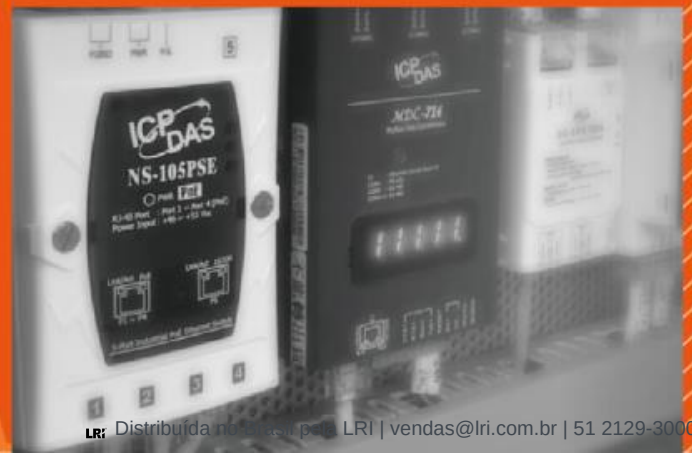
ICP DAS

Industrial Automation Technology
Innovator and Enhancer.





How to connect iSN-81x module through RESTful



ICP DAS CO., LTD.

www.icpdas.com

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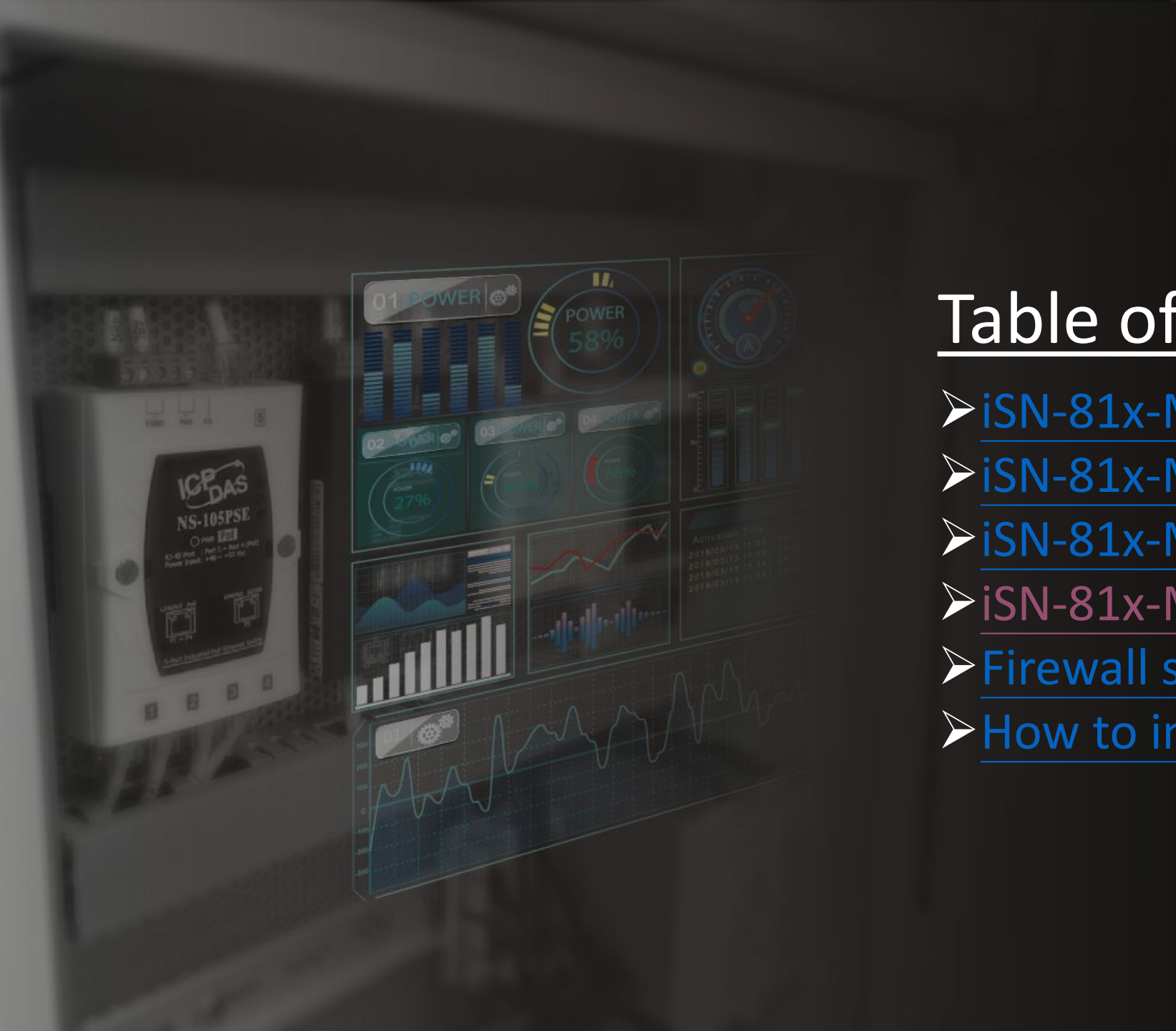


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- iSN-81x-MTCP RESTful_Node.Js
- iSN-81x-MTCP RESTful_PHP
- iSN-81x-MTCP RESTful_Python
- Firewall settings
- How to install Lib

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01

iSN-81x-MTCP RESTful_Csharp

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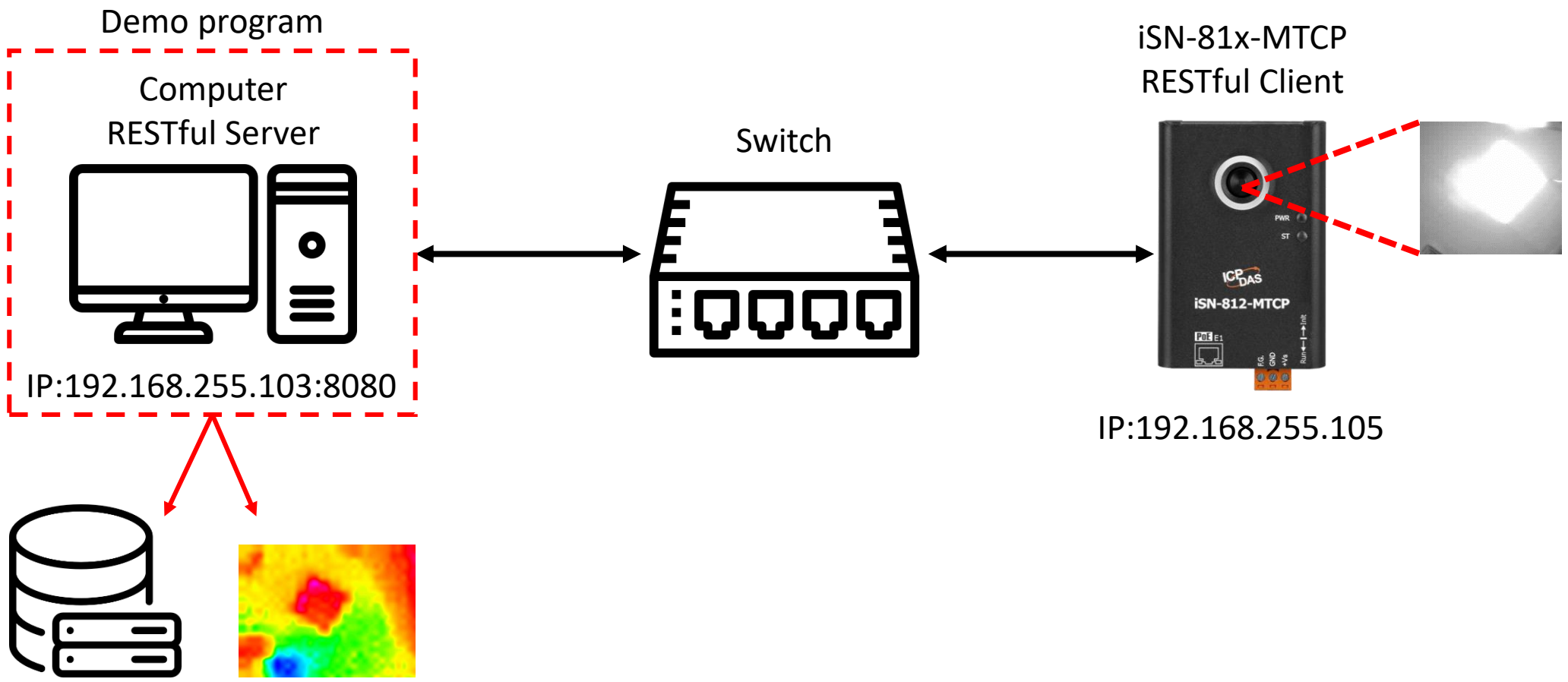
- Sample programs provide different programming languages for your reference, and you can obtain the following data through the demo programs :
  - Thermal image
  - Data measurement time
  - MAC Address of iSN-81x-MTCP
  - Model
  - IR data
  - Thermal image storage path
- The sample program uses SQLite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

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- Pre-install
  - Install-Package System.Data.SQLite

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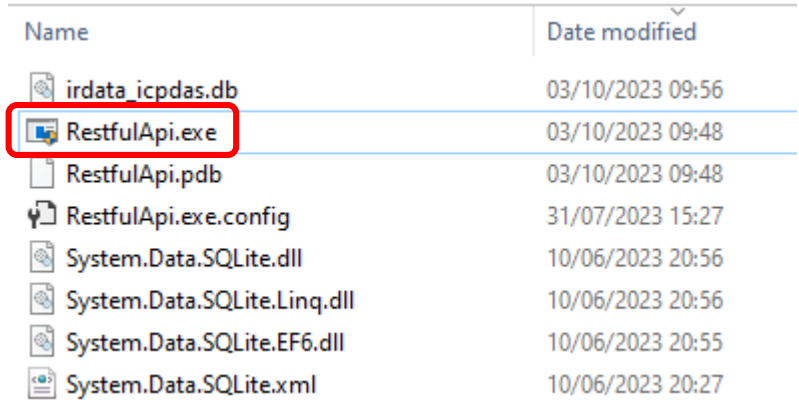
➢ Configuring iSN-81x-MTCP as a RESTful client



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➢ Configuring iSN-81x-MTCP as a RESTful client

- Open RestfulApi.exe
- Want to select IP[0]=192.168.255.103 as the server IP and open port 8080
- Key in “0,8080”
- RESTful server open




