



Industrial Automation Technology
Innovator and Enhancer.

How to connect iSN-81x module through RESTful





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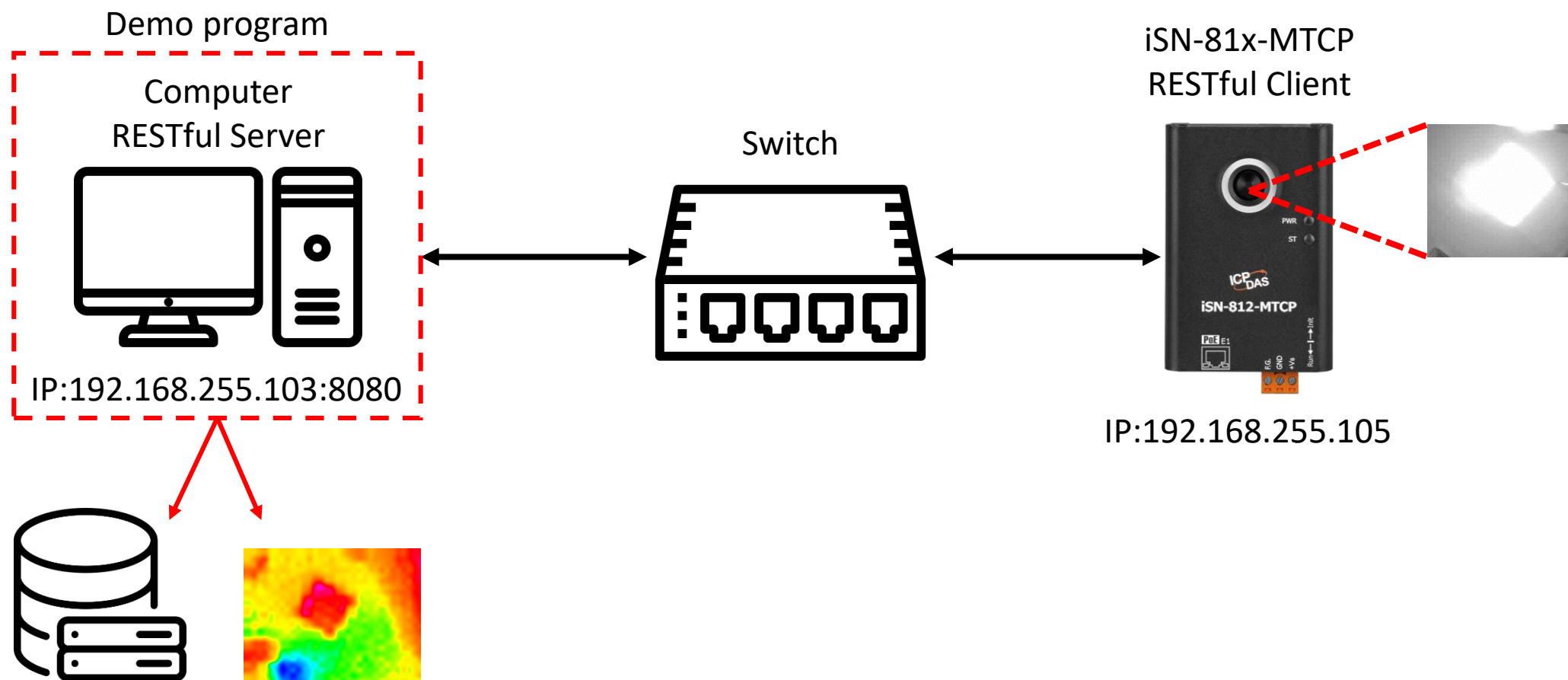
01

iSN-81x-MTCP RESTful_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

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



➤ 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

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

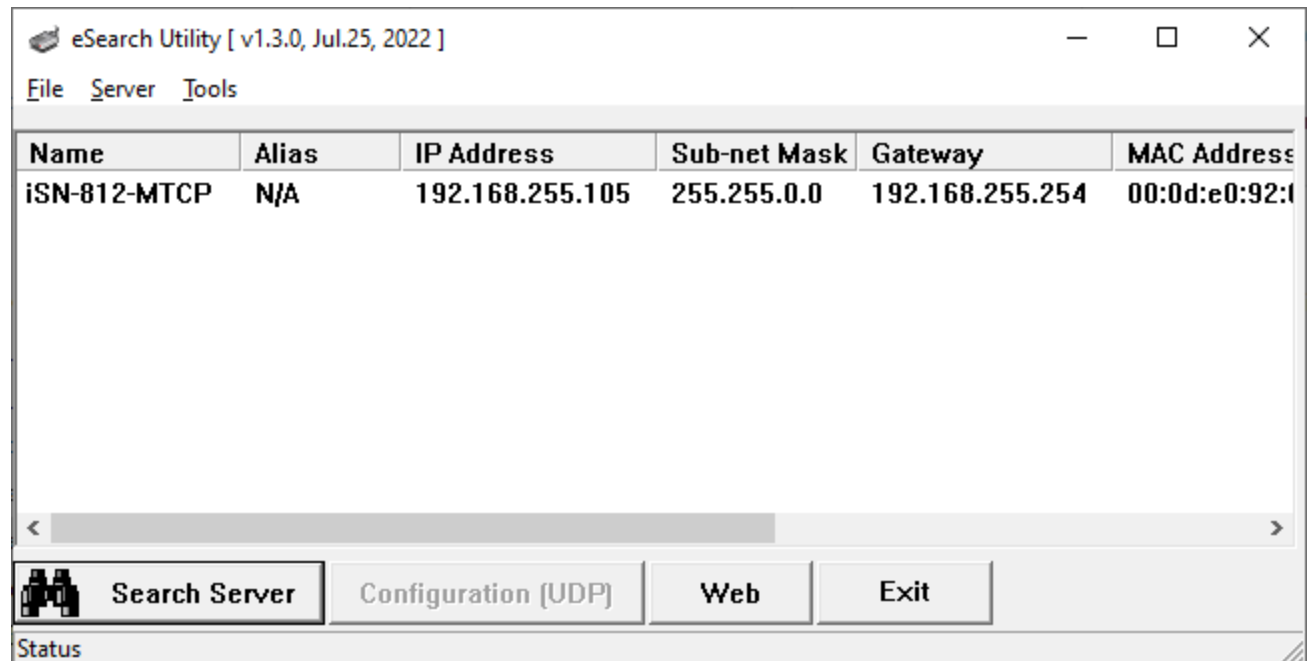
Please Enter IP index, port(default 80) => e.g. 3, 8080
```

```
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
```

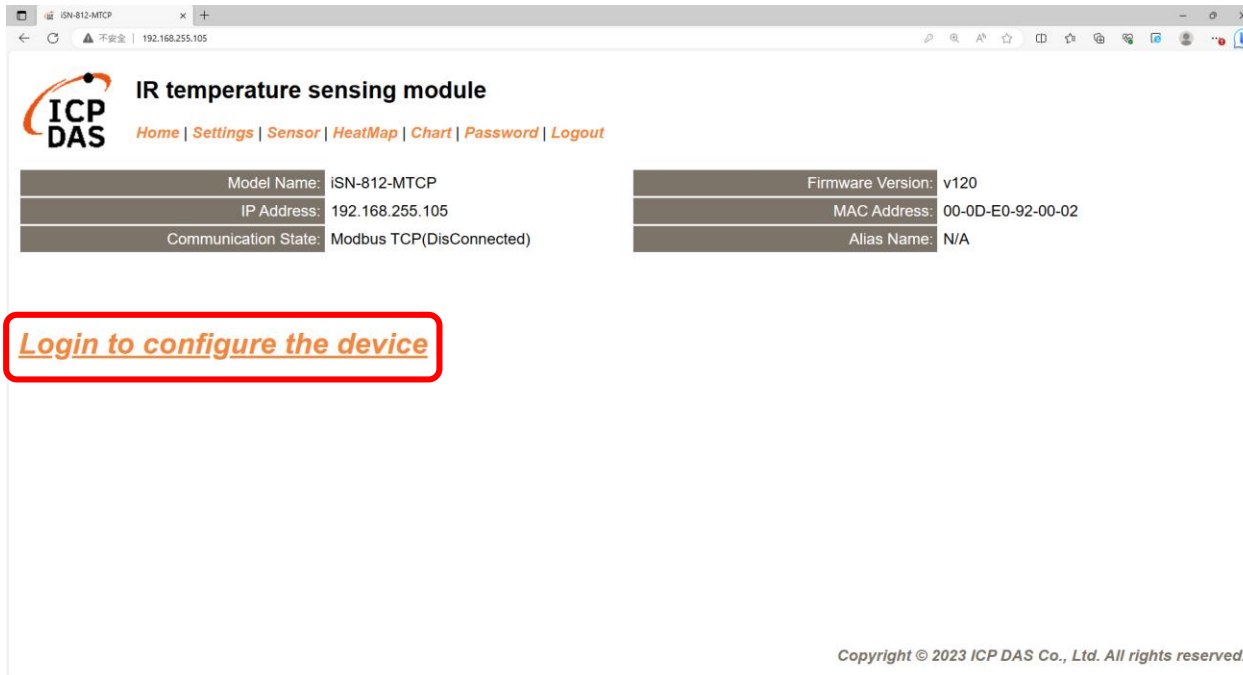
➤ Configuring iSN-81x-MTCP as a RESTful client

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



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

- Click "Login to configure the device" to login



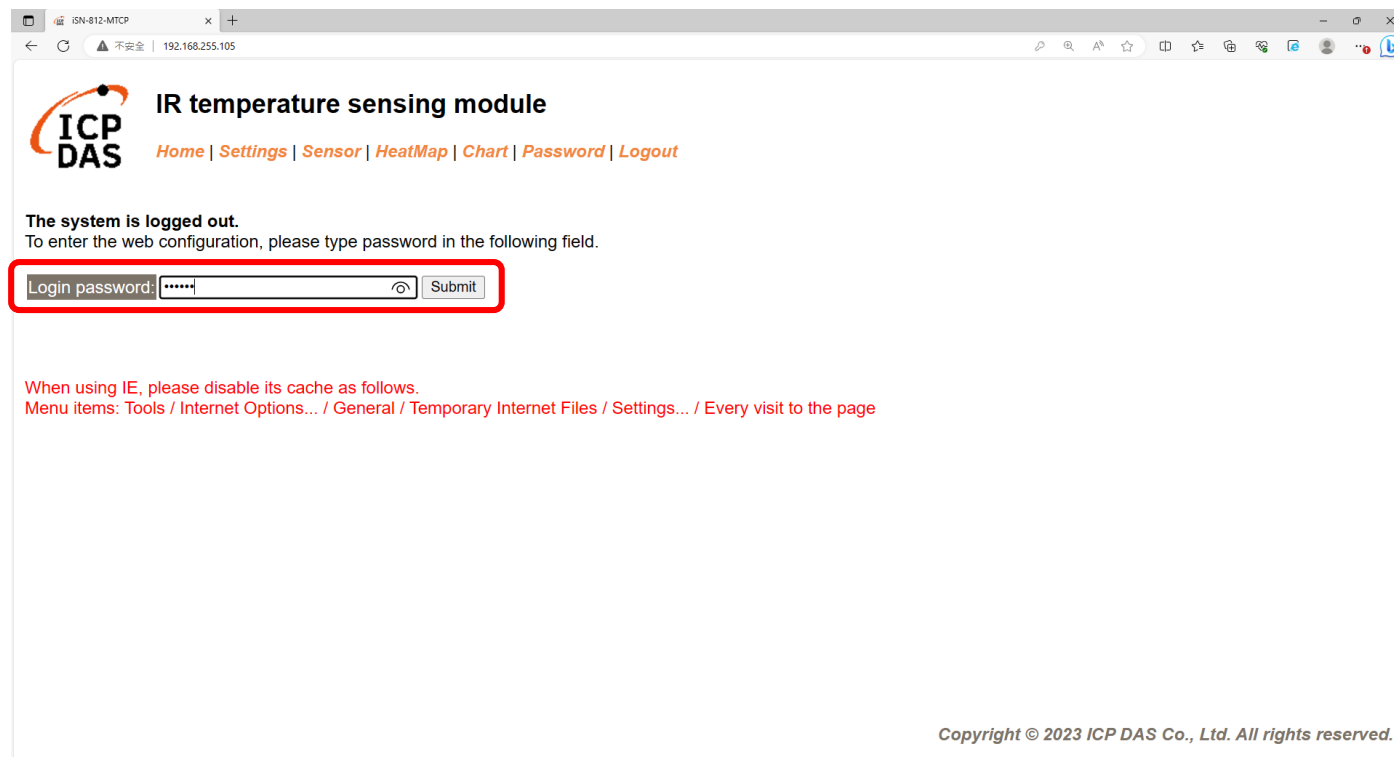
The screenshot shows the web interface for the iSN-812-MTCP device. The page title is "IR temperature sensing module" and the ICP DAS logo is visible. The navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The device information is displayed in a table:

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."

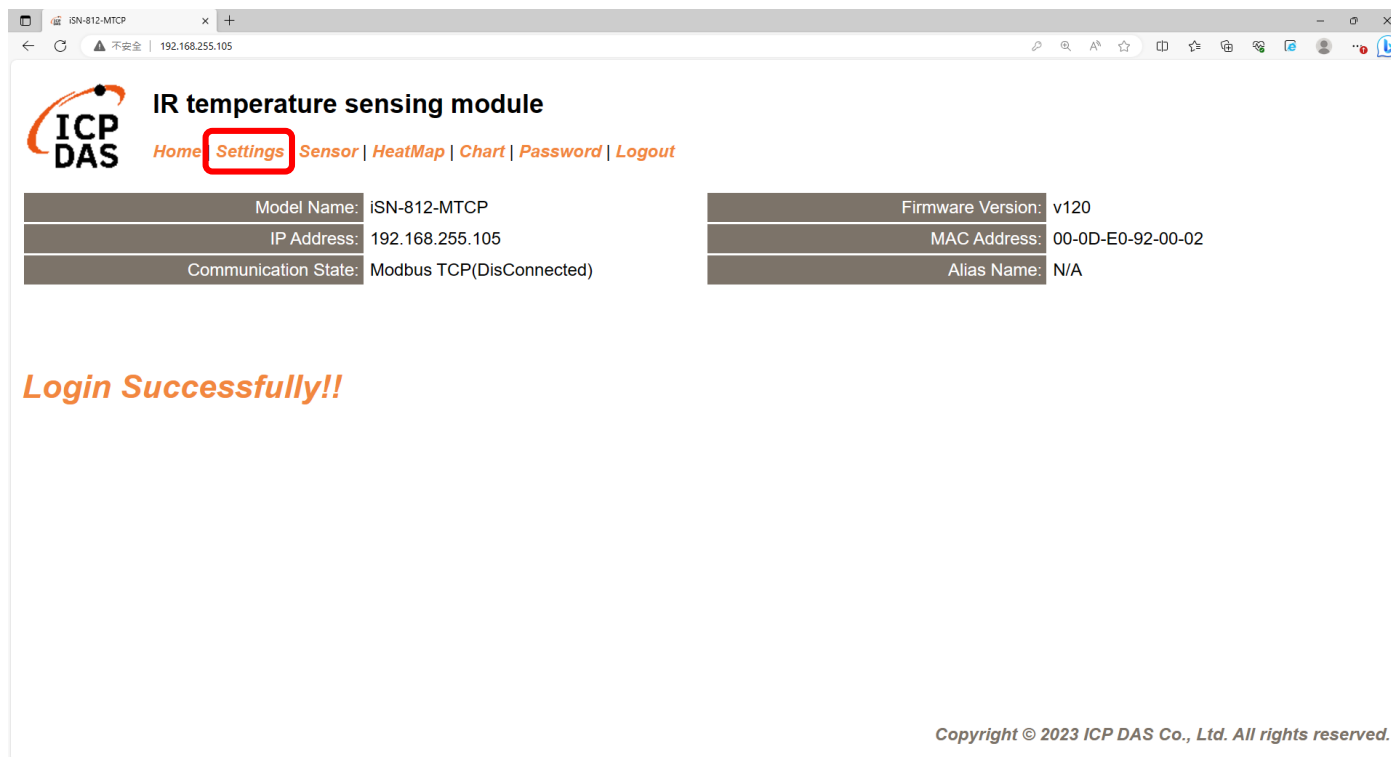
➤ Configuring iSN-81x-MTCP as a RESTful client

- Login(default password: admin)



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

- Click "Settings" to set communication mode



ICP DAS IR temperature sensing module

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

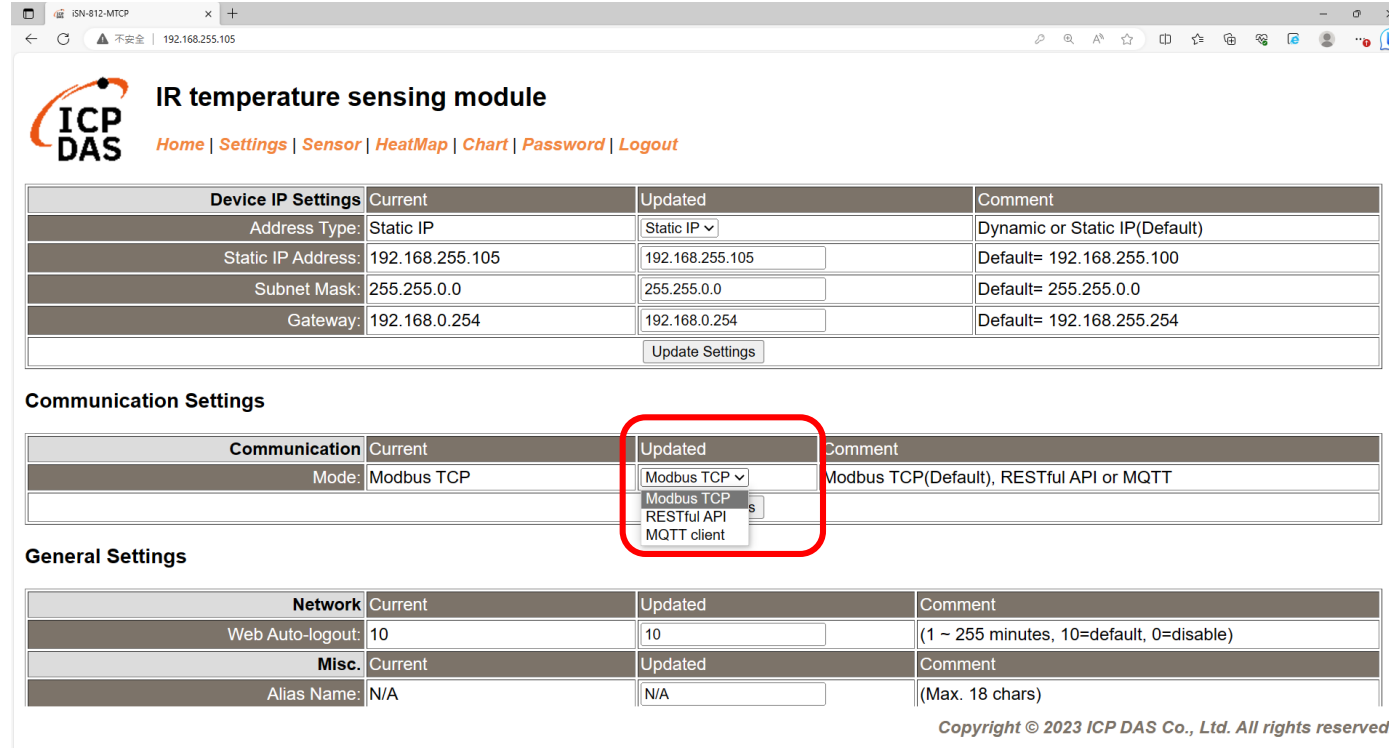
Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Login Successfully!!

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

- Set communication mode to “RESTful API”



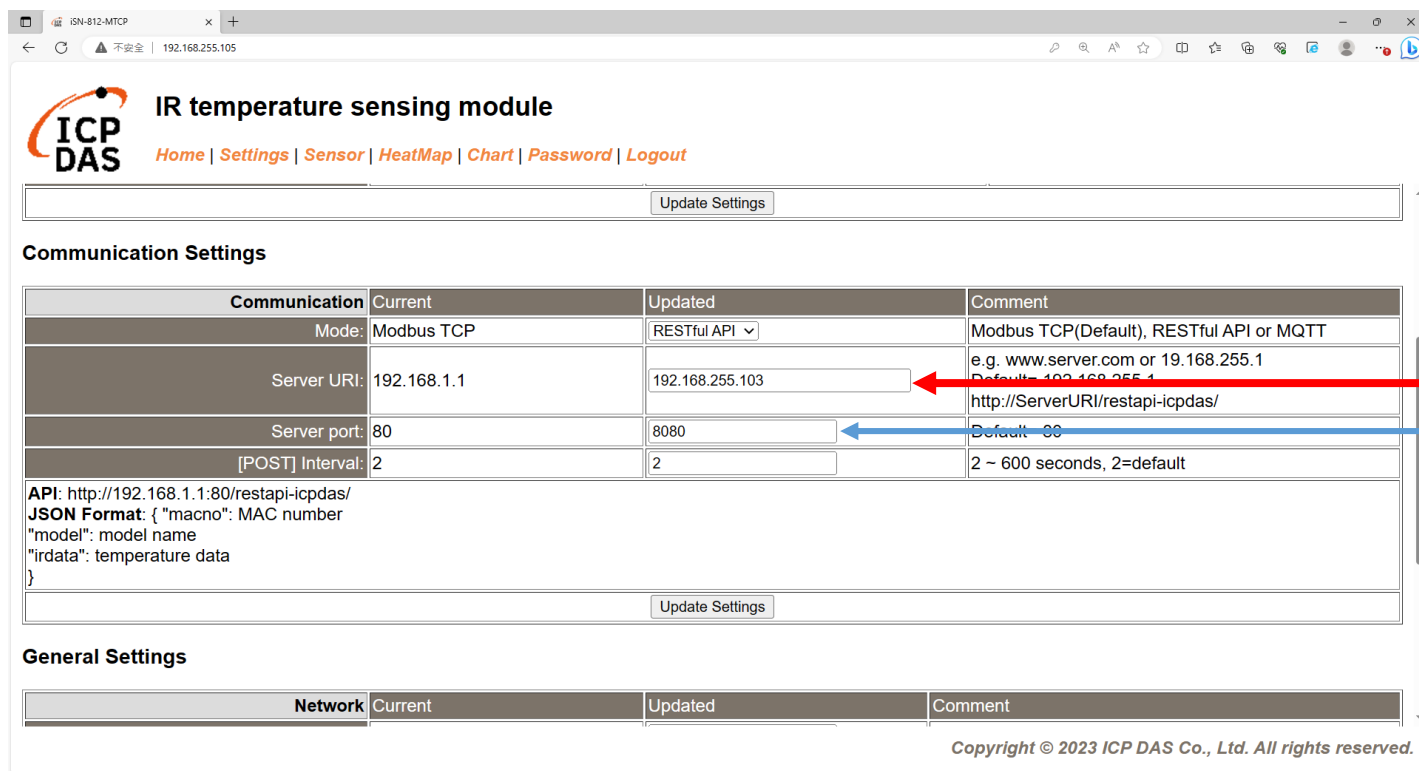
The screenshot shows the web interface for the iSN-81x-MTCP device. The page title is "IR temperature sensing module" and the URL is "192.168.255.105". The interface is divided into several sections:

- Device IP Settings:** A table with columns for "Current" and "Updated" values, and a "Comment" column. The "Address Type" is set to "Static IP". The "Static IP Address" is 192.168.255.105, "Subnet Mask" is 255.255.0.0, and "Gateway" is 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 "Mode" is set to "Modbus TCP". The "Updated" dropdown menu is open, showing options: "Modbus TCP", "RESTful API", and "MQTT client". The "RESTful API" option is highlighted, and a red box is drawn around the dropdown menu.
- General Settings:** A table with columns for "Network", "Current", "Updated", and "Comment". The "Web Auto-logout" is set to 10. The "Misc." section has an "Alias Name" set to N/A.

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

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



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 contains a table with the following data:

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  
}
```

