



Industrial Automation Technology
Innovator and Enhancer.

How to connect iSN-81x module through MQTT





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- [How to install Lib](#)

01

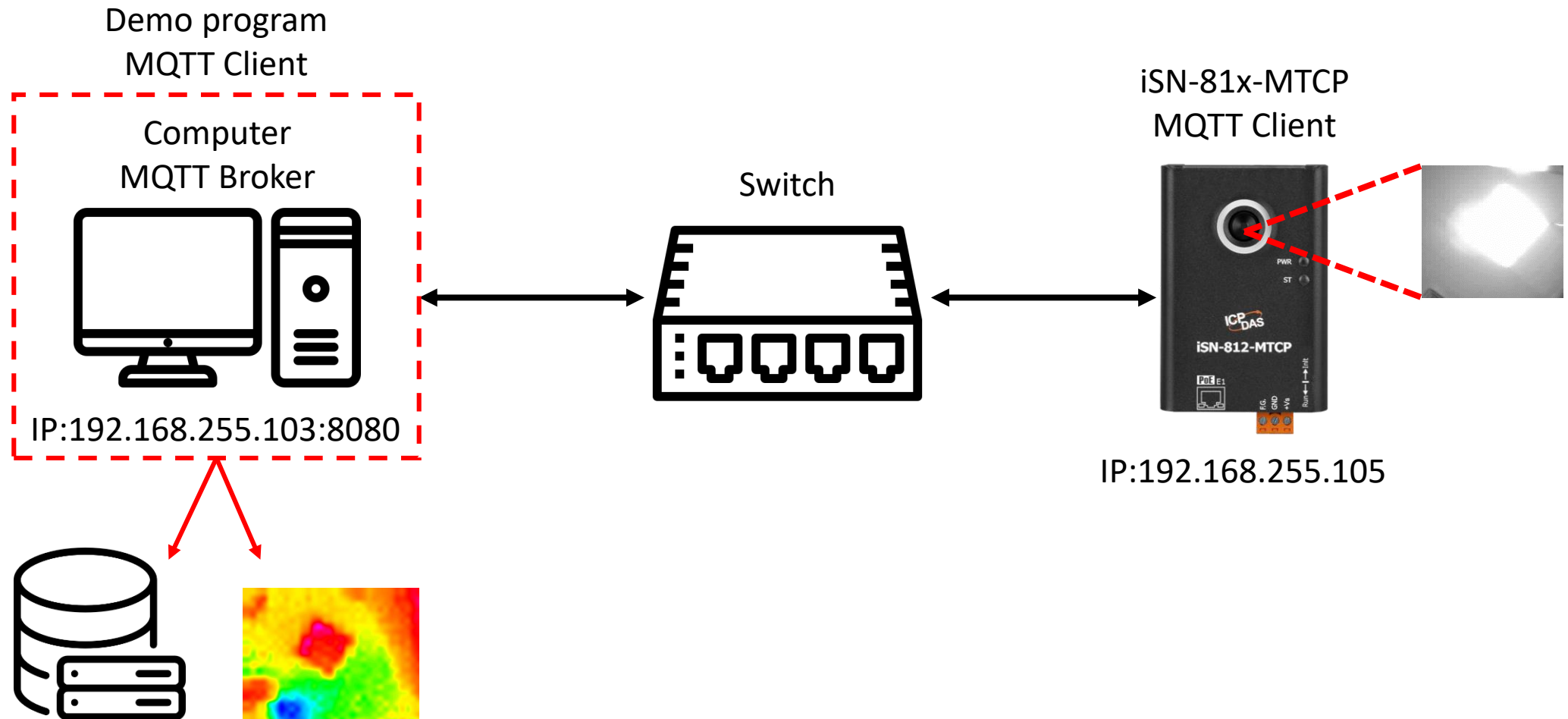
iSN-81x-MTCP MQTT_Csharp

- Sample programs provide different programming languages for your reference, and you can obtain the following data through the demo programs :
 - Thermal image
 - Data measurement time
 - MAC Address of iSN-81x-MTCP
 - Model
 - IR data
 - Thermal image storage path
- The sample program uses SQLite to store measurement data, and you can change the database by yourself, such as MySQL, SQL Server, etc.

- Pre-install

- Install-Package System.Data.SQLite
- Install-Package MQTTnet.Extensions.ManagedClient -Version 3.0.16
- Install-Package Serilog -Version 2.10.0
- Install-Package Serilog.Sinks.Console -Version 3.1.1
- Install-Package Newtonsoft.Json -Version 13.0.1

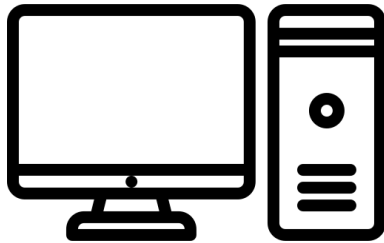
➤ Configuring iSN-81x-MTCP as a MQTT client



➤ Configuring iSN-81x-MTCP as a MQTT client

- The sample program needs to connect to Broker, Broker's IP=192.168.255.103, open "Program.cs" and find the function "Main", and then edit the value "BrokerURI".

Computer
MQTT Broker



IP:192.168.255.103

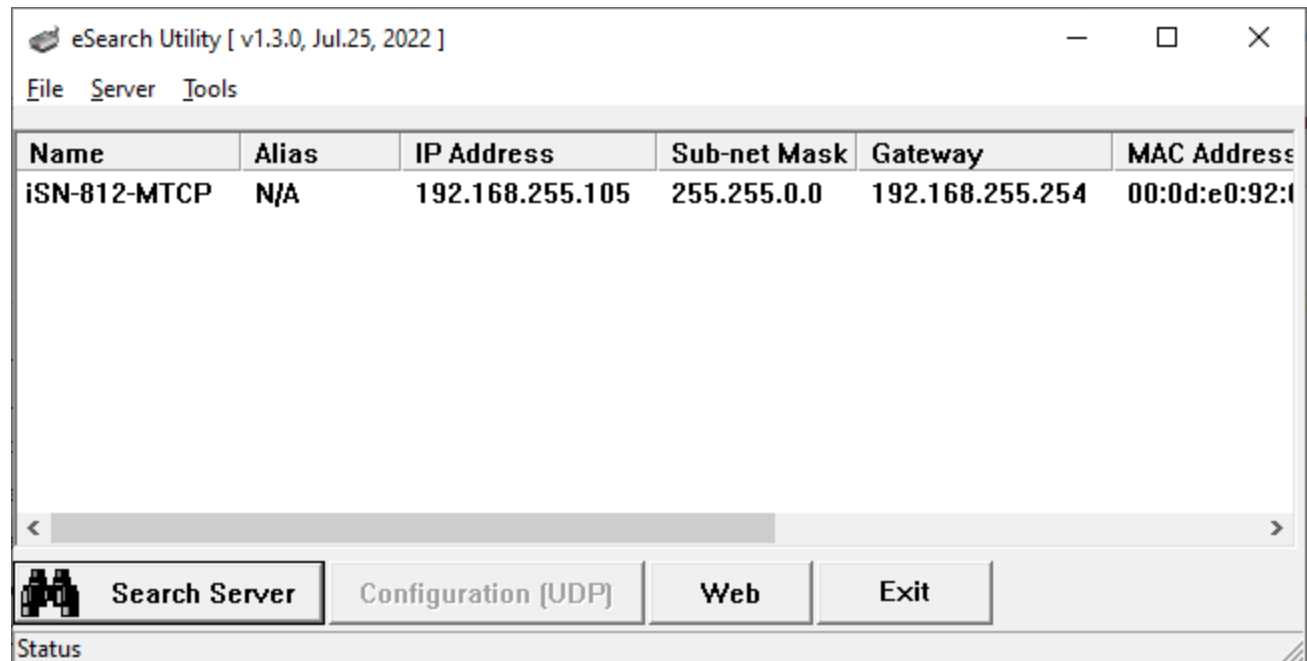


```
string BrokerURI = "192.168.255.103";
```

```
[14:54:29 INF] Successfully connected.
```

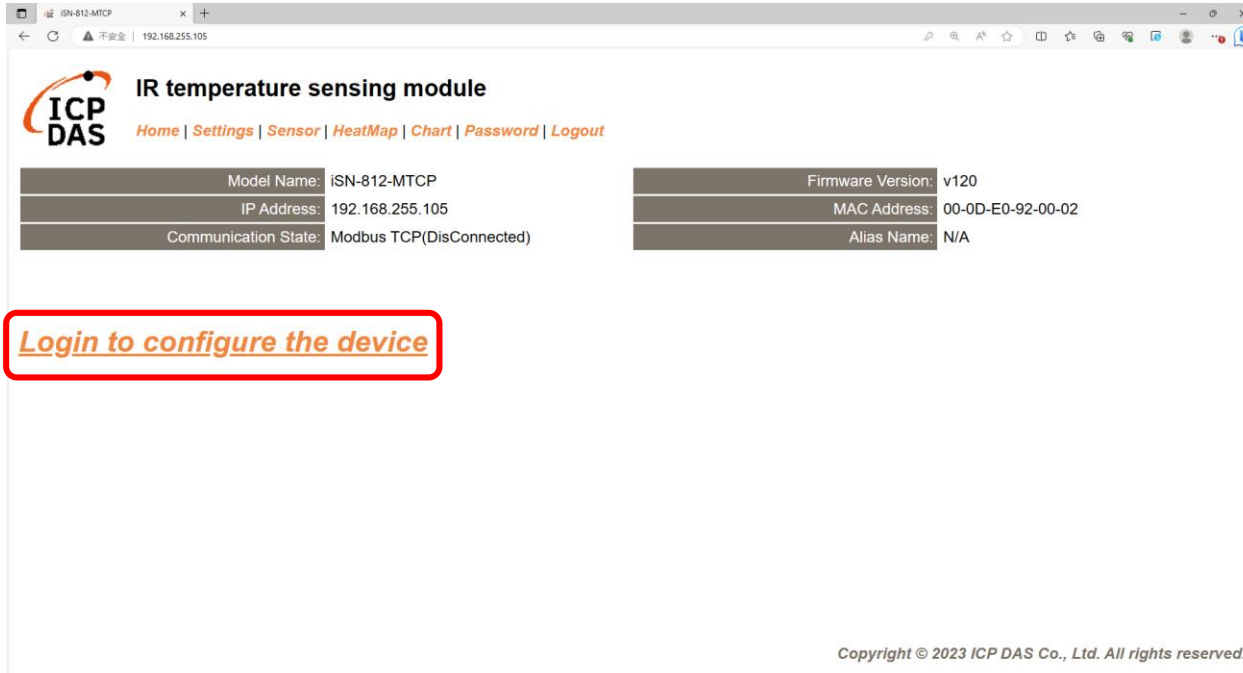
➤ Configuring iSN-81x-MTCP as a MQTT client

- Use eSearch to find iSN-81x-MTCP
- Open the web of iSN-81x-MTCP



➤ Configuring iSN-81x-MTCP as a MQTT client

- Click "Login to configure the device" to login



The screenshot shows a web browser window displaying the configuration page for an ICP DAS IR temperature sensing module. The page title is "IR temperature sensing module" and the ICP DAS logo is visible. The navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The device information is displayed in a table:

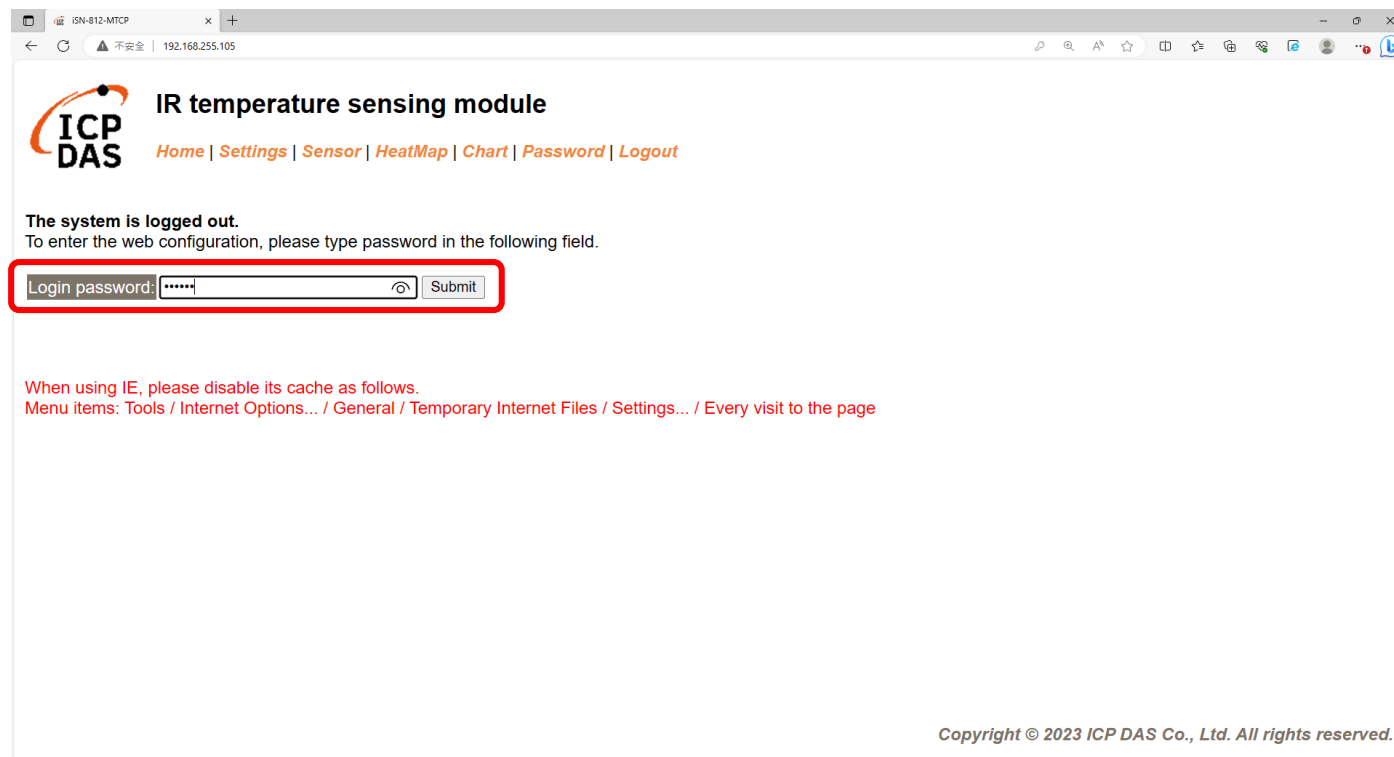
Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Below the table, the text "Login to configure the device" is highlighted with a red rectangular box.

