



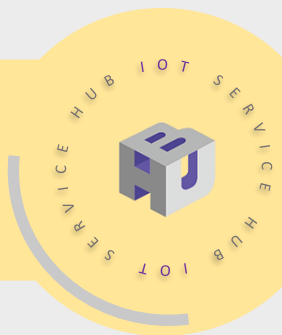
國產IC開發套件 DSI 5168

介紹與使用說明



物聯網智造基地

I O T S E R V I C E H U B

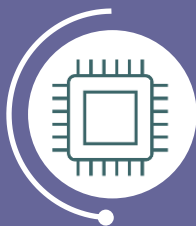


國產IC開發套件 DSI 5168

大綱/CONTENTS



DSI5168介紹



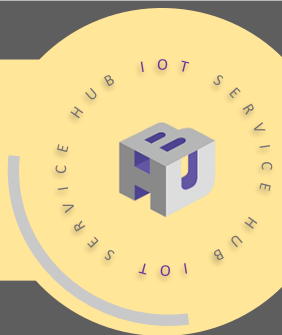
軟體教學



數據平台



實作案例



DSI5168介紹



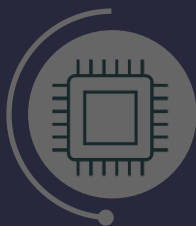
DSI5168介紹

開發板簡介

DSI5168腳位圖

核心 RTL8711AM

驅動程式安裝



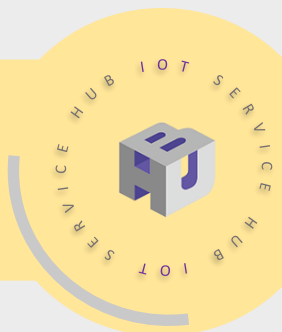
軟體教學



數據平台

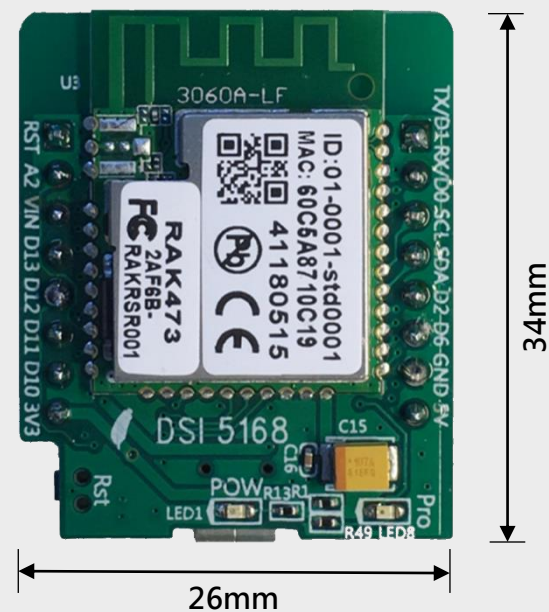


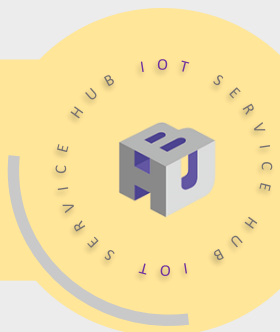
實作個案



開發板簡介

- 採用Realtek Ameba RTL8711AM晶片
- 以ARM架構Cortex M3為核心
- 支援Arduino、IAR、mbed等開發環境
- 擁有2MB Flash 並具 Wi-Fi 功能
- 支援UART、SPI、I2C、PWM等功能
- 擁有8個GPIO腳位

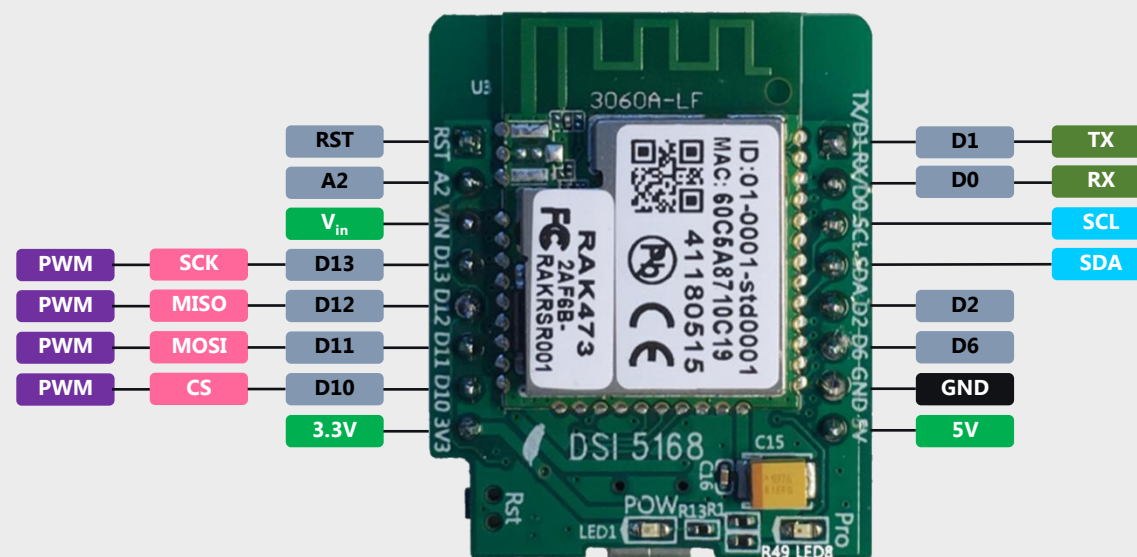


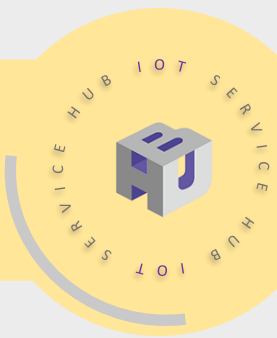


DSI5168 腳位圖

硬體功能	規格
Chipset	RTL8711AM
MCU	ARM M3/166MHz
I/O	12
ROM	1MB
SRAM	512KB
Internal Flash	N/A
External Flash	2MB
ADC	1
SPI	1
UART	1
I2C	1
I2S	N/A
PWM	4
SSL	Support

- UART Function
- I2C Definition
- Arduino Definition
- SPI Definition
- PWM Function





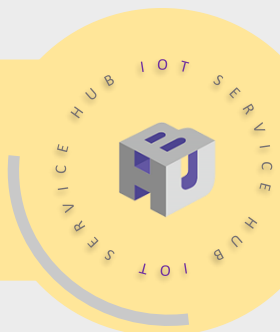
核心 RTL8711AM

- **CPU**
 - ARM®Cortex™-M3 (up to 166MHz)
- **Memory**
 - 1MB embedded ROM
 - 2.5MB embedded RAM
- **Wi-Fi**
 - 2.4GHz 1T1R 802.11b/g/n up to 150Mbps
- **Security**
 - Wi-Fi WEP, WPA, WPA2, WPS
- **Peripheral Interface**
 - NFC tag (read/write)
 - Maximum two PCM with 8/16KHz sample rate
 - UART x 2 (HS-UART x 1, log UART x 1)
 - SPI interface x 1
 - Maximum I2S interface x 1
 - Maximum I2C interface x 3
 - ADC x 1
 - PWM x 4
 - Maximum 19 GPIOs

RTL8711AM









(參考資料 : Realtek)

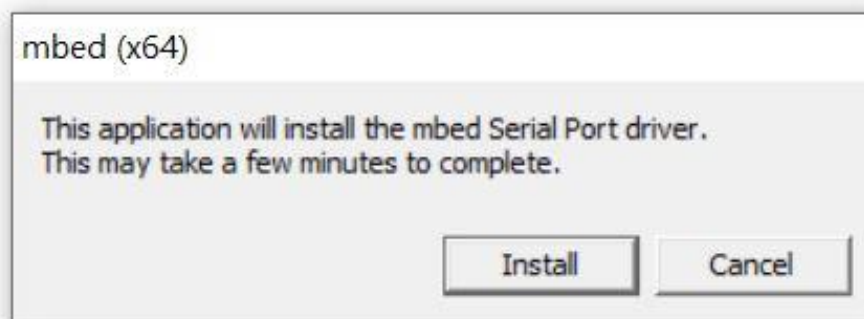


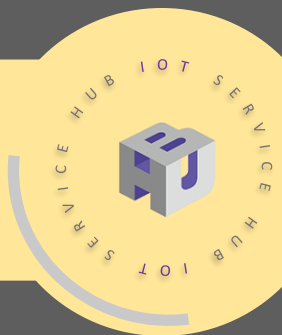
驅動程式安裝

- **Mbed_driver**

將DSI5168接上 Windows的電腦，執行mbedWinSerial_16466.exe驅動程式，即可看到Mbed的磁碟及新增的Com Port 序列埠，可至裝置管理員查看USB連接埠，即已安裝完成。

 SerialPrint		2019/4/17 上午 11:34	檔案資料夾
 國產WiFi SoC晶片規格資料_瑞昱		2018/11/1 下午 03:00	檔案資料夾
 Mbed_driver_Win系列		2018/7/4 下午 06:08	應用程式

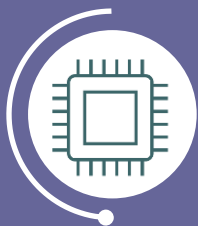




軟體教學



DSI5168介紹



軟體教學

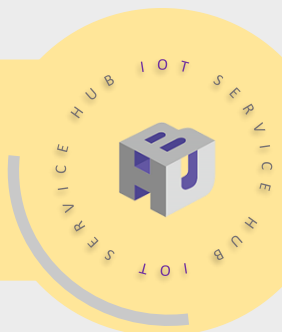


數據平台



實作個案


- 安裝Arduino IDE
- Arduino IDE 設定
- Ameba 資源庫
- 燒錄範例



安裝 Arduino IDE

HARDWARE SOFTWARE CLOUD DOCUMENTATION ▼ COMMUNITY ▼ BLOG ABOUT

Downloads



Arduino IDE 1.8.13

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.