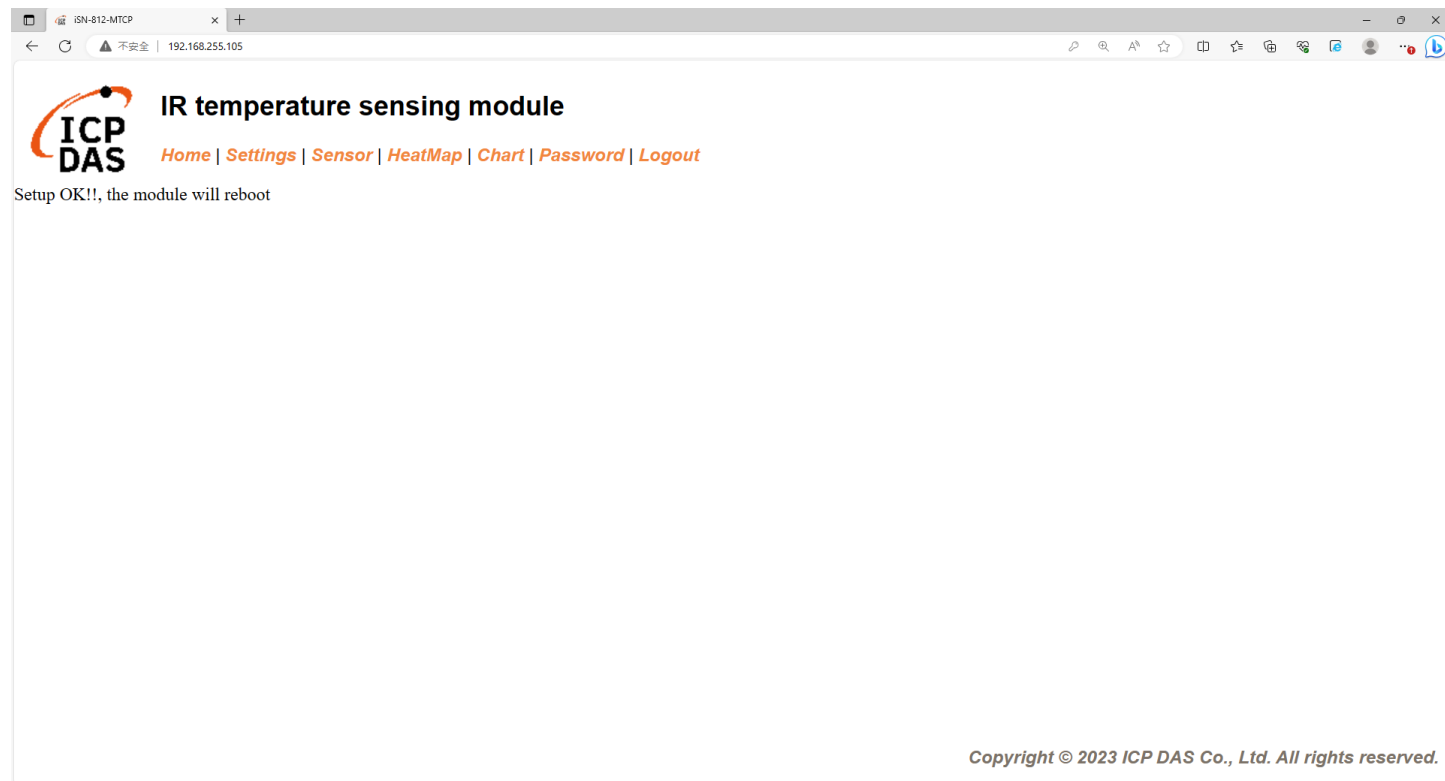
The "General Settings" section is partially visible at the bottom.

```
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
```

Red and blue arrows point from the terminal output to the corresponding input fields in the web interface: a red arrow points from the IP address "192.168.255.103" to the "Server URI" field, and a blue arrow points from the port "8080" to the "Server port" field.

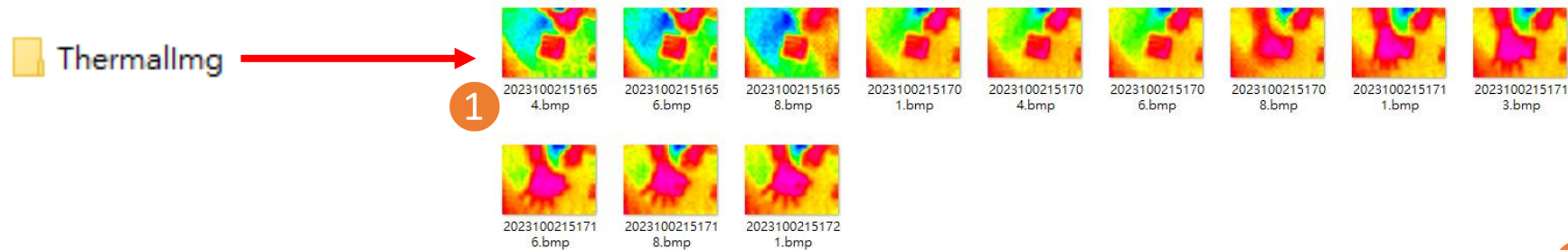
➤ Configuring iSN-81x-MTCP as a RESTful client

- Wait for reboot



➤ 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.



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

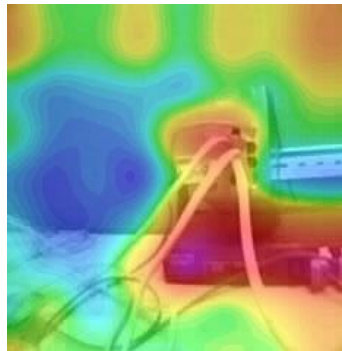
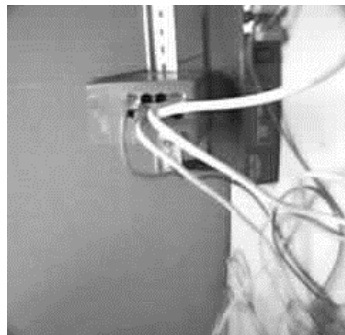
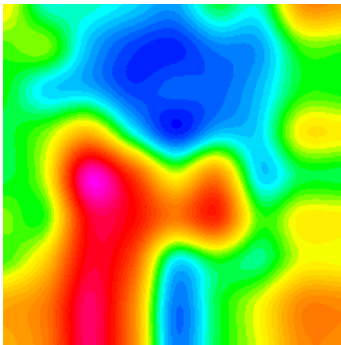
➤ Change the name of the data table

- If you want to change the file name of DB file, open “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;
}
```



02

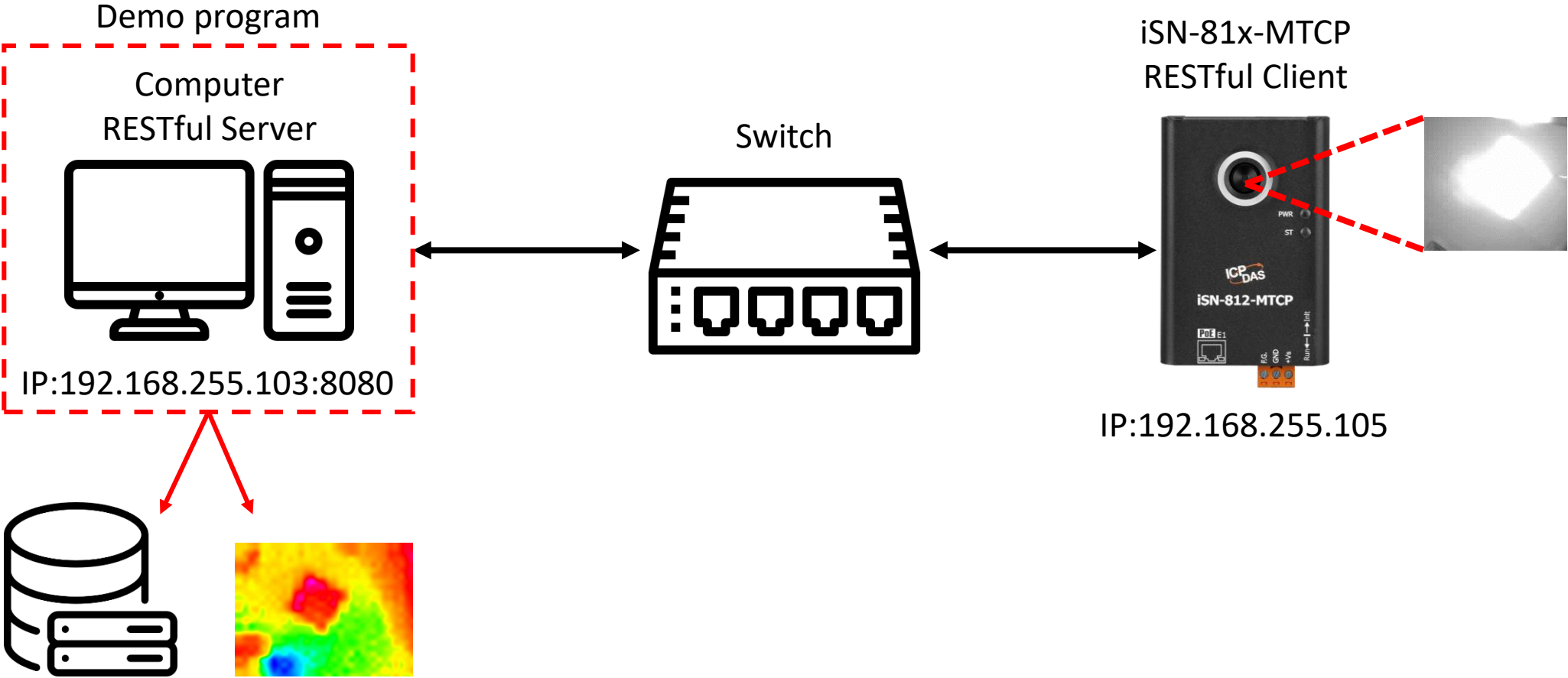
iSN-81x-MTCP RESTful_Node.js

- 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 sharp
- npm install jimp

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



➤ 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

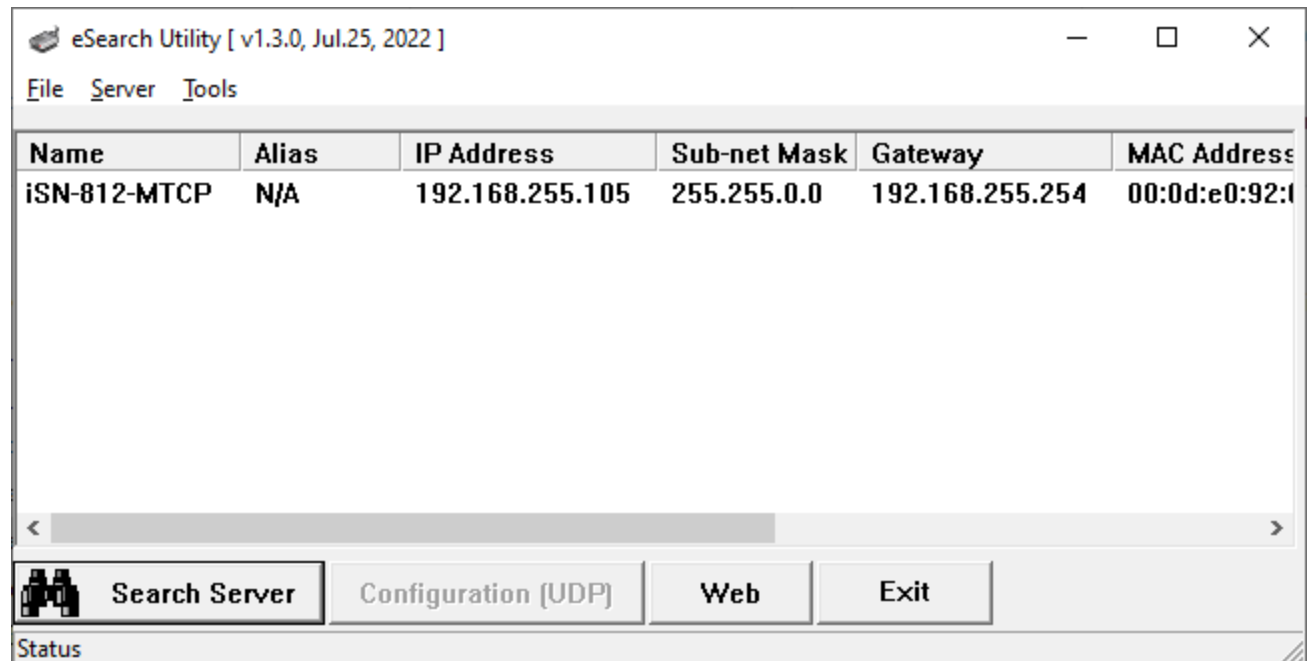
```
const port = 8080;  
const host = '192.168.255.103';
```

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
```