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

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

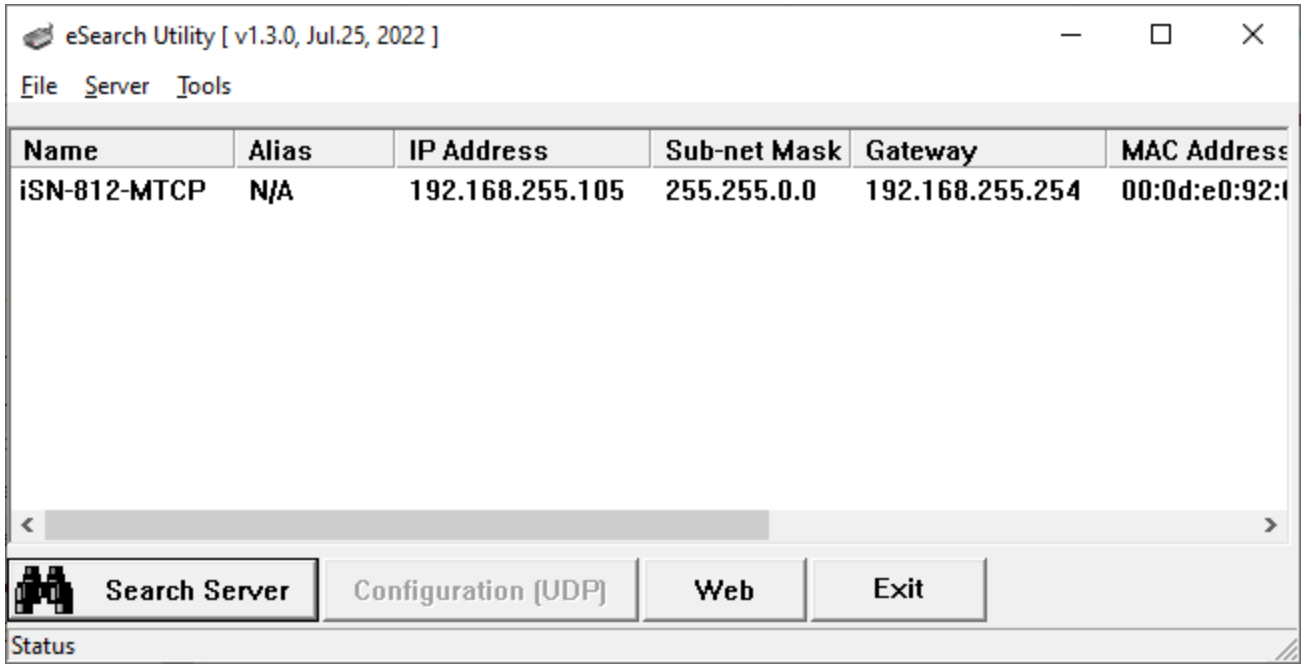
```
IP[0] = 192.168.255.103
IP[1] = 172.16.123.124

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

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➢ Configuring iSN-81x-MTCP as a RESTful client

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



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➢ Configuring iSN-81x-MTCP as a RESTful client

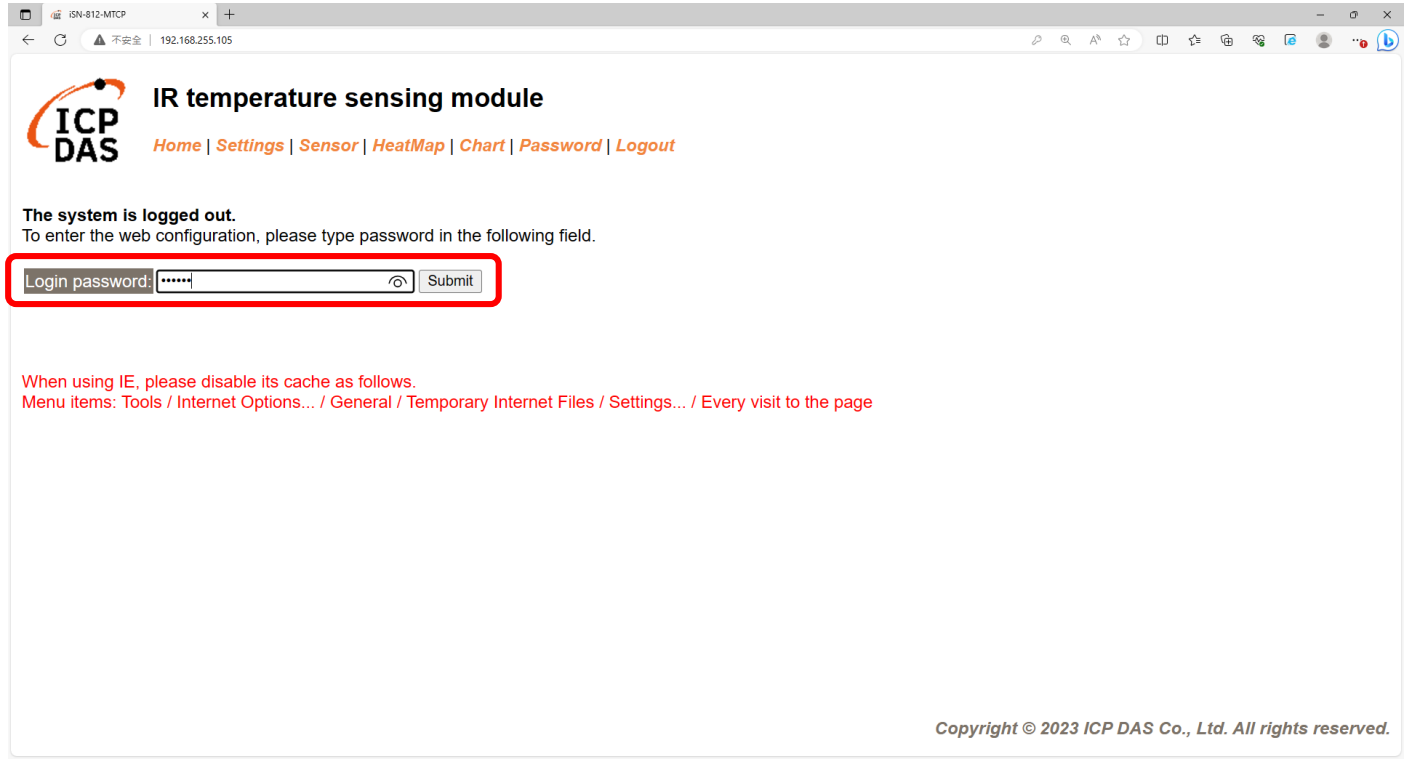
- Click ”Login to configure the device” to login



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➢ Configuring iSN-81x-MTCP as a RESTful client

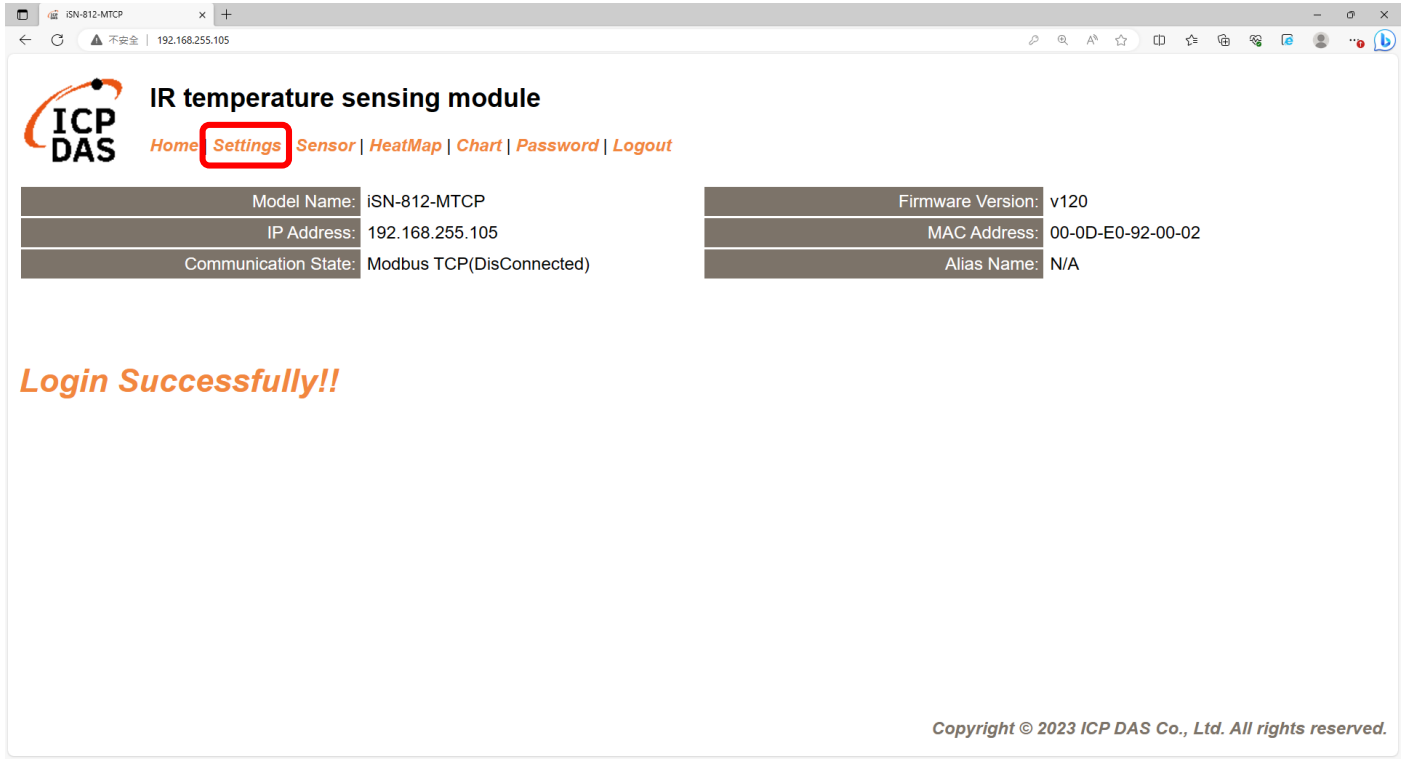
- Login(default password: admin)



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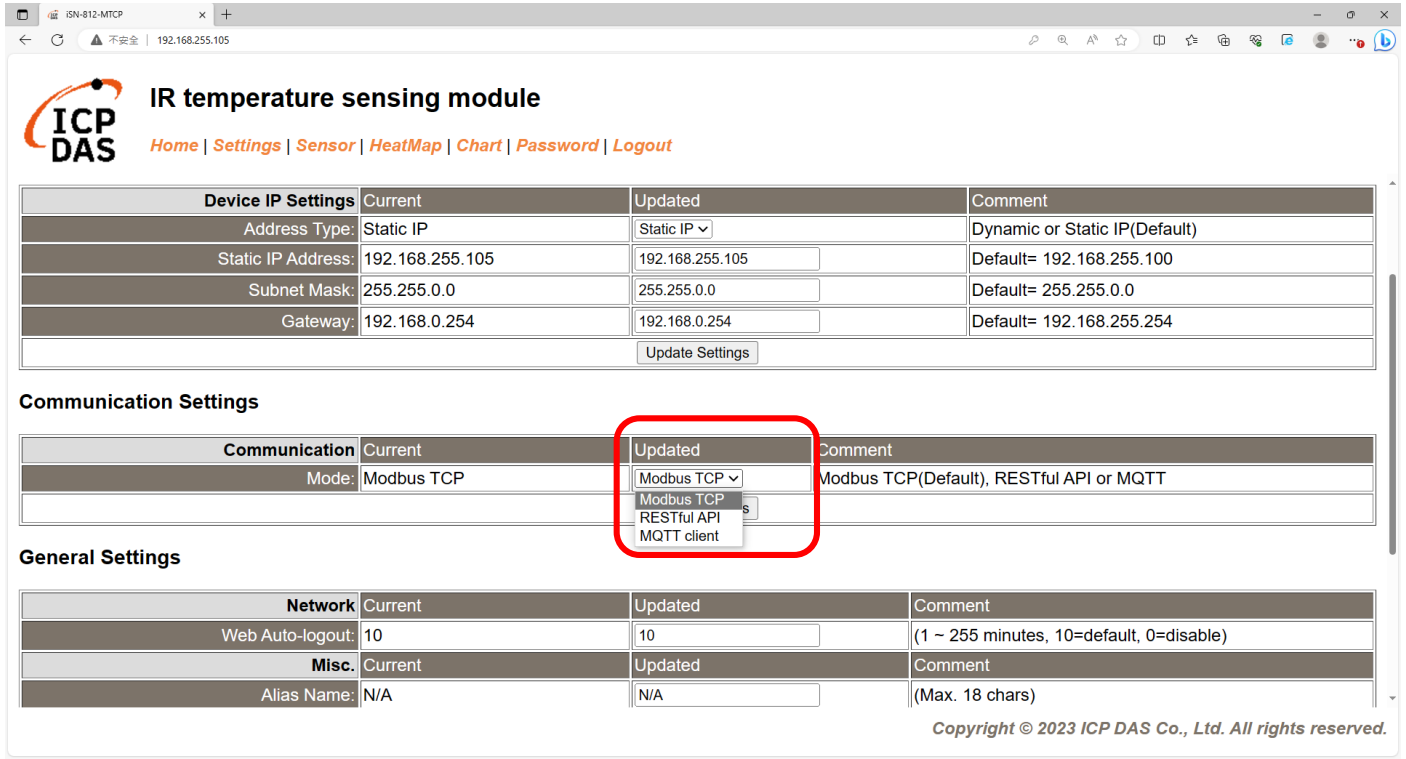
➢ Configuring iSN-81x-MTCP as a RESTful client

- Click ”Settings” to set communication mode



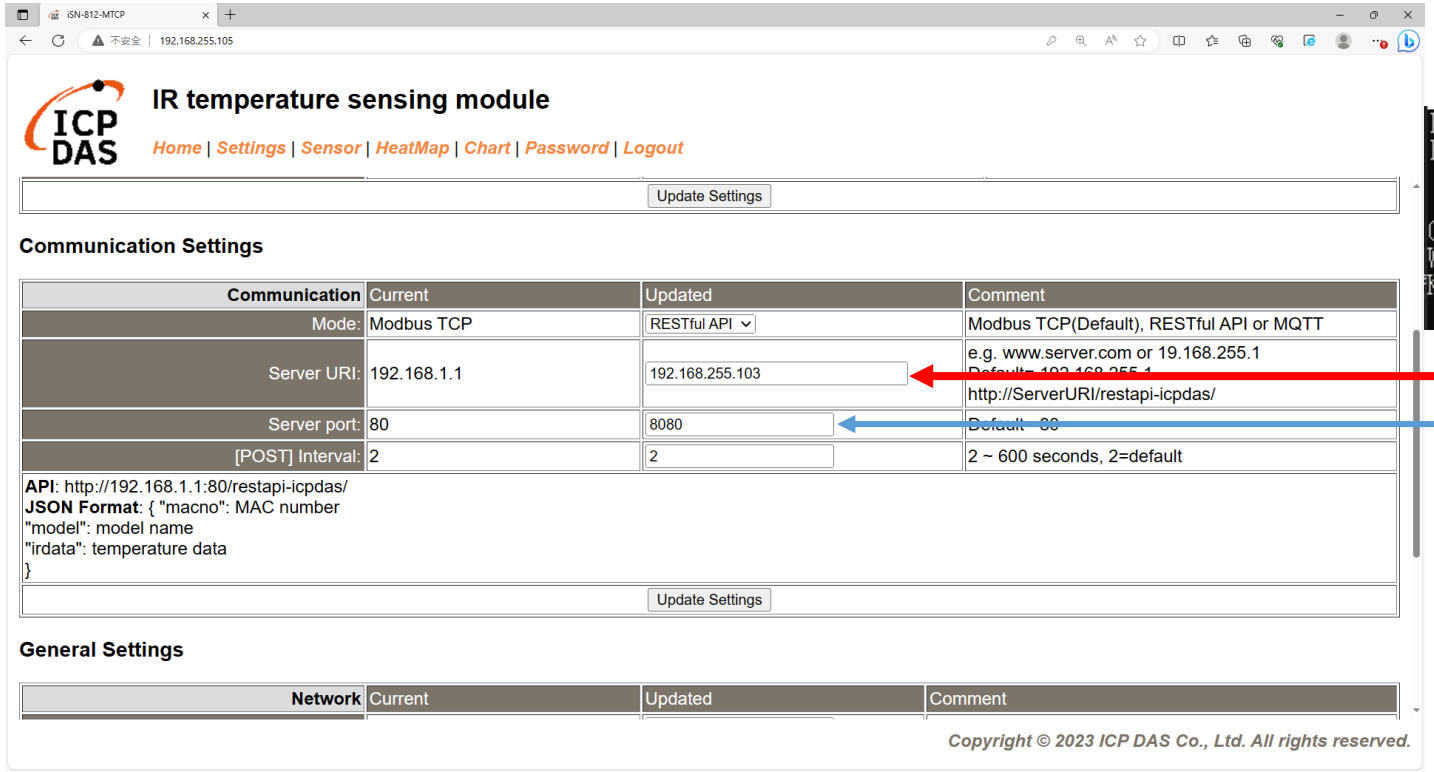
➢ Configuring iSN-81x-MTCP as a RESTful client

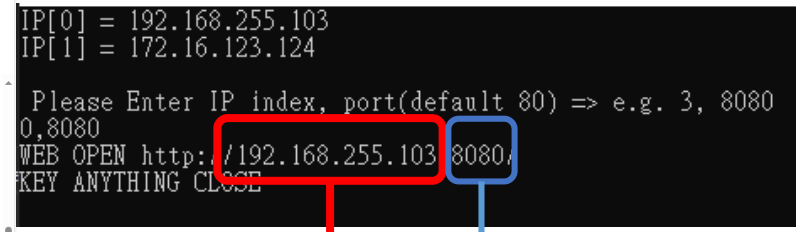
- Set communication mode to “RESTful API”



➢ Configuring iSN-81x-MTCP as a RESTful client

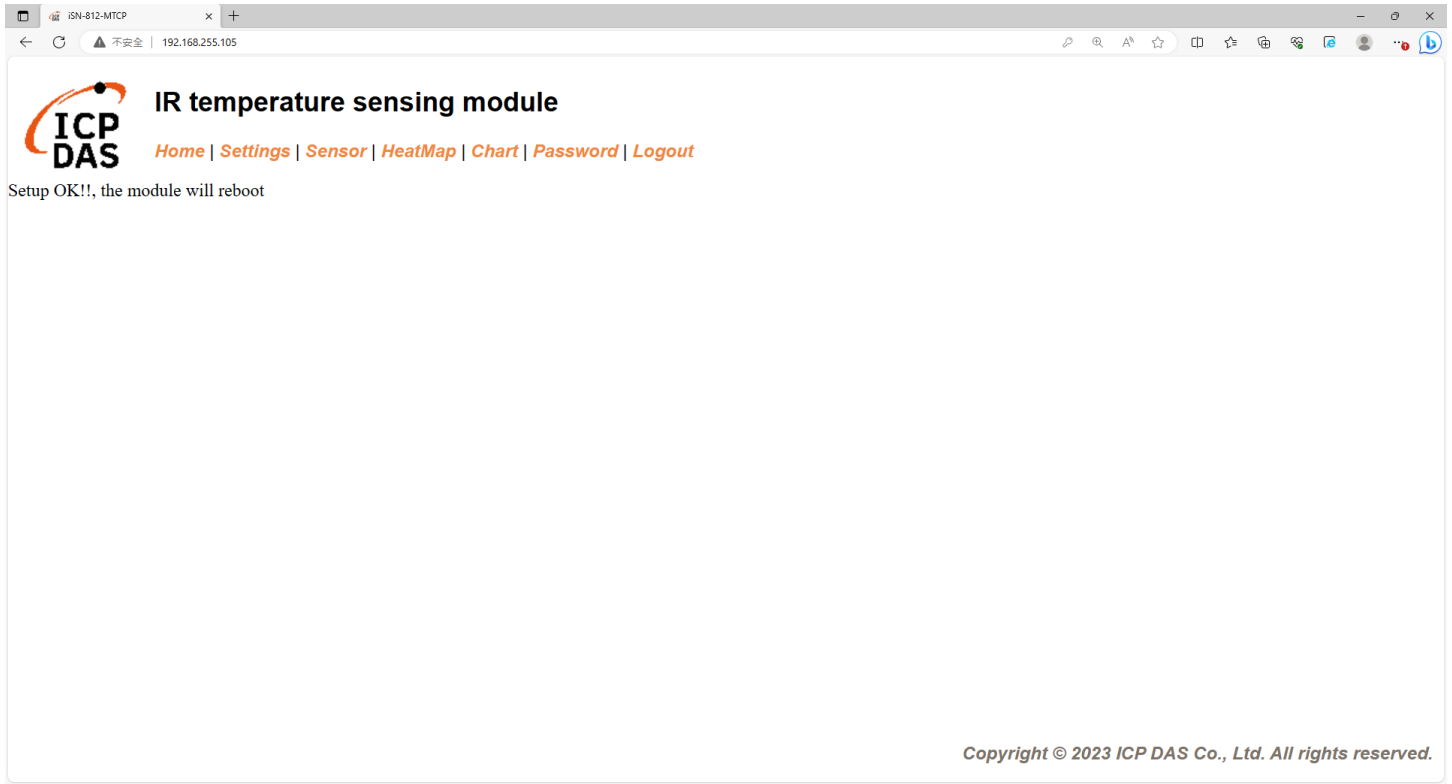
- Set the parameter follow server's IP, and update settings





➢ Configuring iSN-81x-MTCP as a RESTful client

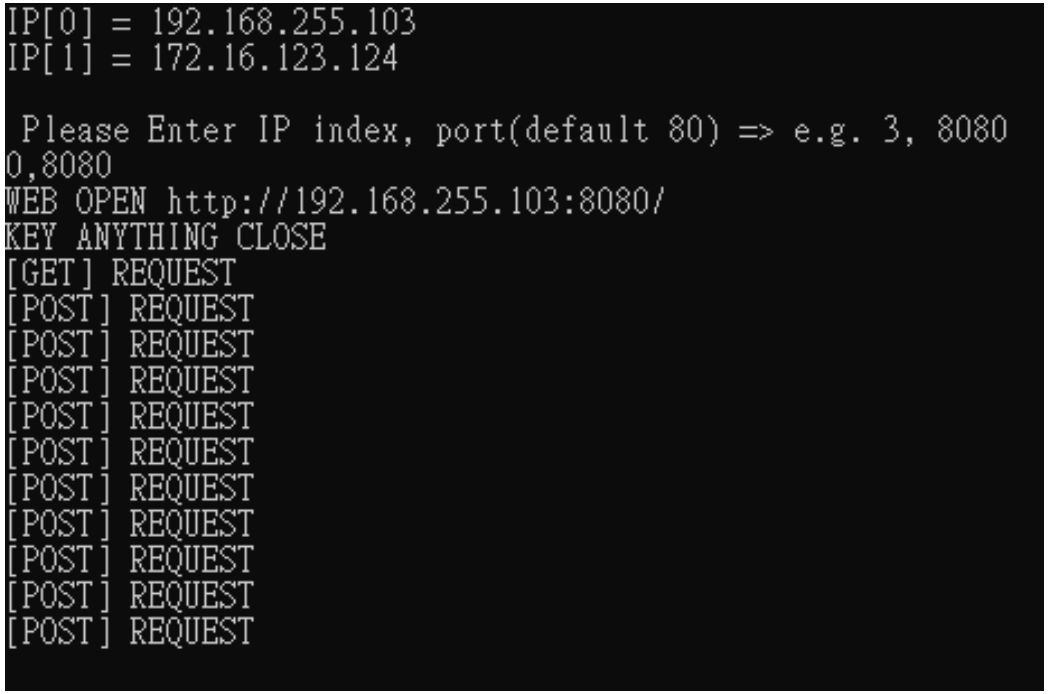
- Wait for reboot



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➢ Configuring iSN-81x-MTCP as a RESTful client

- If the connection is successful, iSN-81x-MTCP will first send a GET request, and then all POST requests.

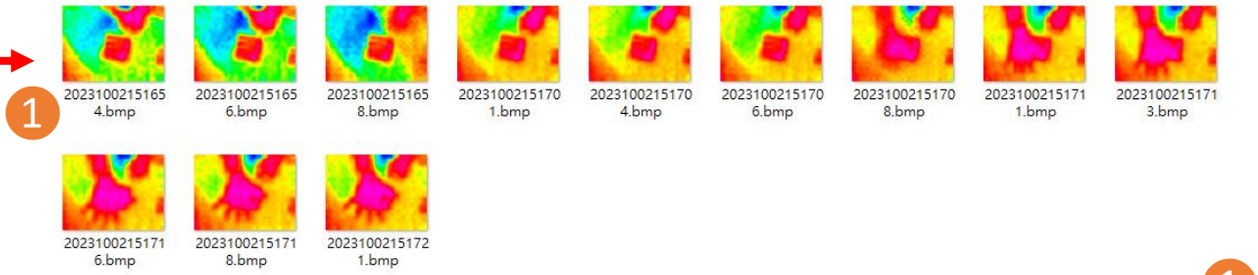


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➢ Configuring iSN-81x-MTCP as a RESTful client

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

ThermalImg



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

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➢ Change the name of the data table

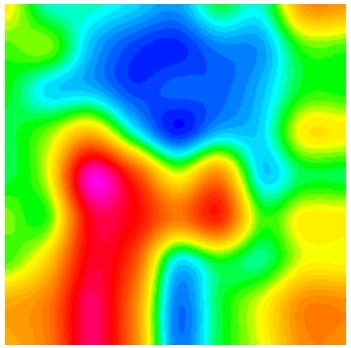
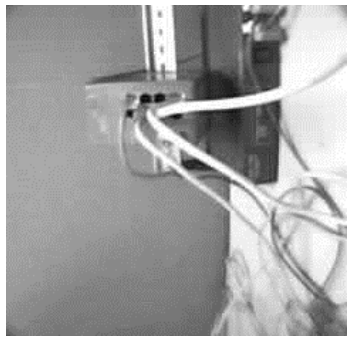
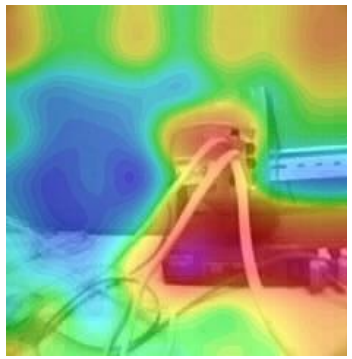
- If you want to change the file name of DB file, open “Class3.cs” find the function “func_irdata”, and then edit the value “dbname”.