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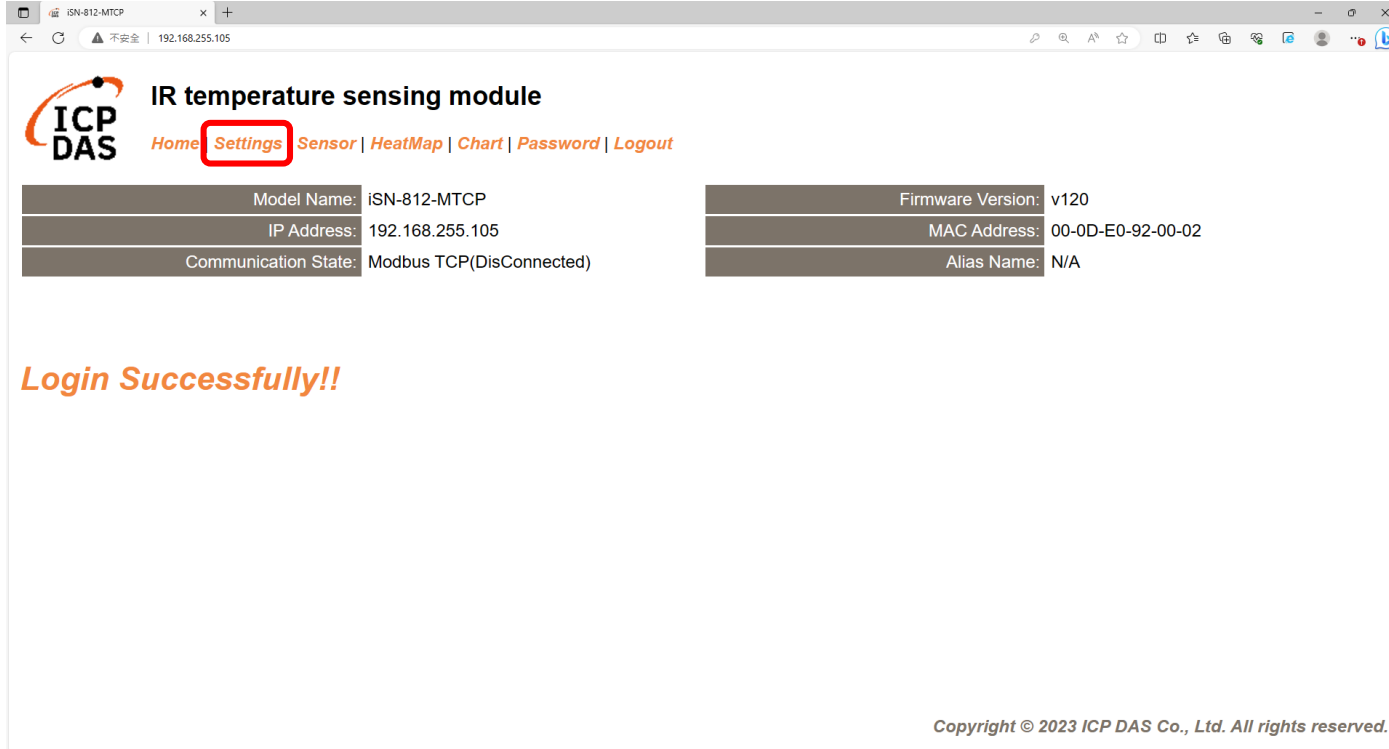
➤ Configuring iSN-81x-MTCP as a MQTT client

- Login(default password:admin)



➤ Configuring iSN-81x-MTCP as a MQTT client

- Click "Settings" to set communication mode



ICP DAS IR temperature sensing module

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

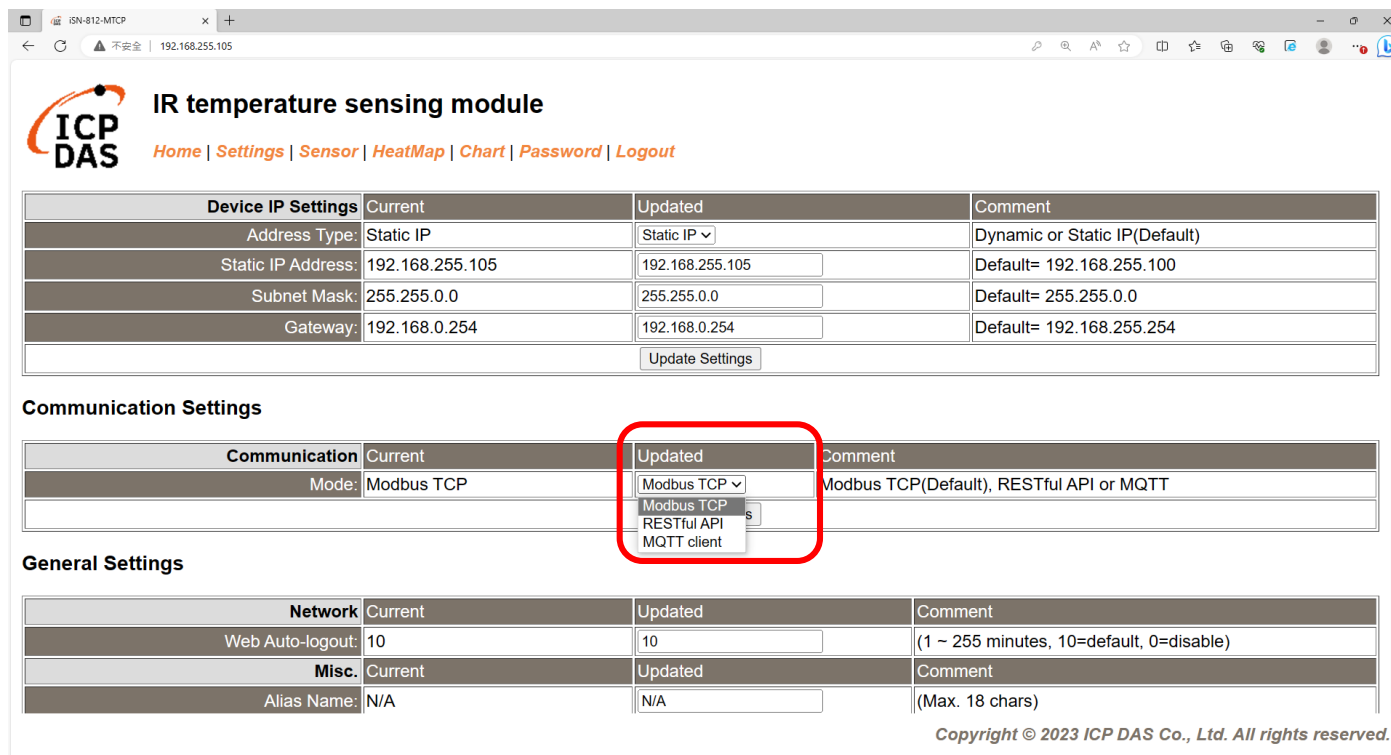
Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Login Successfully!!

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➤ Configuring iSN-81x-MTCP as a MQTT client

- Set communication mode to “MQTT client”



The screenshot displays the web interface for an IR temperature sensing module. The page title is "IR temperature sensing module" and the logo is "ICP DAS". The navigation menu includes "Home", "Settings", "Sensor", "HeatMap", "Chart", "Password", and "Logout".

The "Device IP Settings" section contains a table with the following data:

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

An "Update Settings" button is located below the table.

The "Communication Settings" section contains a table with the following data:

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

The "Updated" column's dropdown menu is highlighted with a red box, showing the "MQTT client" option selected.

The "General Settings" section contains a table with the following data:

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

The "Misc." section contains a table with the following data:

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

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➤ Configuring iSN-81x-MTCP as a MQTT client

- Set the parameter follow Broker's IP, and update settings

IR temperature sensing module
Home | Settings | Sensor | HeatMap | Chart | Password | Logout

Model Name: iSN-812-MTCP Firmware Version: v120
IP Address: 172.16.123.129 MAC Address: 00-0D-E0-92-...
Communication State: MQTT(Connected) Alias Name: N/A

IP Address Settings

Device IP Settings	Current	Updated	Comment
Address Type	Static IP	Static IP	Dynamic or Static IP(Default)
Static IP Address	172.16.123.129	192.168.255.109	Default= 192.168.255.100
Subnet Mask	255.240.0.0	255.255.0.0	Default= 255.255.0.0
Gateway	172.18.0.254	192.168.255.254	Default= 192.168.255.254

Communication Settings

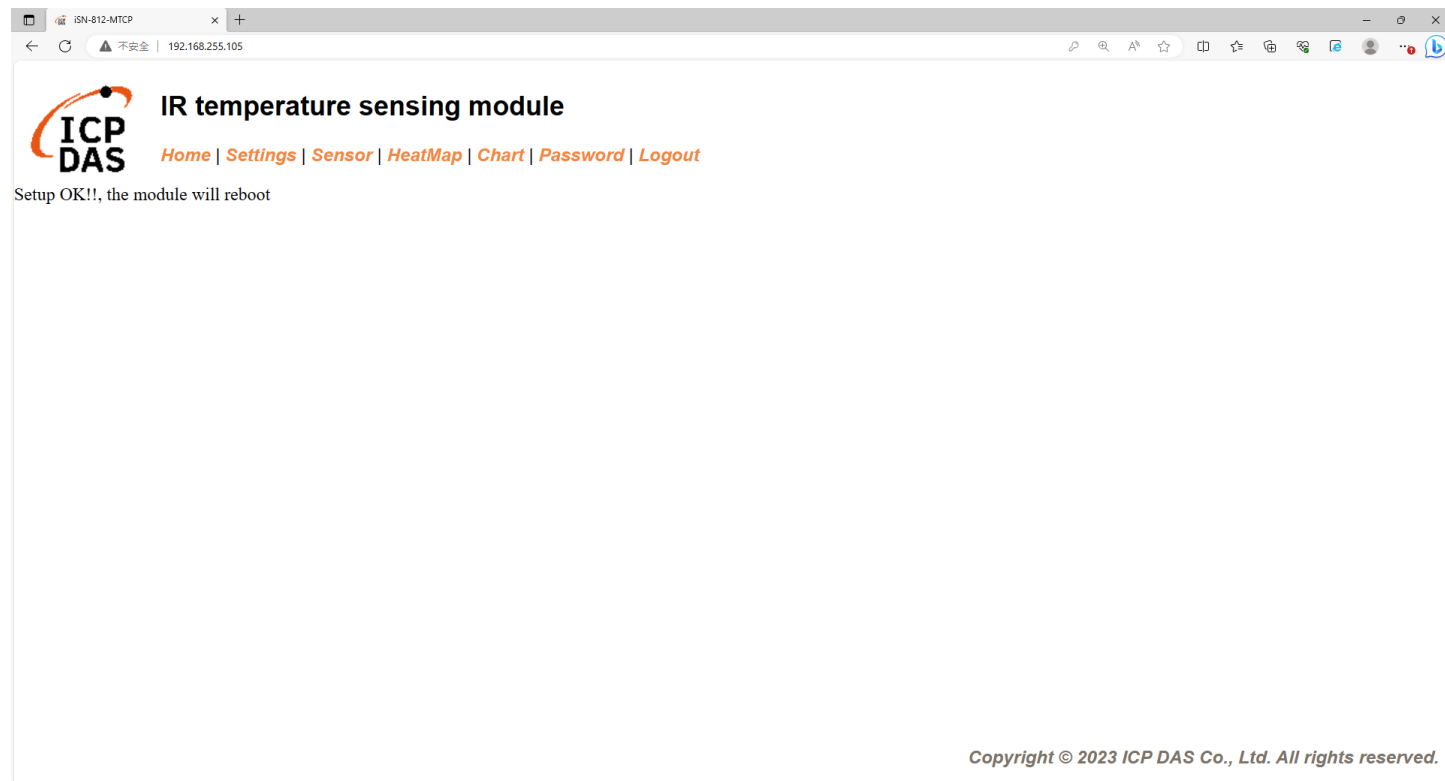
Communication	Current	Updated	Comment
Mode	MQTT client	MQTT client	Modbus TCP(Default), REST
Broker URI	172.16.123.124	192.168.255.103	e.g. www.server.com or 19.16.168.255.1
Broker port	1883	1883	Default= 1883
Reconnection interval	10	10	10 ~ 120 seconds, 10=default
Keep alive interval	30	30	10 ~ 120 seconds, 30=default
[Publish] interval	10	10	10 ~ 120 seconds, 10=default
QoS	0	0	0 - At most once 1 - At least once 2 - Exactly once 0=default
Last Will	Disable	Disable	Enable/Disable Last Will
Authentication	Disable	Disable	Enable/Disable Authentication

Client ID: iSN812_920002
Publish Topic: IR/Temp/iSN812_920002
JSON Format: {"macno": MAC number
"model": model name

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➤ Configuring iSN-81x-MTCP as a MQTT client

- Wait for reboot



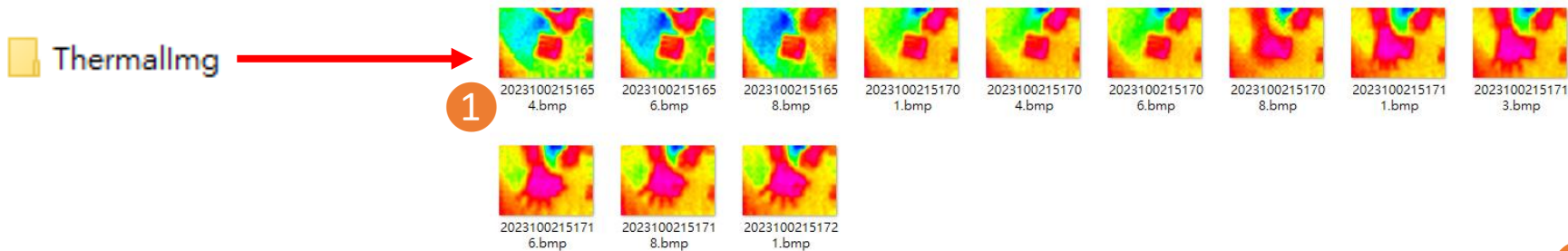
➤ Configuring iSN-81x-MTCP as a MQTT client

- If the connection is successful, iSN-81x-MTCP will publish data to broker.
- topic:IR/Temp/(model)_(mac). Ex:IR/Temp/ISN812_920002.

```
[14:59:51 INF] Successfully connected.  
macno: 00-0D-E0-92-00-02  
model: iSN-812-MTCP  
macno: 00-0D-E0-92-00-02  
model: iSN-812-MTCP  
macno: 00-0D-E0-92-00-02  
model: iSN-812-MTCP  
macno: 00-0D-E0-92-00-02  
model: iSN-812-MTCP
```

➤ Configuring iSN-81x-MTCP as a MQTT client

- After receiving the data, two files will be generated, one is the DB file and the other is the thermal image.



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

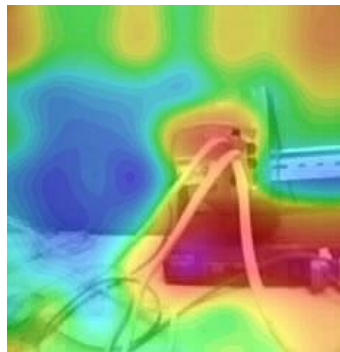
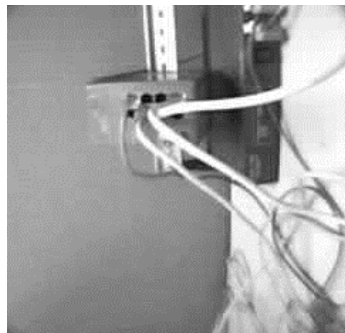
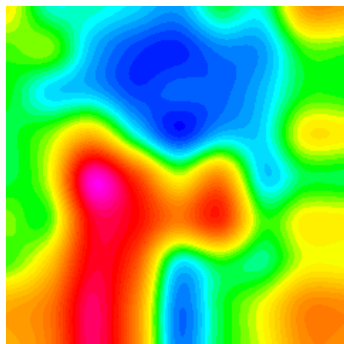
➤ Change the name of the data table

- If you want to change the file name of DB file, open “Program.cs” find the function “OnAppMessage”, and then edit the value “dbname”.

```
public static void OnAppMessage(MqttApplicationMessageReceivedEventArgs obj)
{
    //Log.Logger.Information("MSG:" + Encoding.UTF8.GetString(obj.ApplicationMessage.Payload));
    if (obj.ApplicationMessage.Payload != null && obj.ApplicationMessage.Payload.Length > 0)
    {
        string dbname = "irdata_icpdas.db";
        string _connectionString = $"Data Source={dbname}";
```

- Change the transparency of a composite (for iSN-811C-MTCP)
- If you want to adjust the transparency of the composite image, open “Program.cs” find the function “MergeImg”, and then edit the value “transparencyIR” and “transparencyCrop”.