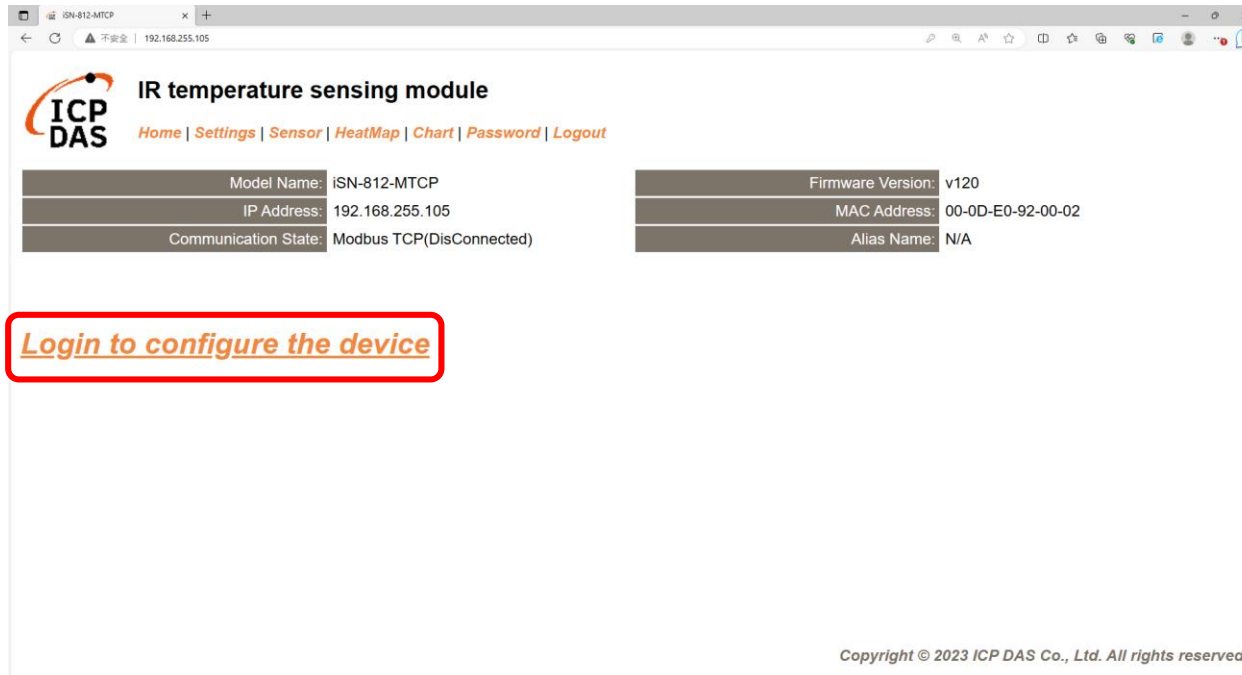
➤ Configuring iSN-81x-MTCP as a RESTful client

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



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

- Click "Login to configure the device" to login



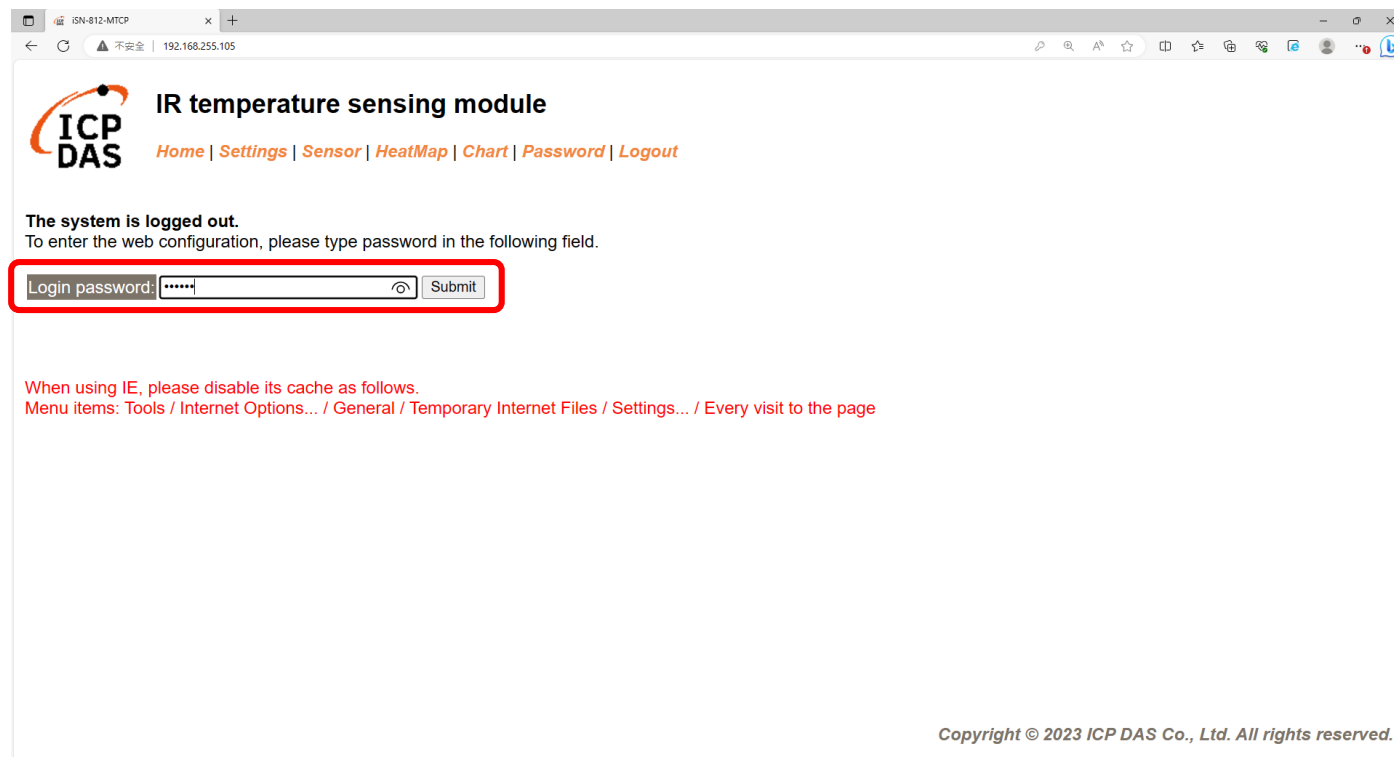
The screenshot displays the web interface for an ICP DAS IR temperature sensing module. The page title is "IR temperature sensing module" and the ICP DAS logo is visible. A navigation menu includes links for Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The device information is presented in two columns:

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, a button labeled "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."

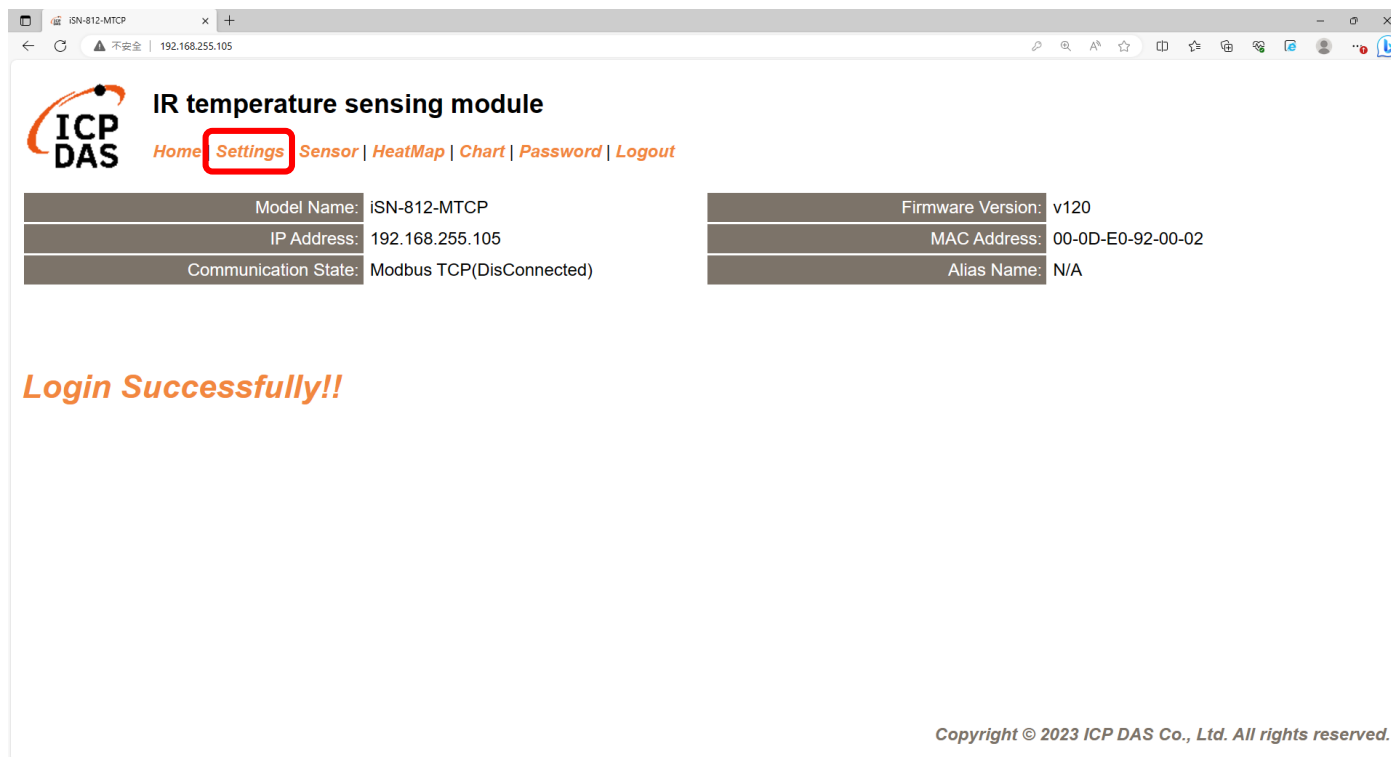
➤ Configuring iSN-81x-MTCP as a RESTful client

- Login(default password: admin)



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

- Click "Settings" to set communication mode



ICP DAS IR temperature sensing module

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

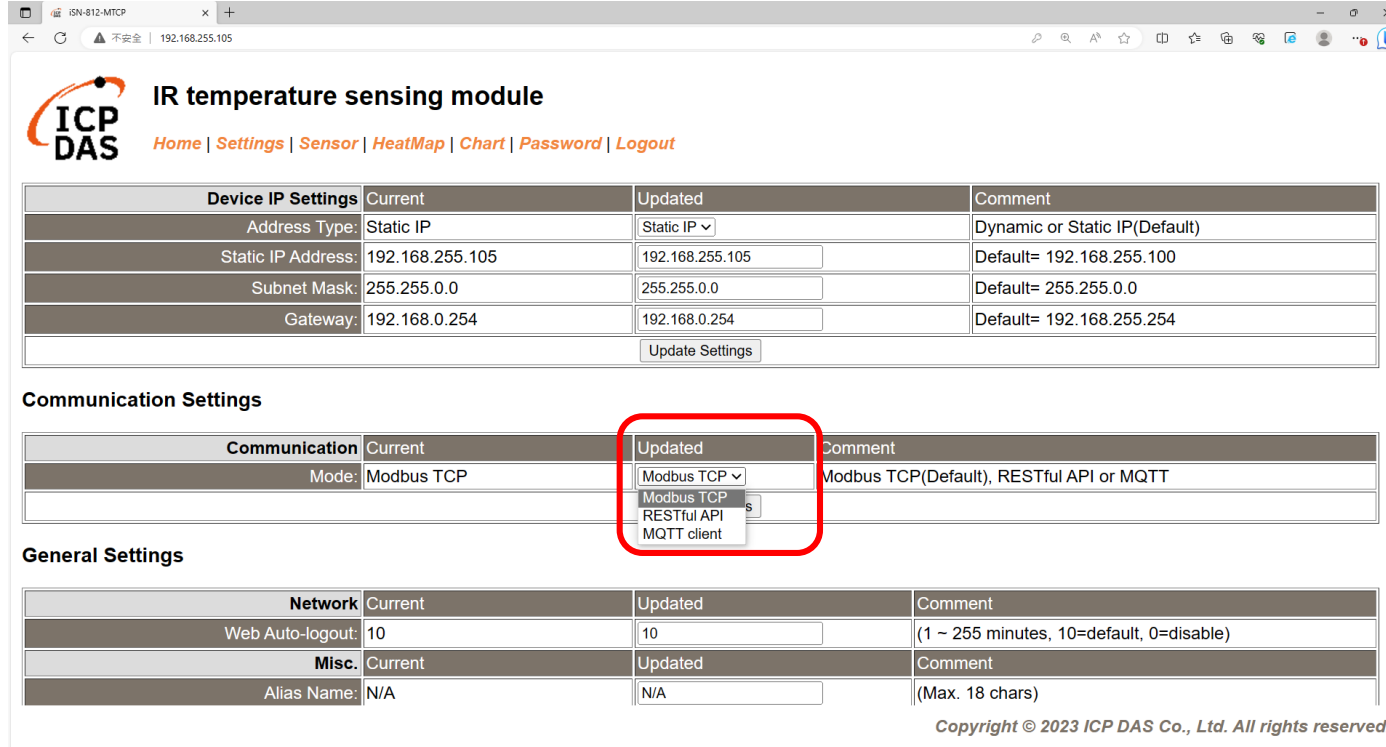
Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Login Successfully!!

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

- Set Mode to “RESTful API”



The screenshot shows the web interface for the iSN-81x-MTCP device. 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 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.

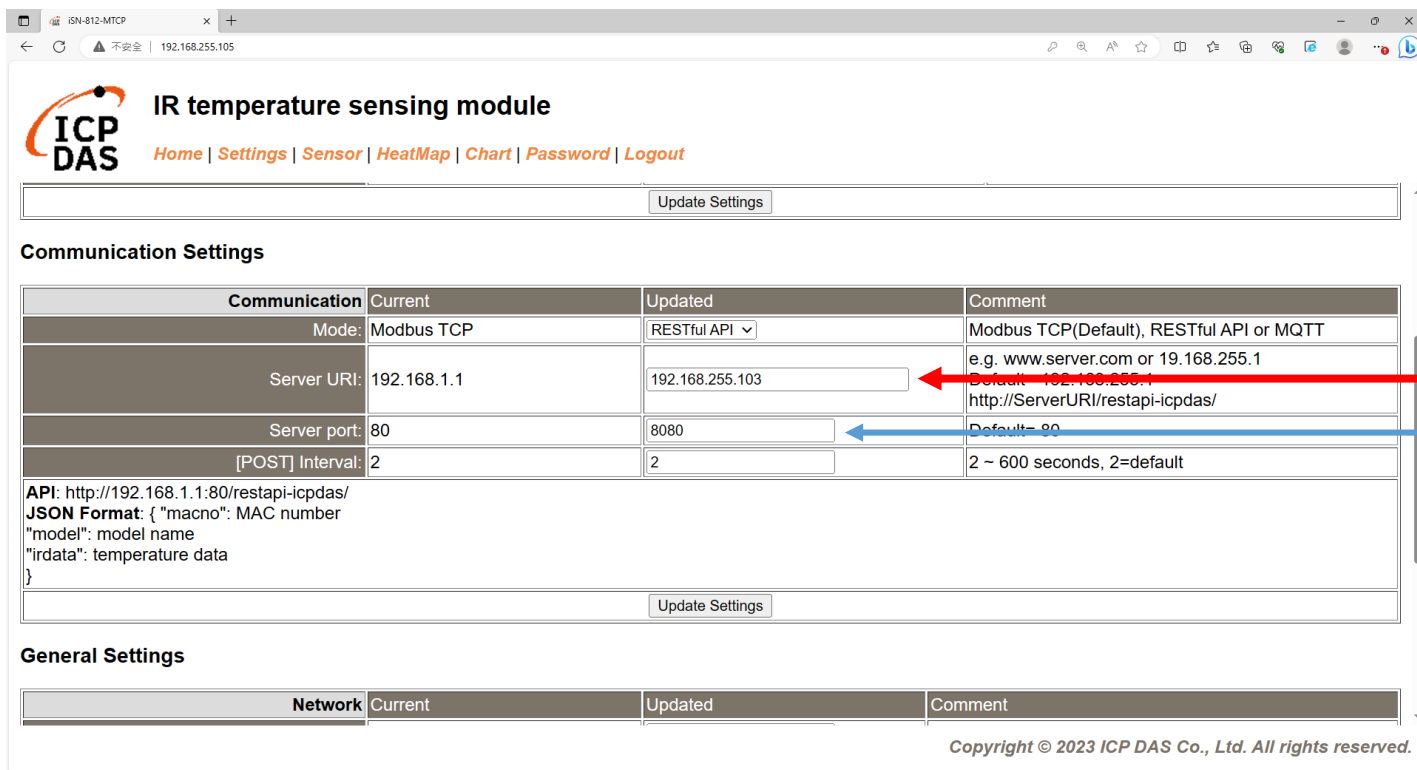
General Settings

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

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



The screenshot shows the web interface for the iSN-81x-MTCP device. 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".

