



Industrial Automation Technology
Innovator and Enhancer.

如何透過RESTful與 iSN-81x 模組連線





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- [iSN-81x-MTCP RESTful_Node.Js](#)
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- [防火牆設定](#)
- [如何安裝函式庫](#)

01

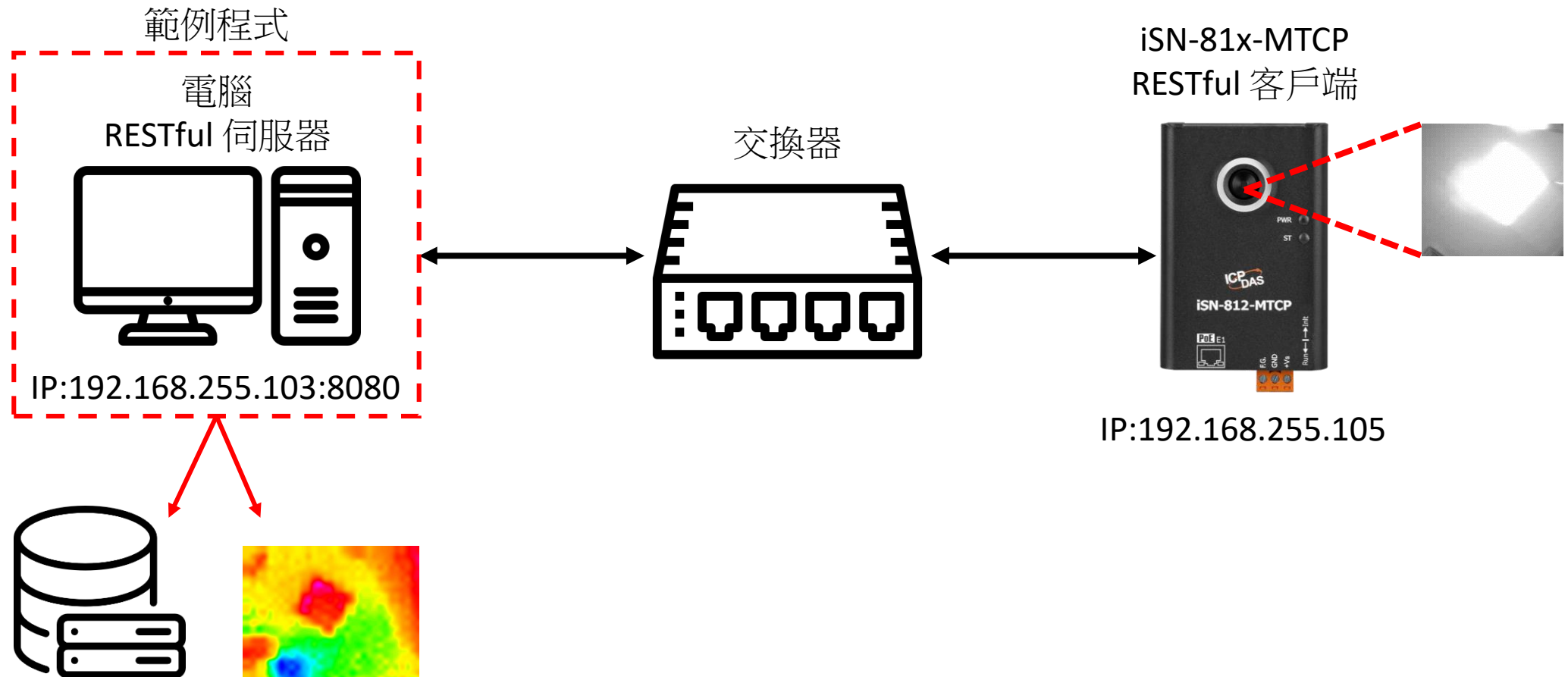
iSN-81x-MTCP RESTful_Csharp

- 範例程式提供不同的程式語言給您參考，您可以透過範例程式取得以下數據：
 - 熱影像
 - 數據讀取時間
 - iSN-81x-MTCP的MAC地址
 - 型號
 - 紅外線數據
 - 熱影像的儲存路徑
- 範例程式使用SQLite儲存量測數據，您可以自行更改使用的資料庫，如MySQL、SQL Server等。

- 預先安裝

- Install-Package System.Data.SQLite

➤ 將iSN-81x-MTCP配置為RESTful客戶端



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 開啟 RestfulApi.exe
- 選擇IP[0]=192.168.255.103做為伺服器IP並開啟port=8080
- 輸入“0,8080”
- RESTful 伺服器開啟

Name	Date modified
irdata_icpdas.db	03/10/2023 09:56
RestfulApi.exe	03/10/2023 09:48
RestfulApi.pdb	03/10/2023 09:48
RestfulApi.exe.config	31/07/2023 15:27
System.Data.SQLite.dll	10/06/2023 20:56
System.Data.SQLite.Linq.dll	10/06/2023 20:56
System.Data.SQLite.EF6.dll	10/06/2023 20:55
System.Data.SQLite.xml	10/06/2023 20:27

```
IP[0] = 192.168.255.103
IP[1] = 172.16.123.124

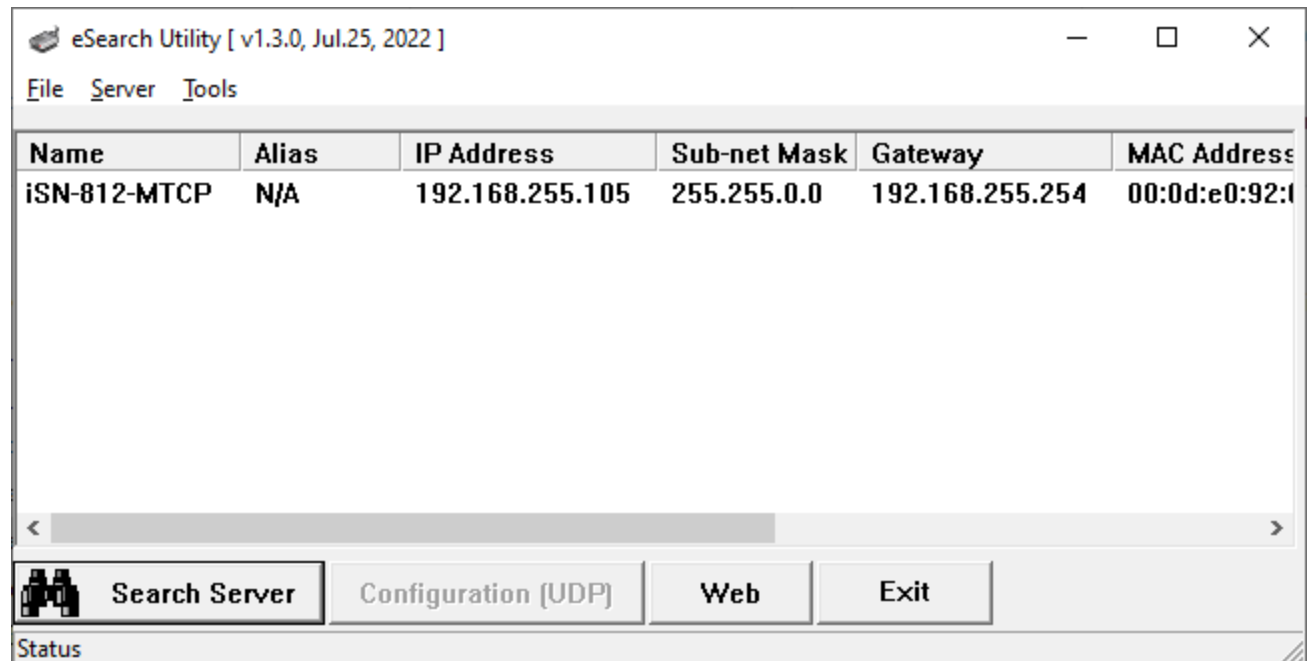
Please Enter IP index, port(default 80) => e.g. 3, 8080
```

```
IP[0] = 192.168.255.103
IP[1] = 172.16.123.124

Please Enter IP index, port(default 80) => e.g. 3, 8080
0,8080
WEB OPEN http://192.168.255.103:8080/
KEY ANYTHING CLOSE
```

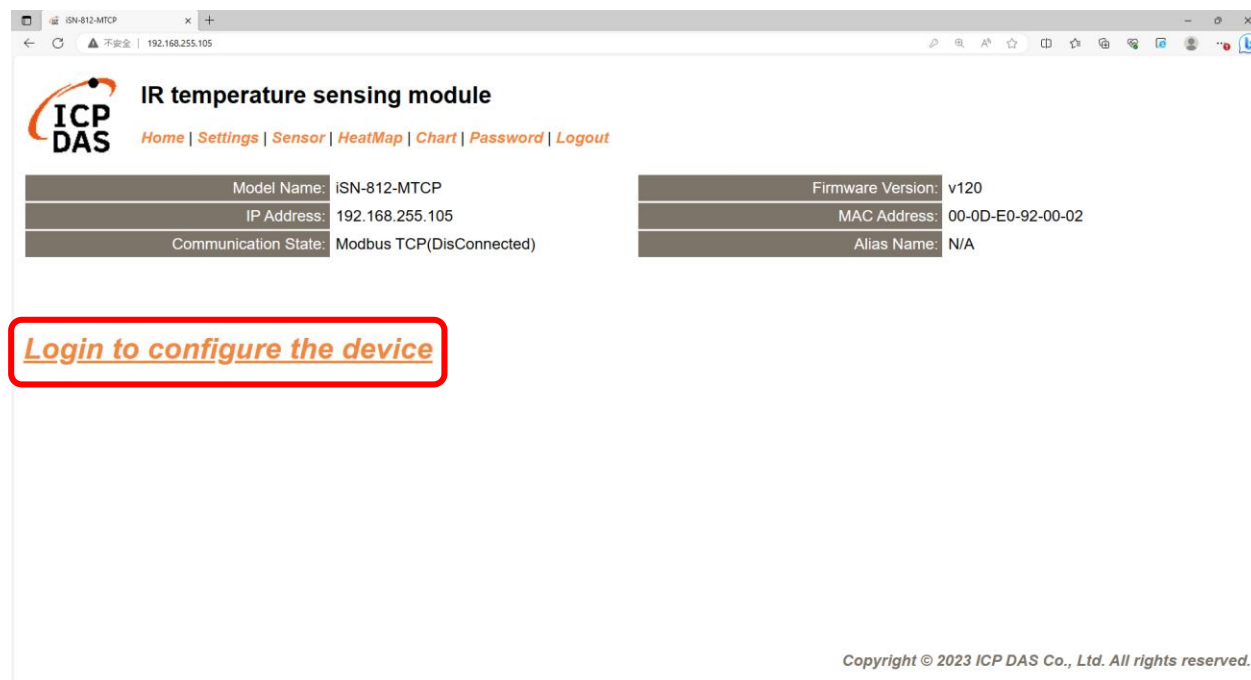
➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 使用eSearch來搜尋iSN-81x-MTCP
- 開啟iSN-81x-MTCP的網站



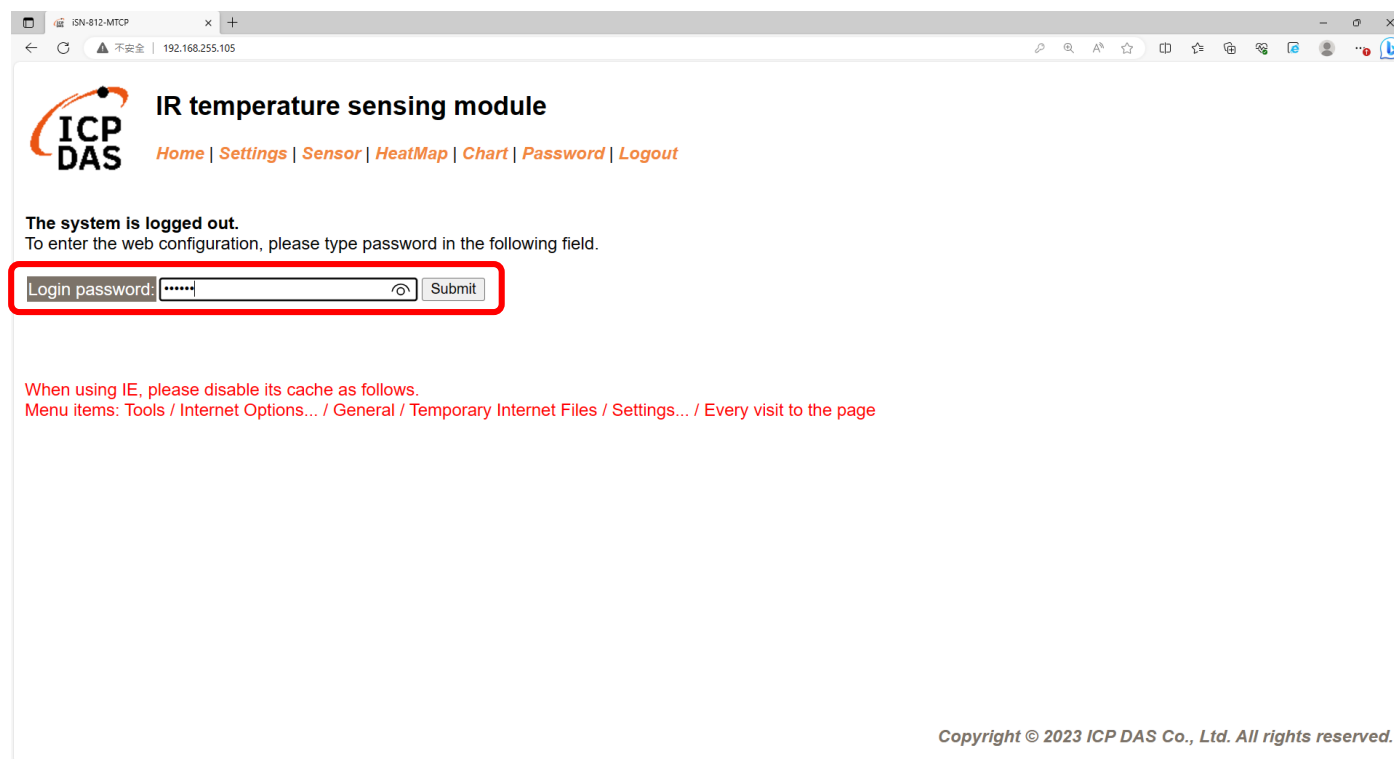
➤ 將iSN-81x-MTCP配置為RESTful客戶端

• 點擊”Login to configure the device”來登入



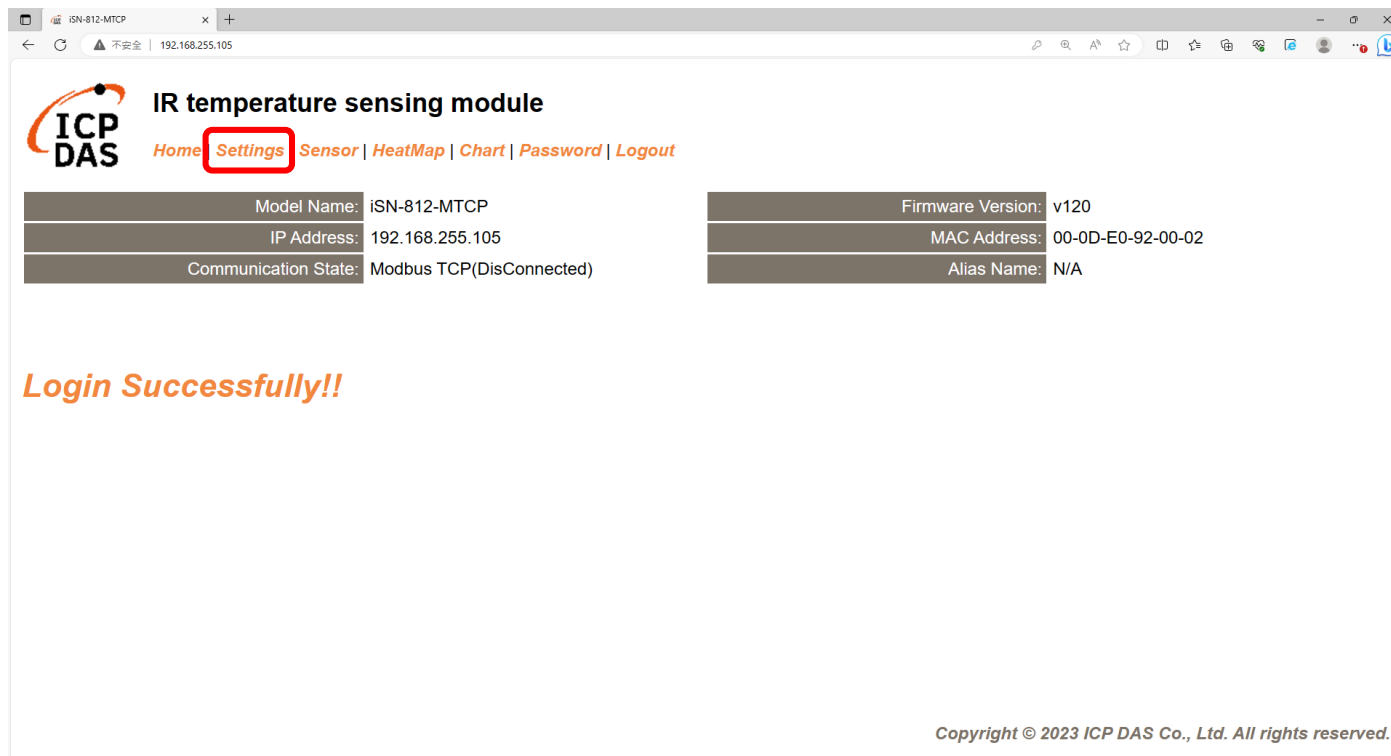
➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 登入(預設密碼: admin)



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 點擊“Settings”來設定通訊模式



ICP DAS IR temperature sensing module

[Home](#) [Settings](#) [Sensor](#) [HeatMap](#) [Chart](#) [Password](#) [Logout](#)

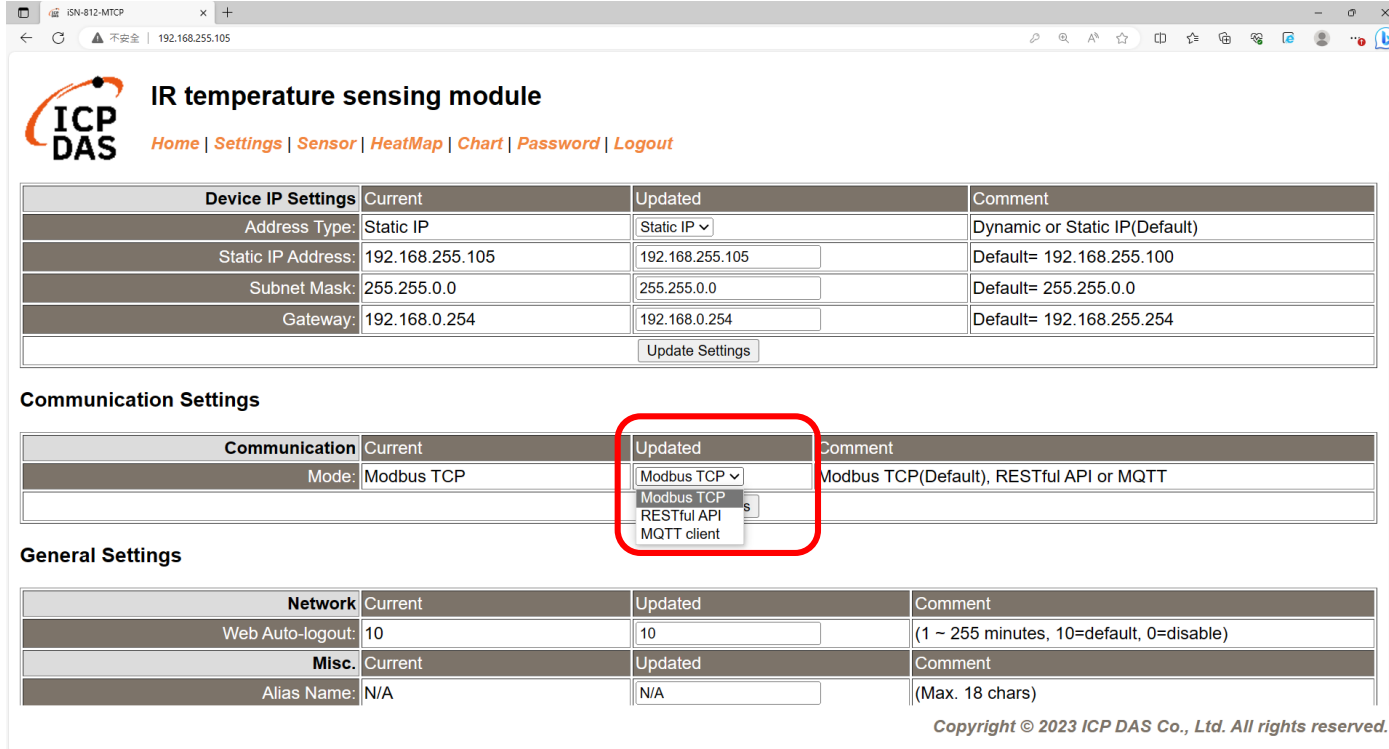
Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Login Successfully!!