Refer to the [Getting Started](#) page for Installation instructions.

SOURCE CODE

Active development of the Arduino software is [hosted by GitHub](#). See the instructions for [building the code](#). Latest release source code archives are available [here](#). The archives are PGP-signed so they can be verified using [this](#) gpg key.

DOWNLOAD OPTIONS

Windows Win 7 and newer
Windows ZIP file

Windows app Win 8.1 or 10 

Linux 32 bits
Linux 64 bits
Linux ARM 32 bits
Linux ARM 64 bits

Mac OS X 10.10 or newer


[Release Notes](#) [Checksums \(sha512\)](#)

至以下網址下載Arduino IDE:
<https://www.arduino.cc/en/software>
並選擇符合您電腦的版本

HARDWARE SOFTWARE CLOUD DOCUMENTATION ▼ COMMUNITY ▼ BLOG ABOUT

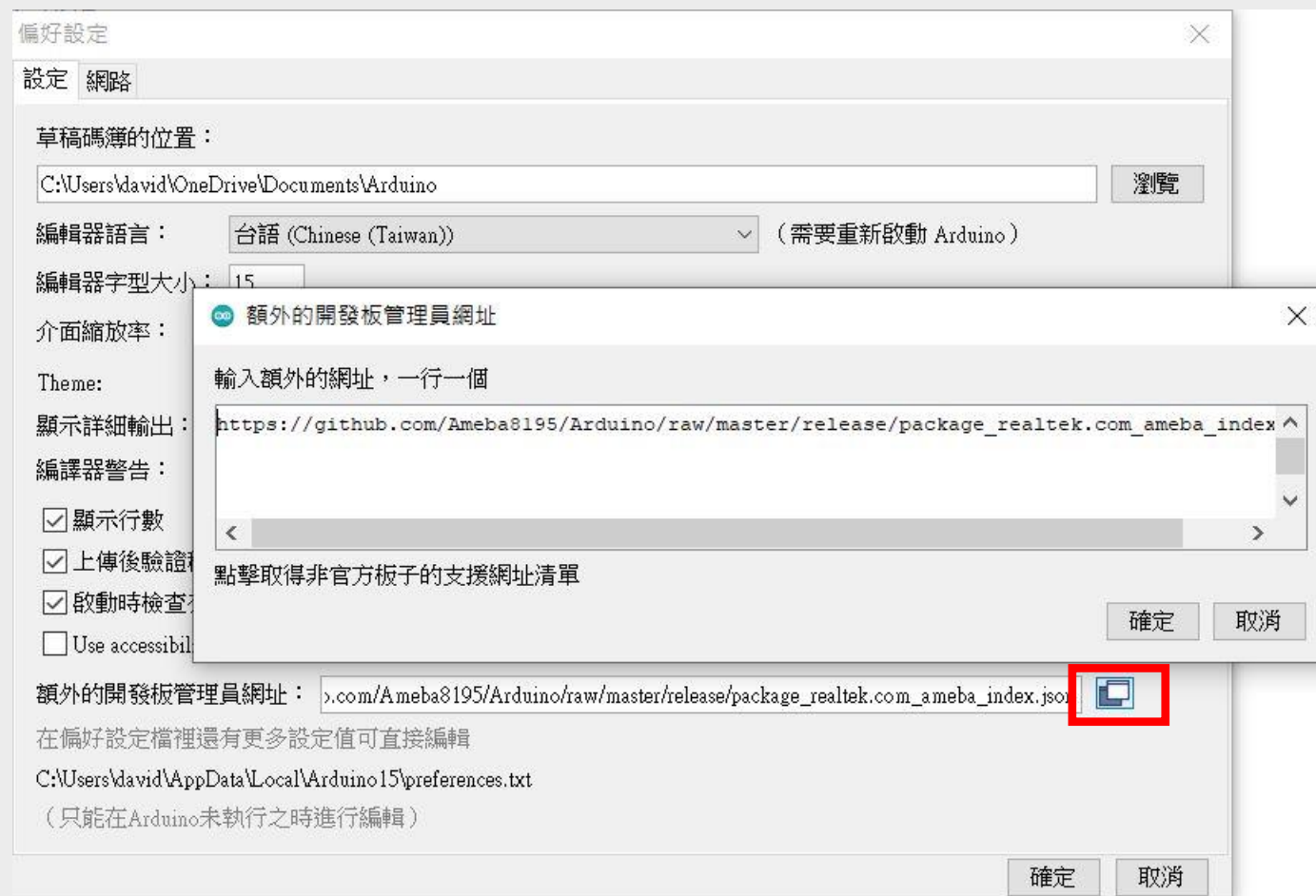
Support the Arduino IDE

Since the release 1.x release in March 2015, the Arduino IDE has been downloaded **50,614,238** times — Impressive! Help its development with a donation.



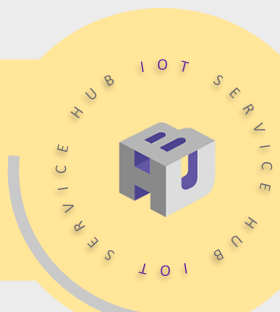
可自行選擇是否贊助Arduino，若暫且不贊助，點選JUST DOWNLOAD即可

Arduino IDE 設定 (1)

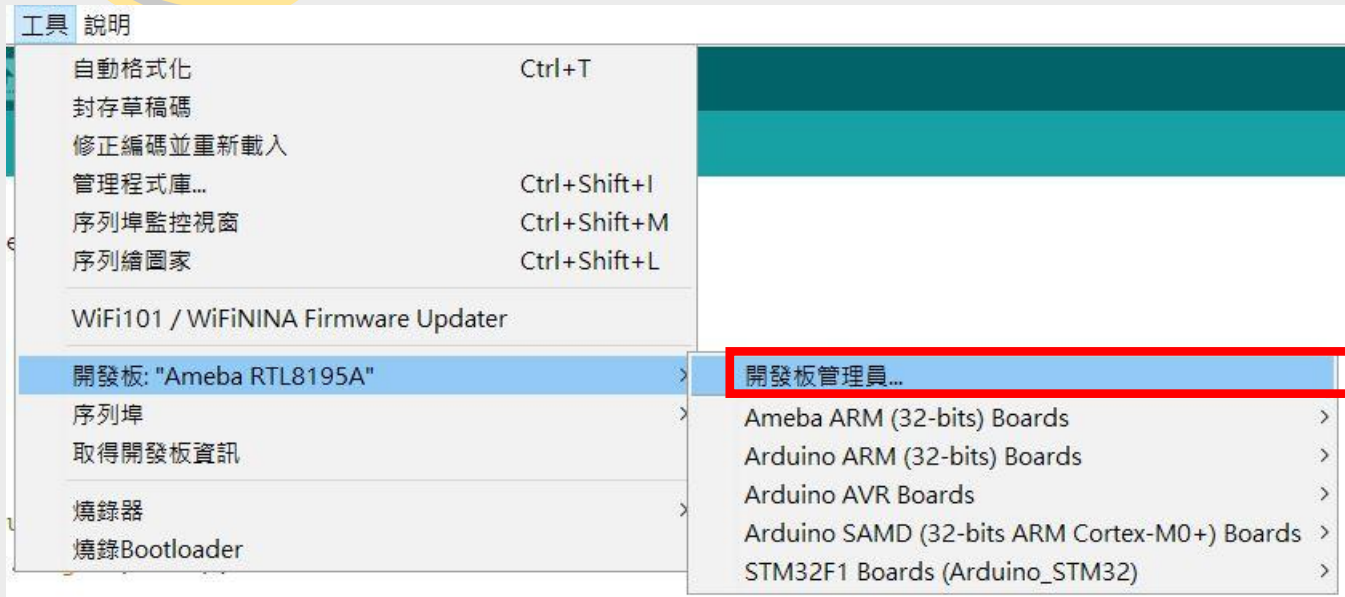


在額外的開發板管理員網址中輸入以下網址：

https://github.com/Ameba8195/Arduino/raw/master/release/package_realtek.com_ameba_index.json

