

DSI 2598 門禁管控訊息輔助

透過手機接收訊息的方式得知目前開門時間

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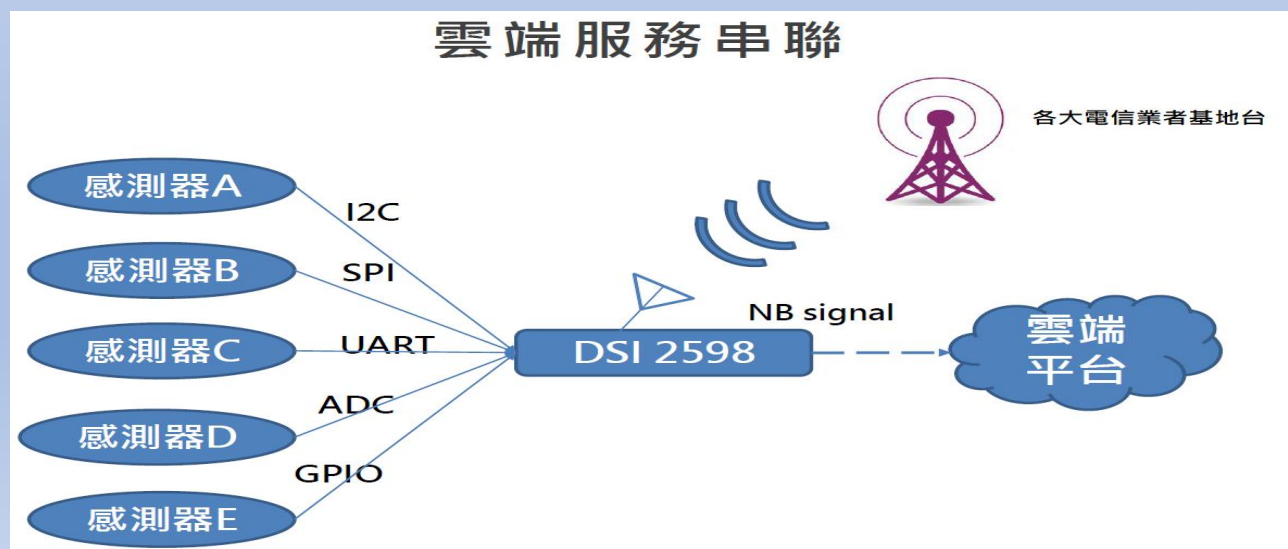
DSI2598 門禁管控訊息輔助

1. 基礎介紹：
2. APN 設定：
3. IFTTT 設定使用概略：
4. Mifare RFID-RC522 模組說明：
5. 程式撰寫內容：
6. 情境操作：

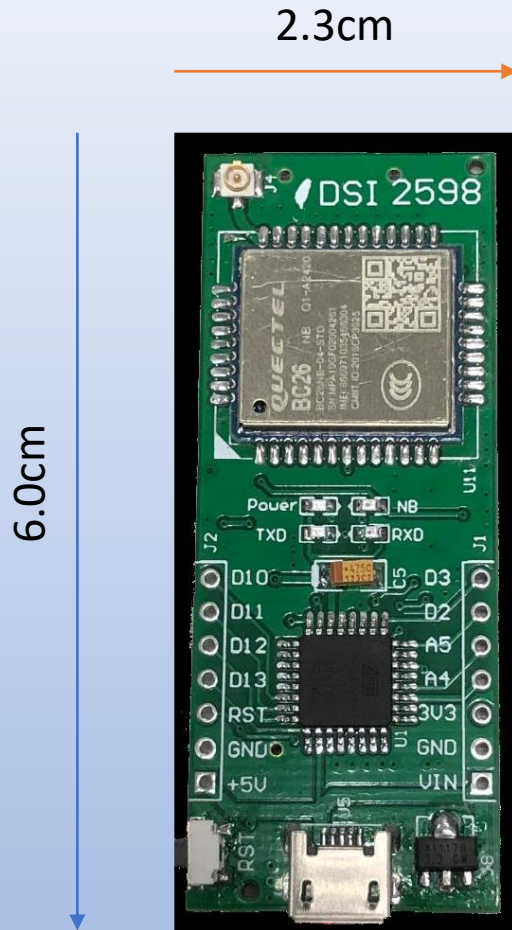
DSI 2598

採用MT 2625 全台首款Arduino NB-IoT開發板

DSI2598使用聯發科技NB-IoT晶片-MT2625模組，搭配Arduino原廠MCU-ATMEGA328P，有著PWM、I2C、SPI、ADC、UART等腳位功能，簡單但完整，可讓使用者無縫接軌任何Arduino程式庫，進行各項功能程式開發，是國內第一款NB-IoT開發板。



外型與尺寸說明



支持NB-IoTR14 的系統單晶片，以超高整合度為大量物聯網設備提供兼具低功耗及成本效益的解決方案，廣泛適用於家庭、城市、工業或行動應用。

高度整合NB-IoT調制解調數字信號處理器、射頻天線及前端模擬基帶，同時結合ARM Cortex-M 微控制器（MCU）、偽靜態隨機存儲器（PSRAM）、閃存與電源管理單元（PMU）。

整合一系列豐富的外圍輸入輸出介面，包括安全數字輸入輸出模塊（SDIO）、通用異步收發傳輸器（UART）、I2C 傳輸協議、I2S、序列外圍接口（SPI）及脈衝寬度調制（PWM）。