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



02

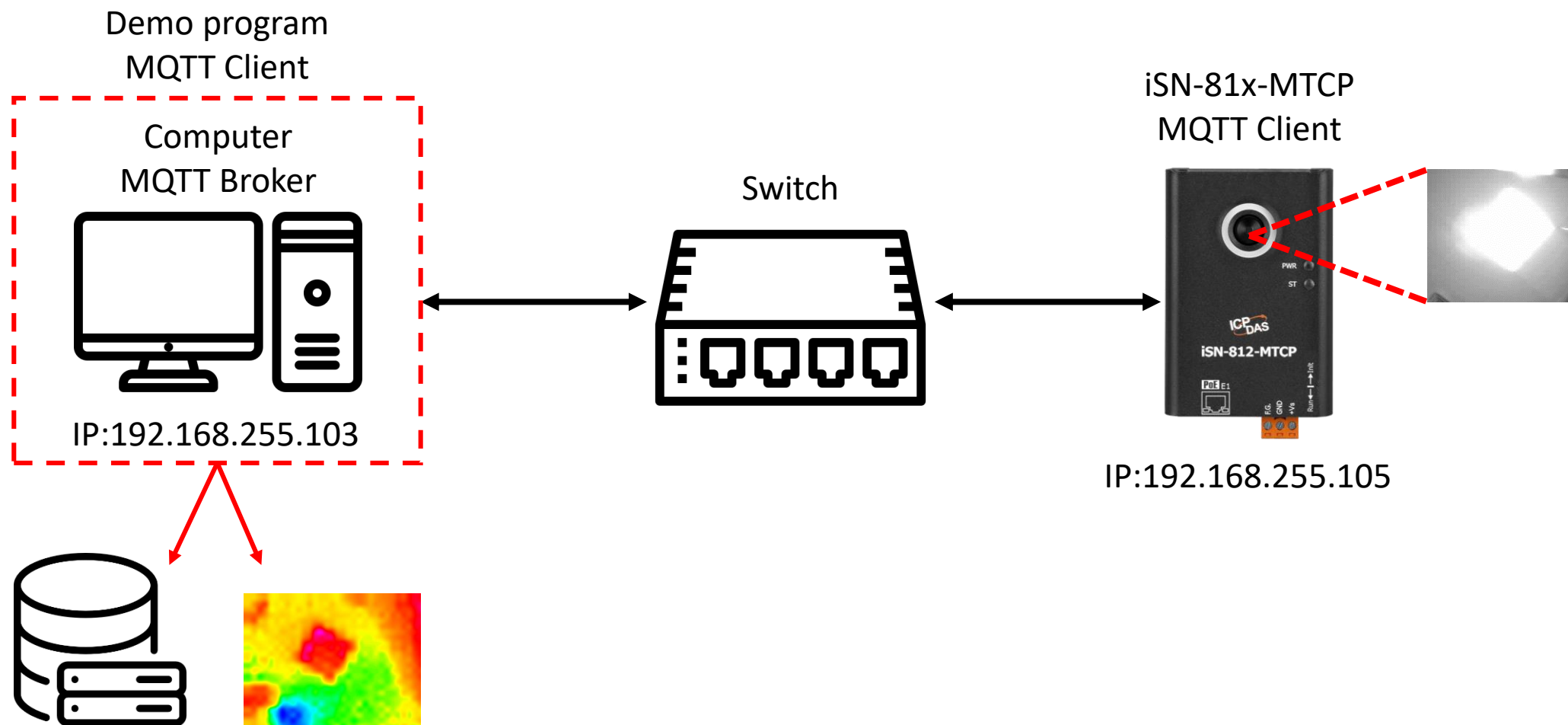
iSN-81x-MTCP MQTT_Node.js

- Sample programs provide different programming languages for your reference, and you can obtain the following data through the demo programs :
 - Thermal image
 - Data measurement time
 - MAC Address of iSN-81x-MTCP
 - Model
 - IR data
 - Thermal image storage path
- The sample program uses SQLite to store measurement data, and you can change the database by yourself, such as MySQL, SQL Server, etc.

- Pre-install

- npm install sqlite3
- npm install mqtt
- npm install sharp
- npm install jimp

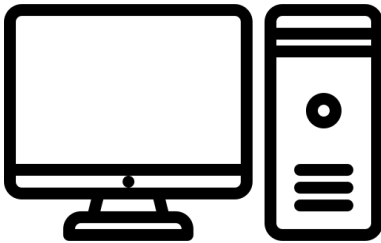
➤ Configuring iSN-81x-MTCP as a MQTT client



➤ Configuring iSN-81x-MTCP as a MQTT client

- The sample program needs to connect to Broker, Broker's IP=192.168.255.103, open "mqtt_client.js" and find the value "BrokerURI" and edit the value.
- Click "start.bat" to connect to broker

MQTT Broker



IP:192.168.255.103



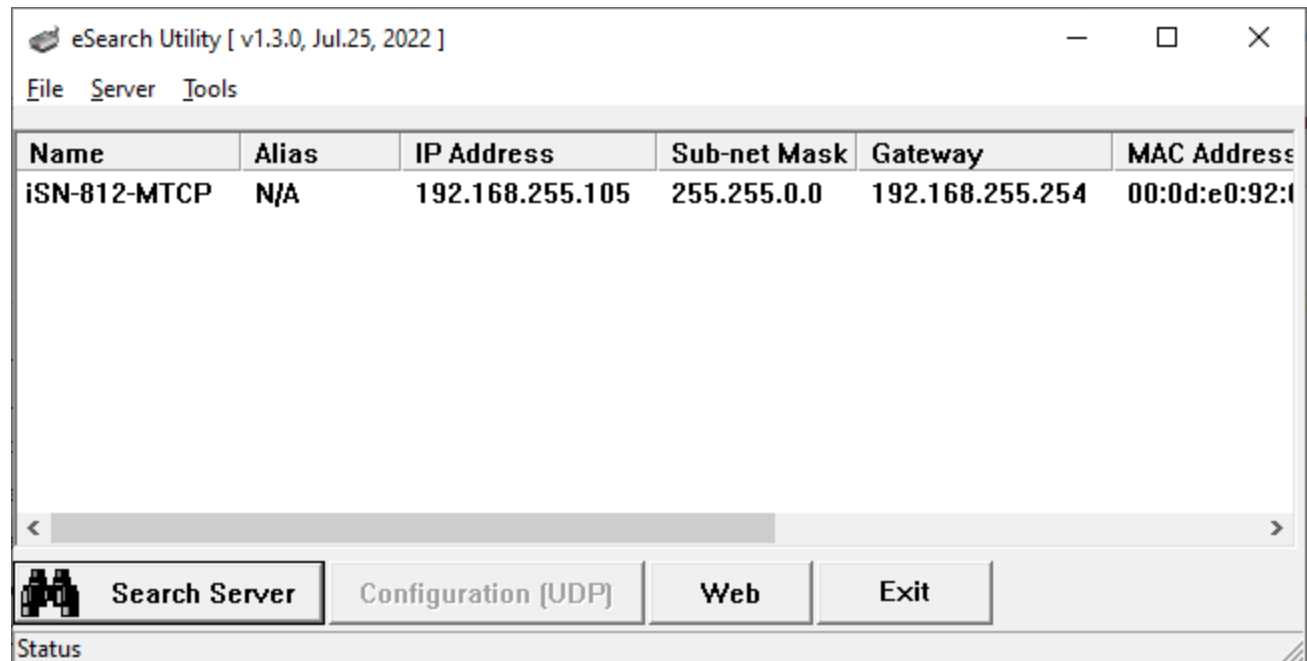
```
const BrokerURI = "192.168.255.103";
```

.vs	23/09/2023 14:36	File folder	
lib	23/09/2023 14:10	File folder	
node_modules	23/09/2023 14:26	File folder	
Demo_MQTT_NodeJs.pptx	03/10/2023 17:06	Microsoft PowerP...	1,249 KB
irdata_handler.js	03/10/2023 09:45	JS File	4 KB
mqtt_client.js	03/10/2023 17:04	JS File	2 KB
package.json	23/09/2023 14:26	JSON File	1 KB
package-lock.json	23/09/2023 14:26	JSON File	87 KB
start.bat	08/08/2023 13:52	Windows Batch File	1 KB

```
D:\_O_CODE\IR\Demo\MQTT\NodeJs>cd /d D:\_O_CODE\IR\Demo\MQTT\NodeJs\  
D:\_O_CODE\IR\Demo\MQTT\NodeJs>mqtt_client.js  
Connected to MQTT broker: 192.168.255.103  
Subscribed to topic: IR/Temp/#
```

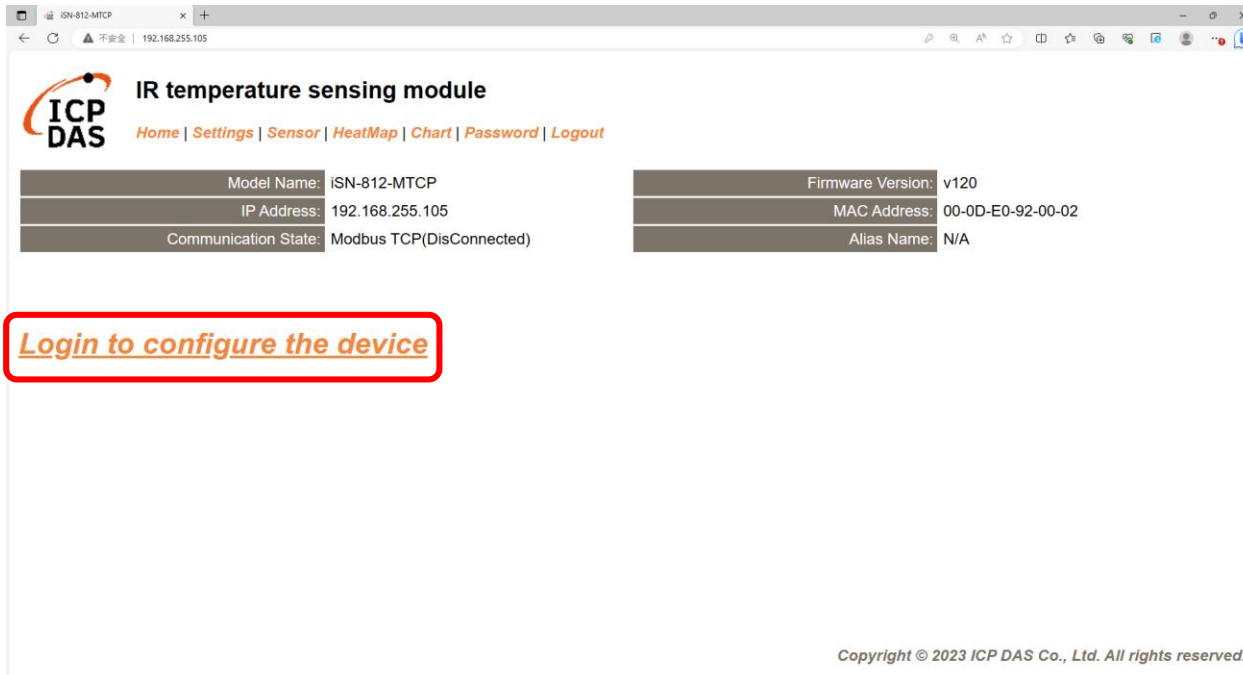
➤ Configuring iSN-81x-MTCP as a MQTT client

- Use eSearch to find iSN-81x-MTCP
- Open the web of iSN-81x-MTCP



➤ Configuring iSN-81x-MTCP as a MQTT client

- Click "Login to configure the device" to login



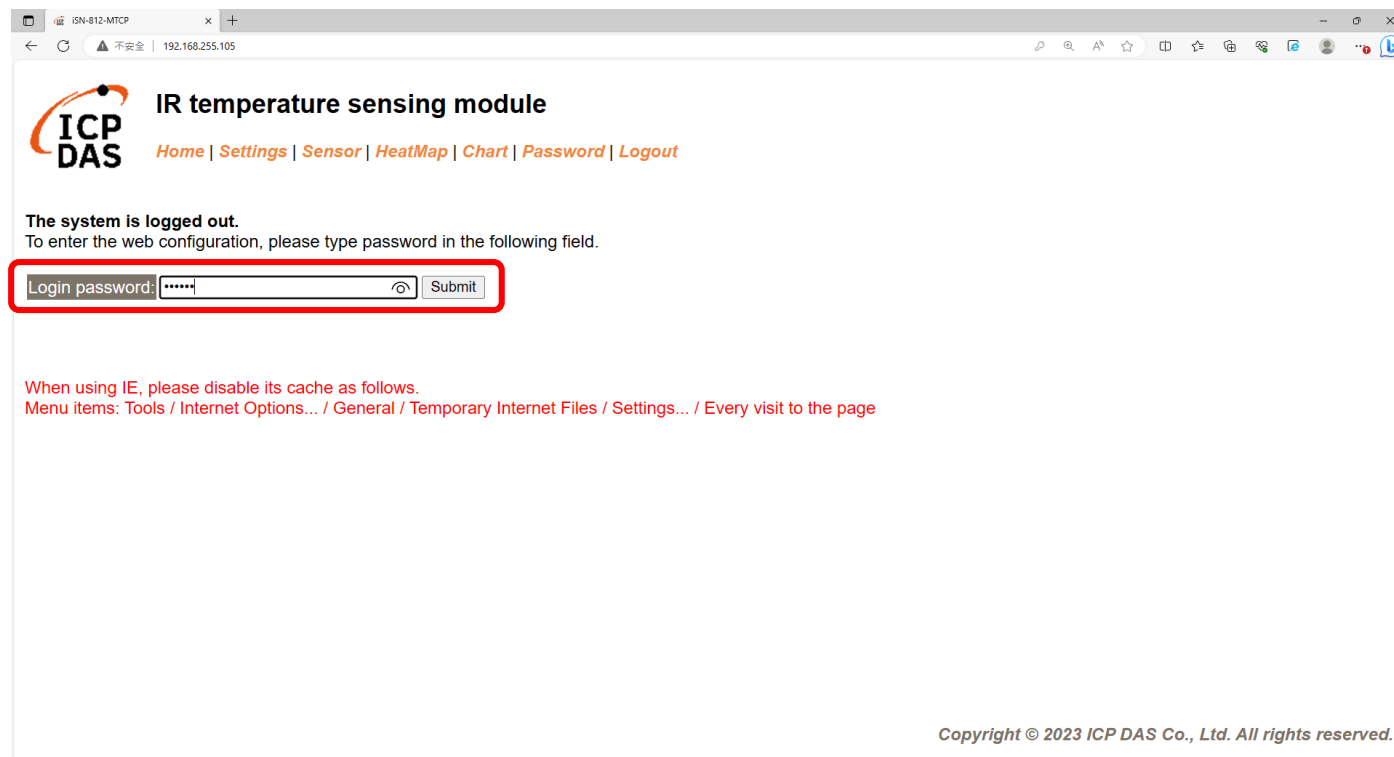
The screenshot shows the web interface for the iSN-812-MTCP device. The page title is "IR temperature sensing module" and the ICP DAS logo is visible. The navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The device information is displayed in a table:

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

Below the table, the text "Login to configure the device" is highlighted with a red rectangular border. At the bottom of the page, the copyright notice reads: "Copyright © 2023 ICP DAS Co., Ltd. All rights reserved."

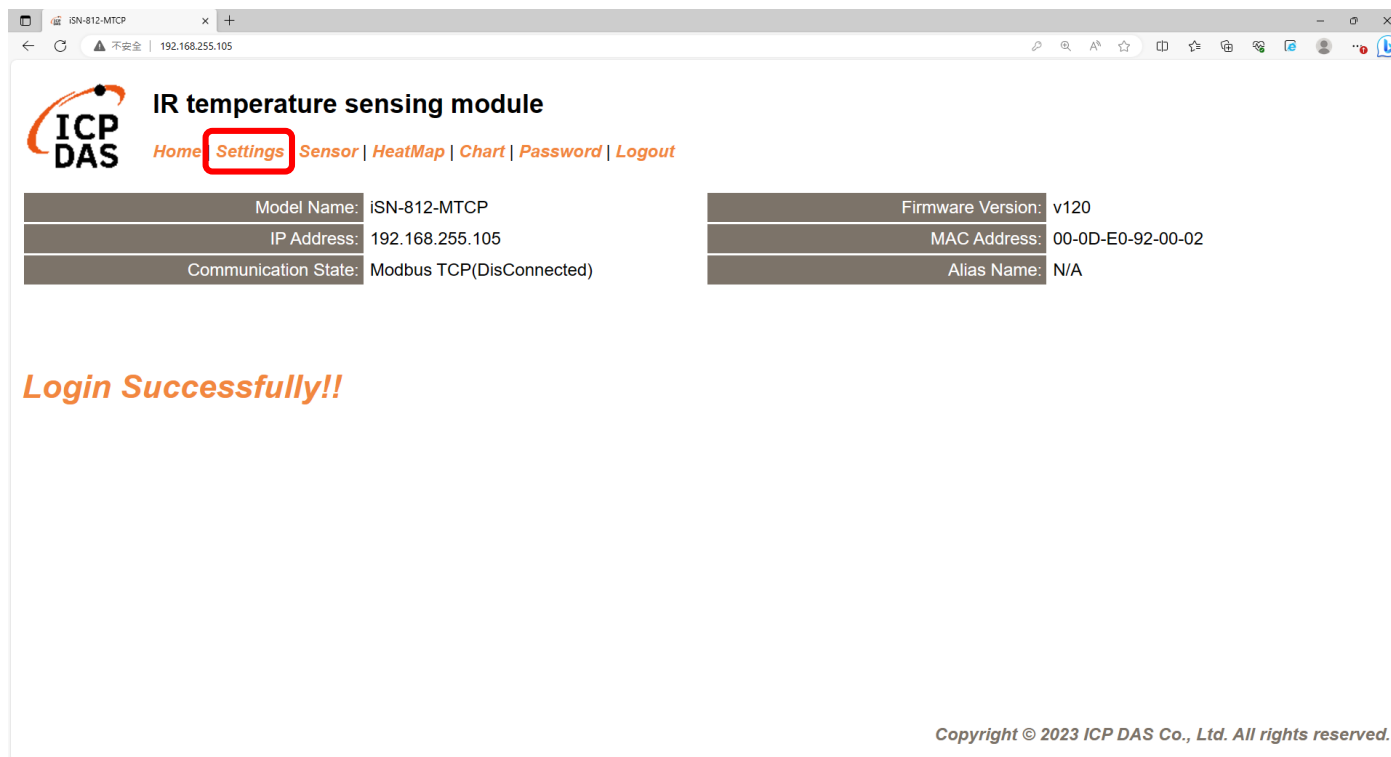
➤ Configuring iSN-81x-MTCP as a MQTT client

- Login(default password: admin)



➤ Configuring iSN-81x-MTCP as a MQTT client

- Click "Settings" to set communication mode



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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➤ Configuring iSN-81x-MTCP as a MQTT client

- Set communication mode to “MQTT client”

The screenshot shows the web interface for the iSN-81x-MTCP device. The page title is "IR temperature sensing module" with the ICP DAS logo. The browser address bar shows the URL "192.168.255.105".

