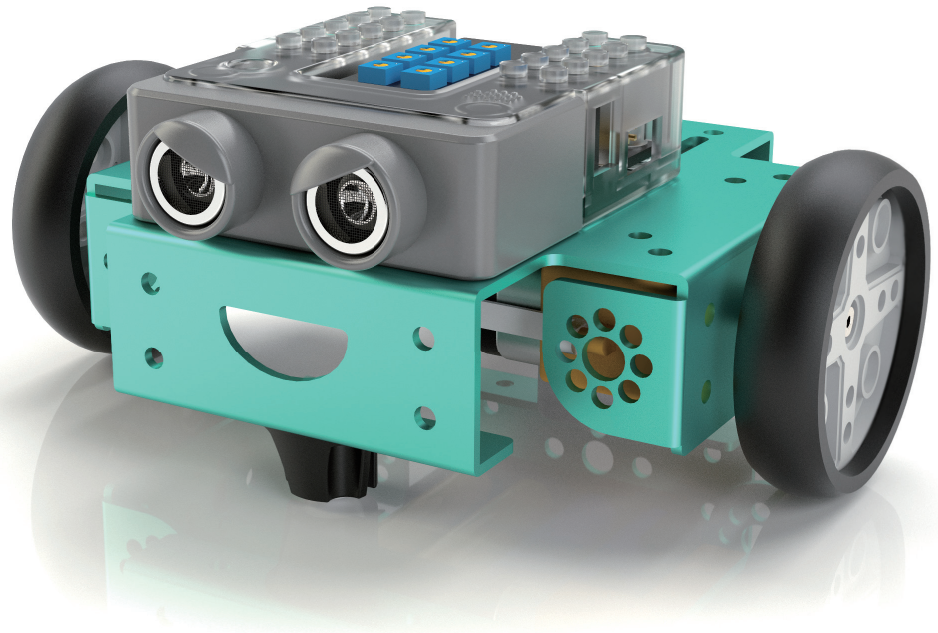


FlipRobot E300

The Ultimate Robotic STEAM Learning Solution

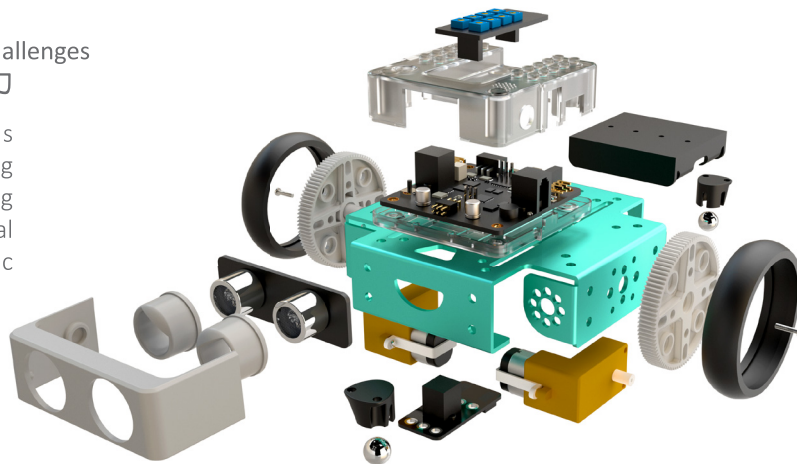


actura

Learn STEAM through FlipRobot 透過機器人學玩 STEAM

Develop students' STEAM skills through FlipRobot challenges
在機器人的任務挑戰活動中培養 STEAM 素養能力

With CASE curriculum at the core, FlipRobot is developed from robotic Problem-based learning approach to the complete STEAM skills learning framework. FlipRobot helps students learn the critical transferable skills of the 21st century through robotic learning, and develop their key STEAM capabilities.

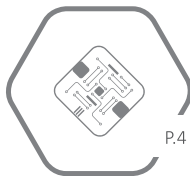


Menu

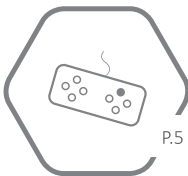
目錄



P. 3 Parts List
零件清單



P.4 FlipBrain
Introduction
FlipBrain 介紹



P.5 Joystick
Assembly
搖桿組裝



P. 6 Assembly
Instruction
組裝及提醒



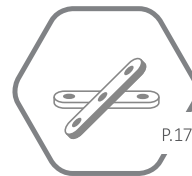
P.12. Operating
Modes
操作模式
中文請翻至 P.18 頁



P.14 Variable Control
Board Definition
變數板功能定義
中文請翻至 P.20 頁

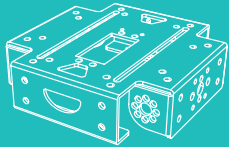


P.16 Cloud-based
Curriculum
雲端課程
中文請翻至 P.22 頁

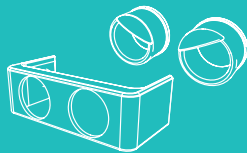


P.17 Extension Kits
延伸套件
中文請翻至 P.23 頁

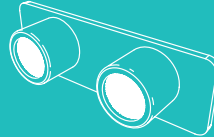
E300 Parts List



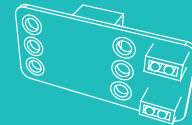
Chassis



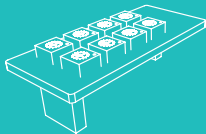
FlipEye



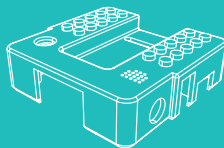
Ultrasonic Module



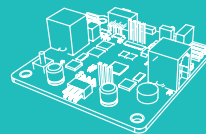
Infrared Module



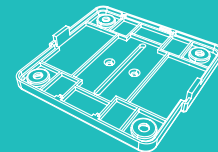
Variable Board



Top Cover



FlipBrain

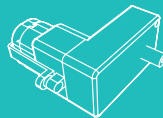


Bottom Cover



Wheel

X2



DC Motor

X2



Battery Case



USB Cable + Ethernet Cables



Caster Wheel

X2



Nut



M2.6 Screw (DC Motor)