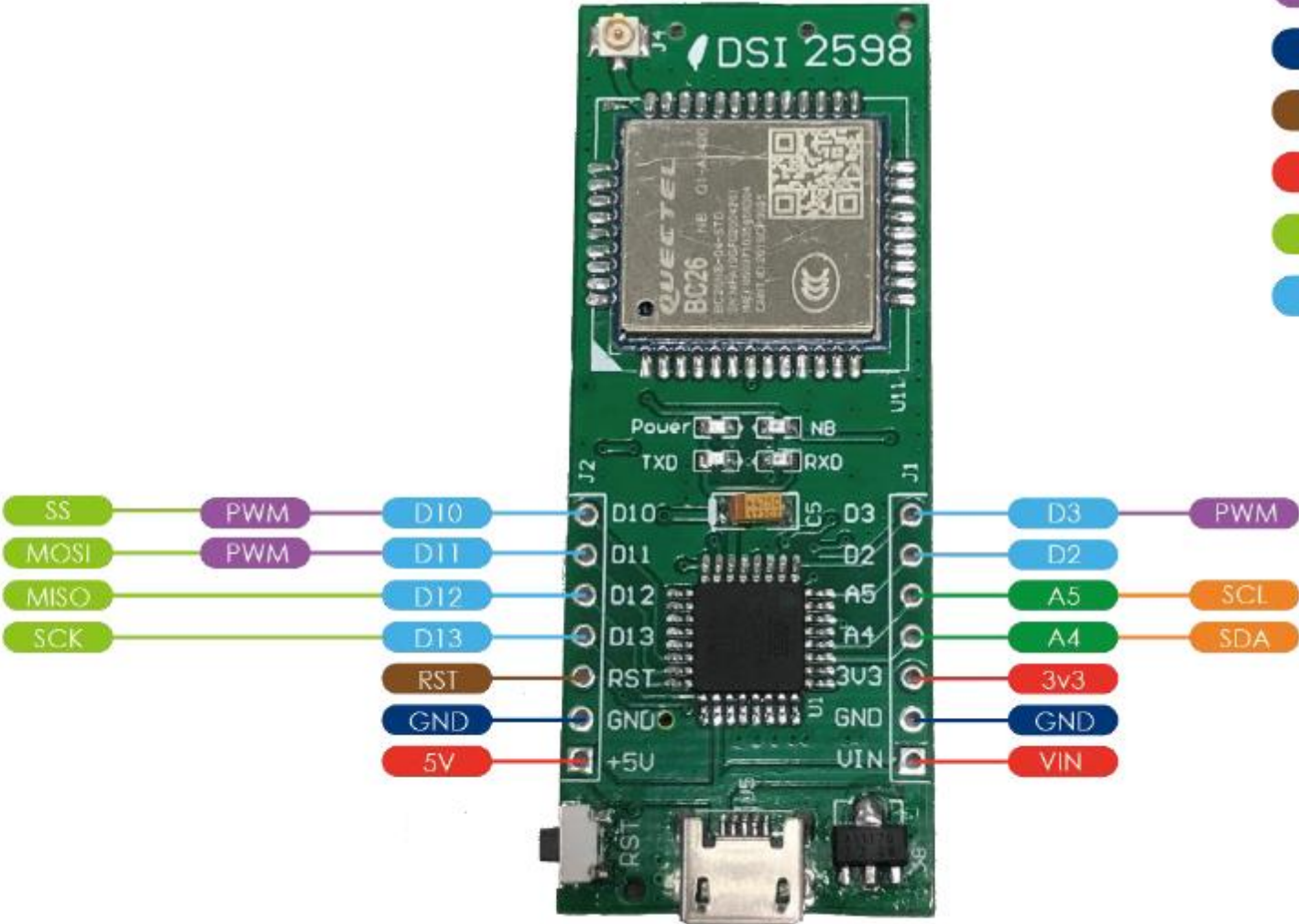
具備強大功能於小巧的封裝尺寸和少量的管腳數目，滿足物聯網設備對成本及體積的需求，並有助於廠商簡化其產品設計流程。

DSI 2598 基於實時操作系統（RTOS），易於針對各種不同的應用進行客製化，比如家庭自動化、雲信標（cloud beacon）、智慧型電錶及多項物聯網靜態或行動應用。

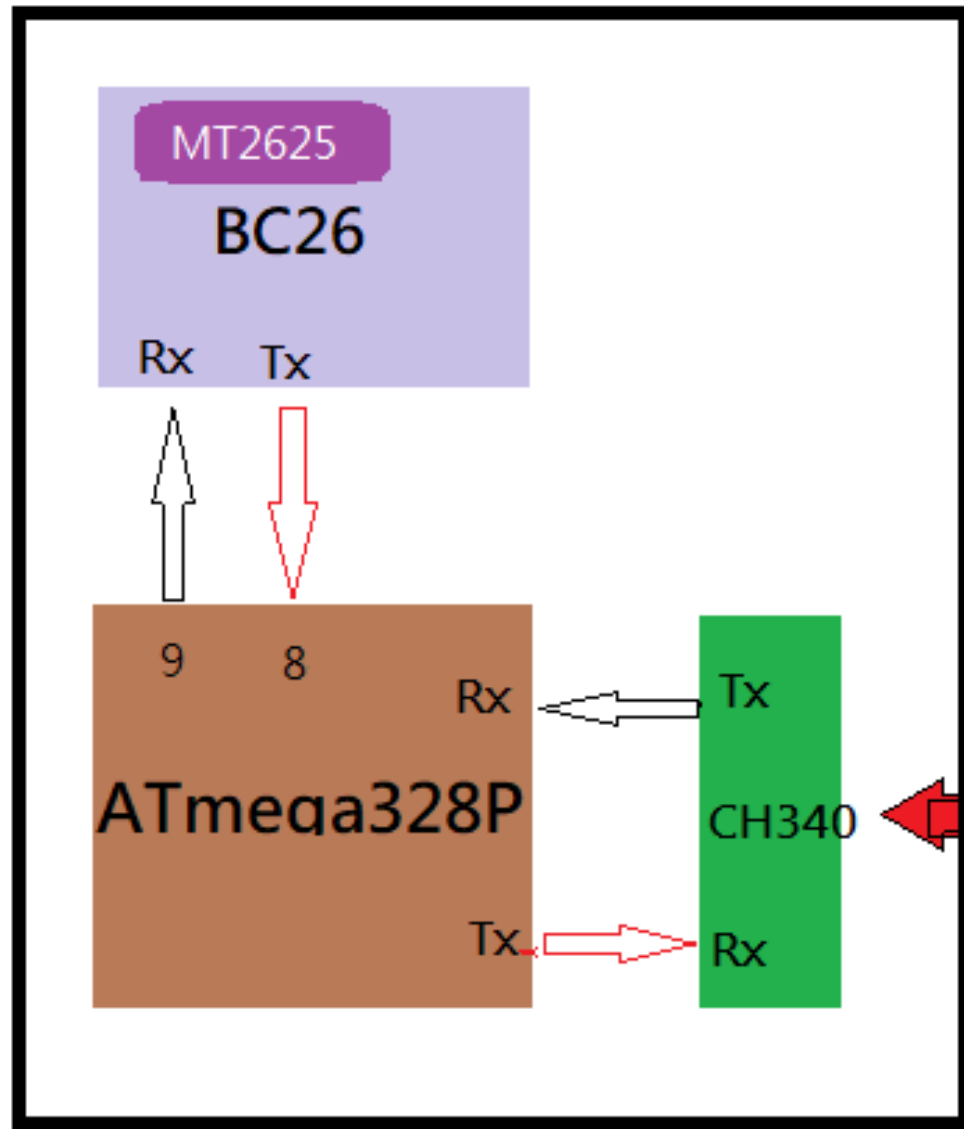
DSI 2598 的寬頻前端模組支持3GPP R14 規範，涵蓋超低頻/低頻/中頻/四頻的全頻段運作，可滿足全球市場需求，進而降低成本和開發時間。

腳位功能說明

- Analog definition
- I2C definition
- PWM definition
- GND
- RST definition
- Power definition
- SPI definition
- Digital definition



DSI2598內部示意圖



NB-IoT :窄帶物聯網(Narrow Band Internet of Things, NB-IoT)

1. 構建於蜂窩網絡，只消耗大約180KHz的帶寬，可直接部署於GSM網絡、UMTS網絡或LTE網絡。
2. 是IoT領域一個新興的技術，支持低功耗設備在廣域網的蜂窩數據連接，也被叫作低功耗廣域網(LPWAN)。
3. 待機時間長、設備電池壽命提高至少5年以上。
4. 可透過各大電信業者提供的 NB-IoT / SIM 卡，利用電信基地台連到網際網路。
5. 其特性可增加覆蓋範圍提升 20dB，使原本透過 4G LTE 網路收不到的地方(如地下室、地下管道等)也能收到訊號。