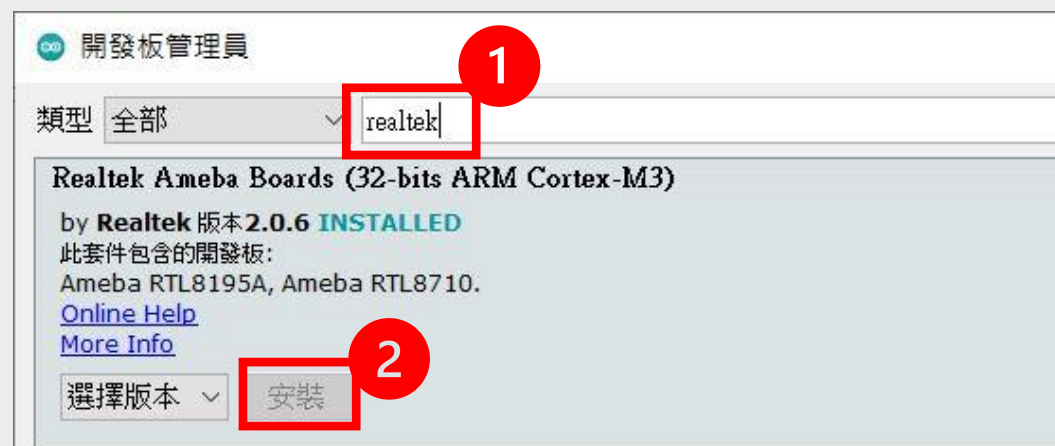


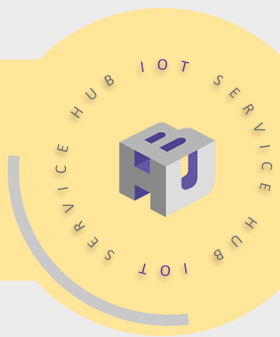
Arduino IDE 設定 (2)



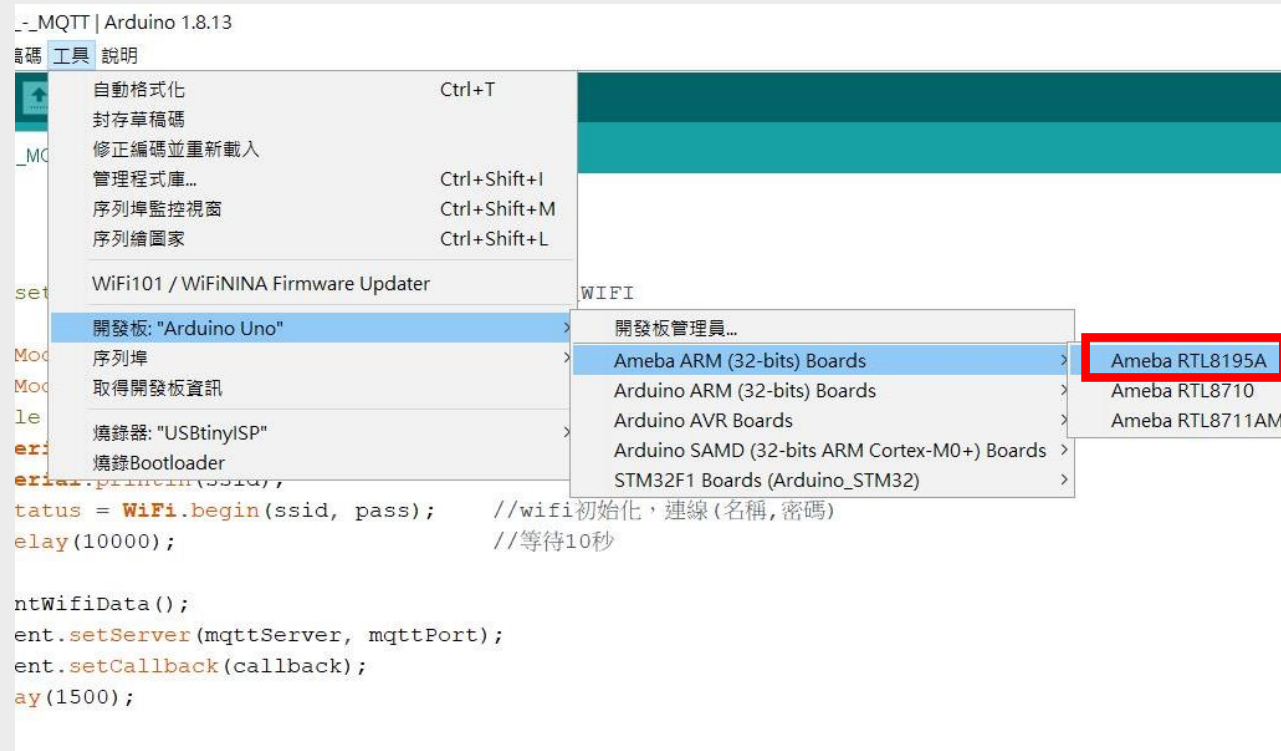
在Arduino IDE 功能列的“工具”中選擇“開發板管理員”

輸入“Realtek”，並選擇安裝
Realtek Ameba Boards (32-bit ARM Cortex-M3)



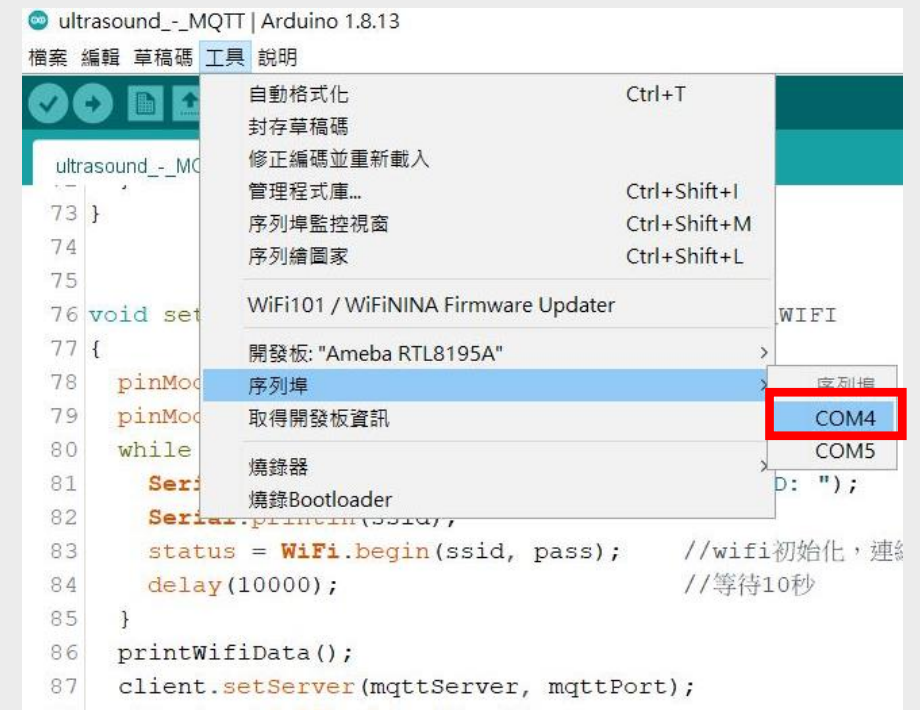


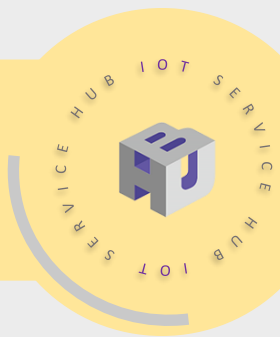
Arduino IDE 設定 (3)



選擇開發板:Amega RTL8195A

選擇連接埠:COM X
(可從電腦裝置管理員中查看port)