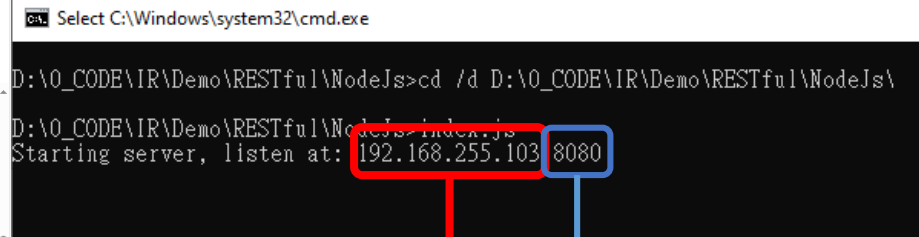
The "Communication Settings" section contains a table with the following data:

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  
}
```

The "General Settings" section is partially visible at the bottom.

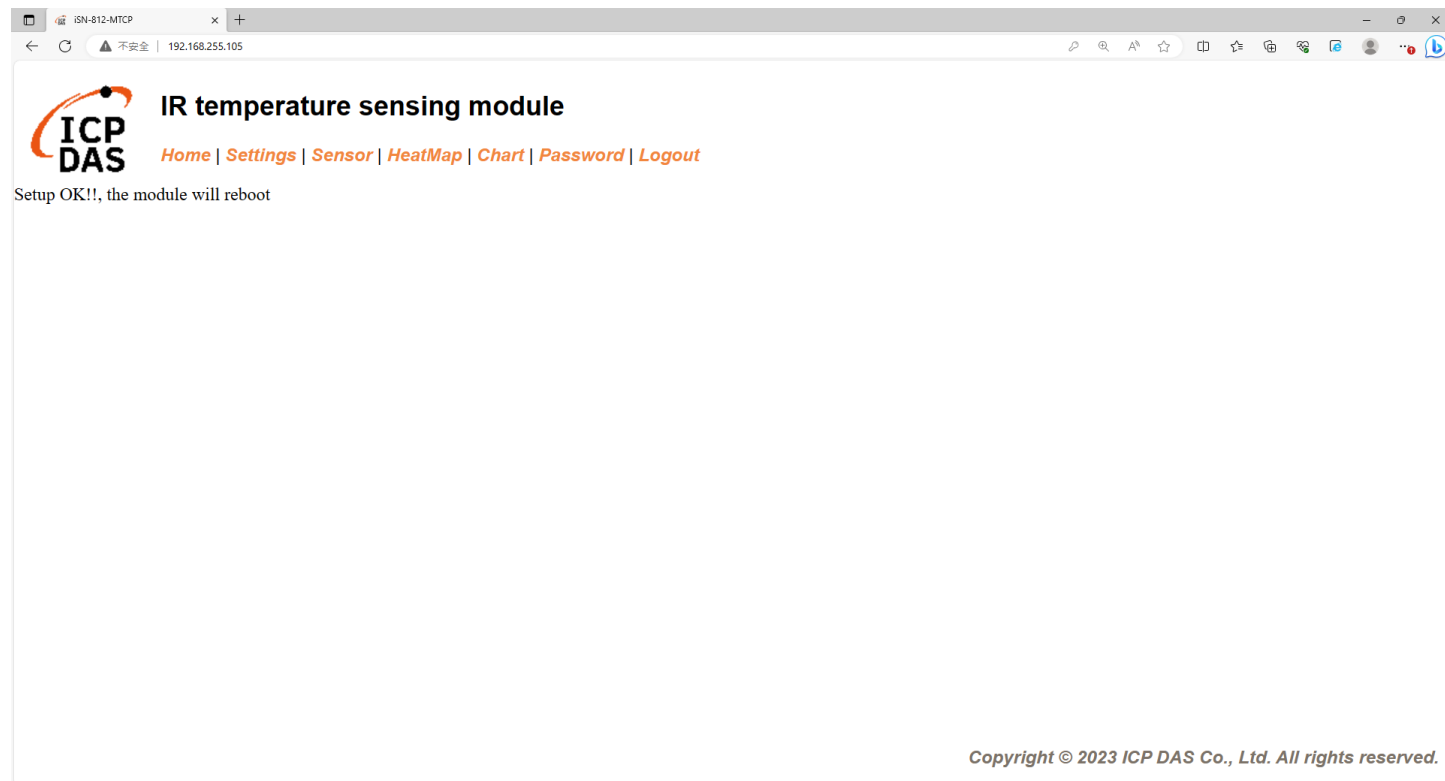


```
Select C:\Windows\system32\cmd.exe  
D:\_CODE\IR\Demo\RESTful\nodejs>cd /d D:\_CODE\IR\Demo\RESTful\nodejs\  
D:\_CODE\IR\Demo\RESTful\nodejs>node index.js  
Starting server, listen at: 192.168.255.103 8080
```

Red and blue arrows point from the IP address and port in the command prompt to the corresponding fields in the web interface screenshot.

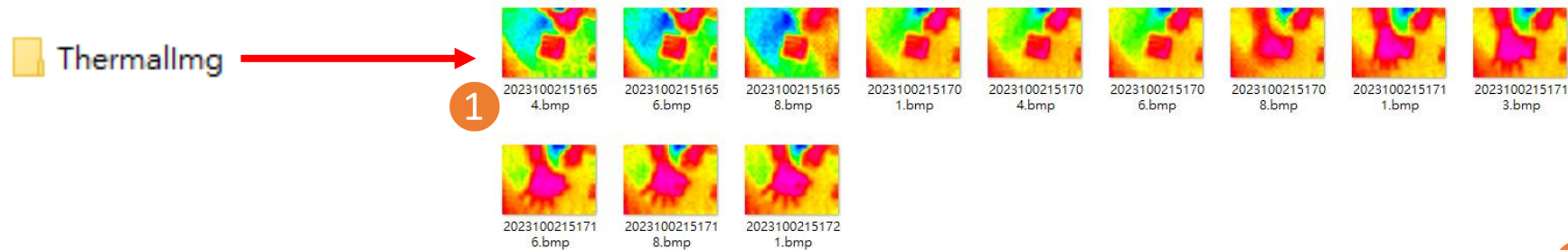
➤ Configuring iSN-81x-MTCP as a RESTful client

- Wait for reboot



➤ 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.



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

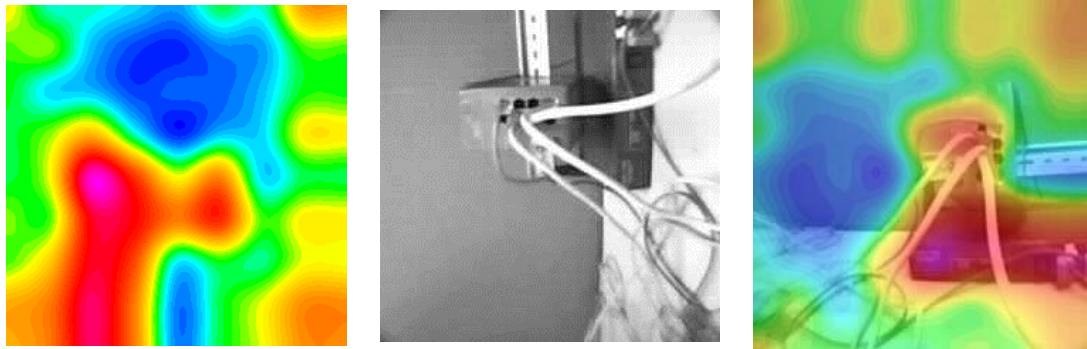
➤ Change the name of the data table

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



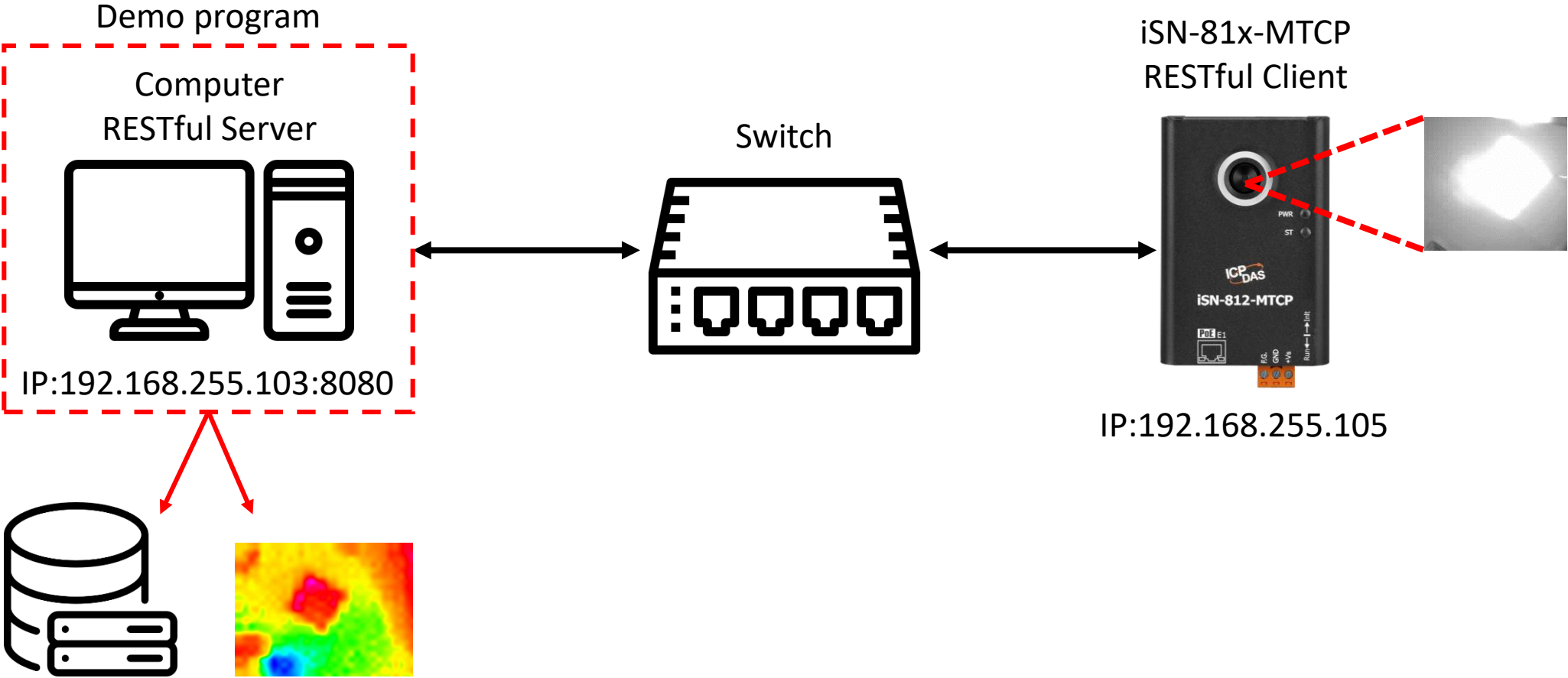
03

iSN-81x-MTCP RESTful_PHP

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

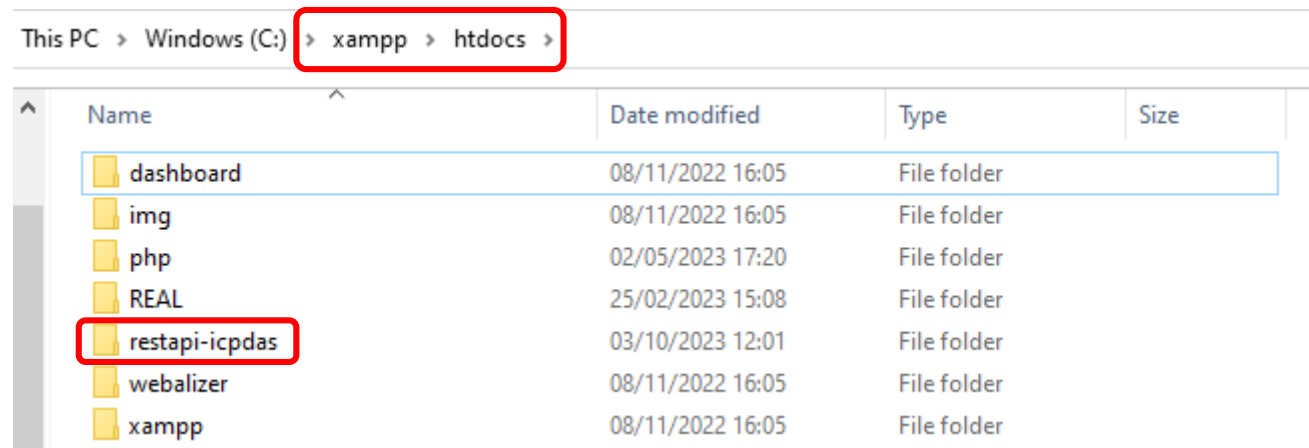
- Pre-install
 - php.ini =>enable gd

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



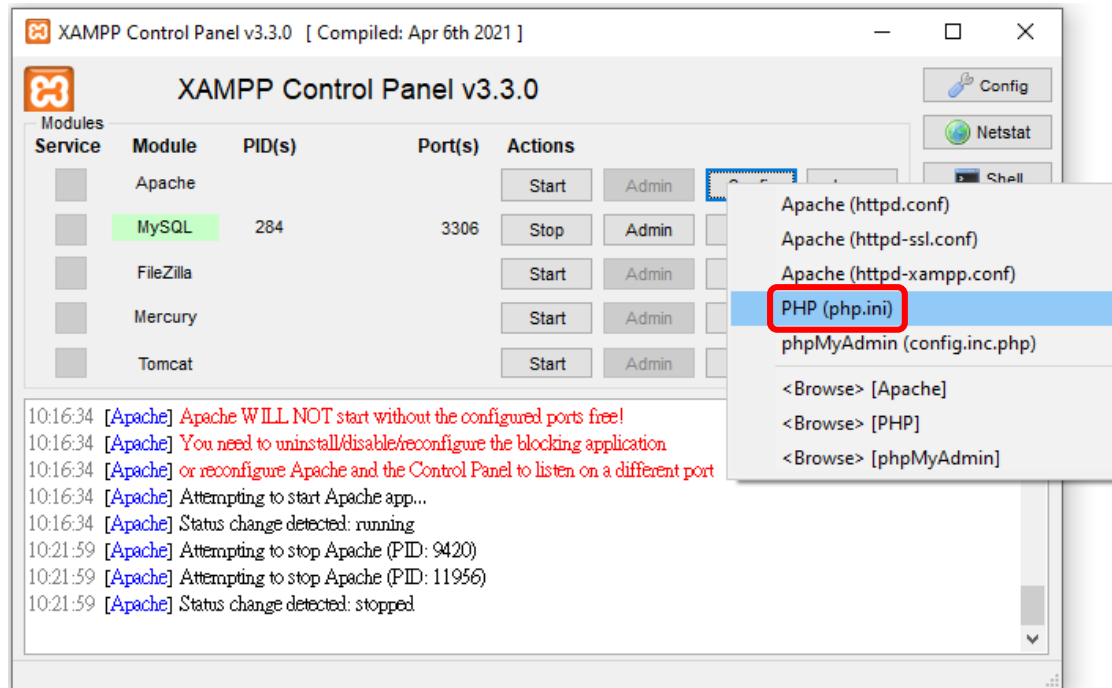
➤ Configuring iSN-81x-MTCP as a RESTful client

- Copy the sample program to the htdocs folder of XAMPP



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

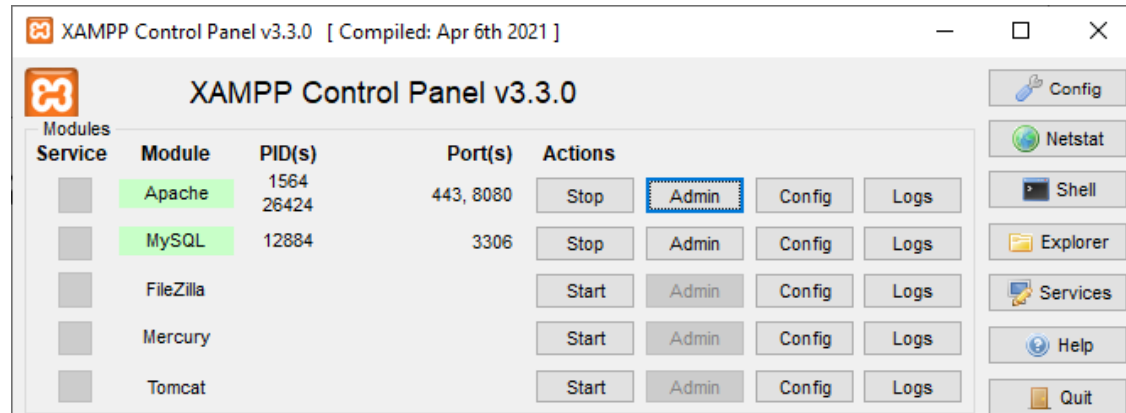
- Open “XAMPP Control Panel” and edit PHP.ini
- Remove “;” before gd