NB-IoT 與 WiFi 之差異：

1. WiFi 透過無線基地台連上網際網路，NB-IoT 利用電信基地台連上網際網路。
2. WiFi 適用傳輸大量資料的訊息，NB-IoT 適用小資料量傳輸。
3. WiFi 連接無線基地台的距離較短，NB-IoT 由於全台基地台涵蓋率夠高，幾乎無死角。
4. WiFi 晶片耗用功率較高，NB-IoT 採用低功率晶片，使用一般 AA 電池可達 3-5 年以上。
5. WiFi 連網較易取得真實 IP 位址，而 NB-IoT 使用的電信基地台提供的 IP 位址大都為 虛擬 IP 網段。

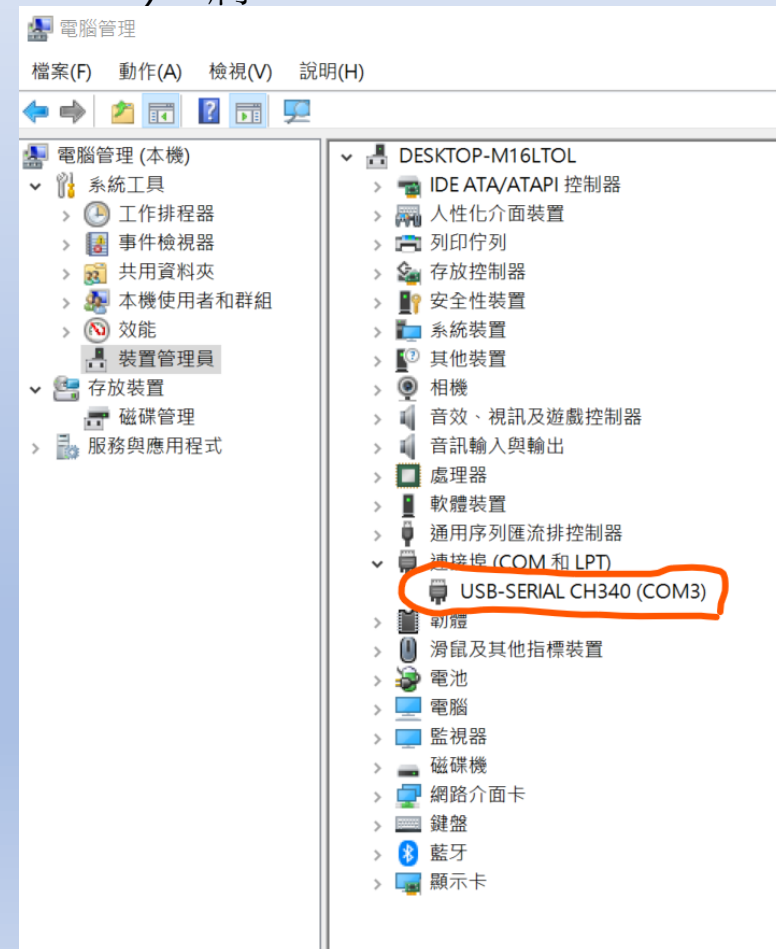
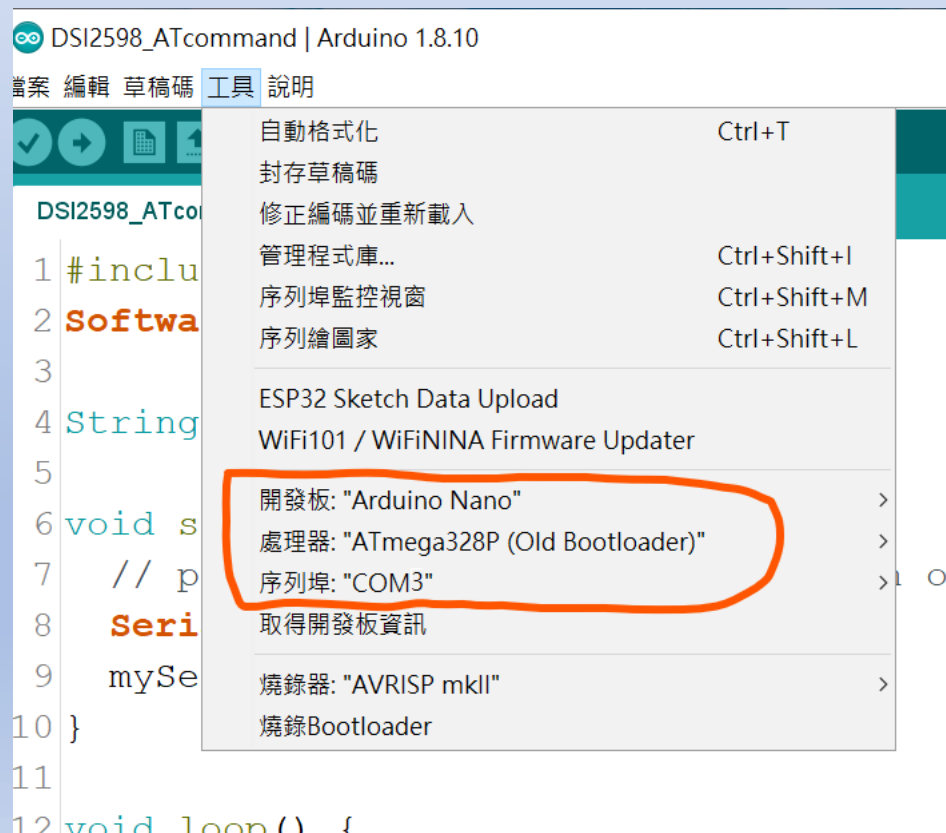
APN 設定

