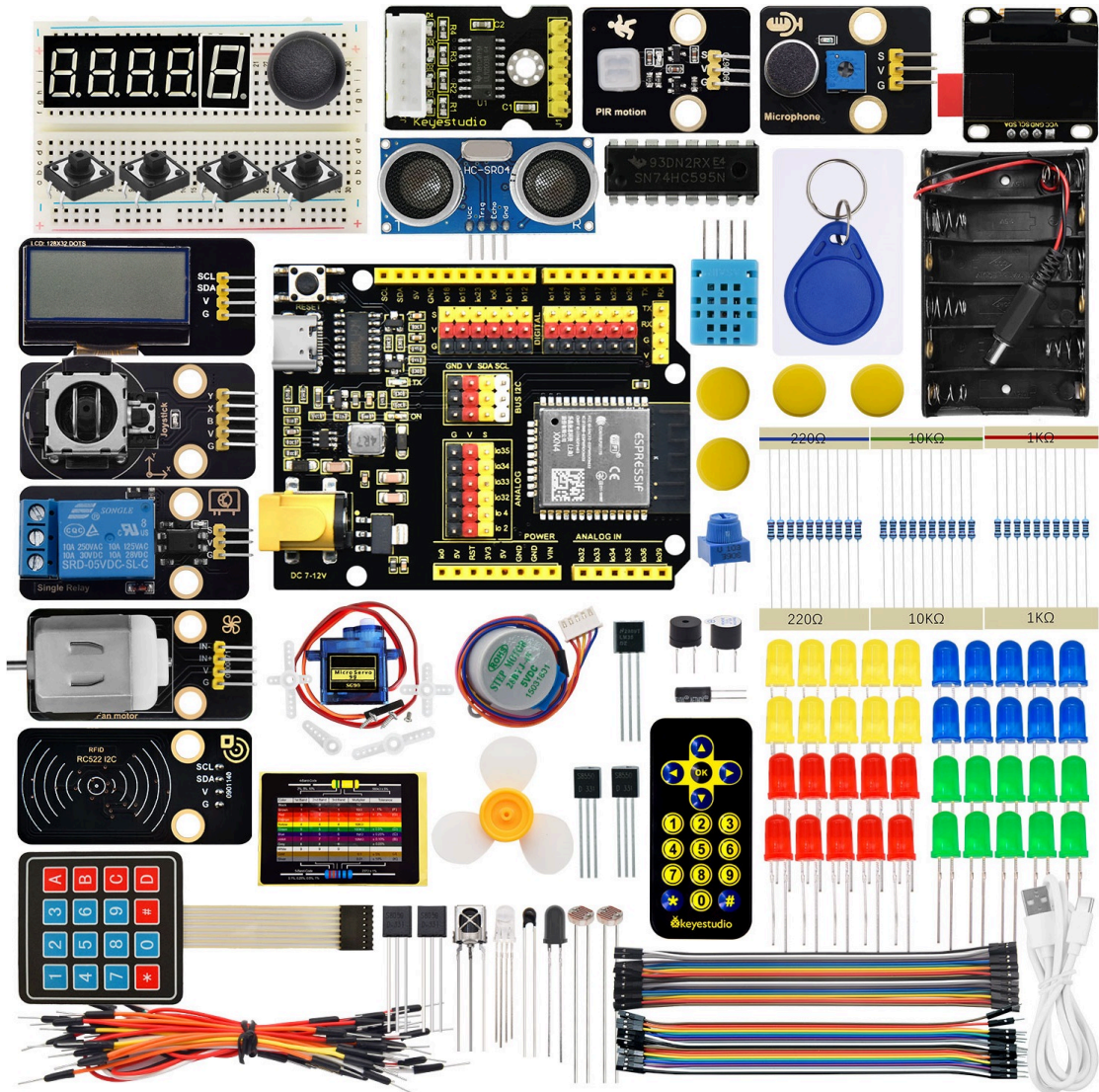


第01篇 ESP32 Arduino開發環境架設

ESP32 內建藍牙及WiFi 具雙核心



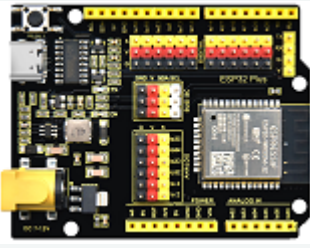


ESP32介紹







ESP32腳位: 腳位36根, 扣除系統使用約10根, 還有約26根可用, 腳位說明如下



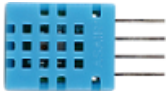


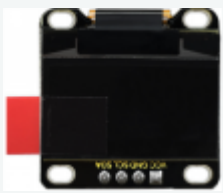





圖











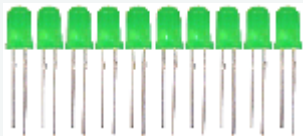

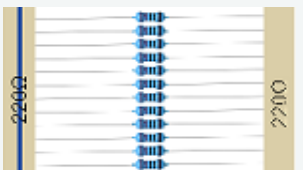
| | | 左 (ESP32)NodeMCU-32S | | 右 | |
|------|------------|----------------------|-----------|----|------------------|
| | | | 3.3V | 19 | GND |
| (pu) | | RESET | EN | 18 | GPIO23 VSPI MOSI |
| SVP | ADC0 | | GPIO36 | 17 | GPIO22 |
| SVN | ADC3 | | GPIO39 | 16 | GPIO1 TX0 |
| | ADC6 | | GPIO34 | 15 | GPIO3 RX0 |
| | ADC7 | | GPIO35 | 14 | GPIO21 |
| | TOUCH9 | ADC4 | GPIO32 | 13 | GND |
| | TOUCH8 | ADC5 | GPIO33 | 12 | GPIO19 VSPI MISO |
| DAC1 | ADC18 | | GPIO25 | 11 | GPIO18 VSPI SCK |
| DAC2 | ADC19 | | GPIO26 | 10 | GPIO5 VSPI SS |
| | TOUCH7 | ADC17 | GPIO27 | 9 | GPIO17 |
| | TMS TOUCH6 | ADC16 | HSPI SCK | 8 | GPIO16 |
