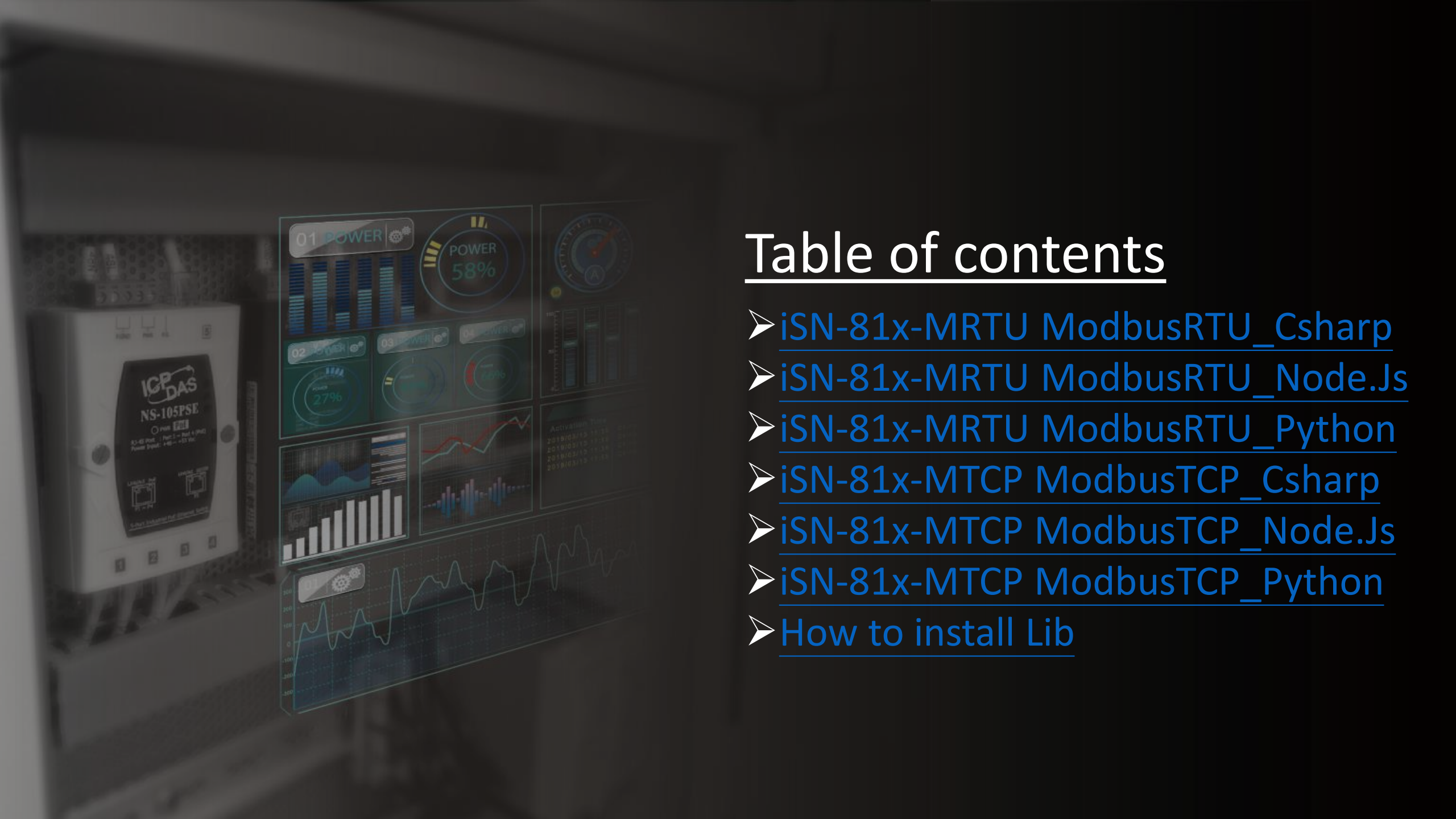
ICP DAS

Industrial Automation Technology
Innovator and Enhancer.