程式碼下載: t.ly/DKkB2

資料來源: 資策會

STEP 1: 打開DSI2598_ATcommand.ino，並至Arduino的工具->序列埠中找到USB
模組的COM PORT編號，可至控制台確認。

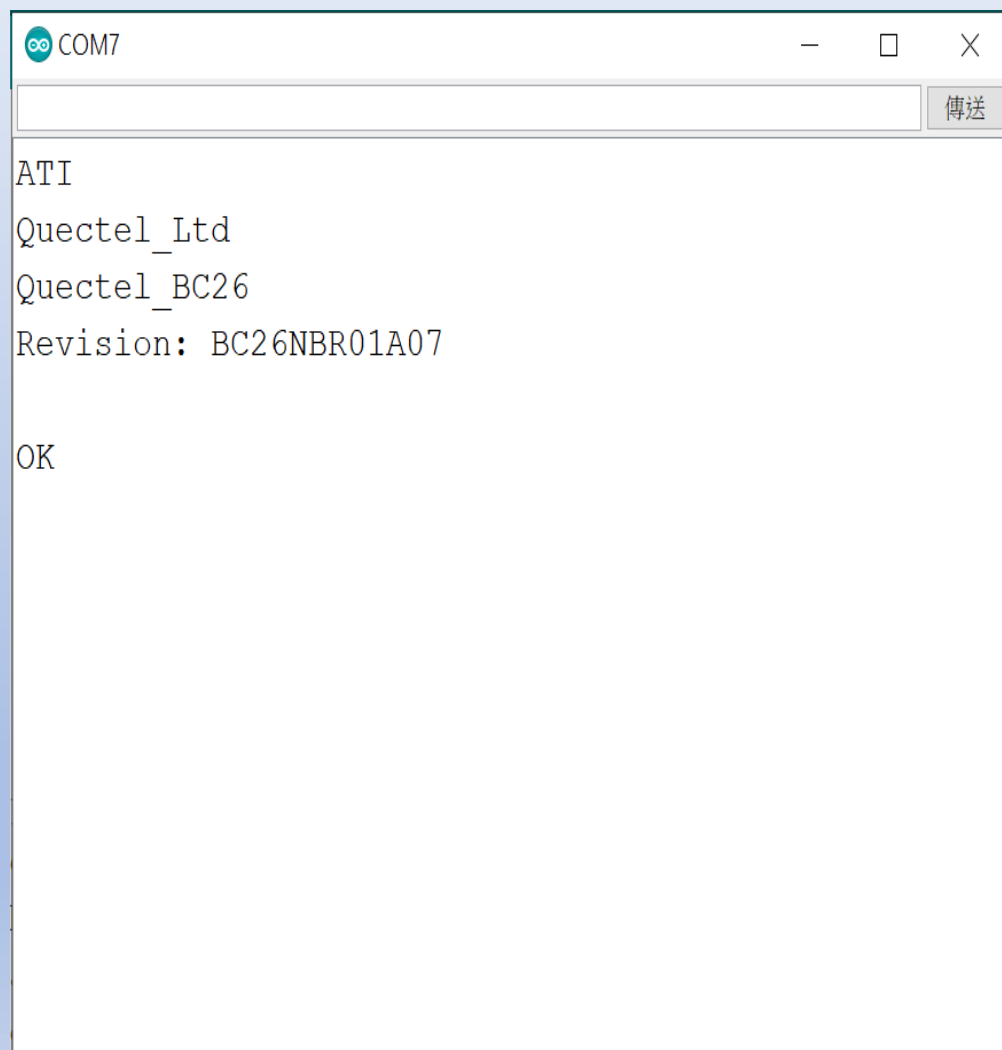
STEP 2: 選擇 工具 ->開發板->Arduino Nano，然後按下上傳 (Ctrl+U)，將
程式燒錄進去。



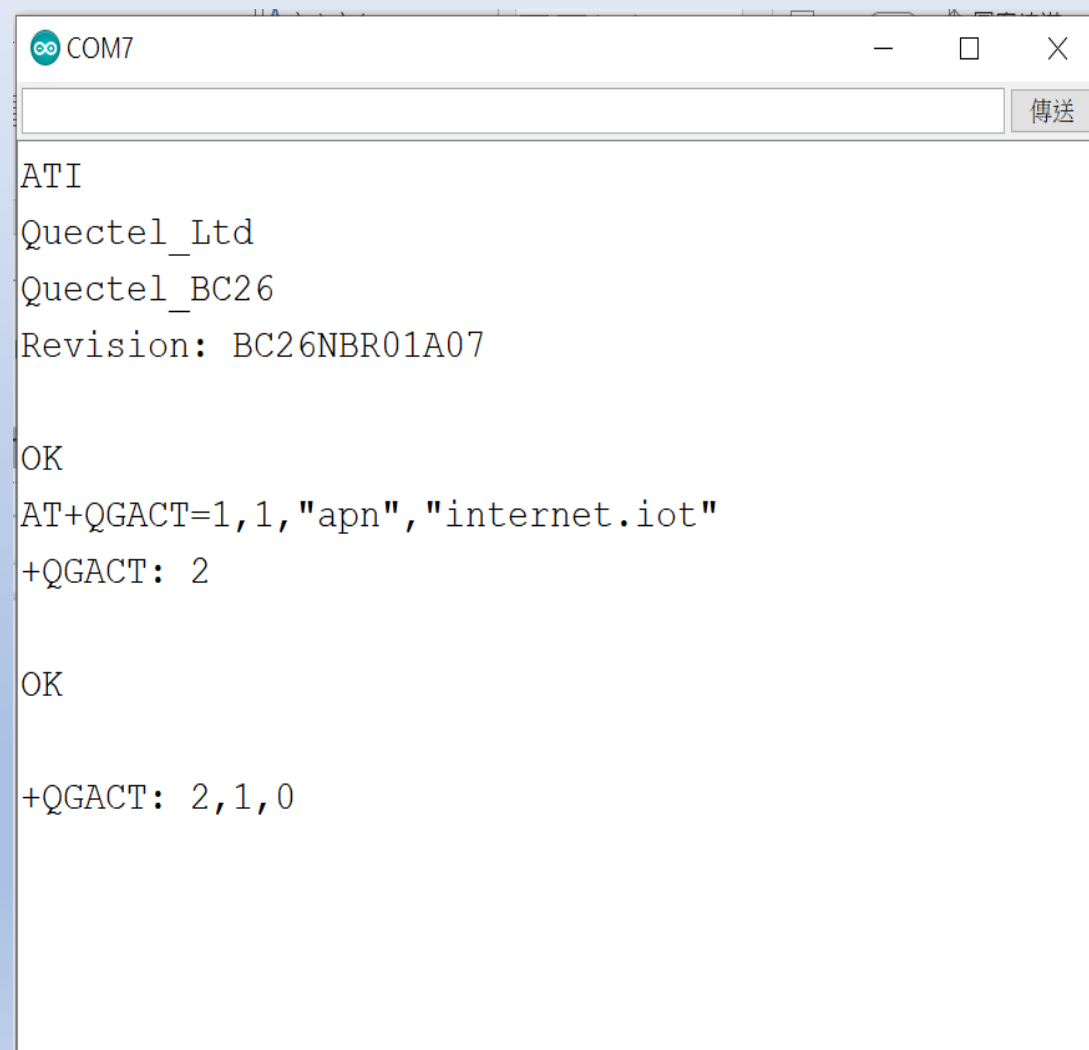
STEP 3：打開序列埠監控視窗，在上方輸入欄中輸入ATI 指令，可先輸入「ATI」，查看模組是否有回覆版本訊息。

資料來源：資策會

STEP 4：啟用APN： AT+QGACT=1,1,"apn","internet.iot"



```
COM7
ATI
Quectel_Ltd
Quectel_BC26
Revision: BC26NBR01A07
OK
```



```
COM7
ATI
Quectel_Ltd
Quectel_BC26
Revision: BC26NBR01A07
OK
AT+QGACT=1,1,"apn","internet.iot"
+QGACT: 2
OK
+QGACT: 2,1,0
```

STEP 5 : 註冊APN : AT+QCGDEFCONT="IP","internet.iot"