```
public string func_irdata(IrPostData jsondata)
{
    Console.WriteLine("[POST] REQUEST");
    string Ret = "done";
    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 “Class3.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;
```

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02

iSN-81x-MTCP RESTful_Node.Js

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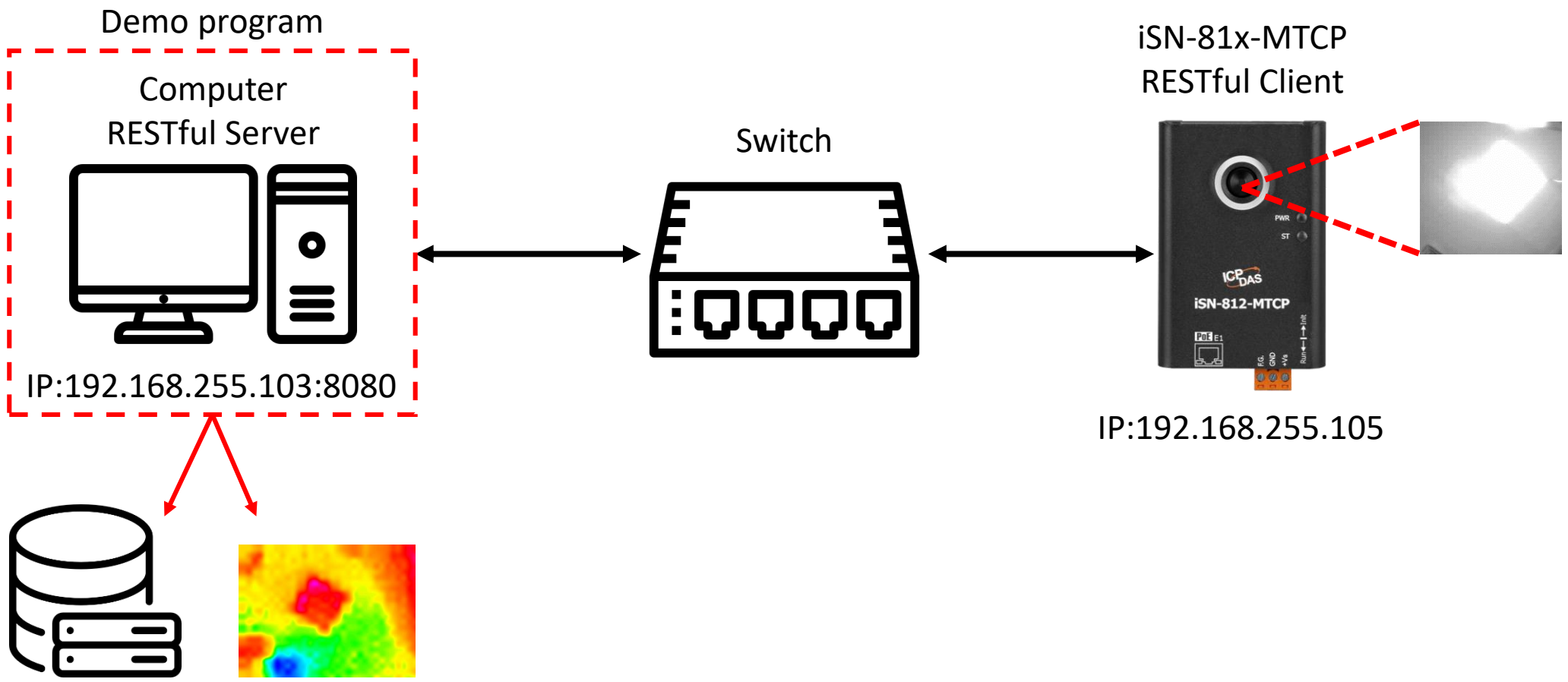
- Sample programs provide different programming languages for your reference, and you can obtain the following data through the demo programs :
  - Thermal image
  - Data measurement time
  - MAC Address of iSN-81x-MTCP
  - Model
  - IR data
  - Thermal image storage path
- The sample program uses SQLite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

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

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➢ Configuring iSN-81x-MTCP as a RESTful client

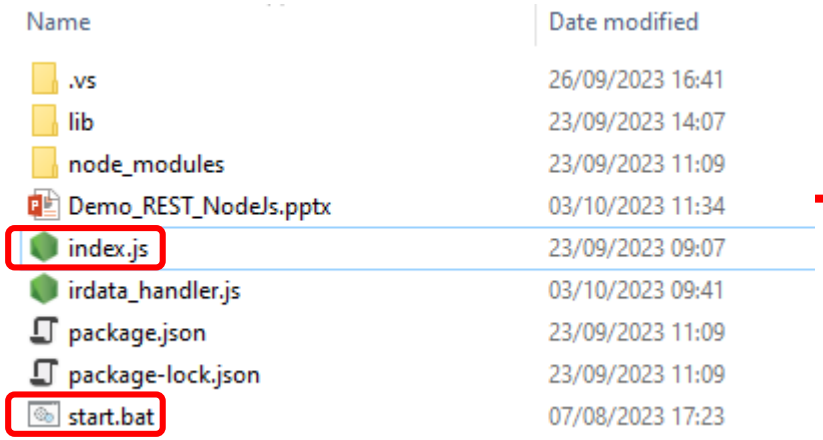


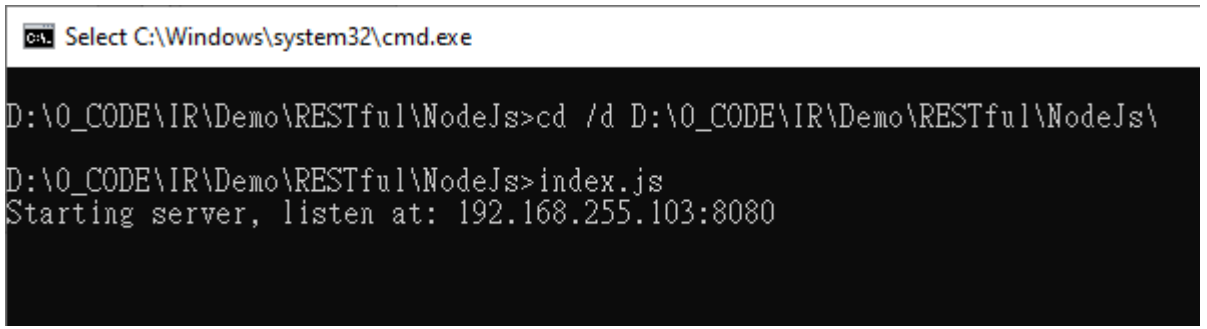
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➢ Configuring iSN-81x-MTCP as a RESTful client

- Open “index.js” and edit host and port to the IP of the server. Save after editing
- Click “start.bat” to open RESTful server

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

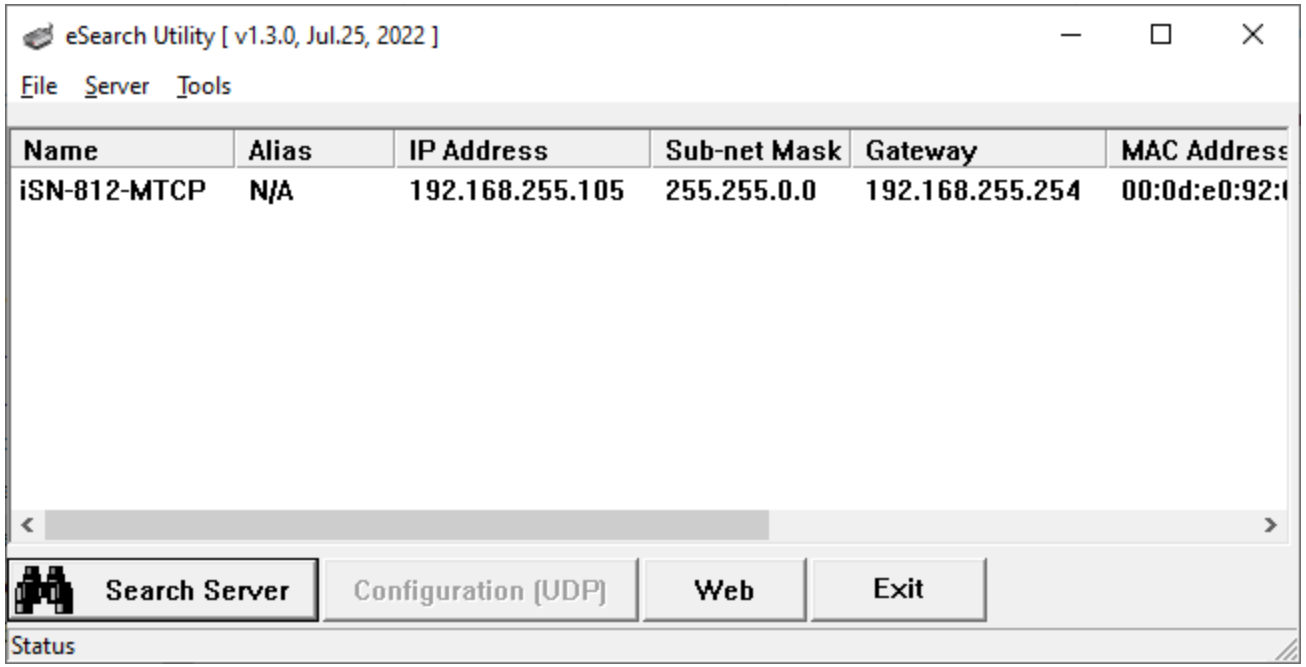




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➢ Configuring iSN-81x-MTCP as a RESTful client

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



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➢ Configuring iSN-81x-MTCP as a RESTful client

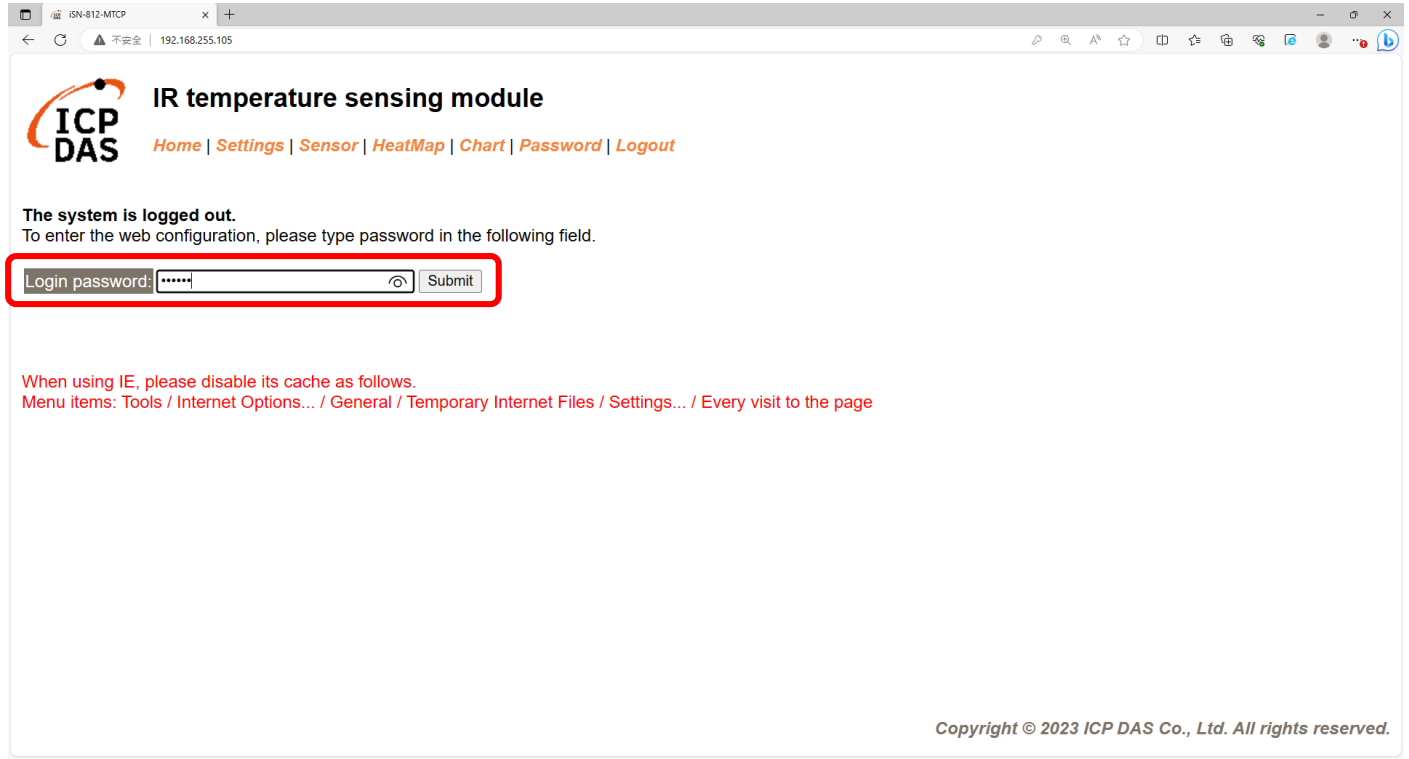
- Click ”Login to configure the device” to login



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➢ Configuring iSN-81x-MTCP as a RESTful client

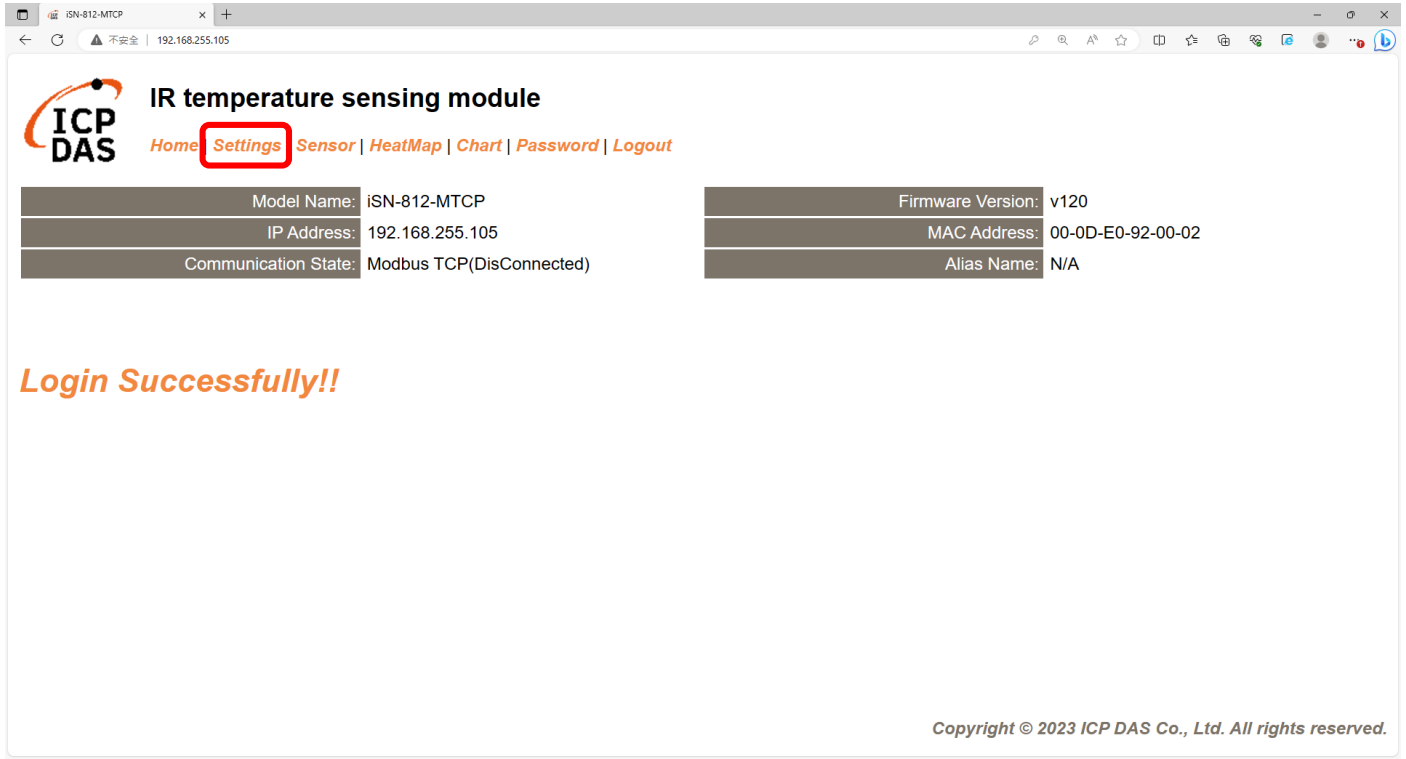
- Login(default password: admin)



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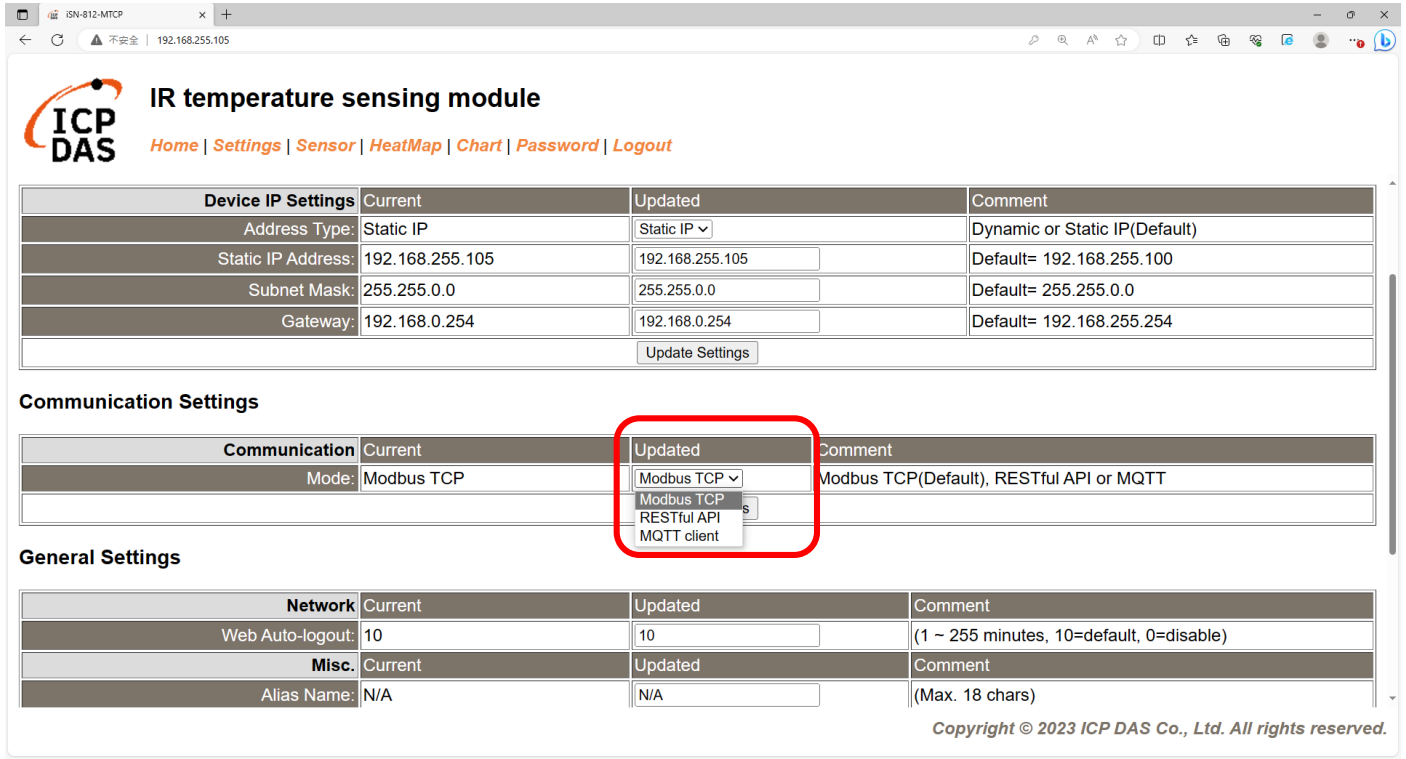
➢ Configuring iSN-81x-MTCP as a RESTful client

- Click ”Settings” to set communication mode



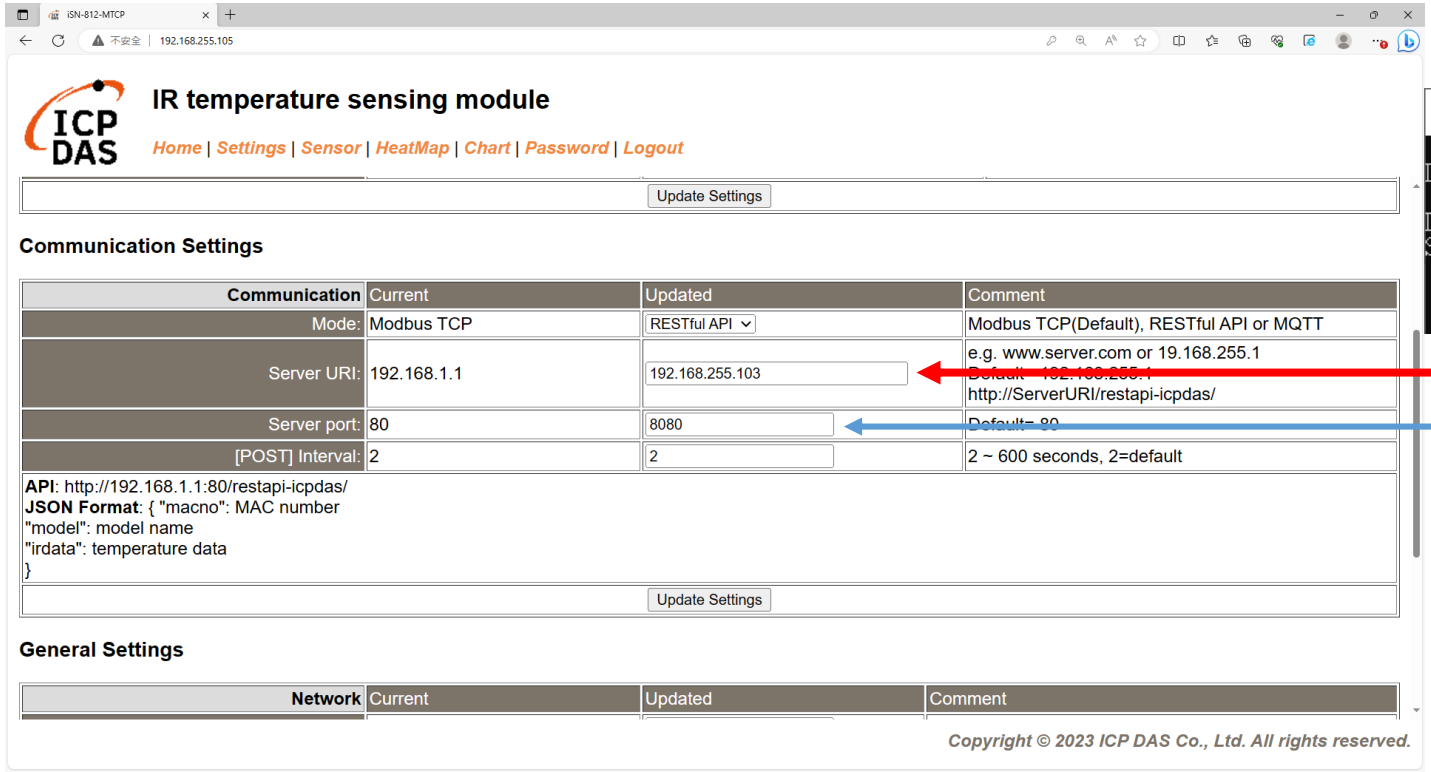
➢ Configuring iSN-81x-MTCP as a RESTful client

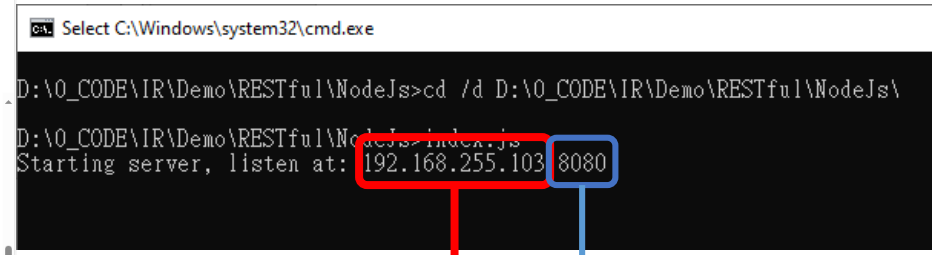
- Set Mode to “RESTful API”



➢ Configuring iSN-81x-MTCP as a RESTful client

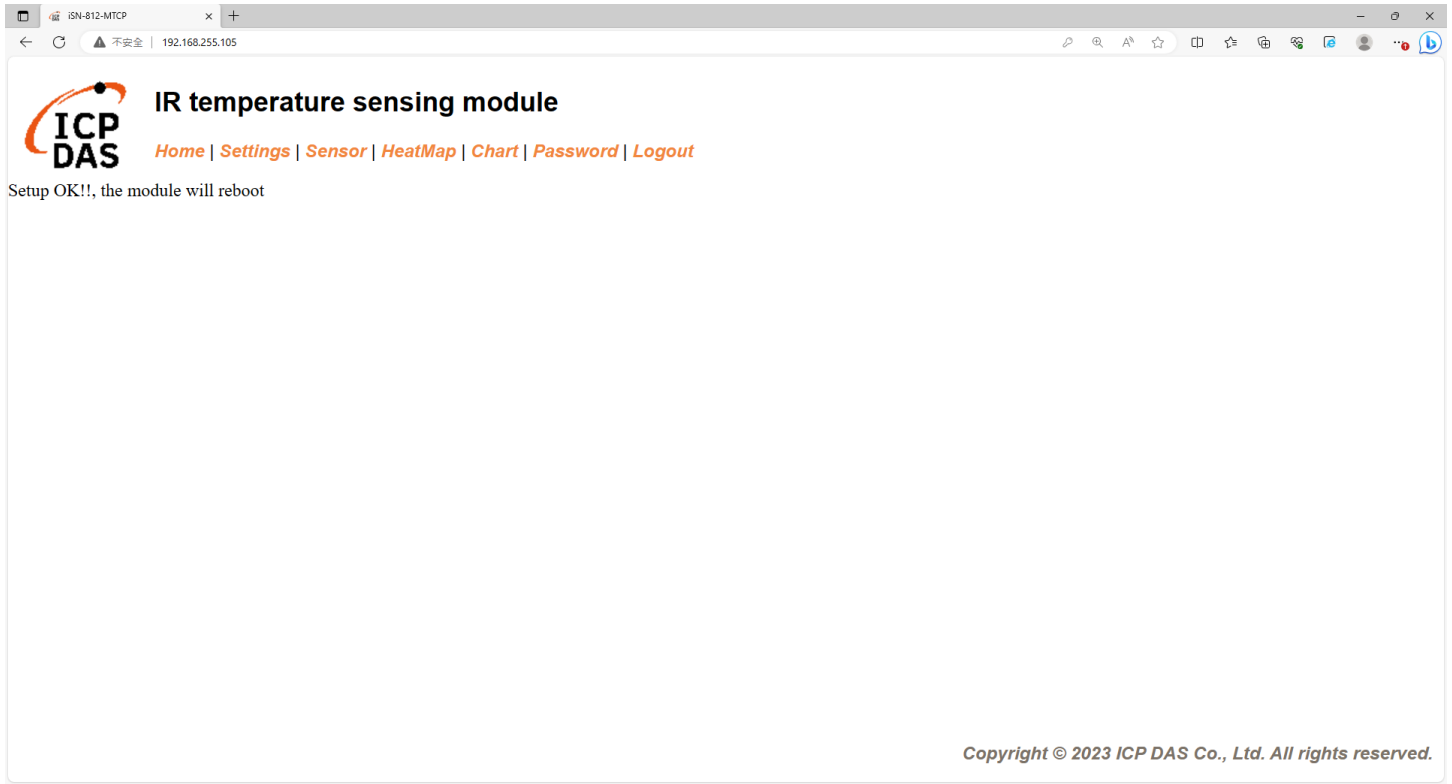
- Set the parameter follow server's IP, and update settings





➢ Configuring iSN-81x-MTCP as a RESTful client

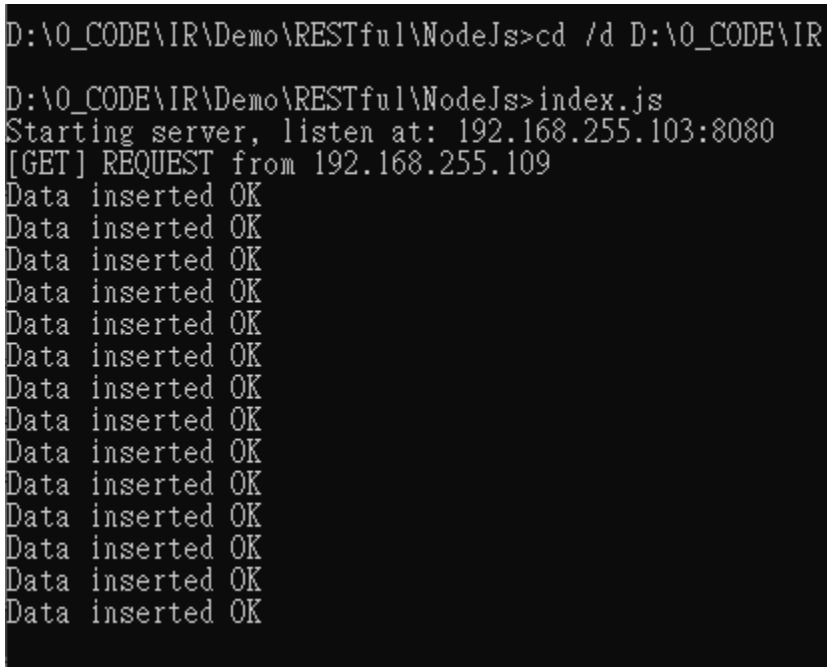
- Wait for reboot



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➢ Configuring iSN-81x-MTCP as a RESTful client

- If the connection is successful, iSN-81x-MTCP will first send a GET request, and then all POST requests.

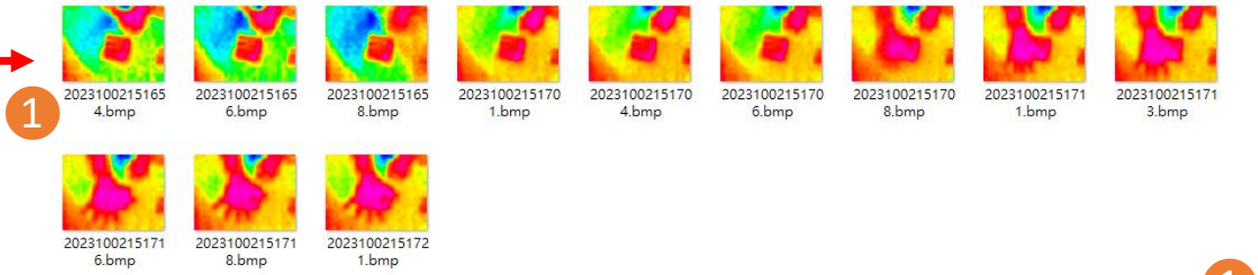


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➢ Configuring iSN-81x-MTCP as a RESTful client

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

ThermalImg



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

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➢ Change the name of the data table

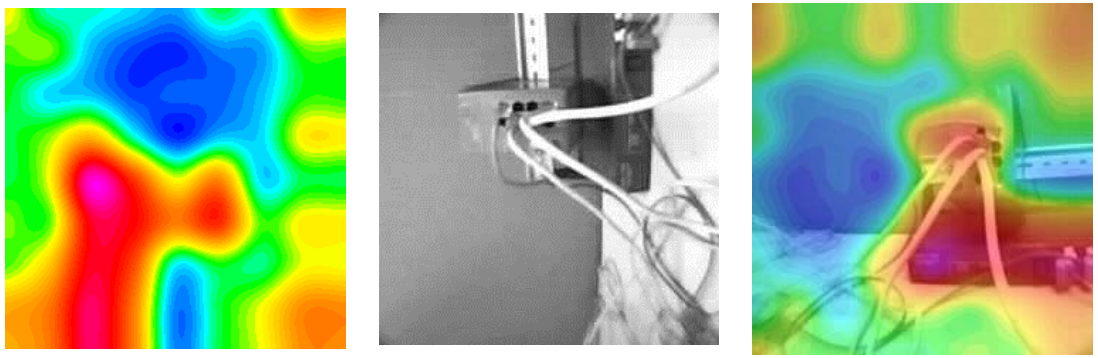
- If you want to change the file name of DB file, open “irdata_handler.js” find the value “dbPath” and edit the value.