```
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
```

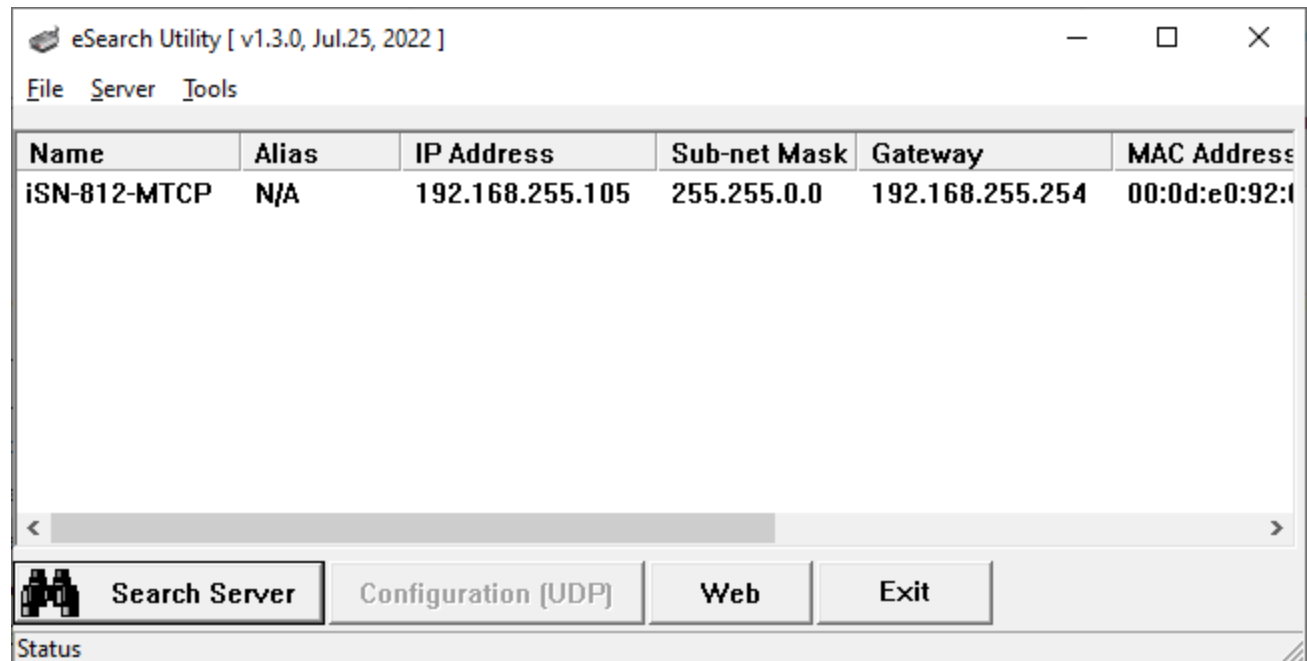

➤ Configuring iSN-81x-MTCP as a RESTful client

- Restart Apache to open RESTful server



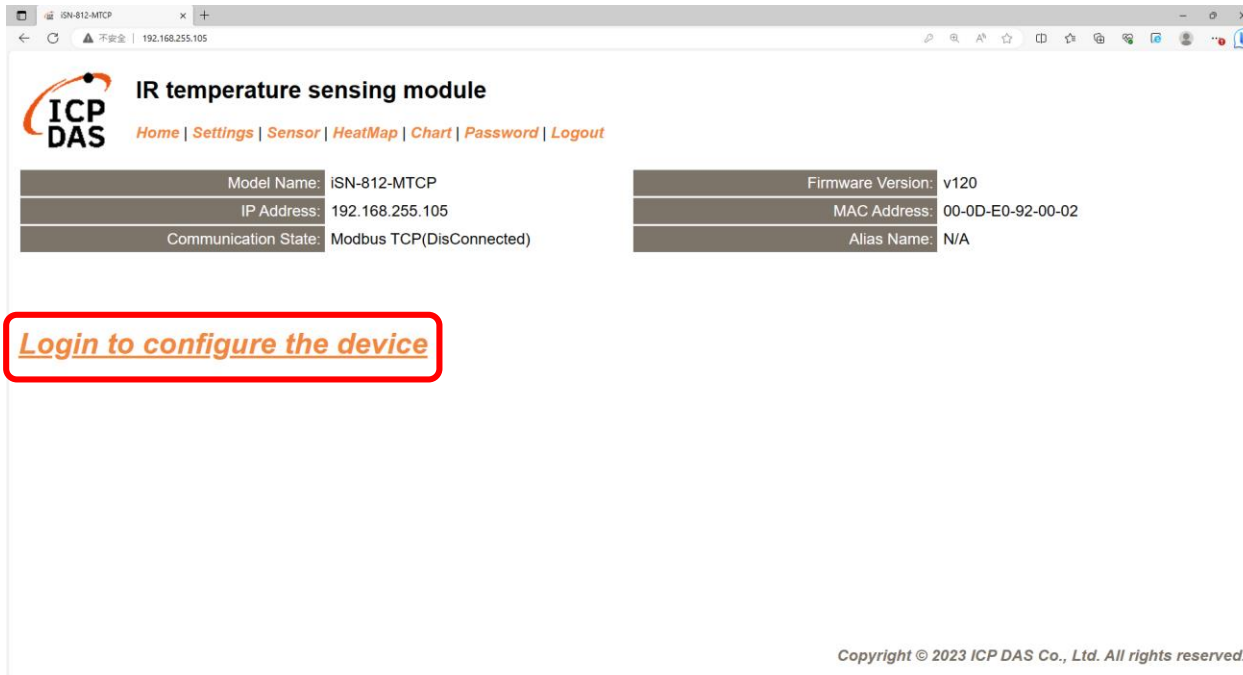
➤ Configuring iSN-81x-MTCP as a RESTful client

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



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

- Click "Login to configure the device" to login



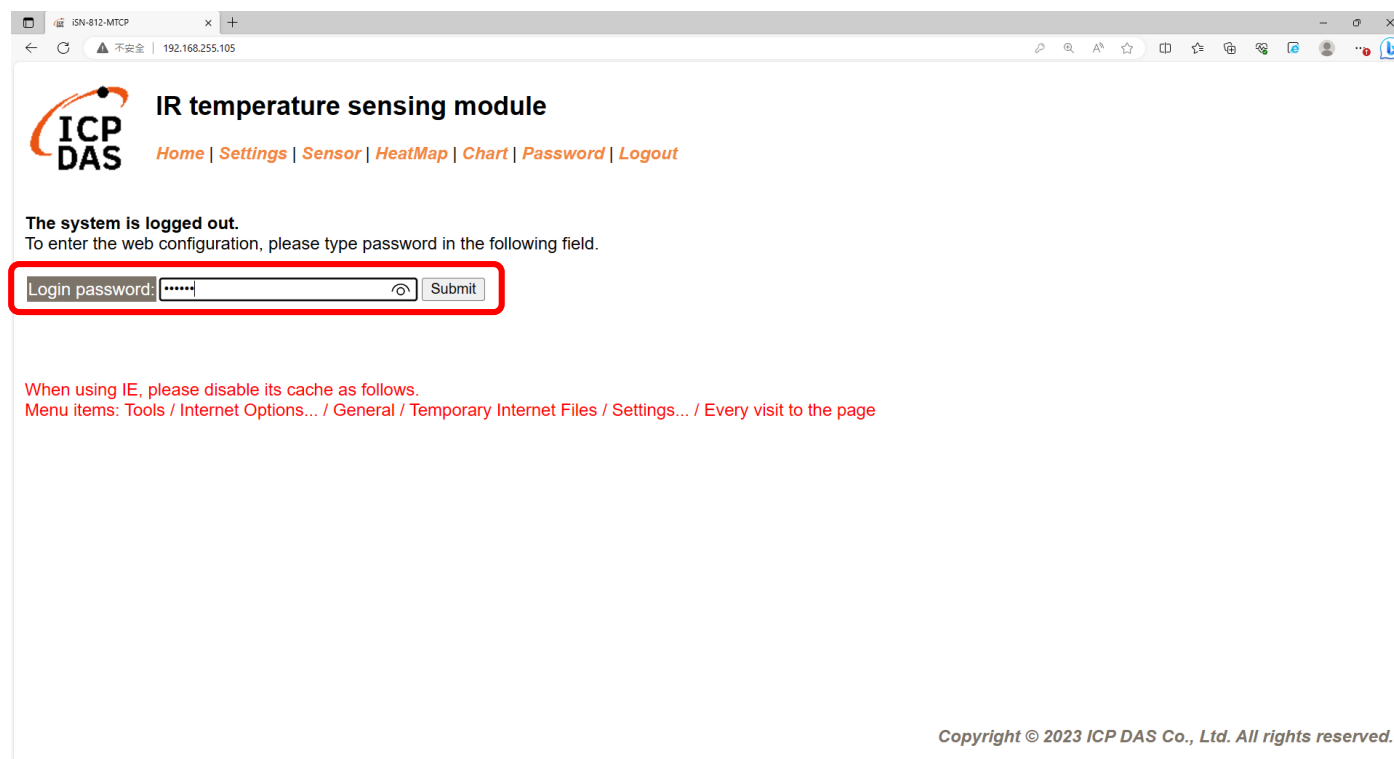
The screenshot shows a web browser window with the URL 192.168.255.105. The page title is "IR temperature sensing module" and the ICP DAS logo is visible. The navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The device information is displayed in a table:

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

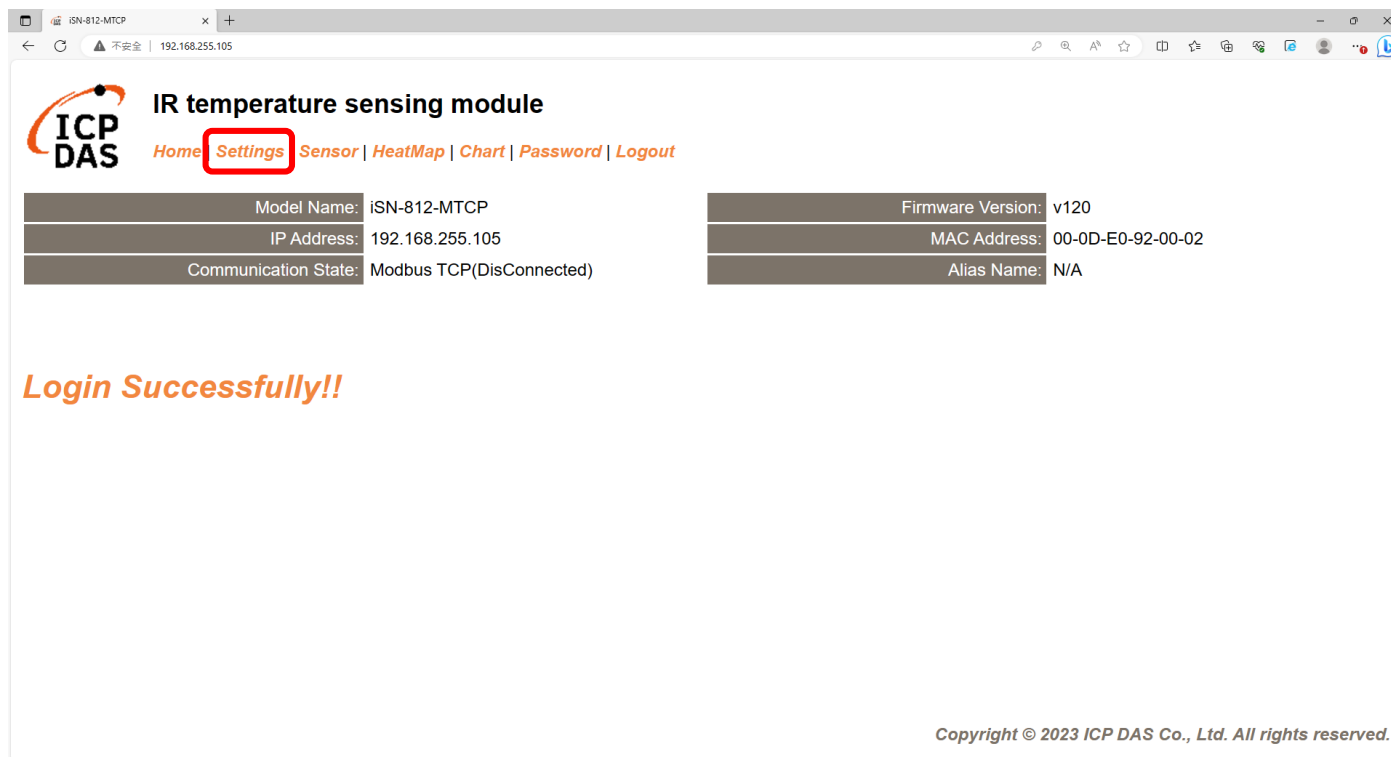
➤ Configuring iSN-81x-MTCP as a RESTful client

- Login(default password: admin)



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

- Click "Settings" to set communication mode



ICP DAS IR temperature sensing module

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

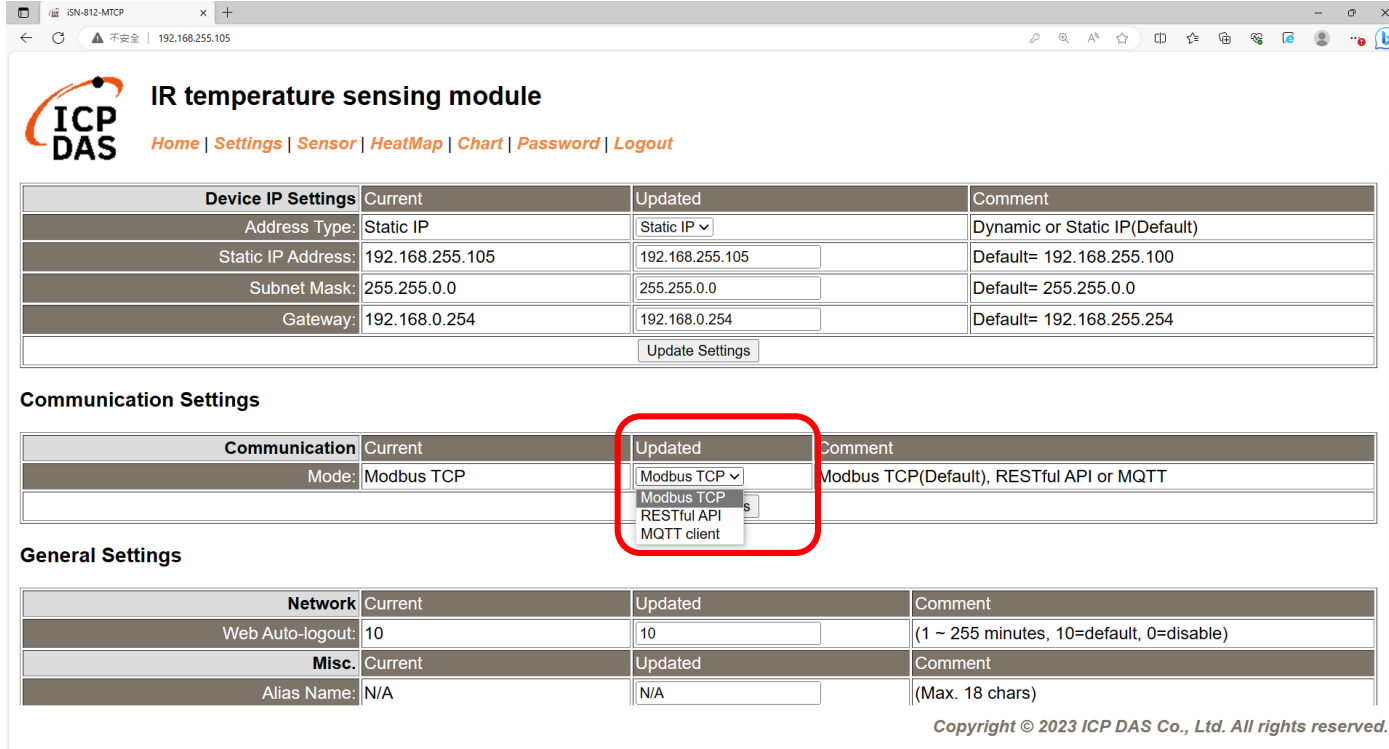
Model Name:	iSN-812-MTCP	Firmware Version:	v120
IP Address:	192.168.255.105	MAC Address:	00-0D-E0-92-00-02
Communication State:	Modbus TCP(DisConnected)	Alias Name:	N/A

Login Successfully!!

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

- Set Mode to “RESTful API”



The screenshot shows the web interface for the iSN-81x-MTCP device. 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 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.

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

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

The image shows two side-by-side screenshots. The left screenshot is the web interface of the iSN-81x-MTCP device, and the right screenshot is the XAMPP Control Panel.

Left Screenshot: iSN-81x-MTCP Web Interface

The page title is "IR temperature sensing module". The navigation menu includes: Home | Settings | Sensor | HeatMap | Chart | Password | Logout.

There is an "Update Settings" button.

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
}

There is another "Update Settings" button.

General Settings

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

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Right Screenshot: XAMPP Control Panel v3.3.0

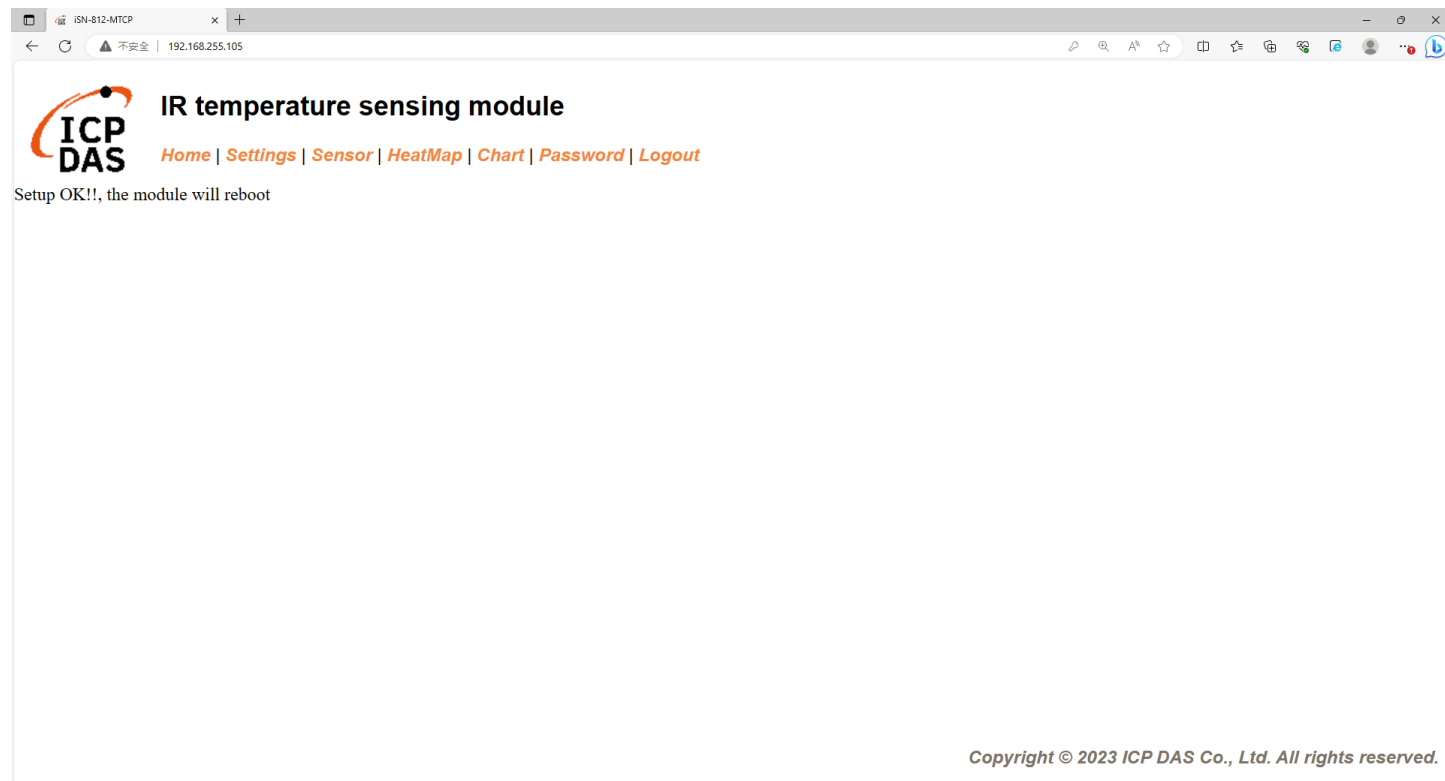
Modules table:

Service	Module	PID(s)	Port(s)	Actions
<input type="checkbox"/>	Apache	1564 26424	443, 8080	Stop Admin
<input type="checkbox"/>	MySQL	12884	3306	Stop Admin
<input type="checkbox"/>	FileZilla			Start Admin
<input type="checkbox"/>	Mercury			Start Admin
<input type="checkbox"/>	Tomcat			Start Admin

A red box highlights the "443, 8080" port(s) for Apache. A red arrow points from this box to the "8080" value in the "Server port" field of the iSN-81x-MTCP interface.

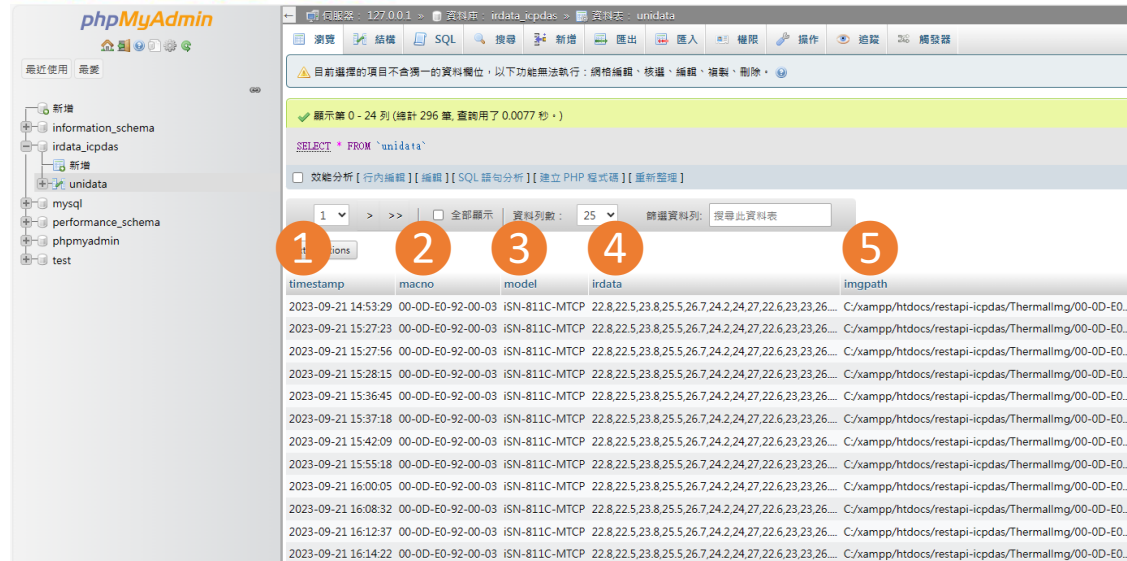
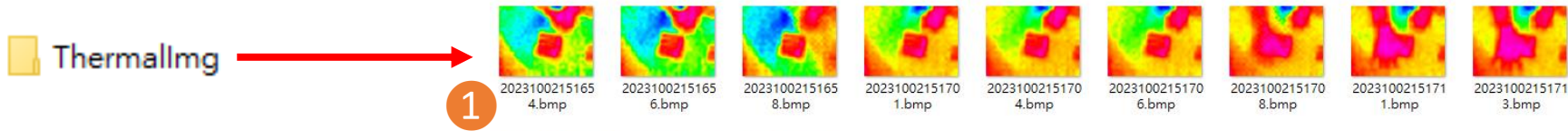
➤ Configuring iSN-81x-MTCP as a RESTful client

- Wait for reboot



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

- After receiving the data, the Thermallmg 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

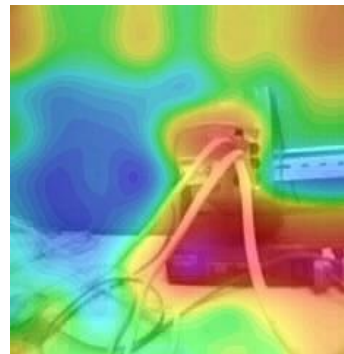
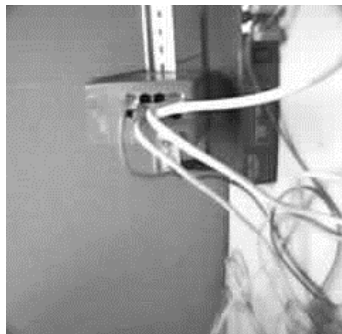
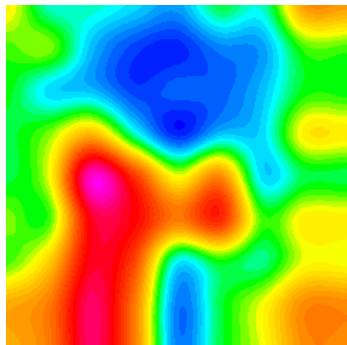
➤ Change the name of the data table

- 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";
```

