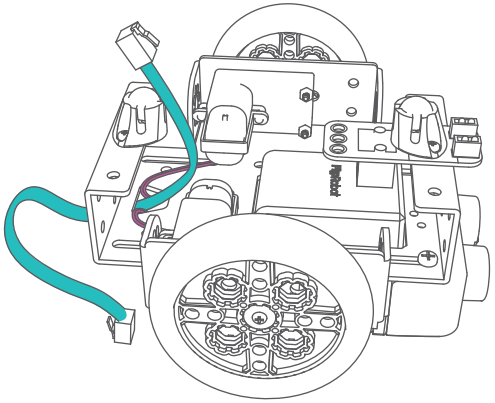
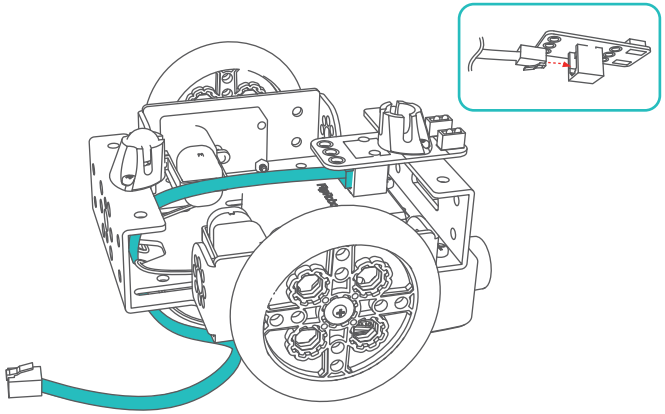
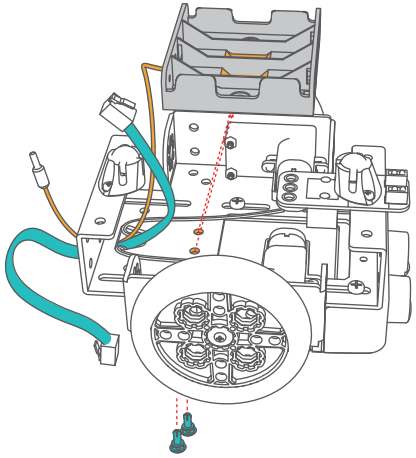