How to connect iSN-81x module through Modbus



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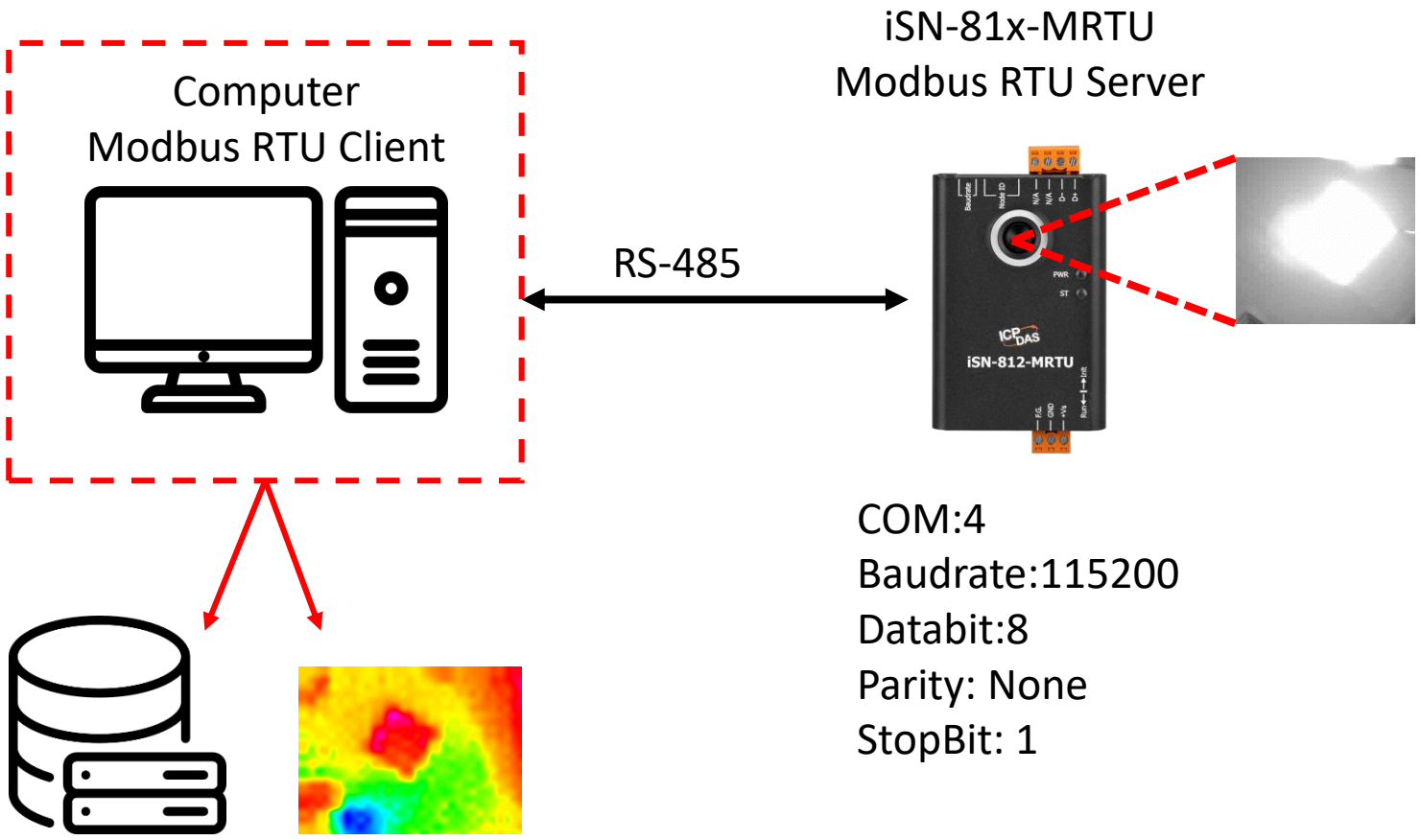
iSN-81x-MRTU ModbusRTU_Csharp

- 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-MRTU
  - 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 Newtonsoft.Json -Version 13.0.1

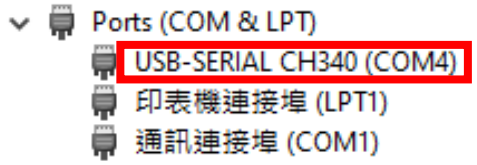
➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

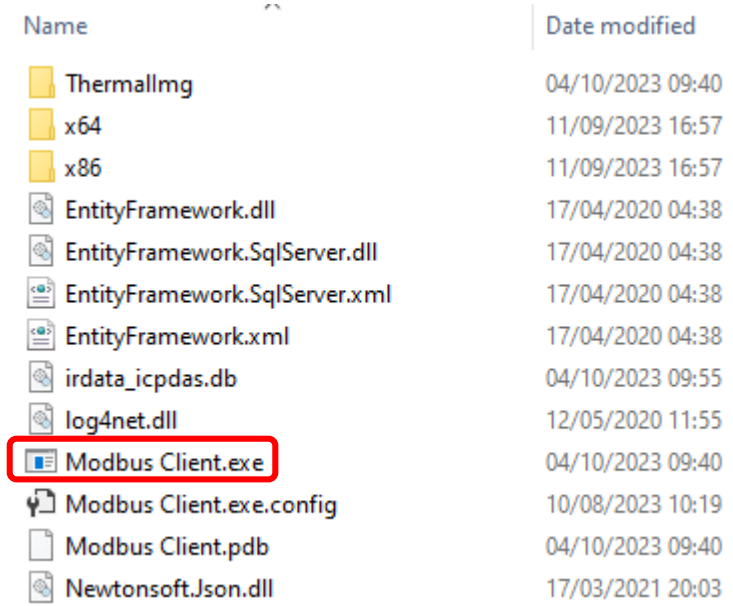


➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

- To connect the demo program to iSN-81x-MRTU, you need to change the value “cmbPort” to the comport of iSN-81x-MRTU in “Program.cs”
- Open “Modbus client.exe”