Ameba 資源庫

Arduino IDE



Ameba 資源連結

Ameba IoT 官方網站

<https://www.amebaiot.com/zh/>

Ameba Github 示範程式

https://github.com/Realtek-AmebaApp/Ameba_Examples

Ameba IoT Facebook 社群

<https://www.facebook.com/groups/AmebaIoT/>

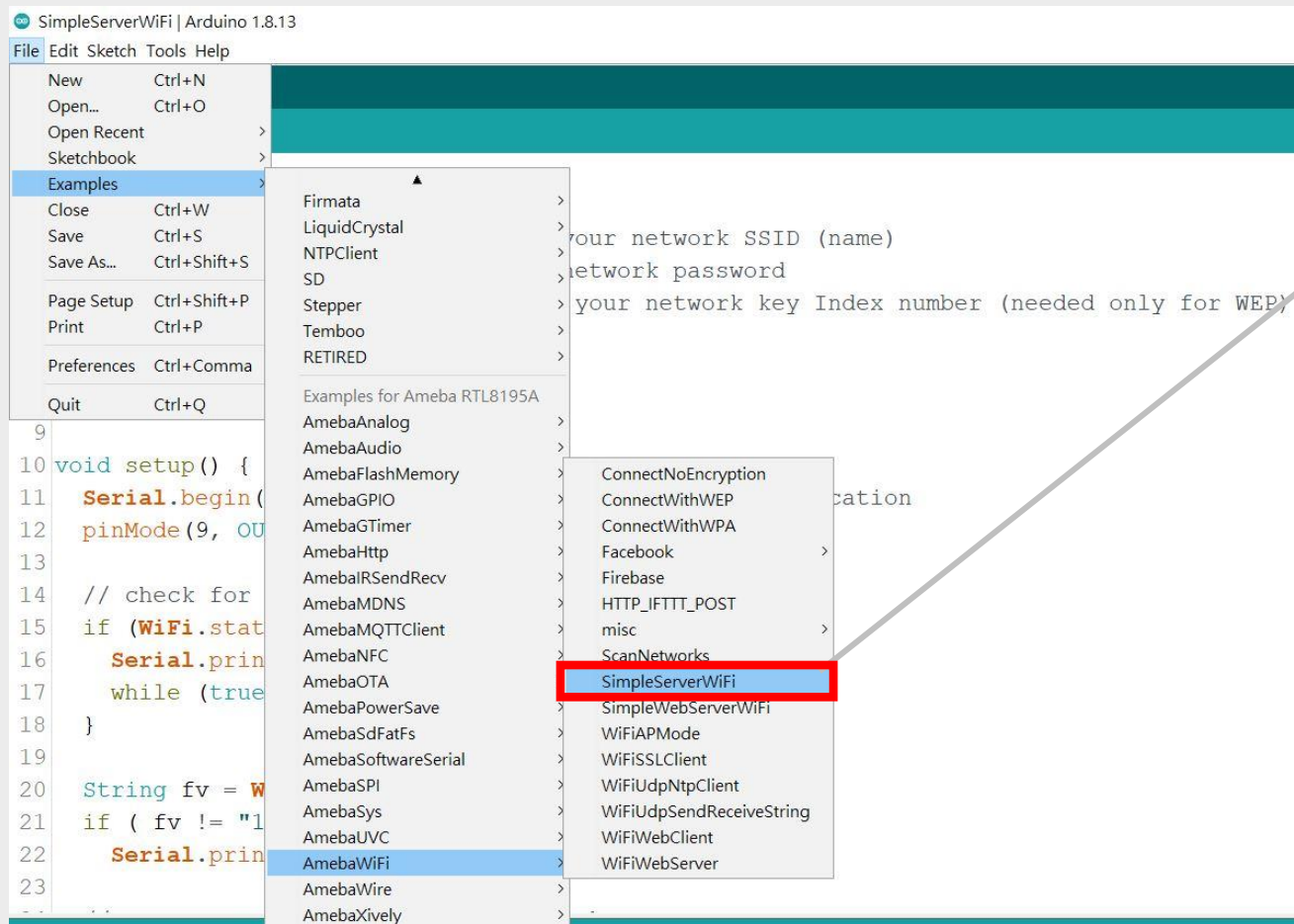
Ameba Library 示範

<https://www.amebaiot.com/zh/ameba-arduino-peripherals-examples/>

MAKERPRO Ameba 論壇

<https://makerpro.cc/category/mainboard/realtek-ameba/>

燒錄範例

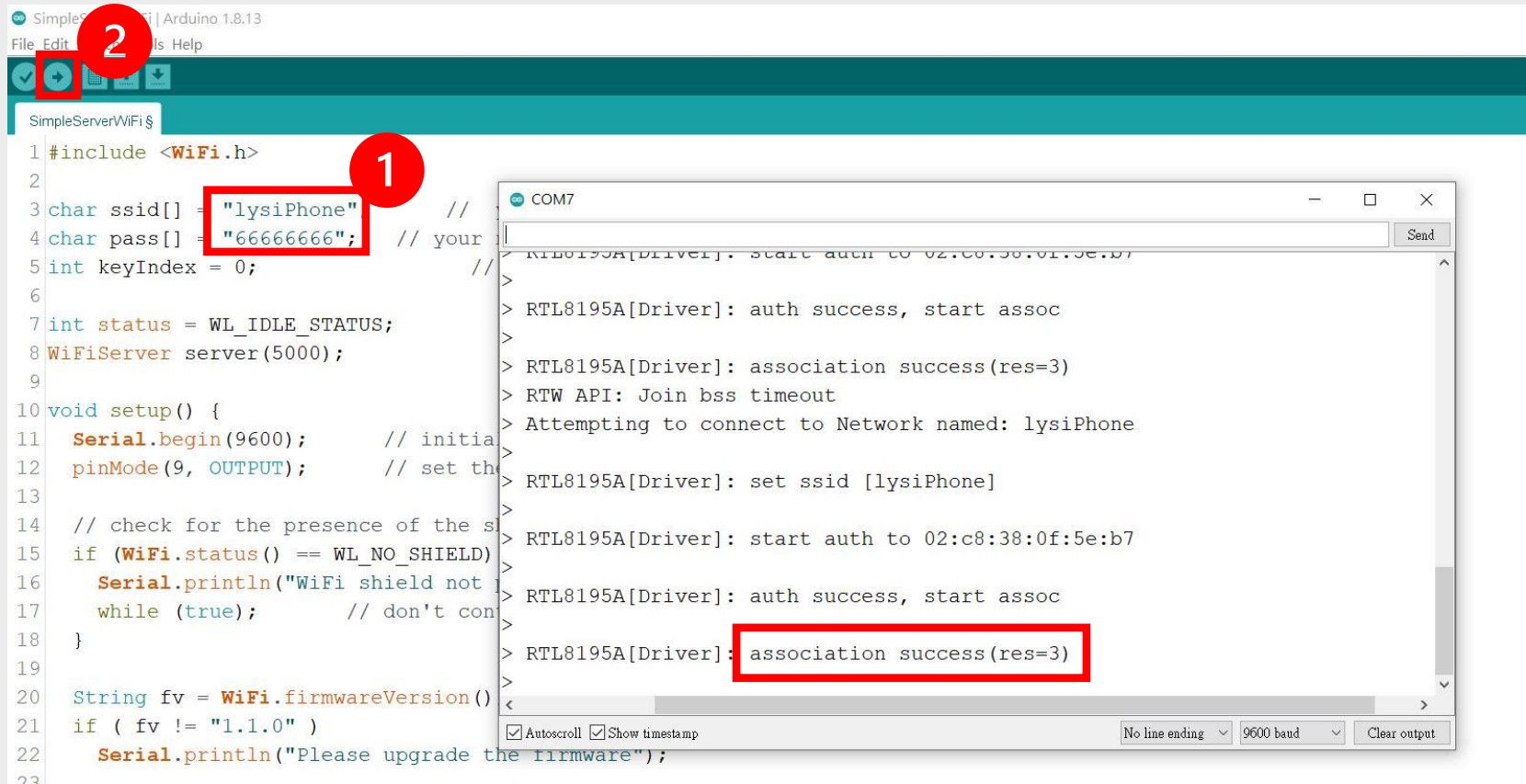


從Arduino IDE中打開“範例”，接著點選AmebaWiFi的範例程式，基本上都能使用，在此我們挑選一個相對簡單的SimpleServerWiFi的範例程式碼開啟。

燒錄範例

Step1. 先更改ssid和pass，這裡請輸入自己所欲連接的基地台(路由器)帳號密碼。

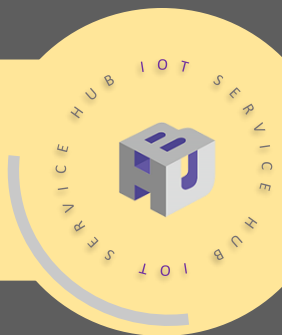
Step2. 接著按下上傳的按鈕，等待上傳完後，打開序列埠視窗，鮑率設定為9600 baud，視窗顯示association success(res=3)，表示已成功連上WiFi。



The screenshot shows the Arduino IDE interface. On the left, the code for 'SimpleServerWiFi.ino' is displayed. A red circle with the number '1' highlights the 'ssid' and 'pass' variables in the code. On the right, the 'Serial Monitor' window is open, showing the output of the program. A red circle with the number '2' highlights the 'Upload' button in the IDE toolbar. The Serial Monitor output shows the following messages:

```
RTL8195A[Driver]: start auth to 02:c8:38:0f:5e:b7
> RTL8195A[Driver]: auth success, start assoc
> RTL8195A[Driver]: association success(res=3)
> RTW API: Join bss timeout
> Attempting to connect to Network named: lysiPhone
> RTL8195A[Driver]: set ssid [lysiPhone]
> RTL8195A[Driver]: start auth to 02:c8:38:0f:5e:b7
> RTL8195A[Driver]: auth success, start assoc
> RTL8195A[Driver]: association success(res=3)
```

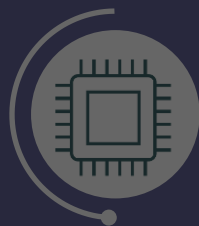
The 'association success(res=3)' message is highlighted with a red box in the Serial Monitor.