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➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 將通訊模式設定為“RESTful API”



The screenshot shows the web interface for the ICP DAS IR temperature sensing module. The page title is "IR temperature sensing module" and the navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The interface is divided into three main sections: Device IP Settings, Communication Settings, and General Settings.

Device IP Settings

Device IP Settings	Current	Updated	Comment
Address Type:	Static IP	Static IP ▾	Dynamic or Static IP(Default)
Static IP Address:	192.168.255.105	192.168.255.105	Default= 192.168.255.100
Subnet Mask:	255.255.0.0	255.255.0.0	Default= 255.255.0.0
Gateway:	192.168.0.254	192.168.0.254	Default= 192.168.255.254

Communication Settings

Communication	Current	Updated	Comment
Mode:	Modbus TCP	Modbus TCP ▾	Modbus TCP(Default), RESTful API or MQTT

The dropdown menu for the "Updated" field in the Communication Settings section is open, showing the following options: Modbus TCP, RESTful API, and MQTT client. The "RESTful API" option is highlighted, indicating it is the selected configuration.

General Settings

Network	Current	Updated	Comment
Web Auto-logout:	10	10	(1 ~ 255 minutes, 10=default, 0=disable)

Misc.	Current	Updated	Comment
Alias Name:	N/A	N/A	(Max. 18 chars)

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➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 根據伺服器的IP設定參數並更新設定

The screenshot shows the web interface for the ICP DAS IR temperature sensing module. The page title is "IR temperature sensing module" and the navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The "Communication Settings" section is active, displaying a table with columns for Communication, Current, Updated, and Comment. The table shows the following settings:

Communication	Current	Updated	Comment
Mode:	Modbus TCP	RESTful API	Modbus TCP(Default), RESTful API or MQTT
Server URI:	192.168.1.1	192.168.255.103	e.g. www.server.com or 19.168.255.1 Default: 192.168.255.1
Server port:	80	8080	Default: 80
[POST] Interval:	2	2	2 ~ 600 seconds, 2=default

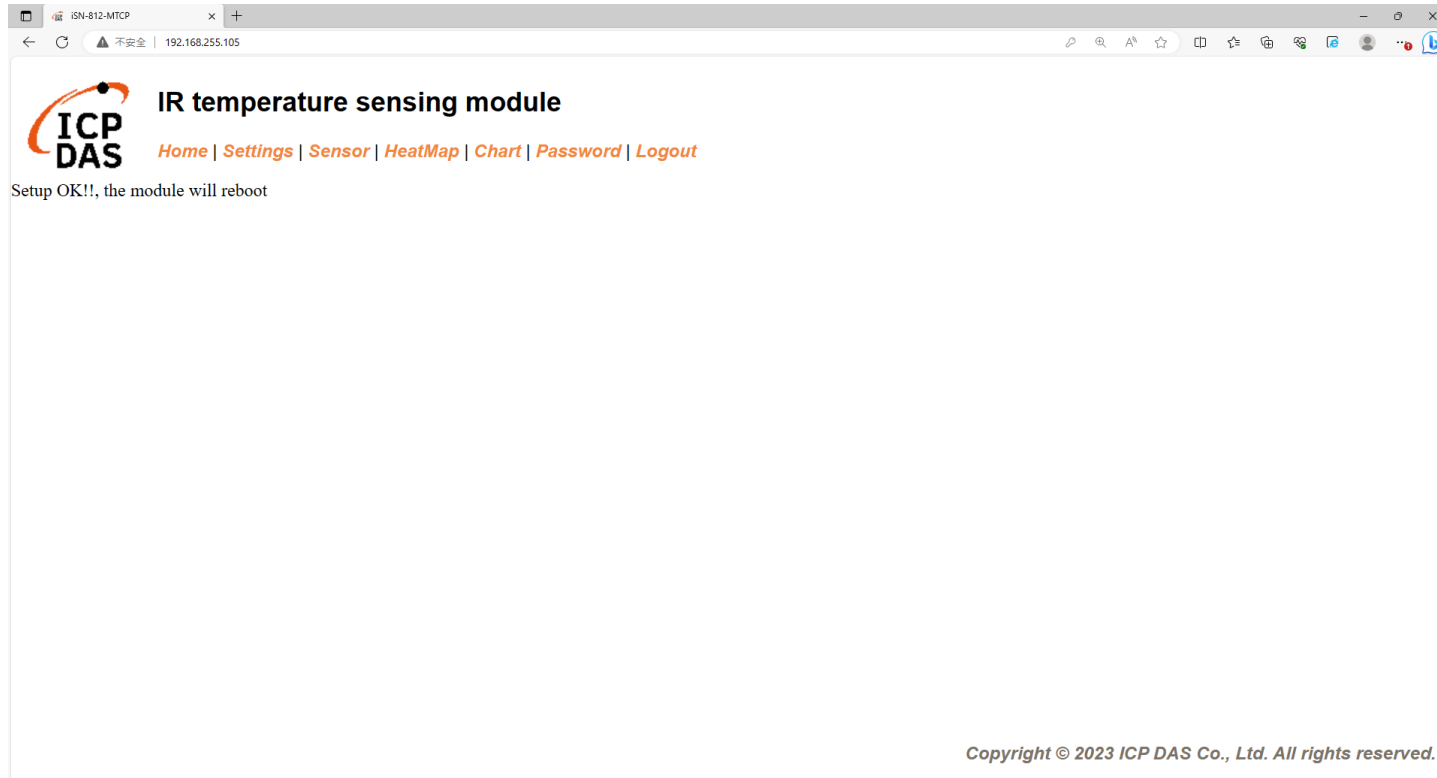
Below the table, the API endpoint is shown as `API: http://192.168.1.1:80/restapi-icpdas/` and the JSON format is defined as `JSON Format: { "macno": MAC number, "model": model name, "irdata": temperature data }`. An "Update Settings" button is located at the bottom of the communication settings section.

```
IP[0] = 192.168.255.103
IP[1] = 172.16.123.124

Please Enter IP index, port(default 80) => e.g. 3, 8080
0,8080
WEB OPEN http://192.168.255.103:8080/
KEY ANYTHING CLOSE
```

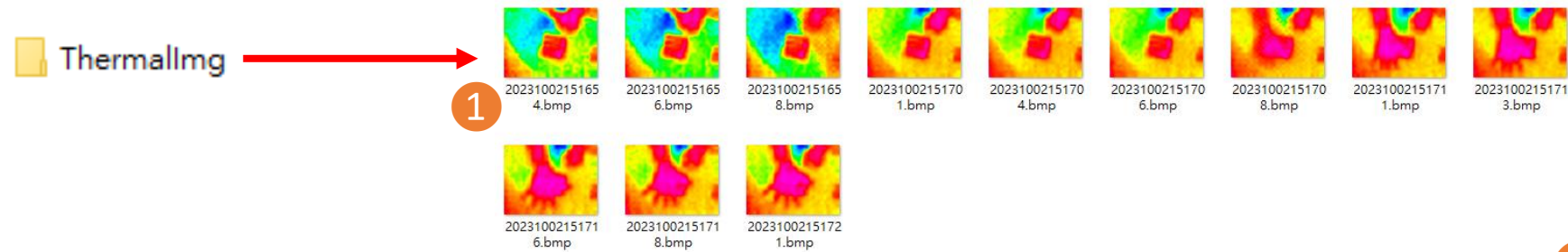
➤ 將iSN-81x-MTCP配置為RESTful客戶端

• 等待重啟



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 接收到數據後會產生兩個檔案，一個是儲存數據的DB檔，一個是熱影像檔。



irdata_jcpdas.db

1 timestamp	2 macno	3 model	4 irdata	5 imgpath
2023-10-02 15:16:54	00-0D-E0-92-00-02	iSN-812-MTCP	30.0,30.2,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:16:56	00-0D-E0-92-00-02	iSN-812-MTCP	30.2,30.5,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:16:58	00-0D-E0-92-00-02	iSN-812-MTCP	31.1,31.9,32D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:01	00-0D-E0-92-00-02	iSN-812-MTCP	31.2,30.9,32D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:04	00-0D-E0-92-00-02	iSN-812-MTCP	30.1,31.2,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:06	00-0D-E0-92-00-02	iSN-812-MTCP	30.9,31.6,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:08	00-0D-E0-92-00-02	iSN-812-MTCP	30.8,30.7,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:11	00-0D-E0-92-00-02	iSN-812-MTCP	30.7,30.4,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:13	00-0D-E0-92-00-02	iSN-812-MTCP	30.6,32.0,32D:\0_CODE\IR\Demo\RESTfu	

- 1 → The time when the data was obtained
- 2 → MAC Address of iSN-81x-MTCP
- 3 → Model
- 4 → IR data measured by iSN-81x-MTCP
- 5 → Thermal image storage path

➤ 修改DB檔名稱

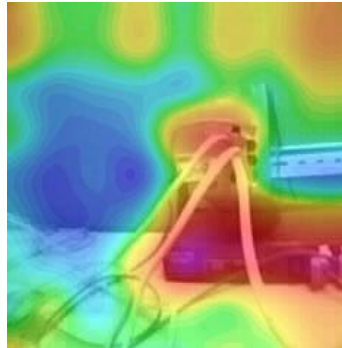
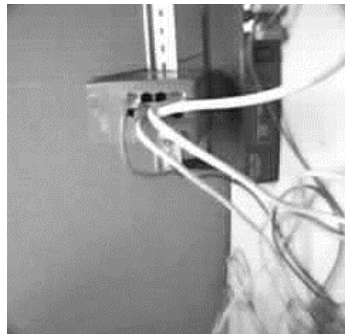
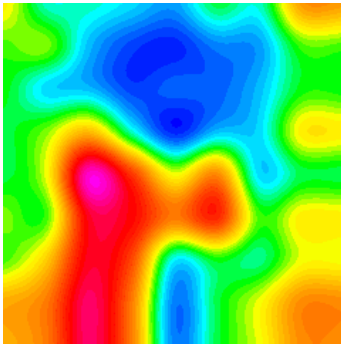
- 如果你想要修改DB檔的名稱，開啟“Class3.cs”後找到函式“func_irdata”然後編輯變數“dbname”。

```
public string func_irdata(IrPostData jsondata)
{
    Console.WriteLine("[POST] REQUEST");
    string Ret = "done";
    string dbname = "irdata_icpdas.db";
    string _connectionString = $"Data Source={dbname}";
```

➤ 更改合成圖的透明度(for iSN-811C-MTCP)

- 如果你想要調整合成圖的透明度，開啟“Class3.cs”找到函式“MergeImg”後編輯變數“transparencyIR”及“transparencyCrop”。

```
public static void MergeImg(Bitmap irBmp, Bitmap cropBmp, string filename)
{
    float transparencyIR = 0.8f;
    float transparencyCrop = 0.4f;
}
```



02

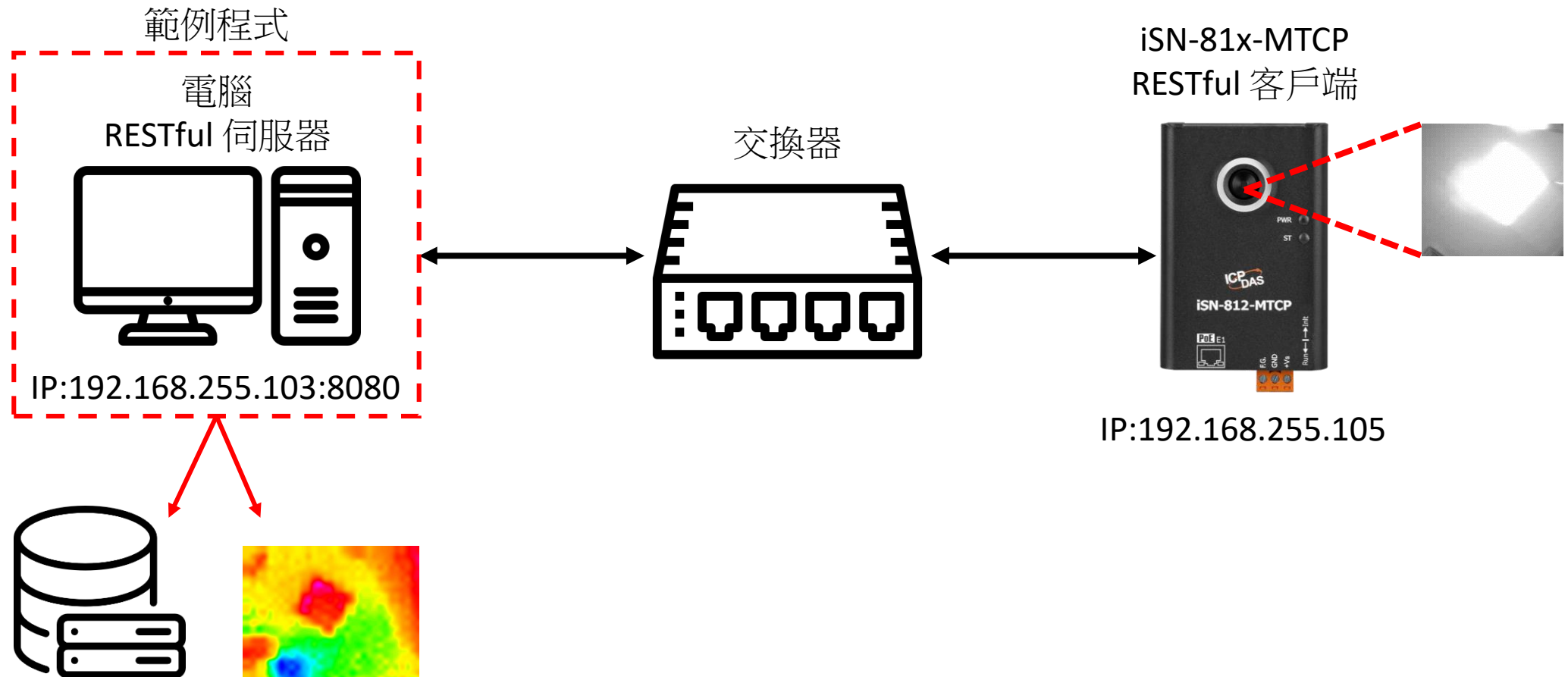
iSN-81x-MTCP RESTful_Node.js

- 範例程式提供不同的程式語言給您參考，您可以透過範例程式取得以下數據：
 - 熱影像
 - 數據讀取時間
 - iSN-81x-MTCP的MAC地址
 - 型號
 - 紅外線數據
 - 熱影像的儲存路徑
- 範例程式使用SQLite儲存量測數據，您可以自行更改使用的資料庫，如MySQL、SQL Server等。

- 預先安裝

- npm install Sqlite3
- npm install sharp
- npm install jimp

➤ 將iSN-81x-MTCP配置為RESTful客戶端



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 開啟“index.js”編輯變數“host”及“port”為伺服器的IP。
- 點擊“start.bat”來開啟RESTful伺服器

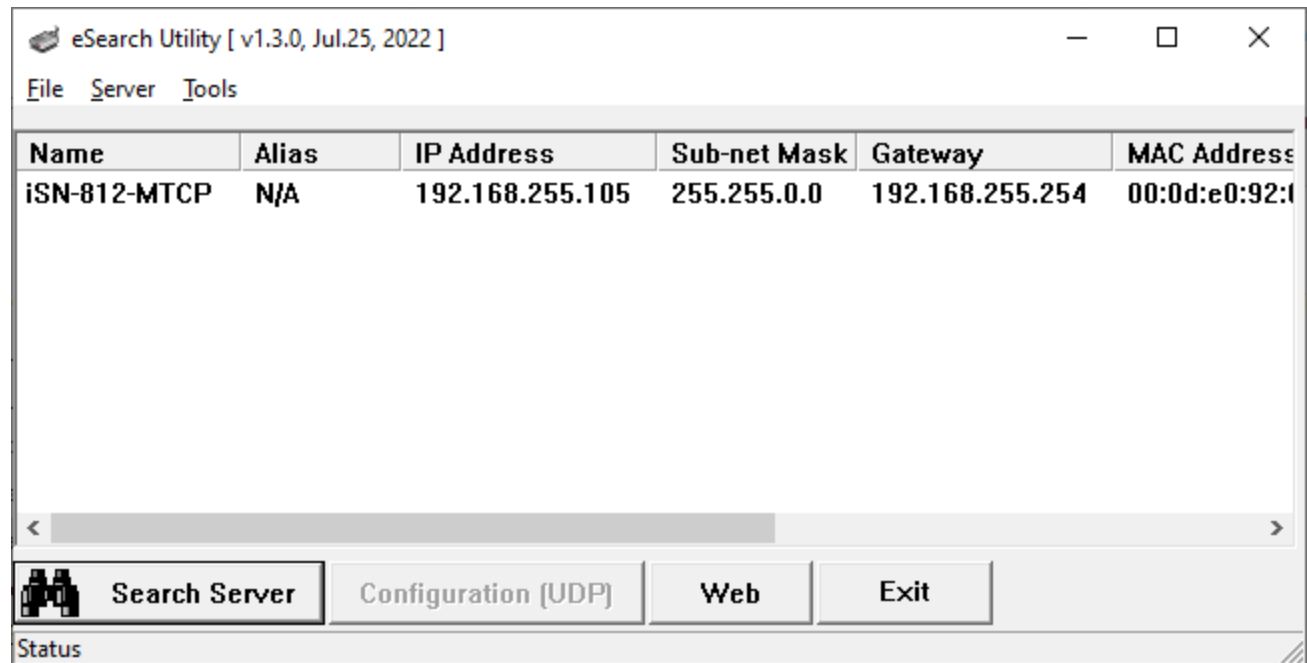
```
const port = 8080;  
const host = '192.168.255.103';
```

Name	Date modified
.vs	26/09/2023 16:41
lib	23/09/2023 14:07
node_modules	23/09/2023 11:09
Demo_REST_NodeJs.pptx	03/10/2023 11:34
index.js	23/09/2023 09:07
irdata_handler.js	03/10/2023 09:41
package.json	23/09/2023 11:09
package-lock.json	23/09/2023 11:09
start.bat	07/08/2023 17:23

```
Select C:\Windows\system32\cmd.exe  
D:\_0_CODE\IR\Demo\RESTful\nodejs>cd /d D:\_0_CODE\IR\Demo\RESTful\nodejs\  
D:\_0_CODE\IR\Demo\RESTful\nodejs>index.js  
Starting server, listen at: 192.168.255.103:8080
```