STEP 6 : 頻寬設定 : AT+QBAND=1,8

STEP 7 : 重新啟動模組 : AT+QRST=1

資料來源 : 資策會

```
COM7
ATI
Quectel_Ltd
Quectel_BC26
Revision: BC26NBR01A07

OK
AT+QGACT=1,1,"apn","internet.iot"
+QGACT: 2

OK

+QGACT: 2,1,0
AT+QCGDEFCONT="IP","internet.iot"
OK
```

```
COM7
Quectel_BC26
Revision: BC26NBR01A07

OK
AT+QGACT=1,1,"apn","internet.iot"
+QGACT: 2

OK

+QGACT: 2,1,0
AT+QCGDEFCONT="IP","internet.iot"
OK
AT+QBAND=1,8

OK
```

```
COM7
OK
AT+QBAND=1,8

OK
AT+QRST=1
RbRQBBER ?tY?
RbRQBBER ?tY?

RDY

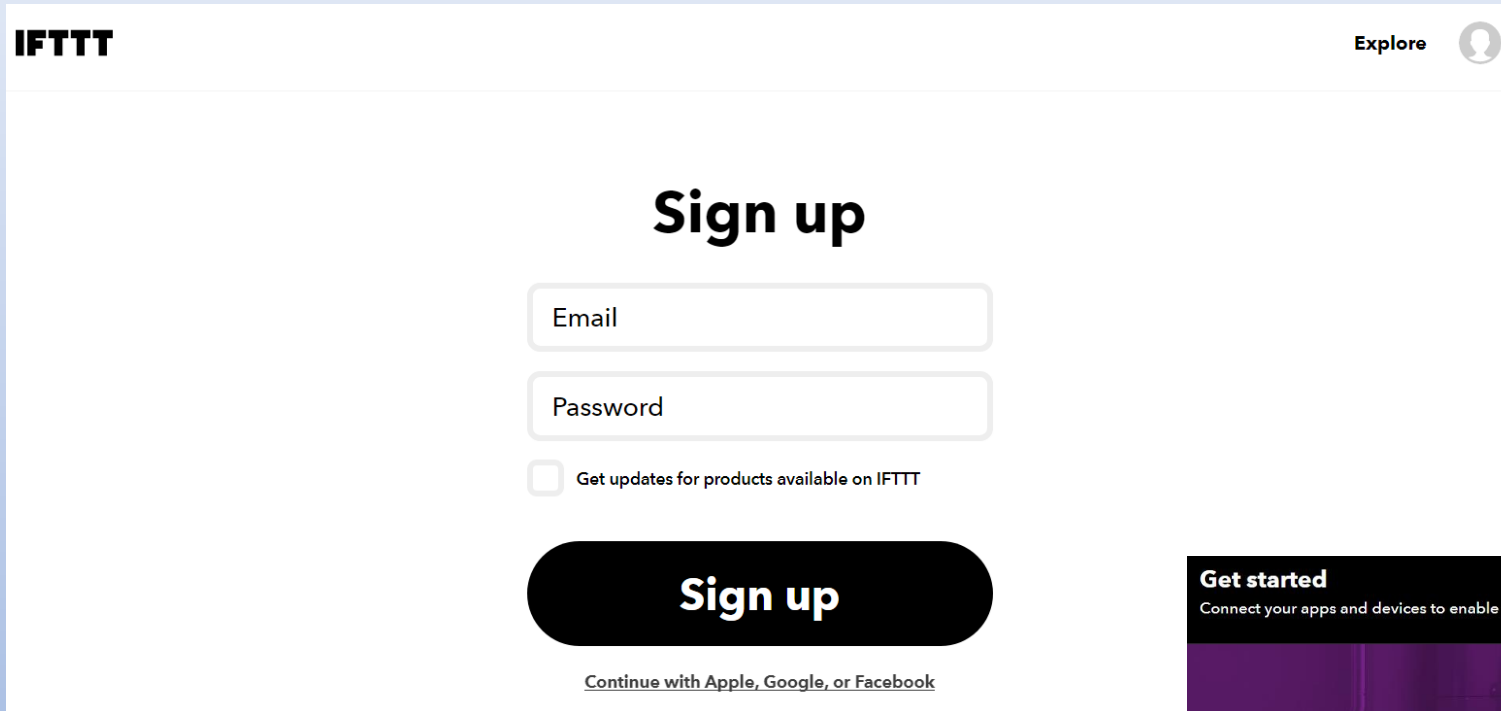
+CFUN: 1

+CPIN: READY

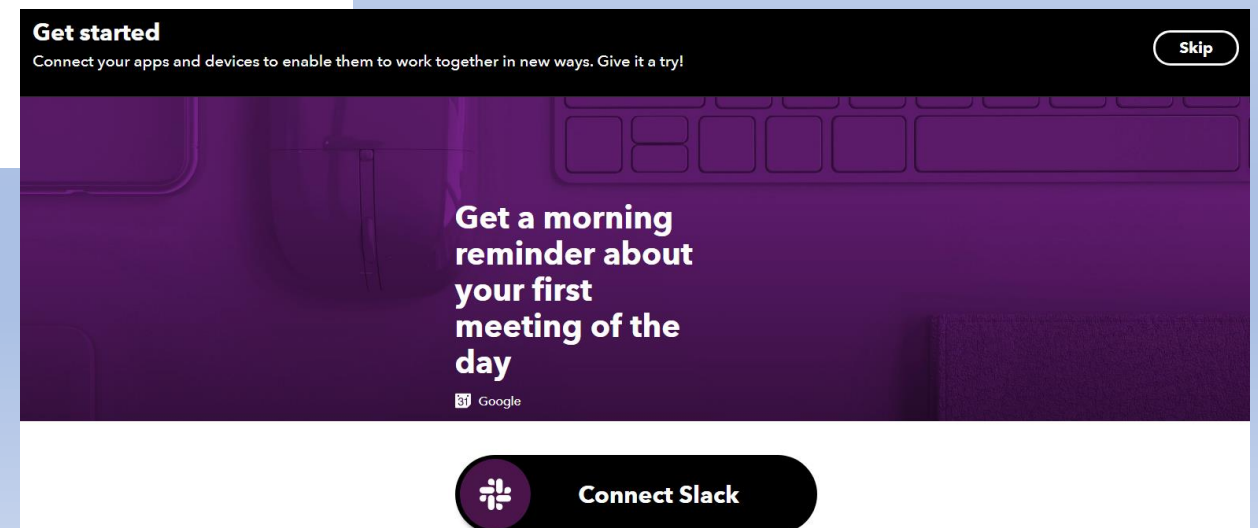
+IP: 10.85.230.245
```

IFTTT 設定介紹

首先使用Chrome 進入網站：<https://ifttt.com> 並選擇 右上方的 Sing UP




The screenshot shows the IFTTT sign-up page. At the top left is the IFTTT logo. At the top right is the word "Explore" next to a user profile icon. The main heading is "Sign up". Below it are two input fields: "Email" and "Password". Under the "Password" field is a checkbox labeled "Get updates for products available on IFTTT". A large black button with the text "Sign up" is centered below the form. At the bottom, there is a link that says "Continue with Apple, Google, or Facebook".