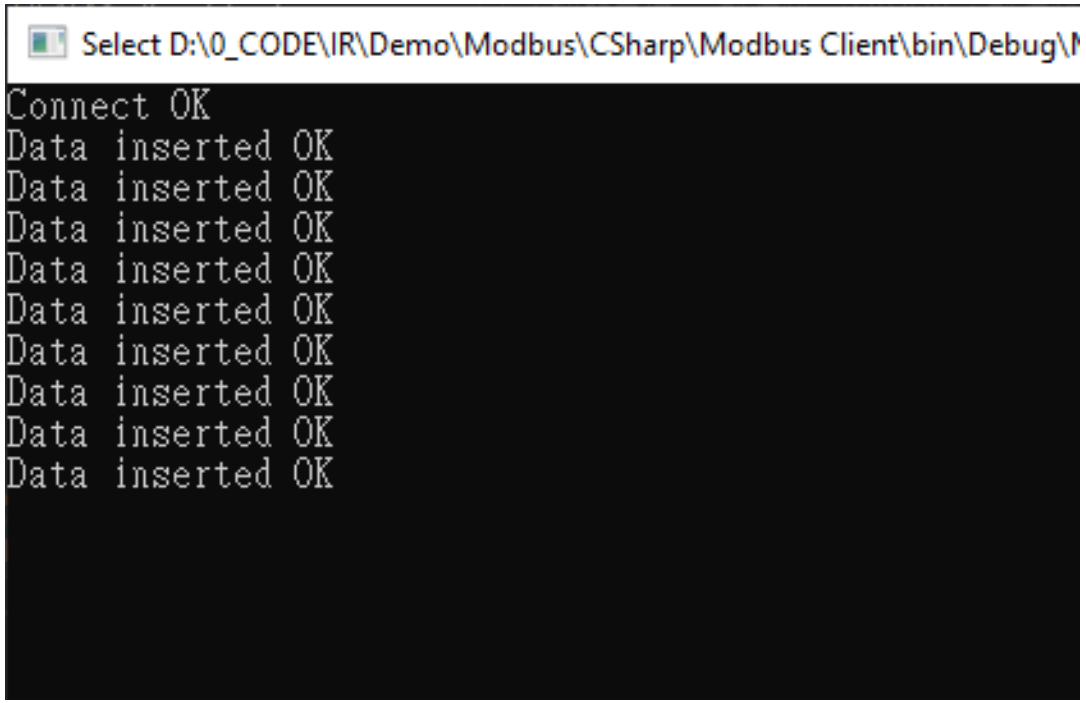
```
static string cmbPort = "COM4";
static string cmbBaud = "115200";
static string cmbParity = "None(0)";
static string cmbDataBit = "8";
static string cmbStopBit = "1";
```





➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

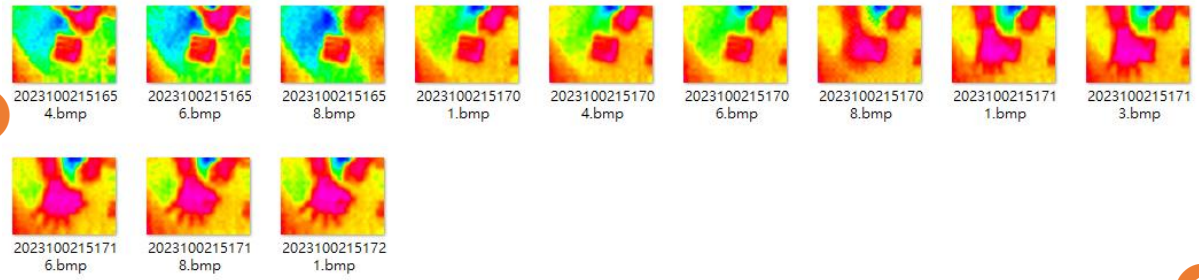
- If the connection is successful, demo program will send request to get the data



➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

- 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-MRTU
3 →Model
4 →IR data measured by iSN-81x-MRTU
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 “func_irdata”, and then edit the value “dbname”.

```
public static void func_irdata(string jsondata)
{
    JsonTempData jsonObj = JsonConvert.DeserializeObje

    string dbname = "irdata_icpdas.db";
    string _connectionString = $"Data Source={dbname};
```