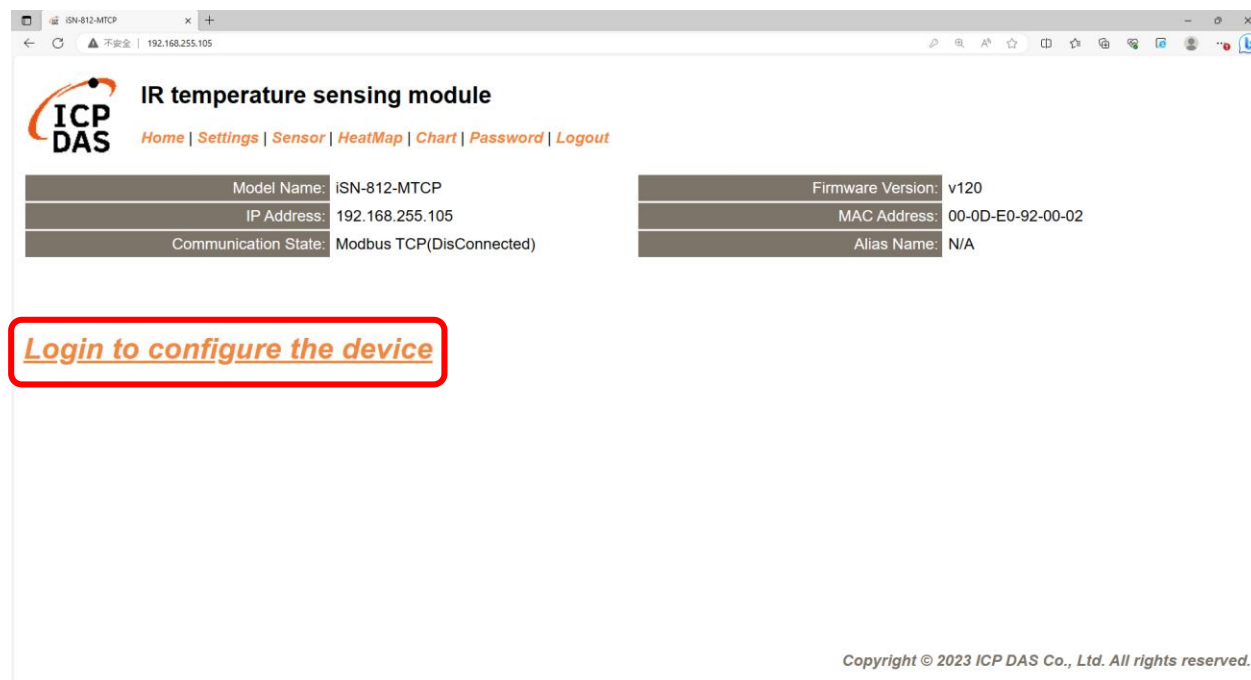
➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 使用eSearch來搜尋iSN-81x-MTCP
- 開啟iSN-81x-MTCP的網站



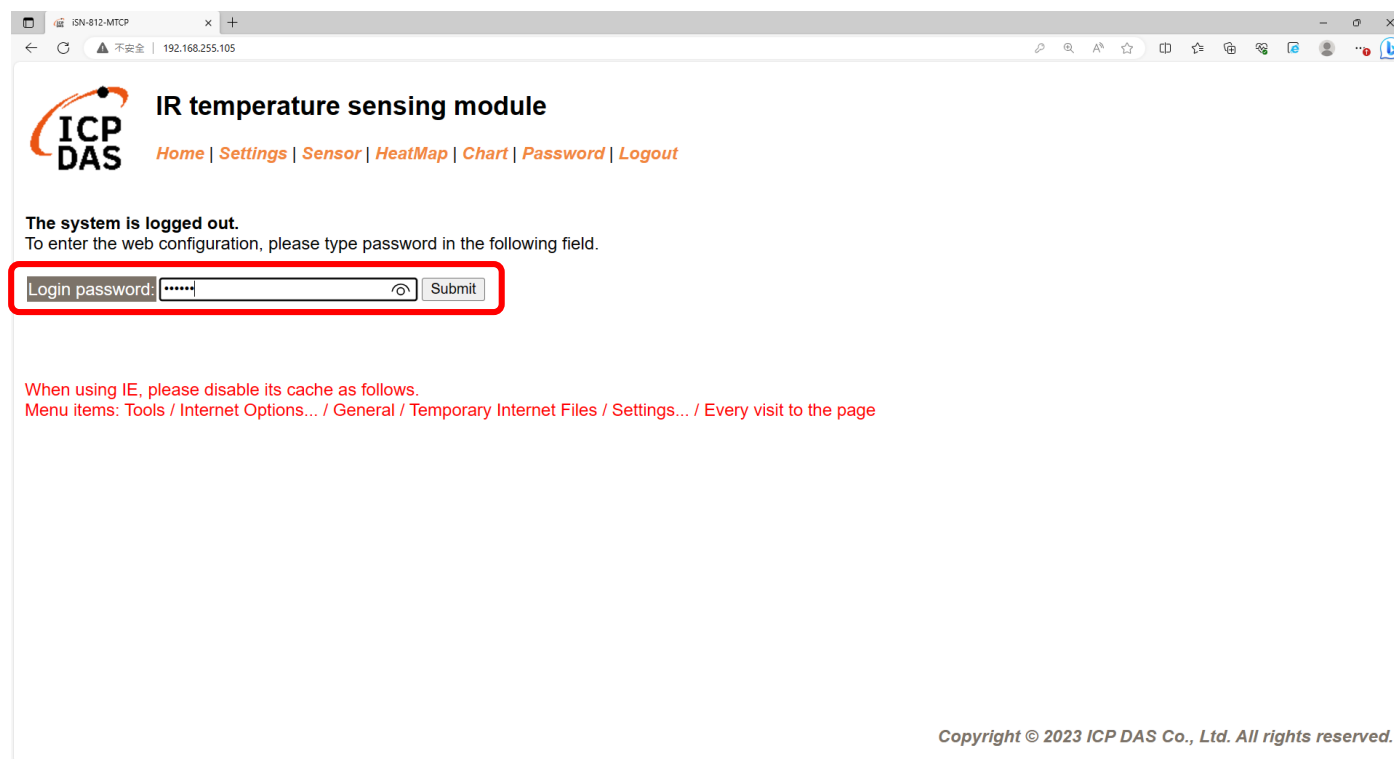
➤ 將iSN-81x-MTCP配置為RESTful客戶端

• 點擊”Login to configure the device”來登入



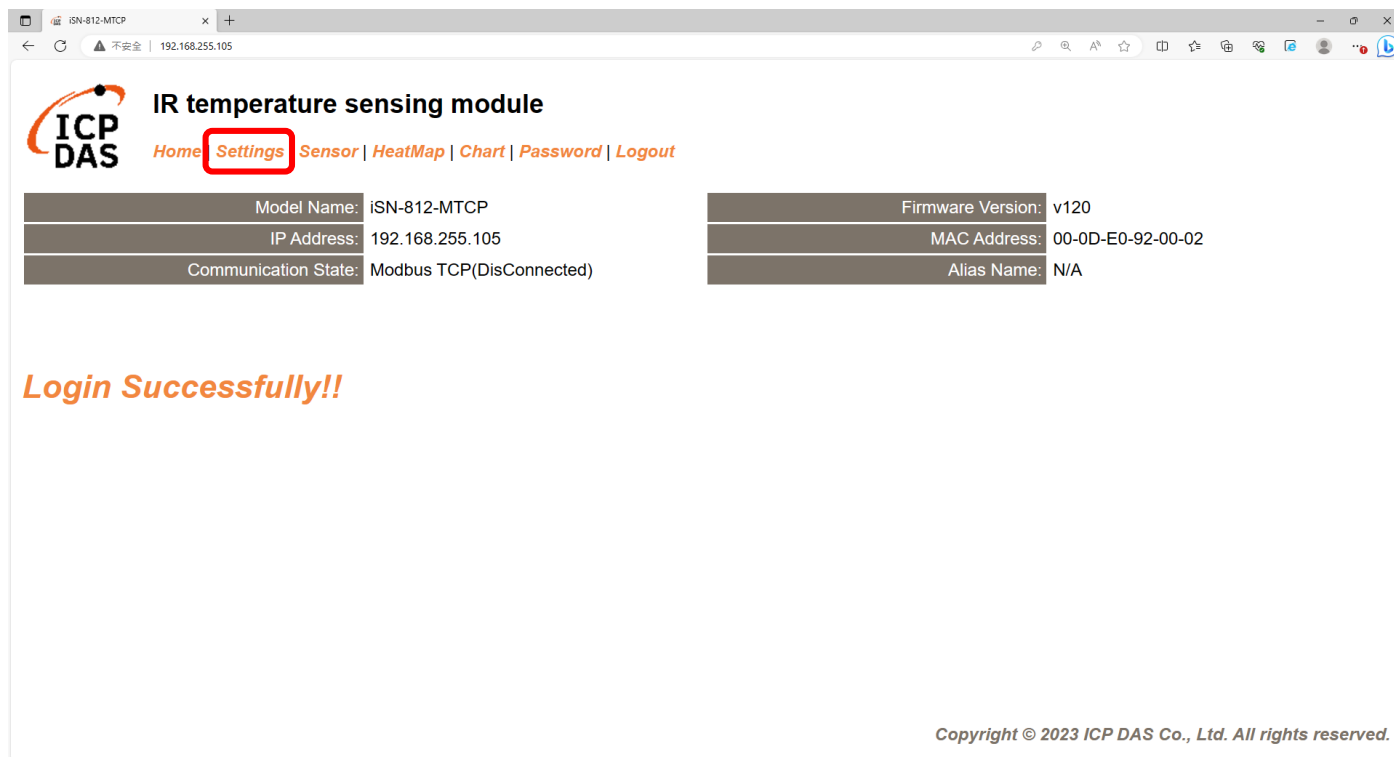
➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 登入(預設密碼: admin)



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 點擊” Settings”來設定通訊模式



ICP DAS IR temperature sensing module

[Home](#) [Settings](#) [Sensor](#) [HeatMap](#) [Chart](#) [Password](#) [Logout](#)

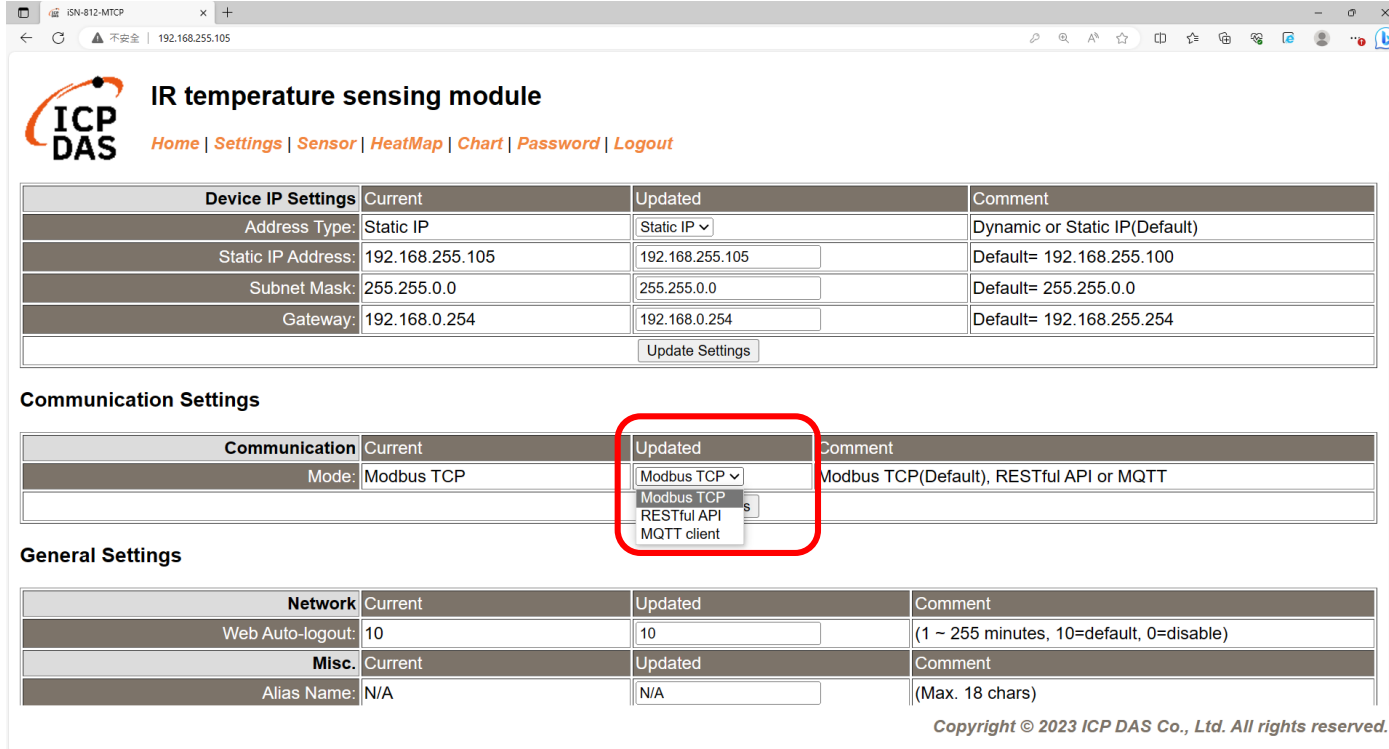
Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Login Successfully!!

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➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 將通訊模式設定為”RESTful API”



The screenshot shows the web interface of an ICP DAS IR temperature sensing module. The page title is "IR temperature sensing module" and the navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The interface is divided into three main sections: Device IP Settings, Communication Settings, and General Settings.

Device IP Settings

Device IP Settings	Current	Updated	Comment
Address Type:	Static IP	Static IP ▾	Dynamic or Static IP(Default)
Static IP Address:	192.168.255.105	192.168.255.105	Default= 192.168.255.100
Subnet Mask:	255.255.0.0	255.255.0.0	Default= 255.255.0.0
Gateway:	192.168.0.254	192.168.0.254	Default= 192.168.255.254

Communication Settings

Communication	Current	Updated	Comment
Mode:	Modbus TCP	Modbus TCP ▾	Modbus TCP(Default), RESTful API or MQTT

The dropdown menu for the "Updated" field in the Communication Settings is open, showing the following options: Modbus TCP, RESTful API, and MQTT client. The "RESTful API" option is highlighted, indicating it is the selected configuration.

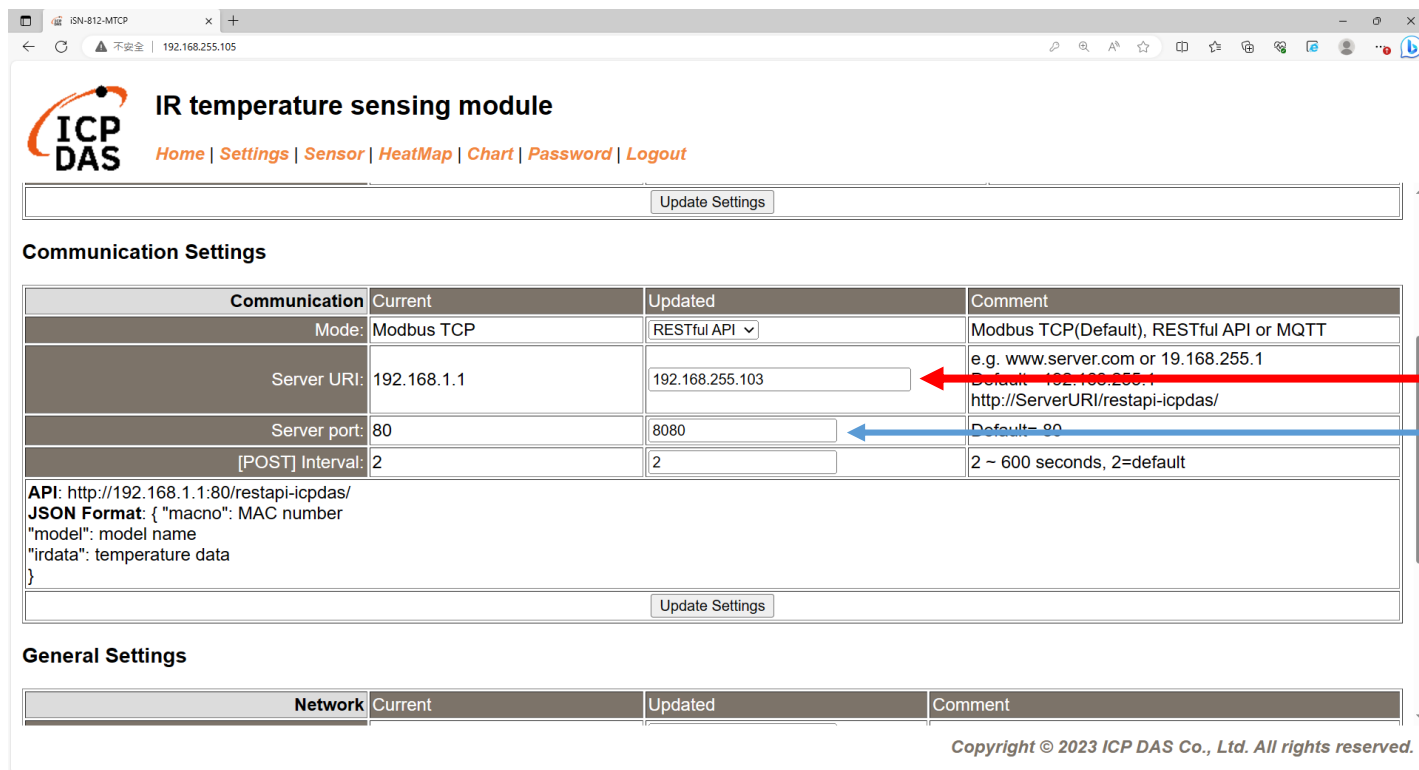
General Settings

Network	Current	Updated	Comment
Web Auto-logout:	10	10	(1 ~ 255 minutes, 10=default, 0=disable)
Misc.	Current	Updated	Comment
Alias Name:	N/A	N/A	(Max. 18 chars)

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➤ 將iSN-81x-MTCP配置為RESTful客戶端

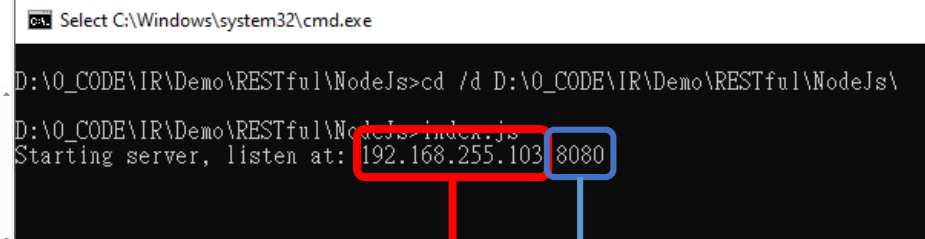
- 根據伺服器的IP設定參數並更新設定



The screenshot shows the web interface of the ICP DAS IR temperature sensing module. The page title is "IR temperature sensing module" and the URL is "192.168.255.105". The navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The "Communication Settings" section is active, displaying a table with current and updated values for various parameters. A red arrow points from the updated IP address "192.168.255.103" in the table to the terminal window on the right. A blue arrow points from the updated port "8080" in the table to the terminal window on the right.