X4



M2.6 Screw x 2
(Battery Case)



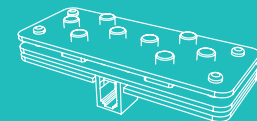
M2 6 Screw x 2
(Wheel)



M3 Screw x 4

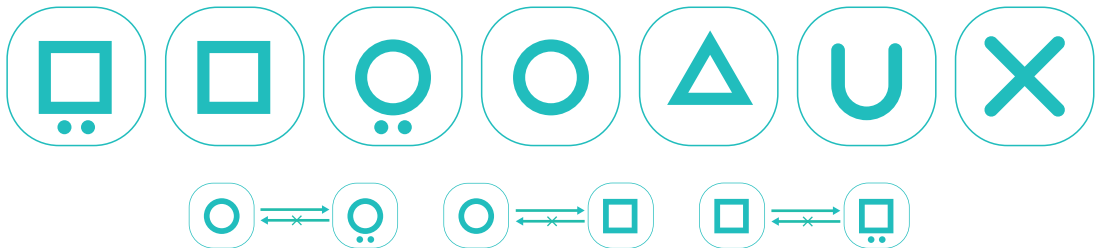
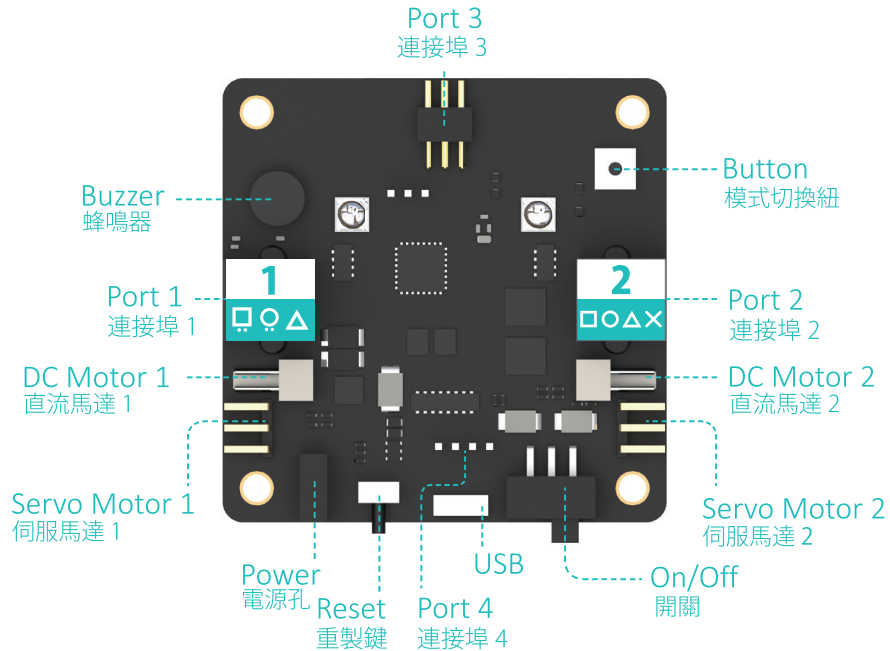