數據平台



DSI5168介紹



軟體教學

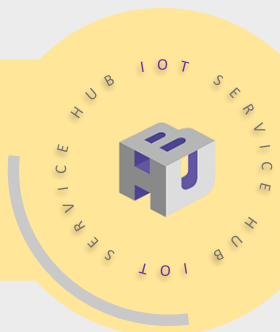


數據平台



實作個案

MQTT Server 測試
IDEASChain



MQTT Server 測試

Step 1


使用google chrome 應用程式搜尋MQTT的測試工具，如MQTTBox、MQTTLens等


Step 2

在此使用MQTTBox來示範，將此應用程式下載至電腦。

chrome 線上應用程式商店

首頁 > 應用程式 > MQTTBox

 **MQTTBox**
來源網站: workswithweb.com
★★★★★ 28 | 擴充功能 | 30,000+ 位使用者



總覽 評論 支援 相關項目

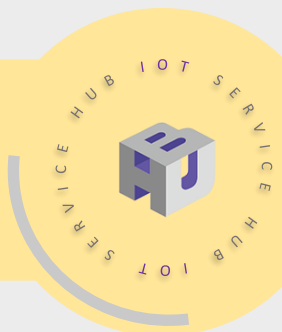
client 4 error
ws://iot.eclipse.org:80/ws
Connection Error

client 5
ws://iot.eclipse.org:80/ws
Not Connected

Menu MQTT LOAD Start Load Test View Graph View Data

Load test 1 - ws://iot.eclipse.org:80/ws Test Type: Publishing, Msg Count: 20, Instances: 4, Topic: /test

Name	Instance 1	Status	Done	Published Time	4.7536s
Published Messages:	20	QoS Response:	20	QoS Time:	4.8520s
Load test completed successfully		Sep-26-2016 03:22:41:904 PM			
Connection to broker closed		Sep-26-2016 03:22:41:890 PM			
Saving data...		Sep-26-2016 03:22:41:987 PM			
Waiting for QoS responses...		Sep-26-2016 03:22:41:787 PM			
Publishing completed		Sep-26-2016 03:22:41:787 PM			
Publishing messages to topic...		Sep-26-2016 03:22:37:034 PM			
Connected to broker		Sep-26-2016 03:22:37:034 PM			
Connecting to Broker...		Sep-26-2016 03:22:36:806 PM			



MQTT基本架構

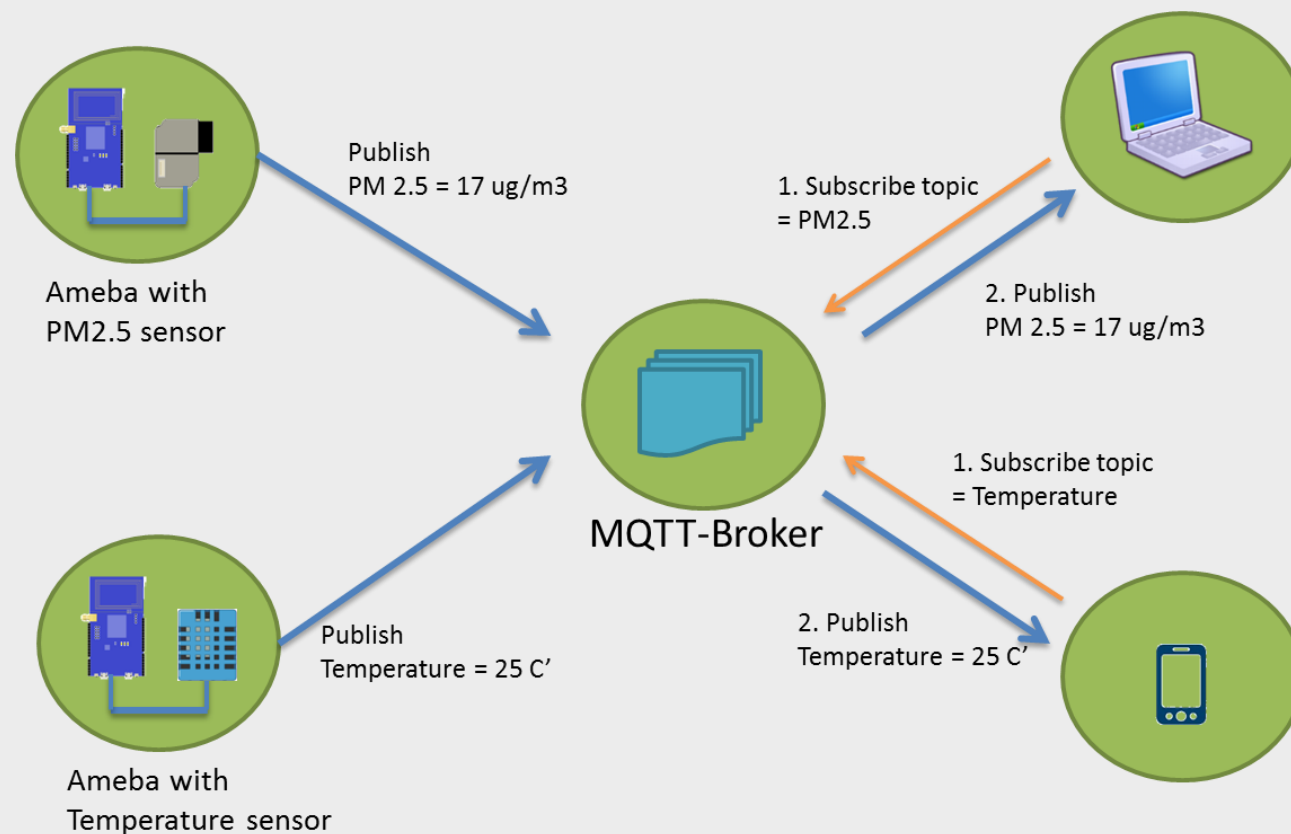
使用MQTT server測試工具，目的是為了要測試你所使用的server，可以順利地透過你所設定的topic來subscribe和publish你所要傳送的payload。

Subscribe

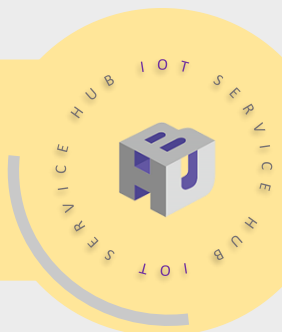
平台向Server端訂閱MQTT訊息

Publish

Sensor透過DSI5168發布MQTT訊息，訊息格式需為Json格式



(圖片來源：amebaiot.com)



MQTTBox 設定

MQTTBox

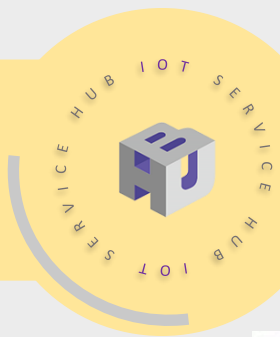
MQTTBox Edit Help

Menu ← MQTT CLIENT SETTINGS

MQTT Client Name <input type="text" value="Ultrasound"/>	MQTT Client Id <input type="text" value="830346d0-896e-11eb-8e26-2532a0ef1bf0"/>	Append timestamp to MQTT client id? <input checked="" type="checkbox"/> Yes	Broker is MQTT v3.1.1 compliant? <input checked="" type="checkbox"/> Yes
Protocol <input type="text" value="mqtt / tcp"/>	Host <input type="text" value="liot.ideaschain.com.tw"/>	Clean Session? <input checked="" type="checkbox"/> Yes	Auto connect on app launch? <input checked="" type="checkbox"/> Yes
Username <input type="text" value="xfJsQcKkZWGG8mgd05YE"/>	Password <input type="text" value="Password"/>	Reschedule Pings? <input checked="" type="checkbox"/> Yes	Queue outgoing QoS zero messages? <input checked="" type="checkbox"/> Yes
Reconnect Period (milliseconds) <input type="text" value="1000"/>	Connect Timeout (milliseconds) <input type="text" value="2000"/>	KeepAlive (seconds) <input type="text" value="5"/>	
Will - Topic <input type="text" value="v1/devices/me/telemetry"/>	Will - QoS <input type="text" value="0 - Almost Once"/>	Will - Retain <input type="checkbox"/> No	Will - Payload <input type="text" value='{"on":1}'/>

- Clientname: 任意指定
- Username: 平台的存取權杖(可參考教學之page 23)
- MQTT Client id: 指定一個獨一無二的名稱

Host: <https://ideaschain.com.tw>
(使用IDEAS Chain作為Server及數據平台)



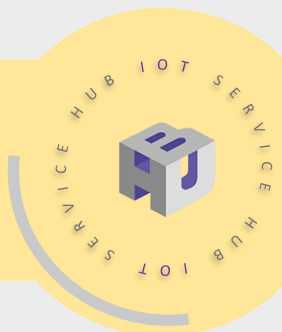
MQTTBox 收發測試

The screenshot shows the MQTTBox web interface. At the top, there's a navigation bar with 'MQTTBox', 'Edit', and 'Help'. Below this is a status bar showing 'Connected' and buttons for 'Add publisher' and 'Add subscriber'. The main area is divided into two panels. The left panel, titled 'Topic to publish', has a text input field containing 'v1/devices/me/telemetry', a 'QoS' dropdown set to '0 - Almost Once', a 'Retain' checkbox, a 'Payload Type' dropdown set to 'Strings / JSON / XML / Characters', and a 'Payload' text area containing '{"distance":30}'. A 'Publish' button is at the bottom. The right panel, titled 'Topic to subscribe', has a text input field containing 'v1/devices/me/telemetry', a 'QoS' dropdown set to '0 - Almost Once', and a 'Subscribe' button. Below the 'Subscribe' button, there's a text area showing the received payload: '{"distance":{"ts":1617887661806,"value":30}}'. Below this, a detailed log shows: 'qos : 0, retain : false, cmd : publish, dup : false, topic : v1/devices/me/telemetry, messageid : , length : 69, Raw payload : 12334100105115116971109910134581233411611534584954495556565554544956485444341189710811710134585148125125'.