```
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 "RealImg.js" to find the code in the picture below, and then edit the code.

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



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03

iSN-81x-MTCP RESTful_PHP

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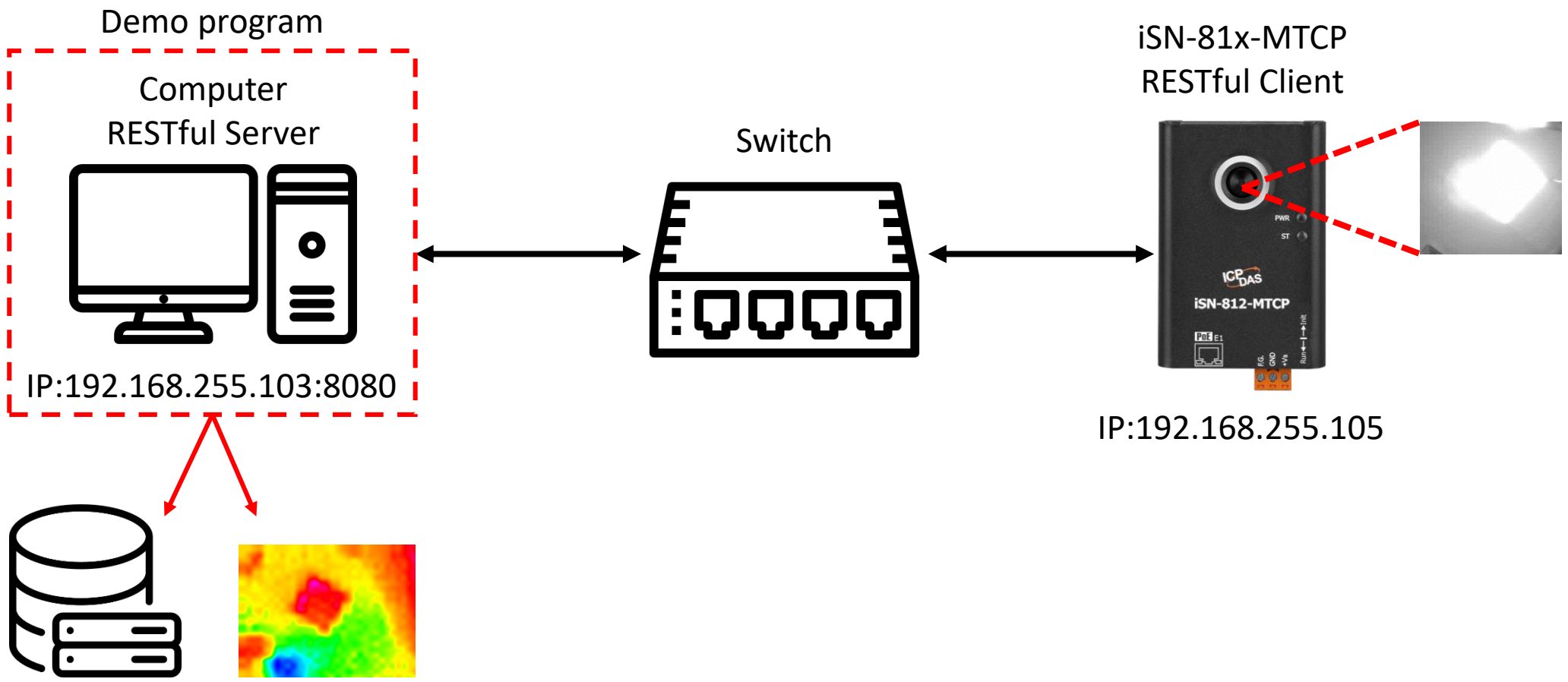
- Sample programs provide different programming languages for your reference, and you can obtain the following data through the demo programs :
  - Thermal image
  - Data measurement time
  - MAC Address of iSN-81x-MTCP
  - Model
  - IR data
  - Thermal image storage path
- The sample program uses SQLite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

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- Pre-install
  - php.ini =>enable gd

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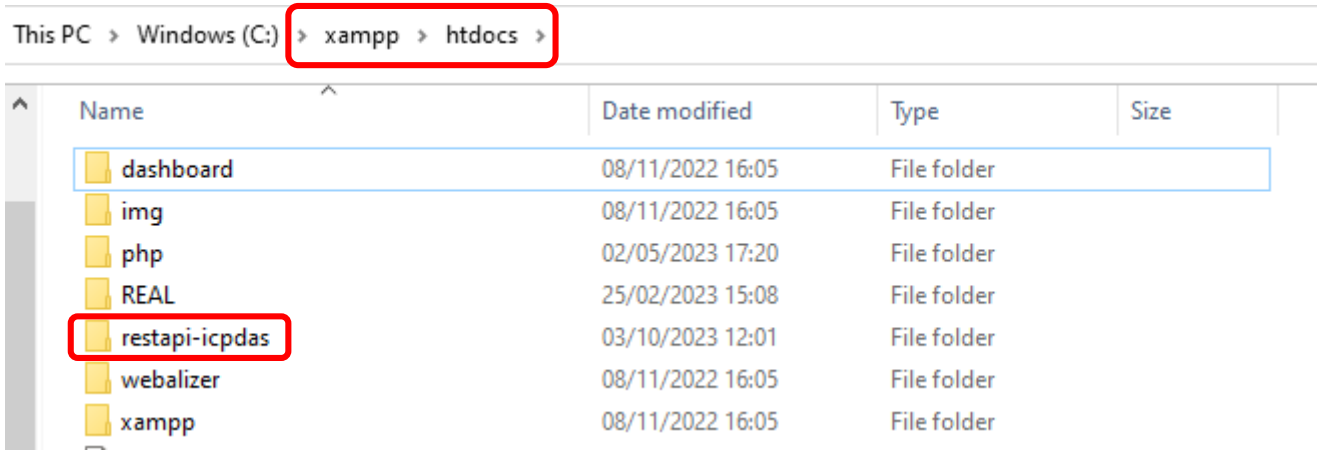
➢ Configuring iSN-81x-MTCP as a RESTful client



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➢ Configuring iSN-81x-MTCP as a RESTful client

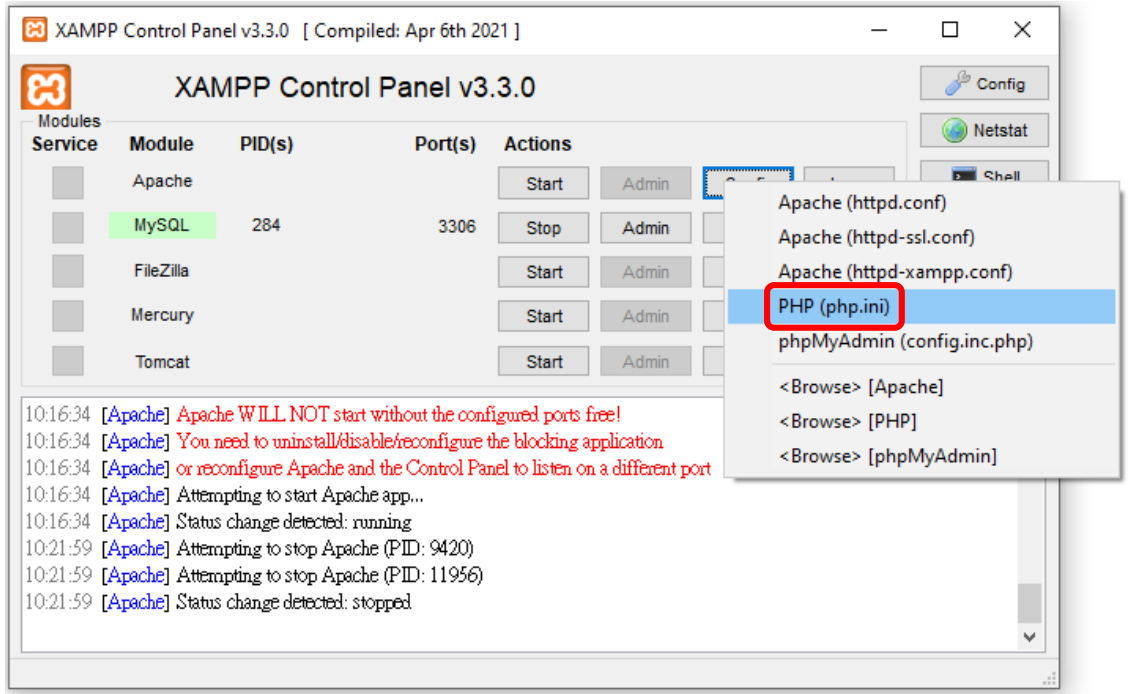
- Copy the sample program to the htdocs folder of XAMPP

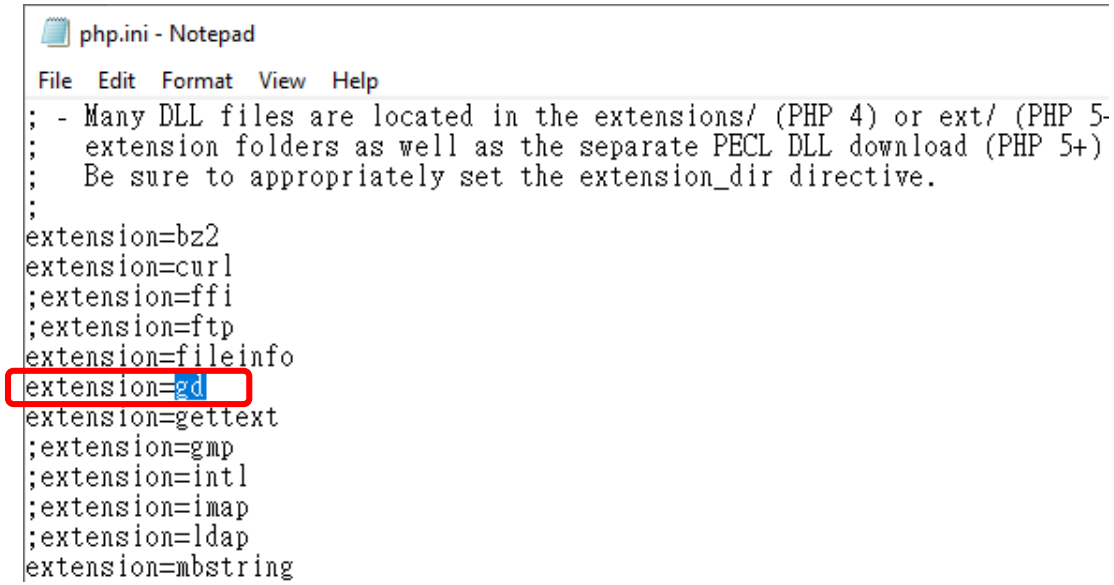


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➢ Configuring iSN-81x-MTCP as a RESTful client

- Open “XAMPP Control Panel” and edit PHP.ini
- Remove “;” before gd

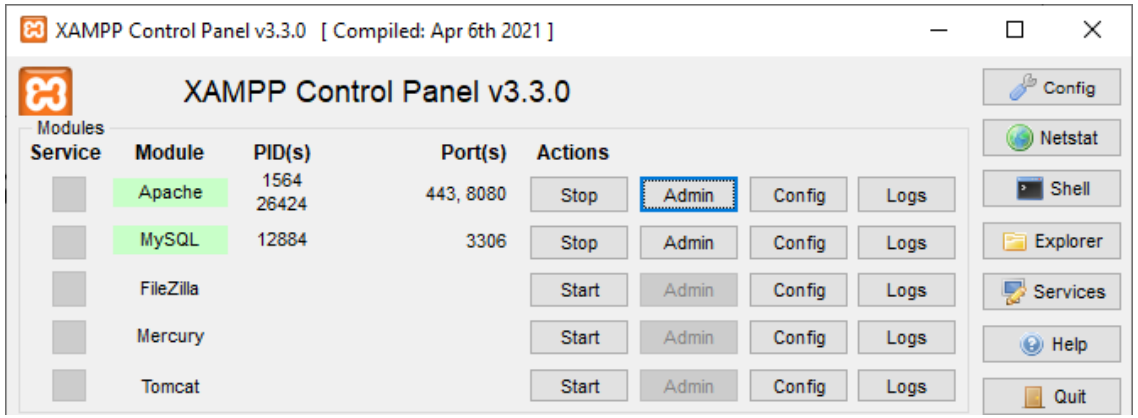




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➢ Configuring iSN-81x-MTCP as a RESTful client

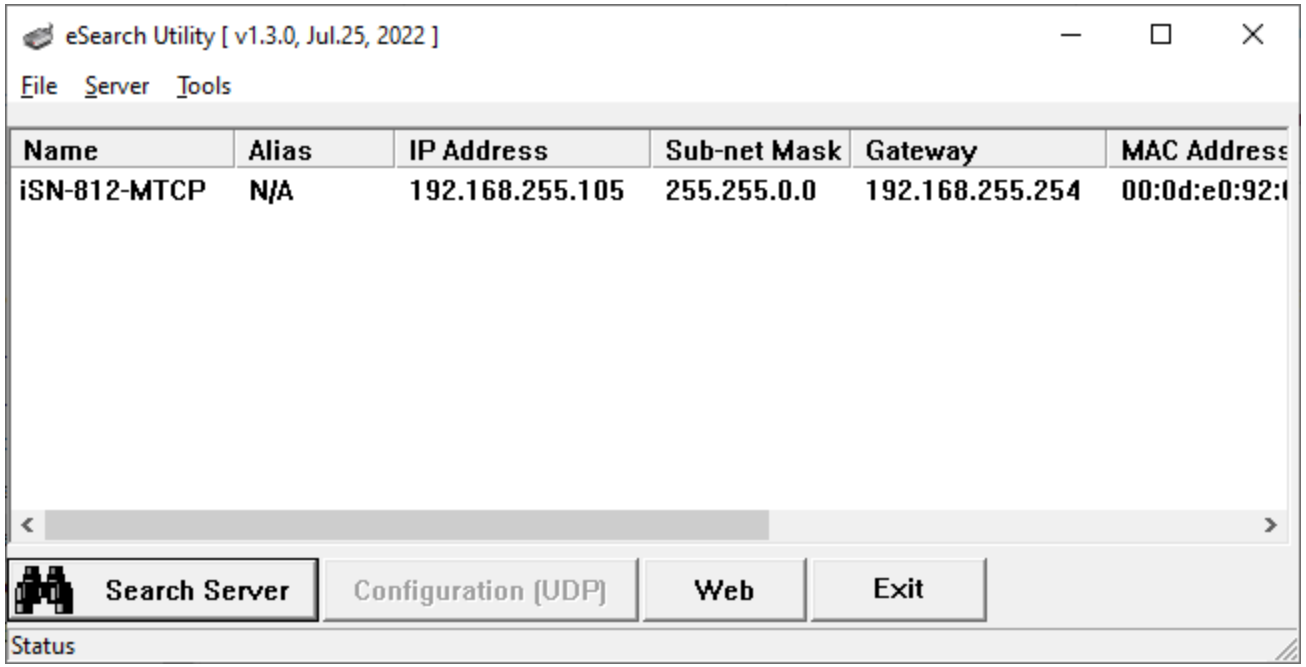
- Restart Apache to open RESTful server



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➢ Configuring iSN-81x-MTCP as a RESTful client