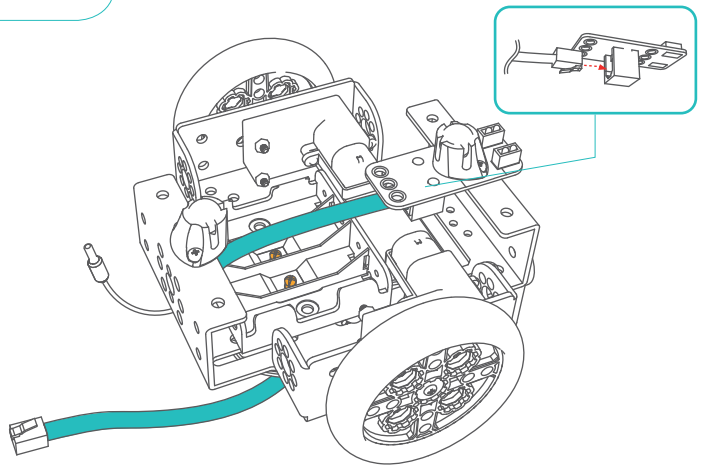


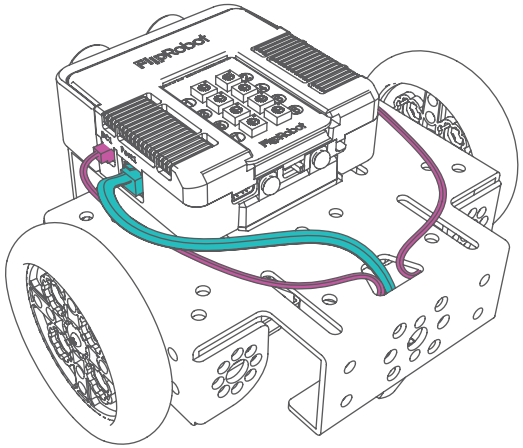
E310 PLUS

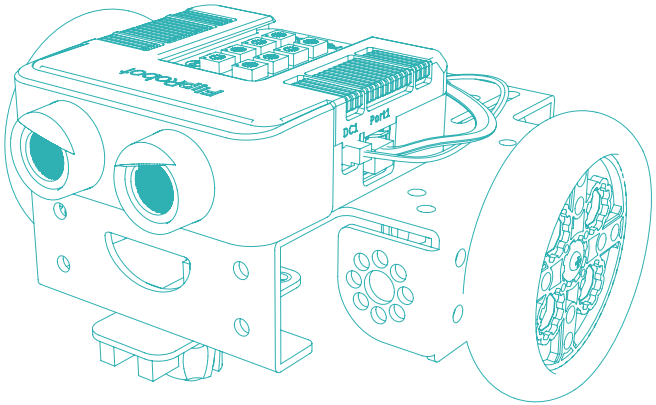
11 12

E310



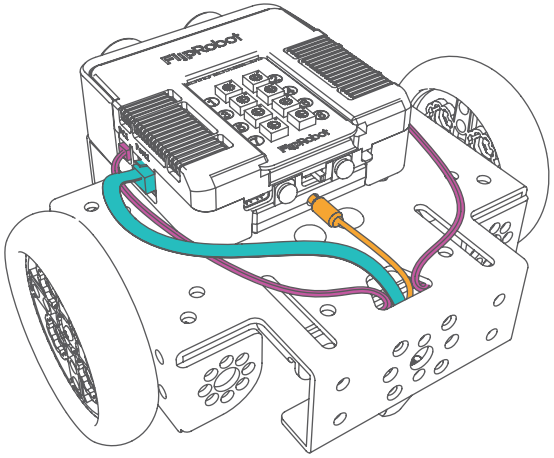


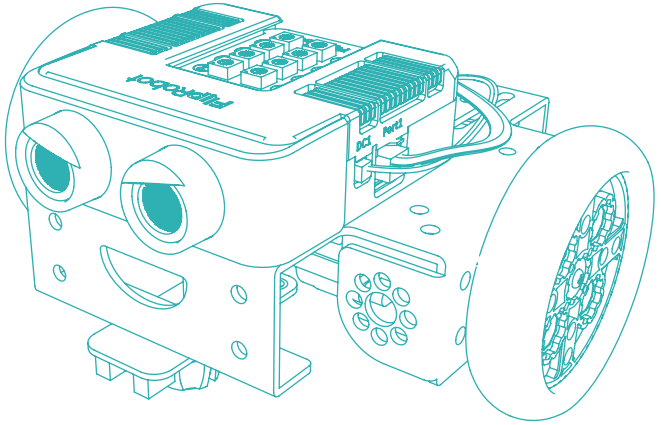




13 14

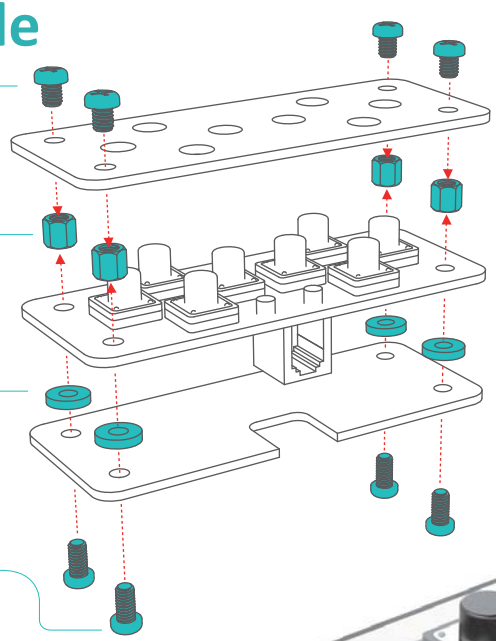
Assembly Completed

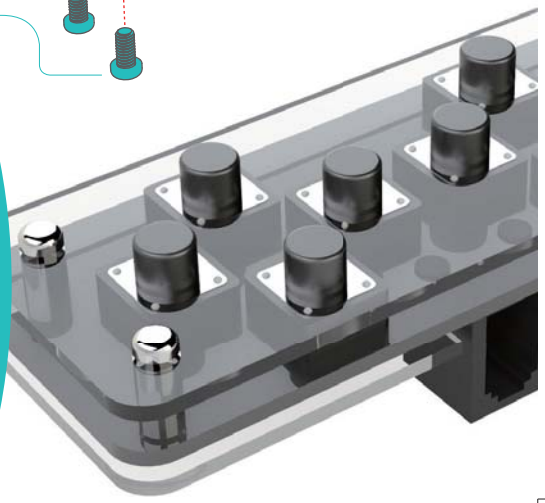