Communication	Current	Updated	Comment
Mode:	Modbus TCP	RESTful API	Modbus TCP(Default), RESTful API or MQTT
Server URI:	192.168.1.1	192.168.255.103	e.g. www.server.com or 19.168.255.1 Default: 192.168.255.1
Server port:	80	8080	Default: 80
[POST] Interval:	2	2	2 ~ 600 seconds, 2=default

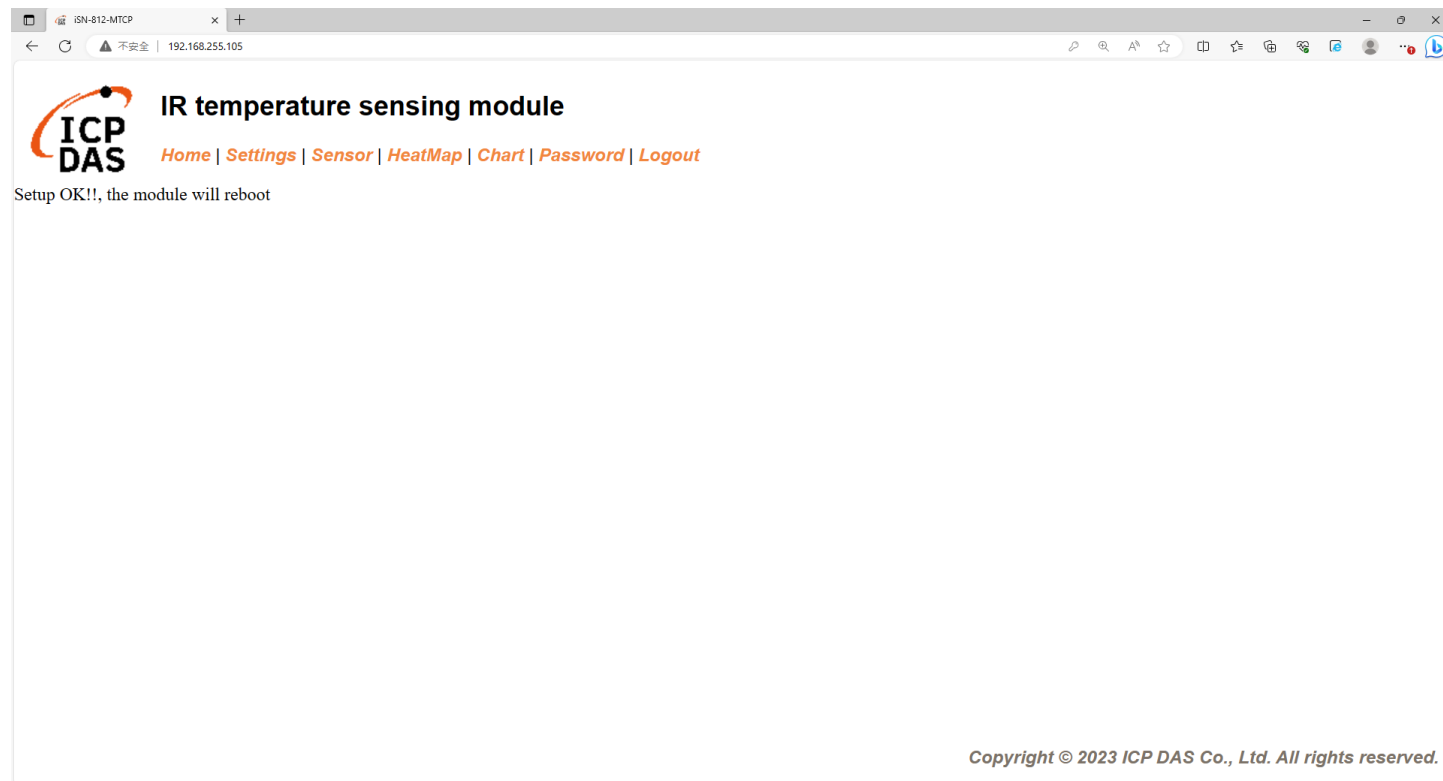
API: http://192.168.1.1:80/restapi-icpdas/
JSON Format: { "macno": MAC number
"model": model name
"irdata": temperature data
}



```
Select C:\Windows\system32\cmd.exe
D:\_0_CODE\IR\Demo\RESTful\NodeJs>cd /d D:\_0_CODE\IR\Demo\RESTful\NodeJs\
D:\_0_CODE\IR\Demo\RESTful\NodeJs>node index.js
Starting server, listen at: 192.168.255.103 8080
```

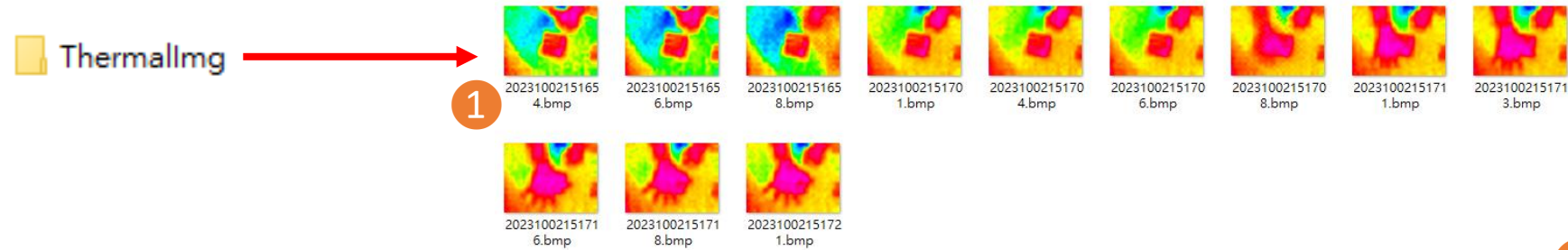
➤ 將iSN-81x-MTCP配置為RESTful客戶端

• 等待重啟



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 接收到數據後會產生兩個檔案，一個是儲存數據的DB檔，一個是熱影像檔。



1 timestamp	2 macno	3 model	4 irdata	5 imgpath
2023-10-02 15:16:54	00-0D-E0-92-00-02	iSN-812-MTCP	30.0,30.2,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:16:56	00-0D-E0-92-00-02	iSN-812-MTCP	30.2,30.5,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:16:58	00-0D-E0-92-00-02	iSN-812-MTCP	31.1,31.9,32D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:01	00-0D-E0-92-00-02	iSN-812-MTCP	31.2,30.9,32D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:04	00-0D-E0-92-00-02	iSN-812-MTCP	30.1,31.2,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:06	00-0D-E0-92-00-02	iSN-812-MTCP	30.9,31.6,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:08	00-0D-E0-92-00-02	iSN-812-MTCP	30.8,30.7,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:11	00-0D-E0-92-00-02	iSN-812-MTCP	30.7,30.4,31D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:13	00-0D-E0-92-00-02	iSN-812-MTCP	30.6,32.0,32D:\0_CODE\IR\Demo\RESTfu	

- 1 → The time when the data was obtained
- 2 → MAC Address of iSN-81x-MTCP
- 3 → Model
- 4 → IR data measured by iSN-81x-MTCP
- 5 → Thermal image storage path

➤ 修改DB檔名稱

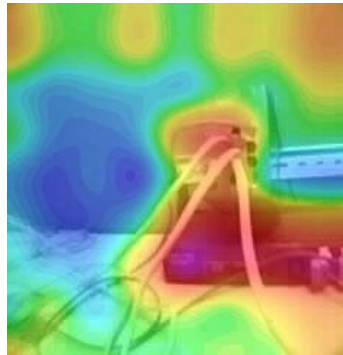
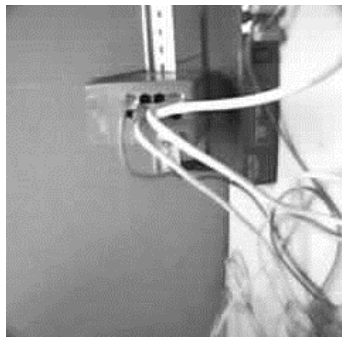
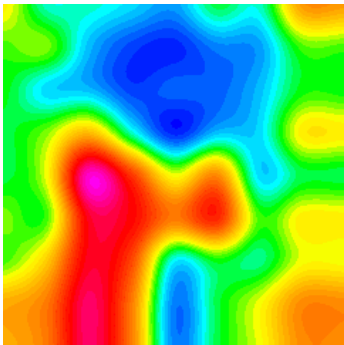
- 如果你想要修改DB檔的名稱，開啟“irdata_handler.js”後找到變數“dbPath”然後編輯它。

```
const dbPath = './irdata_icpdas.db';
```

➤ 更改合成圖的透明度(for iSN-811C-MTCP)

- 如果你想要調整合成圖的透明度，開啟“Reallmg.js”找到下圖的程式碼修改數值。

```
imageA.opacity(0.5);
```



03

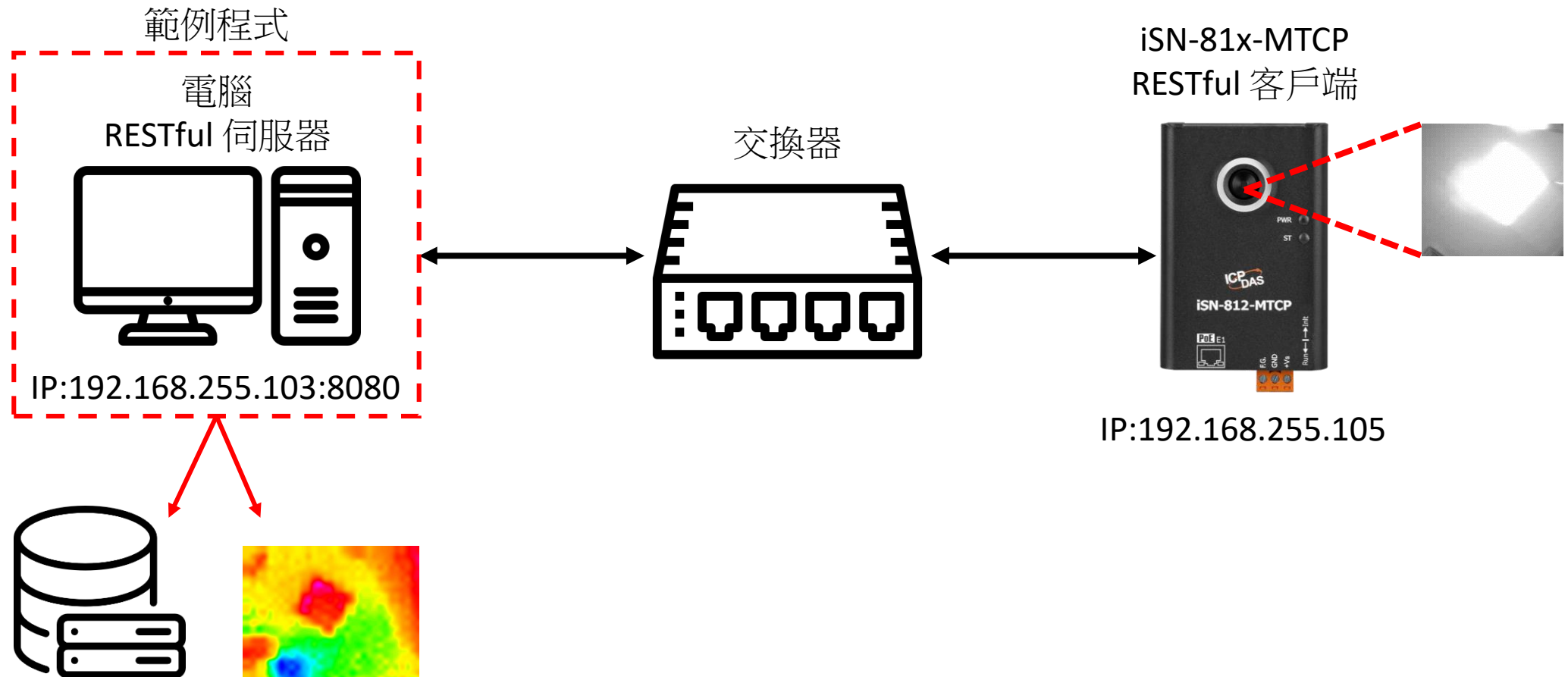
iSN-81x-MTCP RESTful_PHP

- 範例程式提供不同的程式語言給您參考，您可以透過範例程式取得以下數據：
 - 熱影像
 - 數據讀取時間
 - iSN-81x-MTCP的MAC地址
 - 型號
 - 紅外線數據
 - 熱影像的儲存路徑
- 範例程式使用SQLite儲存量測數據，您可以自行更改使用的資料庫，如MySQL、SQL Server等。

- 預先安裝

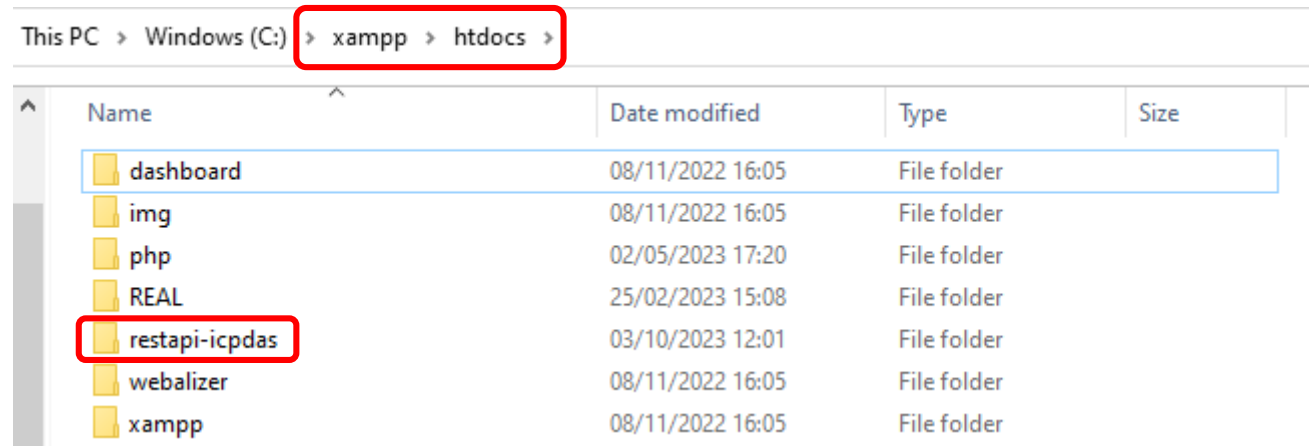
- php.ini =>enable gd

➤ 將iSN-81x-MTCP配置為RESTful客戶端



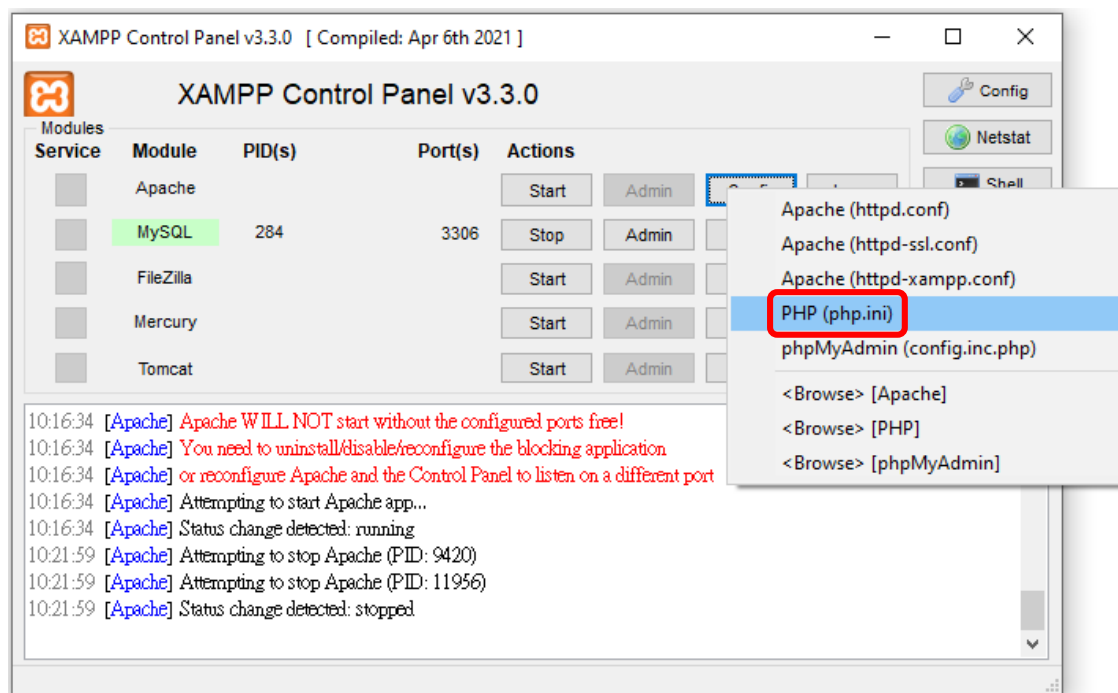
➤ 將iSN-81x-MTCP配置為RESTful客戶端

• 將範例程式複製到XAMPP的”htdocs”資料夾



➤ 將iSN-81x-MTCP配置為RESTful客戶端

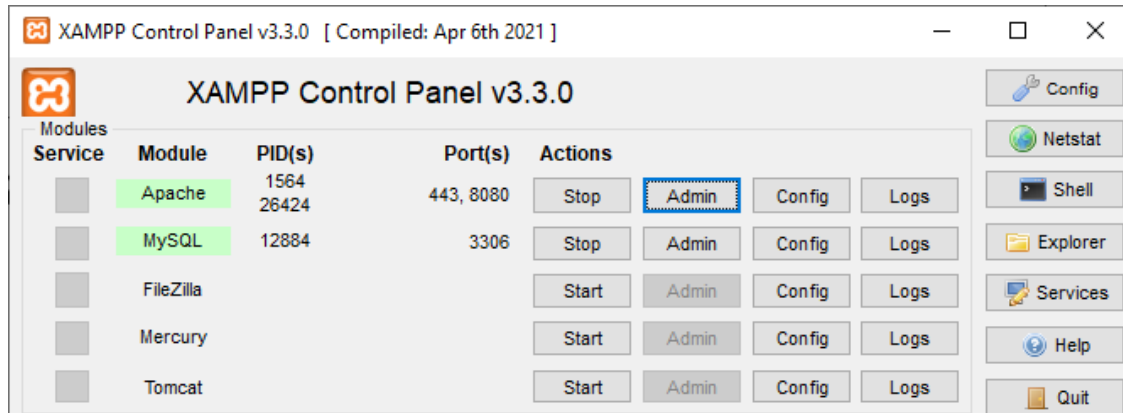
- 開啟“XAMPP Control Panel”後編輯“PHP.ini”
- 刪除gd前的“;”



```
php.ini - Notepad
File Edit Format View Help
; - Many DLL files are located in the extensions/ (PHP 4) or ext/ (PHP 5-
; extension folders as well as the separate PECL DLL download (PHP 5+)
; Be sure to appropriately set the extension_dir directive.
;
extension=bz2
extension=curl
;extension=ffi
;extension=ftp
extension=fileinfo
extension=gd
extension=gettext
;extension=gmp
;extension=intl
;extension=imap
;extension=ldap
extension=mbstring
```