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



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➢ Configuring iSN-81x-MTCP as a RESTful client

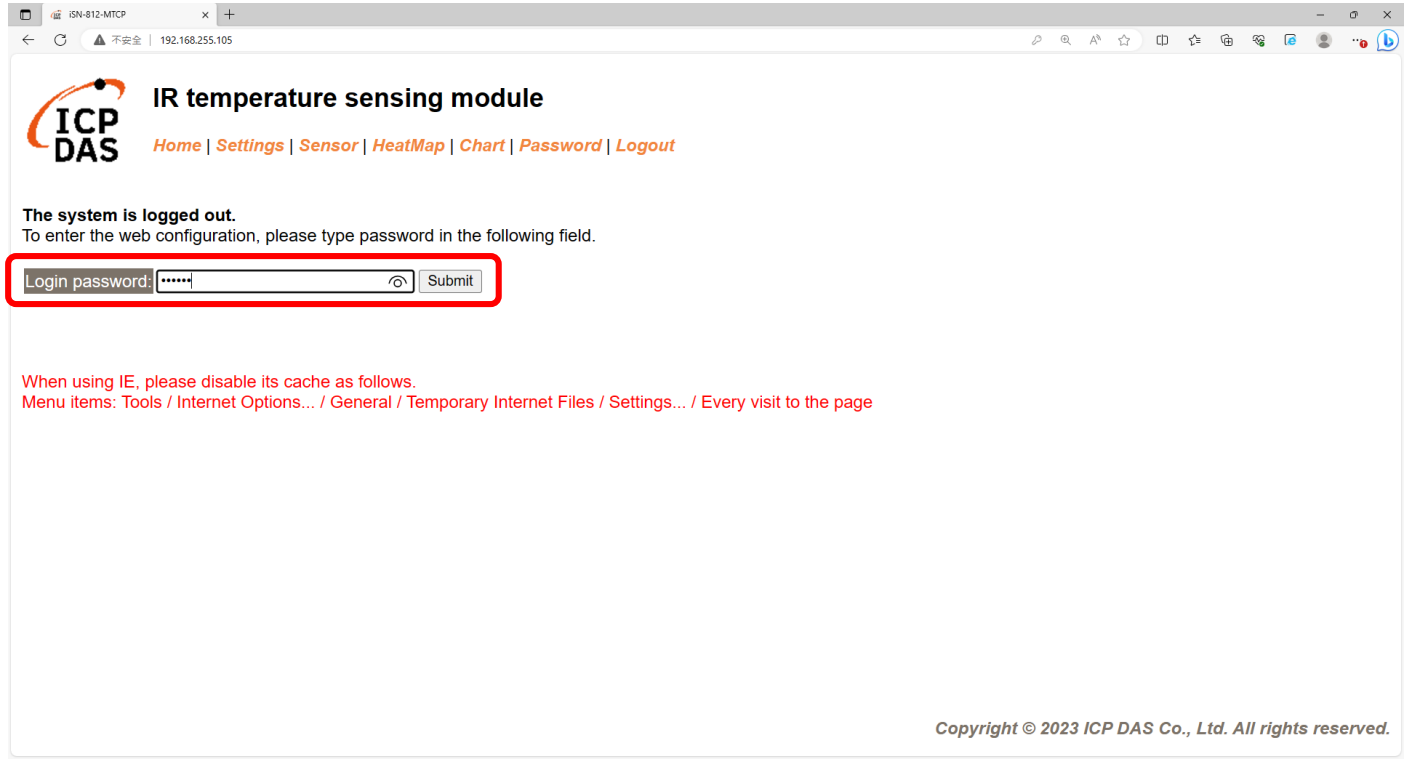
- Click ”Login to configure the device” to login



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➢ Configuring iSN-81x-MTCP as a RESTful client

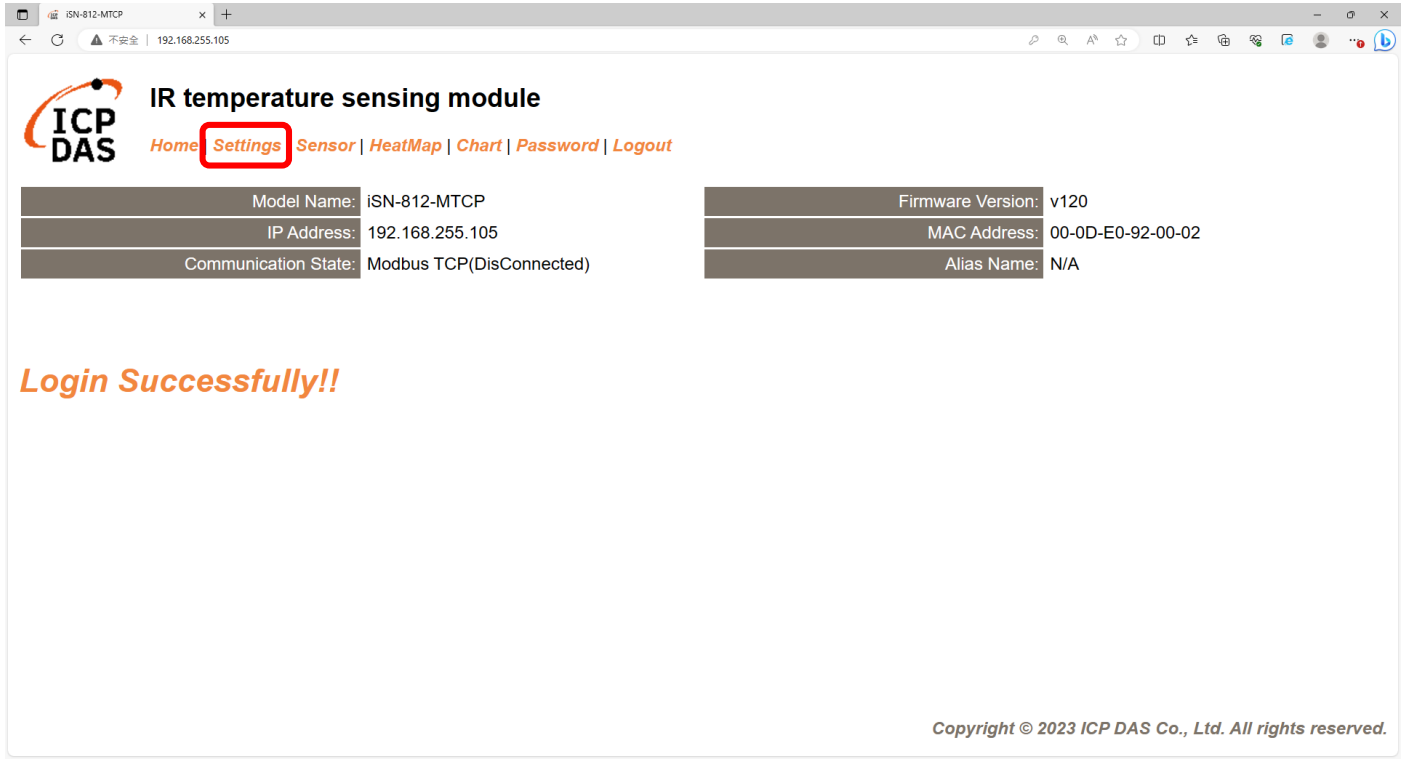
- Login(default password: admin)



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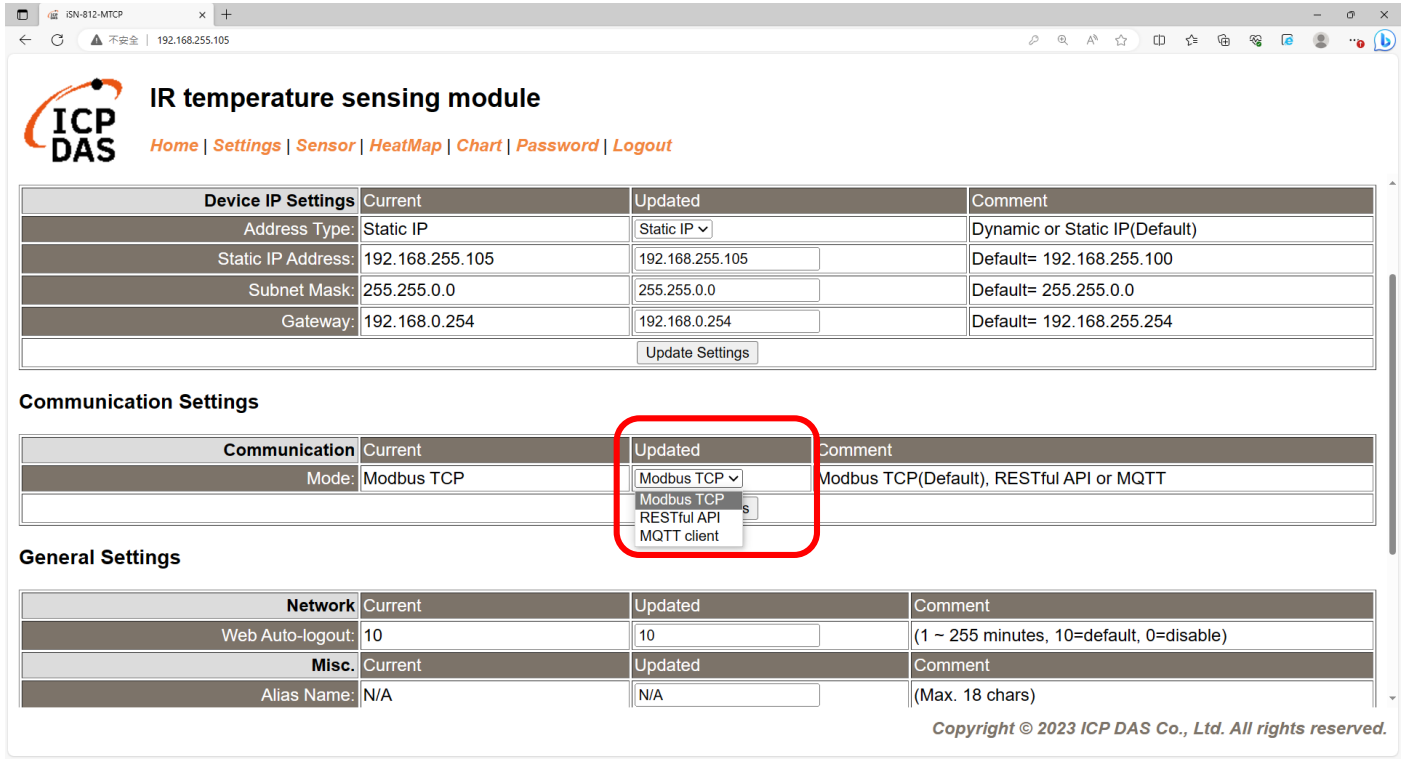
➢ Configuring iSN-81x-MTCP as a RESTful client

- Click ”Settings” to set communication mode



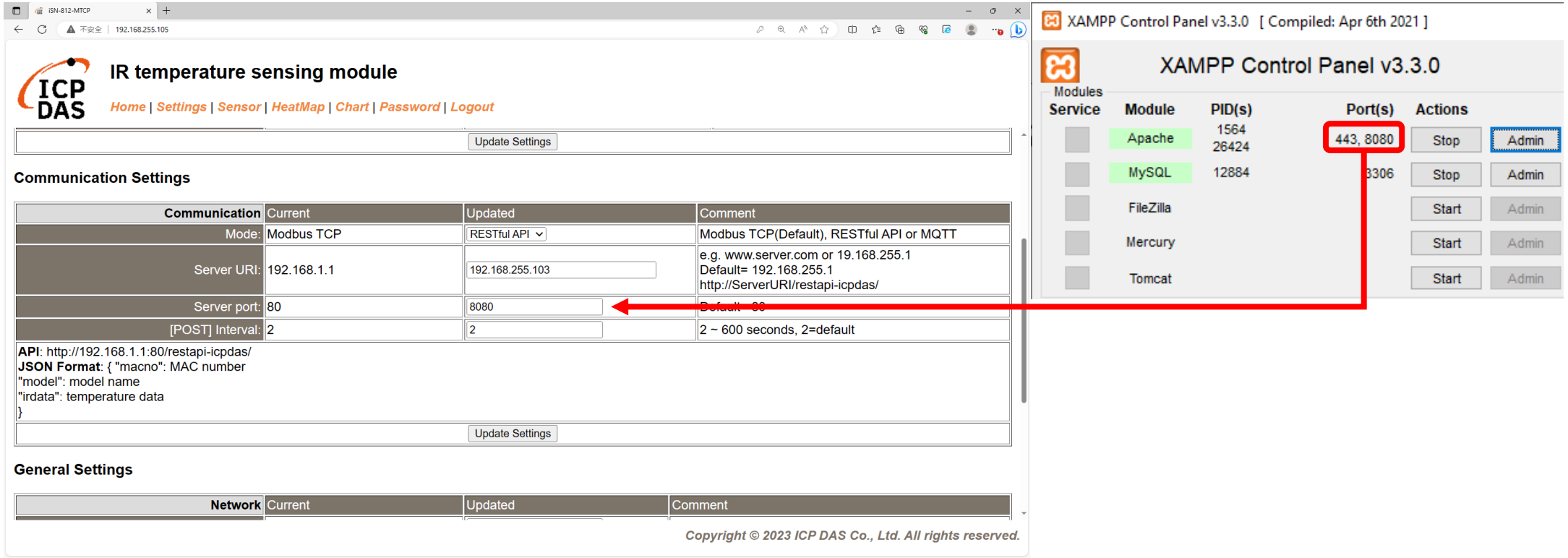
➢ Configuring iSN-81x-MTCP as a RESTful client

- Set Mode to “RESTful API”



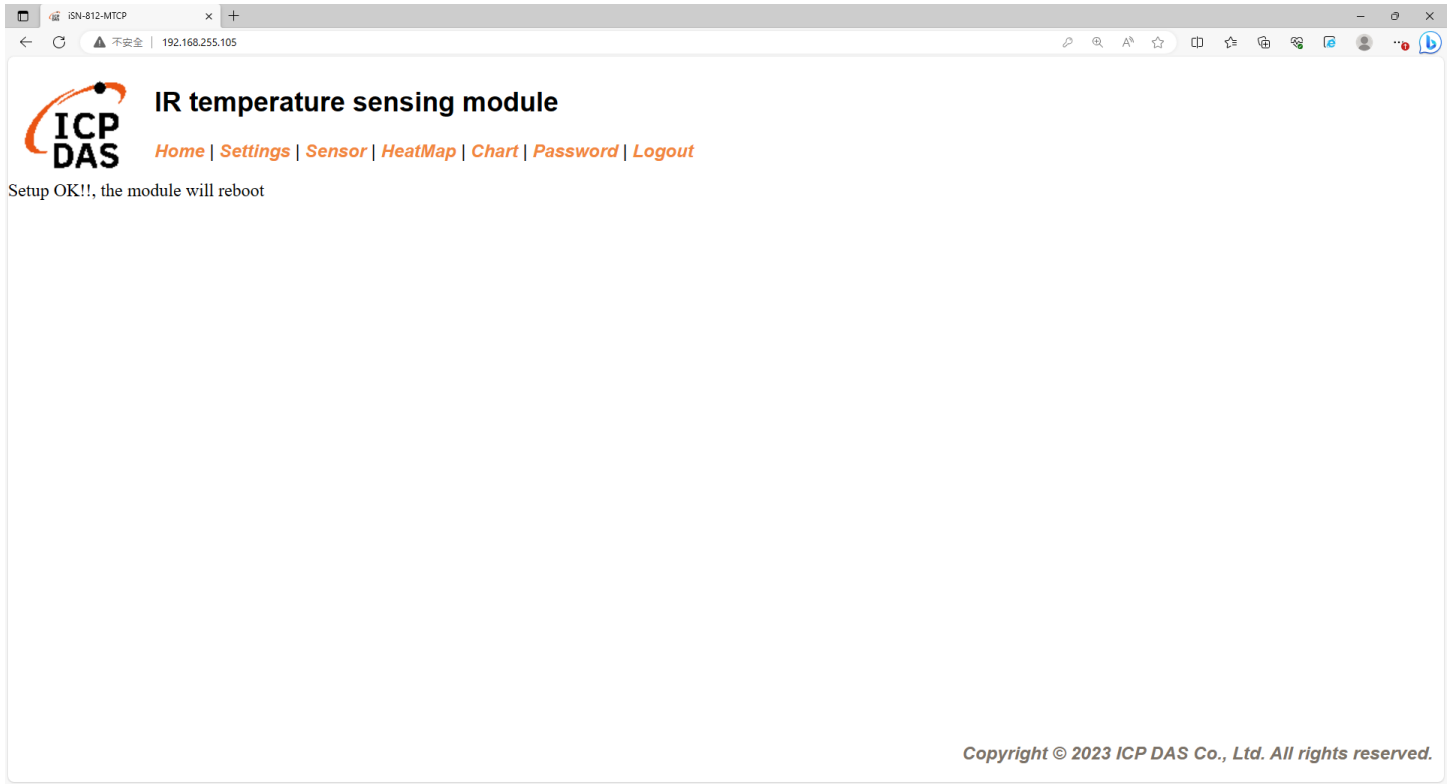
➢ Configuring iSN-81x-MTCP as a RESTful client

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



➢ Configuring iSN-81x-MTCP as a RESTful client

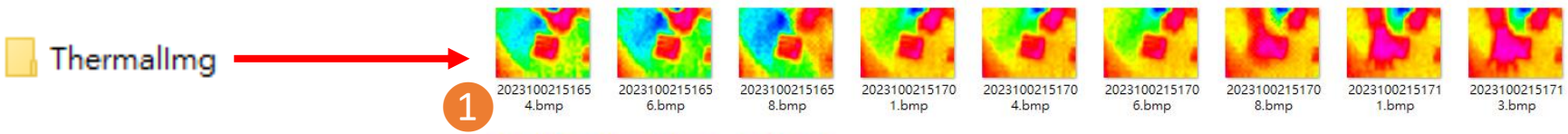
- Wait for reboot

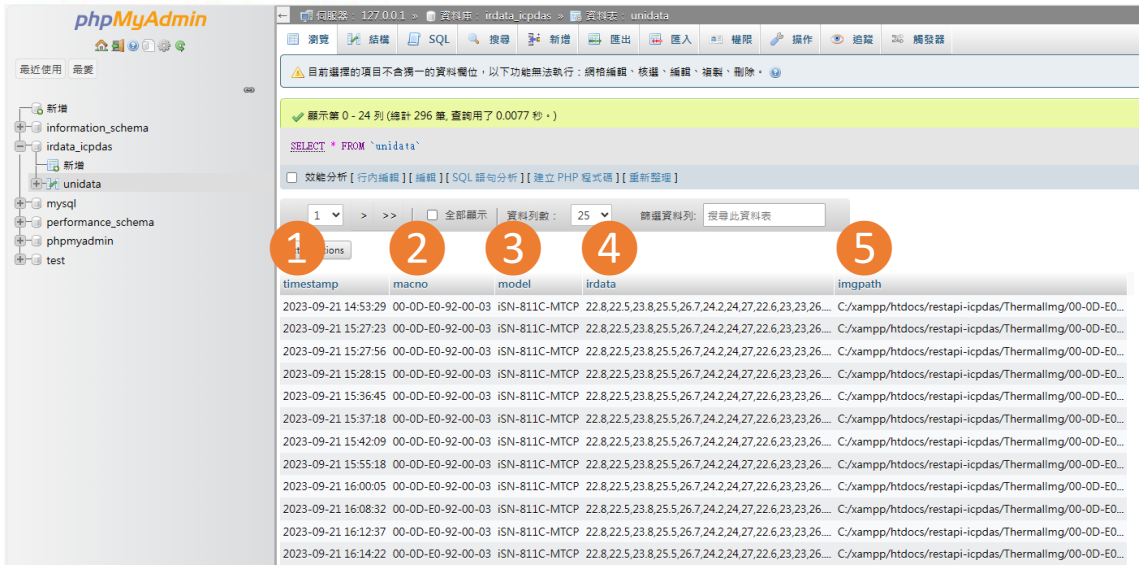


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➢ Configuring iSN-81x-MTCP as a RESTful client

- After receiving the data, the ThermalImg folder will be generated.
- Data will be saved to MySQL





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 name of Database or the name of table, open “irdata_handler.php” find the value “DBname” or “TBname” and edit the value.