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	<input type="text" value="192.168.255.105"/>	Default= 192.168.255.100
Subnet Mask:	255.255.0.0	<input type="text" value="255.255.0.0"/>	Default= 255.255.0.0
Gateway:	192.168.0.254	<input type="text" value="192.168.0.254"/>	Default= 192.168.255.254

Communication Settings

Communication	Current	Updated	Comment
Mode:	Modbus TCP	<div style="border: 2px solid red; padding: 2px;">Modbus TCP ▾ Modbus TCP RESTful API MQTT client</div>	Modbus TCP(Default), RESTful API or MQTT

General Settings

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

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➤ Configuring iSN-81x-MTCP as a MQTT client

- Set the parameter follow Broker's IP, and update settings

IR temperature sensing module
Home | Settings | Sensor | HeatMap | Chart | Password | Logout

Model Name: iSN-81x-MTCP
IP Address: 172.16.123.129
Communication State: MQTT(Connected)

Firmware Version: v120
MAC Address: 00-0D-E0-92-...
Alias Name: N/A

IP Address Settings

Device IP Settings	Current	Updated	Comment
Address Type	Static IP	Static IP	Dynamic or Static IP(Default)
Static IP Address	172.16.123.129	192.168.255.109	Default= 192.168.255.100
Subnet Mask	255.240.0.0	255.255.0.0	Default= 255.255.0.0
Gateway	172.18.0.254	192.168.255.254	Default= 192.168.255.254

Communication Settings

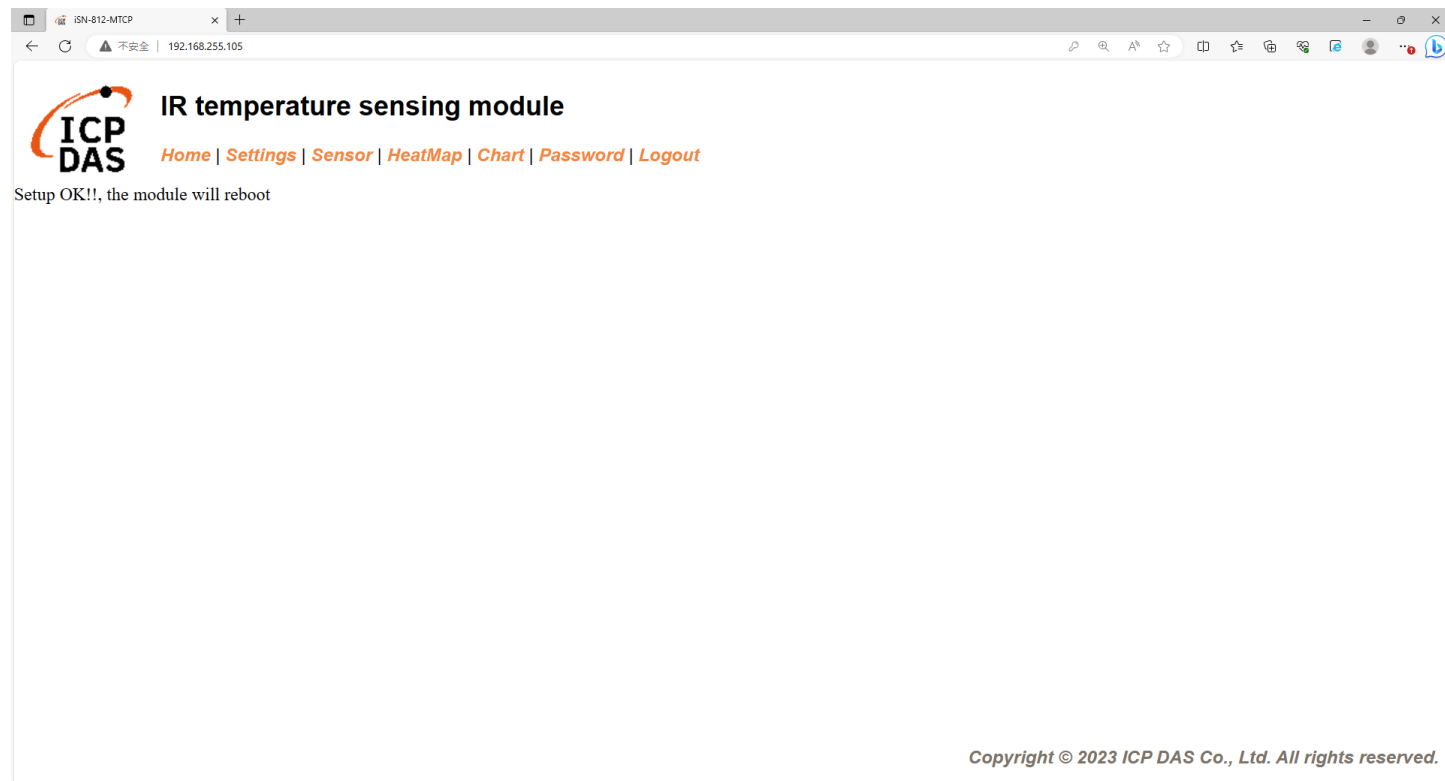
Communication	Current	Updated	Comment
Mode	MQTT client	MQTT client	Modbus TCP(Default), REST
Broker URI	172.16.123.124	192.168.255.103	e.g. www.server.com or 19.16.168.255.1
Broker port	1883	1883	Default= 1883
Reconnection interval	10	10	10 ~ 120 seconds, 10=default
Keep alive interval	30	30	10 ~ 120 seconds, 30=default
[Publish] interval	10	10	10 ~ 120 seconds, 10=default
QoS	0	0	0 - At most once 1 - At least once 2 - Exactly once 0=default
Last Will	Disable	Disable	Enable/Disable Last Will
Authentication	Disable	Disable	Enable/Disable Authentication

Client ID: iSN812_920002
Publish Topic: IR/Temp/iSN812_920002
JSON Format: {"macno": MAC number
"model": model name

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➤ Configuring iSN-81x-MTCP as a MQTT client

- Wait for reboot

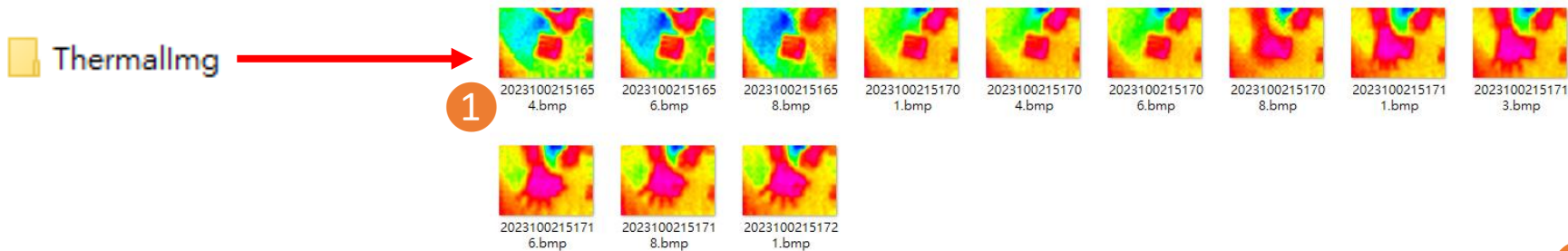


- Configuring iSN-81x-MTCP as a MQTT client
- If the connection is successful, iSN-81x-MTCP will publish data to broker.
- Topic:IR/Temp/(model)_(mac). Ex:IR/Temp/ISN812_920002.

```
D:\0_CODE\IR\Demo\MQTT\nodeJs>cd /d D:\0_CODE\IR\Demo\MQTT\nodeJs\  
D:\0_CODE\IR\Demo\MQTT\nodeJs>mqtt_client.js  
Connected to MQTT broker: 192.168.255.103  
Subscribed to topic: IR/Temp/#  
Data inserted OK  
Data inserted OK  
Data inserted OK
```

➤ Configuring iSN-81x-MTCP as a MQTT client

- After receiving the data, two files will be generated, one is the DB file and the other is the thermal image.



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

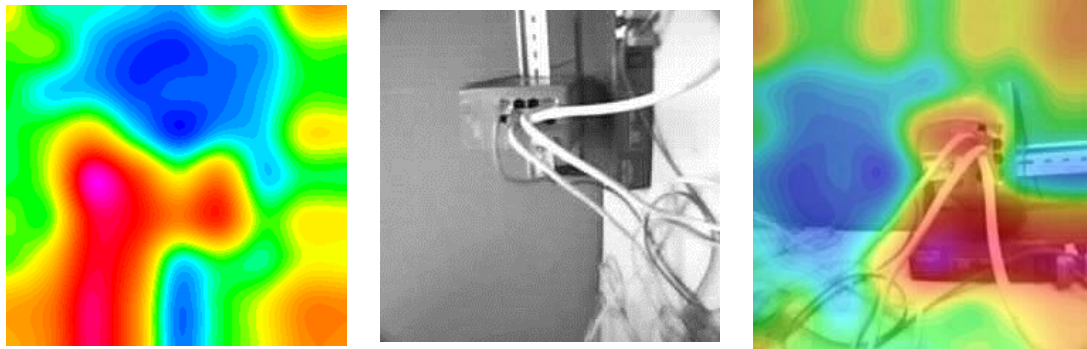
➤ Change the name of the data table

- If you want to change the file name of DB file, open “irdata_handler.js” find the value “dbPath”, and then edit the value.

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

- Change the transparency of a composite (for iSN-811C-MTCP)
- If you want to adjust the transparency of the composite image, please open "Reallmg.js" to find the code in the picture below, and then edit the code.

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



03

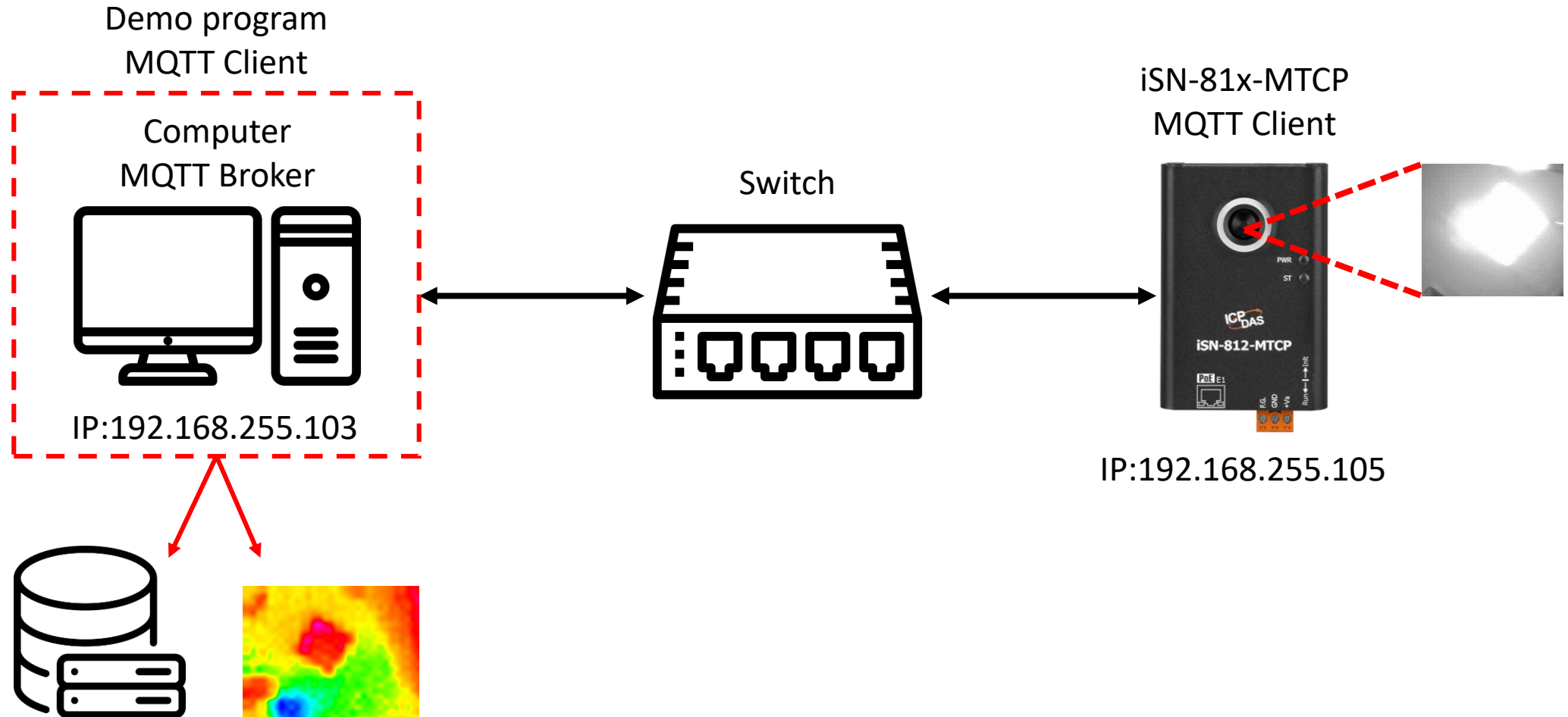
iSN-81x-MTCP MQTT_Python

- Sample programs provide different programming languages for your reference, and you can obtain the following data through the demo programs :
 - Thermal image
 - Data measurement time
 - MAC Address of iSN-81x-MTCP
 - Model
 - IR data
 - Thermal image storage path
- The sample program uses SQLite to store measurement data, and you can change the database by yourself, such as MySQL, SQL Server, etc.