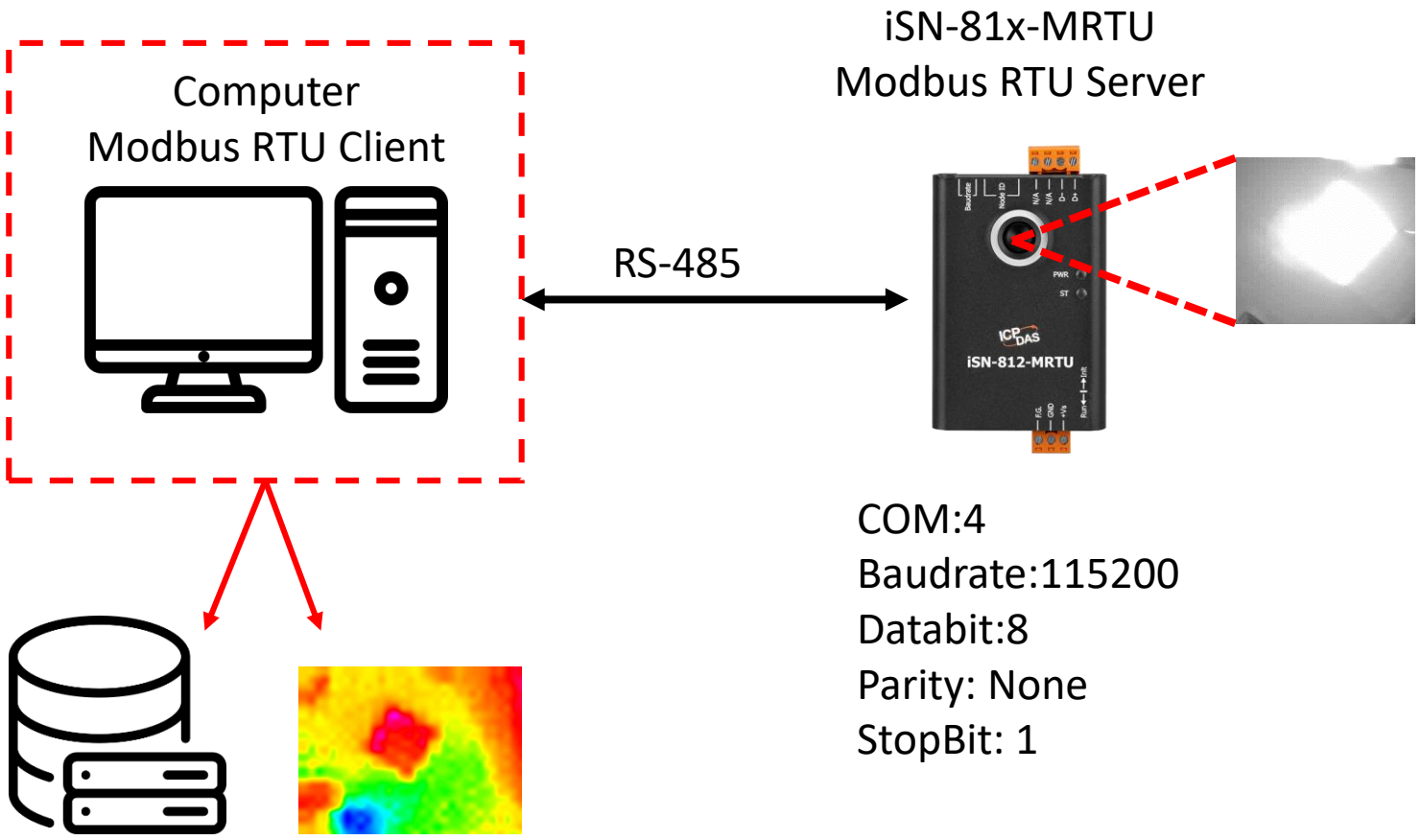
02

iSN-81x-MRTU ModbusRTU_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-MRTU
  - 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

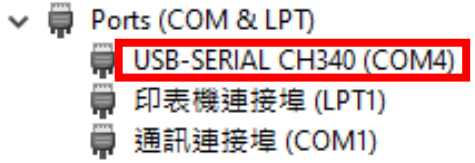
➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

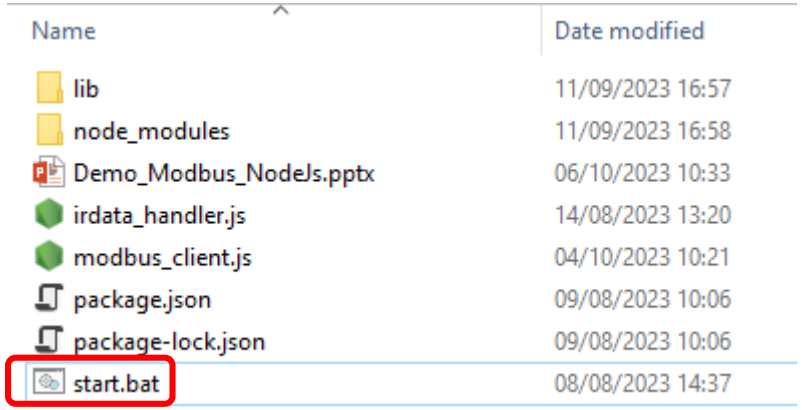


➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

- To connect the demo program to iSN-81x-MRTU, you need to change the value “comport” to the comport of iSN-81x-MRTU in ” modbus_client.js”
- Open “start.bat”