| (pd) | TDI TOUCH5 | ADC15 | HSPI MISO | 7 | GPIO4 |
| | | | GND | 6 | GPIO0 BOOT |
| | TCK TOUCH4 | ADC14 | HSPI MOSI | 5 | GPIO2 |
| | | FLASH D2 | GPIO9 | 4 | GPIO15 HSPI SS |
| | | FLASH D3 | GPIO10 | 3 | GPIO8 FLASH D1 |
| | | FLASH CMD | GPIO11 | 2 | GPIO7 FLASH D0 |
| | | 5V | | 1 | GPIO6 FLASH SCK |

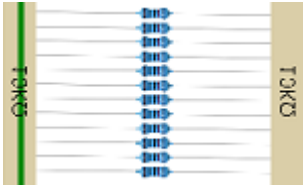


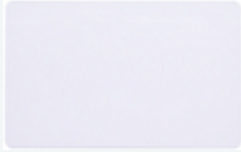



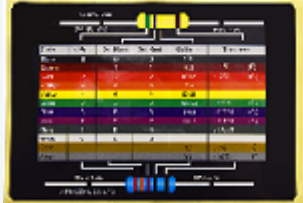
Reset Flash







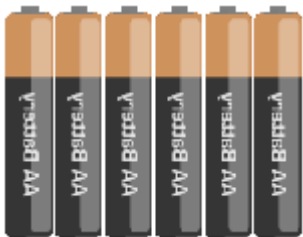
| # | PIC | NAME | QTY |
|---|---|-------------------------------|-----|
| 1 |  | ESP32 PLUS main control board | 1 |
| 2 | | breadboard | 1 |
| 3 |  | ultrasonic sensor | 1 |
| 4 |  | stepper motor drive board | 1 |

| | | | |
|----|---|-----------------------|---|
| 5 |  | PIR motion sensor | 1 |
| 6 |  | RFID module | 1 |
| 7 |  | joystick module | 1 |
| 8 |  | LCD_128X32_DOT module | 1 |
| 9 |  | thin film 4*4 key pad | 1 |
| 10 |  | servo | 1 |
| 11 |  | stepper motor | 1 |
| 12 |  | DC motor | 1 |