Joystick Module
搖桿組裝 / 摇杆组装

Joystick Module
Assembly Instruction



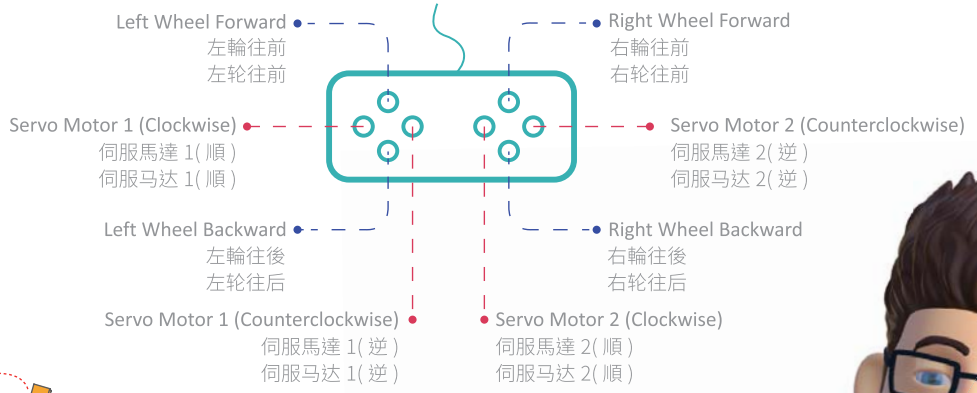


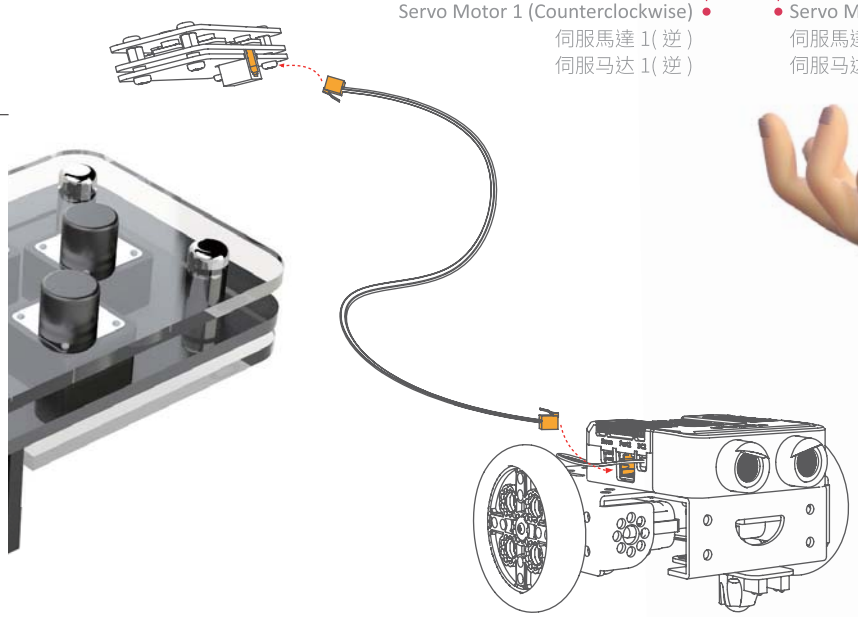
a. M4*5mm Round Head Screw
b. Round Acrylic Plate
c. M4*6mm Double-Sided Hex Pillar
d. M4*8mm Round Head Screw

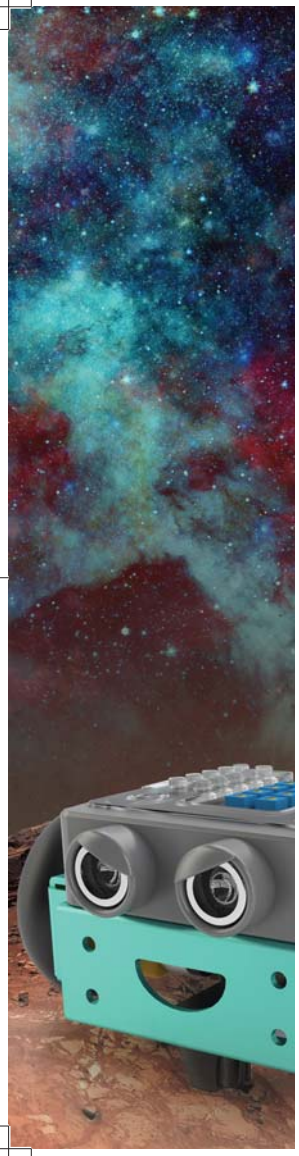
a. M4*5mm 圓頭螺絲
b. 圓形墊片
c. M4*6mm 雙通六角隔離柱
d. M4*8mm 圓頭螺絲