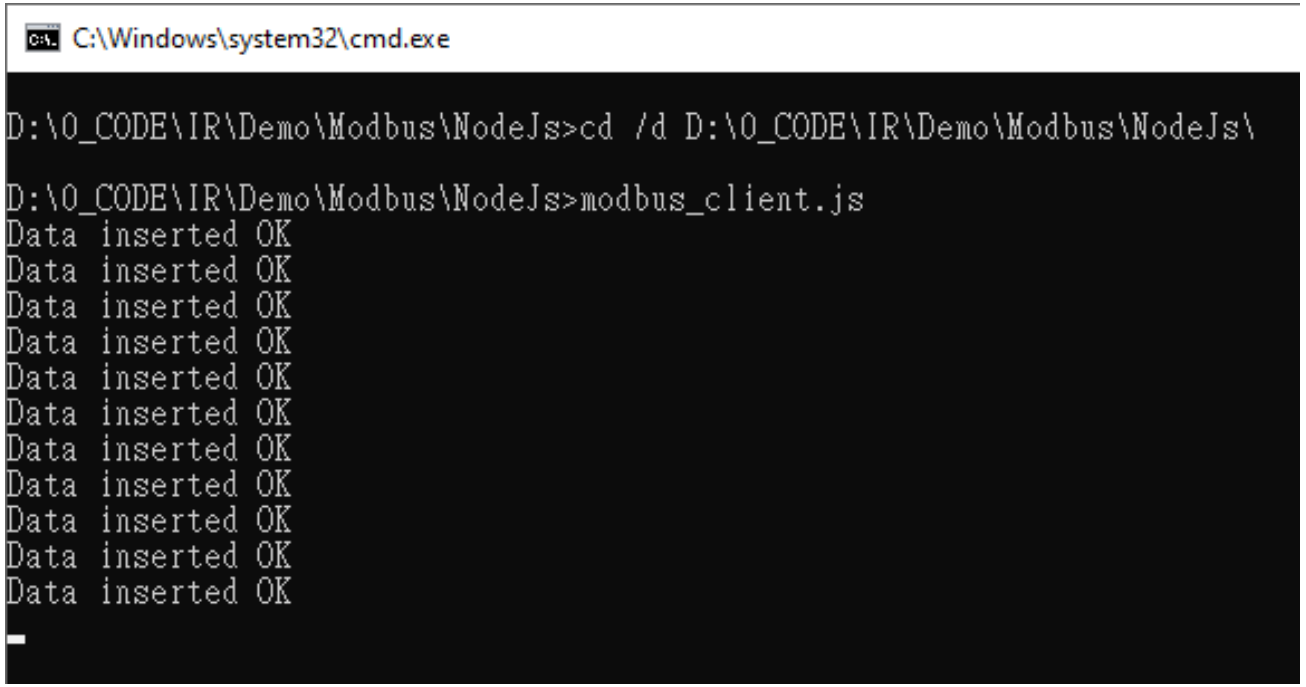
```
const comport = "COM4";
```





➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

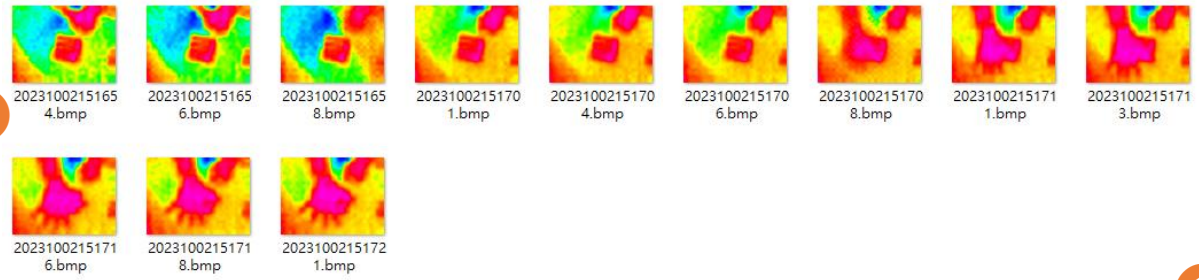
- If the connection is successful, demo program will send request to get the data



➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

- 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

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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-MRTU
3 →Model
4 →IR data measured by iSN-81x-MRTU
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.