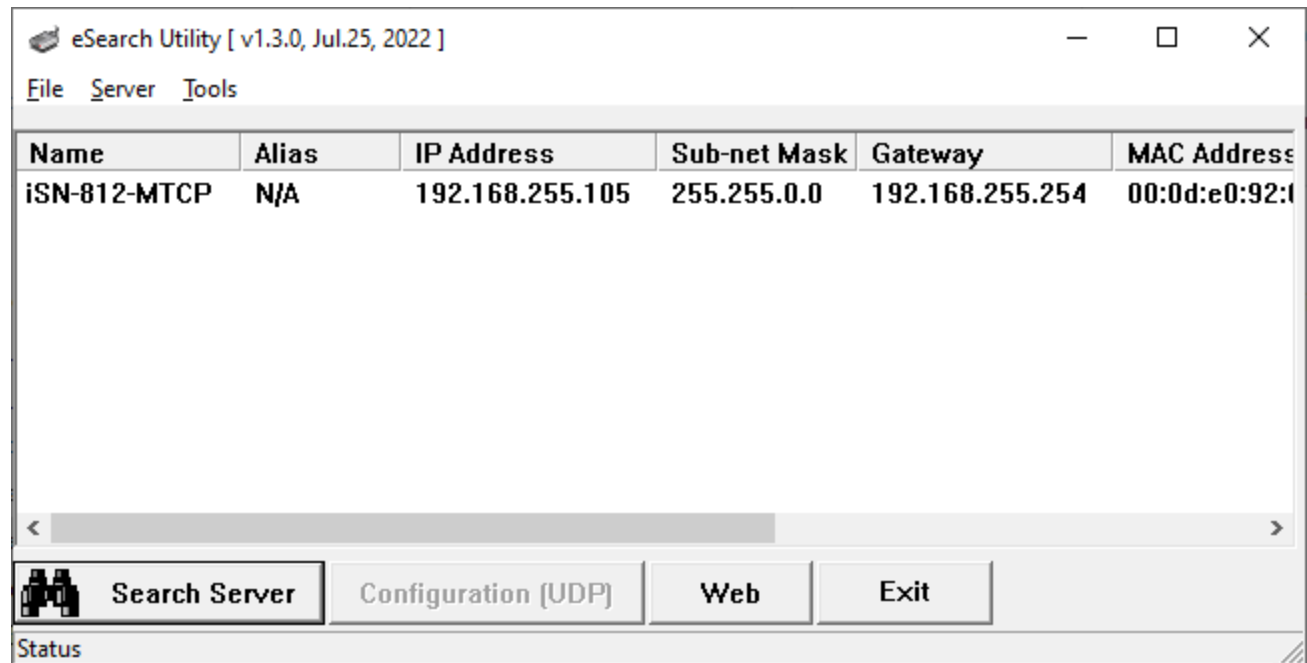

➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 重新啟動Apache來開啟RESTful伺服器



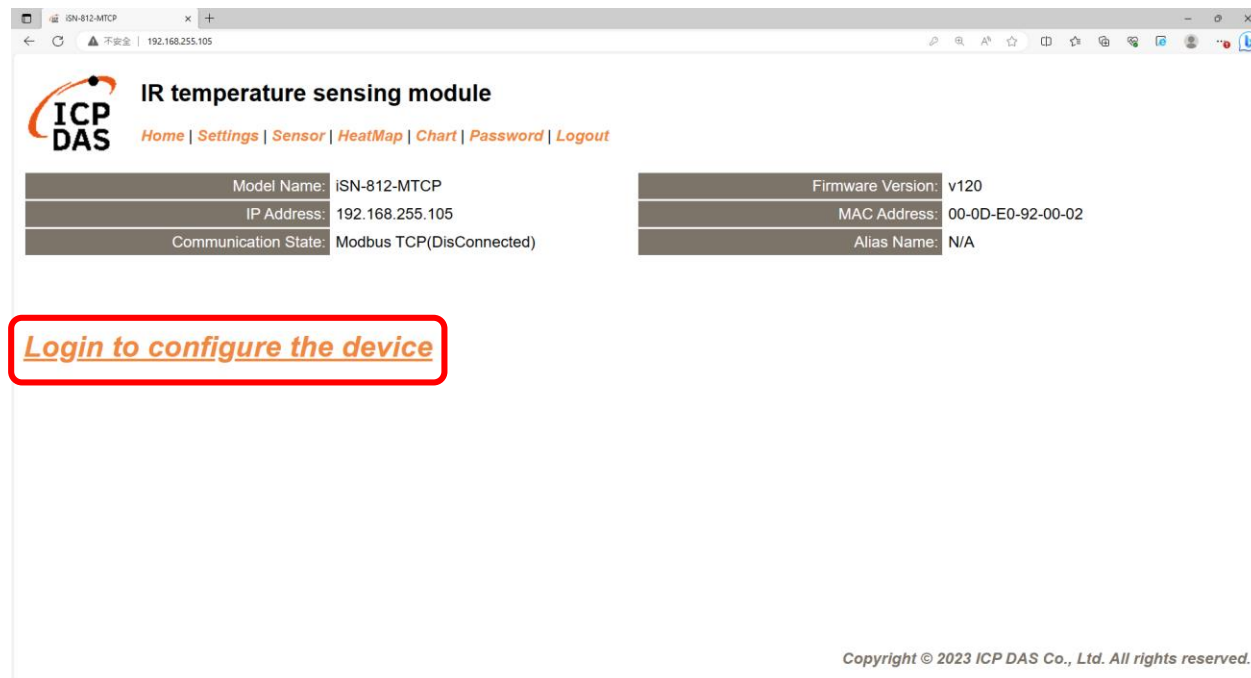
➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 使用eSearch來搜尋iSN-81x-MTCP
- 開啟iSN-81x-MTCP的網站



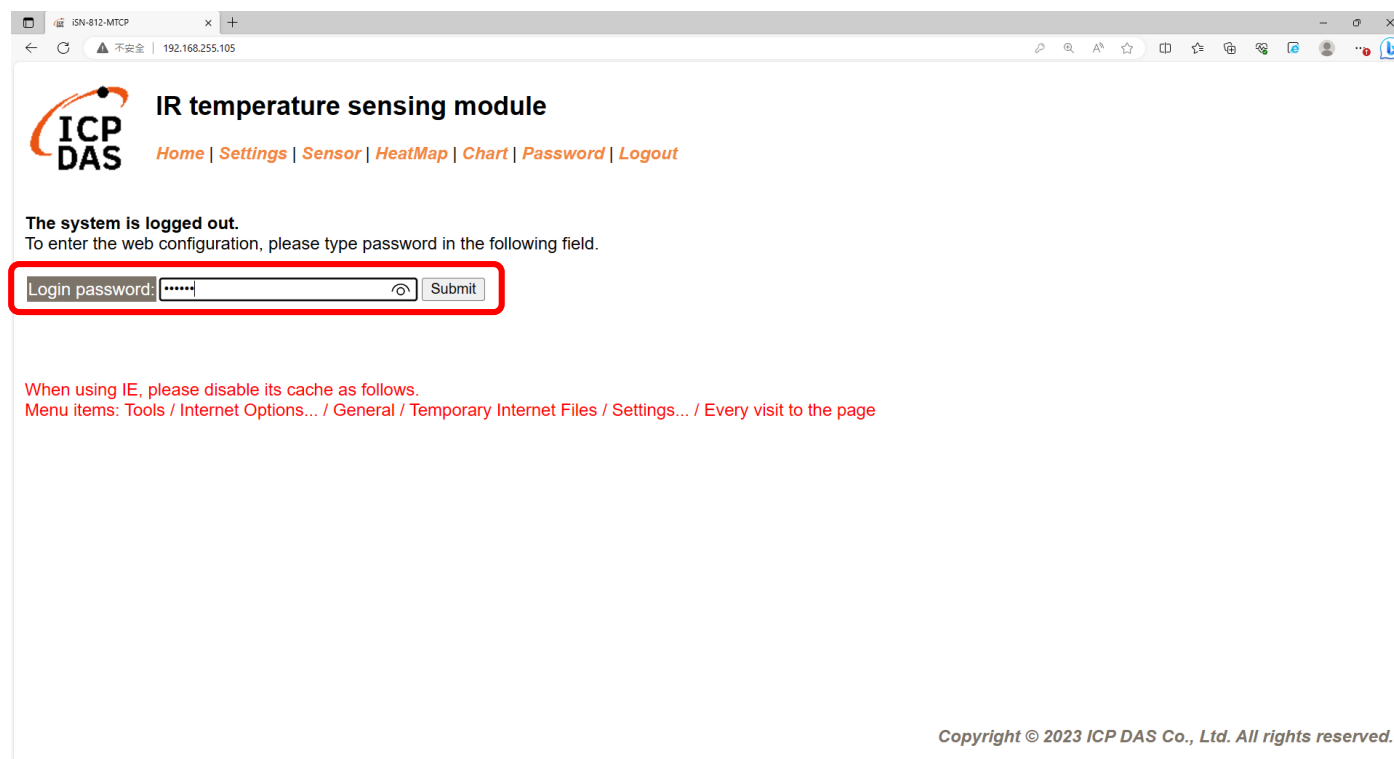
➤ 將iSN-81x-MTCP配置為RESTful客戶端

• 點擊“Login to configure the device”來登入



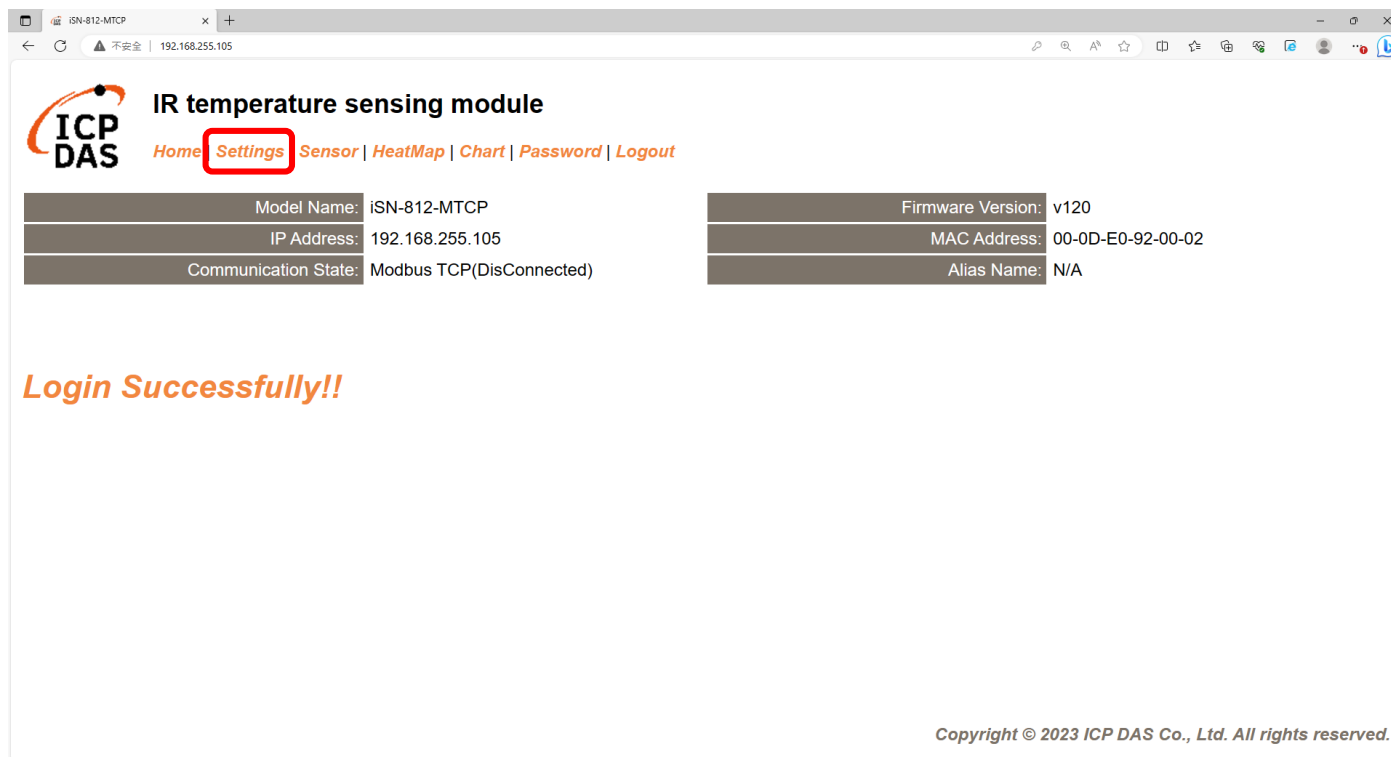
➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 登入(預設密碼: admin)



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 點擊“Settings”來設定通訊模式



ICP DAS IR temperature sensing module

[Home](#) [Settings](#) [Sensor](#) [HeatMap](#) [Chart](#) [Password](#) [Logout](#)

Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Login Successfully!!

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➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 將通訊模式設定為”RESTful API”

The screenshot shows the web interface of the ICP DAS IR temperature sensing module. The page title is "IR temperature sensing module" and the navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The interface is divided into three main sections: Device IP Settings, Communication Settings, and General Settings.

Device IP Settings: A table with columns for Current, Updated, and Comment. The current settings are: Address Type: Static IP, Static IP Address: 192.168.255.105, Subnet Mask: 255.255.0.0, and Gateway: 192.168.0.254. The updated settings are: Address Type: Static IP, Static IP Address: 192.168.255.105, Subnet Mask: 255.255.0.0, and Gateway: 192.168.0.254. A "Update Settings" button is located below the table.

Communication Settings: A table with columns for Communication, Current, Updated, and Comment. The current mode is Modbus TCP. The updated mode is also Modbus TCP, but a dropdown menu is open, showing options: Modbus TCP, RESTful API, and MQTT client. The "RESTful API" option is highlighted with a red box. The comment for the updated mode is "Modbus TCP(Default), RESTful API or MQTT".

General Settings: A table with columns for Network, Current, Updated, and Comment. The current Web Auto-logout is 10. The updated Web Auto-logout is 10. The comment for the updated Web Auto-logout is "(1 ~ 255 minutes, 10=default, 0=disable)". The current Alias Name is N/A. The updated Alias Name is N/A. The comment for the updated Alias Name is "(Max. 18 chars)".

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➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 根據伺服器的IP設定參數並更新設定

The image shows two side-by-side screenshots. The left screenshot is the web interface for the 'iSN-81x-MTCP' device, titled 'IR temperature sensing module'. It features a navigation menu with 'Home', 'Settings', 'Sensor', 'HeatMap', 'Chart', 'Password', and 'Logout'. Below the menu is an 'Update Settings' button. The 'Communication Settings' section contains a table with columns for 'Communication', 'Current', 'Updated', and 'Comment'. The 'Server port' is currently set to 80 and is being updated to 8080. The 'Server URI' is set to 192.168.1.1 and is being updated to 192.168.255.103. The 'API' section shows the endpoint 'http://192.168.1.1:80/restapi-icpdas/' and the JSON format. The right screenshot is the 'XAMPP Control Panel v3.3.0' interface. It displays a table of services with columns for 'Service', 'Module', 'PID(s)', 'Port(s)', and 'Actions'. The Apache service is highlighted in green, and its 'Port(s)' field, containing '443, 8080', is circled in red. A red arrow points from this field to the 'Server port' field in the iSN-81x-MTCP settings.

Communication Settings

Communication	Current	Updated	Comment
Mode:	Modbus TCP	RESTful API	Modbus TCP(Default), RESTful API or MQTT
Server URI:	192.168.1.1	192.168.255.103	e.g. www.server.com or 19.168.255.1 Default= 192.168.255.1 http://ServerURI/restapi-icpdas/
Server port:	80	8080	Default= 80
[POST] Interval:	2	2	2 ~ 600 seconds, 2=default

API: http://192.168.1.1:80/restapi-icpdas/
JSON Format: { "macno": MAC number
"model": model name
"irdata": temperature data
}

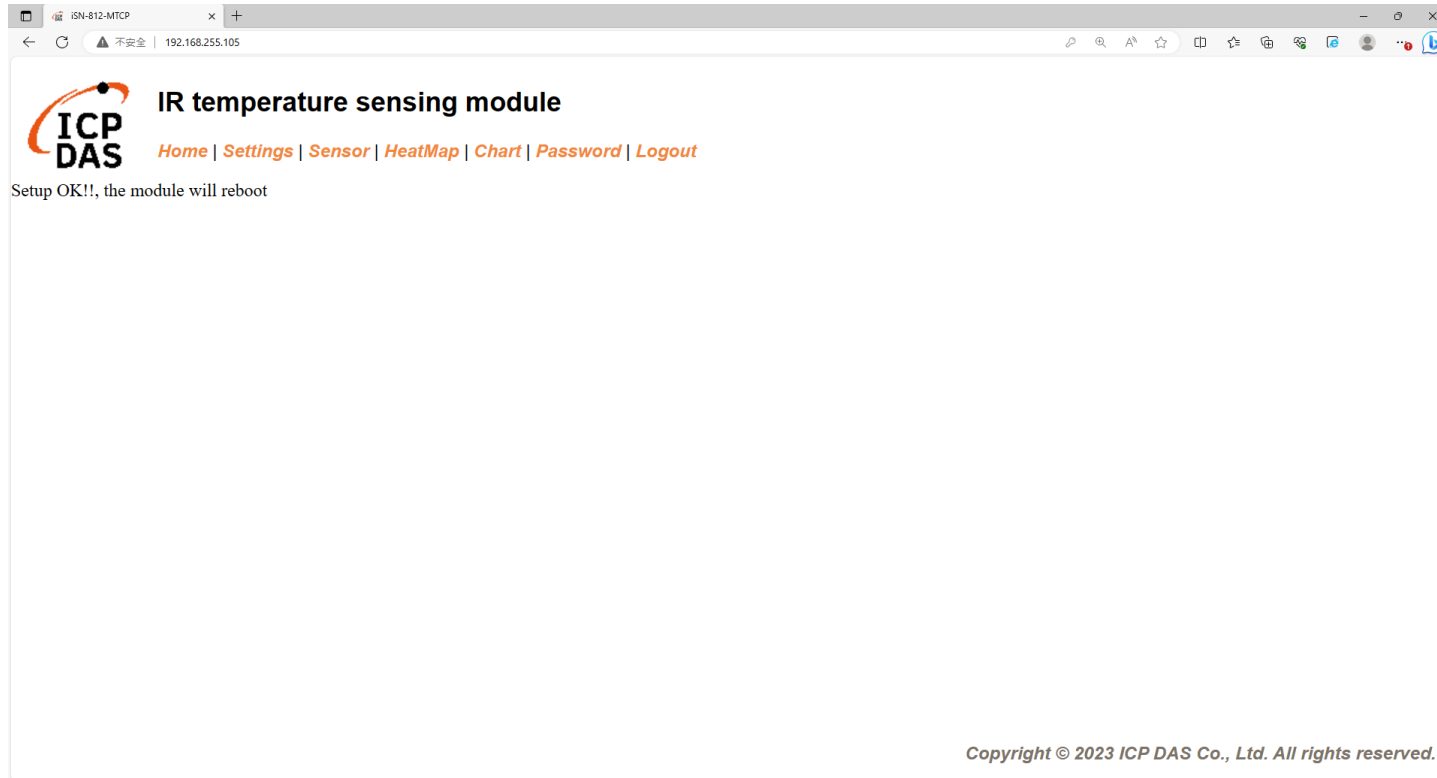
General Settings

Network	Current	Updated	Comment
---------	---------	---------	---------

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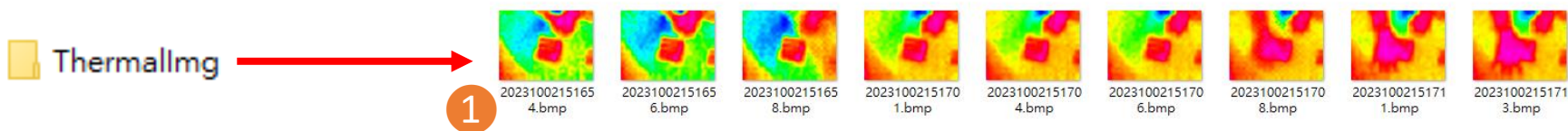
➤ 將iSN-81x-MTCP配置為RESTful客戶端

• 等待重啟



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 接收到數據後會生成“ThermalImg”資料夾
- 數據會儲存至MySQL



1 timestamp	2 macno	3 model	4 irdata	5 imgpath
2023-09-21 14:53:29	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 15:27:23	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 15:27:56	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 15:28:15	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 15:36:45	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 15:37:18	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 15:42:09	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 15:55:18	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 16:00:05	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 16:08:32	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 16:12:37	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...
2023-09-21 16:14:22	00-0D-E0-92-00-03	iSN-811C-MTCP	22.8,22.5,23.8,25.5,26.7,24.2,24,27,22.6,23,23,26...	C:/xampp/htdocs/restapi-icpdas/ThermalImg/00-0D-E0...