a. M4*5mm 圆头螺丝
b. 圆形垫片
c. M4*6mm 双通六角隔离柱
d. M4*8mm 圆头螺丝

Controller


Left Wheel Forward
左輪往前
左轮往前
Right Wheel Forward
右輪往前
右轮往前
Servo Motor 1 (Clockwise)
伺服馬達 1(順)
伺服马达 1(順)
Servo Motor 2 (Counterclockwise)
伺服馬達 2(逆)
伺服马达 2(逆)
Left Wheel Backward
左輪往後
左轮往后
Right Wheel Backward
右輪往後
右轮往后
Servo Motor 1 (Counterclockwise)
伺服馬達 1(逆)
伺服马达 1(逆)
Servo Motor 2 (Clockwise)
伺服馬達 2(順)
伺服马达 2(順)





Control Mode

5 Basic Control Modes
Learning CASE Curriculum Topic 1 & 2

Switch on power to commence the following process.

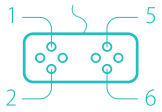
LED light flashes 5 times → Short music indicates power on successful → **Enter Mode 1** (Blue Light) Joystick Control Mode

Press the button on the back right position of the FlipBrain to enter different default firmware modes.

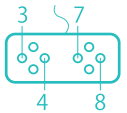
Enter Mode 2 (Yellow Light) Detection Mode → **Enter Mode 3** (Green Light) Obstacle Avoidance Mode → **Enter Mode 4** (White Light) LED Color Setting Mode

Enter Mode 5 (Purple Light) Line Tracing Mode

Mode 1
(Blue Light)
Joystick Control Mode

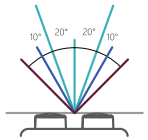


1. Left Wheel Forward
2. Left Wheel Backward
5. Right Wheel Forward
6. Right Wheel Backward



3. Servo Motor 1 (Clockwise)
4. Servo Motor 1 (Counterclockwise)
7. Servo Motor 2 (Clockwise)
8. Servo Motor 2 (Counterclockwise)

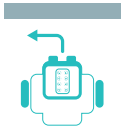
Mode 2
(Yellow Light)
Detection Mode



Ultrasonic sensor function definition:
Detection distance scope : 5~15cm
Detection angle scope : 0~30 degree

When in Detection Mode, LED will signal red when object detected.

Mode 3
(Green Light)
Obstacle Avoidance Mode



Ultrasonic Sensor Self-Driving Mode, variable board defines turning direction and function duration.

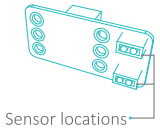
Extension of detection mode, obstacle avoidance mode can be used to complete various challenges.

Mode 4
(White Light)
LED Color Setting Mode

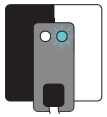
Understand the principle of chromatic tri-color by using variable board to adjust RGB LED light color combinations and create different color variations.

In LED Color Setting Mode, RGB values of LEDs can be adjusted via variable board.

Mode 5
(Purple Light)
Line Tracing Mode



With configurations through variable board, use infrared sensors to detect black and white areas, and achieve line tracing functions.

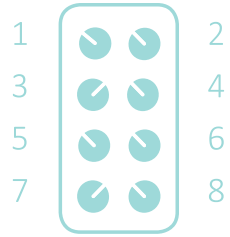


Black area: Input is 0 since no infrared reflection is detected (light off).

