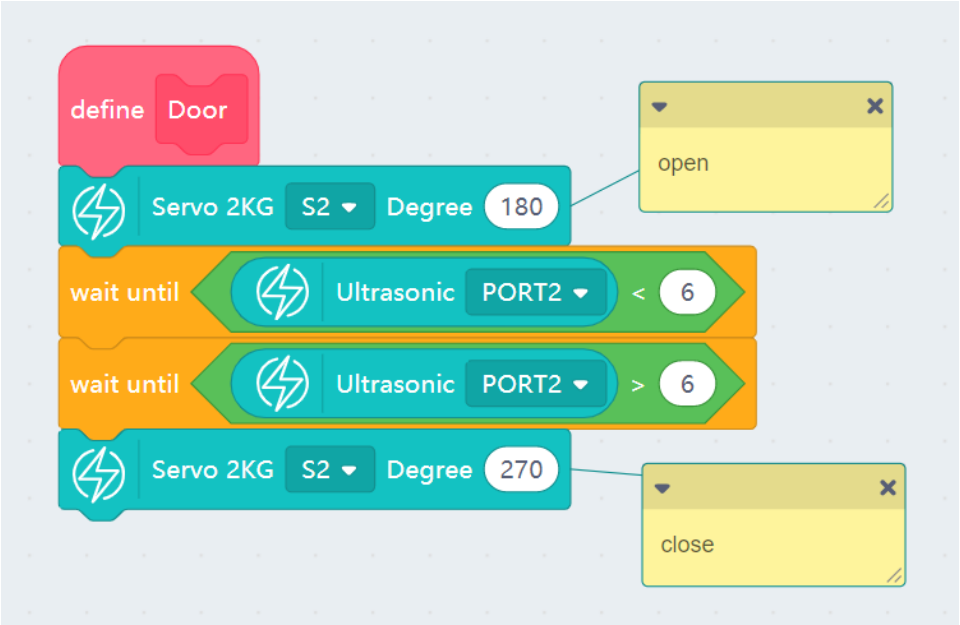


- If the power indicator is not on, press the activate power button

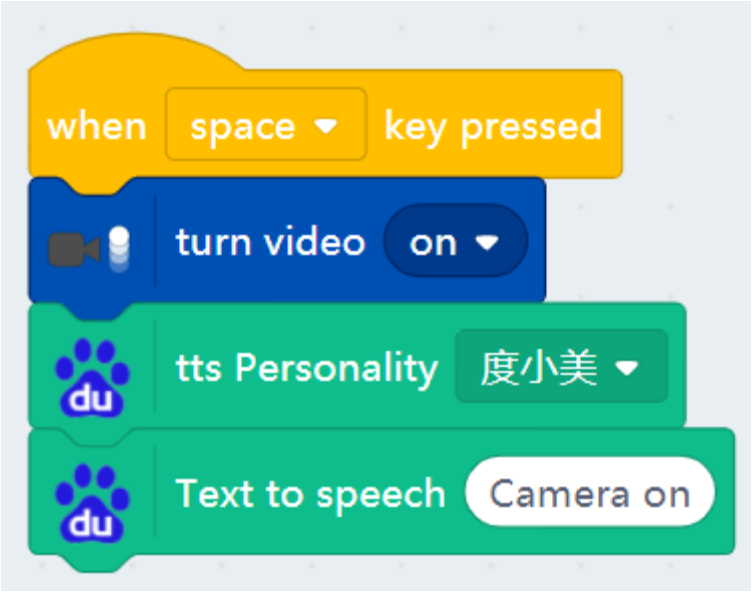
Design Documents

Example—Smart Access Control

1. Define the function of door opening. When the door is opened, ultrasonic starts to work and the door closed when person passed was detected.