- 1 → The time when the data was obtained
- 2 → MAC Address of iSN-81x-MTCP
- 3 → Model
- 4 → IR data measured by iSN-81x-MTCP
- 5 → Thermal image storage path

➤ 修改DB檔名稱

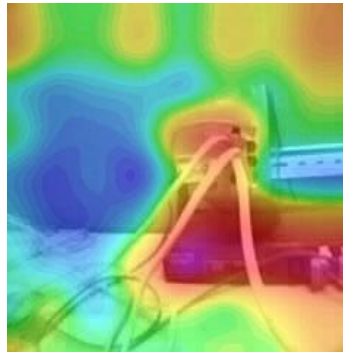
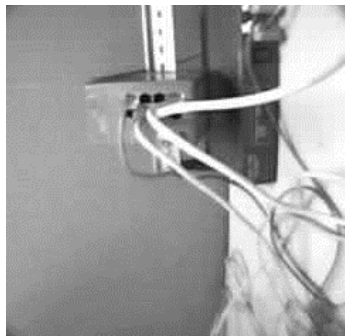
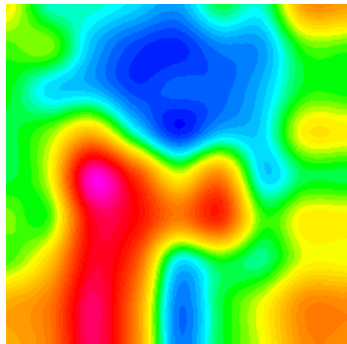
- 如果想要修改資料庫或資料表的名稱，開啟“irdata_handler.php”找到變數“DBname”或“TBname”後編輯。

```
$DBname = "irdata_icpdas";  
$TBname = "unidata";
```

➤ 更改合成圖的透明度(for iSN-811C-MTCP)

- 如果你想要調整合成圖的透明度，開啟"Reallmg.php"找到下圖的程式碼修改數值。

```
imagecopymerge($bImage, $croppedAImage, 0, 0, 0, 0, $bWidth, $bHeight, 50);
```



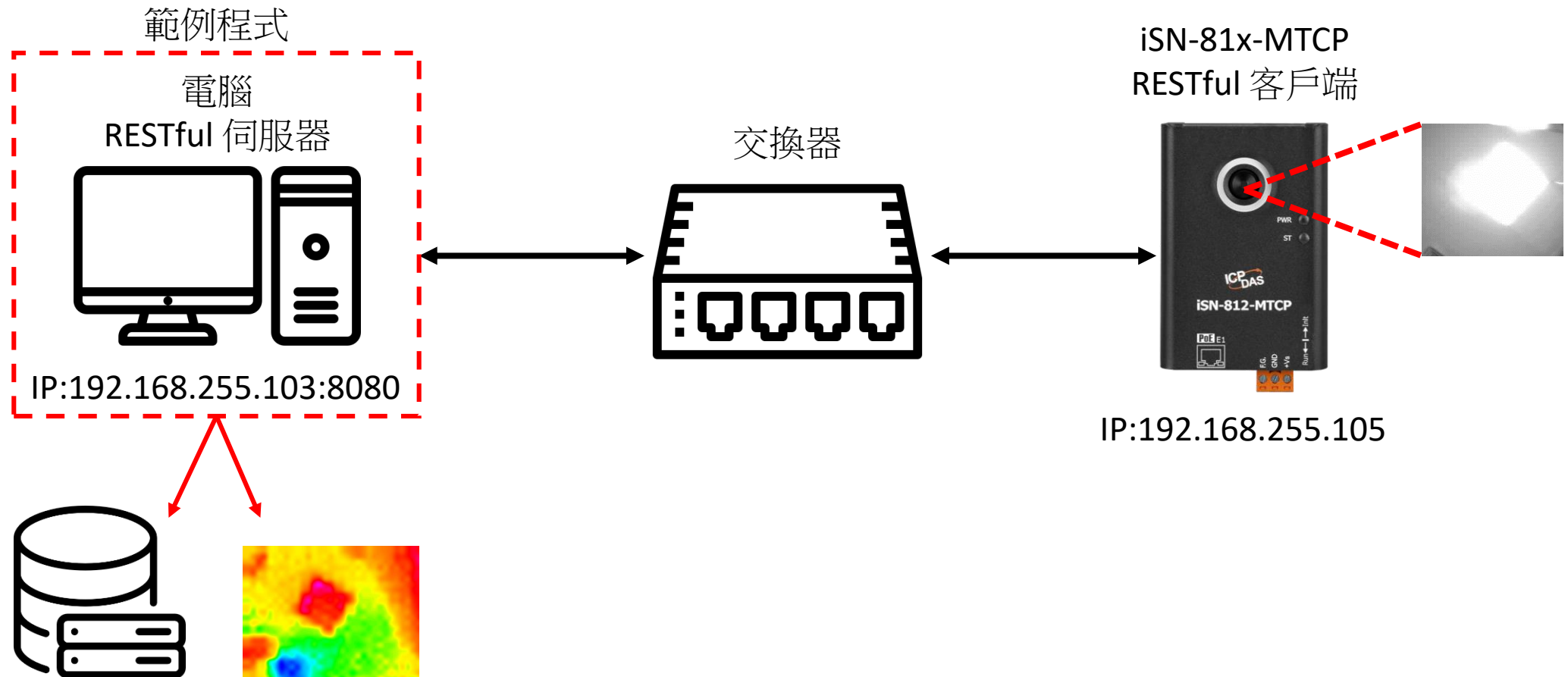
04

iSN-81x-MTCP RESTful_Python

- 範例程式提供不同的程式語言給您參考，您可以透過範例程式取得以下數據：
 - 熱影像
 - 數據讀取時間
 - iSN-81x-MTCP的MAC地址
 - 型號
 - 紅外線數據
 - 熱影像的儲存路徑
- 範例程式使用SQLite儲存量測數據，您可以自行更改使用的資料庫，如MySQL、SQL Server等。

- 預先安裝
 - pip install tornado
 - pip install numpy
 - pip install opencv-python

➤ 將iSN-81x-MTCP配置為RESTful客戶端



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 開啟“__index.py”編輯變數“host”及“port”為伺服器的IP。
- 點擊“start.bat”來開啟RESTful伺服器

```
app.listen(8080, address="192.168.255.103")
```

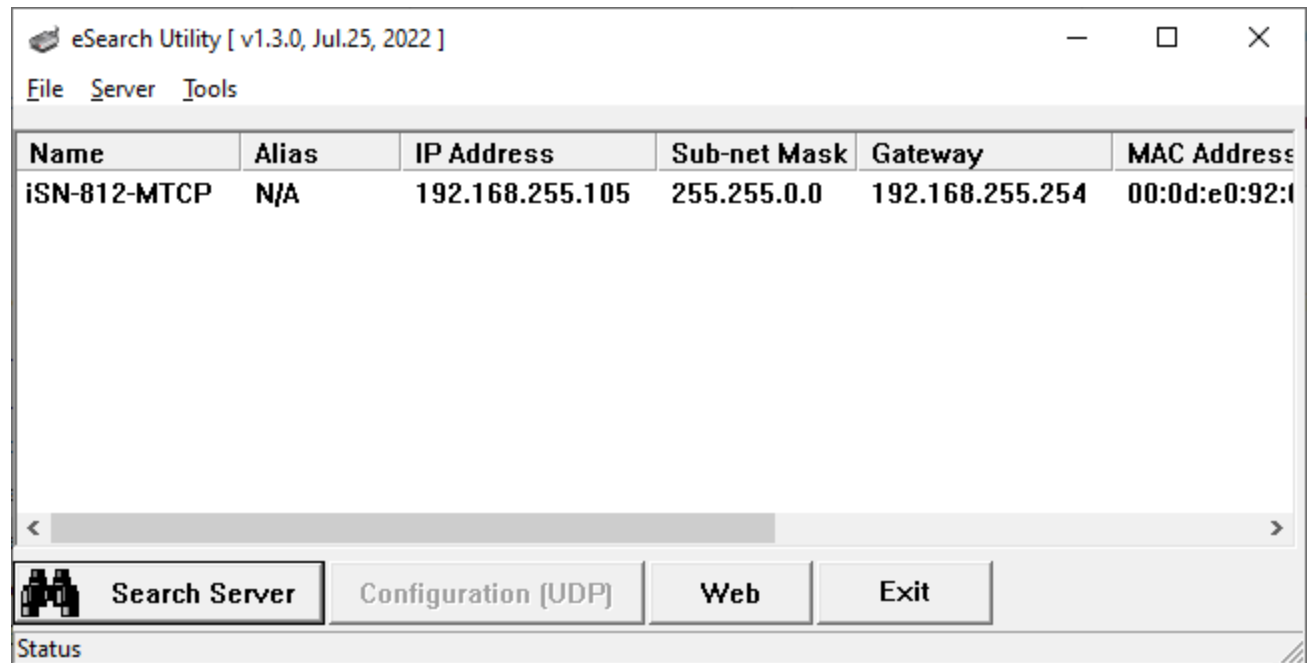
Name	Date modified
.vs	03/10/2023 14:09
__pycache__	03/10/2023 14:18
lib	03/10/2023 13:49
Thermallmg	03/10/2023 14:18
__index.py	03/10/2023 14:09
Demo_REST_Python.pptx	04/10/2023 11:11
index.py	04/10/2023 11:10
irdata_handler.py	03/10/2023 14:18
irdata_icpdas.db	03/10/2023 14:24
Pre-Install.txt	21/09/2023 11:57
start.bat	01/08/2023 15:35



```
Select C:\Windows\system32\cmd.exe  
D:\_CODE\IR\Demo\RESTful\Python\restapi-icpdas>cd /d D:\_CODE\IR\Demo\RESTful\Python\restapi-icpdas  
D:\_CODE\IR\Demo\RESTful\Python\restapi-icpdas>__index.py  
Starting server, listen at: 192.168.255.103:8080
```

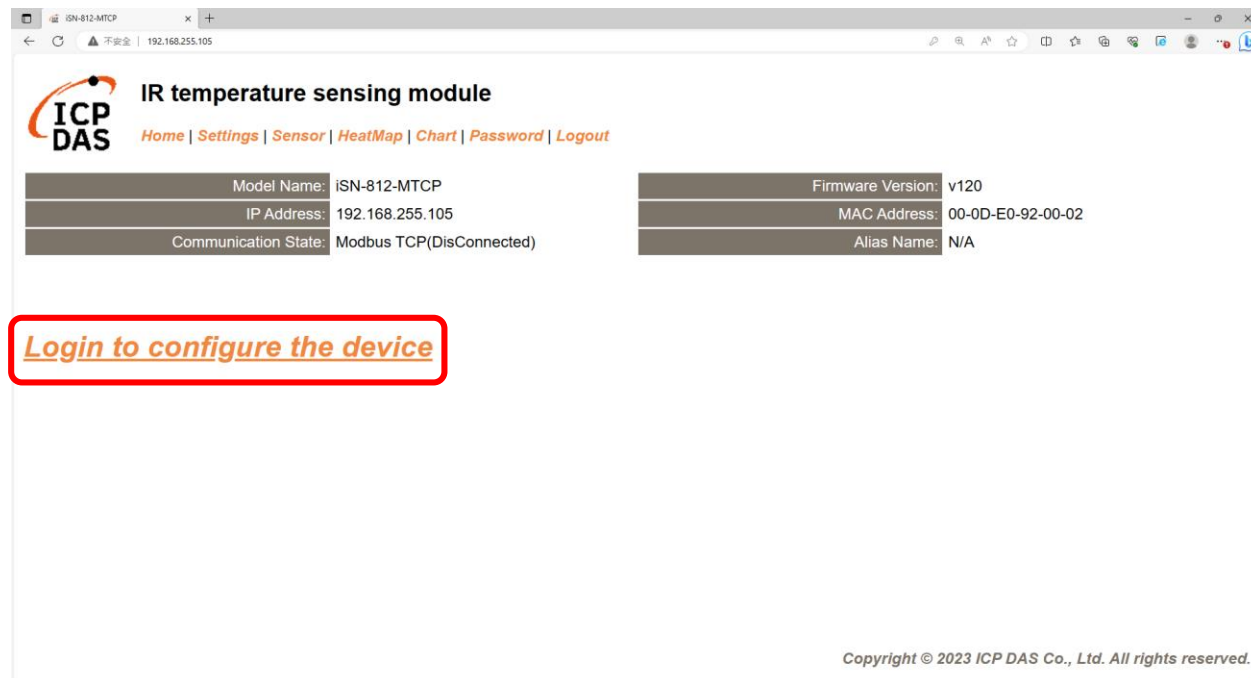

➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 使用eSearch來搜尋iSN-81x-MTCP
- 開啟iSN-81x-MTCP的網站



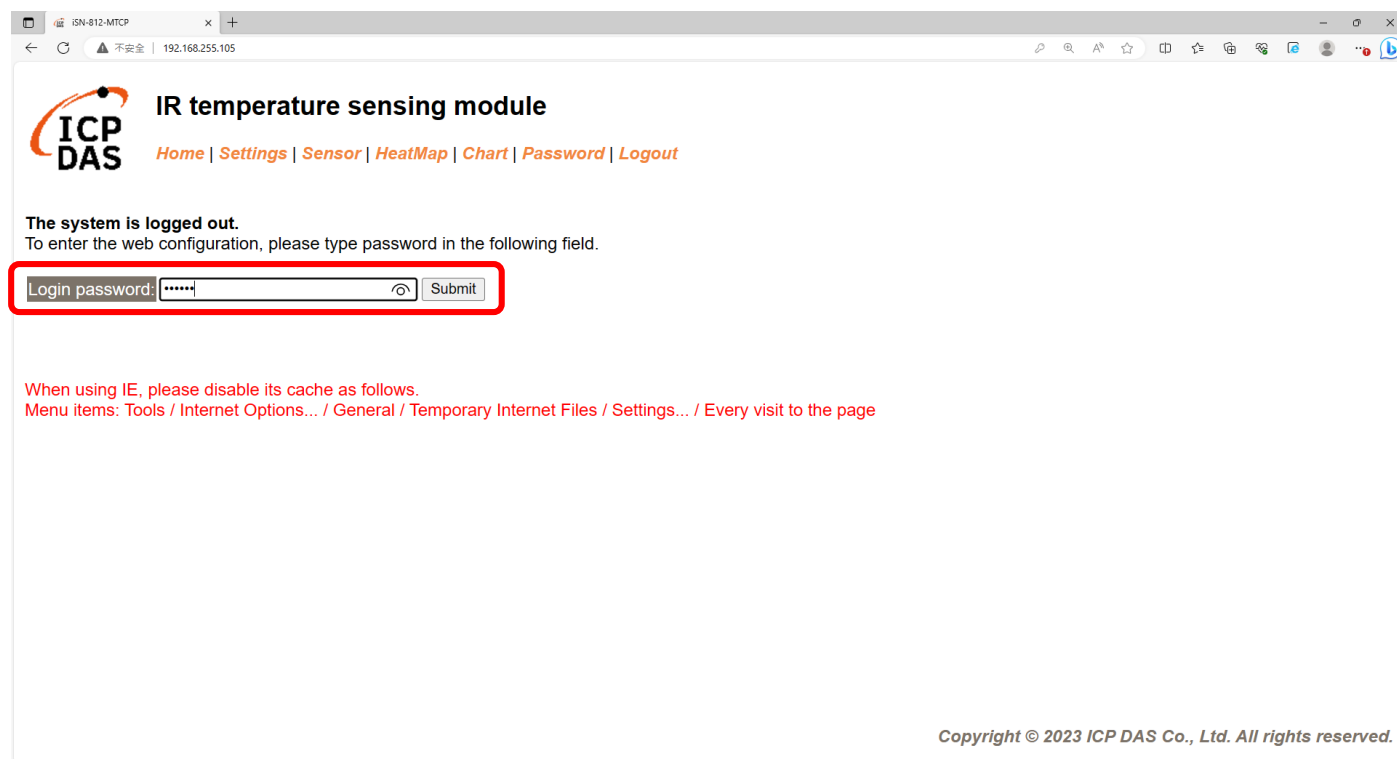
➤ 將iSN-81x-MTCP配置為RESTful客戶端

• 點擊”Login to configure the device”來登入



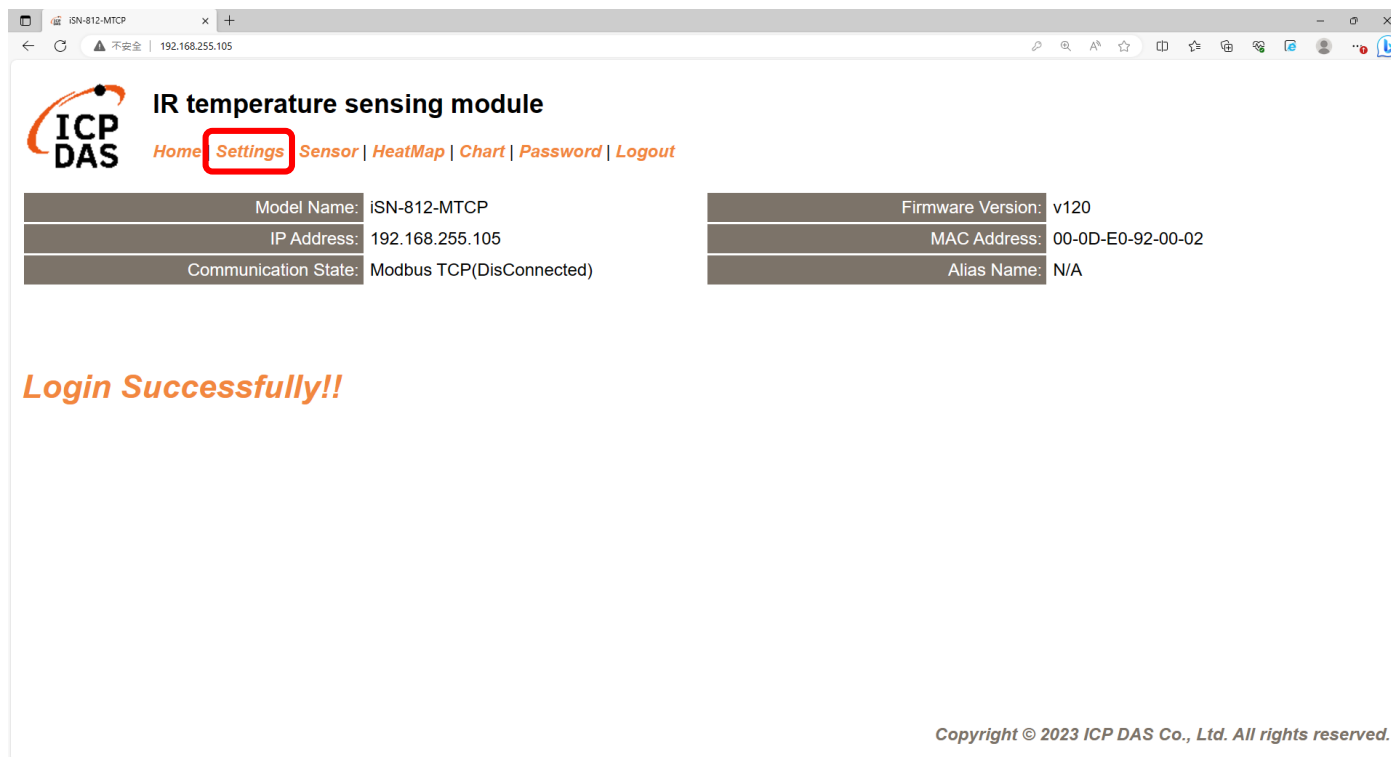
➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 登入(預設密碼: admin)



➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 點擊“Settings”來設定通訊模式



ICP DAS IR temperature sensing module

[Home](#) [Settings](#) [Sensor](#) [HeatMap](#) [Chart](#) [Password](#) [Logout](#)

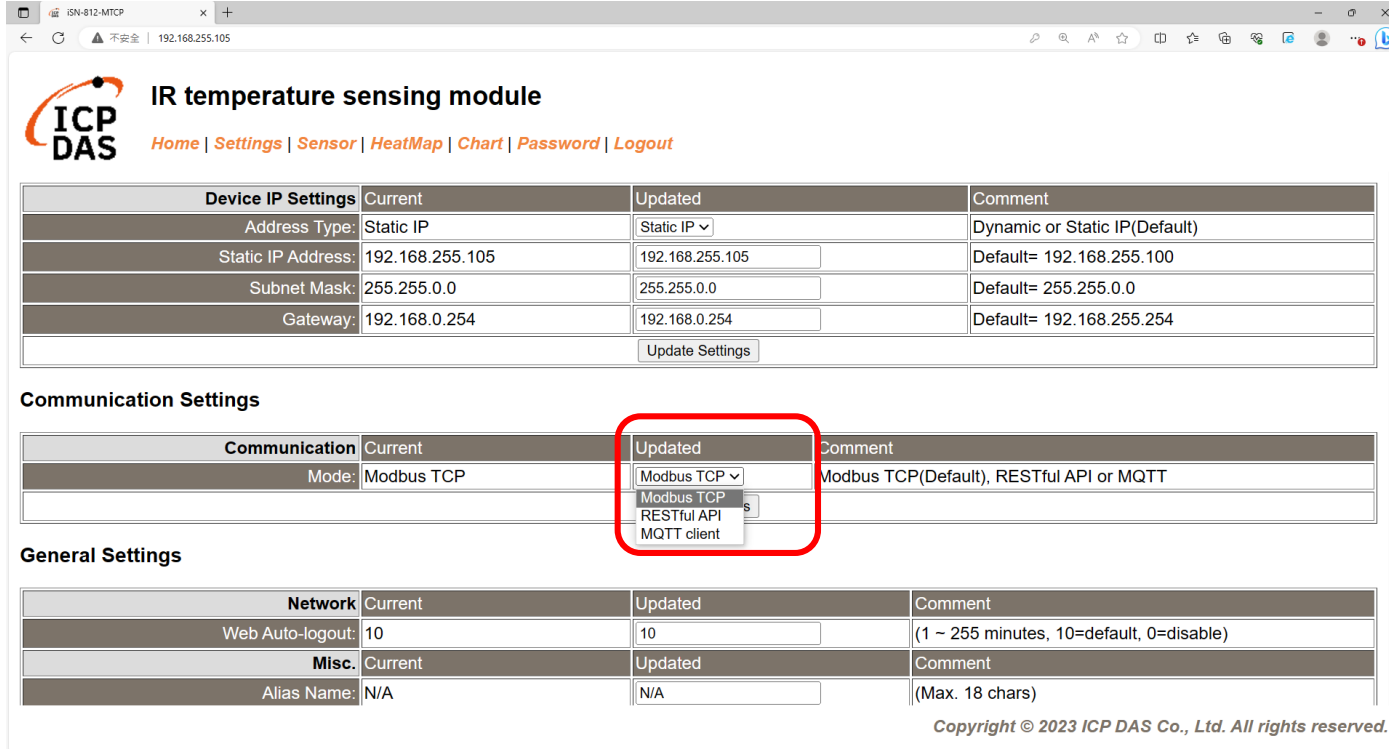
Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Login Successfully!!