M4 Screw x 4



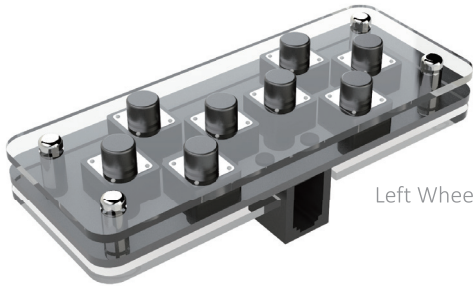
Joystick Module

FlipBrain



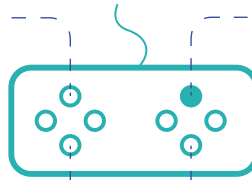
Controller

搖桿組裝



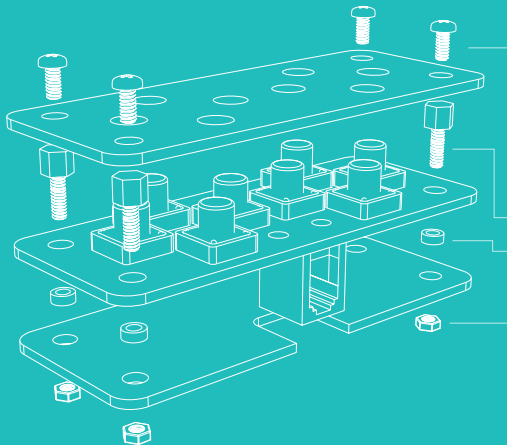
Left Wheel Forward
左輪往前

Right Wheel Forward
右輪往前



Left Wheel Backward
左輪往後

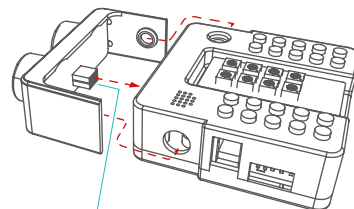
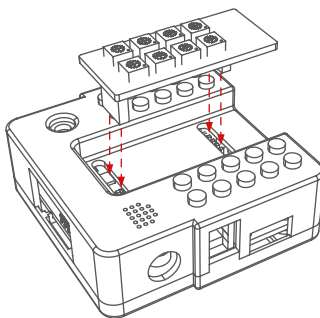
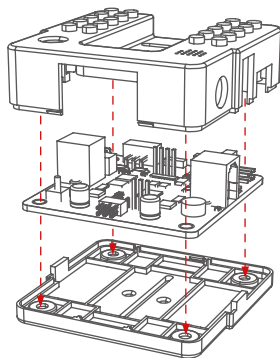
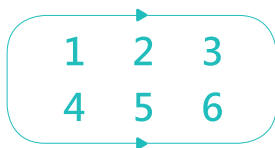
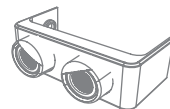
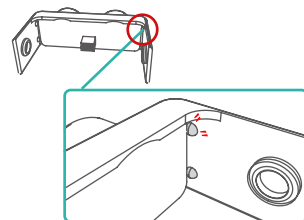
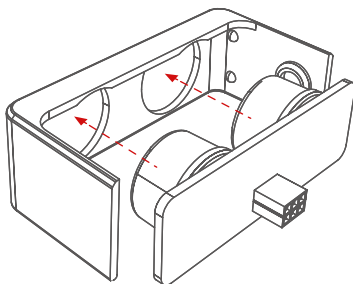
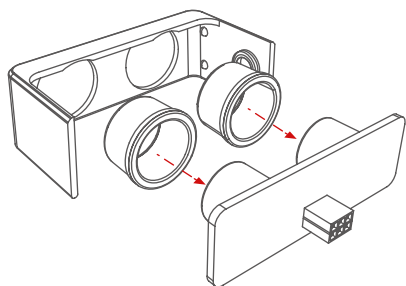
Right Wheel Backward
右輪往後

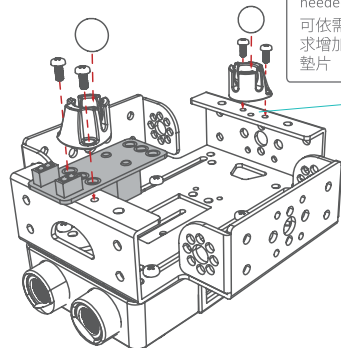
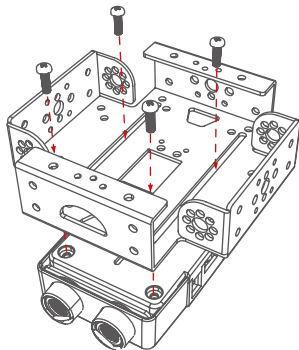
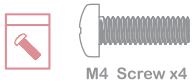
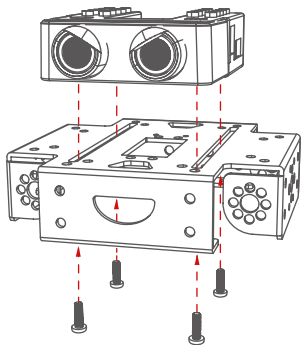


- a. M4 Screw x4
- b. Copper Pillar x4
- c. Circular Acrylic Plate x4
- d. Nut x4

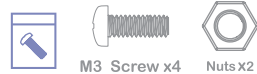
Joystick Module
assembly instruction



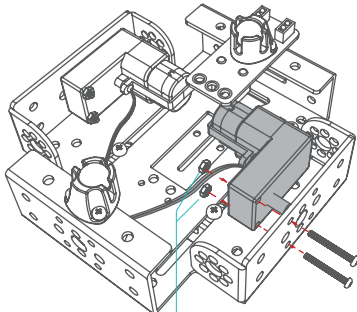
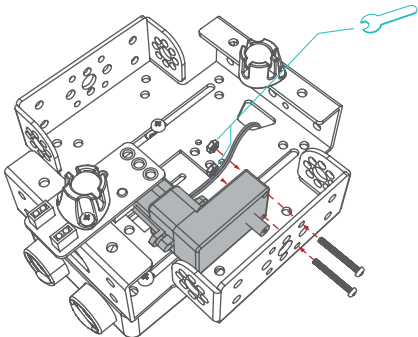




