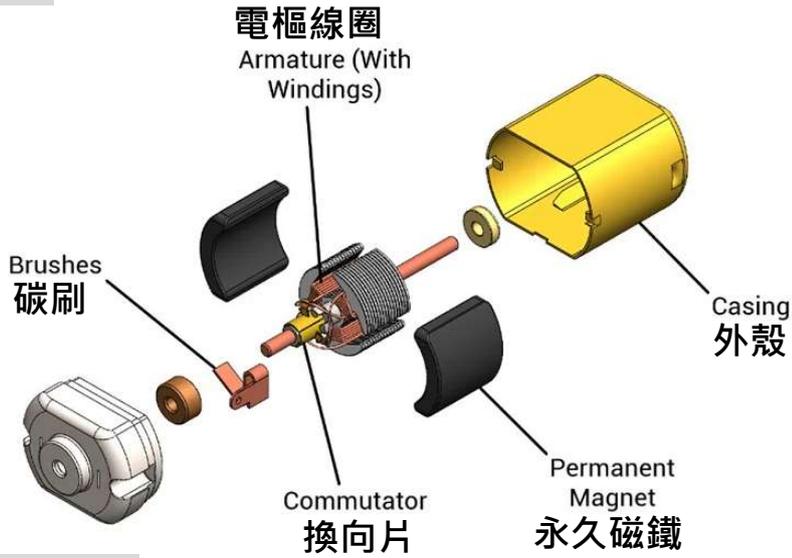
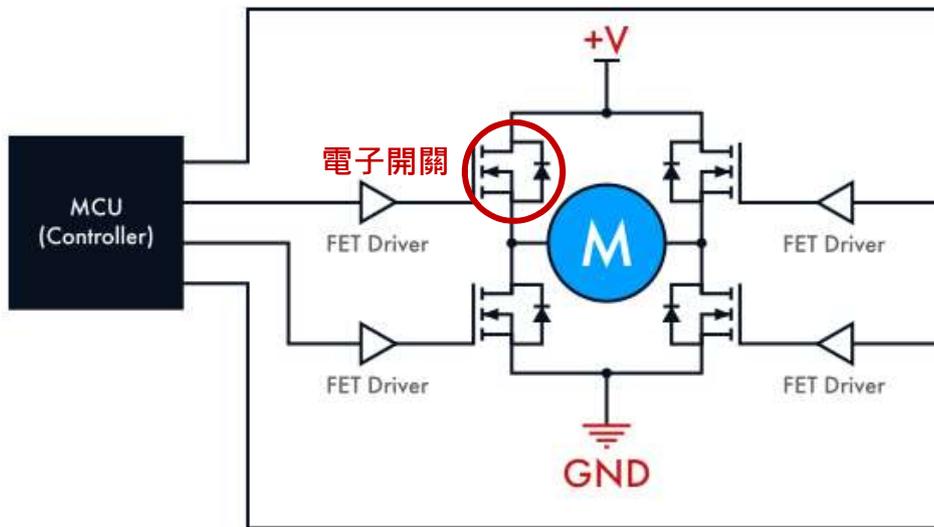