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➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 將通訊模式設定為”RESTful API”



The screenshot shows the web interface for the ICP DAS IR temperature sensing module. The page title is "IR temperature sensing module" and the navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The interface is divided into three main sections: Device IP Settings, Communication Settings, and General Settings.

Device IP Settings

Device IP Settings	Current	Updated	Comment
Address Type:	Static IP	Static IP ▾	Dynamic or Static IP(Default)
Static IP Address:	192.168.255.105	192.168.255.105	Default= 192.168.255.100
Subnet Mask:	255.255.0.0	255.255.0.0	Default= 255.255.0.0
Gateway:	192.168.0.254	192.168.0.254	Default= 192.168.255.254

Communication Settings

Communication	Current	Updated	Comment
Mode:	Modbus TCP	Modbus TCP ▾	Modbus TCP(Default), RESTful API or MQTT

The dropdown menu for the "Updated" field in the Communication Settings section is open, showing the following options: Modbus TCP, RESTful API, and MQTT client. The "RESTful API" option is highlighted.

General Settings

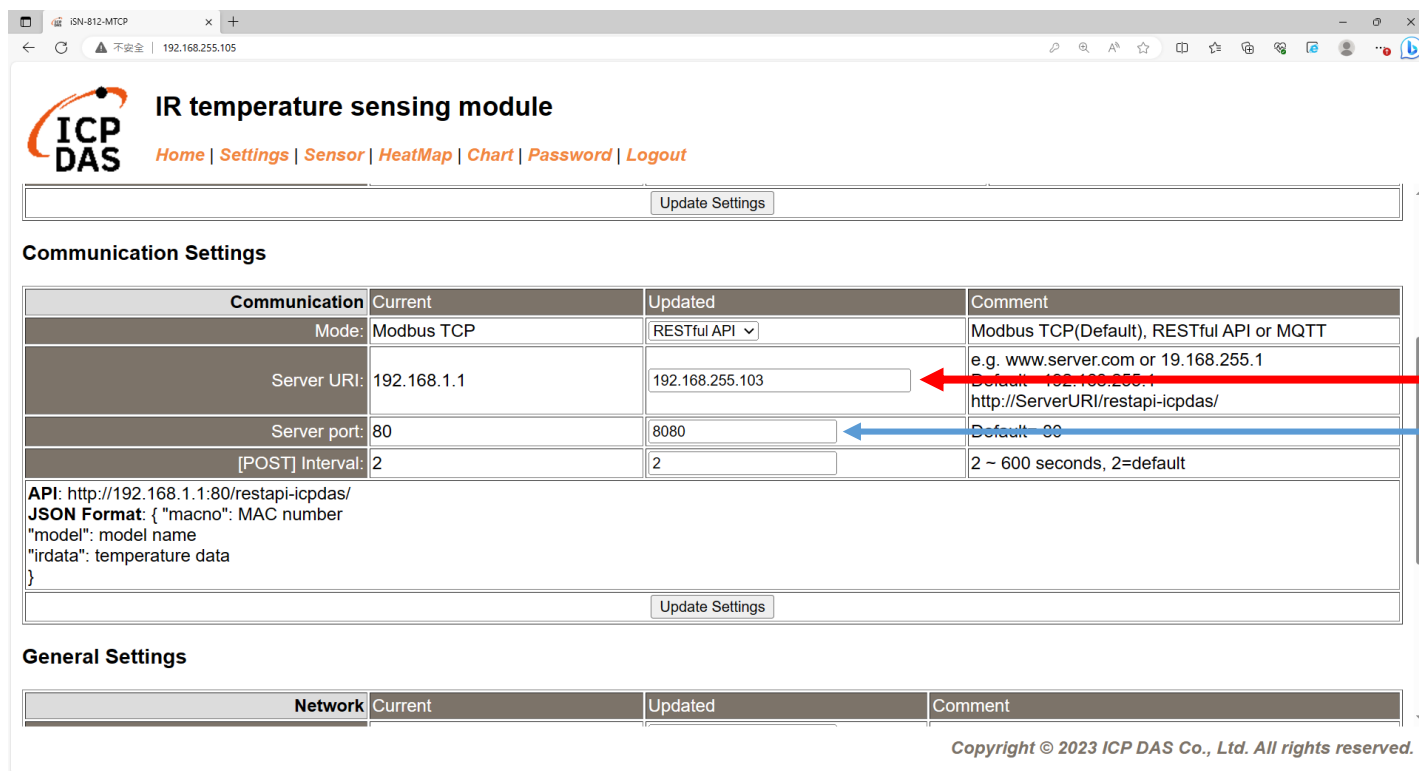
Network	Current	Updated	Comment
Web Auto-logout:	10	10	(1 ~ 255 minutes, 10=default, 0=disable)

Misc.	Current	Updated	Comment
Alias Name:	N/A	N/A	(Max. 18 chars)

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➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 根據伺服器的IP設定參數並更新設定



The screenshot shows the web interface for the ICP DAS IR temperature sensing module. The page title is "IR temperature sensing module" and the URL is "192.168.255.105". The navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The "Communication Settings" section is active, displaying a table with current and updated values for various parameters. A red arrow points from the updated IP address "192.168.255.103" in the terminal to the "Server URI" field in the web interface. A blue arrow points from the updated port "8080" in the terminal to the "Server port" field in the web interface.

Communication	Current	Updated	Comment
Mode:	Modbus TCP	RESTful API	Modbus TCP(Default), RESTful API or MQTT
Server URI:	192.168.1.1	192.168.255.103	e.g. www.server.com or 19.168.255.1 Default: 192.168.255.1
Server port:	80	8080	Default: 80
[POST] Interval:	2	2	2 ~ 600 seconds, 2=default

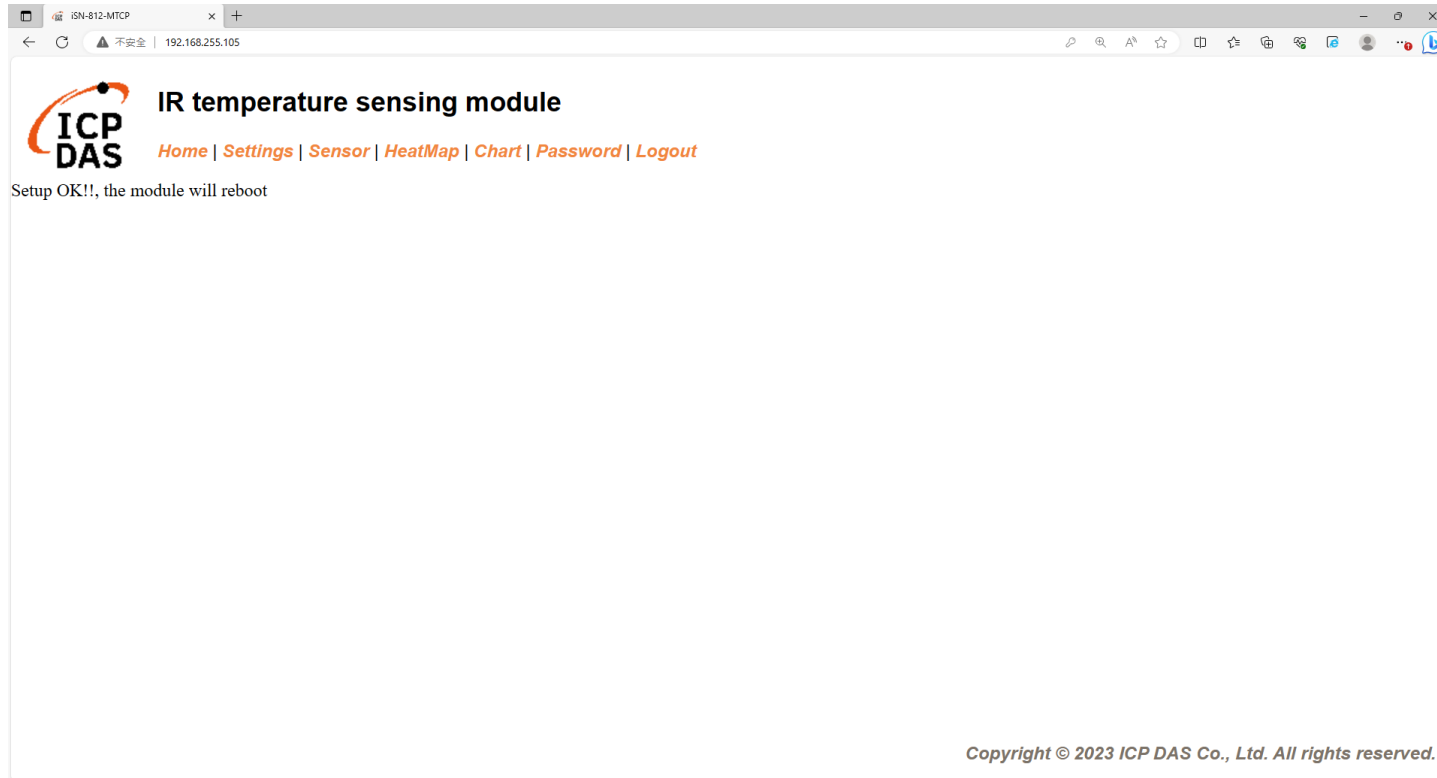
API: http://192.168.1.1:80/restapi-icpdas/
JSON Format: { "macno": MAC number
"model": model name
"irdata": temperature data
}

C:\> Select C:\Windows\system32\cmd.exe

```
D:\_O_CODE\IR\Demo\RESTful\Python\restapi-icpdas>cd /d D:\_O_CODE\IR\Demo\RESTful\Python\restapi-icpdas
D:\_O_CODE\IR\Demo\RESTful\Python\restapi-icpdas>python restapi-icpdas_index.py
Starting server, listen at: 192.168.255.103:8080
```

➤ 將iSN-81x-MTCP配置為RESTful客戶端

• 等待重啟



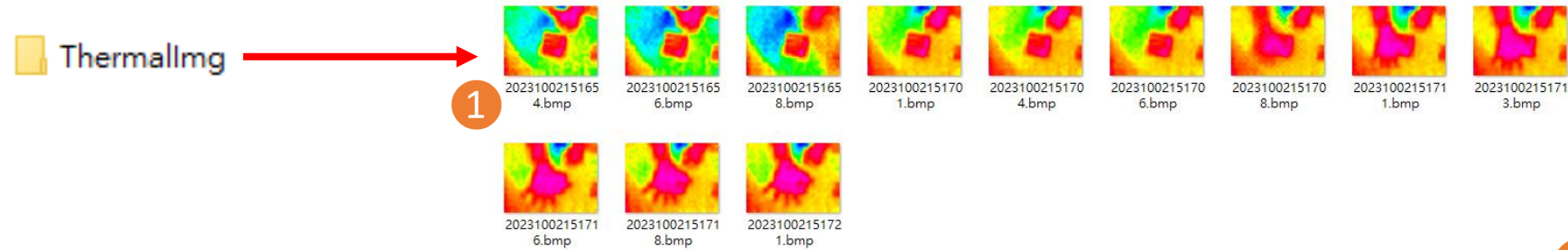
➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 如果連線成功，iSN-81x-MTCP會先發送GET請求，後續則皆為POST請求。

```
C:\Windows\system32\cmd.exe
D:\_0_CODE\IR\Demo\RESTful\Python\restapi-icpdas>cd /d D:\_0_CODE\IR\Demo\RESTful\Python
D:\_0_CODE\IR\Demo\RESTful\Python\restapi-icpdas>__index.py
Starting server, listen at: 192.168.255.103:8080
192.168.255.109 - - [04/Oct/2023 11:39:12] "GET /restapi-icpdas/ HTTP/1.1" 200 -
POST
Data inserted OK
192.168.255.109 - - [04/Oct/2023 11:39:15] "POST /restapi-icpdas/ HTTP/1.1" 200 -
```


➤ 將iSN-81x-MTCP配置為RESTful客戶端

- 接收到數據後會產生兩個檔案，一個是儲存數據的DB檔，一個是熱影像檔。



irdata_icpdas.db

1 timestamp	2 macno	3 model	4 irdata	5 imgpath
2023-10-02 15:16:54	00-0D-E0-92-00-02	iSN-812-MTCP	30.0,30.2,31 D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:16:56	00-0D-E0-92-00-02	iSN-812-MTCP	30.2,30.5,31 D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:16:58	00-0D-E0-92-00-02	iSN-812-MTCP	31.1,31.9,32 D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:01	00-0D-E0-92-00-02	iSN-812-MTCP	31.2,30.9,32 D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:04	00-0D-E0-92-00-02	iSN-812-MTCP	30.1,31.2,31 D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:06	00-0D-E0-92-00-02	iSN-812-MTCP	30.9,31.6,31 D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:08	00-0D-E0-92-00-02	iSN-812-MTCP	30.8,30.7,31 D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:11	00-0D-E0-92-00-02	iSN-812-MTCP	30.7,30.4,31 D:\0_CODE\IR\Demo\RESTfu	
2023-10-02 15:17:13	00-0D-E0-92-00-02	iSN-812-MTCP	30.6,32.0,32 D:\0_CODE\IR\Demo\RESTfu	

- 1 → The time when the data was obtained
- 2 → MAC Address of iSN-81x-MTCP
- 3 → Model
- 4 → IR data measured by iSN-81x-MTCP
- 5 → Thermal image storage path

➤ 修改DB檔名稱

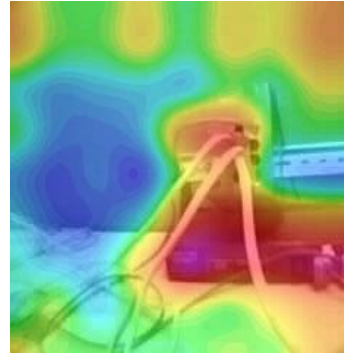
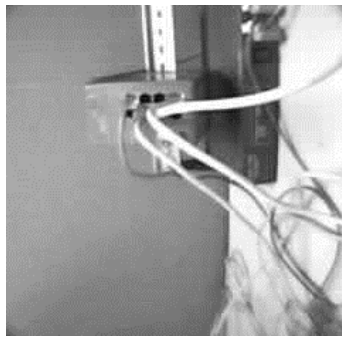
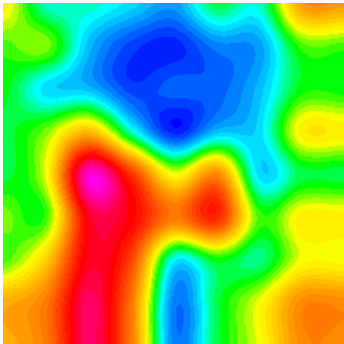
- 如果你想要修改DB檔的名稱，開啟“irdata_handler.py”後找到變數“conn”然後編輯它。

```
conn = sqlite3.connect('irdata_icpdas.db')
```

➤ 更改合成圖的透明度(for iSN-811C-MTCP)

- 如果你想要調整合成圖的透明度，開啟“Reallmg.py”找到下圖的程式碼修改數值。

```
mergeBmp = cv2.addWeighted(cropBmp, 0.5, irBmp_with_transparency, 0.5, 0, dtype=cv2.CV_8U)
```



05

防火牆設定

➤ 如何解決外部連線被防火牆阻擋

- 如果設定正確但無法接收到數據，數據可能是被防火牆阻擋了。
- 開啟防火牆設定，並點擊“進階設定”

(1) 防火牆與網路保護

決定誰和什麼裝置可以存取您的網路。

🏠 網域網路

防火牆已開啟。

🔒 私人網路 (使用中)