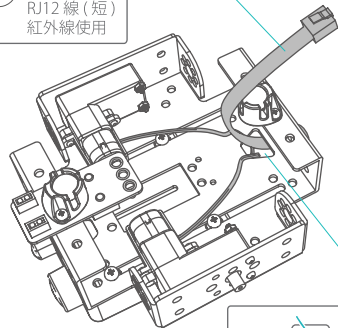
Add in the pad if needed
可依需求增加墊片

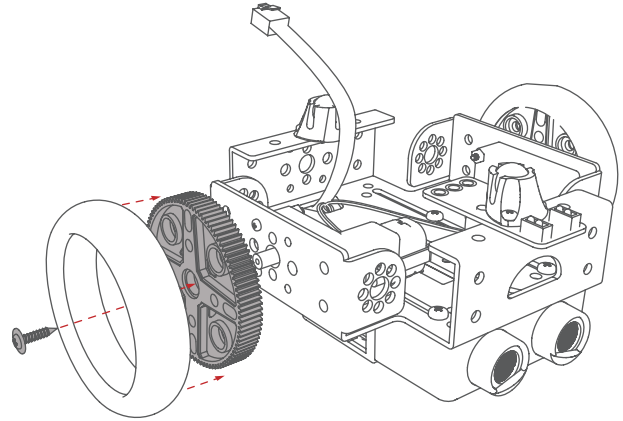
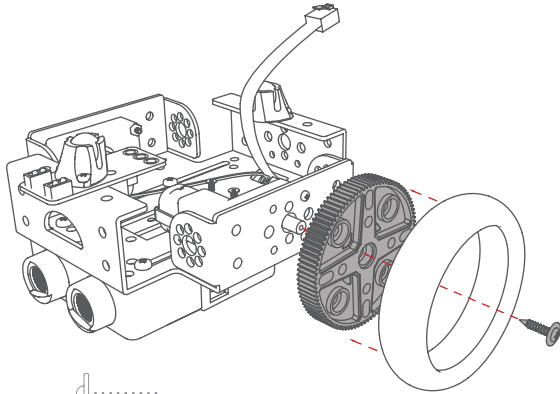
7 8 9
10 11 12



IR Sensor
RJ12 cable (short)
RJ12 線 (短)
紅外線使用

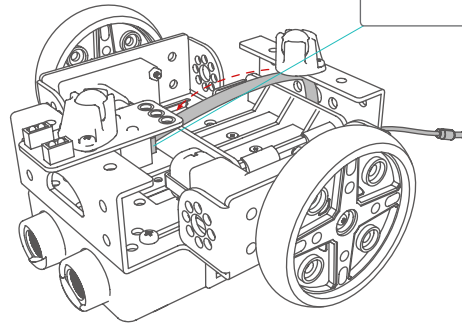
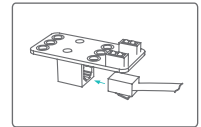
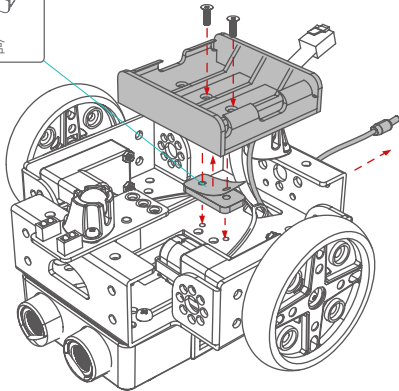


Cable Outlet
線路孔

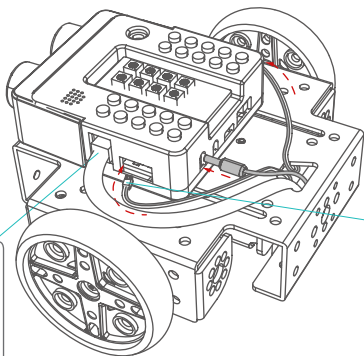


M2.6 Screw x 2

13 14
16 15



M2.6 Screw x 2



IR sensor's RJ12 cable need to be inserted into Port 1

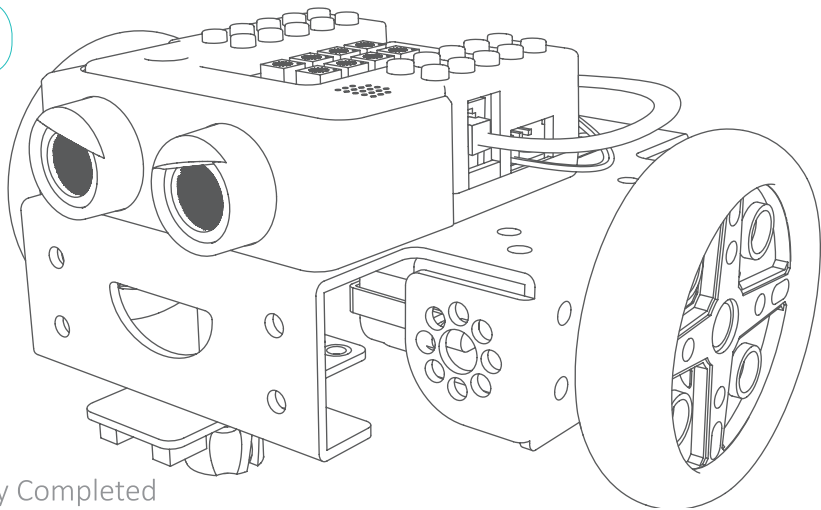
紅外線對應 RJ12 需插入 Port1

- Left motor wires connect to DC motor 1 port
- Right motor wires connect to DC motor 2 port