Topic: 為IDEAS Chain所指定之路徑: v1/devices/me/telemetry

Payload: 需為Json格式

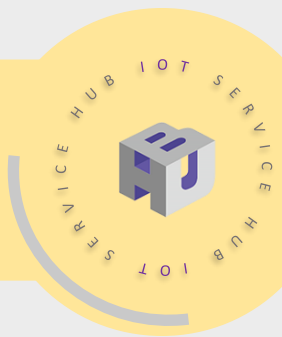
設定完成後先按下Subscribe再按下Publish，若有成功訂閱到payload訊息，表示成功透過server收發MQTT訊息



MQTT數據平台

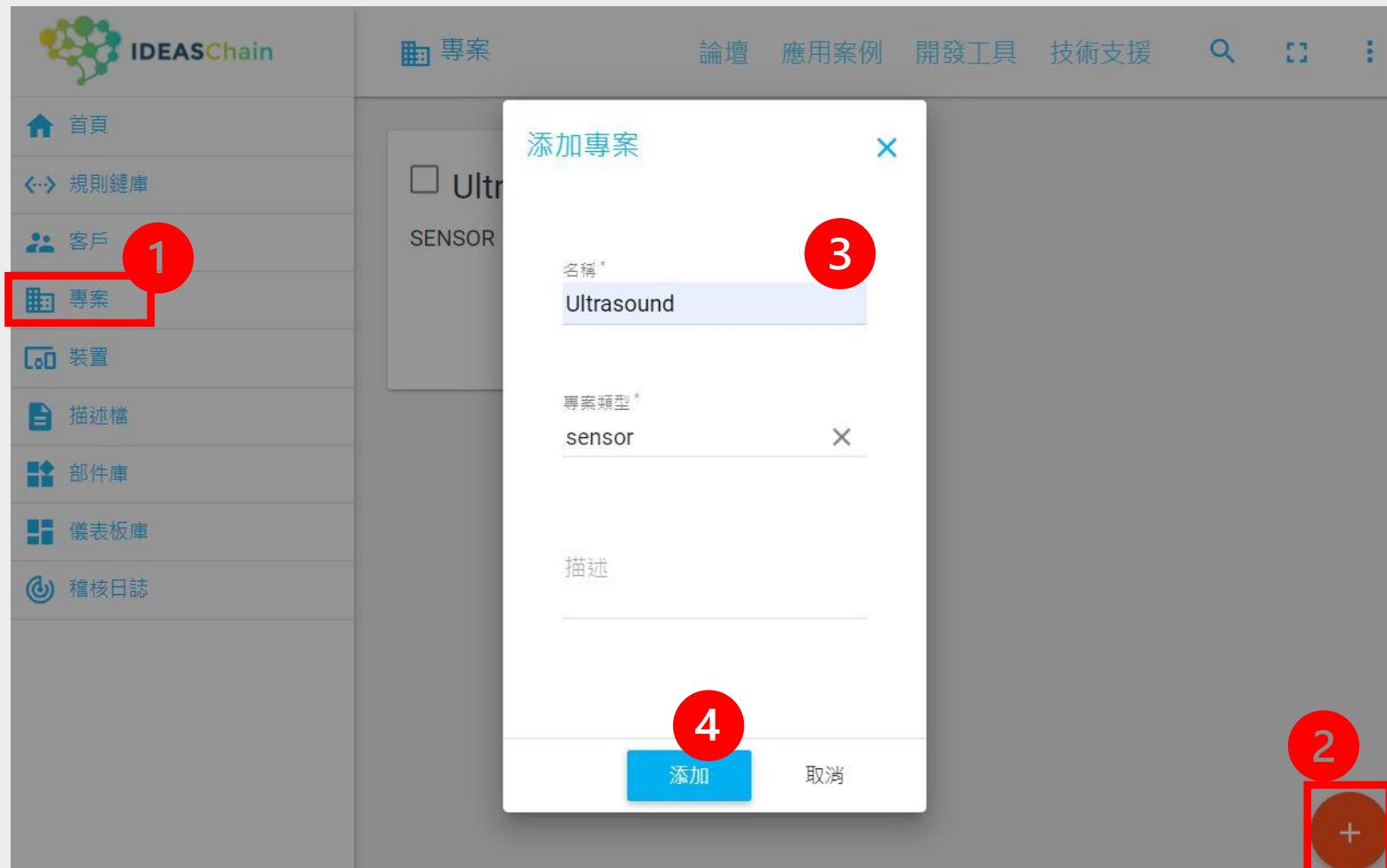
Step1. 至IDEAS Chain並點選數據平台: <https://iiot.ideaschain.com.tw/home> (請先建立帳號)
在此平台建立專屬專案，並連接儀表板

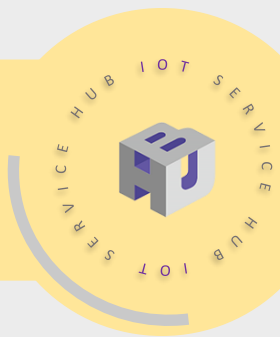




MQTT數據平台

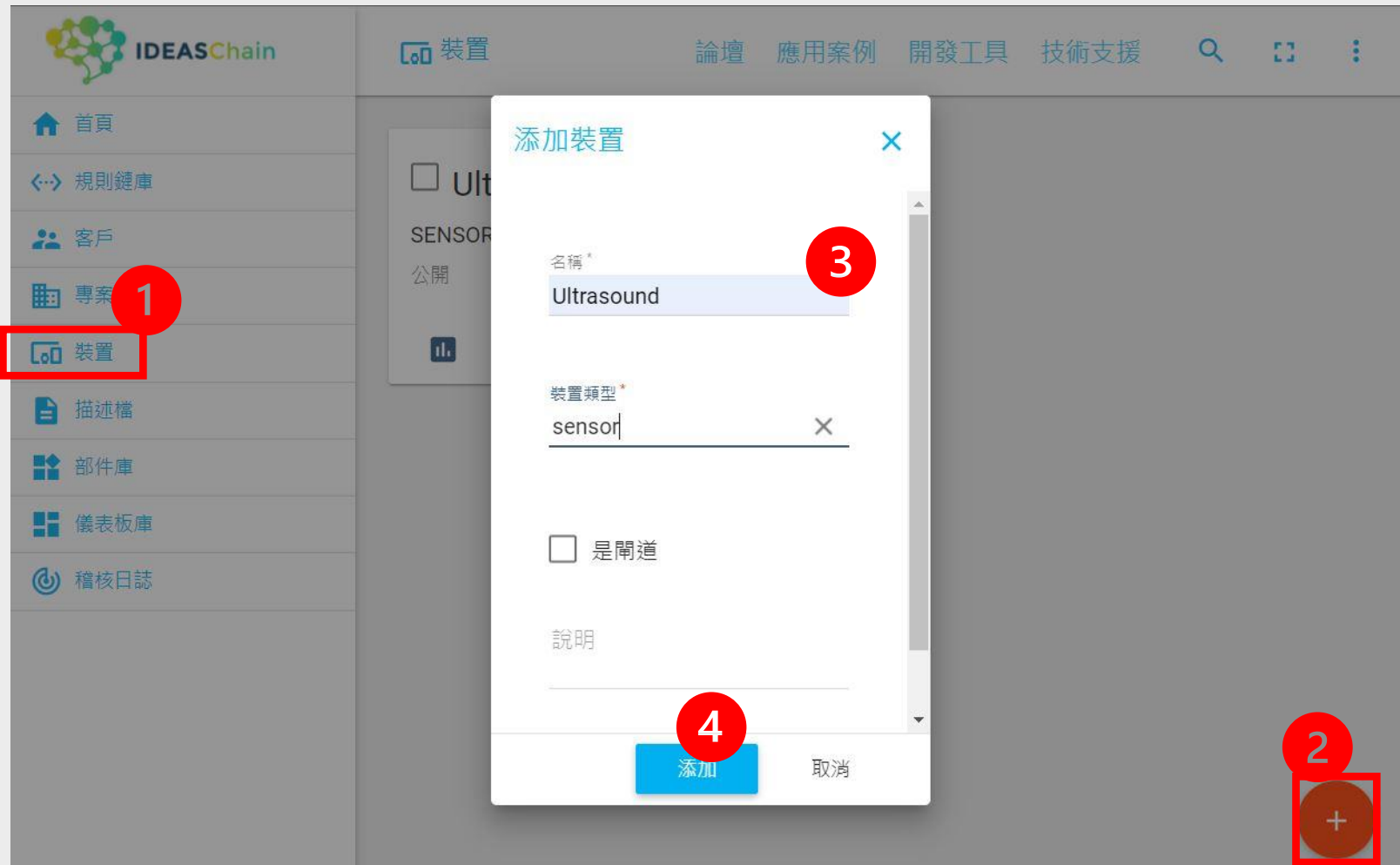
Step2. 點選左側:<專案>，再點選右下角的+，添加專案，填寫名稱類型後，點選添加