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

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



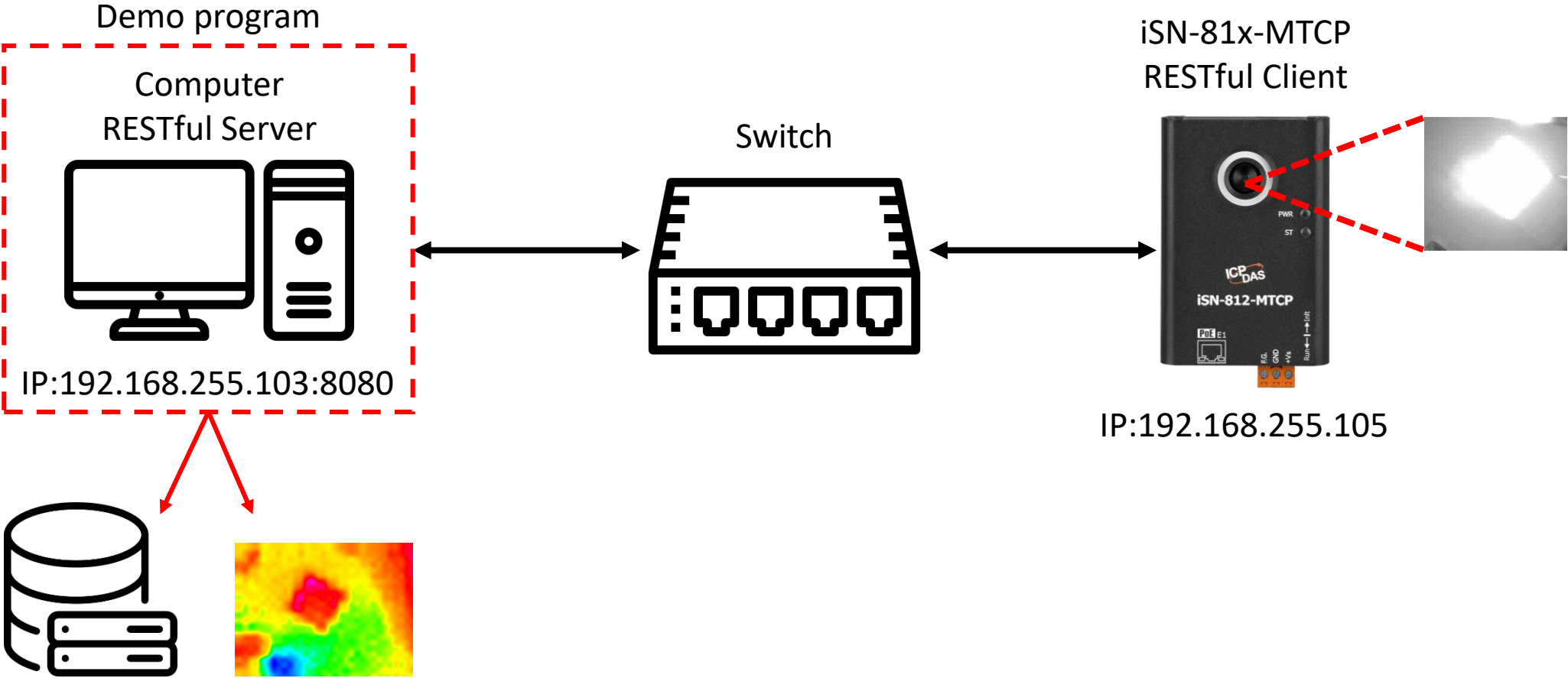
04

iSN-81x-MTCP RESTful_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 tornado
 - pip install numpy
 - pip install opencv-python

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



➤ 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")
```

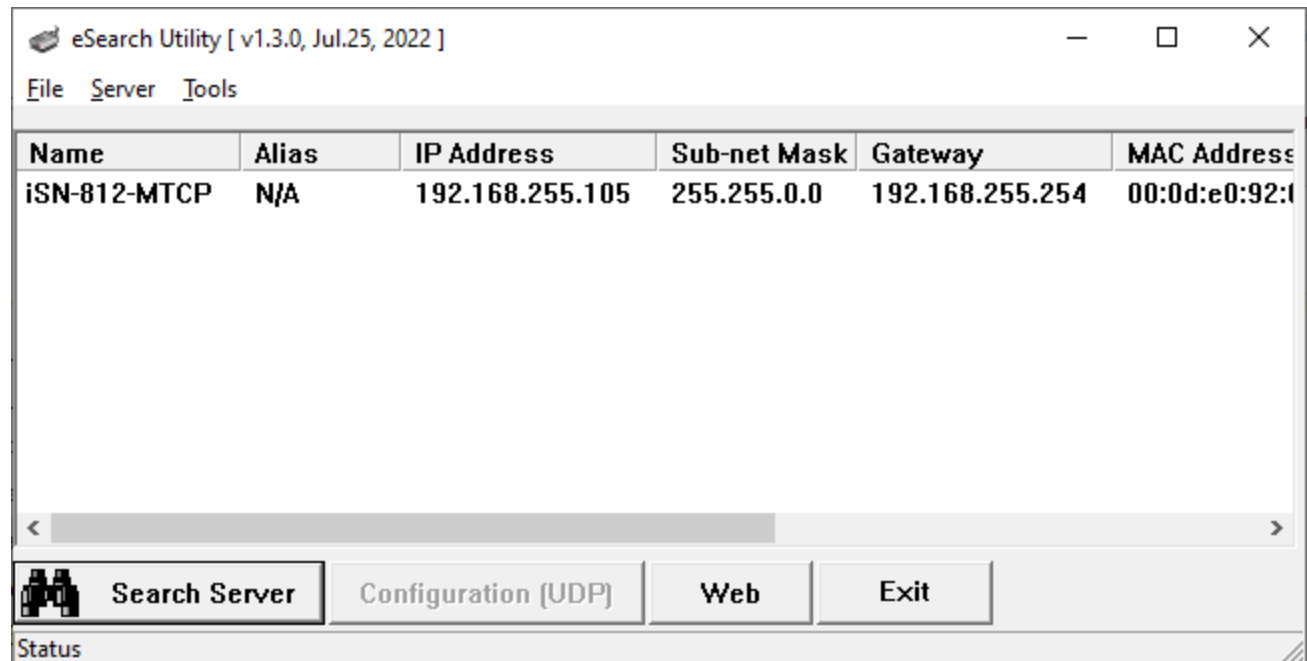
Name	Date modified
.vs	03/10/2023 14:09
__pycache__	03/10/2023 14:18
lib	03/10/2023 13:49
ThermalImg	03/10/2023 14:18
__index.py	03/10/2023 14:09
Demo_REST_Python.pptx	04/10/2023 11:11
index.py	04/10/2023 11:10
irdata_handler.py	03/10/2023 14:18
irdata_icpdas.db	03/10/2023 14:24
Pre-Install.txt	21/09/2023 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
```

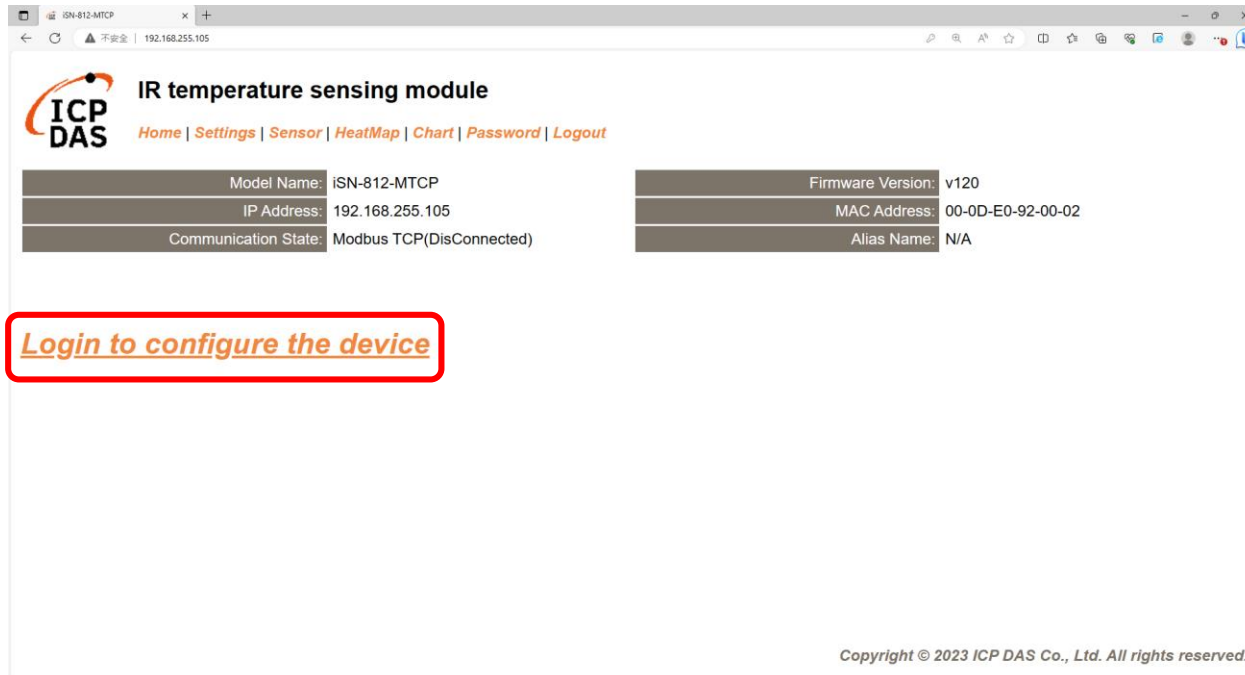

➤ Configuring iSN-81x-MTCP as a RESTful client

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



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

- Click "Login to configure the device" to login



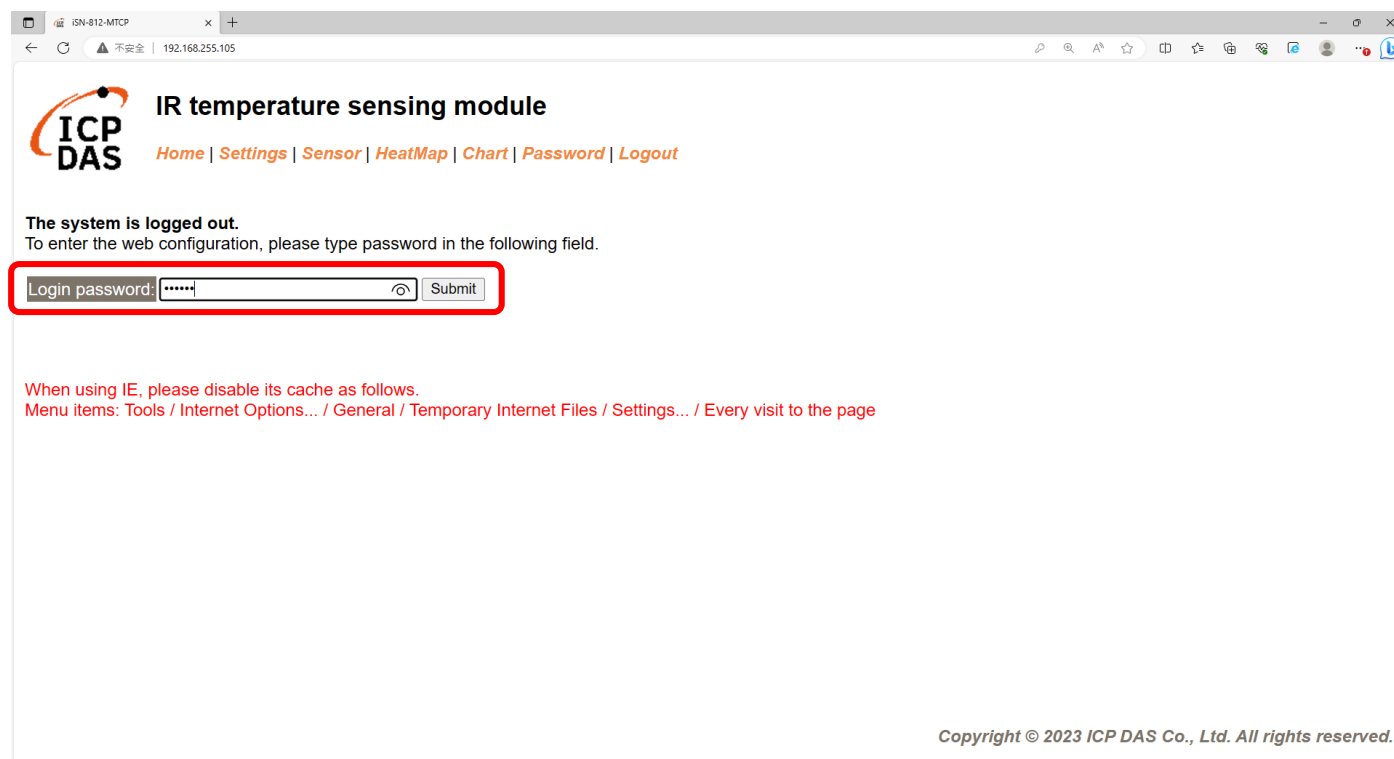
The screenshot shows the web interface for the iSN-812-MTCP device. The page title is "IR temperature sensing module" and the ICP DAS logo is visible. The navigation menu includes Home, Settings, Sensor, HeatMap, Chart, Password, and Logout. The device information is displayed in a table:

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 box. At the bottom of the page, the copyright notice reads: "Copyright © 2023 ICP DAS Co., Ltd. All rights reserved."

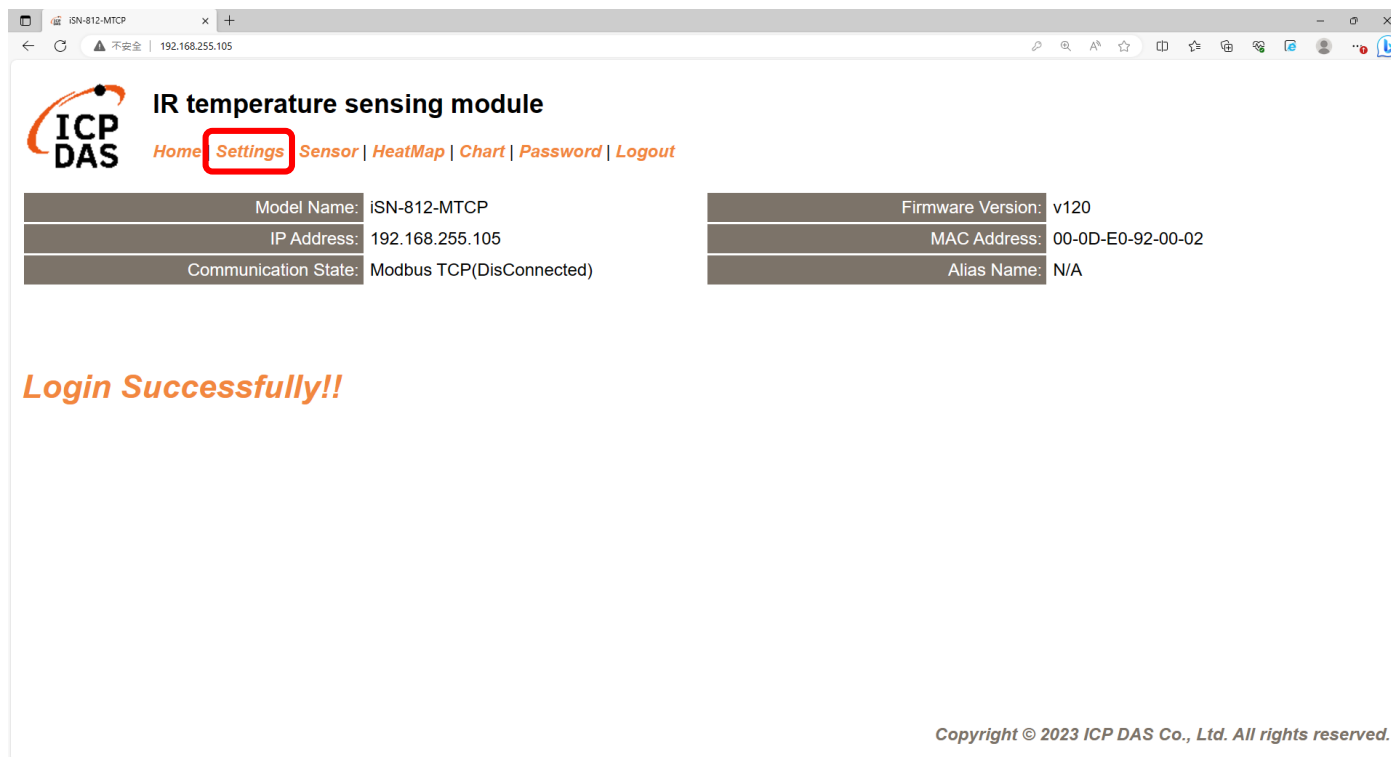
➤ Configuring iSN-81x-MTCP as a RESTful client

- Login(default password: admin)



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

- Set Mode to “RESTful API”

The screenshot shows the web interface for the iSN-81x-MTCP device. The browser address bar shows the URL 192.168.255.105. The page title is "IR temperature sensing module" with the ICP DAS logo. Navigation links include Home, Settings, Sensor, HeatMap, Chart, Password, and Logout.