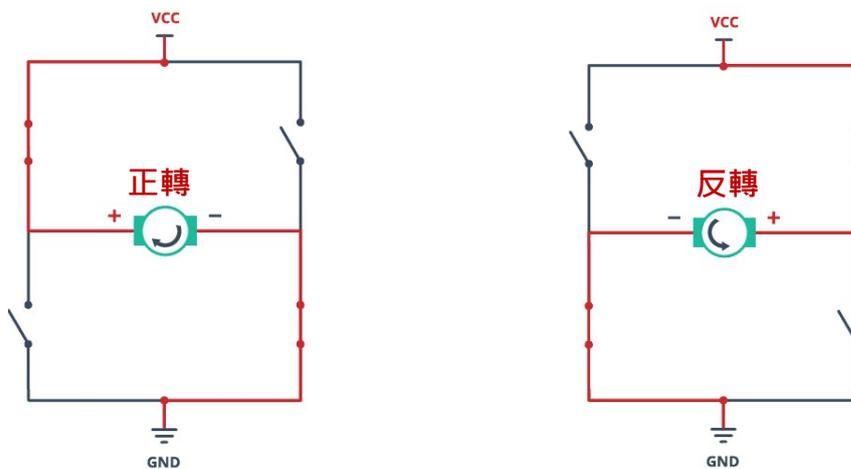
直流馬達構造



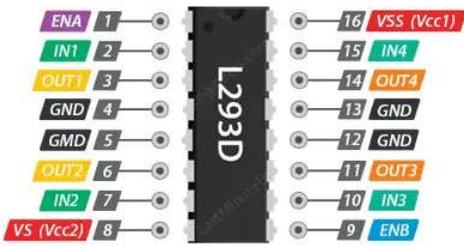
直流馬達驅動方式



直流馬達轉向控制



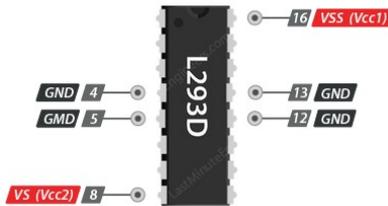
直流馬達驅動 IC



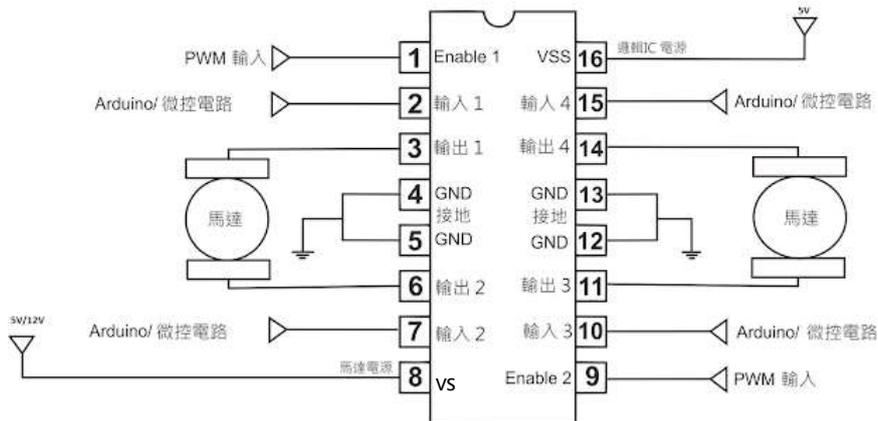
VS (Vcc2) 馬達外接電源 4.5 V ~ 36V

VSS (Vcc1) IC 供電電源 5V.

GND 共同接地腳位

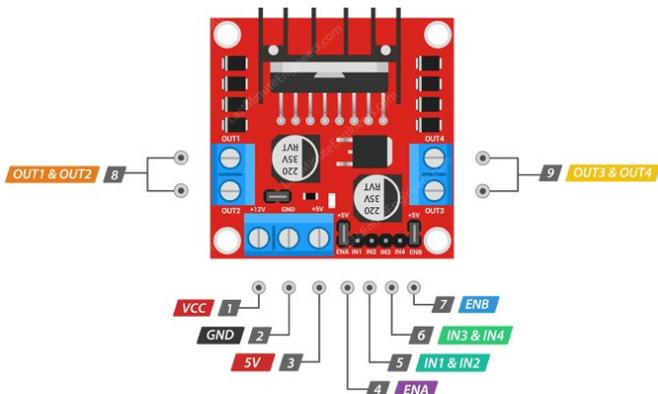


L293D 是一顆用雙路直流馬達的控制器，用這顆 IC 可以用來驅動一般的小型馬達/玩具馬達之類的，相當方便。其內部結構大概就是一個 4 路半 H 橋式驅動電路。