MQTT數據平台

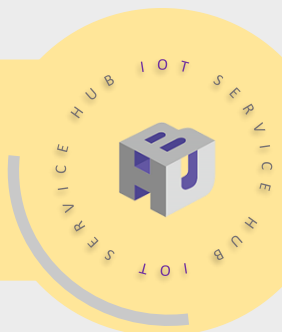
Step3. 點選左側:<裝置>，再點選右下角的+，添加專案，填寫名稱類型後，點選添加



MQTT數據平台

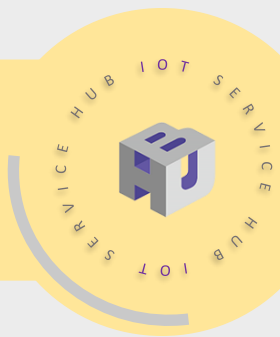
Step4. 點選左側:<裝置>，再點選剛才新增的裝置，並複製存取權杖，貼上於程式碼中(或MQTTBox)

The screenshot displays the IDEASChain MQTT data platform interface. On the left sidebar, the '裝置' (Devices) menu item is highlighted with a red box and a red circle containing the number 1. The main content area shows a list of devices, with 'Ultrasound' selected, indicated by a red circle containing the number 2. Below the device name, the status 'SENSOR' and '公開' (Public) are visible. At the bottom of the device card, there are several icons, including a shield icon. On the right side, the 'ULTRASOUND' device details page is shown. The '裝置詳細信息' (Device Detailed Information) tab is active. Below the tabs, there are buttons for '私人' (Private), '管理認證' (Manage Credentials), and '刪除裝置' (Delete Device). The '複製裝置ID' (Copy Device ID) button is highlighted with a red box and a red circle containing the number 3. Below this, the '裝置公開' (Device Public) section shows the device name 'Ultrasound' and the device type 'sensor'. At the bottom, there is a checkbox labeled '是閘道' (Is Gateway).



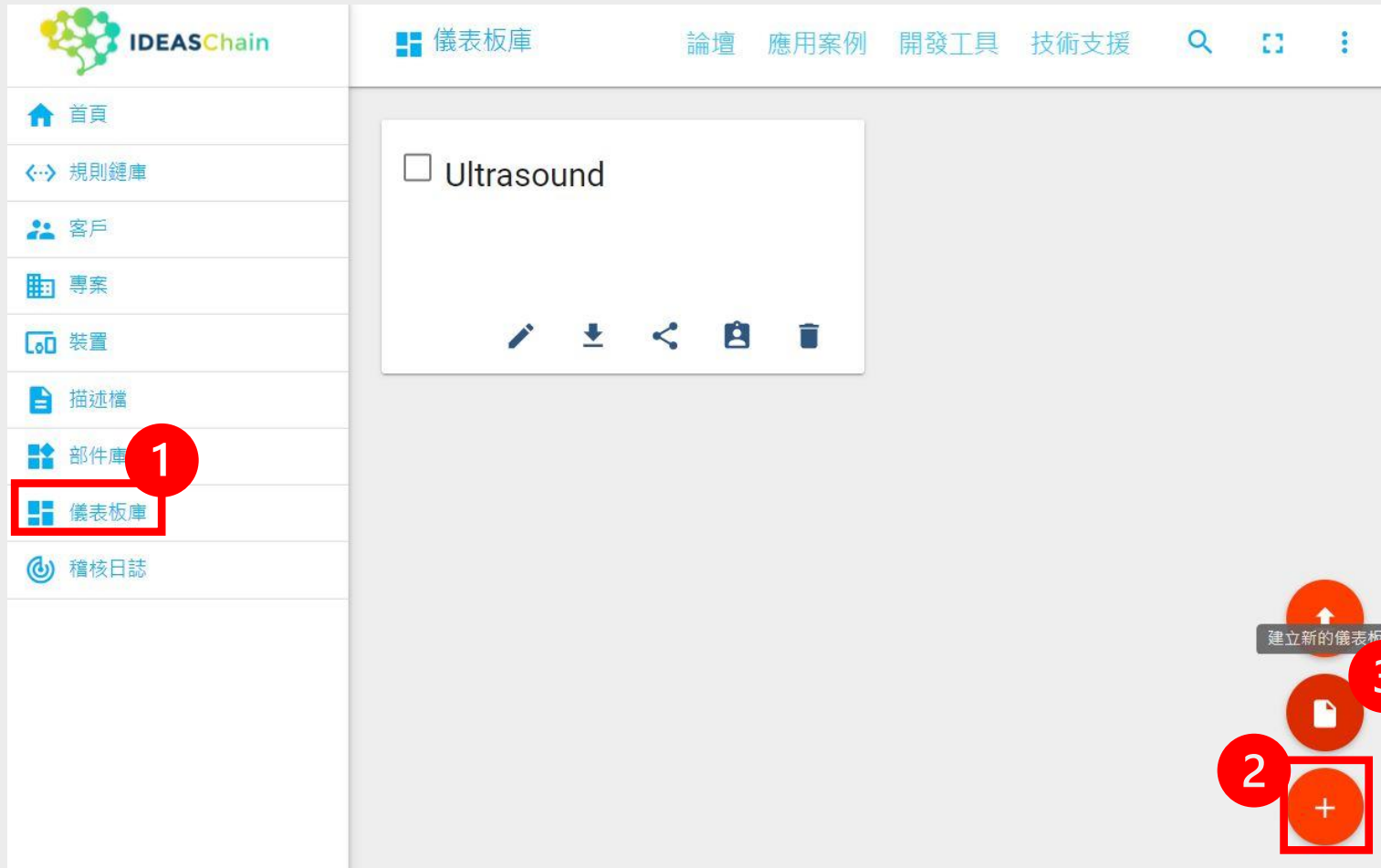
MQTT數據平台

Step5. 點選左側:<裝置>，再點選剛才新增的裝置，接著點選關聯，關聯類型填寫” Contains” 後，類型點選<裝置>，並填寫剛才加入的裝置名稱，最後點選<添加>。



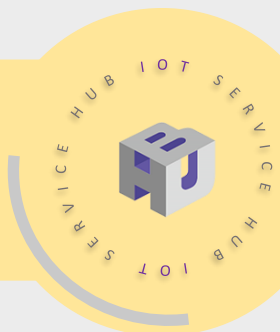
MQTT數據平台

Step6. 點選左側:<儀表板庫>，再點選右下角的+，建立新的儀表板



Step7. 添加儀表板並新增標題





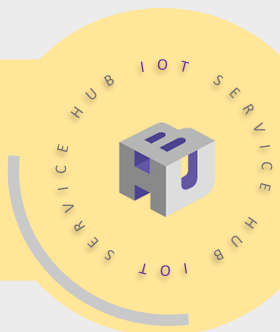
MQTT數據平台

Step8. 點選左側:<儀表板庫>，再點選剛才新增的儀表板，建立新的儀表板點選添加



Step9. 點選添加新的部件



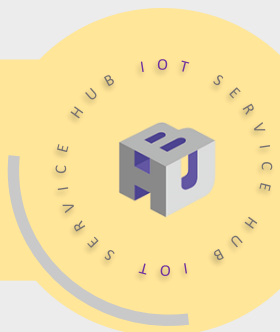


MQTT數據平台

Step10. 點選當前包，在選擇合適的圖表，在這裡使用“ Charts ”，並在圖表處點一下新增

The screenshot displays the IDEASChain MQTT data platform interface. On the left is a sidebar with navigation links: 首頁 (Home), 規則鏈庫 (Rule Chain Library), 客戶 (Customers), 專案 (Projects), 裝置 (Devices), 描述檔 (Description Files), 部件庫 (Component Library), 儀表板庫 (Dashboard Library), and 稽核日誌 (Audit Log). The main area shows a dashboard titled 'Ultrasour' with a '選擇部' (Select Component) dropdown menu. The '當前包' (Current Package) option is selected, and the 'Charts' option is highlighted. A red box labeled '3' encloses a 'Timeseries' chart showing two data series: 'First' (blue bars) and 'Second' (yellow bars). The chart displays data over time, with the y-axis ranging from 0 to 400. The x-axis shows timestamps from 22:20:20 to 22:21:10. A legend at the bottom left identifies the series. A summary table at the bottom right shows the average values for each series.