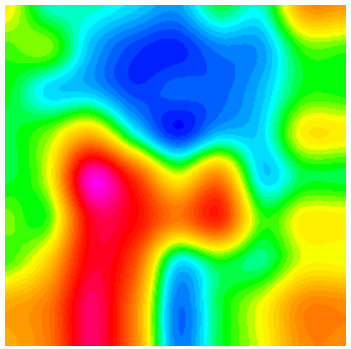
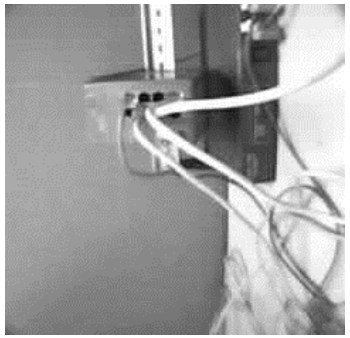
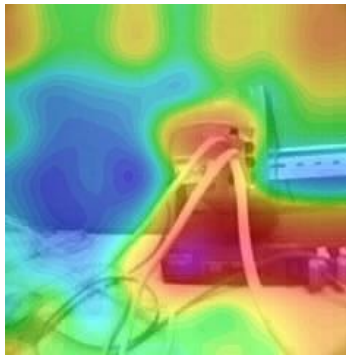
```
$DBname = "irdata_icpdas";
$TBname = "unidata";
```

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

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

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

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04

iSN-81x-MTCP RESTful_Python

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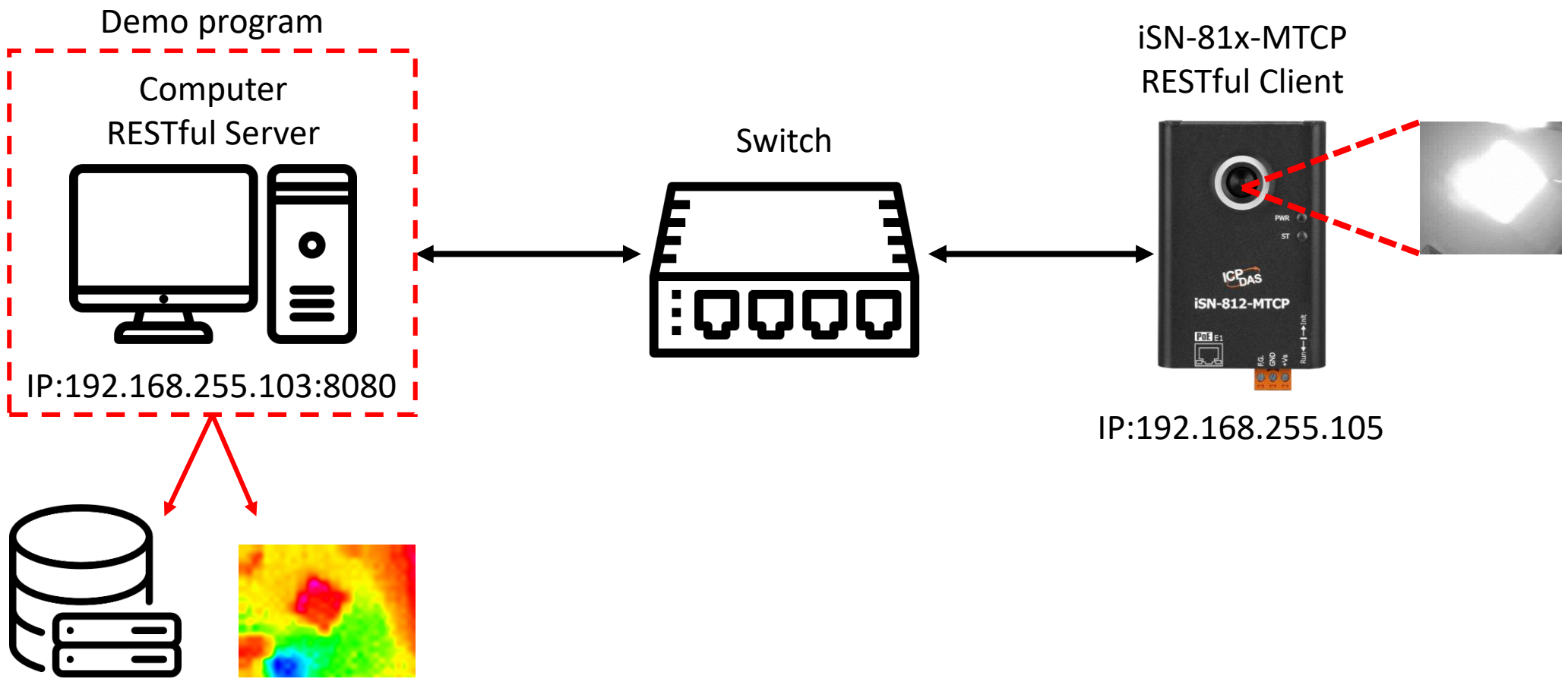
- Sample programs provide different programming languages for your reference, and you can obtain the following data through the demo programs :
  - Thermal image
  - Data measurement time
  - MAC Address of iSN-81x-MTCP
  - Model
  - IR data
  - Thermal image storage path
- The sample program uses SQLite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

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- Pre-install
  - pip install tornado
  - pip install numpy
  - pip install opencv-python

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➢ Configuring iSN-81x-MTCP as a RESTful client

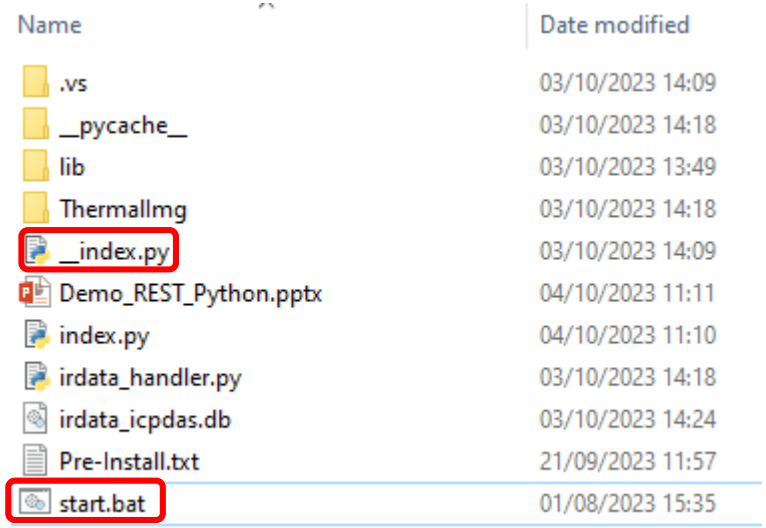


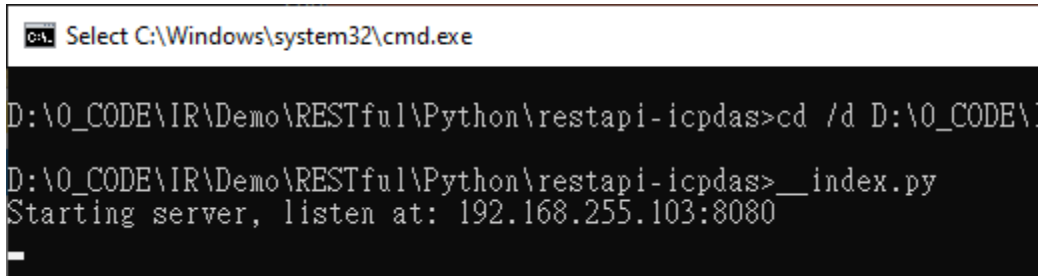
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➢ Configuring iSN-81x-MTCP as a RESTful client

- Open “__index.py” and edit host and port to the IP of the server. Save after editing
- Click “start.bat” to open RESTful server

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

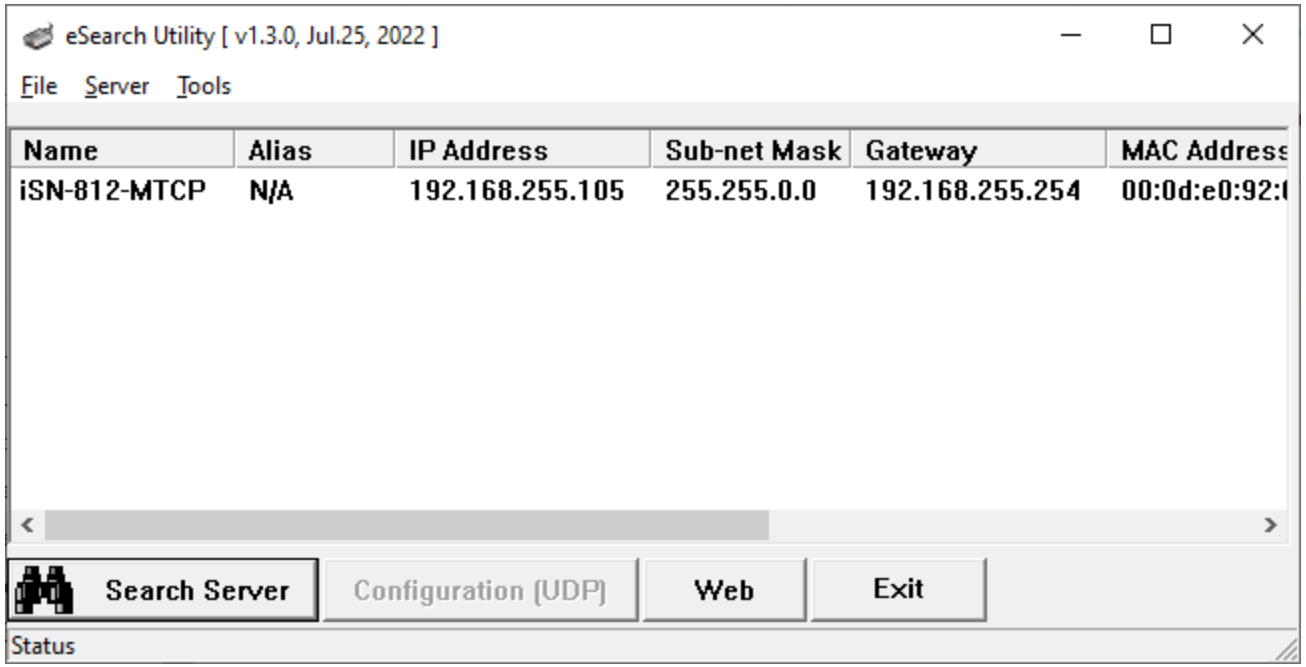




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➢ Configuring iSN-81x-MTCP as a RESTful client

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



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➢ Configuring iSN-81x-MTCP as a RESTful client

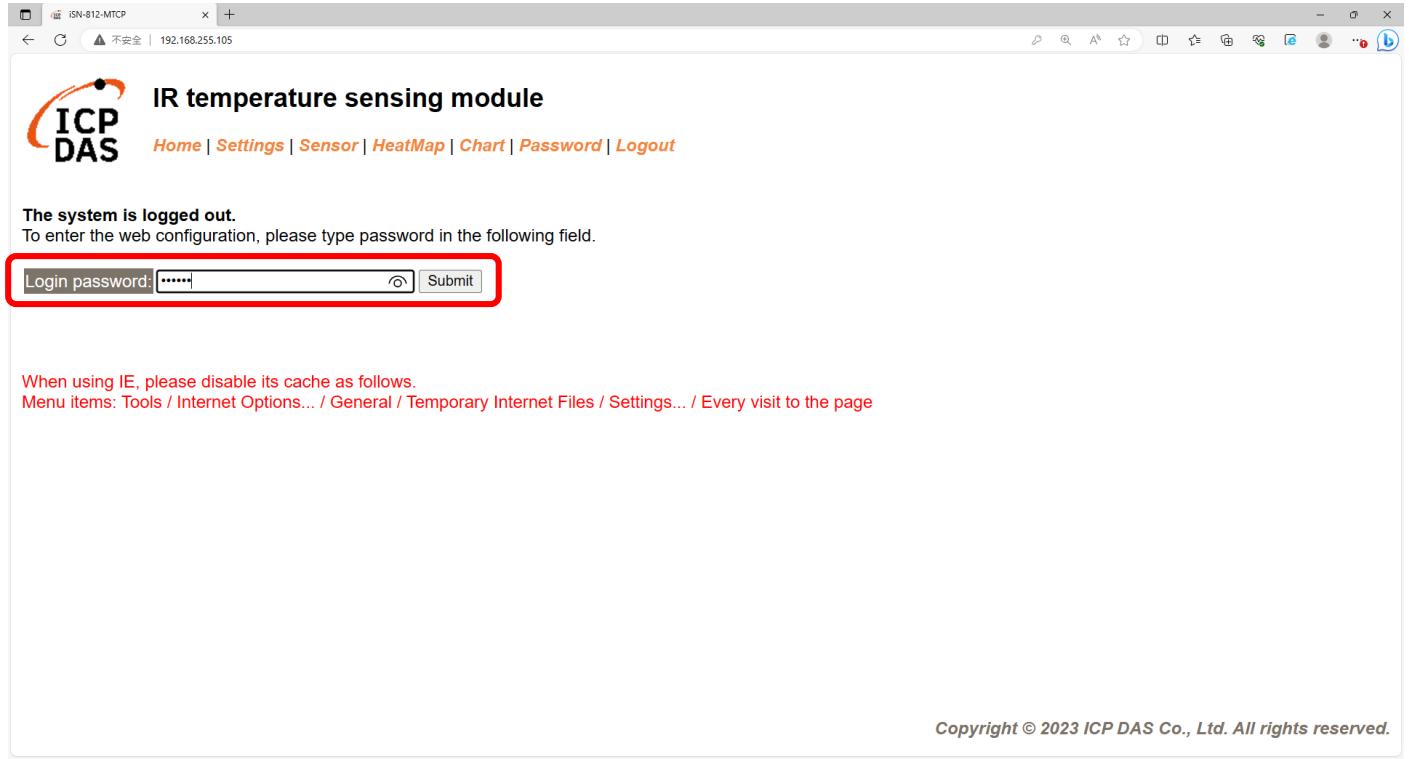
- Click ”Login to configure the device” to login



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➢ Configuring iSN-81x-MTCP as a RESTful client

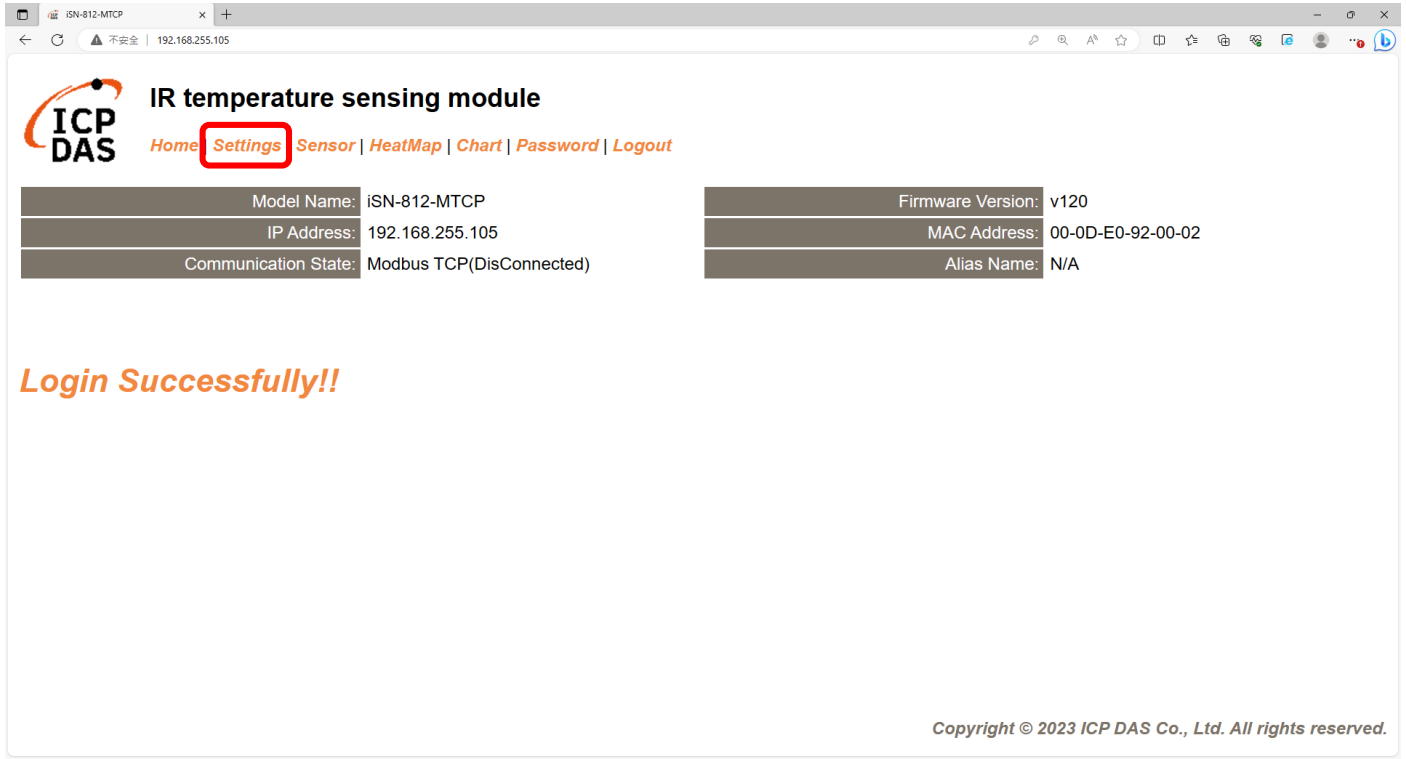
- Login(default password: admin)



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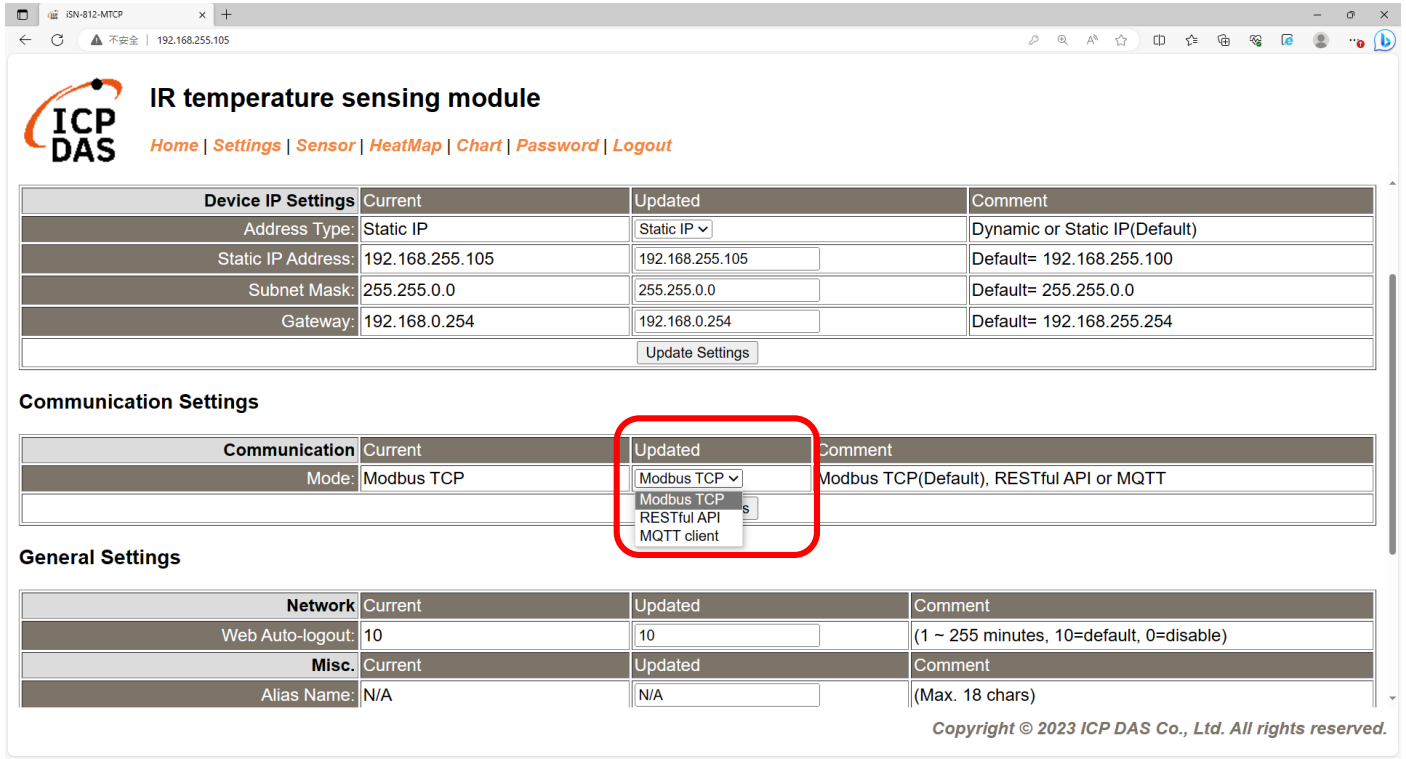
➢ Configuring iSN-81x-MTCP as a RESTful client