| | | | |
|----|---|---------------------------------------|---|
| 13 |  | 1-bit digital tube | 1 |
| 14 |  | 4-bit digital tube | 1 |
| 15 |  | relay module | 1 |
| 16 |  | DHT11 temperature and humidity sensor | 1 |
| 17 |  | LM35 temperature sensor | 1 |
| 18 |  | sound sensor | 1 |
| 19 |  | OLED module | 1 |
| 20 |  | button | 4 |
| 21 |  | passive buzzer | 1 |
| 22 |  | active buzzer | 1 |
| 23 |  | photoresistor | 2 |
| 24 |  | tilt switch | 1 |

| | | | |
|----|---|-----------------------|----|
| 25 |  | flame sensor | 1 |
| 26 |  | thermistor | 1 |
| 27 |  | IR receiver | 1 |
| 28 |  | 74HC595 chip | 1 |
| 29 |  | potentiometer | 1 |
| 30 |  | NPN(S8050) transistor | 2 |
| 31 |  | PNP(S8550) transistor | 2 |
| 32 |  | RGB LED | 1 |
| 33 |  | red LED | 10 |
| 34 |  | yellow LED | 10 |
| 35 |  | green LED | 10 |
| 36 |  | blue LED | 10 |
| 37 |  | 220Ω resistor | 10 |

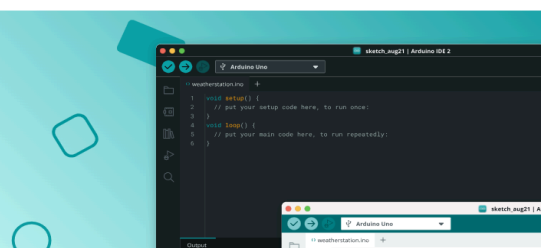
| | | | |
|----|---|-----------------|----|
| 38 |  | 10KΩ resistor | 10 |
| 39 |  | 1KΩ resistor | 10 |
| 40 |  | battery holder | 1 |
| 41 |  | IC card | 1 |
| 42 |  | ID card | 1 |
| 43 |  | joystick cap | 1 |
| 44 |  | fan | 1 |
| 45 |  | resistance card | 1 |

| | | | |
|----|---|------------------------------------|---|
| 46 |  | remote control | 1 |
| 47 |  | yellow button cap | 4 |
| 48 |  | Micro USB cable | 1 |
| 49 |  | jumper wire | 1 |
| 50 |  | F-F DuPont wire | 1 |
| 51 |  | M-F DuPont wire | 1 |
| 52 |  | 1.5V AA battery (self-provided) | 6 |

Arduino IDE 編輯工具安裝

IDE工具下載：請至<https://www.arduino.cc/en/Main/Software>網站下載，筆者比較建議直接下載免安裝檔，解壓縮後直接可用，因為這樣的程式可以帶著走，不需要安裝，未來電腦更新或升級也可以直接開啟，甚至放在USB都可以使用。

Bring Your Projects to Life with Arduino Software



Windows Win 10 or newer (64-bit) ✓

- Windows MSI installer
- Windows ZIP file
- Linux Appliance (64-bit X86-64)
- Linux ZIP file (64-bit X86-64)
- macOS Intel 10.15 Catalina or newer (64-bit)
- macOS Apple Silicon 11 Big Sur or newer (64-bit)

Windows Win 10 or newer (64-bit)