- Pre-install

- pip install paho-mqtt
- pip install numpy
- pip install opencv-python

➤ Configuring iSN-81x-MTCP as a MQTT client



➤ Configuring iSN-81x-MTCP as a MQTT client

- The sample program needs to connect to Broker, Broker's IP=192.168.255.103, open "Subscribe.py" and find the value "BrokerURI" and edit the value.
- Click "start.bat" to connect to broker

MQTT Broker



IP:192.168.255.103



```
BrokerURI = "192.168.255.103"
```

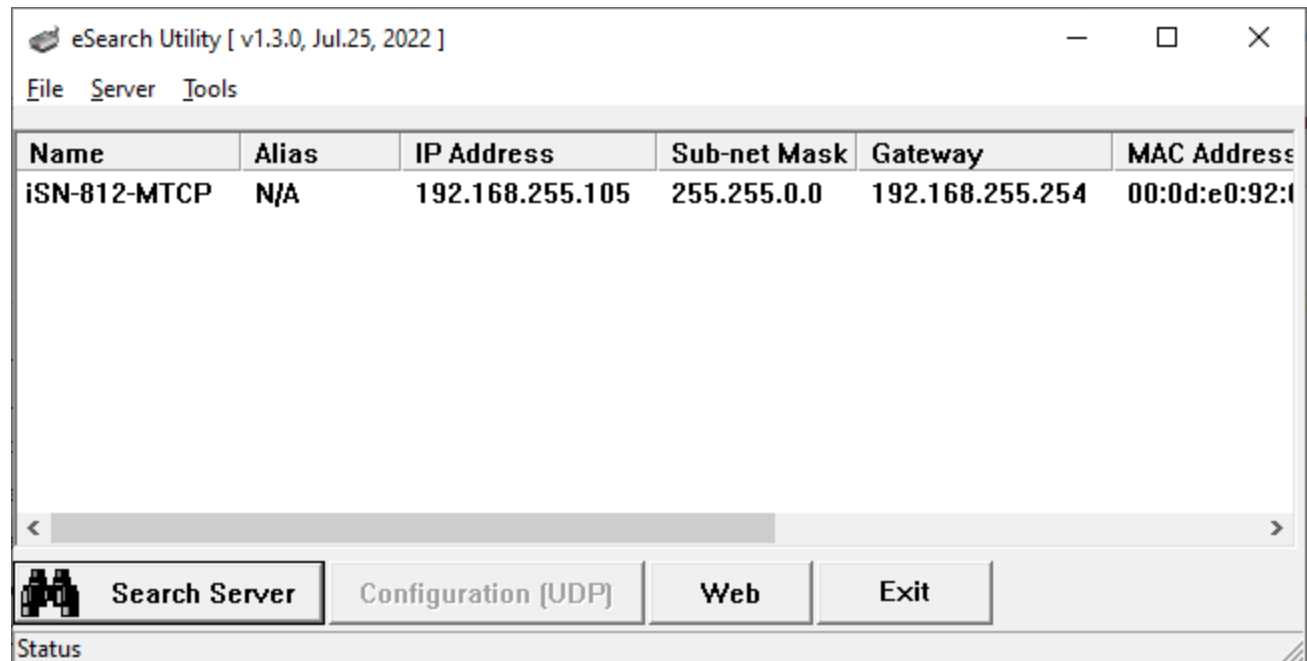
.vs	21/09/2023 11:54	File folder
__pycache__	03/10/2023 10:26	File folder
lib	21/09/2023 11:52	File folder
Demo_MQTT_Python.pptx	03/10/2023 17:25	Microsoft PowerP...
irdata_handler.py	03/10/2023 09:45	Python File
Pre-Install.txt	21/09/2023 11:56	Text Document
Publish.py	03/10/2023 17:26	Python File
start.bat	04/08/2023 15:05	Windows Batch File
Subscribe.py	03/10/2023 17:26	Python File



```
D:\0_CODE\IR\Demo\MQTT\Python>Subscribe.py  
Connected to 192.168.255.103 with result code 0  
Subscribe Topic: IR/Temp/#
```

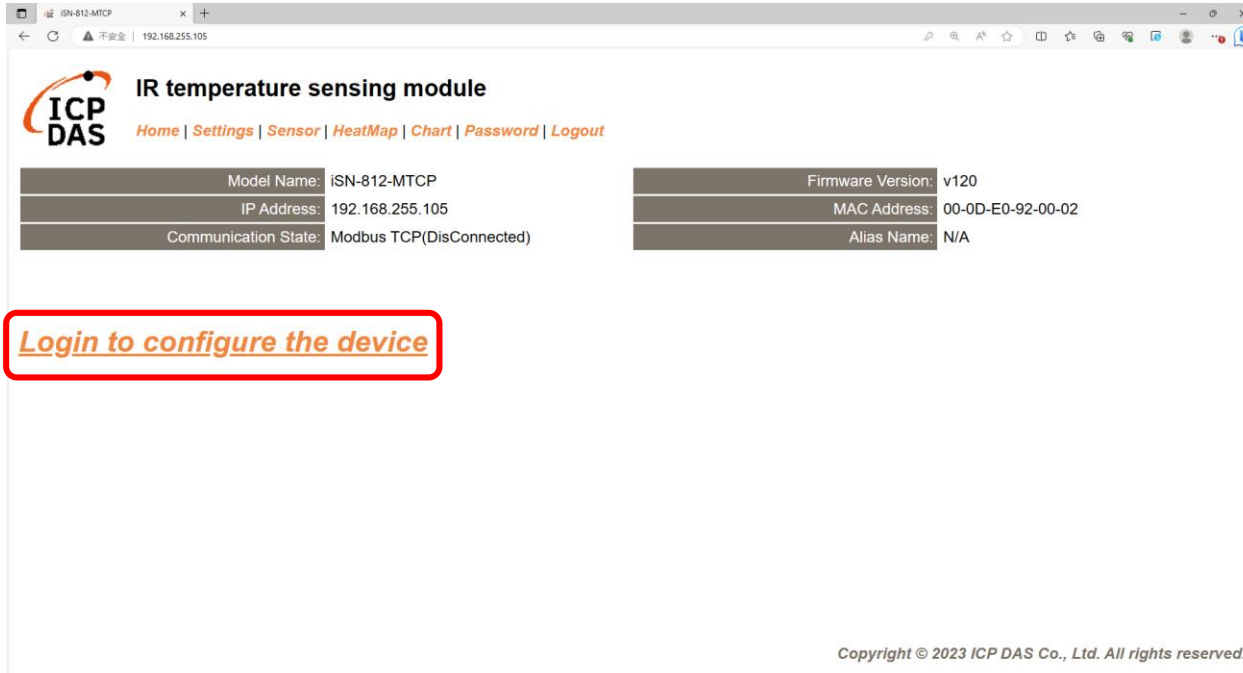
➤ Configuring iSN-81x-MTCP as a MQTT client

- Use eSearch to find iSN-81x-MTCP
- Open the web of iSN-81x-MTCP



➤ Configuring iSN-81x-MTCP as a MQTT client

- Click "Login to configure the device" to login



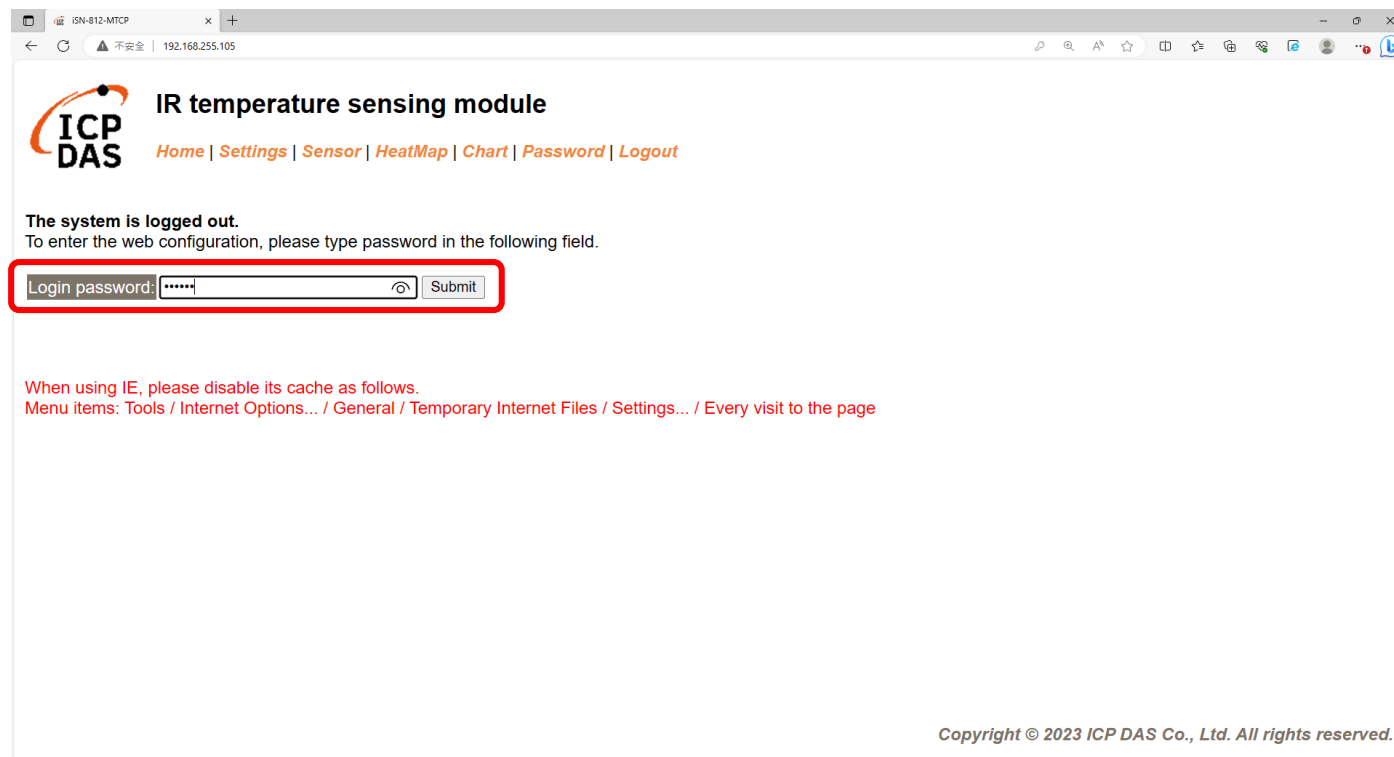
The screenshot shows a web browser window displaying the ICP DAS web interface for an IR temperature sensing module. The page title is "IR temperature sensing module" and the ICP DAS logo is visible. The navigation menu includes "Home", "Settings", "Sensor", "HeatMap", "Chart", "Password", and "Logout". The device information is displayed in a table:

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

Below the device information, the text "Login to configure the device" is highlighted with a red box. At the bottom of the page, the copyright notice reads: "Copyright © 2023 ICP DAS Co., Ltd. All rights reserved."

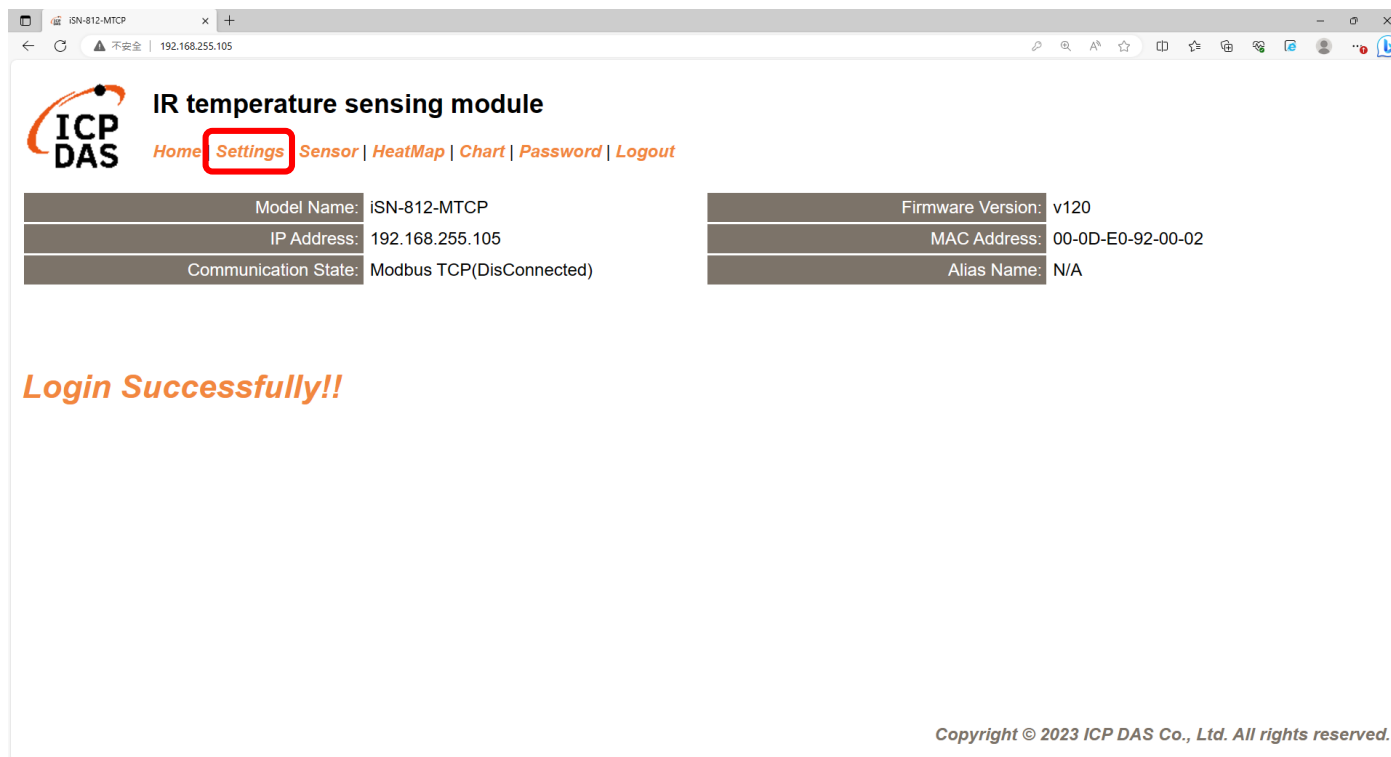
➤ Configuring iSN-81x-MTCP as a MQTT client

- Login(default password: admin)



➤ Configuring iSN-81x-MTCP as a MQTT client

- Click "Settings" to set communication mode



ICP DAS IR temperature sensing module

Home **Settings** Sensor | HeatMap | Chart | Password | Logout

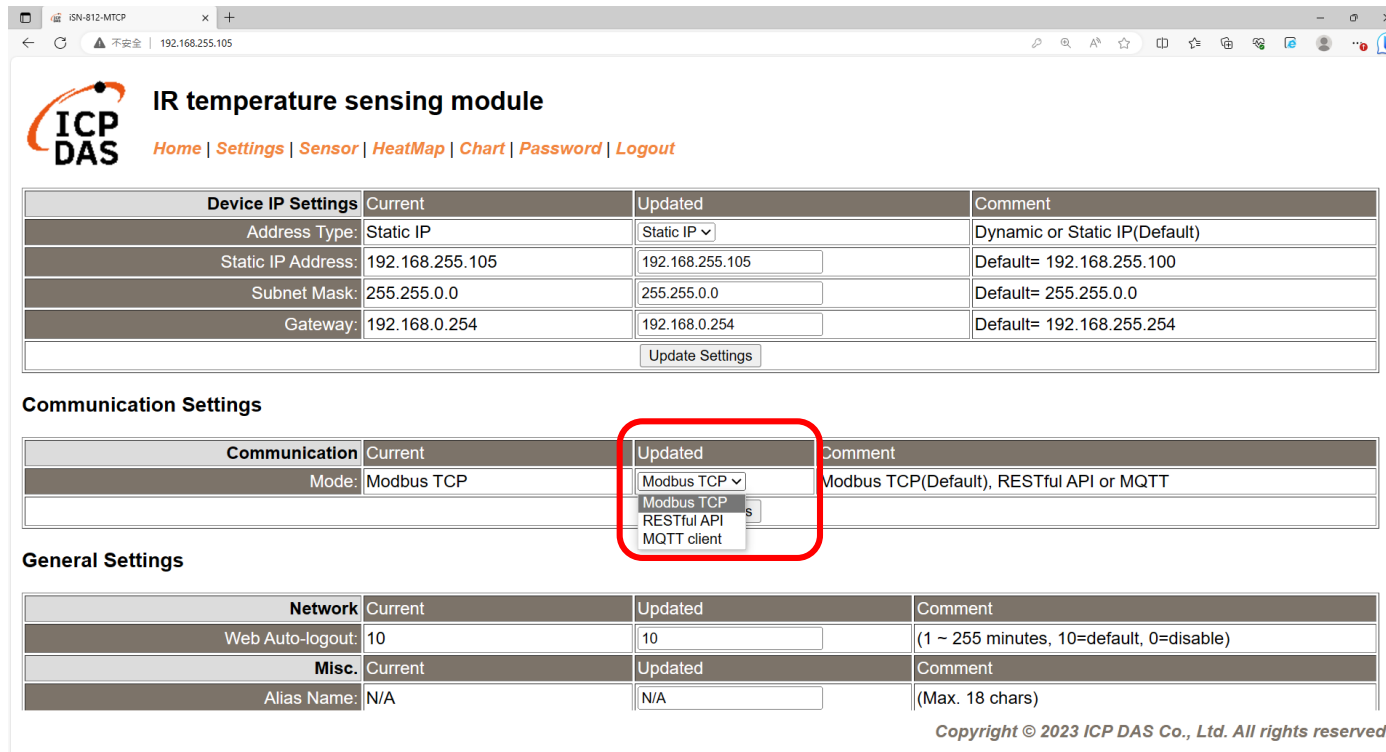
Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Login Successfully!!

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➤ Configuring iSN-81x-MTCP as a MQTT client

- Set communication mode to “MQTT client”



The screenshot displays the web interface for an IR temperature sensing module. The page title is "IR temperature sensing module" and the logo is "ICP DAS". The navigation menu includes "Home", "Settings", "Sensor", "HeatMap", "Chart", "Password", and "Logout".

The "Device IP Settings" section contains a table with the following data:

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

The "Communication Settings" section contains a table with the following data:

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

The "Updated" dropdown menu is open, showing the following options: Modbus TCP, Modbus TCP, RESTful API, and MQTT client. The "MQTT client" option is highlighted with a red box.