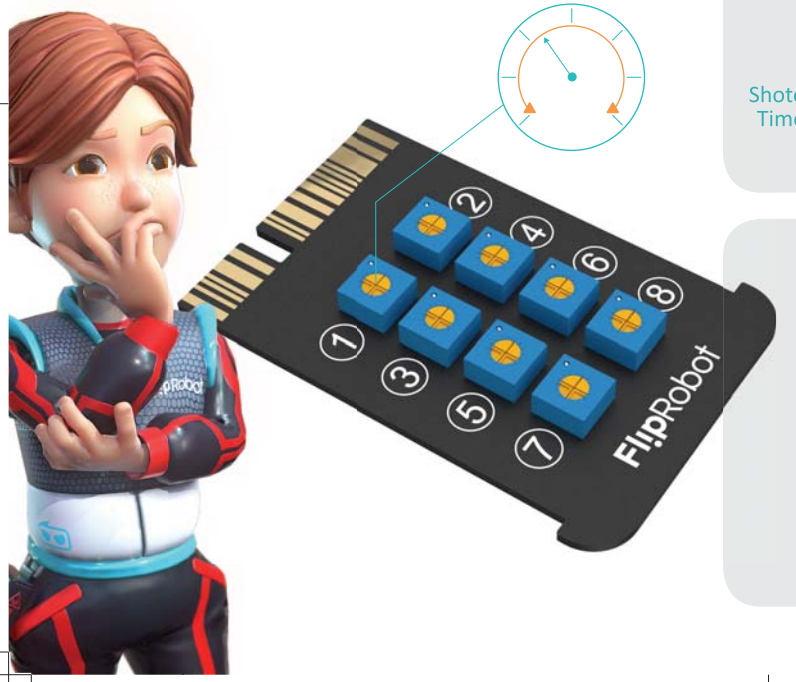
White area: Input is 1 since infrared reflection is detected (blue light on).

Variable Board

Function Definition

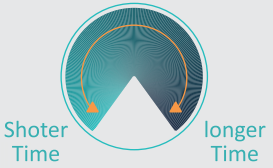


Easy to operate
Simple to use in learning programming logic



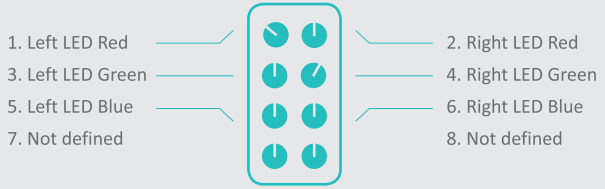
Mode 3
(Green Light)
Obstacle Avoidance Mode

1. Turn left or right when sensing first wall
3. Turn left or right when sensing second wall
5. Turn left or right when sensing third wall
7. Left DC motor speed

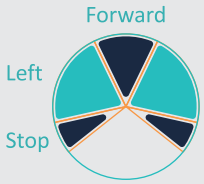


2. Turning time length when sensing first wall
4. Turning time length when sensing second wall
6. Turning time length when sensing third wall
8. Right DC motor speed

Mode 4
(White Light)
LED Color Setting Mode

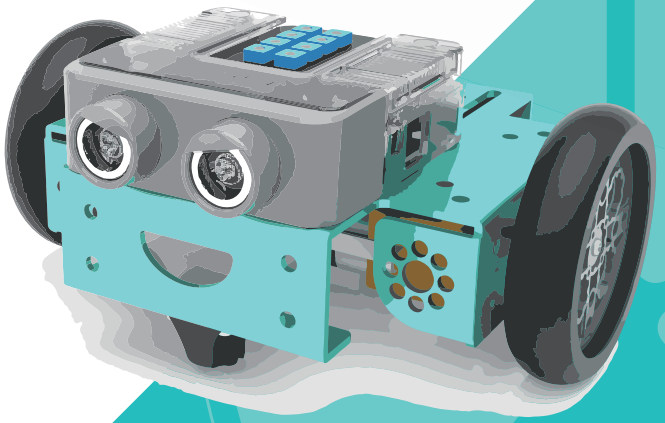


Mode 5
(Purple Light)
Line Tracing Mode



Adjust the variable board dials from 1 to 4. Set up different combinations to create interesting line tracing results.

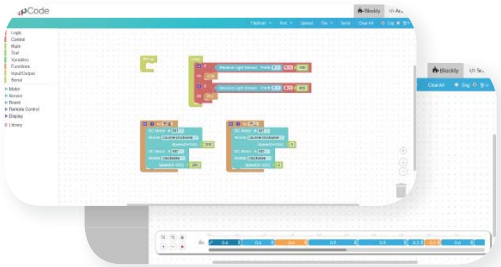
Example



Learn STEAM and 5C skills through play and experiment

Comprehensive Educator Resources in FlipRobot 2.0

The FlipRobot Cloud Platform (FlipCloud) provides teachers with CASE Robotics Curriculum resources, software tools, online knowledge base, and professional training to help facilitate implementation. FlipCloud is also home to a robotics community where teachers and students can interact.