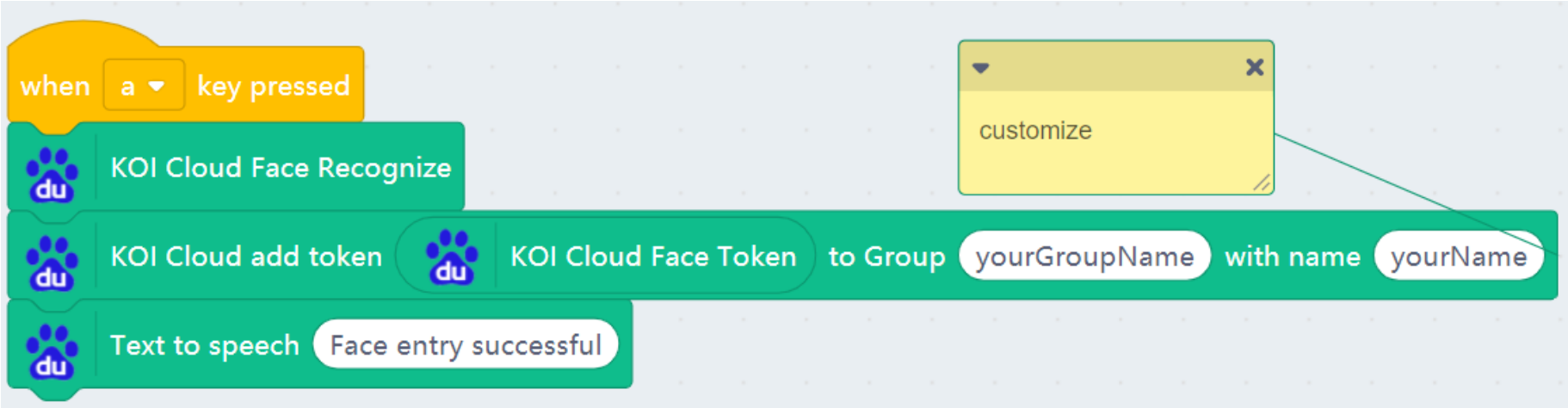
2. When you press the space on keyboard , the computer camera turns on and play prompt voice



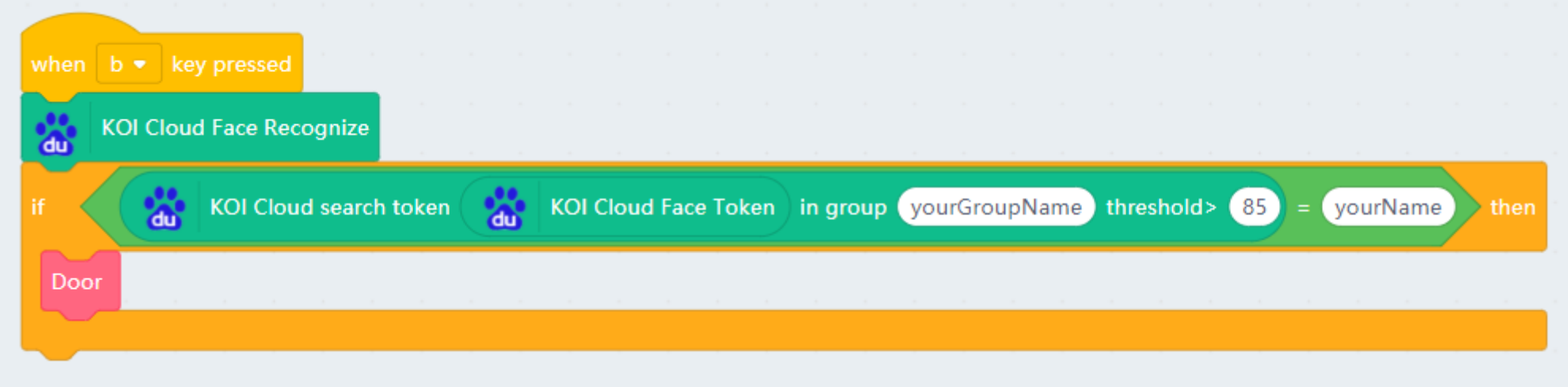
Design Documents

Example—Smart Access Control

3. Upload the name of the face to the face group in the cloud



4. When the right face is recognized from the cloud face group, the door will open



Design Documents

Detail of other applications can be found on the website : www.kittenbot.cc