The "General Settings" section contains a table with the following data:

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

The "Misc." section contains a table with the following data:

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

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➤ Configuring iSN-81x-MTCP as a MQTT client

- Set the parameter follow Broker's IP, and update settings

IR temperature sensing module
Home | Settings | Sensor | HeatMap | Chart | Password | Logout

Model Name: iSN-81x-MTCP
IP Address: 172.16.123.129
Communication State: MQTT(Connected)

Firmware Version: v120
MAC Address: 00-0D-E0-92-...
Alias Name: N/A

IP Address Settings

Device IP Settings	Current	Updated	Comment
Address Type	Static IP	Static IP	Dynamic or Static IP(Default)
Static IP Address	172.16.123.129	192.168.255.109	Default= 192.168.255.100
Subnet Mask	255.240.0.0	255.255.0.0	Default= 255.255.0.0
Gateway	172.18.0.254	192.168.255.254	Default= 192.168.255.254

Communication Settings

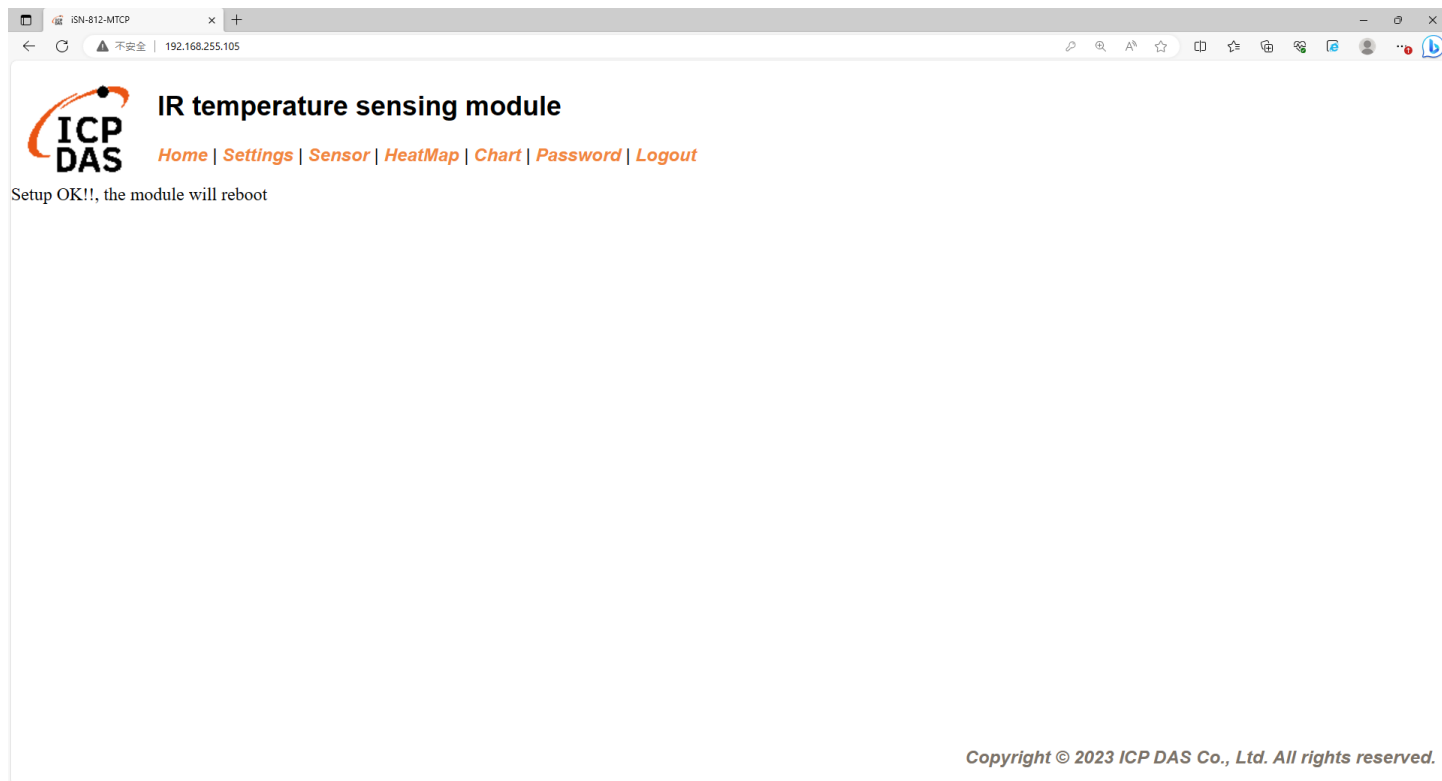
Communication	Current	Updated	Comment
Mode	MQTT client	MQTT client	Modbus TCP(Default), REST
Broker URI	172.16.123.124	192.168.255.103	e.g. www.server.com or 19.16.168.255.1
Broker port	1883	1883	Default= 1883
Reconnection interval	10	10	10 ~ 120 seconds, 10=default
Keep alive interval	30	30	10 ~ 120 seconds, 30=default
[Publish] interval	10	10	10 ~ 120 seconds, 10=default
QoS	0	0	0 - At most once 1 - At least once 2 - Exactly once 0=default
Last Will	Disable	Disable	Enable/Disable Last Will
Authentication	Disable	Disable	Enable/Disable Authentication

Client ID: iSN812_920002
Publish Topic: IR/Temp/iSN812_920002
JSON Format: {"macno": MAC number
"model": model name

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➤ Configuring iSN-81x-MTCP as a MQTT client

- Wait for reboot



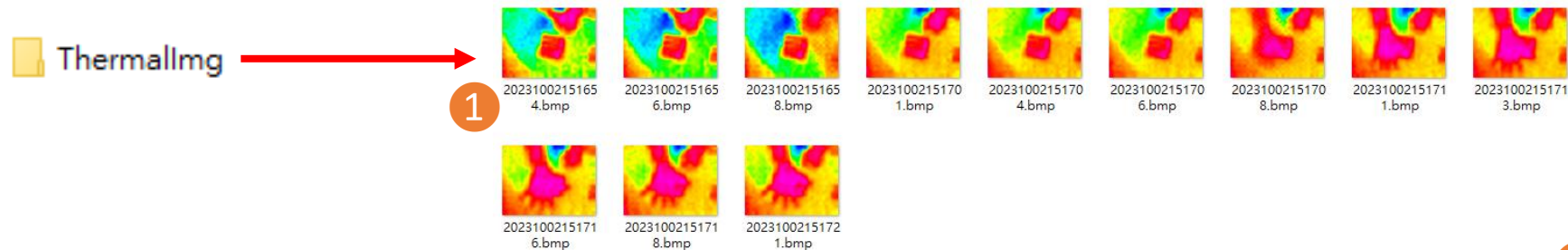
➤ Configuring iSN-81x-MTCP as a MQTT client

- If the connection is successful, iSN-81x-MTCP will publish data to broker.
- Topic:IR/Temp/(model)_(mac). Ex:IR/Temp/ISN812_920002.

```
D:\0_CODE\IR\Demo\MQTT\Python>Subscribe.py
Connected to 192.168.255.103 with result code 0
Subscribe Topic: IR/Temp/#
IR/Temp/ISN812_920002
Data inserted OK
IR/Temp/ISN812_920002
Data inserted OK
IR/Temp/ISN812_920002
Data inserted OK
```

➤ Configuring iSN-81x-MTCP as a MQTT client

- After receiving the data, two files will be generated, one is the DB file and the other is the thermal image.



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

➤ Change the name of the data table

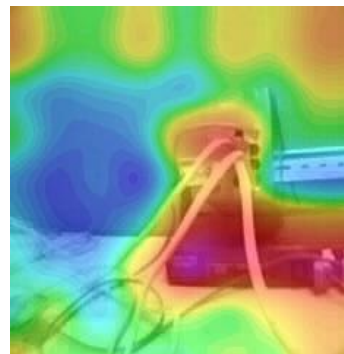
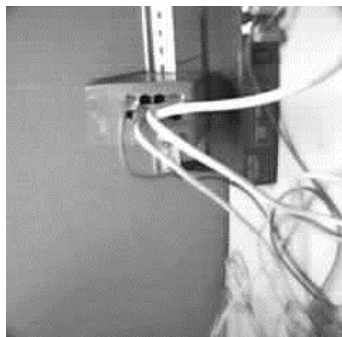
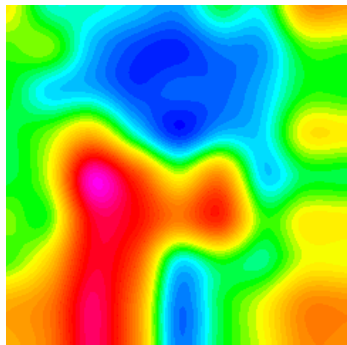
- If you want to change the file name of DB file, open “irdata_handler.py” find the value “conn”, and then edit the value.

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

➤ Change the transparency of a composite
(for iSN-811C-MTCP)

- If you want to adjust the transparency of the composite image, please open "Reallmg.py" to find the code in the picture below, and then edit the code.

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

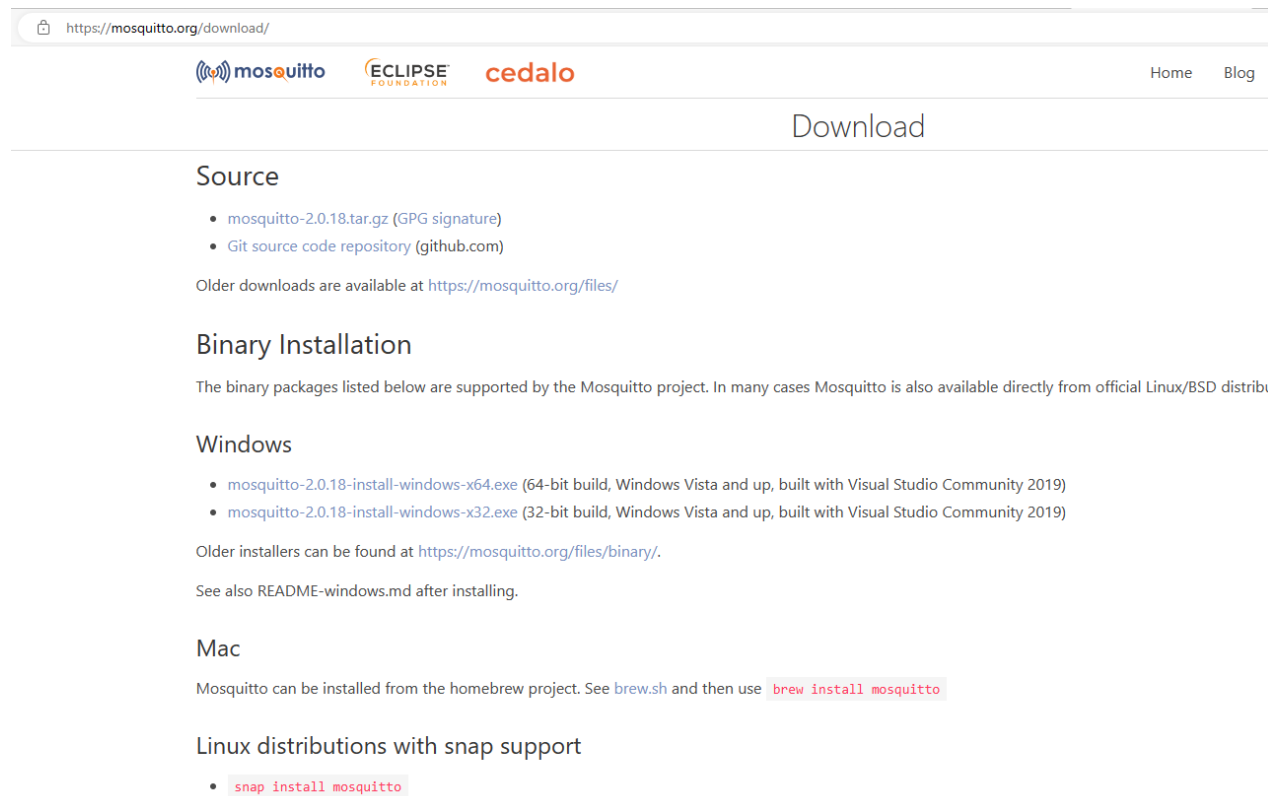


04

How to set up an MQTT server

➤ How to set up an MQTT server

• Install MQTT broker “mosquitto”



The screenshot shows the 'Download' page of the Mosquitto project. The browser address bar displays 'https://mosquitto.org/download/'. The page header includes logos for mosquitto, Eclipse Foundation, and cedalo, along with navigation links for 'Home' and 'Blog'. The main content is titled 'Download' and is organized into several sections: 'Source', 'Binary Installation', 'Windows', 'Mac', and 'Linux distributions with snap support'. Each section provides links to download files or source code, and includes terminal commands for installation.

https://mosquitto.org/download/

mosquitto ECLIPSE FOUNDATION cedalo Home Blog

Download

Source

- [mosquitto-2.0.18.tar.gz \(GPG signature\)](#)
- [Git source code repository \(github.com\)](#)

Older downloads are available at <https://mosquitto.org/files/>

Binary Installation

The binary packages listed below are supported by the Mosquitto project. In many cases Mosquitto is also available directly from official Linux/BSD distribu

Windows

- [mosquitto-2.0.18-install-windows-x64.exe \(64-bit build, Windows Vista and up, built with Visual Studio Community 2019\)](#)
- [mosquitto-2.0.18-install-windows-x32.exe \(32-bit build, Windows Vista and up, built with Visual Studio Community 2019\)](#)

Older installers can be found at <https://mosquitto.org/files/binary/>.

See also README-windows.md after installing.

Mac

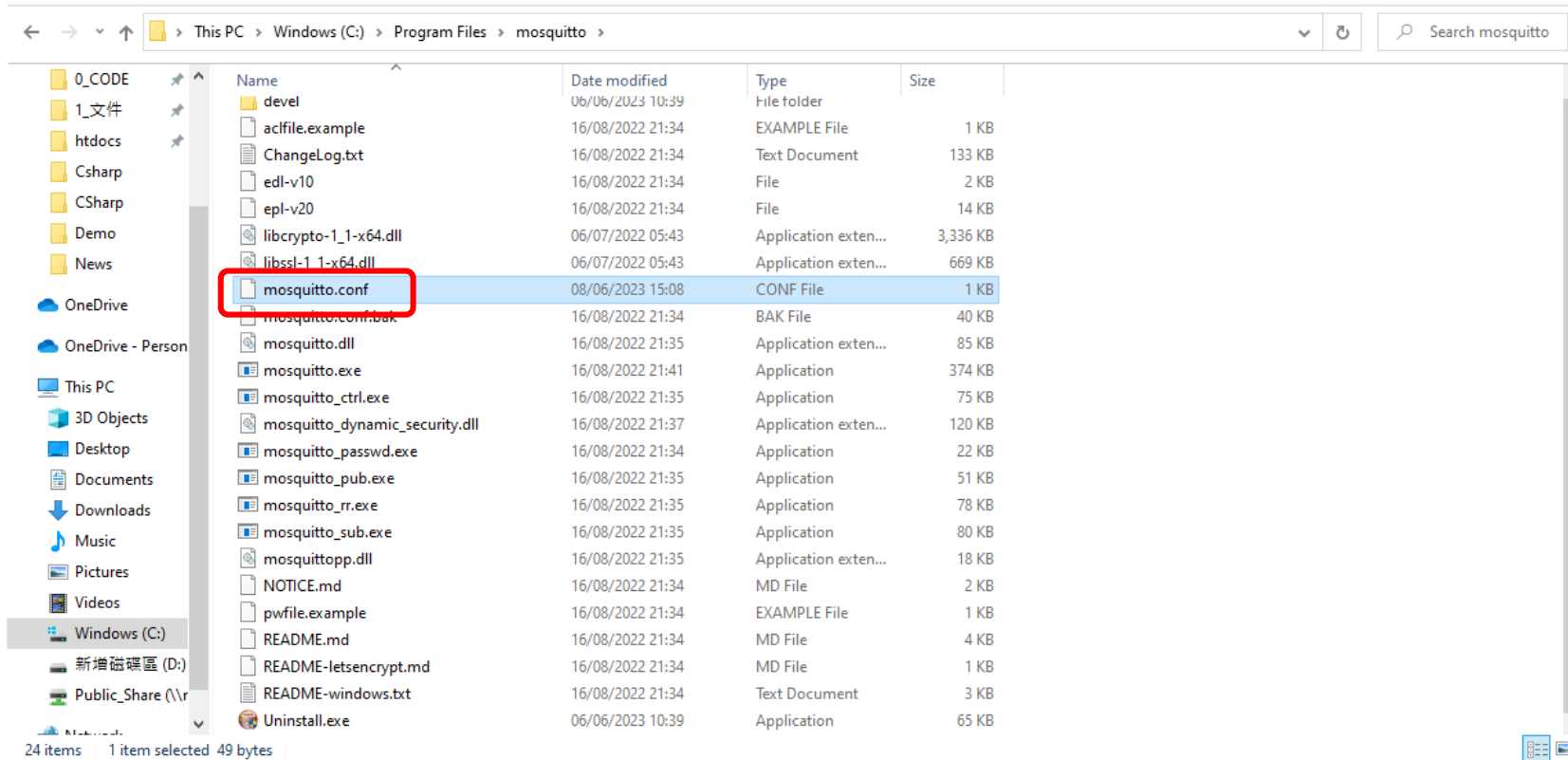
Mosquitto can be installed from the homebrew project. See [brew.sh](#) and then use `brew install mosquitto`