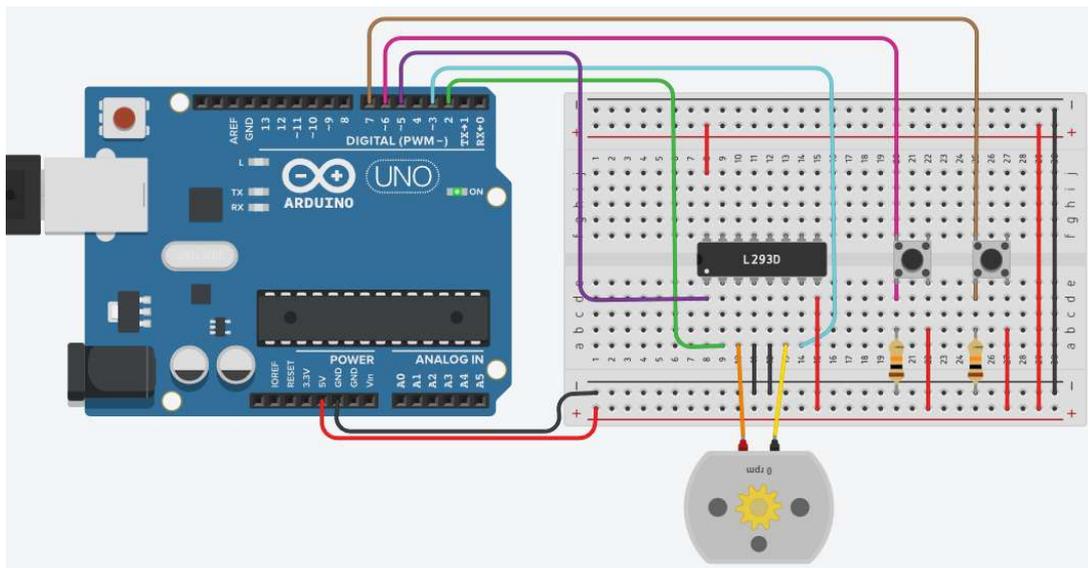


Pin 2 (IN1) 與 Pin 7 (IN2) 屬於一對，Pin 10 (IN3) 與 Pin 15 (IN4) 也屬於一對。Pin 1 (ENA) 與 Pin 9 (ENB) 雖然做為 **Enable 接腳**，但是也可以輸入 PWM 訊號來控制馬達出力的力度。Pin 8 (VS)是提供給馬達的額外電力，可以獨立供給，也可以和 Pin 16 的 Vcc 共用。

直流馬達驅動模組 L298N



直流馬達正反轉控制



```
forever loop
  if (digitalRead(6) == HIGH) then
    dir = 0
    digitalWrite(5, 255)
    digitalWrite(2, HIGH)
    digitalWrite(3, LOW)
  else
    if (digitalRead(7) == HIGH) then
      dir = 1
      digitalWrite(5, 255)
      digitalWrite(2, LOW)
      digitalWrite(3, HIGH)
    else
      if (dir == 0) then
        digitalWrite(2, HIGH)
        digitalWrite(3, LOW)
      else
        if (dir == 1) then
          digitalWrite(2, LOW)
          digitalWrite(3, HIGH)
```

```
on start
  digitalWrite(2, LOW)
  digitalWrite(3, LOW)
  digitalWrite(5, 0)
```