The screenshot shows a "Get started" banner. At the top left, it says "Get started" and "Connect your apps and devices to enable them to work together in new ways. Give it a try!". At the top right is a "Skip" button. The background is a dark purple image of a laptop keyboard. The main text reads "Get a morning reminder about your first meeting of the day". Below this is the Google logo. At the bottom, there is a black button with the Slack logo and the text "Connect Slack".

IFTTT Home Q Search

Start connecting your world.



Get more

- Account
- Activity
- My Applets
- My services
- Create
- Help
- Sign out

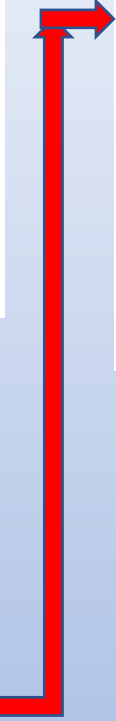


IFTTT Home Q Search Explore

Create your own

If + This Then That

Build your own service on the IFTTT Platform

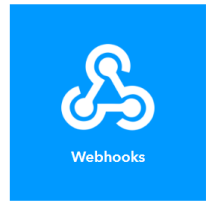


IFTTT Home Q Search Explore

< Back

Choose a service

Step 1 of 6




Webhooks



IFTTT Home Q Search Explore

< Back



Connect Webhooks

Step 1 of 6

Integrate other services on IFTTT with your DIY projects. You can create Applets that work with any device or app that can make or receive a web request. If you'd like to build your own service and Applets, check out the IFTTT platform.

Connect

< Back

Choose trigger

Step 2 of 6

Receive a web request
This trigger fires every time the Maker service receives a web request to notify it of an event. For information on triggering events, go to your Maker service settings and then the listed URL (web) or tap your username (mobile)



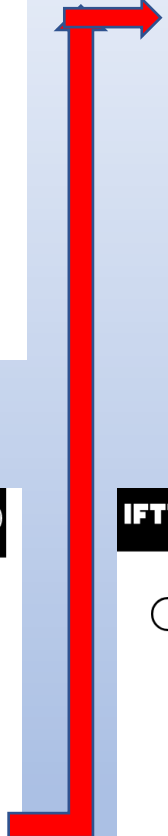
< Back

Complete trigger fields

Step 2 of 6

Event Name

The name of the event, like "button_pressed" or "front_door_opened"
Create trigger



< Back

If Then + That



< Back

Choose action service

Step 3 of 6

Q line

- LINE
- Linear PRO Access

< Back

Connect LINE

Step 3 of 6

LINE is a global messaging app used in over 230 countries and regions. LINE offers fun and free voice, video, and chat communication across multiple platforms. Receive event notifications from LINE Notify official account.

Connect

LINE

電子郵件帳號

密碼

登入

IFTTT

IFTTT, Inc.

將提供用戶名稱及聊天室列表給IFTTT服務的提供者。您可於LINE Notify的個人頁面解除連動。

同意後便會自動將「LINE Notify」官方帳號加入好友。

取消 **同意並連動**

IFTTT Home Search Explore

< Back

Choose action

Step 4 of 6

Send message
This Action will post a message to LINE.

[Back](#)

Complete action fields

Step 5 of 6

Recipient

透過1對1聊天接收LINE N

Message destination

Message

Value 1: Value1

Value 2: Value2

Value 3: Value3

[Add ingredient](#)

Photo URL

[Add ingredient](#)


[Create action](#)



[Back](#)

Review and finish

Step 6 of 6



If Maker Event "Door", then Send message


by taso2309 40/140

Receive notifications when this Applet runs

[Finish](#)




[Back](#) [Settings](#)



If Maker Event "Door", then Send message

by taso2309

Connected



If Maker Event "Door", then Send message

Edit title

by taso2309

Get notifications when this connection is active

- Connected May 07, 2020
- Never run

[View activity](#)

This connection usually runs within a few seconds [Check now](#)

Receive a web request

This trigger fires every time the Maker service receives a web request to notify it of an event. For information on triggering events, go to your Maker service settings and then the listed URL (web) or tap your username (mobile)

Event Name

The name of the event, like "button_pressed" or "front_door_opened"

Send message

This Action will post a message to LINE.

Recipient

Message destination

Message

Value 1: Value1

Value 2: Value2

Value 3: Value3

Add ingredient

Photo URL (optional)

Add ingredient

Save

修改



Receive a web request

This trigger fires every time the Maker service receives a web request to notify it of an event. For information on triggering events, go to your Maker service settings and then the listed URL (web) or tap your username (mobile)

Event Name

The name of the event, like "button_pressed" or "front_door_opened"

Send message

This Action will post a message to LINE.

Recipient

Message destination

Message

卡號: {{Value1}}

Date:{{OccurredAt}}

Add ingredient

Photo URL (optional)

Add ingredient

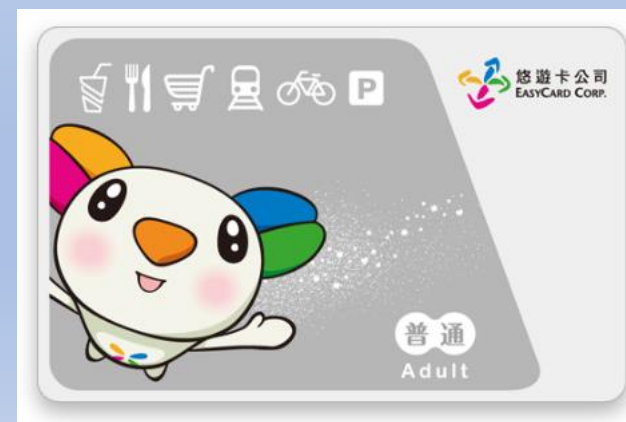
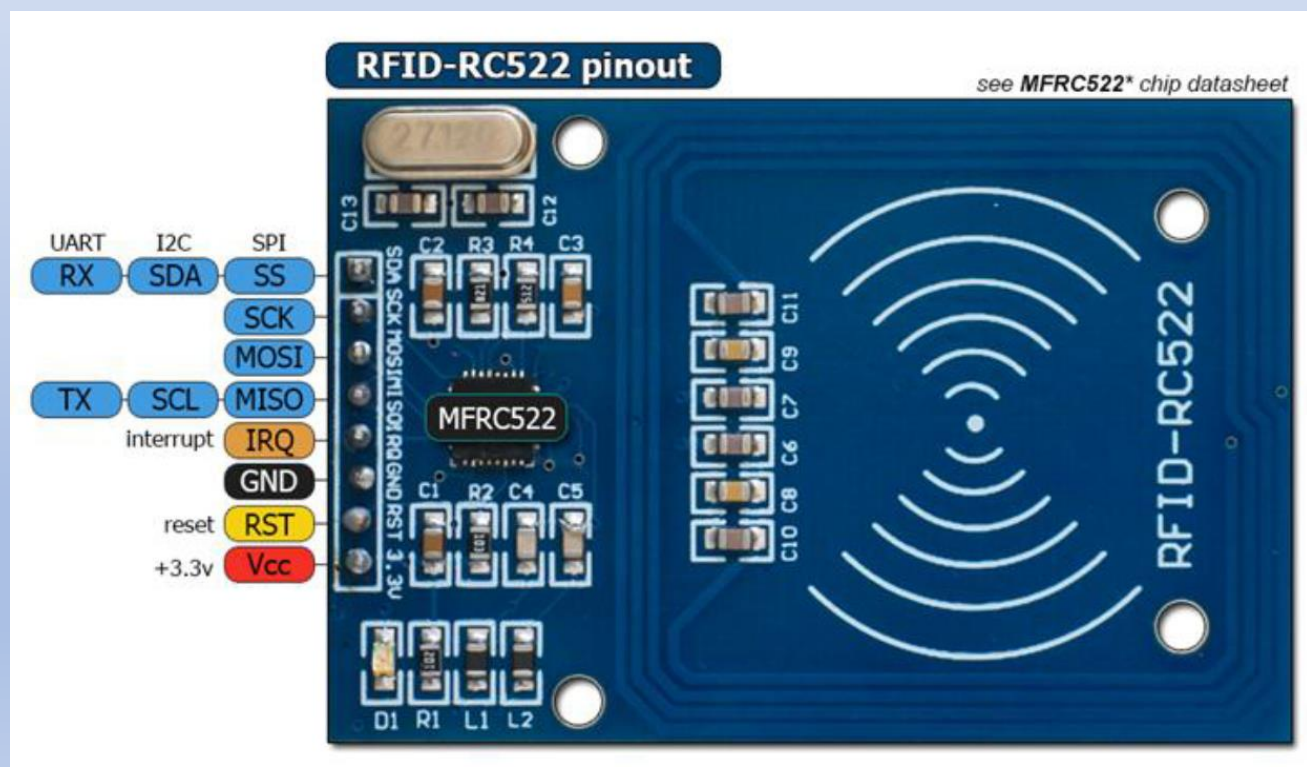
Save