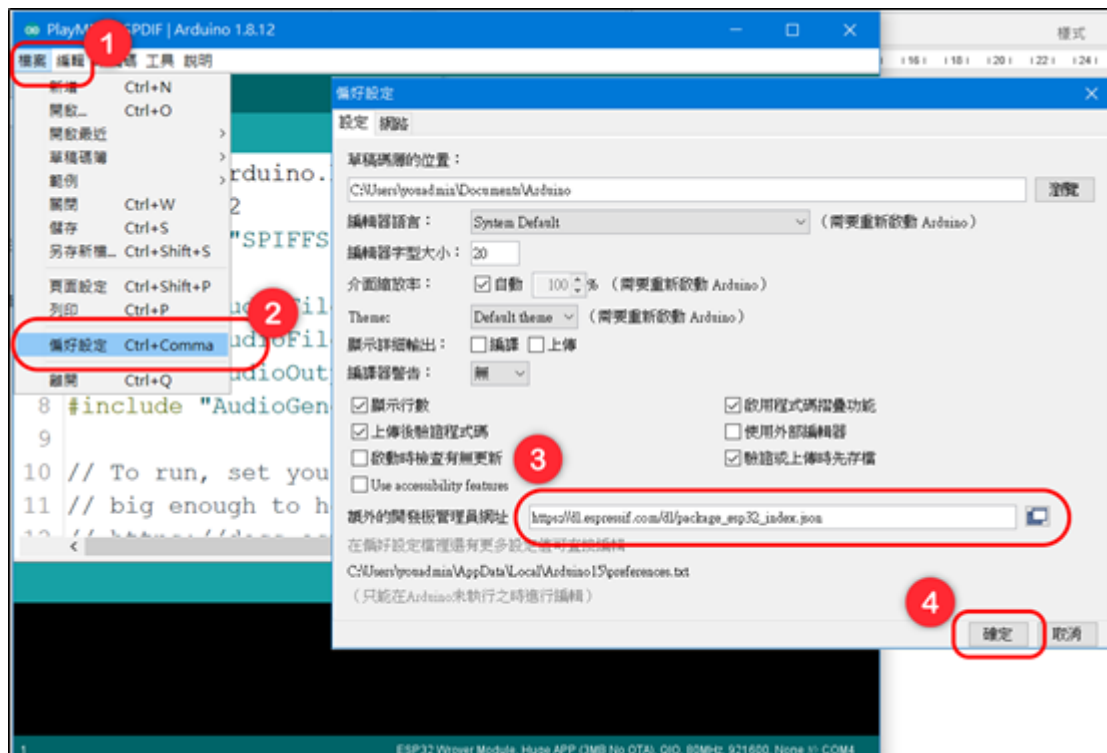
DOWNLOAD

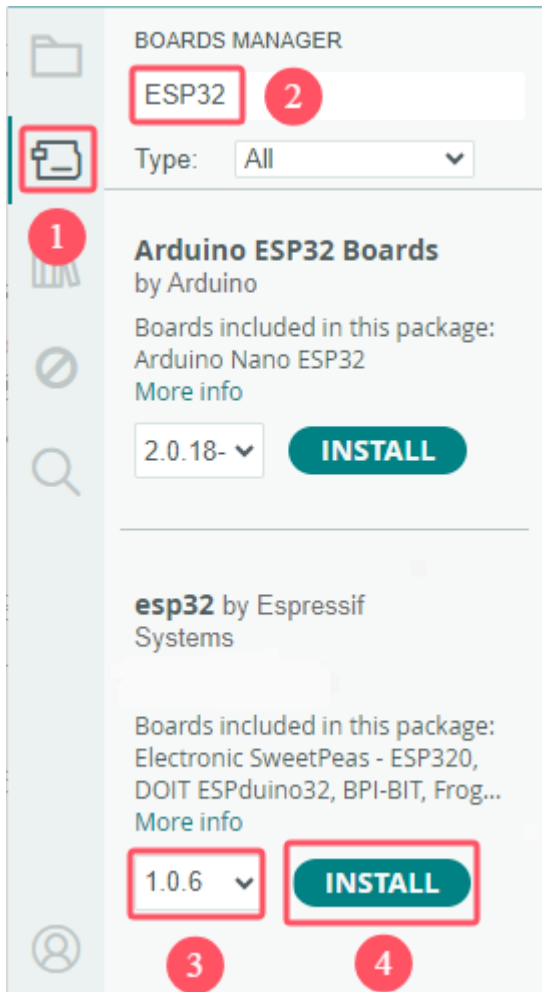
even more
more responsive
and even a live
documentation.