左馬達對應直流馬達 1 的接頭。

右馬達對應直流馬達 2 的接頭。

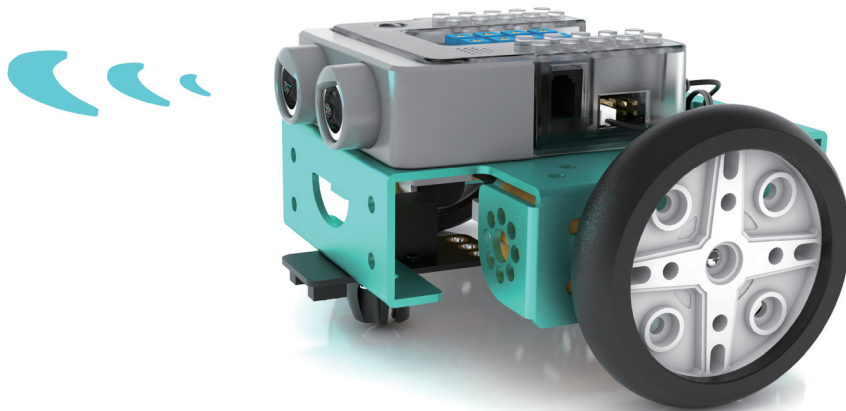
17 18



Assembly Completed

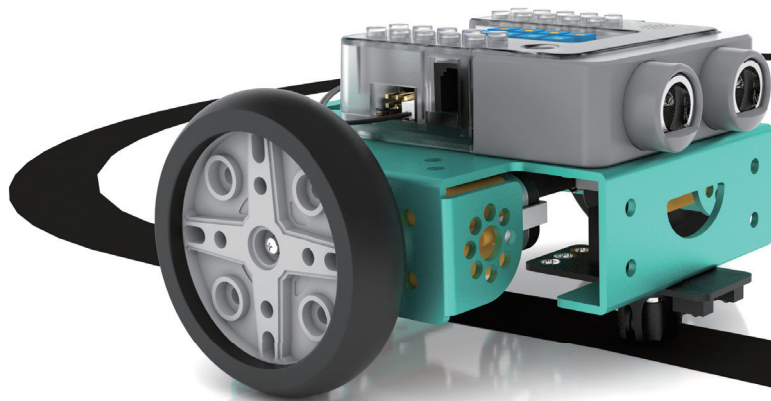
Assembly Tips

- 1** When assembling FlipEye cover with ultrasonic sensor module, please make sure you hear the snapping sound on each side of the FlipEye cover, then you know you have assembled it successfully.
 - 2** Install Variable Board onto the top cover of FlipBrain, and ensure the FlipRobot logo on Variable Board is towards the rear-end of the chassis.
 - 3** When installing FlipEye onto FlipBrain, please ensure FlipEye's pins are connected with FlipBrain pin port correctly, and you will hear the snapping sound on each side of the FlipBrain.
 - 4** When installing infrared sensor module onto the chassis, please ensure the infrared sensors are facing towards the front of the chassis.
- 1** 組裝眼睛與超音波電路板時，請注意排針孔需朝下，卡入時會有喀一聲才算組裝成功。
 - 2** Variable Board(變數板)請從上而下對準孔位後再與 FlipBrain 接合，如需拔起請輕輕向上拔出。
 - 3** 組裝眼睛與 FlipBrain 時，請注意超音波排針孔已順利與 FlipBrain 接合。
 - 4** 您可以選擇將紅外線板偵測頭向外或向內組裝方式，可以擁不同的循跡模式體驗。



- 5 When installing the rear-end caster wheel onto the chassis, depending on the ground condition, you can decide whether it is necessary to add the small acrylic pad between the caster wheel and chassis.
- 6 Stick the small acrylic pad on the back of the battery case. Please ensure all the cables are put through the ladder-shaped hole at the rear-end of the chassis first before securing the battery case onto the chassis.
- 7 You can either use four standard 1.5V AA batteries or two 14500 3.7V Lithium-ion batteries with two AA battery placeholders (dummy batteries) to power up FlipRobot.
- 8 Lastly, infrared sensor module's RJ12 cable needs to be connected with Port 1 on the chassis. Port 1's position on FlipBrain is shown on next page.

- 5 前後鋼珠輔助輪，組裝方式可依環境需求，自行增加輔助輪墊片高度，以適應不同地形。
- 6 請將墊片黏上電池盒，並留意線路須統一收納至後方梯形線孔，再進行電池盒組裝。
- 7 您可選用 1. 四顆 AA 3 號電池 2. 兩顆 14500 鋰電池加兩顆佔位桶，進行供電。
- 8 最後，紅外線板 RJ12 線路須接至 Port1 方能正常啟動，詳情翻閱 P.7 進行組裝。



FlipRobot
E300

Control Mode

5 Basic Control Modes
Learning CASE Curriculum Topic 1 & Topic 2

Switch on power switch or press reset button 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 top right position of the top cover
to enter different default firmware modes

Enter Mode 2
(Yellow Light)
Detection Mode



Enter Mode 3
(Green Light) Obstacle
Avoidance Mode



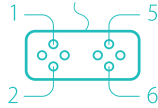
Enter Mode 4
(White Light) LED
Color Setting Mode

Enter Mode 5
(Purple Light) Line
Tracing Mode

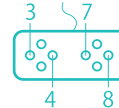


Mode 1

(Blue Light) Joystick Control Mode



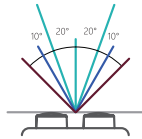
1. Left Wheel Forward
2. Left Wheel Backward
5. Right Wheel Forward
6. Right Wheel Backward



3, 4, 7, 8 buttons can be self-defined.

Mode 2

(Yellow Light) Detection Mode



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



When in detection mode, LED will signal red when object detected.

Mode 3

(Green Light) Obstacle Avoidance Mode



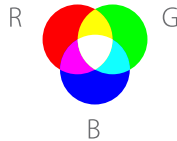
Ultrasonic sensor self-driving mode, variable board defines turning direction and function duration.



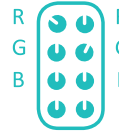
Extension of detection mode, obstacle avoidance mode can be used to complete various challenges.

Mode 4

(White Light) LED Color Setting Mode



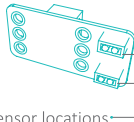
Understand the principle of chromatic tri-color by using variable board to adjust RGB LED light color combinations and create different color variations.