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

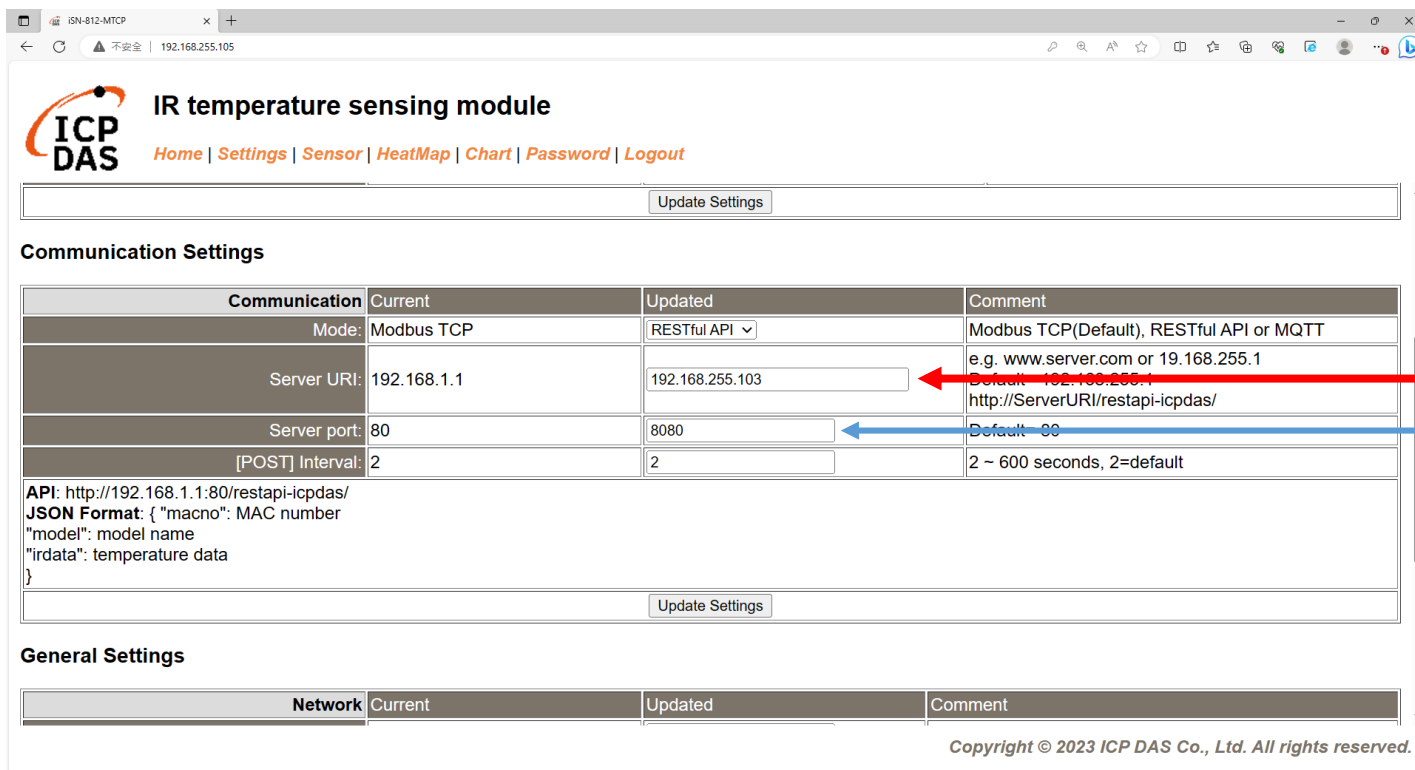
General Settings

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 RESTful client

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



The screenshot shows the web interface for the 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 "Communication Settings" section is active, displaying a table with columns for Communication, Current, Updated, and Comment. The "Server URI" field is updated from 192.168.1.1 to 192.168.255.103, and the "Server port" is updated from 80 to 8080. The "API" section shows the URL http://192.168.1.1:80/restapi-icpdas/ and the JSON format: {"macno": "MAC number", "model": "model name", "irdata": "temperature data"}. The "General Settings" section is partially visible at the bottom.

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

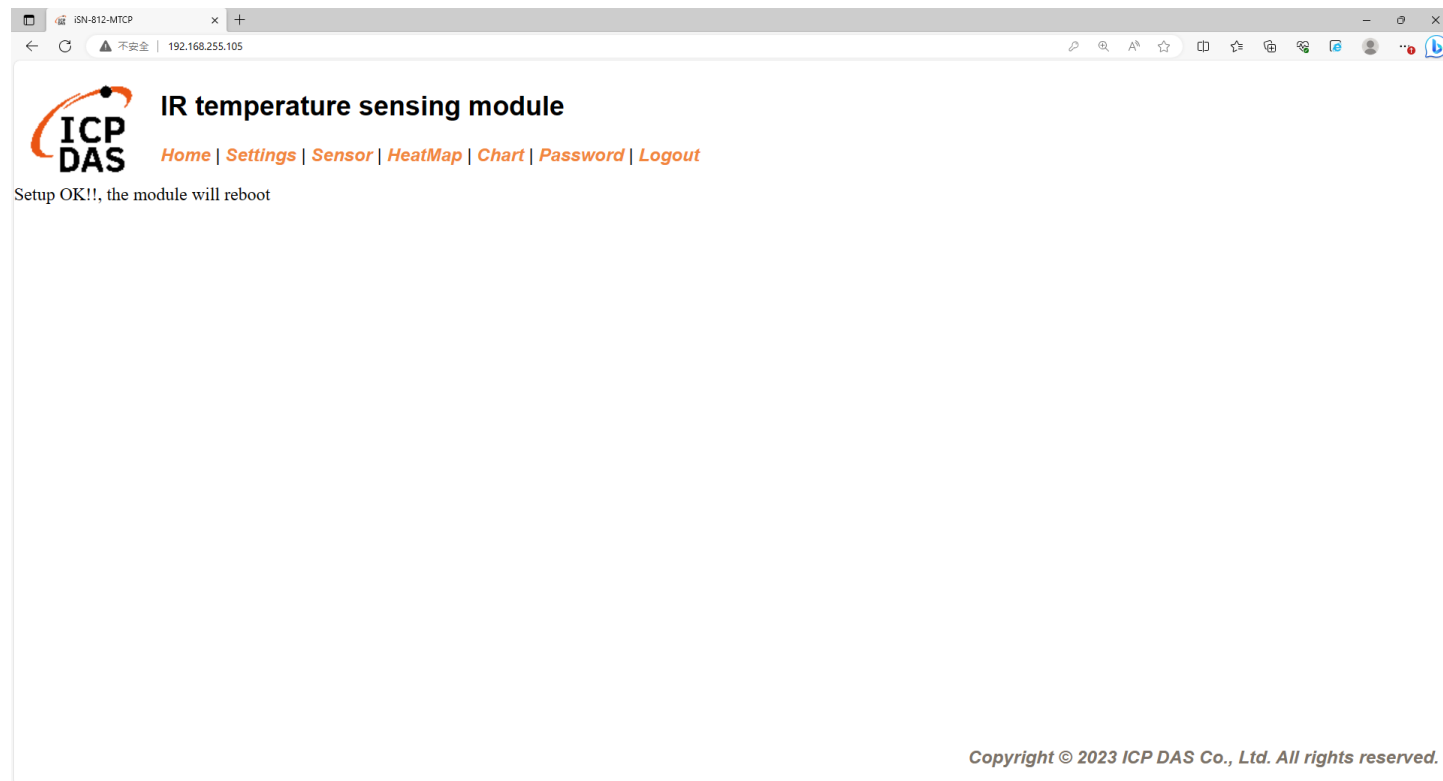
API: http://192.168.1.1:80/restapi-icpdas/
JSON Format: { "macno": "MAC number", "model": "model name", "irdata": "temperature data" }

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 _index.py
Starting server, listen at: 192.168.255.103:8080
```

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

- Wait for reboot



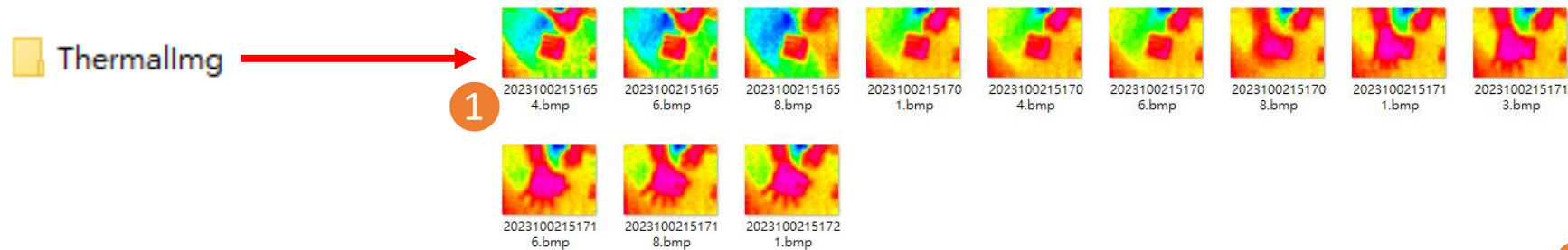
➤ Configuring iSN-81x-MTCP as a RESTful client

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