Mifare RFID-RC522 模組

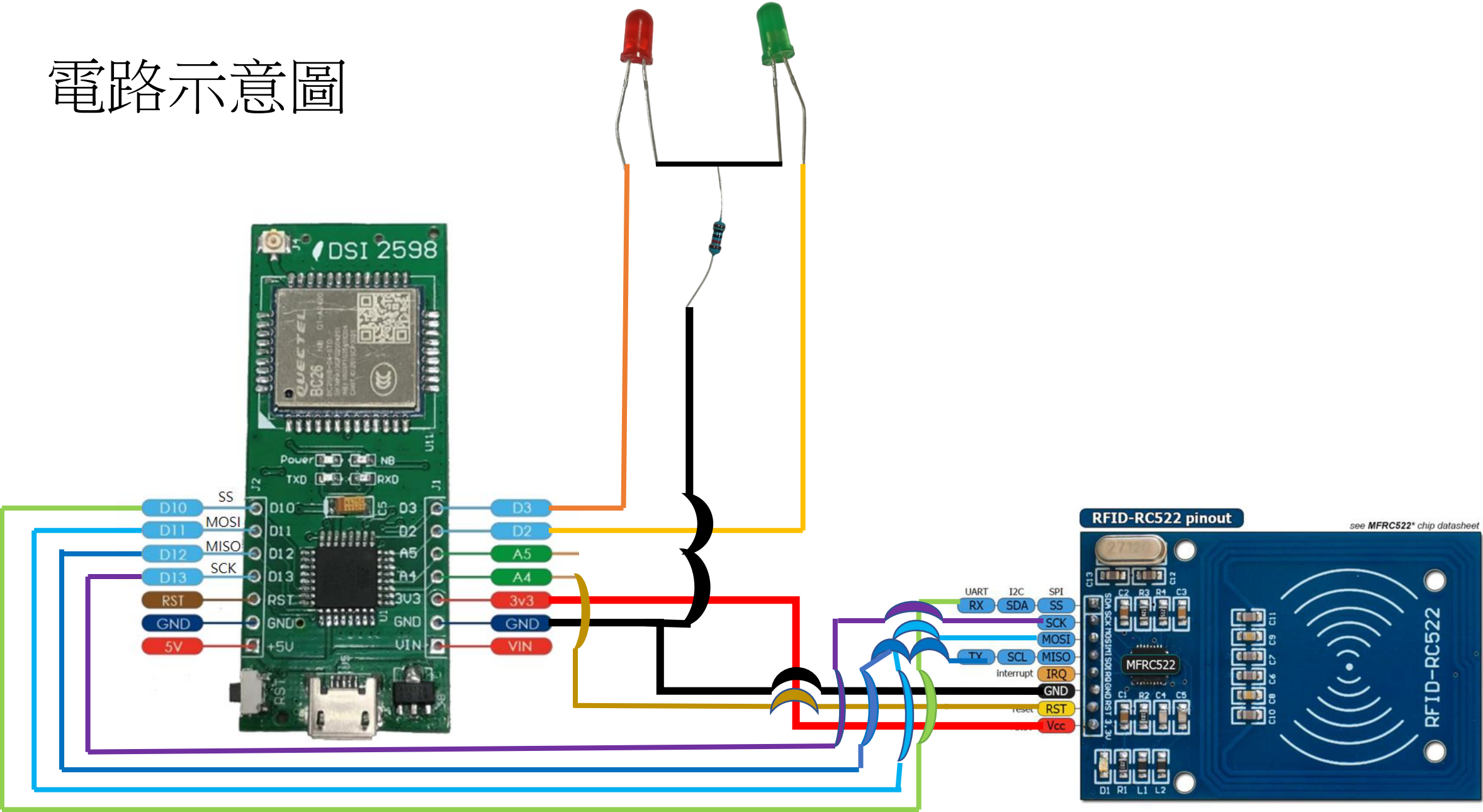
MFRC522程式庫 <https://github.com/miguelbalboa/rfid>
詳細請參閱網站：<https://swf.com.tw/?p=930>

RFID全名為Radio Frequency Identification，中文叫做無線射頻辨識，是一種自動識別和獲取資料的無線通信技術！

當卡片接近讀卡裝置的有效感應距離(幾公分)時，卡片的天線(線圈)受到讀卡裝置的磁場影響，產生感應電流，提供電力讓內部的晶片運作。



電路示意圖



2.1.1. AT+QIOPEN Open a Socket Service

This command is used to open a socket service. The service type can be specified by <service_type>, and the data access mode can be specified by <access_mode>. The URC “+QIOPEN: <connectID>,<err>” indicates whether the socket service has been opened successfully.

AT+QIOPEN Open a Socket Service	
Test Command AT+QIOPEN=?	Response +QIOPEN: (1-3),(0-4),"TCP/UDP","<IP_address>/<domain_name>",<remote_port>,<local_port>,(0-1)[,(0-1)] OK
Write Command AT+QIOPEN=<contextID>,<connectID>,<service_type>,<IP_address>/<domain_name>,<remote_port>[,<local_port>[,<access_mode>]][,<protocol_type>]]	Response OK +QIOPEN: <connectID>,<err> If there is an error related to ME functionality: ERROR
Maximum Response Time	300ms

2.1.4. AT+QISEND Send Text String Data

The command is used to send socket data in text string format via specified connection.