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

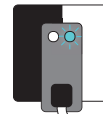
Mode 5

(Purple Light) Line Tracing Mode



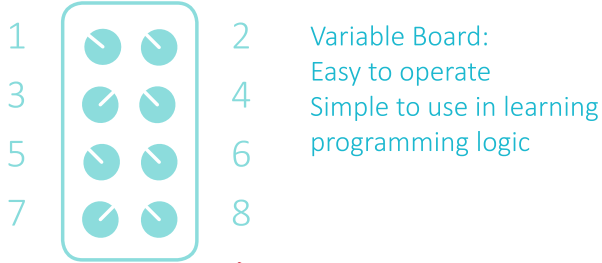
Sensor locations

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

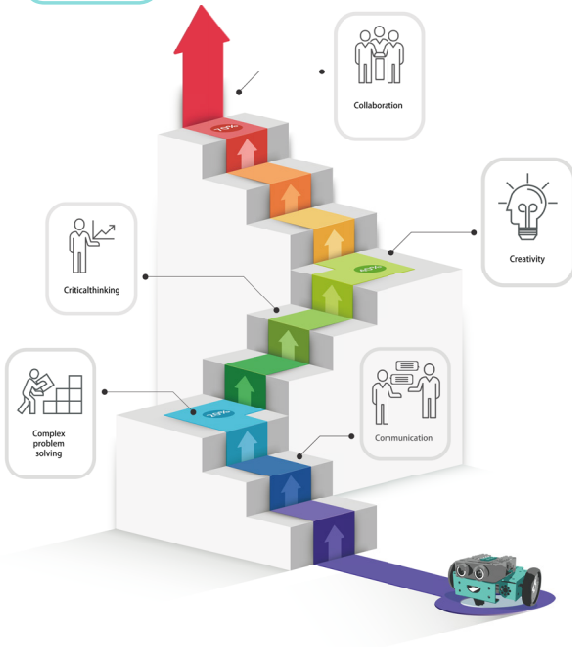


Black area: Input is 0 since no infrared reflection is detected (light off)
White area: Input is 1 since infrared reflection is detected (blue light on)

Variable Board function definition:

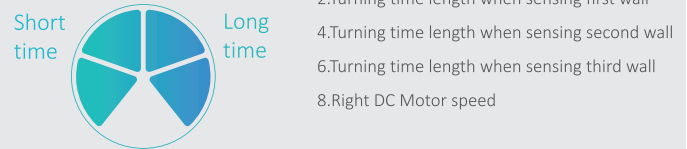
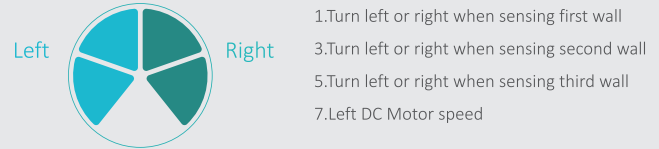


Variable Board:
Easy to operate
Simple to use in learning
programming logic



Mode 3

(Green light) Obstacle
Avoidance Mode



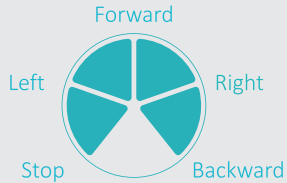
Mode 4

(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.

1. 00



3. 10



5. Forward speed

7. Not defined



Example

2. 01

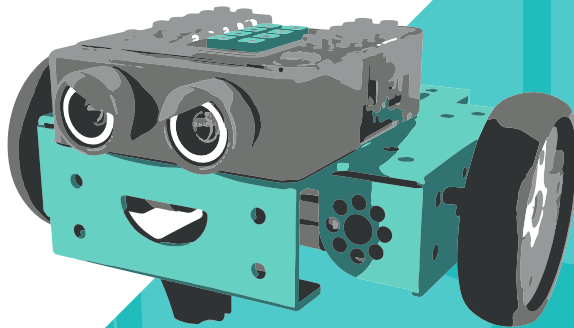


4. 11



6. Rotation speed

8. Not defined



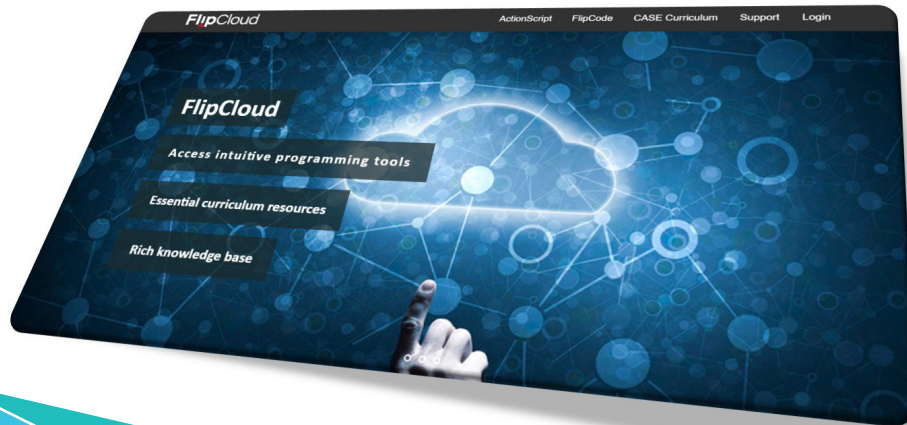
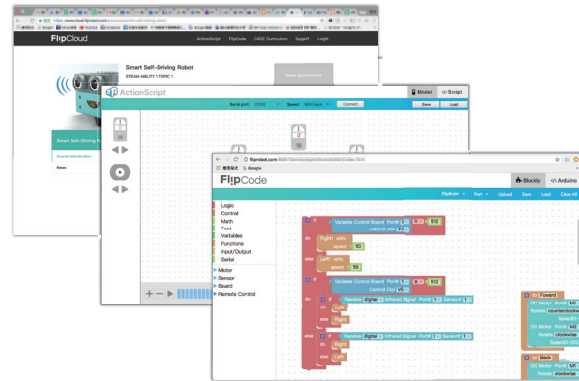
FlipRobot
E300