```
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 -
```


➤ 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.



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

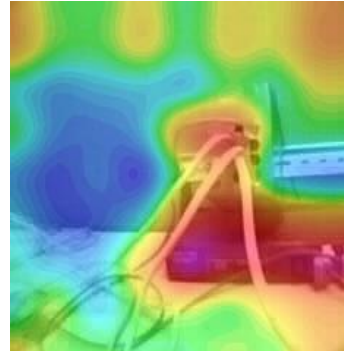
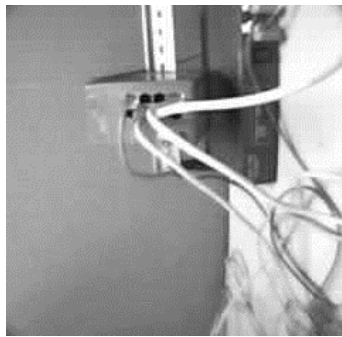
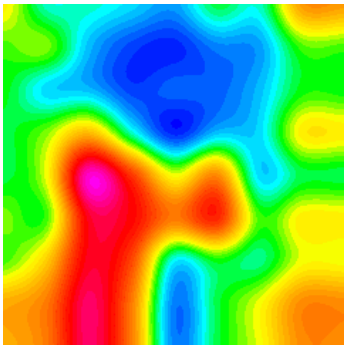
➤ Change the name of the data table

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



05

Firewall settings

➤ 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"

🔒 Firewall & network protection

Who and what can access your networks.

🏠 Domain network

Firewall is on.

🏠 Private network (active)

Firewall is on.

🌐 Public network

Firewall is on.

[Allow an app through the firewall](#)

[Network and Internet troubleshooter](#)

[Firewall notification settings](#)

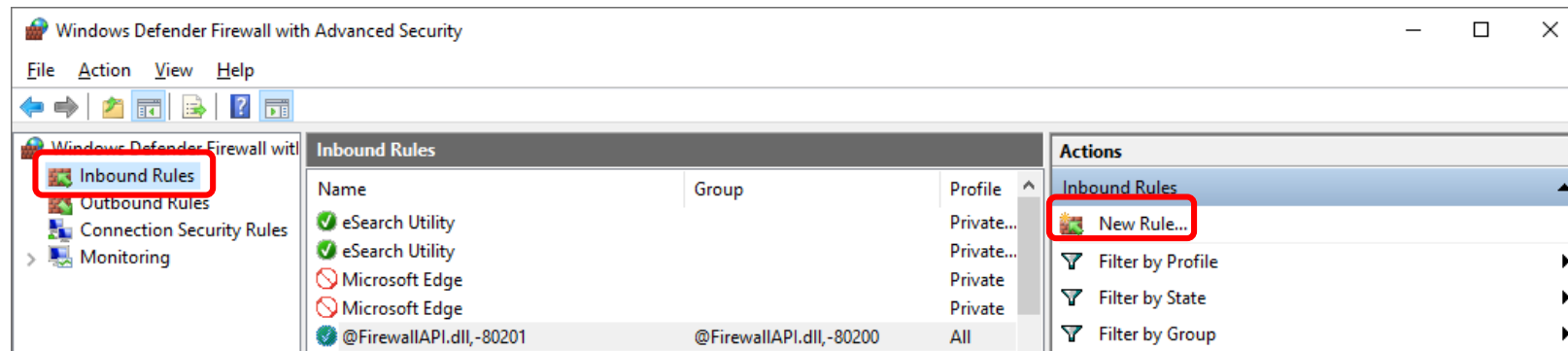
[Advanced settings](#)

[Restore firewalls to default](#)

Advanced settings

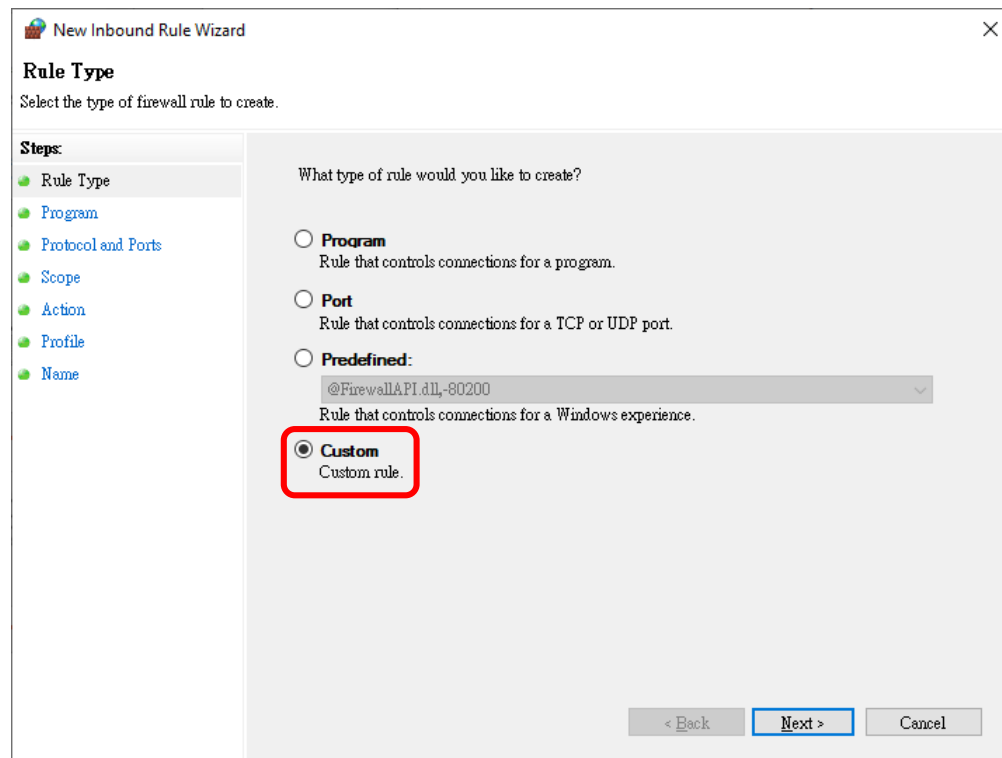
➤ How to solve the problem of external connections being blocked by firewall

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



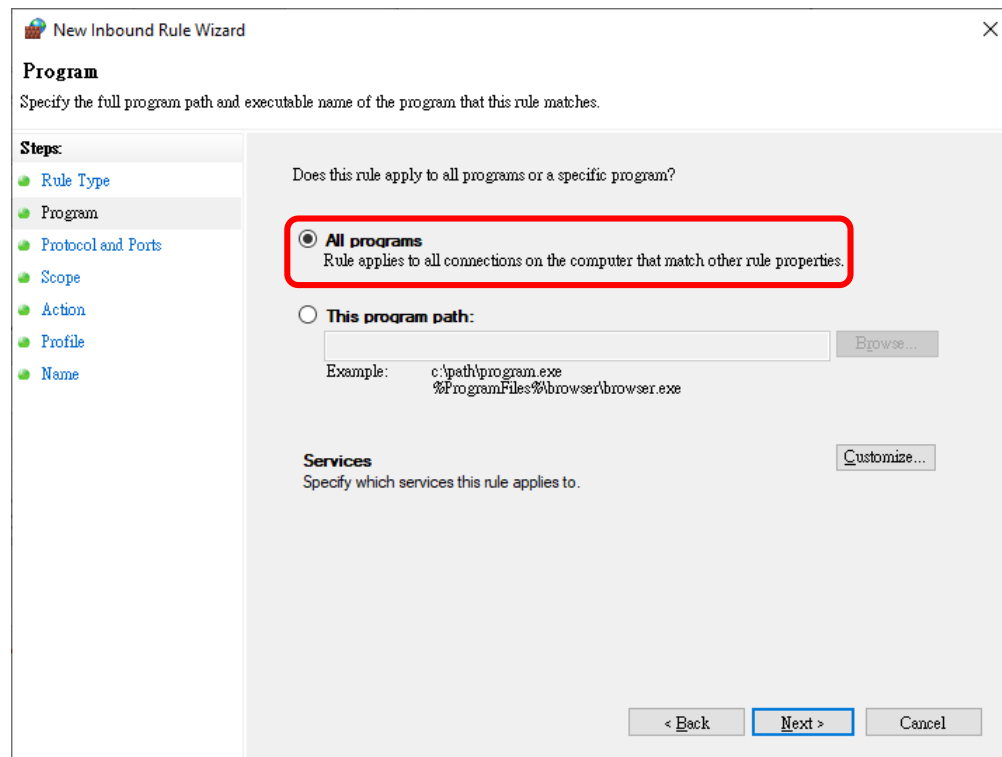
➤ How to solve the problem of external connections being blocked by firewall

- Select “Custom”



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

- Select “All programs”



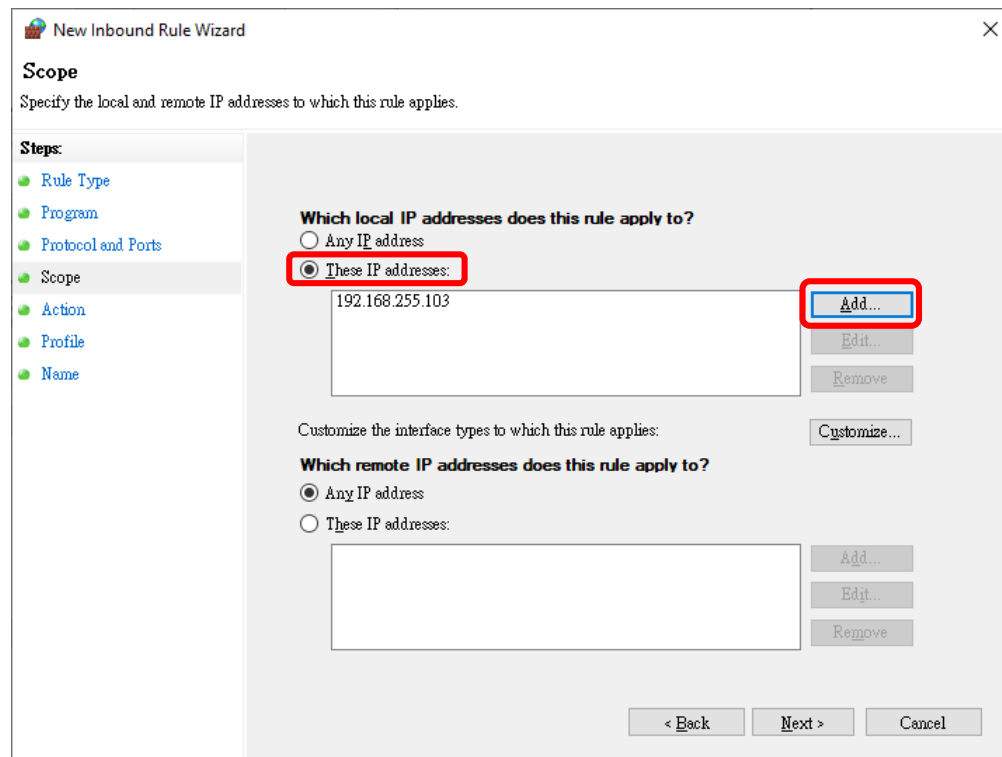
➤ How to solve the problem of external connections being blocked by firewall

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

The screenshot shows the 'New Inbound Rule Wizard' dialog box, specifically the 'Protocol and Ports' step. The title bar reads 'New Inbound Rule Wizard'. 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' pane lists: Rule Type, Program, Protocol and Ports (selected), Scope, Action, Profile, and Name. The main area is titled 'To which ports and protocols does this rule apply?' and contains the following fields: 'Protocol type' is set to 'TCP'; 'Protocol number' is set to '6'; 'Local port' is set to 'Specific Ports' with a text box containing '8080' and an example 'Example: 80, 443, 5000-5010'; 'Remote port' is set to 'All Ports' with an example 'Example: 80, 443, 5000-5010'. There is also an 'Internet Control Message Protocol (ICMP) settings:' section with a 'Customize...' button. At the bottom, there are '< Back', 'Next >', and 'Cancel' buttons. A red rectangle highlights the 'Protocol type', 'Protocol number', and 'Local port' fields.

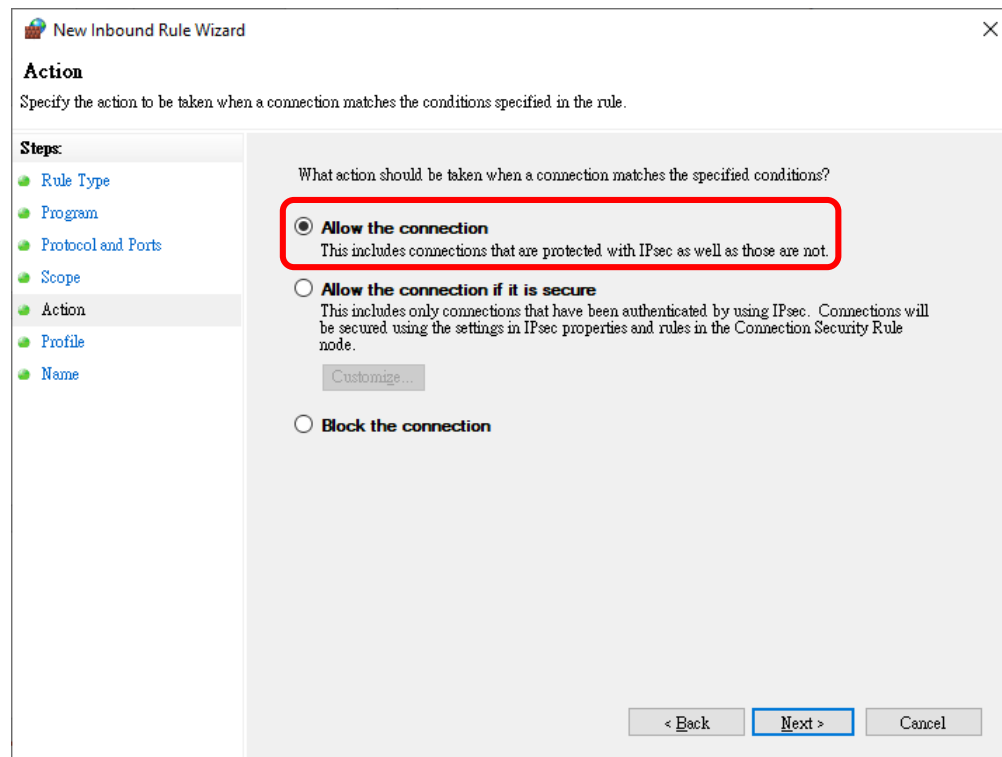
➤ How to solve the problem of external connections being blocked by firewall

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



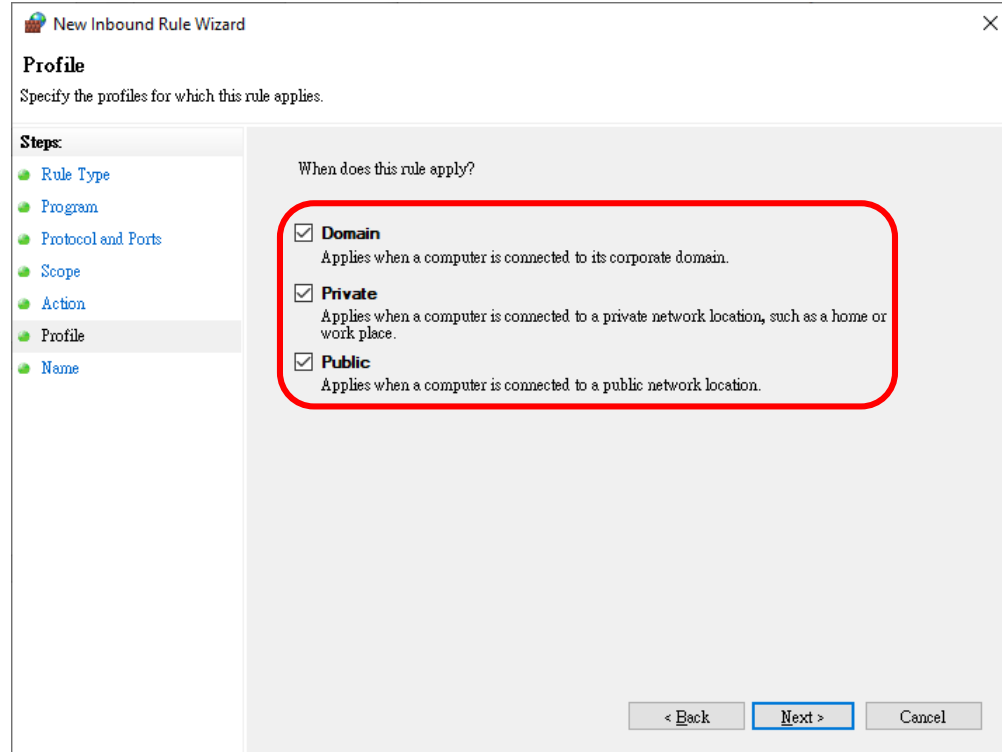
➤ How to solve the problem of external connections being blocked by firewall

- Select “Allow the connection”



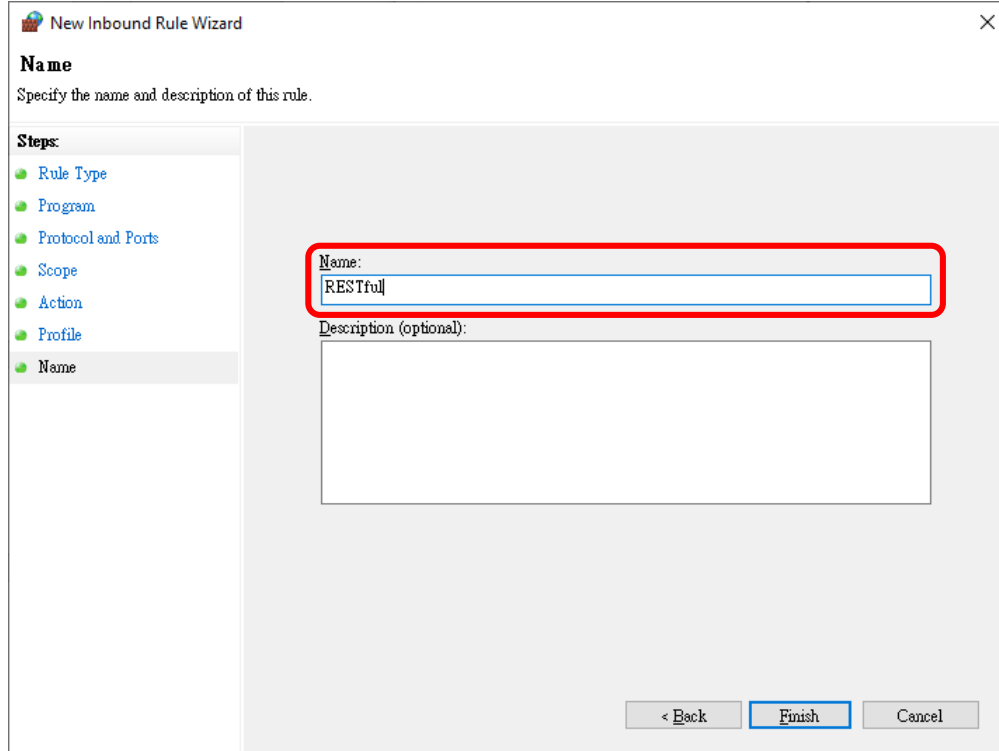
➤ How to solve the problem of external connections being blocked by firewall

- Check all options



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

- Name:RESTful



New Inbound Rule Wizard

Name
Specify the name and description of this rule.

Steps:

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

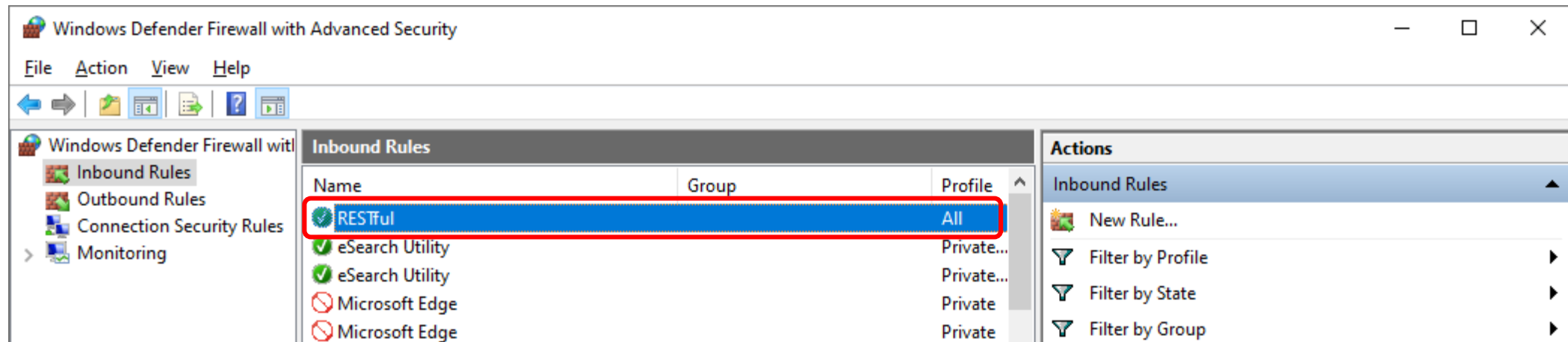
Name:
RESTful

Description (optional):

< Back Finish Cancel

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

- Complete and check whether data reception is normal

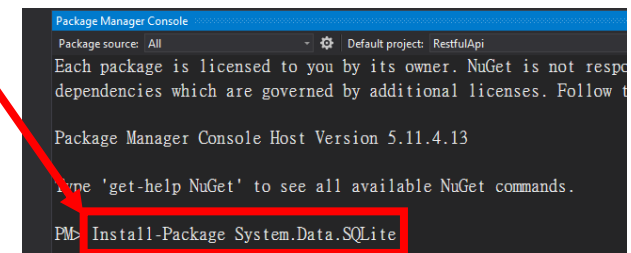
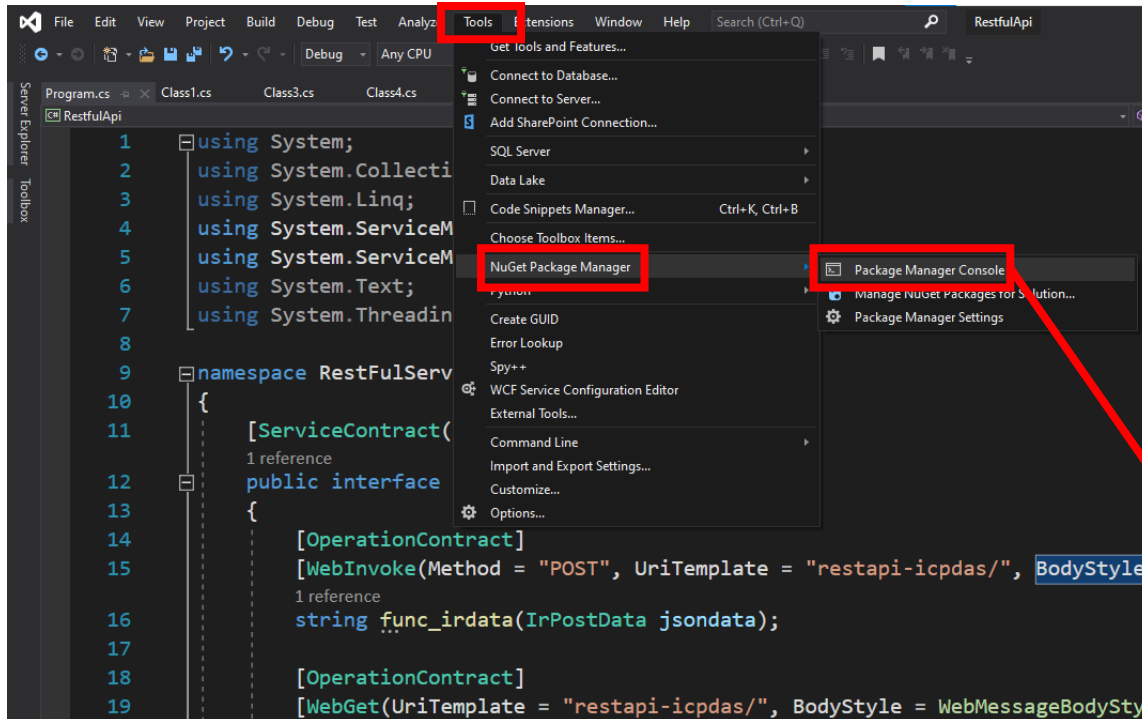


06

How to install Lib

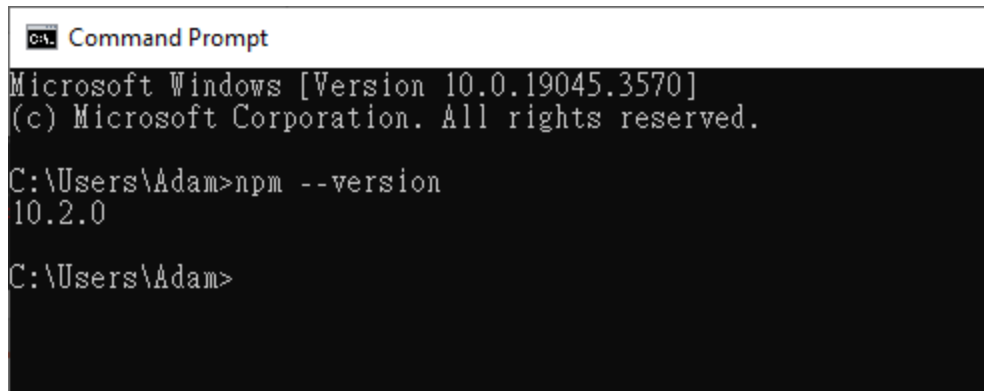
➤ How to install Lib in CSharp

- 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)



```
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)

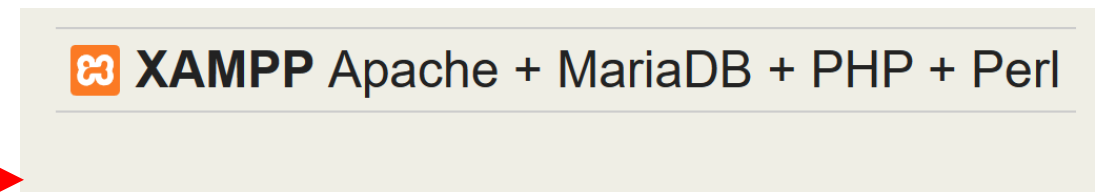
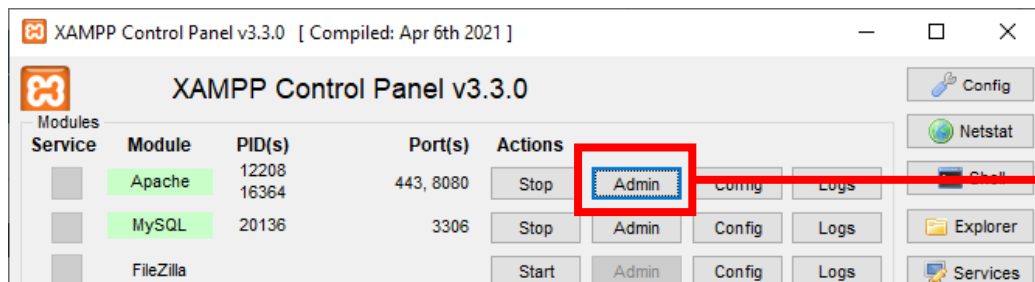
```
cmd Command Prompt
Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

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

C:\Users\Adam>
```

➤ 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/\(windows\)](https://sourceforge.net/projects/xampp/files/XAMPP%20Windows/8.1.10/(windows))



Welcome to XAMPP for Windows 8.1.10