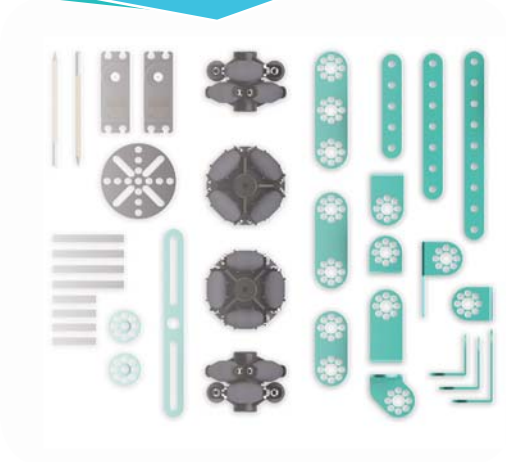


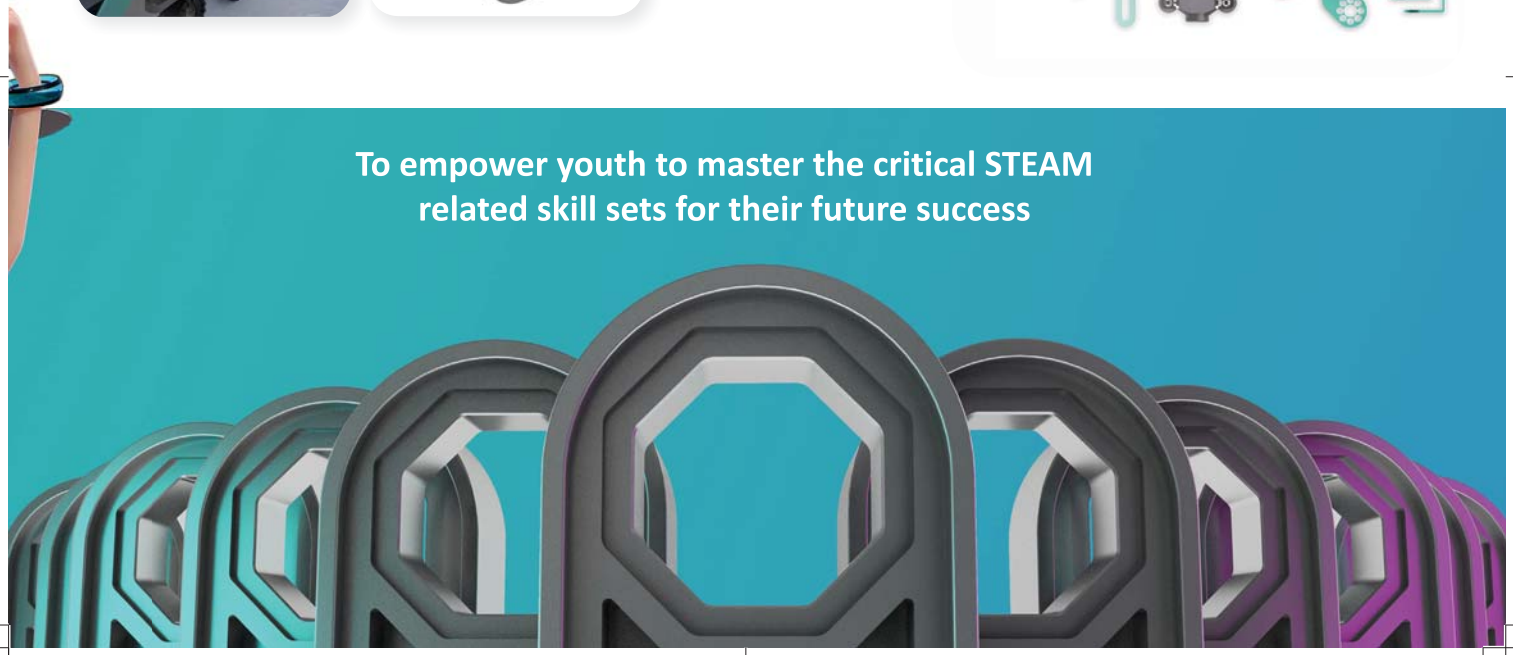
Learning with UC Approved Curriculum

For manual: CASE Robotics Curriculum is University of California approved, which means that the curriculum has clear learning outcomes and that the curriculum content is equipped with high academic level of quality and credibility.

Enhanced Design for Education

Developed based on teaching needs, FlipRobot not only possess a wide array of mechanical parts but there is also a unique FlipVariable board module, FlipTool programming interfaces, two battery configurations, and a Bluetooth board to emphasize the significance of AI and IoT in the near future.