Learn STEAM and 5C skills
through play and experiment

FlipCloud

Cloud - based robotic programming

Our comprehensive FlipCloud solution does not only provide complete CASE curriculum resources, but also includes various programming learning and logic debugging tools. This provides ease and convenience for teachers to help students develop design thinking and computational thinking.



The robot that grows with the curriculum

FlipRobot E300 and all its extension kits are thoughtfully designed to seamlessly implement the CASE Curriculum in a classroom.



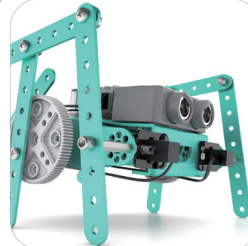
Smart Self-Driving Robot

STEAM ABILITY 1 TOPIC 1
6 Units 18 Hours



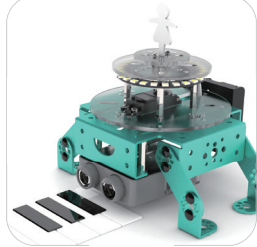
Magic Line-Tracing Robot

STEAM ABILITY 1 TOPIC 2
6 Units 18 Hours



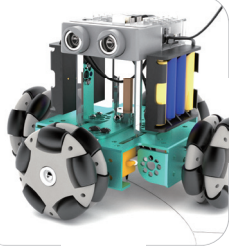
Light Following Insect Simulation Limbed Robot

STEAM ABILITY 1 TOPIC 3
6 Units 18 Hours



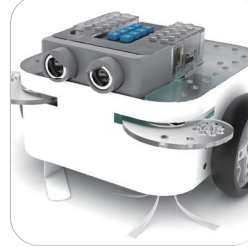
Air Piano Musical Playing Robot

STEAM ABILITY 1 TOPIC 4
6 Units 18 Hours



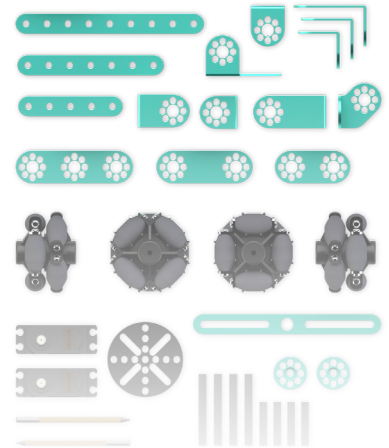
Little Artist Robot

STEAM ABILITY 1 TOPIC 5
6 Units 18 Hours



Smart Household Vacuum Robot

STEAM ABILITY 1 TOPIC 6
6 Units 18 Hours



www.cloud.fliprobot.com

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。

開機或 Reset 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)

按下主機上方 (模式切換鈕)

進入模式 2
(黃燈)(測距模式)



進入模式 3
(綠燈)(避障模式)

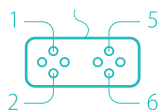


進入模式 4
(白燈)(RGB 調色)

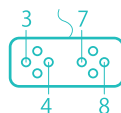
進入模式 5
(紫燈)(循跡模式)



模式 1 (藍燈)(線控模式)

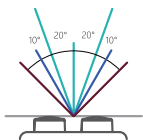


- 1 左輪往前
- 2 左輪往後
- 5 右輪往前
- 6 右輪往後



3、4、7、8 按鍵可自由在雲端平台定義功能。

模式 2 (黃燈)(測距模式)

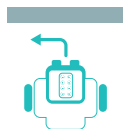


超音波功能定義，測距範圍 5~15cm，偵測角度為 0~30 度以內為佳。



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)

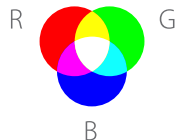


超音波自走車模式，可由變數板定義轉向與轉速玩出各種可能性。

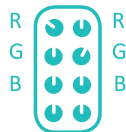


可結合測距感應模式，來設置各種有趣的場地環境進行避障實驗。

模式 4 (白燈)(調色模式)

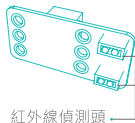


了解色光三原色原理，藉由變數板可自行調整 LED，呈現出不同的色彩變化。



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)



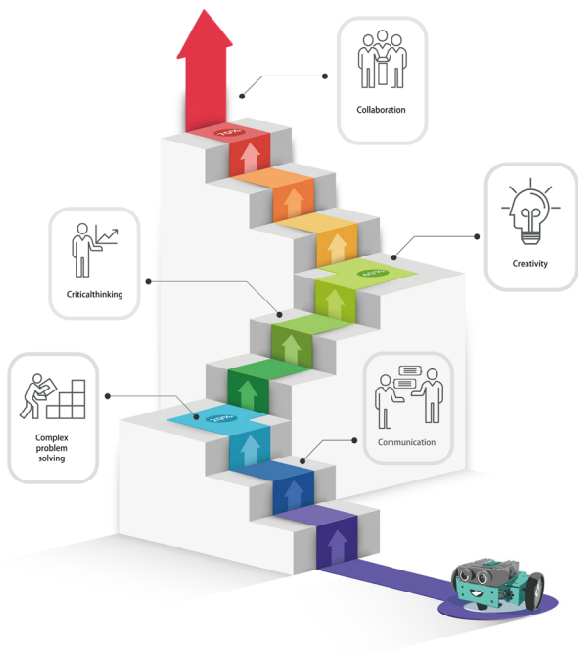
紅外線偵測頭

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)