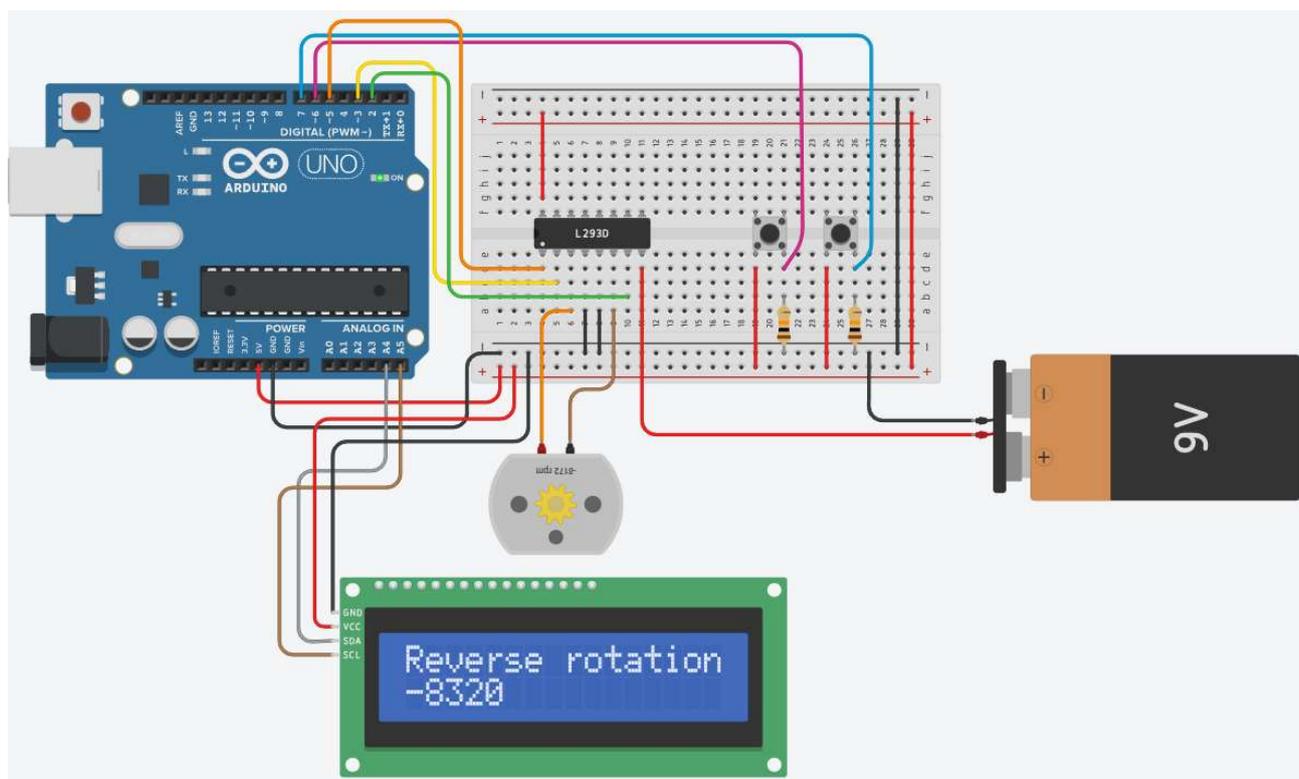


```
if temp < 10 then
  set pin 6 to 255
  set pin 9 to LOW
  set pin 8 to HIGH
endif
if temp > 50 then
  set pin 6 to 128
  set pin 9 to HIGH
  set pin 8 to LOW
endif
print to serial monitor temp with newline
```

The image shows a Scratch script with the following logic:

- An **if** block with the condition **temp < 10**. Inside this block, three **set pin** blocks are stacked:
 - set pin 6 to 255**
 - set pin 9 to LOW**
 - set pin 8 to HIGH**
- An **if** block with the condition **temp > 50**. Inside this block, three **set pin** blocks are stacked:
 - set pin 6 to 128**
 - set pin 9 to HIGH**
 - set pin 8 to LOW**
- A **print to serial monitor** block with the text **temp** and the **with** dropdown set to **newline**.

直流馬達正反轉控制+LCD 顯示



```
on start
  set pin 2 to LOW
  set pin 3 to LOW
  set pin 5 to 0
  configure LCD 1 type to I2C (PCF8574) with address 39 (b27)
  set position on LCD 1 to column 0 row 0
  on LCD 1 turn on the backlight
  on LCD 1 turn on the display

if read digital pin 6 == HIGH and read digital pin 7 == LOW then
  wait 200 milliseconds
  set speed1 to 255
  set pin 5 to speed1
  set pin 2 to LOW
  set pin 3 to HIGH
  on LCD 1 clear the screen
  print to LCD 1 Forward rotation
  set position on LCD 1 to column 0 row 1
  print to LCD 1 speed1 x 85
else
  if read digital pin 7 == HIGH and read digital pin 6 == LOW then
    wait 200 milliseconds
    set speed2 to 128
    set pin 5 to speed2
    set pin 2 to HIGH
    set pin 3 to LOW
    on LCD 1 clear the screen
    print to LCD 1 Reverse rotation
    set position on LCD 1 to column 0 row 1
    print to LCD 1 -
    set position on LCD 1 to column 1 row 1
    print to LCD 1 speed2 x 85
```