防火牆已開啟。

🌐 公用網路

防火牆已開啟。

允許應用程式通過防火牆

網路和網際網路疑難排解員

防火牆通知設定

進階設定

將防火牆還原為預設設定

進階設定

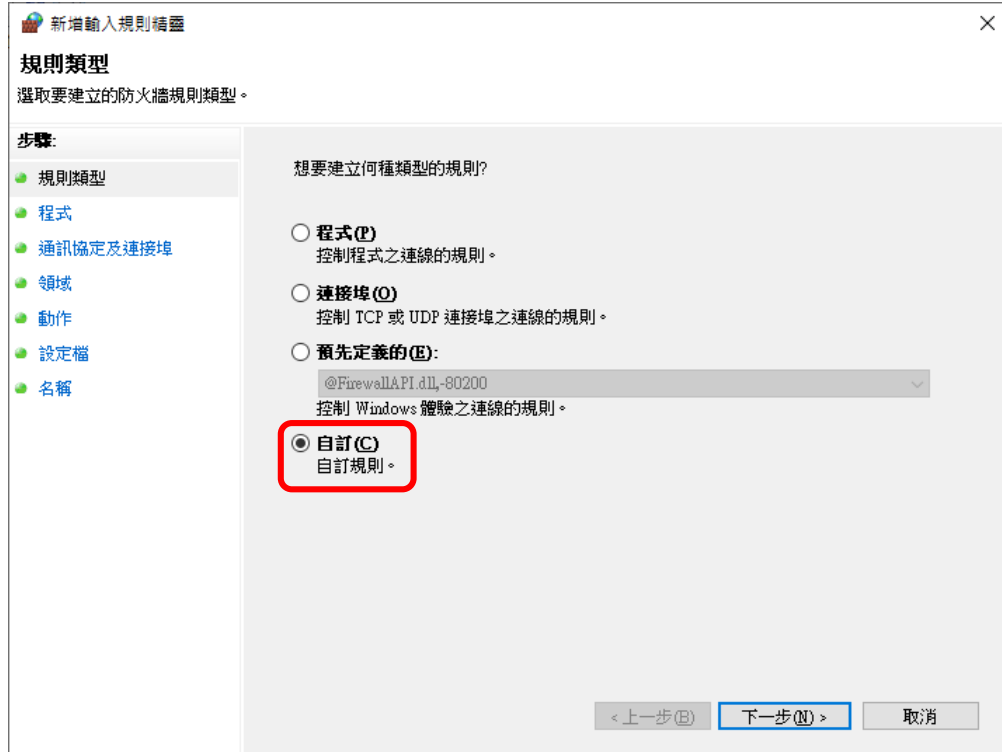
➤ 如何解決外部連線被防火牆阻擋

- 點擊“輸入規則”後，點擊新增規則



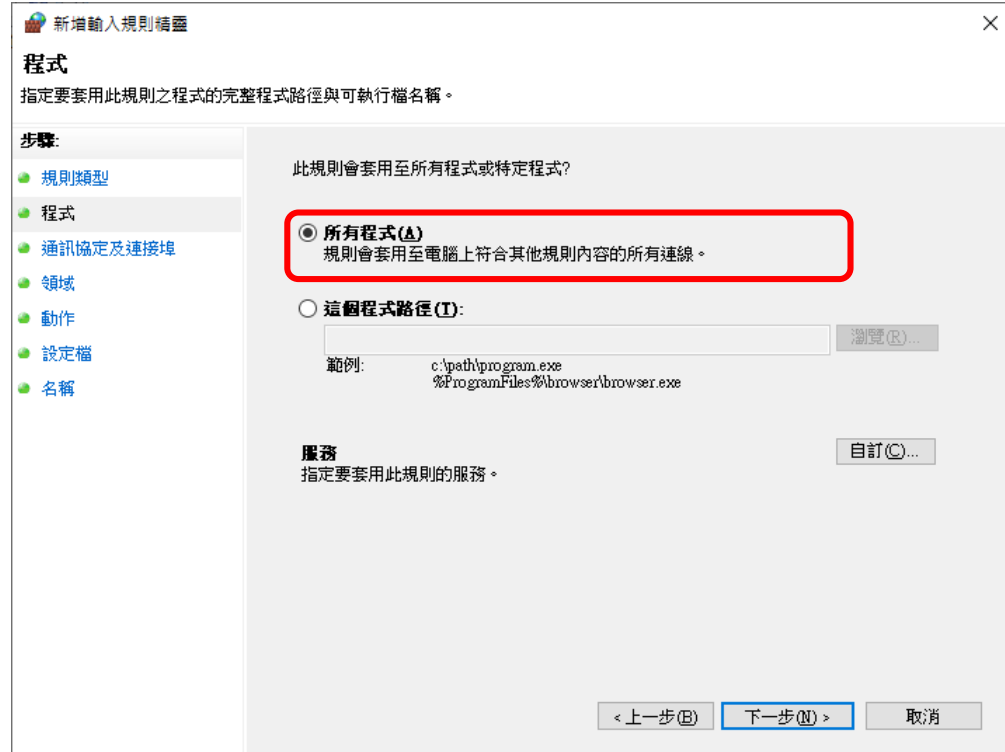
➤ 如何解決外部連線被防火牆阻擋

- 選擇“自訂”



➤ 如何解決外部連線被防火牆阻擋

- 選擇所有程式



➤ 如何解決外部連線被防火牆阻擋

- 協定類型: TCP
- 本機連接埠: 特定連接埠、伺服器的埠

新增輸入規則精靈

通訊協定及連接埠

指定套用這個規則的通訊協定與連接埠。

步驟:

- 規則類型
- 程式
- 通訊協定及連接埠
- 領域
- 動作
- 設定檔
- 名稱

這個規則要套用到哪些連接埠及通訊協定?

通訊協定類型(T): TCP

通訊協定號碼(U): 6

本機連接埠(L): 特定連接埠
8080
範例: 80, 443, 5000-5010

遠端連接埠(R): 所有連接埠
範例: 80, 443, 5000-5010

網際網路控制訊息通訊協定 (ICMP) 設定: 自訂...

< 上一步(B) 下一步(N) > 取消

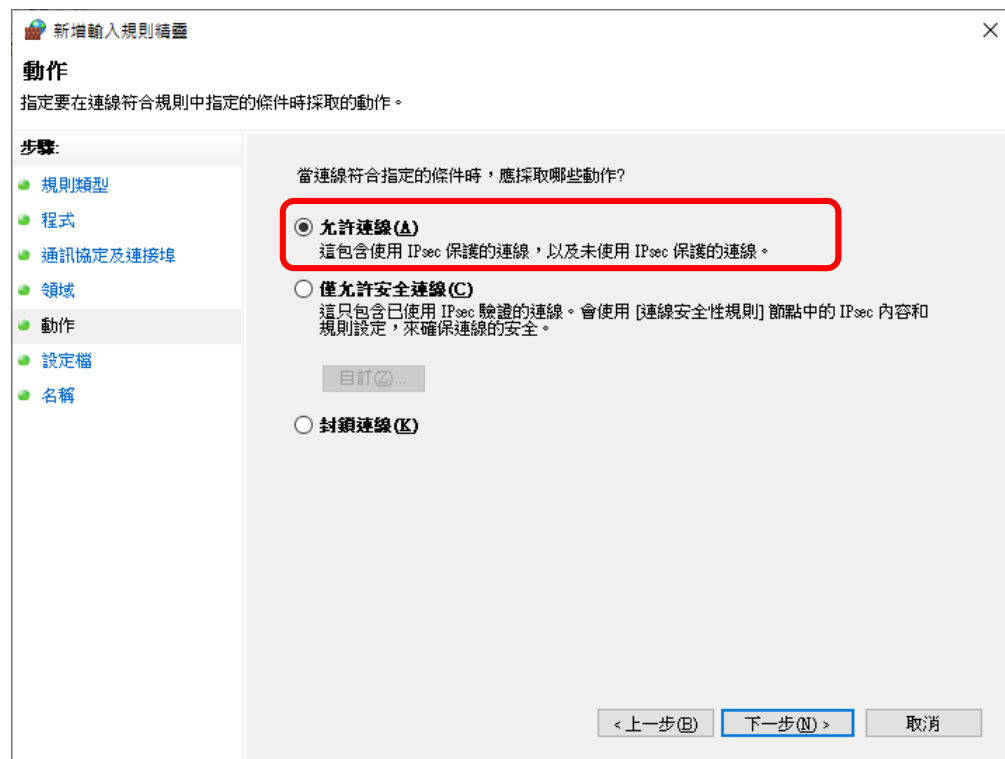
➤ 如何解決外部連線被防火牆阻擋

- 選擇“這些IP位址”，點擊新增加入伺服器的IP



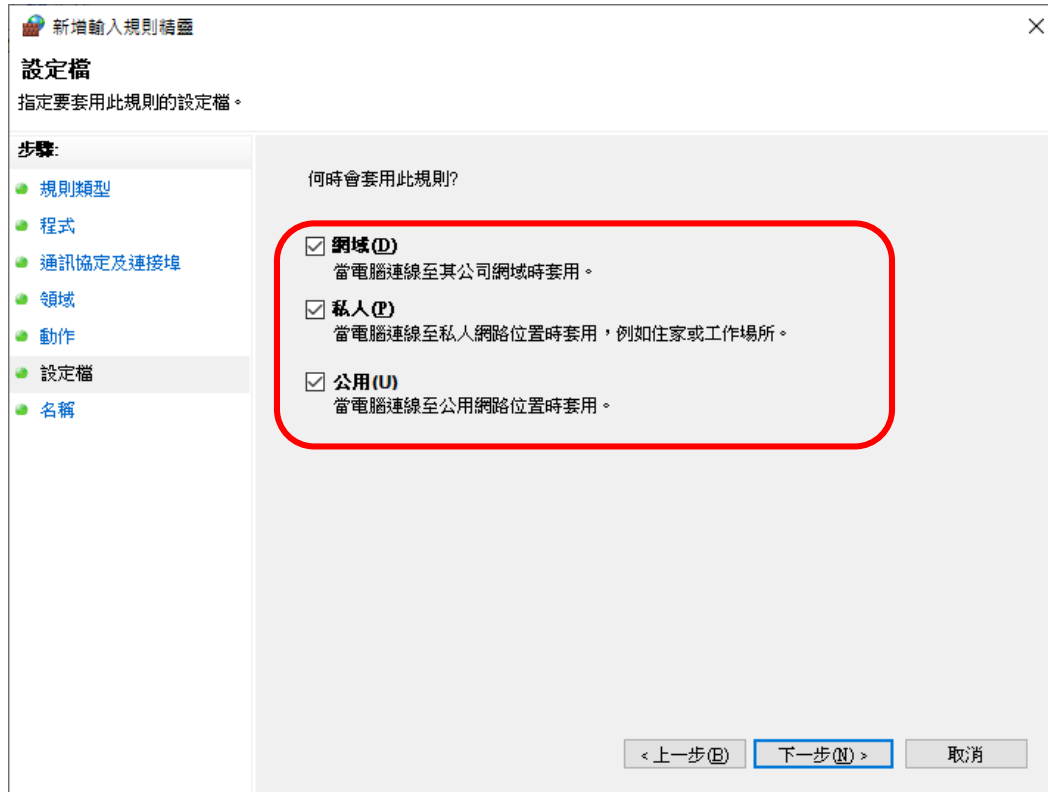
➤ 如何解決外部連線被防火牆阻擋

- 選擇“允許連線”



➤ 如何解決外部連線被防火牆阻擋

- 勾選所有選項



新增輸入規則精靈

設定檔
指定要套用此規則的設定檔。

步驟:

- 規則類型
- 程式
- 通訊協定及連接埠
- 領域
- 動作
- 設定檔
- 名稱

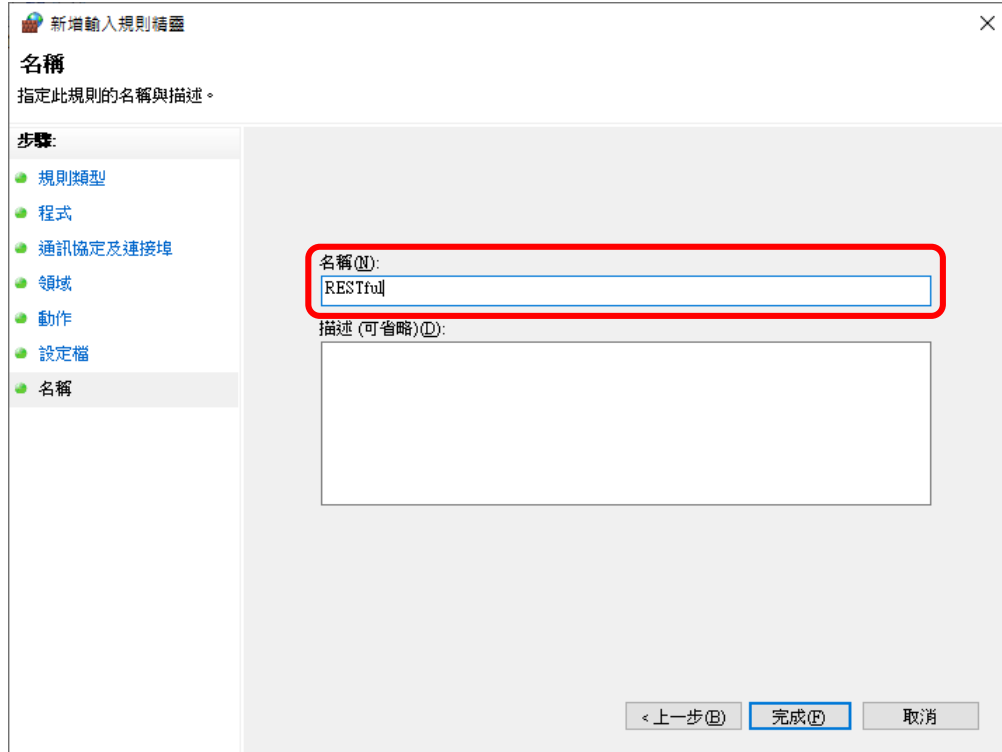
何時會套用此規則?

- 網域 (N)
當電腦連線至其公司網域時套用。
- 私人 (P)
當電腦連線至私人網路位置時套用，例如住家或工作場所。
- 公用 (U)
當電腦連線至公用網路位置時套用。

< 上一步 (B) 下一步 (N) > 取消

➤ 如何解決外部連線被防火牆阻擋

- 名稱:RESTful



新增輸入規則精靈

名稱
指定此規則的名稱與描述。

步驟:

- 規則類型
- 程式
- 通訊協定及連接埠
- 領域
- 動作
- 設定檔
- 名稱

名稱(N):
RESTful

描述 (可省略)(D):

< 上一步(B) 完成(F) 取消

➤ 如何解決外部連線被防火牆阻擋

- 完成並檢查資料接收是否正常

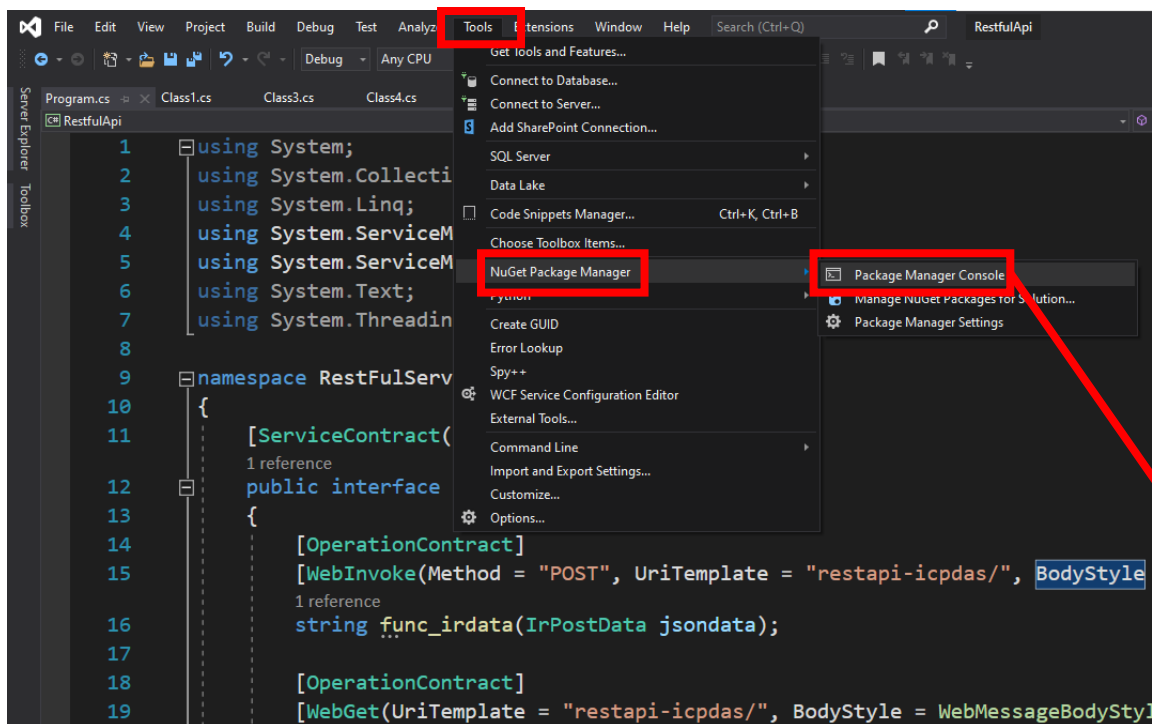


06

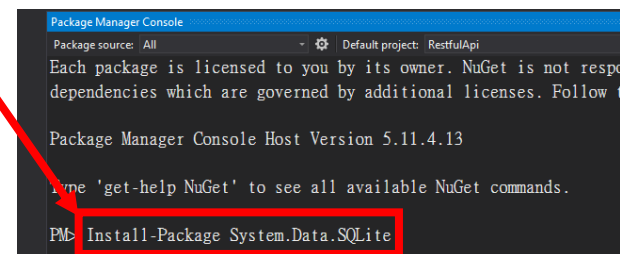
如何安裝函式庫

➤ CSharp如何安裝函式庫

- NuGet
- 安裝命令 → Install-Package System.Data.SQLite (函式庫名稱)



The screenshot shows the Visual Studio interface with the 'Tools' menu open. The 'NuGet Package Manager' option is highlighted with a red box. Below it, the 'Package Manager Console' option is also highlighted with a red box. A red arrow points from the 'Package Manager Console' option to the console window shown in the next image.



The screenshot shows the Package Manager Console window. The command 'Install-Package System.Data.SQLite' is entered in the console and highlighted with a red box. The console output shows the command being executed successfully.

➤ Node.js如何安裝函式庫

- 當你安裝node.js環境時，也會安裝npm。npm用於在node.js環境中安裝各種函式庫。
- 使用命令檢查npm是否有安裝→`npm --version`
- 安裝命令→`npm install modbus-serial`(函式庫名稱)

```
Command Prompt
Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Adam>npm --version
10.2.0

C:\Users\Adam>
```

➤ Python如何安裝函式庫

- Python使用pip來管理函式庫。安裝python時，也會安裝pip。
- 使用命令檢查pip是否有安裝→`pip --version`
- 安裝命令→ `pip install pymodbus`(函式庫名稱)

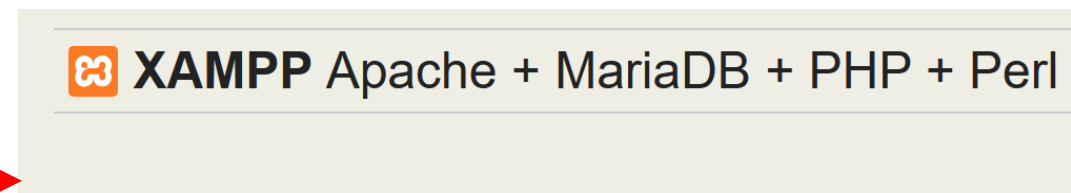
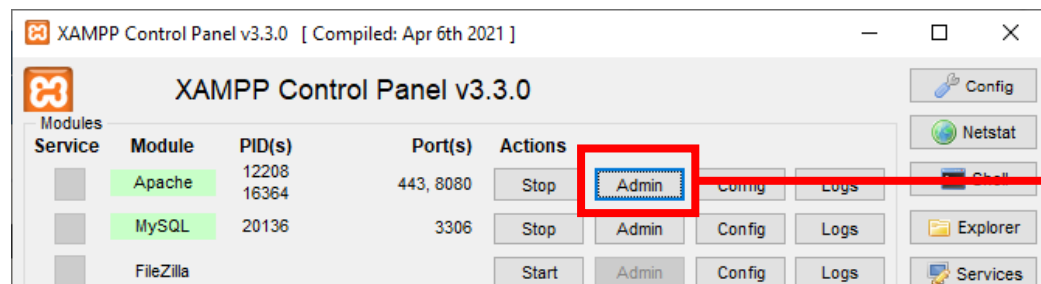
```
ca. Command Prompt
Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Adam>pip --version
pip 23.2.1 from C:\Python312\Lib\site-packages\pip (python 3.12)

C:\Users\Adam>
```

➤ 如何安裝XAMPP

- XAMPP是一個將Apache Web伺服器與PHP、Perl和MariaDB整合的安裝檔，讓使用者在自己的電腦上輕鬆建立Web伺服器。
- 範例程式XAMPP的版本→8.1.10
- 根據你的作業系統下載安裝檔
→[https://sourceforge.net/projects/xampp/files/XAMPP%20Windows/8.1.10/\(windows\)](https://sourceforge.net/projects/xampp/files/XAMPP%20Windows/8.1.10/(windows))



Welcome to XAMPP for Windows 8.1.10