Extension Kits for Endless Possibilities

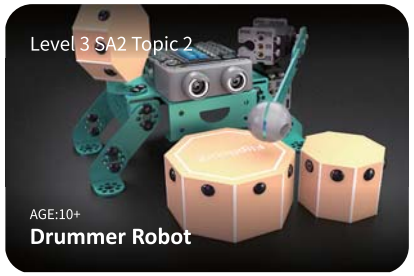
In accordance with CASE Robotics Curriculum's CPBL curriculum design, each lesson topic has its own corresponding robotics parts . The various extension kits will provide endless possibilities for students.

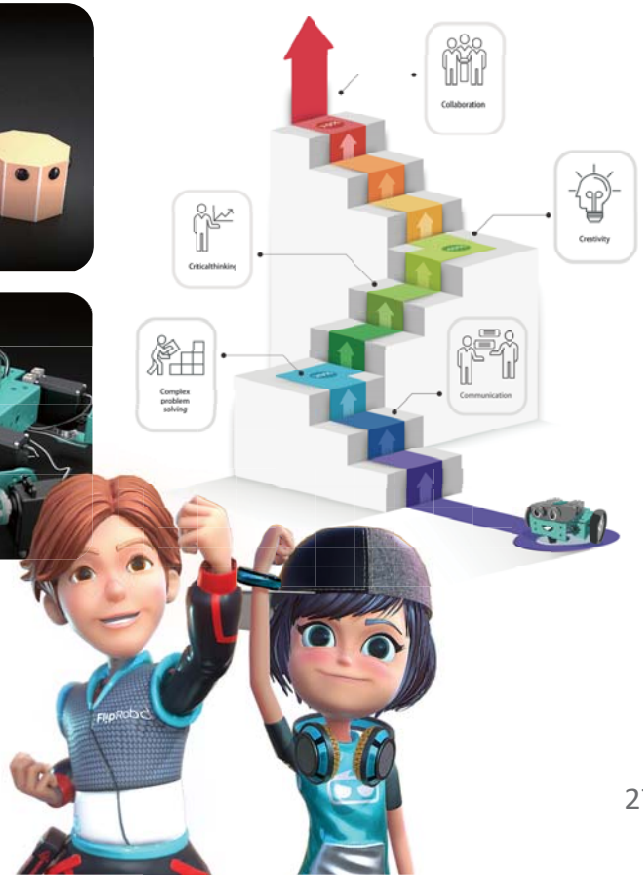
Interdisciplinary Learning Based on STEAM Curriculum

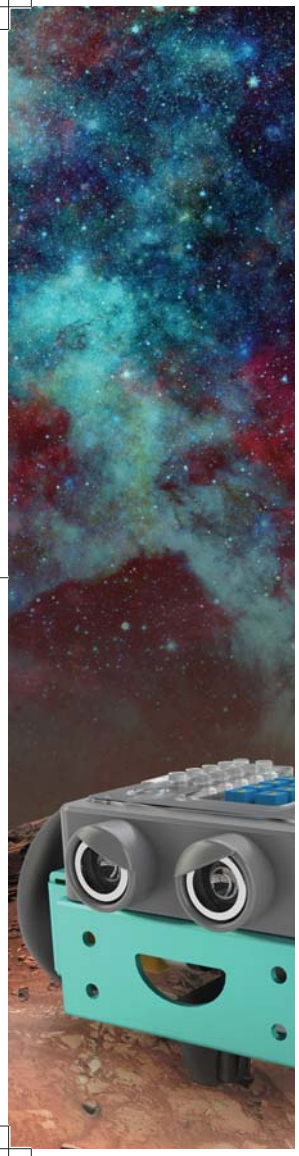
For manual: CASE Robotics Curriculum is designed using contextual problem-based learning (CPBL). Student can not only master interdisciplinary subject knowledge but also develop competitive skills required in the 21st century.

Transportable Skills of the 21st Century

For manual: FlipRobot's comprehensive STEAM robotics education solution will help students develop crucial 5C abilities: creativity, critical thinking, collaboration, cooperation, and communication to overcome future challenges.