安裝好Arduino IDE後執行

ESP32開發版驅動程式安裝

https://espressif.github.io/arduino-esp32/package_esp32_index.json



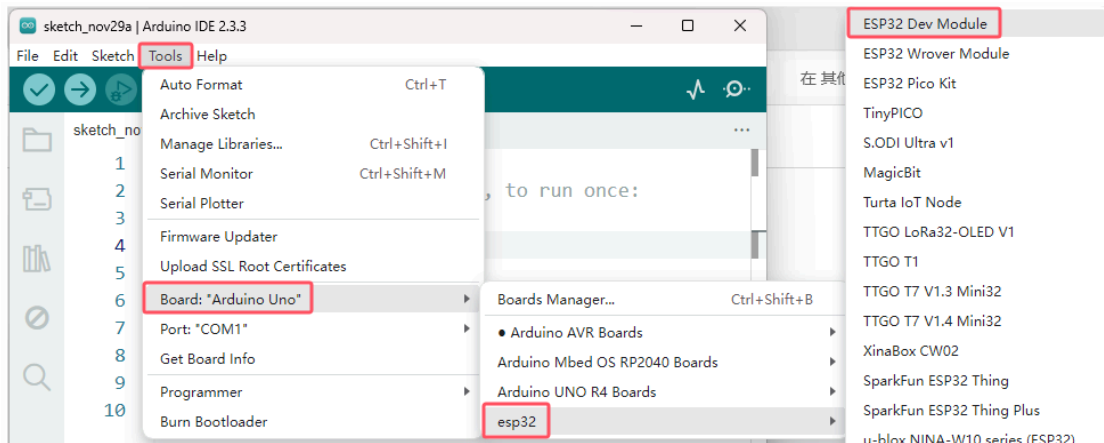


USB驅動程式安裝

<https://docs.keyestudio.com/projects/Arduino/en/latest/Arduino%20IDE%20Tutorial.html#install-driver>

| | | | | |
|--------|--------------------|---|----------------|------------|
| KS0413 | keyestudio ESP32 |  | CP2102-WINDOWS | CP2102-MAC |
| KS5016 | keyestudio ESP32S |  | CH340-WINDOWS | CH340-MAC |
| KS0389 | keyestudio ESP8266 |  | CP2102-WINDOWS | CP2102-MAC |

主板選擇 + 連接埠選擇設定



裝置管理員 (安裝驅動 + 確認連接埠)。

WIN+X (或在開始功能表按鍵, 按滑鼠右鍵) → 選裝置管理員。

Library Manager Adafruit_GFX

測試程式碼1:

```
void setup() {  
  
    pinMode(27, OUTPUT);  
  
}  
  
void loop() {  
  
    digitalWrite(27, HIGH);  
  
    delay(200);  
  
}
```

```
digitalWrite(27,LOW);  
  
delay(200);  
  
}
```

測試程式碼2:

```
void setup() {  
  
    // put your setup code here, to run once:  
  
    pinMode(25,OUTPUT);  
  
    pinMode(26,OUTPUT);  
  
    pinMode(27,OUTPUT);  
  
}  
  
void loop() {  
  
    // put your main code here, to run repeatedly:  
  
    digitalWrite(25,HIGH);  
  
    delay(5000);  
  
    digitalWrite(25,LOW);  
  
    digitalWrite(26,HIGH);  
  
    delay(200);  
  
    digitalWrite(26,LOW);  
  
    delay(200);  
  
}
```

```
digitalWrite (26,HIGH);

delay(200);

digitalWrite (26,LOW);

delay(200);

digitalWrite (26,HIGH);

delay(200);

digitalWrite (26,LOW);

delay(200);

digitalWrite (26,HIGH);

delay(200);

digitalWrite (26,LOW);

delay(200);

digitalWrite (26,HIGH);

delay(200);

digitalWrite (26,LOW);

delay(200);

digitalWrite (26,HIGH);

delay(200);

digitalWrite (26,LOW);

digitalWrite (27,HIGH);

delay(10000);
```

```
digitalWrite(27,LOW);
```

```
}
```