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

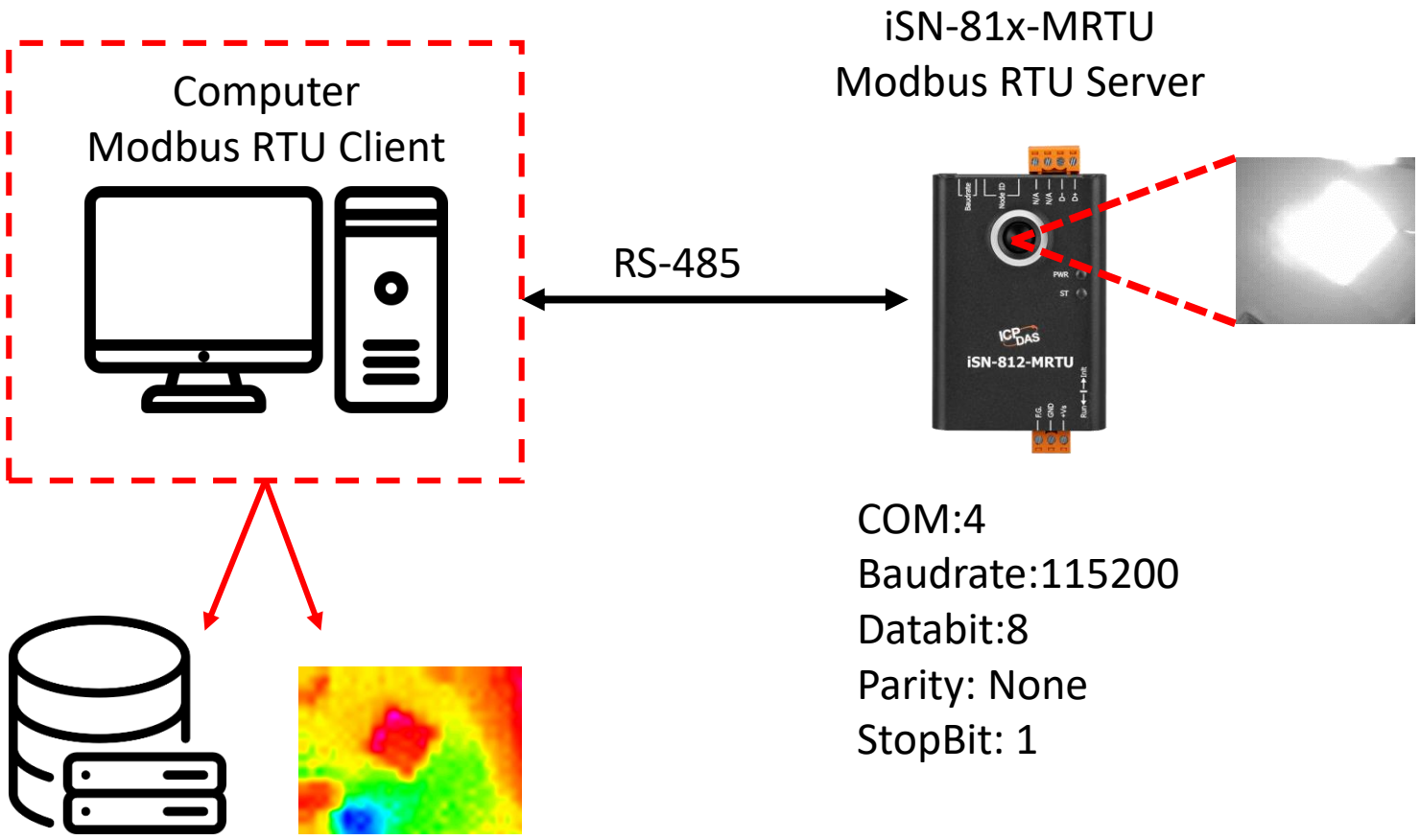
03

iSN-81x-MRTU ModbusRTU_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-MRTU
  - 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 pymodbus
  - pip install numpy
  - pip install opencv-python

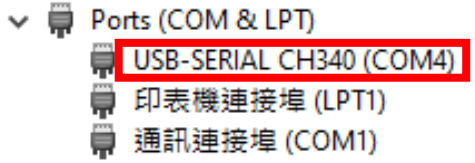
➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