AT+QISEND Send Text String Data	
Test Command AT+QISEND=?	Response +QISEND: (0-4),(1-1024),<data> OK
Write Command AT+QISEND=<connectID>,<send_length>,<data>	Response If data is sent successfully: OK SEND OK Otherwise: OK SEND FAIL

2.1.2. AT+QICLOSE Close a Socket Service

The command is used to close the specified socket service.

AT+QICLOSE Close a Socket Service

Test Command
AT+QICLOSE=?

Response
+QICLOSE: (0-4)

OK

Write Command
AT+QICLOSE=<connectID>

Response
If closed successfully:

OK

CLOSE OK

If there is an error related to ME functionality:

ERROR

Maximum Response Time

300ms

程式說明：

程式共分為二個檔案

1. 函式檔：BC26Init.h
2. 主程式：door_line.ino

BC26Init.h (1)

```
1  #include <SoftwareSerial.h>
2
3  SoftwareSerial mySerial(8, 9);
4  void(* resetFunc) (void) = 0; // 宣告系統重置參數
5  int waitingTime = 10000; //Wait 10 seconds to response.
6
7  String Check_RevData(int z)
8  {
9      String data= "";
10     char c;
11     long int StartTime=millis();
12     while (!mySerial.available())
13     {
14         Serial.print(".");
15         delay(100);
16         if ((StartTime+waitingTime) < millis() && z==0)
17         {
18             Serial.println();
19             Serial.println("No response.");
20             resetFunc();
21             break;
22         }
23     }
24     Serial.println();
25     while (mySerial.available())
26     {
27         delay(100);
28         c = mySerial.read(); //Conduct a serial read
29         if (c=='\n' || c=='\r') continue;
30         data+=c; //Shorthand for data = data + c
31     }
32     return data;
33 }
```


BC26Init.h (2)

```
34 bool Send_ATcommand(String msg,byte stepnum)
35 {
36     String Showmsg="";
37     mySerial.println(msg);
38     Showmsg=Check_RevData(0);
39     //Serial.println(Showmsg.length());
40     Serial.println(Showmsg);
41     switch (stepnum)
42     {
43         case 0:          // Reset BC26
44         case 1:          // Close show message
45             break;;
46         case 2:          // Check IPAddress
47             if (!Showmsg.startsWith("+CGPADDR:")) return false;
48             break;
49         case 3:          // Connect to Server
50             if (Showmsg.startsWith("OK+QIOPEN: 0,0")) return true;
51             if (Showmsg.startsWith("OK"))
52             {
53                 Showmsg=Check_RevData(0);
54                 if (!Showmsg.startsWith("+QIOPEN: 0,0")) return false;
55             }
56
57             break;
58         case 4:          // Other Data
59             if (!Showmsg.startsWith("OK")) return false;
60             break;
61     }
62     return true;
63 }
64
```

BC26Init.h (3)

```
67  bool BC26init()
68  {
69      Send_ATcommand("AT+QRST=1",0);
70      Send_ATcommand("ATE0",1);
71      if (!Send_ATcommand("AT+CGPADDR=1",2)) return false;
72      if (!Send_ATcommand("AT+IPR=9600",4)) return false;
73      return true;
74  }
75
76  bool Connect_Server(String S_name)
77  {
78      String S_temp="";
79      S_temp="AT+QIOPEN=1,0,\"TCP\", \"" + S_name + "\",80,0,0";
80      Serial.println(S_temp);
81      if (!Send_ATcommand(S_temp,3)) return false;
82      //Send_ATcommand("AT+QICFG=\"viewmode\",1",4);
83      delay(100);
84      return true;
85  }
86
```

BC26Init.h (4)

```
86
87  bool Send_Data(String SHost,String SKey,String SEvent,String v1)
88  {
89      String Send_check="";
90      String S_tempdata="";
91      String S_temphost="";
92      S_tempdata="POST /trigger/" + SEvent + "/with/key/" + SKey + "?value1="+v1+" HTTP/1.1";
93      S_temphost="HOST: " + SHost ;
94      Serial.println("AT+QISEND=0");
95      mySerial.println("AT+QISEND=0");
96      delay(100);
97      mySerial.println(S_tempdata);
98      mySerial.println(S_temphost);
99      mySerial.println();
100     mySerial.print("\x1A");
101     while (!Send_check.startsWith(">OKSEND OK+QIURC: \\"recv\\",0"))
102     {
103         Serial.println("Wait ...");
104         Send_check=Check_RevData(0);
105     }
106     delay (100);
107     Send_ATcommand("AT+QICLOSE=0",4);
108     return true;
109 }
110
```

door_line.ino (1)

```
1 #include "BC26Init.h"
2 #include <SPI.h>
3 #include <MFRC522.h> // 引用程式庫
4
5 #define RST_PIN A4 // 讀卡機的重置腳位
6 #define SS_PIN 10 // 晶片選擇腳位
7
8 #define Switch_led 2 // 卡片感應完成之燈號
9 #define Init_led 3 // 初始化 DSI2598 之燈號
10
11 String Server_Name="maker.ifttt.com"; // IFTTT 的網址
12 String IFTTT_Line_Key="XXXXXXXXXXXXXXXXXXXX"; // your WebHooks of Key
13 String IFTTT_Event="Door"; // Line of Event
14
15 String RFID_id="";
16
17 MFRC522 mfrc522(SS_PIN, RST_PIN); // 建立MFRC522物件
18
19 bool Check_RFID()
20 {
21     RFID_id="";
22     if (mfrc522.PICC_IsNewCardPresent() && mfrc522.PICC_ReadCardSerial())
23     {
24         byte *id = mfrc522.uid.uidByte; // 取得卡片的UID
25         byte idSize = mfrc522.uid.size; // 取得UID的長度
26         MFRC522::PICC_Type piccType = mfrc522.PICC_GetType(mfrc522.uid.sak);
27         for (byte i = 0; i < idSize; i++) RFID_id+=id[i]; // 逐一顯示UID碼
28         Serial.println(RFID_id);
29         mfrc522.PICC_HaltA(); // 讓卡片進入停止模式
30         return true;
31     }
32     return false;
33 }
34
```

door_line.ino (2)

```
35 void setup()
36 {
37     Serial.begin(9600);
38     mySerial.begin(9600);
39
40     pinMode(Switch_led, OUTPUT);
41     pinMode(Init_led, OUTPUT);
42
43     digitalWrite(Init_led, HIGH);
44     digitalWrite(Switch_led, LOW);
45
46     SPI.begin();
47     mfrc522.PCD_Init(); // 初始化MFRC522讀卡機模組
48
49     while(!BC26init()) delay(5000);
50     delay(1000);
51     digitalWrite(Init_led, LOW);
52     Serial.println("Start Loop Program ...");
53 }
54
55 void loop()
56 {
57     if(Check_RFID())
58     {
59         digitalWrite(Switch_led, HIGH);
60         if (Connect_Server(Server_Name))
61         {
62             Send_Data(Server_Name,IFTTT_Line_Key,IFTTT_Event,RFID_id);
63             Serial.println("Send OK ...");
64             digitalWrite(Switch_led, LOW);
65         }
66     }
67 }
```

情境操作：