- Click ”Settings” to set communication mode



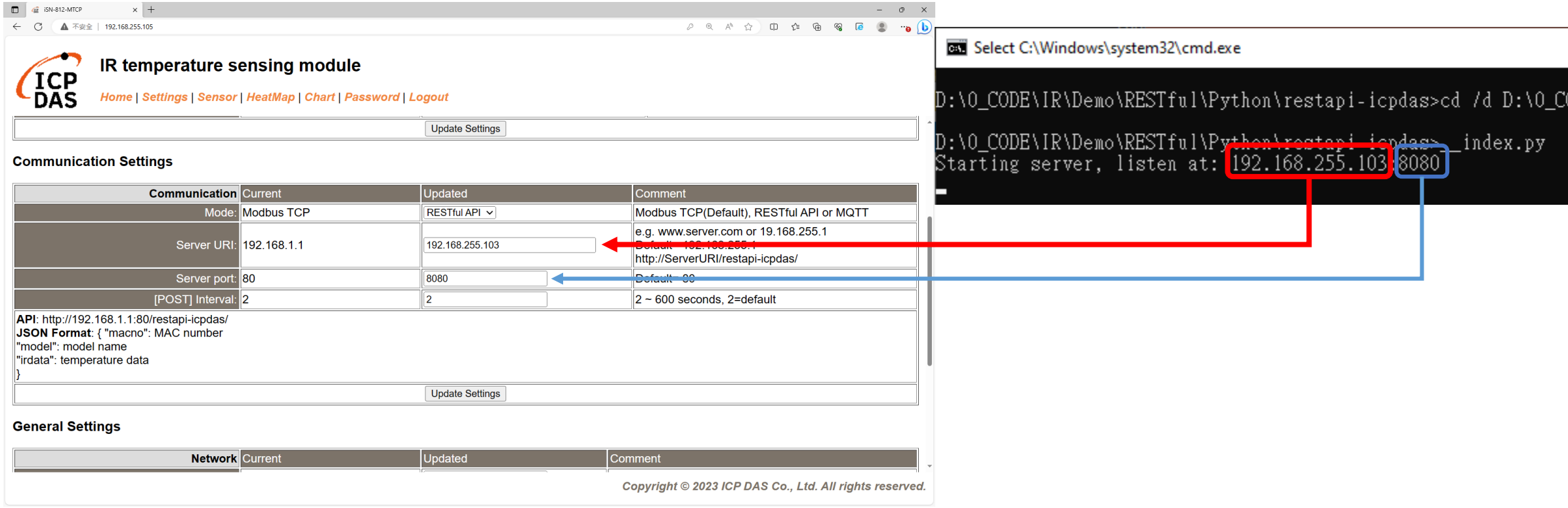
➢ Configuring iSN-81x-MTCP as a RESTful client

- Set Mode to “RESTful API”



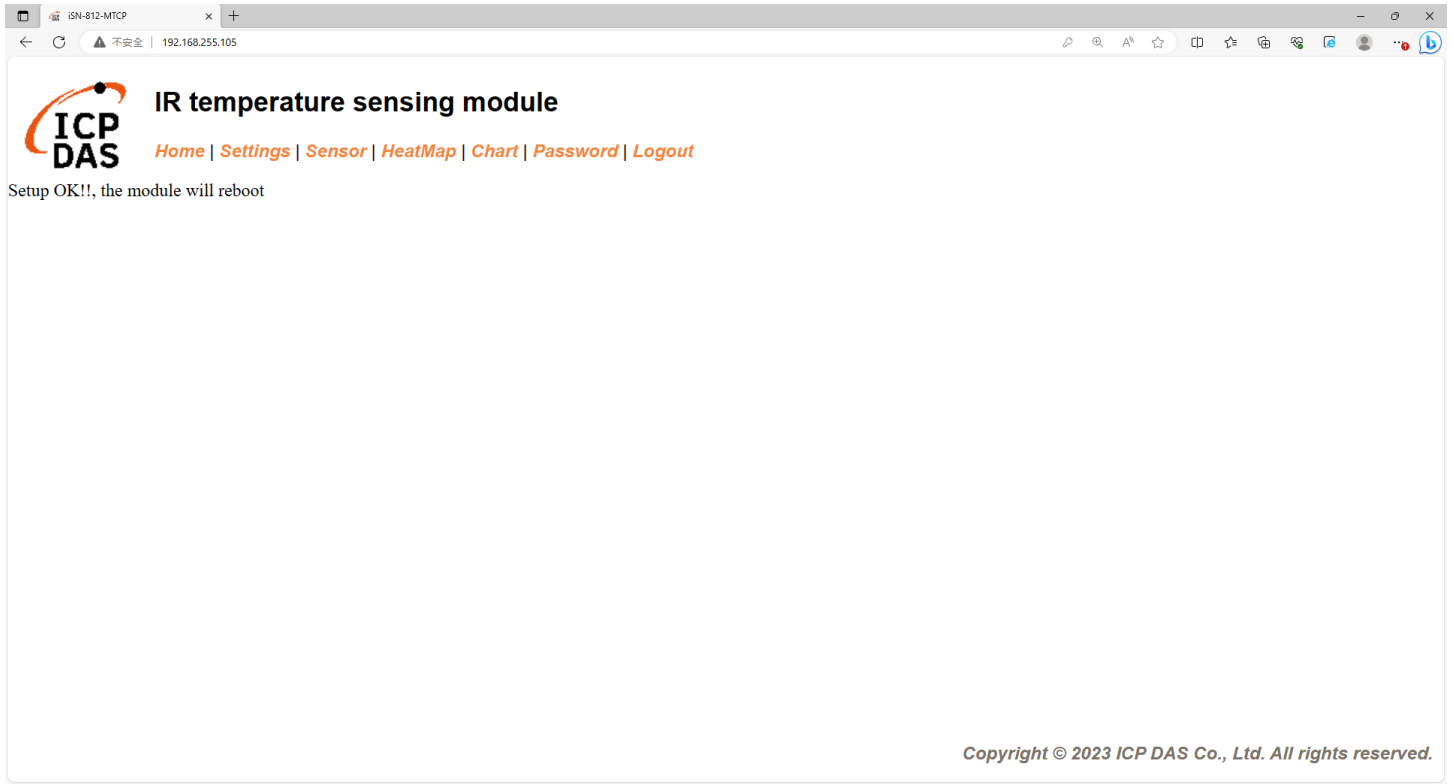
➢ Configuring iSN-81x-MTCP as a RESTful client

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



➢ Configuring iSN-81x-MTCP as a RESTful client

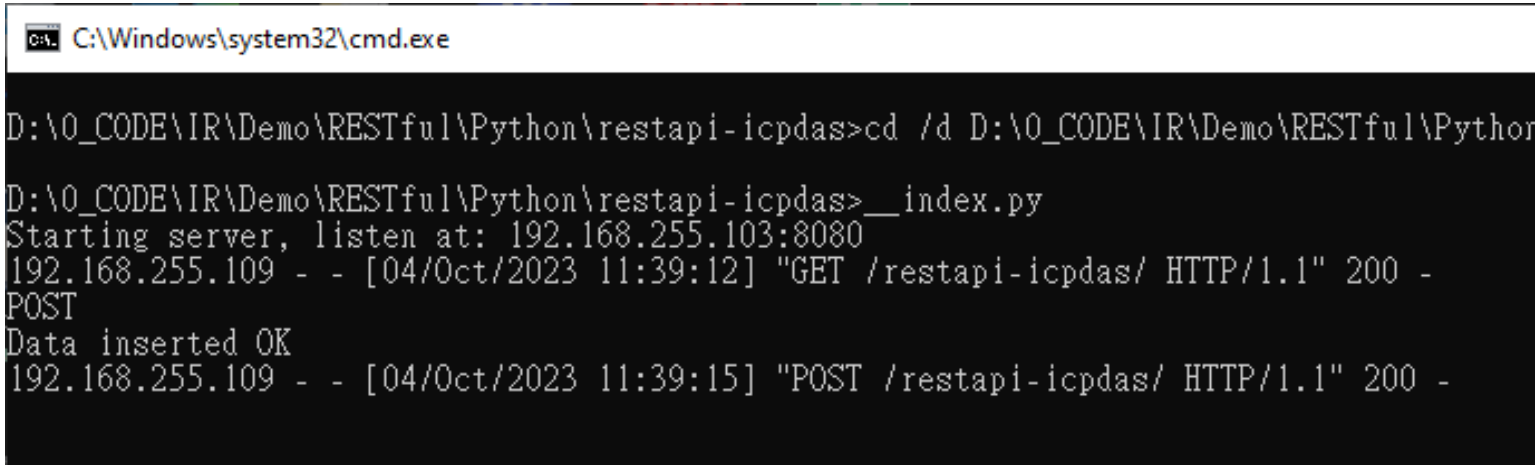
- Wait for reboot



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➢ Configuring iSN-81x-MTCP as a RESTful client

- If the connection is successful, iSN-81x-MTCP will first send a GET request, and then all POST requests.

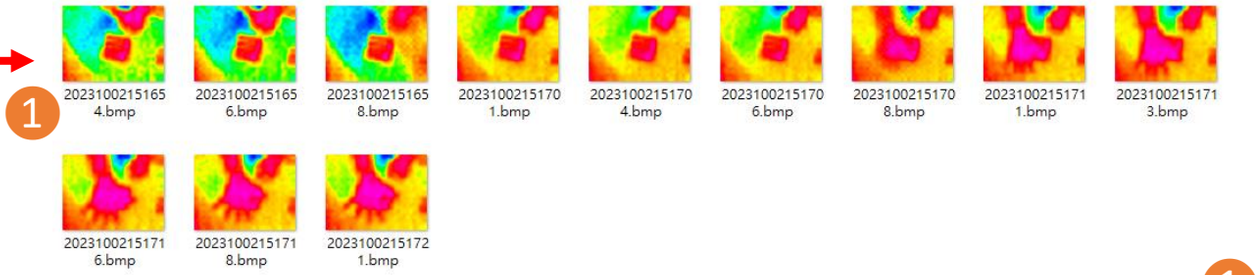


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➢ Configuring iSN-81x-MTCP as a RESTful client

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

ThermalImg



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

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➢ 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 edit the value.

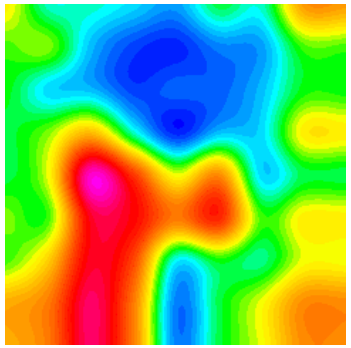
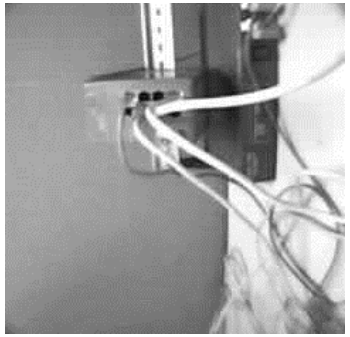
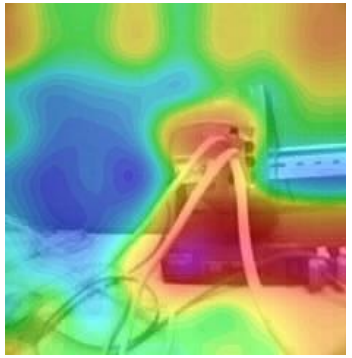
```
conn = sqlite3.connect('irdata_icpdas.db')
```