Linux distributions with snap support

- `snap install mosquitto`

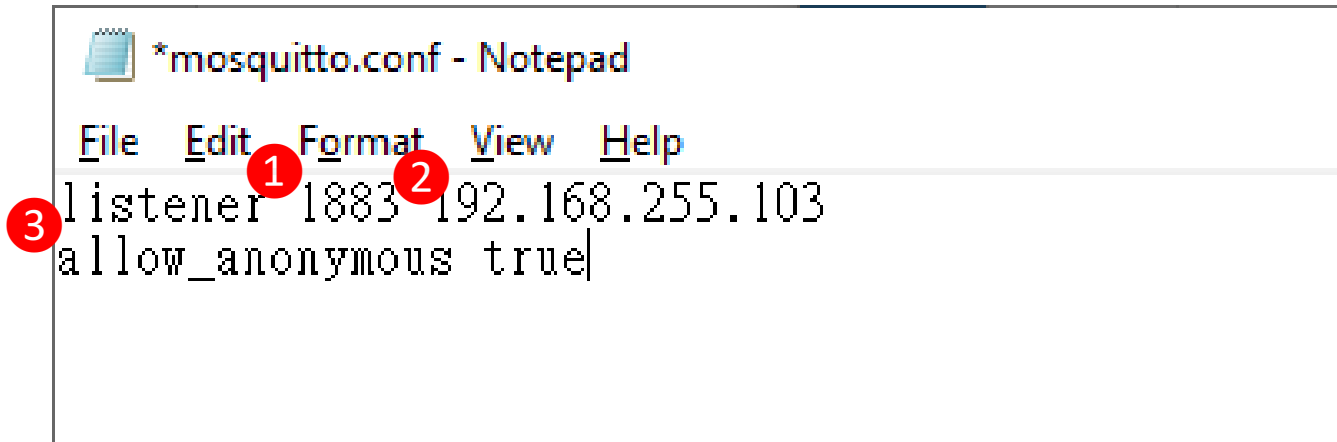
➤ How to set up an MQTT server

- Edit the conf file to allow external devices to connect to the broker



➤ How to set up an MQTT server

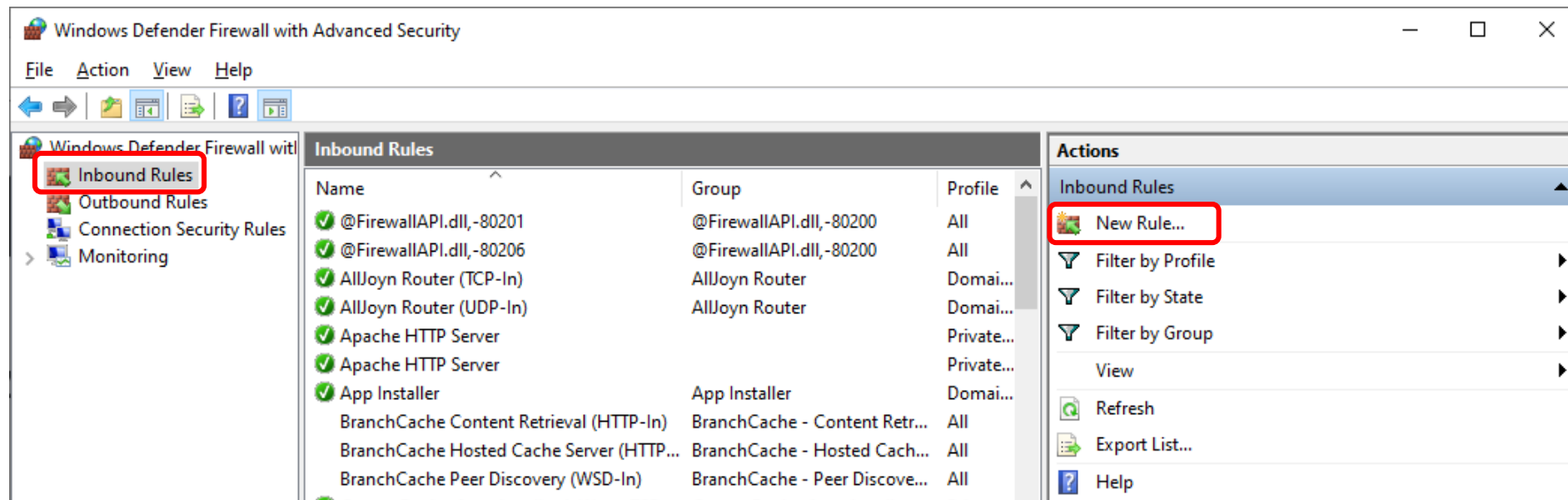
1. MQTT default port
2. Broker's IP
3. Allow external devices to connect to the broker



```
*mosquitto.conf - Notepad
File Edit Format View Help
listener 1883 192.168.255.103
allow_anonymous true
```

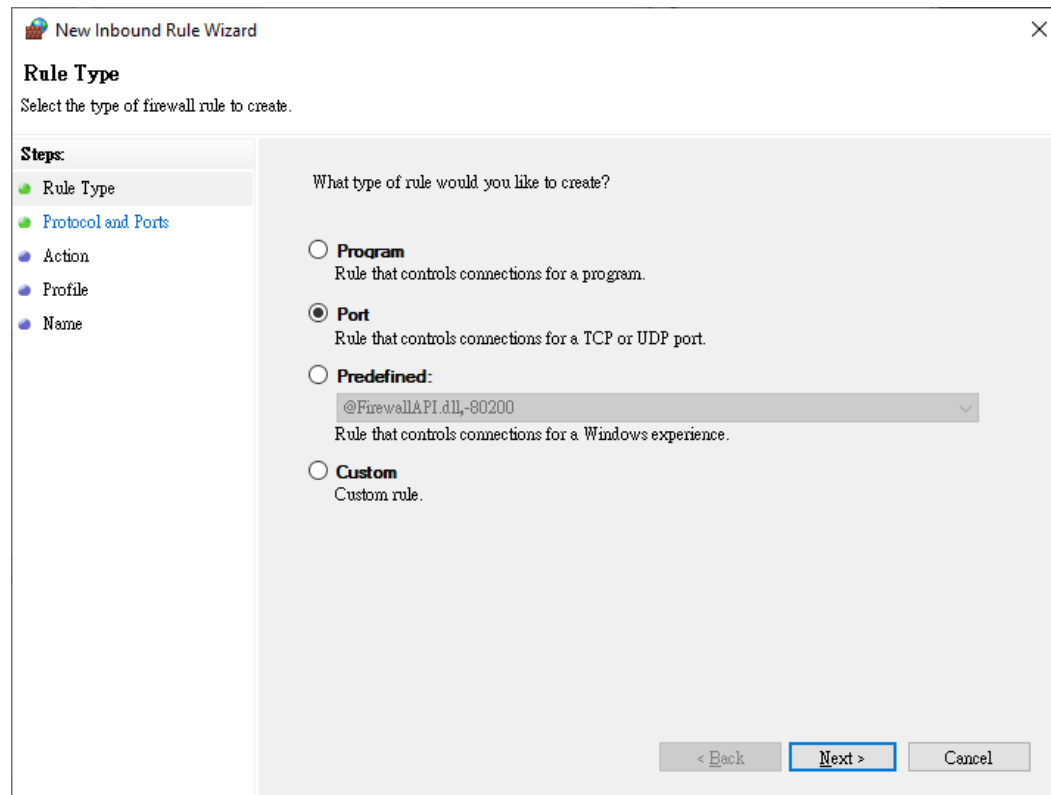
➤ How to set up an MQTT server

- Click “Inbound rules”, and then click “New rule”



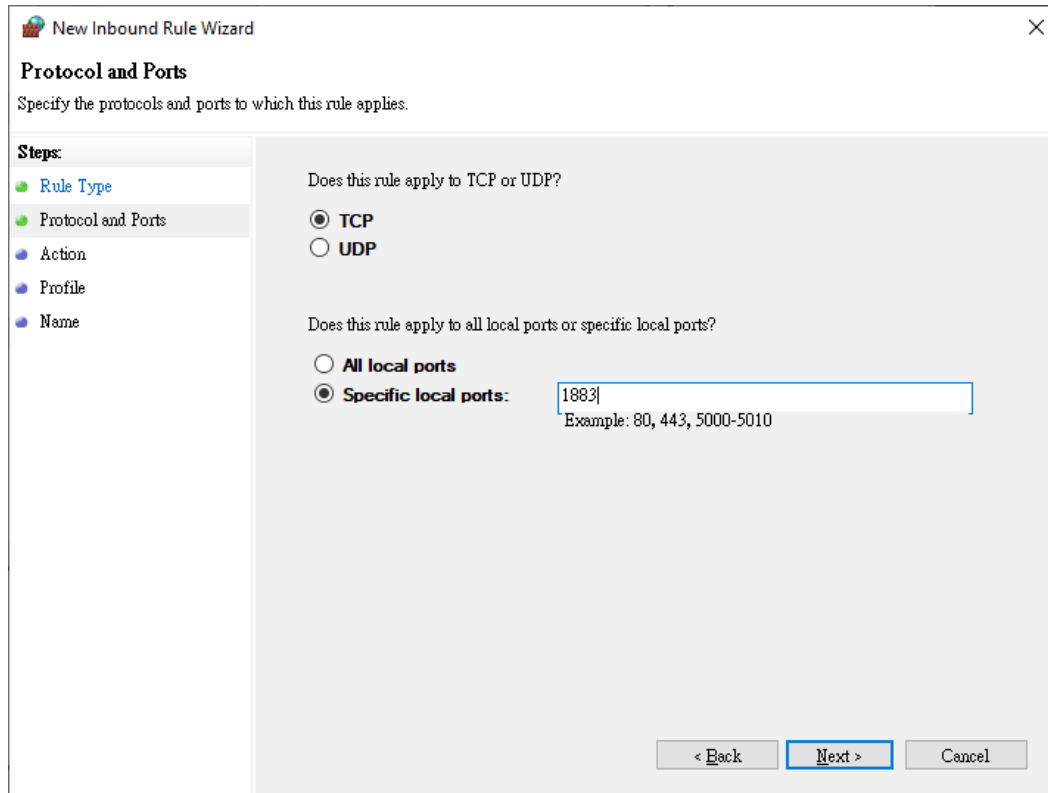
➤ How to set up an MQTT server

- Select “Port”



➤ How to set up an MQTT server

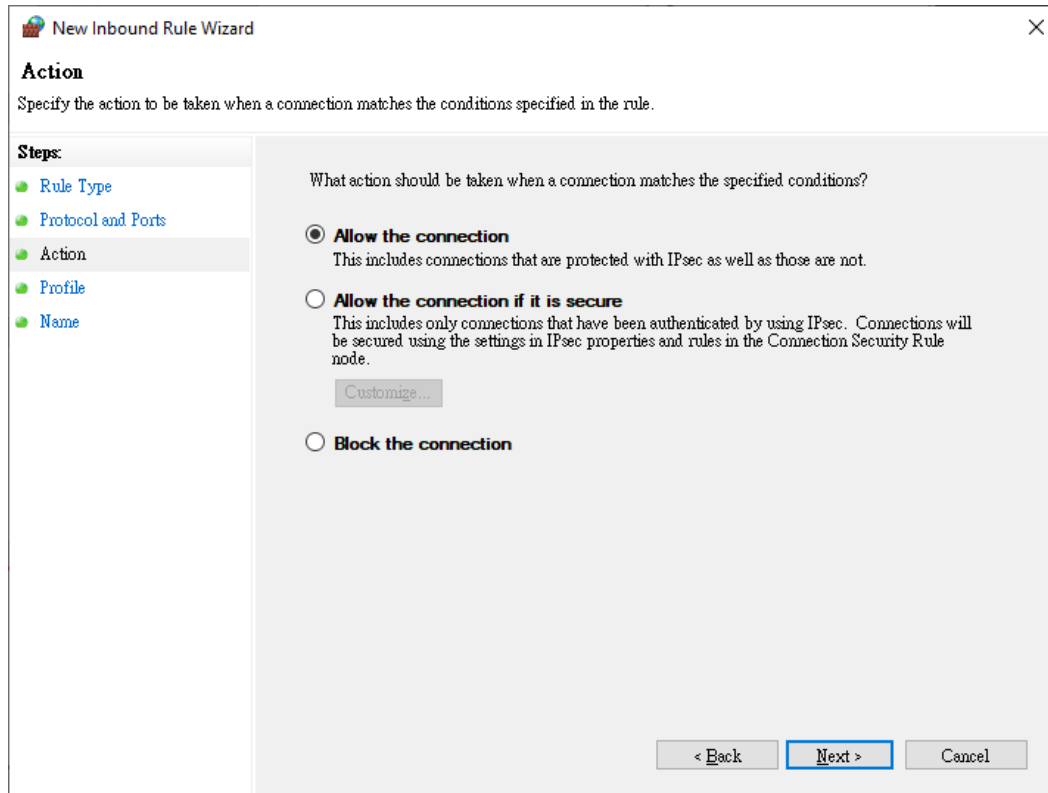
- Select “TCP” and Specific local ports :1883



The screenshot shows the 'New Inbound Rule Wizard' dialog box, specifically the 'Protocol and Ports' step. The title bar reads 'New Inbound Rule Wizard' with a close button. The main heading is 'Protocol and Ports' with the instruction 'Specify the protocols and ports to which this rule applies.' On the left, a 'Steps:' sidebar lists 'Rule Type', 'Protocol and Ports', 'Action', 'Profile', and 'Name', with 'Protocol and Ports' currently selected. The main area contains two questions: 'Does this rule apply to TCP or UDP?' with radio buttons for 'TCP' (selected) and 'UDP'; and 'Does this rule apply to all local ports or specific local ports?' with radio buttons for 'All local ports' and 'Specific local ports:' (selected). A text input field next to 'Specific local ports:' contains '1883', with an example 'Example: 80, 443, 5000-5010' below it. At the bottom, there are three buttons: '< Back', 'Next >' (highlighted with a blue border), and 'Cancel'.

➤ How to set up an MQTT server

- Select “Allow the connection”



New Inbound Rule Wizard [Close]

Action
Specify the action to be taken when a connection matches the conditions specified in the rule.

Steps:

- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

What action should be taken when a connection matches the specified conditions?

Allow the connection
This includes connections that are protected with IPsec as well as those are not.

Allow the connection if it is secure
This includes only connections that have been authenticated by using IPsec. Connections will be secured using the settings in IPsec properties and rules in the Connection Security Rule node.

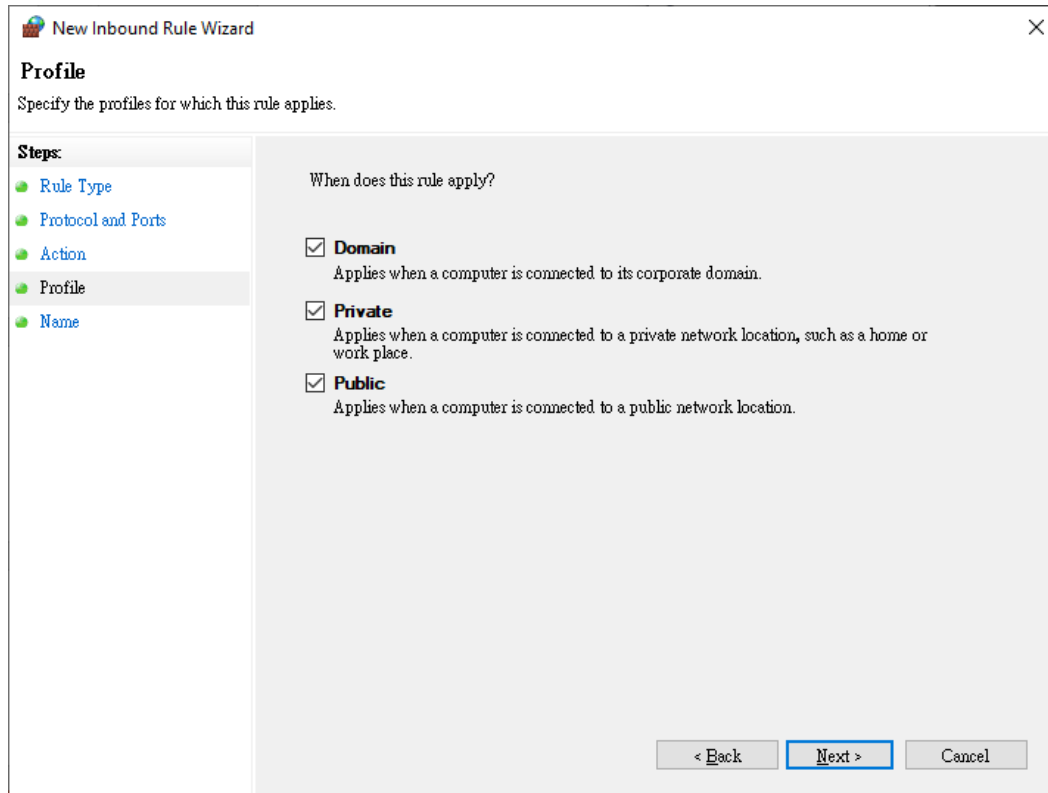
Customize...