Control Mode

操作模式

5 種基本模式，
學習主題一與主題二的課程內容。

開機後進入以下程序

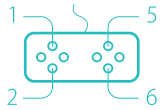
閃燈 5 次 ▷ 音樂響起 ▷ 進入模式 1
(藍燈)(線控模式)

按下主機後方 button 模式切換

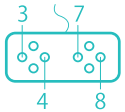
進入模式 2
(黃燈)(測距模式) ▷ 進入模式 3
(綠燈)(避障模式) ▷ 進入模式 4
(白燈)(調色模式)

進入模式 5
(紫燈)(循跡模式)

模式 1
(藍燈)(線控模式)

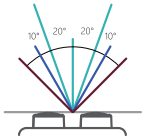


1 左輪往前
2 左輪往後
5 右輪往前
6 右輪往後



3 伺服馬達 1 (正轉)
4 伺服馬達 1 (逆轉)
7 伺服馬達 2 (正轉)
8 伺服馬達 2 (逆轉)

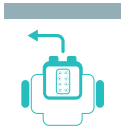
模式 2
(黃燈)(測距模式)



超音波功能定義 :
測距 :5~15 公分
偵測範圍 : 左右 0~30 度以內為佳。

模式下持續黃燈，當感測到時則亮起紅燈，輕鬆了解偵測範圍。

模式 3
(綠燈)(避障模式)

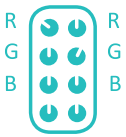


超音波自走車模式，可由變數板定義轉向與轉速玩出各種可能性。

可結合測距感應模式，來設置各種有趣的場地環境進行避障實驗。

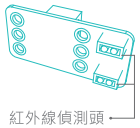
模式 4
(白燈)(調色模式)

了解色光三原色原理，藉由變數板可自行調整 LED，呈現出不同的色彩變化。



調色模式下起始為亮白色燈，調整左右的 RGB 數值，可直接看到 LED 燈的顏色變化。

模式 5
(紫燈)(循跡模式)

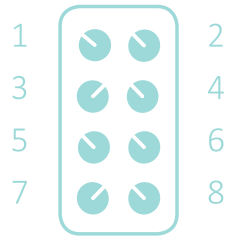


利用紅外線偵測黑白區域，配合變數板的調控，達到循跡功能。

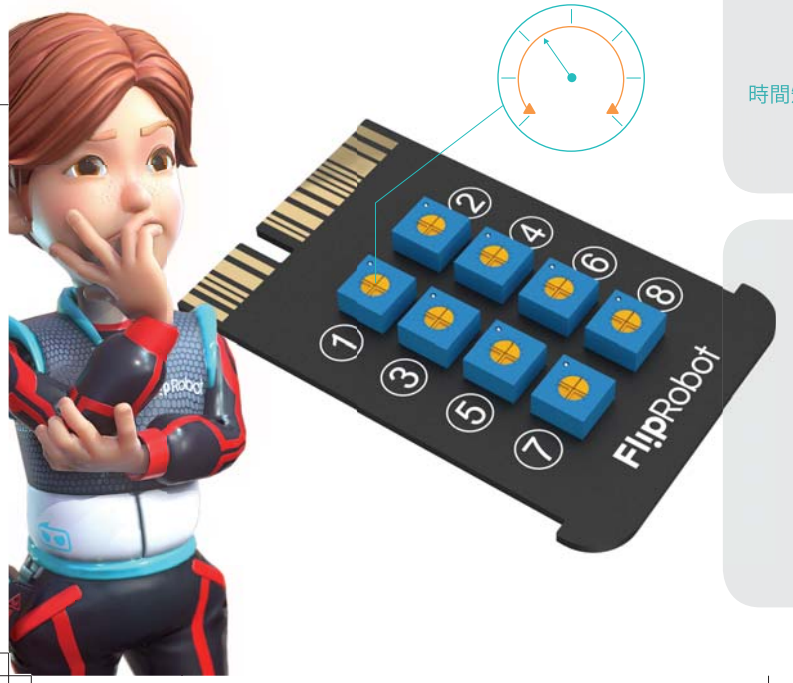
黑區域：無偵測為 0 (熄燈)
白區域：有偵測為 1 (亮藍燈)

Variable Board

變數板功能定義



變數板
輕鬆好上手
簡單學習程式邏輯



模式 3
(綠燈)(避障模式)

1. 遇到第一面牆左轉或右轉
3. 遇到第二面牆左轉或右轉
5. 遇到第三面牆左轉或右轉
7. 左直流馬達轉速

2. 遇到第一面牆轉彎的持續時間
4. 遇到第二面牆轉彎的持續時間
6. 遇到第三面牆轉彎的持續時間
7. 右直流馬達轉速

模式 4
(白燈)(調色模式)

1. 左 LED (紅)
3. 左 LED (綠)
5. 左 LED (藍)
7. 無

2. 右 LED (紅)
4. 右 LED (綠)
6. 右 LED (藍)
8. 無