Series	平均值 (Average)
First	161.23
Second	42.64



MQTT數據平台

Step11. 類型:點選實體，參數:輸入sensorDist

添加部件

數據 設定 進階 動作

☒ 使用儀表板的時間窗口 時間窗口 即時 - 最後 分

資料來源

1. 類型 實體 參數 沒有找到'sensorDist' 別名 2. 建立新 時間序列 3. 需要裝置時間序列。

+ 添加

5. 添加 取消

Step12. 類型:點選實體，參數:輸入sensorDist

添加別名

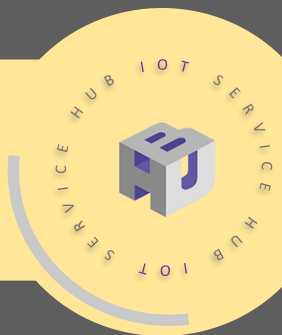
別名* sensorDist 3

過濾類型* 單個實體

類型 裝置* 4

裝置 Ultrasound

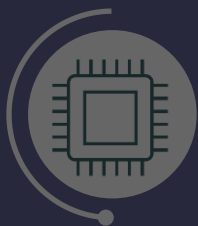
添加



實作案例



DSI5168介紹



軟體教學



數據平台



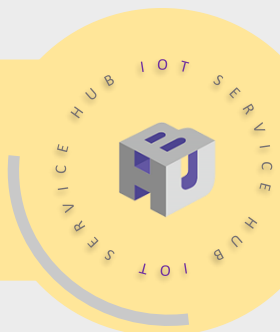
實作案例

IDEASChain應用案例

實作案例:一氧化碳警報系統

實作案例:工廠材料分裝

實作案例:長照中心老人離床
監測



IDEASChain 應用案例

點選以下網址 <https://iforum.ideaschain.com.tw/iforum/techmatch/tagsearch.do>
進入IDEASChain 應用案例，可以參考相關的使用方式及其他硬體搭配

IDEASChain

首頁 數據平台 論壇 **應用案例** 開發工具 技術支援 管理後台 登出

應用案例

首頁 > 應用案例

全部時間 ▾ 最新發文 ▾

選擇應用類型 ▾

搜尋...

DSI5168工廠材料分裝

使用情境：用於工廠內材料分裝時二次確認成品的重量與分裝，能夠藉由網頁或是手機去控制待測量產品的數量與重量。而在工廠內設有 OLED 與 RGB 燈，能夠針對產品測量後是否符合標準的結果即時的顯示在螢幕與閃爍不同的燈色，同時也會回饋於網頁與手機上，藉以去做立即的調整與應對。

30 0 0

DSI 5168、新版數據平台、智慧立方

hikari 發佈於2021-08-17 12:18:57

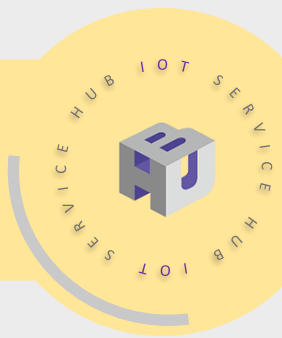
上傳方案

常用標籤

DSI 2598+ DSI 5188

DSI 2599 藍芽/BLE WiFi

1.tw/iforum/techmatch/list.do



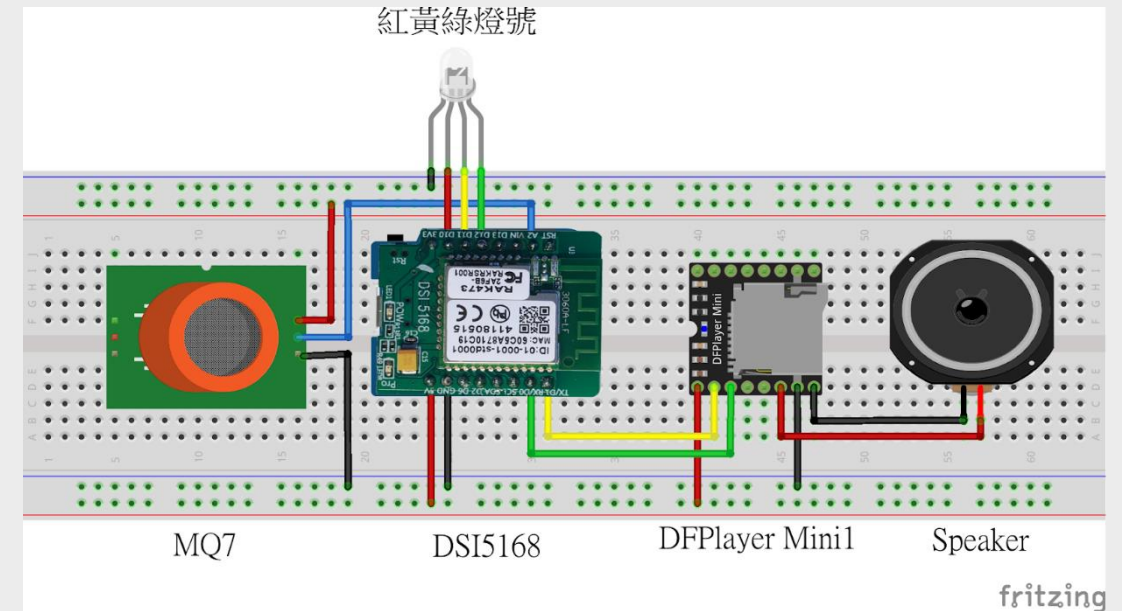
實作案例：一氧化碳警報系統

使用情境：

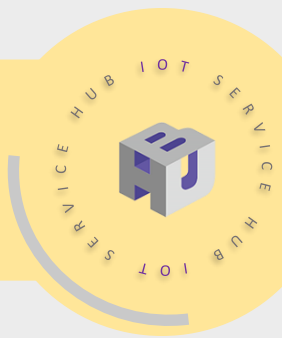
運用DSI5168開發板，監測空氣中一氧化碳濃度，當濃度過高時(偵測 Ao, MP3音量直接25 輸出)，便發出警報聲響，同時透過IFTTT + LINE 發送警報訊息。

案例說明手冊：

https://drive.google.com/drive/folders/1n3HT-Q6-Bjst_RZwn9821HeAVnHdDJy4



(設計者：楊俊益)



實作案例：工廠材料分裝

使用情境：

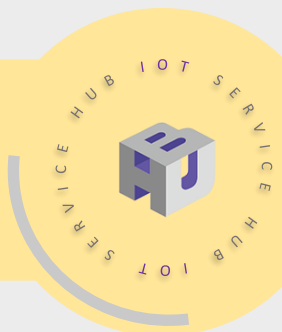
用於工廠內材料分裝時二次確認成品的重量與分裝，能夠藉由網頁或是手機去控制待測量產品的數量與重量。而在工廠內設有 OLED 與 RGB 燈，能夠針對產品測量後是否符合標準的結果即時的顯示在螢幕與閃爍不同的燈色，同時也會回饋於網頁與手機上，藉以去做立即的調整與應對。

案例說明手冊：

https://iforum.ideaschain.com.tw/develop_board/%E8%AA%AA%E6%98%8E%E6%89%8B%E5%86%8A_1629342268795.pdf



(設計者：吳晨光)



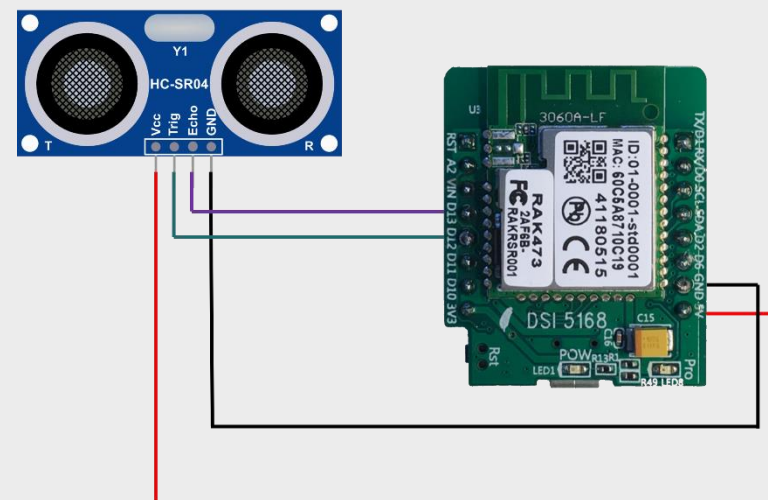
實作案例：長照中心老人離床監測

使用情境：

此應用是將超音波感測器裝設在床頭，在臥床者平躺狀態下，量測臥床者上方床頭至床板的距離，若臥床者起身，量取到的距離將會變小，在接收到數值改變後，主動傳送LINE的警示訊息給照護人員。

案例說明手冊：

https://iforum.ideaschain.com.tw/develop_board/%E6%9D%8E%E5%A5%95%E8%B3%A2_DSI5168%E6%95%99%E6%A1%88%E7%B0%A1%E5%A0%B1_%E3%80%90%E9%95%B7%E7%85%A7%E4%B8%AD%E5%BF%83%E9%9B%A2%E5%BA%8A%E7%9B%A3%E6%B8%AC%E3%80%91_1629389679637.pdf



(設計者：李奕賢)