變數板功能定義



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 (DC Motor) 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
8. 右 (DC Motor) 轉速

模式 4

(白燈)(RGB 調色)

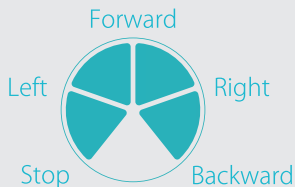
1. 左 LED R
3. 左 LED G
5. 左 LED B
7. 無定義



2. 右 LED R
4. 右 LED G
6. 右 LED B
8. 無定義

模式 5

(紫燈)(循跡模式)

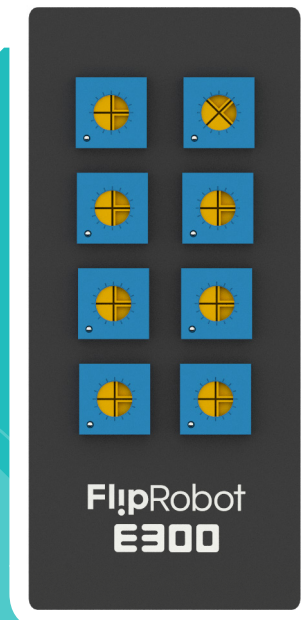
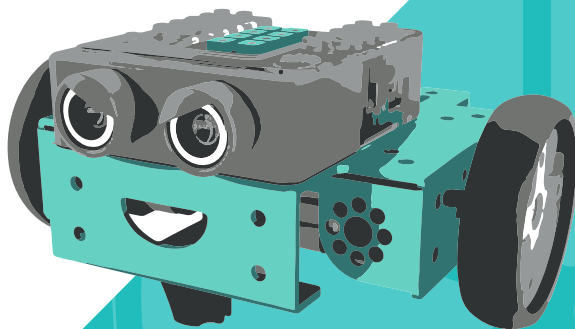


調整變數板 1 至 4 旋鈕，自由指定不同狀態的執行動作及有趣的循跡效果。

- 1. 00
- 3. 10
- 5. 直走速度
- 7. 無定義



- 2. 01
- 4. 11
- 6. 旋轉速度
- 8. 無定義

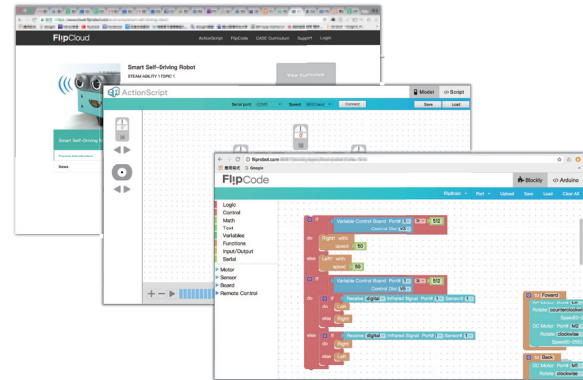


學玩體驗從 STEAM 到
5C 能力指標發展

FlipCloud

現在馬上進入雲端學玩機器人

我們提供完整的翻轉教育雲，除了提供教師豐富的教學資源，也提供各種程式學習工具及邏輯診斷系統，讓教師更容易進行教學，讓學生無礙學習，真正做到培養孩子運算思維能力的養成。



跟著課程茁壯的機器人

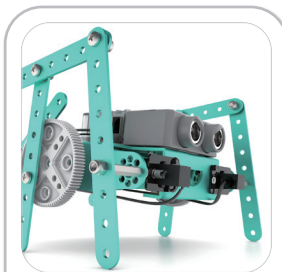
FlipRobot 翻轉機器人來自台灣，每一個機器人的元件都是依照教學現場的需求而設計。



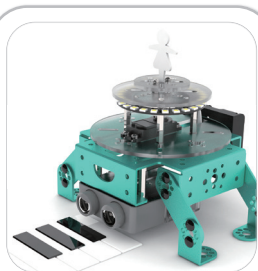
SA1 Topic1
迷宮領航者



SA1 Topic2
過彎高手



SA1 Topic3
光感連桿蟲



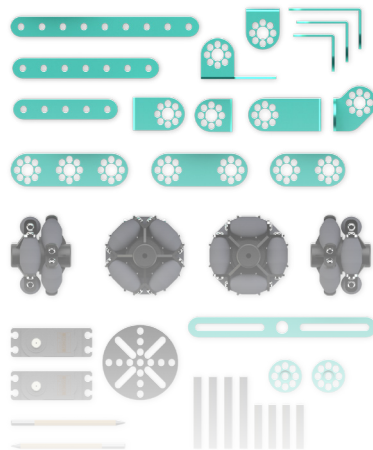
SA1 Topic4
空氣鋼琴音樂劇



SA1 Topic5
小小藝術家



SA1 Topic6
智慧清潔小幫手



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FlipRobot
E300

actura
www.actura.com