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

- If you want to adjust the transparency of the composite image, please open "RealImg.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)
```

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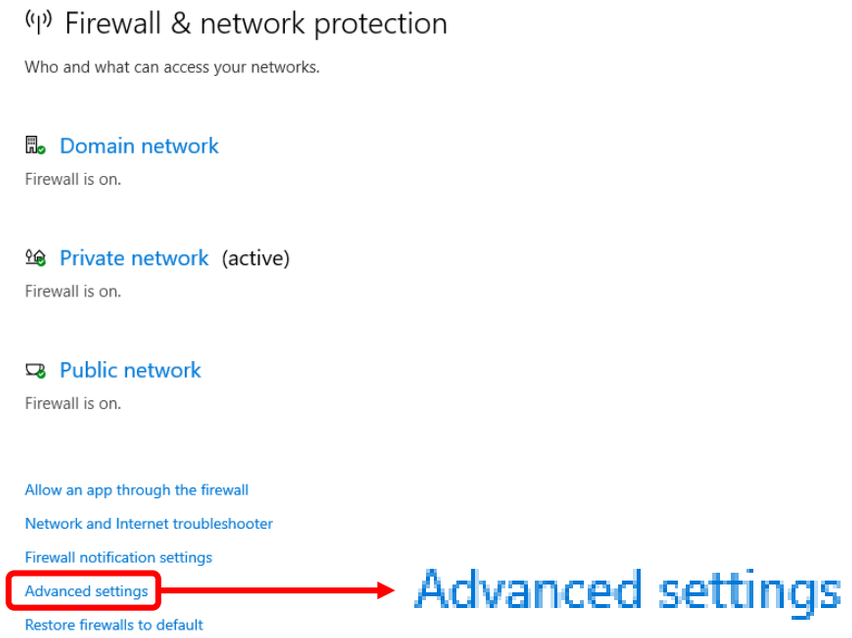
05

Firewall settings

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➢ How to solve the problem of external connections being blocked by firewall

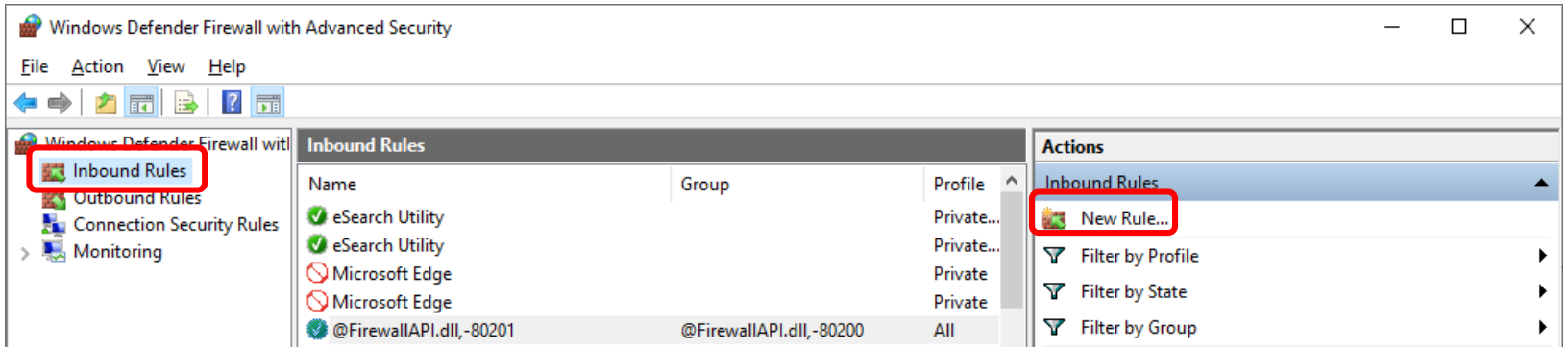
- If the settings are correct but still can’t receive the data, the data may be blocked by firewall.
- Open Firewall setting and click “Advanced settings”



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➢ How to solve the problem of external connections being blocked by firewall

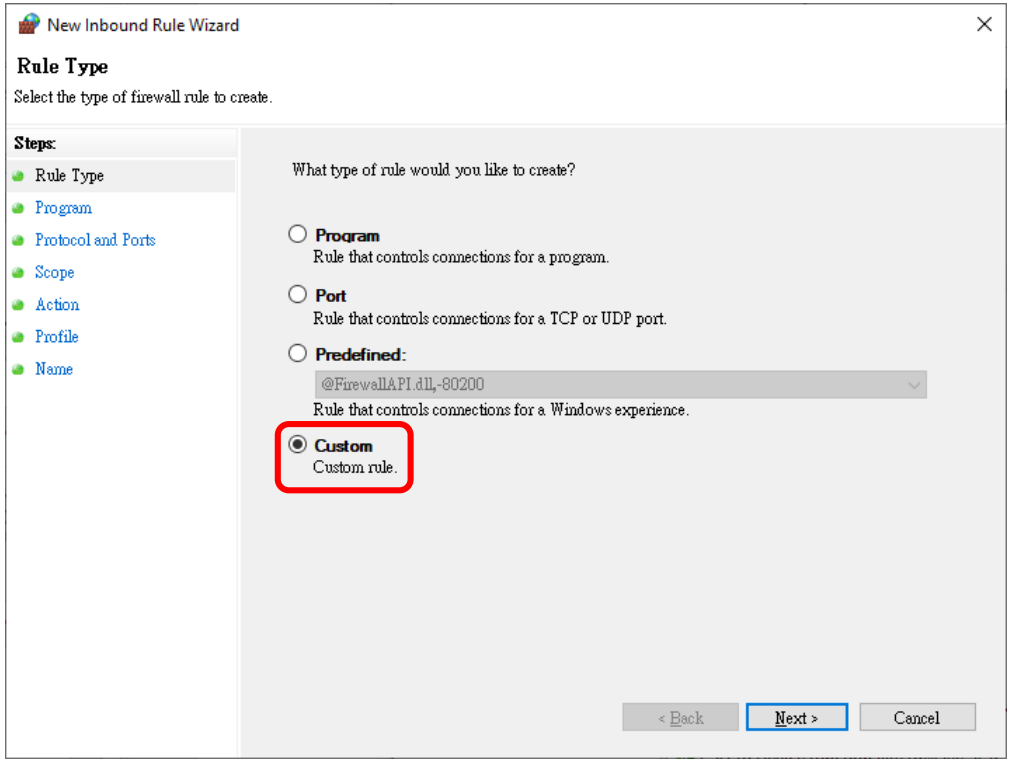
- Click “Inbound rules”, and then click “New rule”.



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➢ How to solve the problem of external connections being blocked by firewall

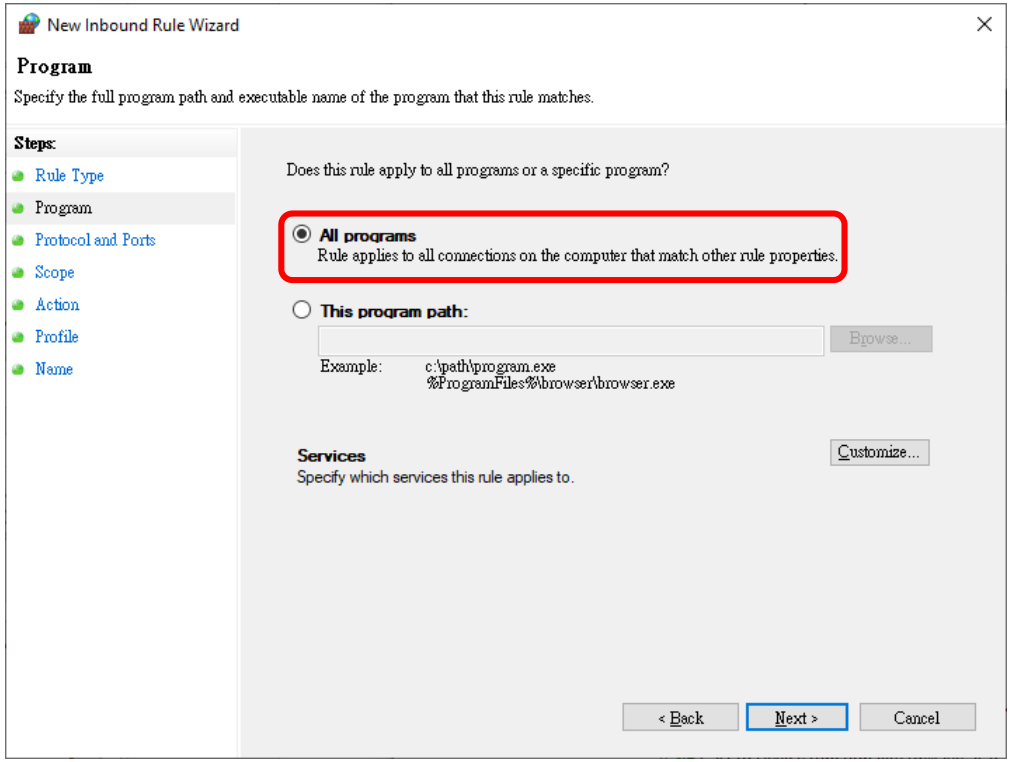
- Select “Custom”



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➢ How to solve the problem of external connections being blocked by firewall

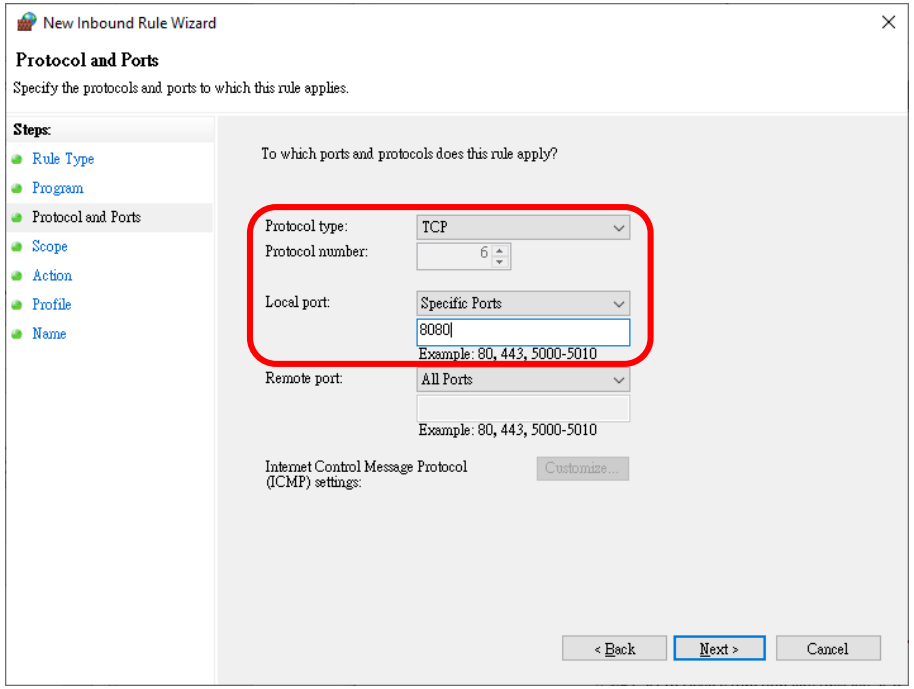
- Select “All programs”



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➢ How to solve the problem of external connections being blocked by firewall

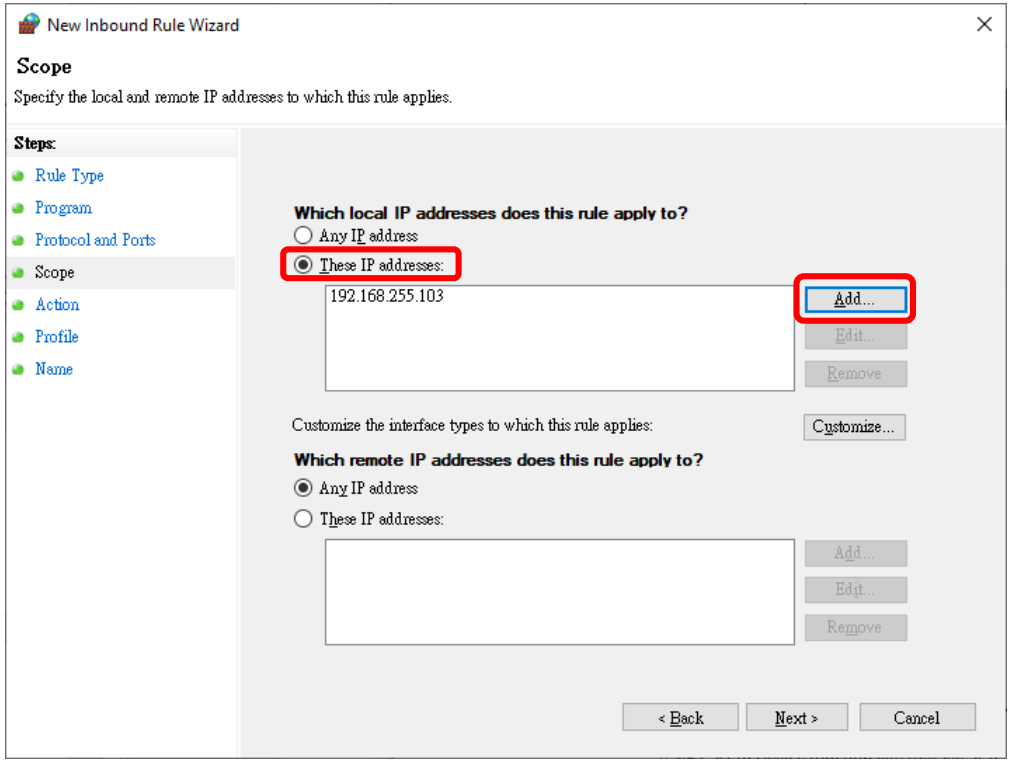
- Protocol type: TCP
- Local port: Specific ports,server’s port



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➢ How to solve the problem of external connections being blocked by firewall

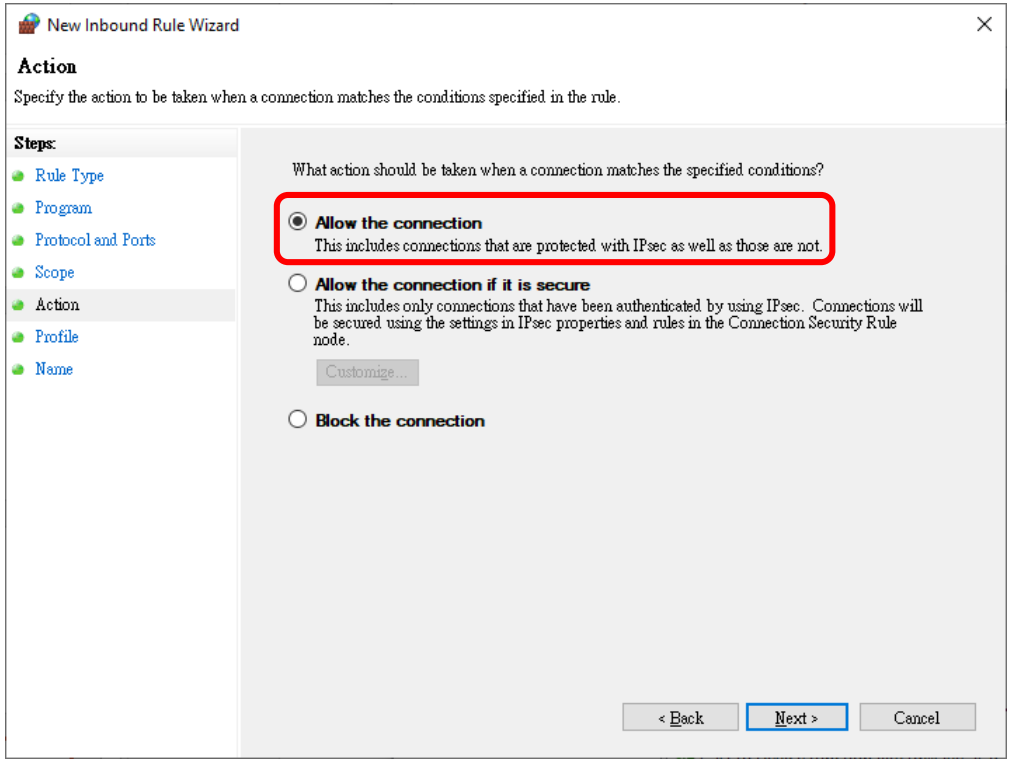
- Select “These IP address” and click “Add” to add server’s IP



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➢ How to solve the problem of external connections being blocked by firewall

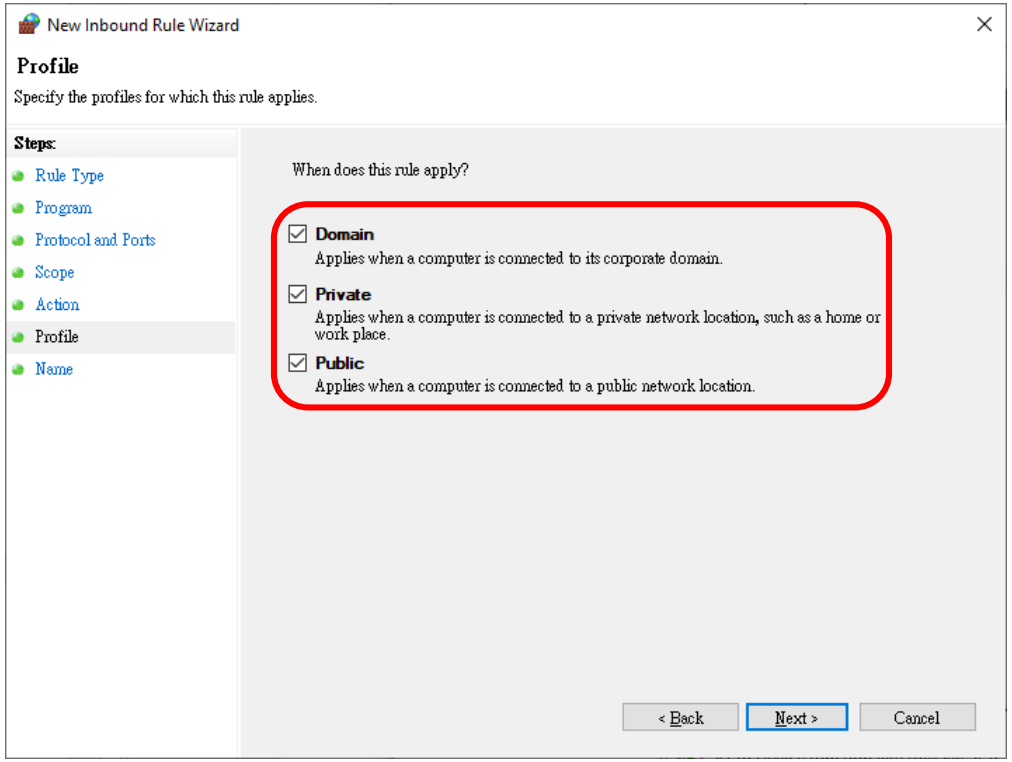
- Select “Allow the connection”



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➢ How to solve the problem of external connections being blocked by firewall

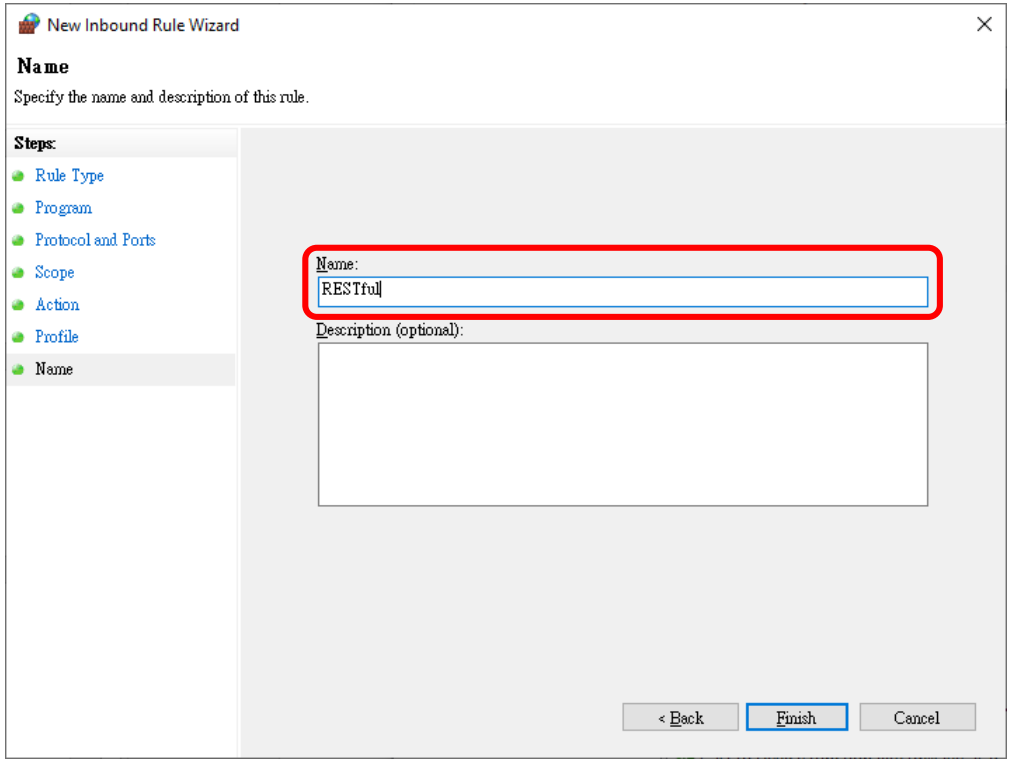
- Check all options



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➢ How to solve the problem of external connections being blocked by firewall

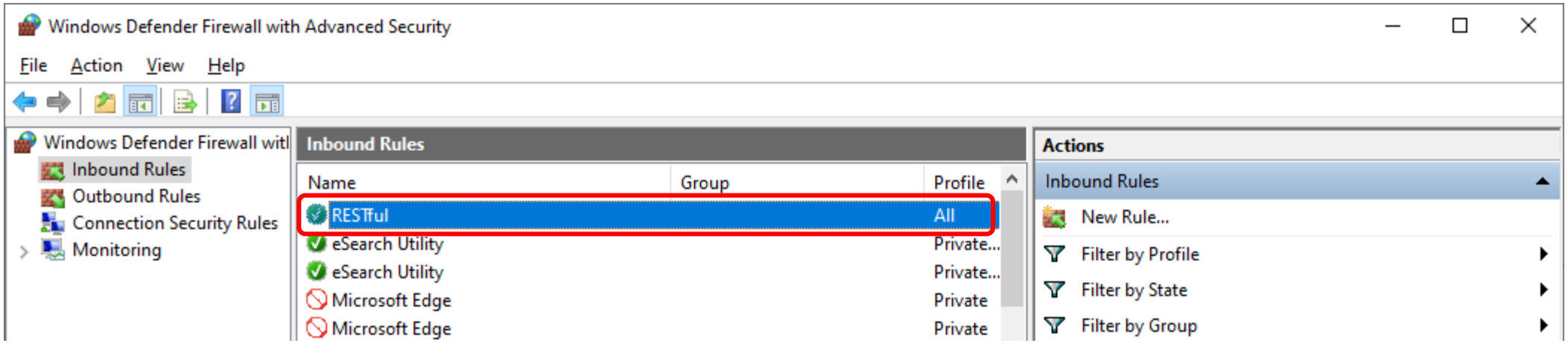
- Name:RESTful



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➢ How to solve the problem of external connections being blocked by firewall

- Complete and check whether data reception is normal



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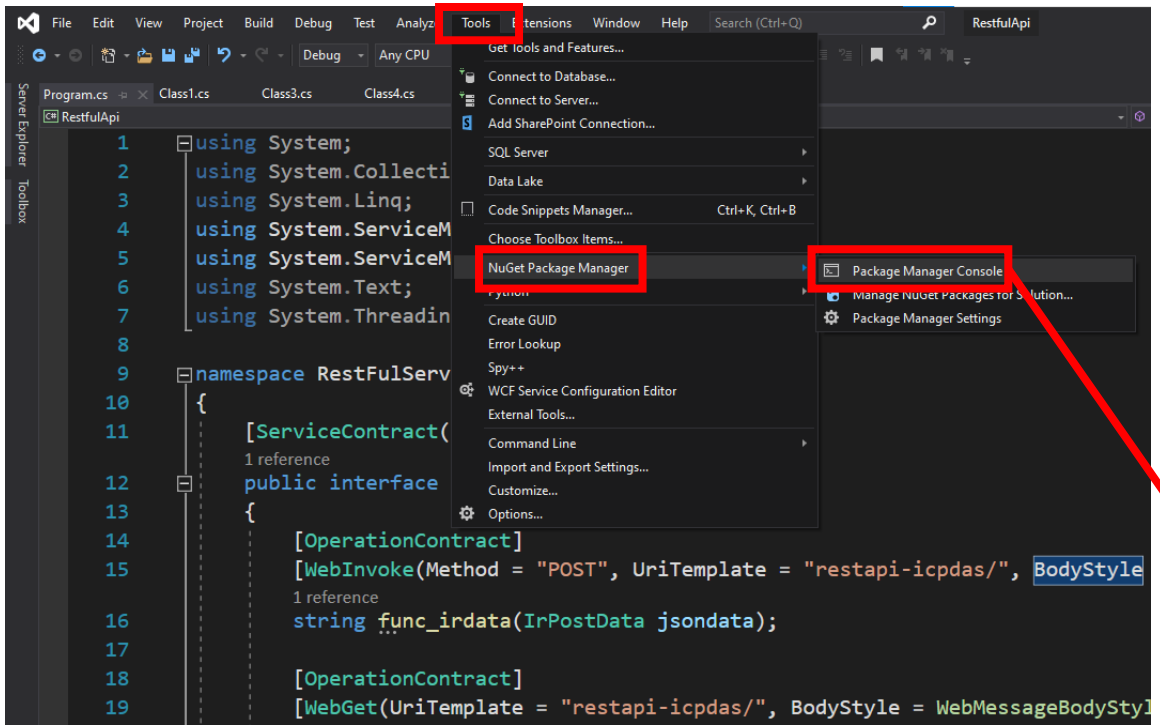
06

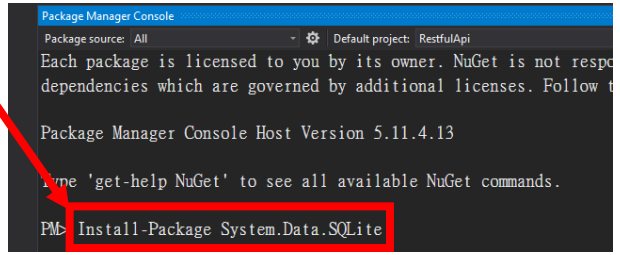
How to install Lib

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➢ How to install Lib in CSharp

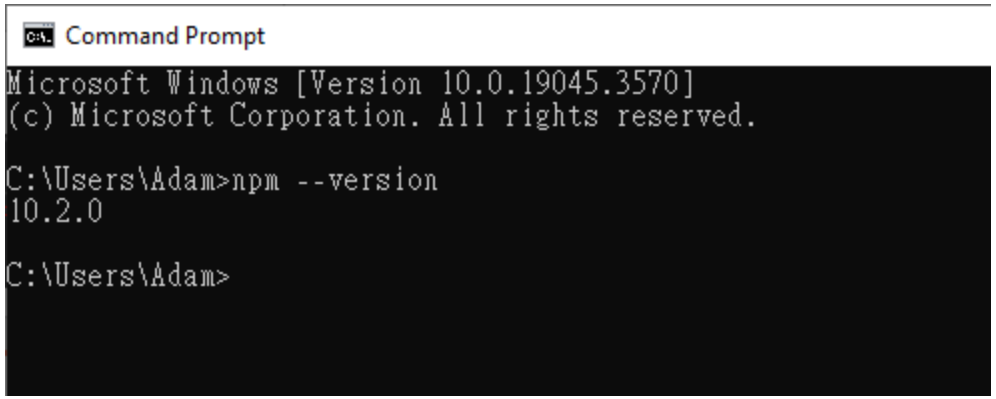
- NuGet
- Install Command→Install-Package System.Data.SQLite (libraries's name)





➢ How to install Lib in Node.js

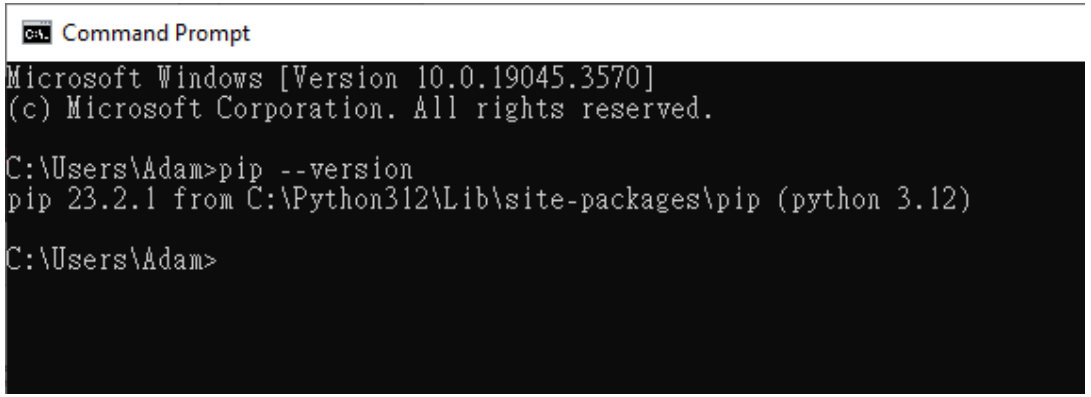
- When you install the node.js environment, npm is also installed. npm is used to install various libraries in the node.js environment.
- Use the command to check whether npm is installed →npm --version
- Install Command→npm install modbus-serial(libraries's name)



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➢ How to install Lib in Python

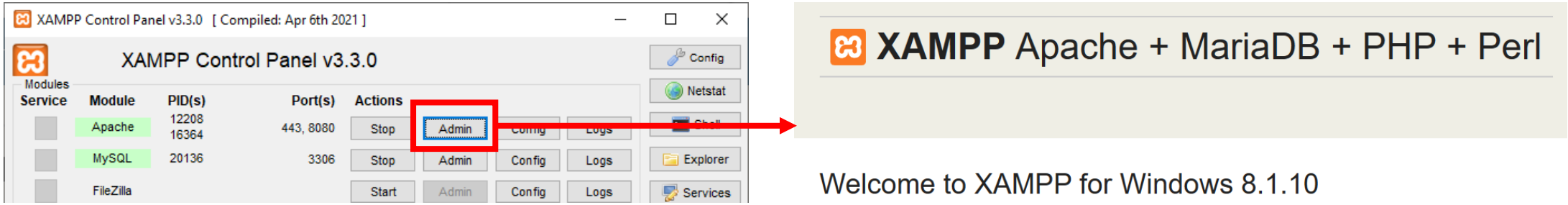
- Python uses pip to manage function libraries. When installing python, pip will also be installed.
- Use the command to check whether pip is installed →pip --version
- Install Command→ pip install pymodbus(libraries's name)



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➢ How to install XAMPP

- XAMPP is an installation package that integrates the Apache web server with PHP, Perl and MariaDB, allowing users to easily create web servers on their own computers.
- Sample program XAMPP's version→8.1.10
- Download the installation package according to your operating system→https://sourceforge.net/projects/xampp/files/XAMPP%20Windows/8.1.10/(windows)



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