Block the connection

< Back Next > Cancel

➤ How to set up an MQTT server

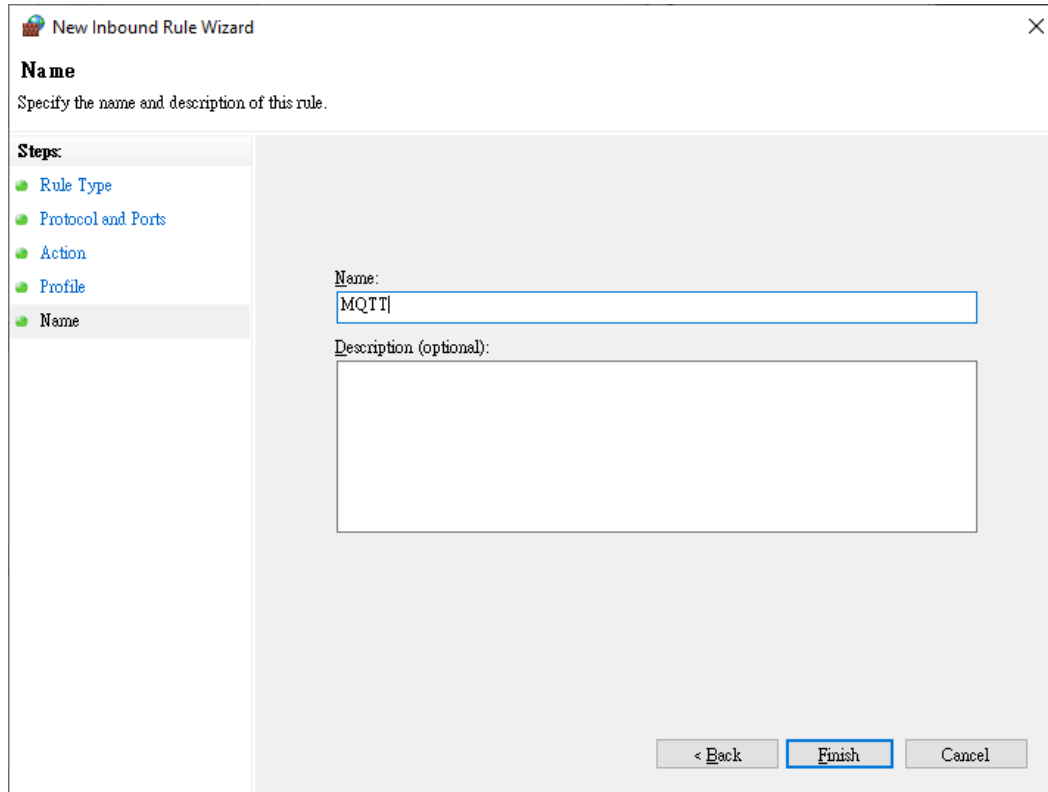
- Check all options



The screenshot shows the 'New Inbound Rule Wizard' dialog box, specifically the 'Profile' step. The title bar reads 'New Inbound Rule Wizard' with a close button. The main heading is 'Profile' with the instruction 'Specify the profiles for which this rule applies.' On the left, a 'Steps:' pane lists 'Rule Type', 'Protocol and Ports', 'Action', 'Profile' (highlighted), and 'Name'. The main area is titled 'When does this rule apply?' and contains three checked options: 'Domain' (Applies when a computer is connected to its corporate domain.), 'Private' (Applies when a computer is connected to a private network location, such as a home or work place.), and 'Public' (Applies when a computer is connected to a public network location.). At the bottom, there are three buttons: '< Back', 'Next >' (highlighted with a blue border), and 'Cancel'.

➤ How to set up an MQTT server

- Name:MQTT



New Inbound Rule Wizard

Name
Specify the name and description of this rule.

Steps:

- Rule Type
- Protocol and Ports
- Action
- Profile
- **Name**

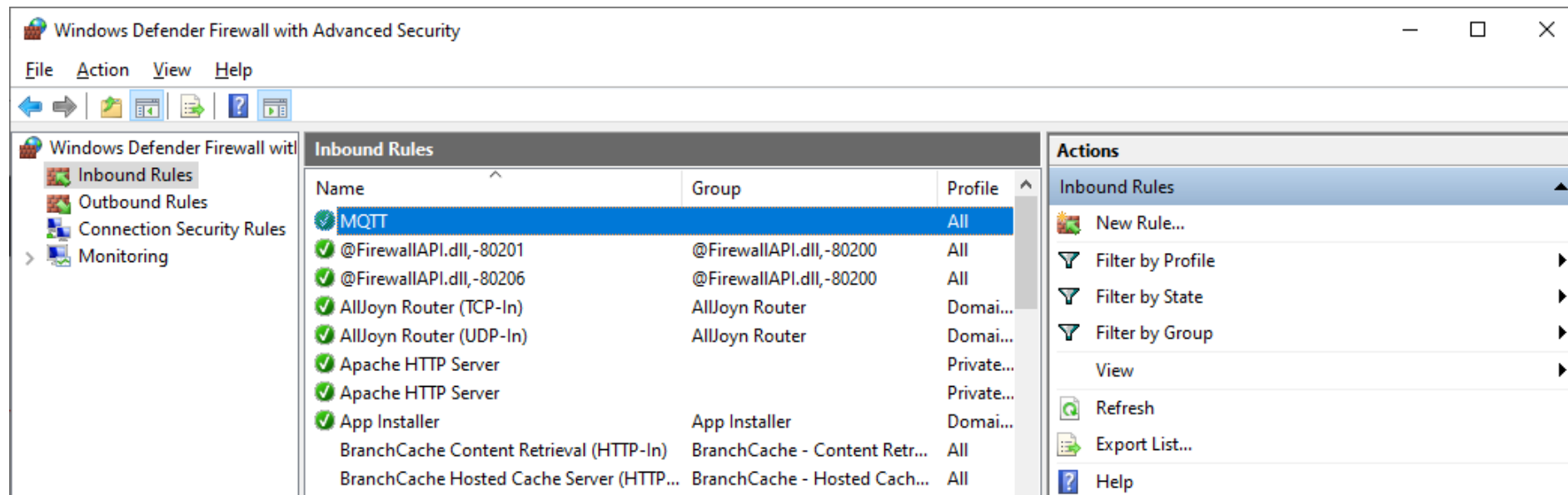
Name:

Description (optional):

< Back Finish Cancel

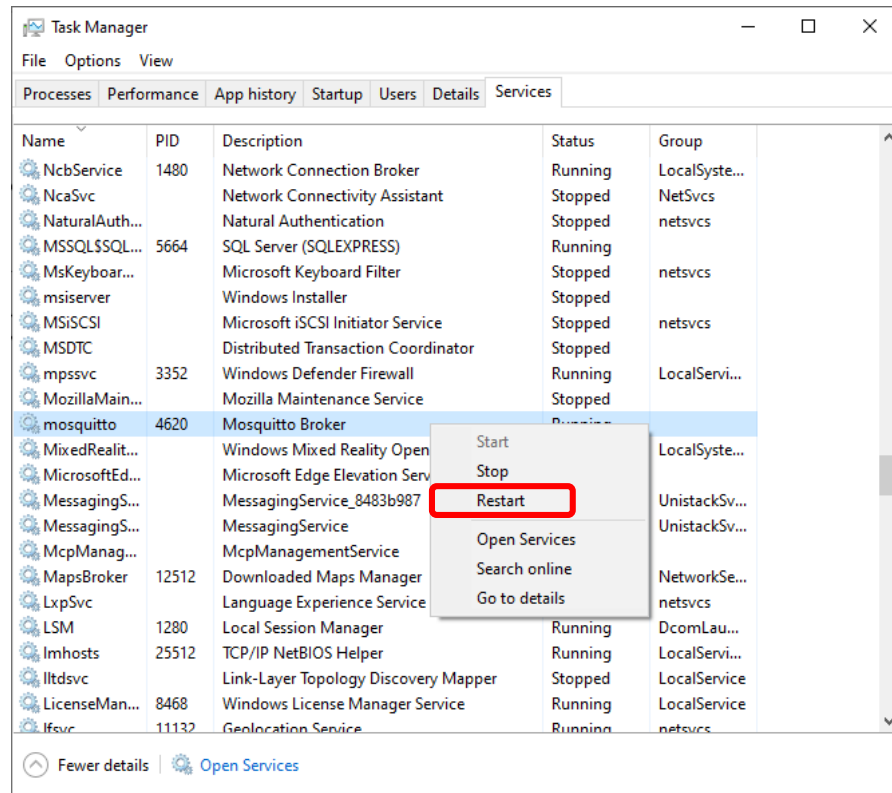
➤ How to set up an MQTT server

- Complete



➤ How to set up an MQTT server

- Restart mosquitto broker

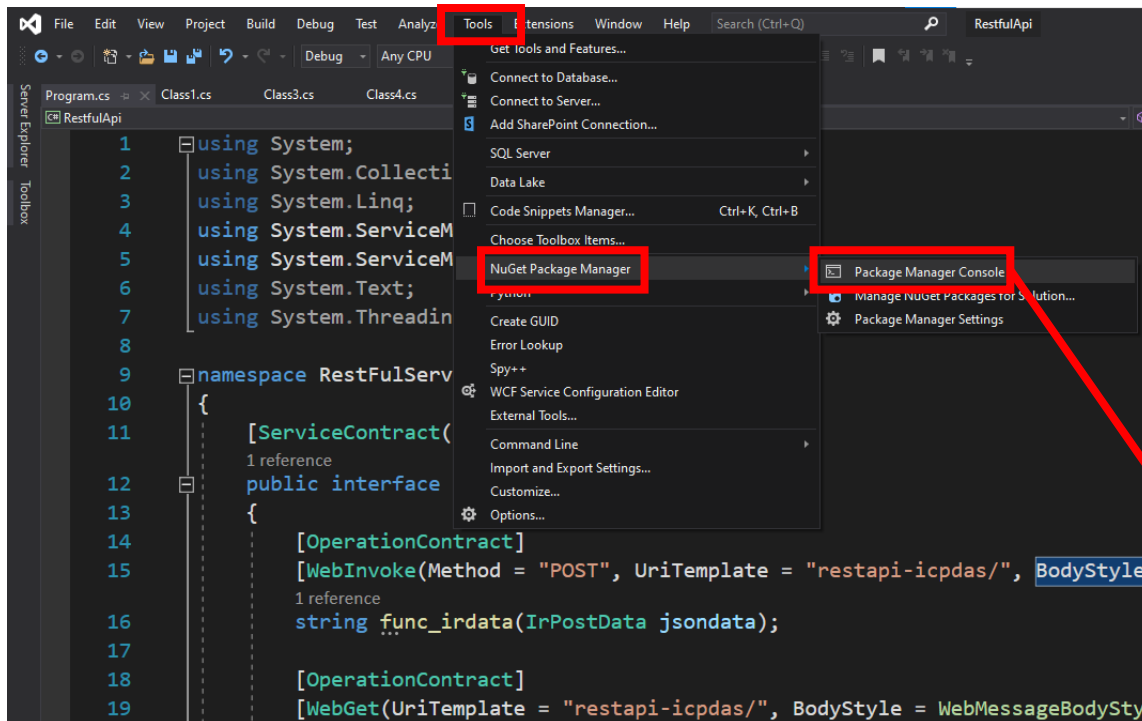


05

How to install Lib

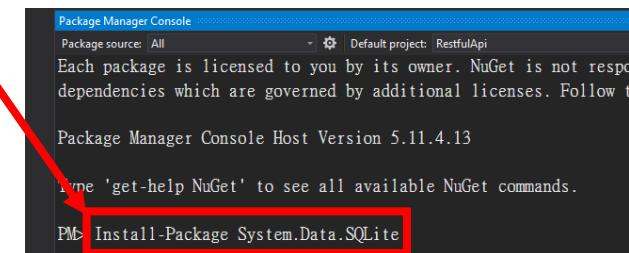
➤ How to install Lib in CSharp

- NuGet
- Install Command → Install-Package System.Data.SQLite (libraries's name)



```
File Edit View Project Build Debug Test Analyze Tools Extensions Window Help Search (Ctrl+Q) RestfulApi
Get tools and Features...
Connect to Database...
Connect to Server...
Add SharePoint Connection...
SQL Server
Data Lake
Code Snippets Manager... Ctrl+K, Ctrl+B
Choose Toolbox Items...
NuGet Package Manager
Package Manager Console
Manage NuGet Packages for Solution...
Package Manager Settings
Create GUID
Error Lookup
Spy++
WCF Service Configuration Editor
External Tools...
Command Line
Import and Export Settings...
Customize...
Options...

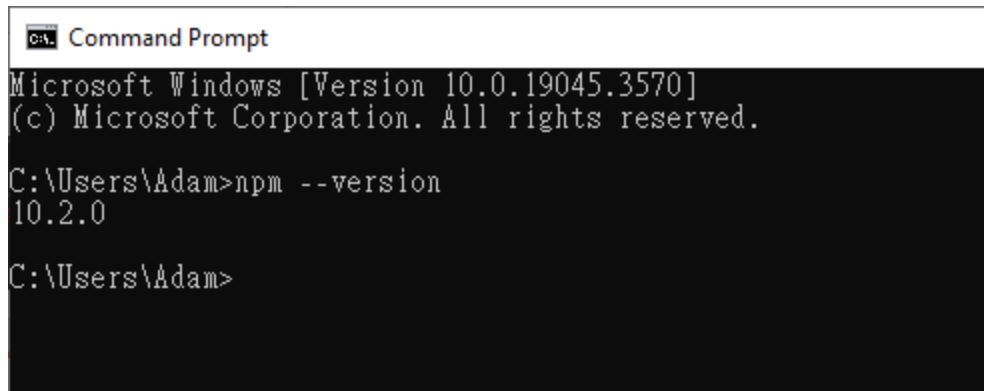
Program.cs Class1.cs Class3.cs Class4.cs
Server Explorer Toolbox
1 using System;
2 using System.Collecti
3 using System.Linq;
4 using System.ServiceM
5 using System.ServiceM
6 using System.Text;
7 using System.Threadin
8
9 namespace RestFulServ
10 {
11     [ServiceContract(
12         1 reference
13         public interface
14         {
15             [OperationContract]
16             [WebInvoke(Method = "POST", UriTemplate = "restapi-icpdas/", BodyStyle
17             1 reference
18             string func_irdata(IrPostData jsondata);
19
20             [OperationContract]
21             [WebGet(UriTemplate = "restapi-icpdas/", BodyStyle = WebMessageBodyStyI
```



```
Package Manager Console
Package source: All Default project: RestfulApi
Each package is licensed to you by its owner. NuGet is not resp
dependencies which are governed by additional licenses. Follow t
Package Manager Console Host Version 5.11.4.13
Type 'get-help NuGet' to see all available NuGet commands.
PM> Install-Package System.Data.SQLite
```


➤ How to install Lib in Node.js

- When you install the node.js environment, npm is also installed. npm is used to install various libraries in the node.js environment.
- Use the command to check whether npm is installed → `npm --version`
- Install Command → `npm install modbus-serial`(libraries's name)



```
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>
```

➤ How to install Lib in Python

- Python uses pip to manage function libraries. When installing python, pip will also be installed.
- Use the command to check whether pip is installed → `pip --version`
- Install Command → `pip install pymodbus`(libraries's name)

```
cmd 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>
```