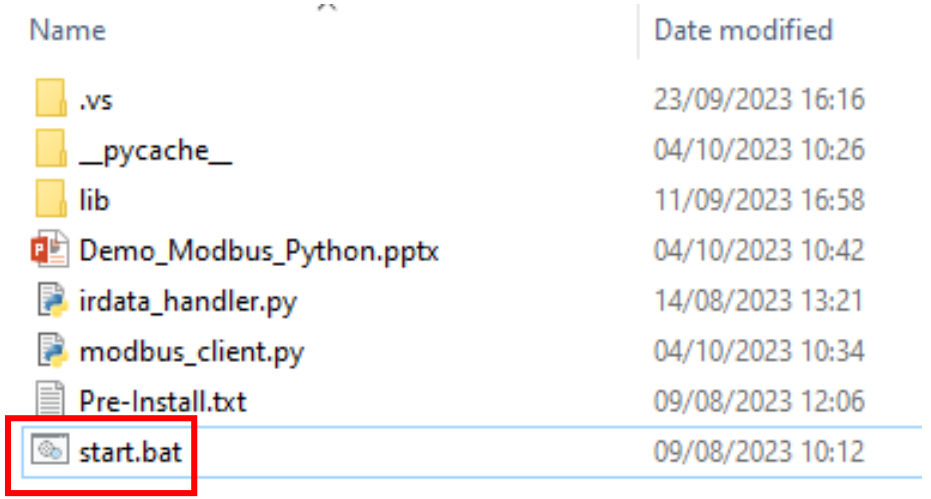


➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

- To connect the demo program to iSN-81x-MRTU, you need to change the value “port” to the comport of iSN-81x-MRTU in “modbus_client.py”
- Open “start.bat”

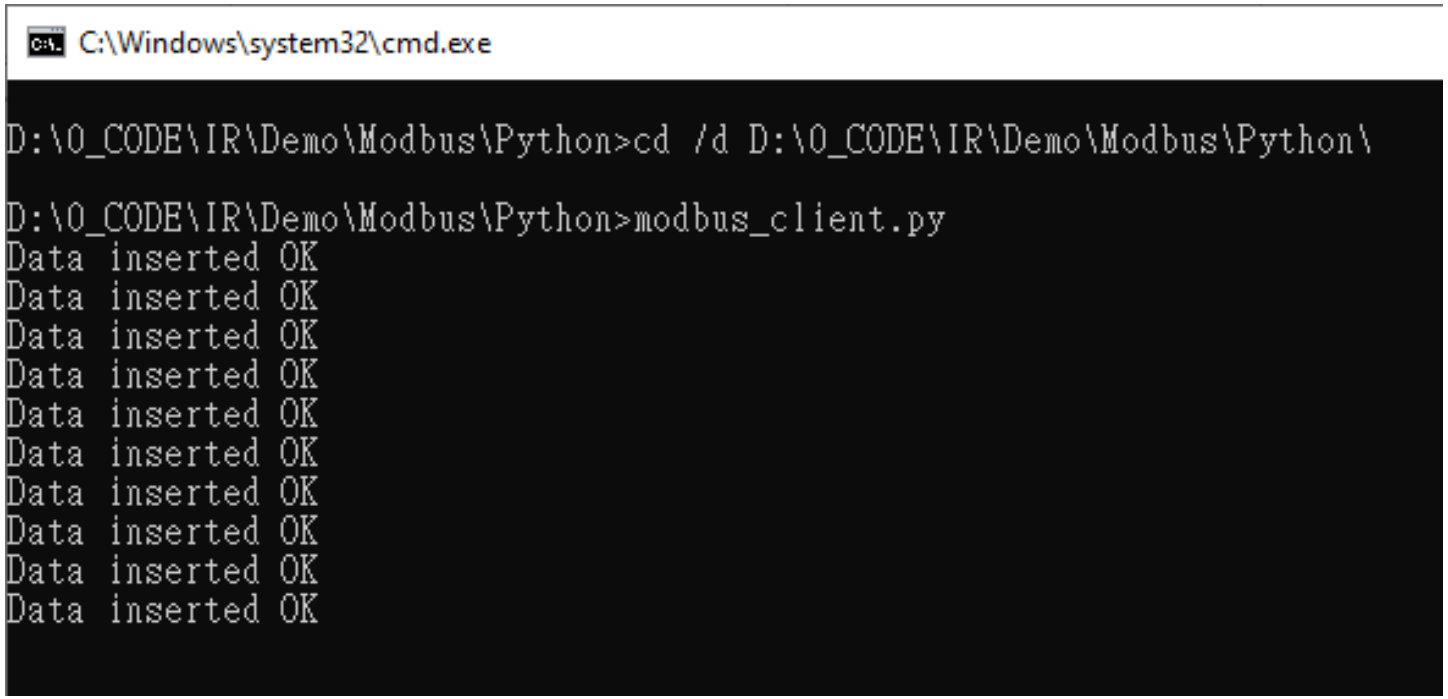
```
client = ModbusClient(
    method='rtu',
    port='COM4',
    baudrate=115200,
    stopbits=1,
    bytesize=8,
    parity='N'
)
```





➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

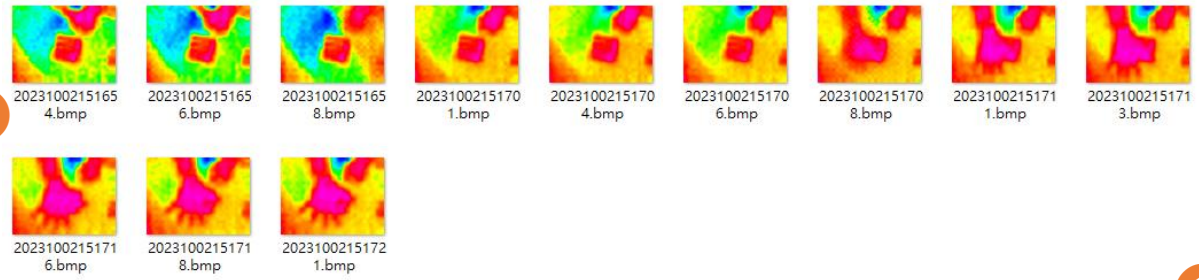
- If the connection is successful, demo program will send request to get the data



➢ Configuring iSN-81x-MRTU as a Modbus RTU Server

- 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

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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-MRTU
3 →Model
4 →IR data measured by iSN-81x-MRTU
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.

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

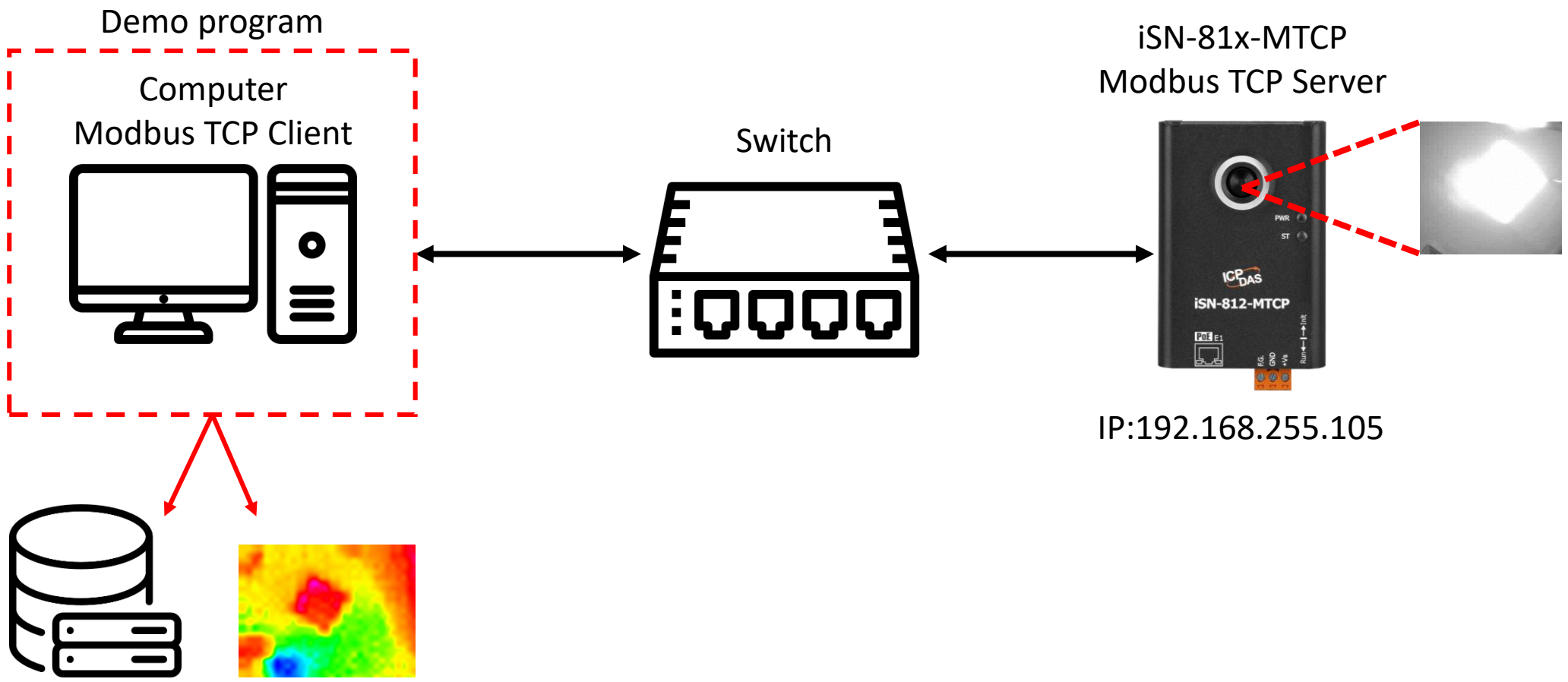
04

iSN-81x-MTCP ModbusTCP_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.

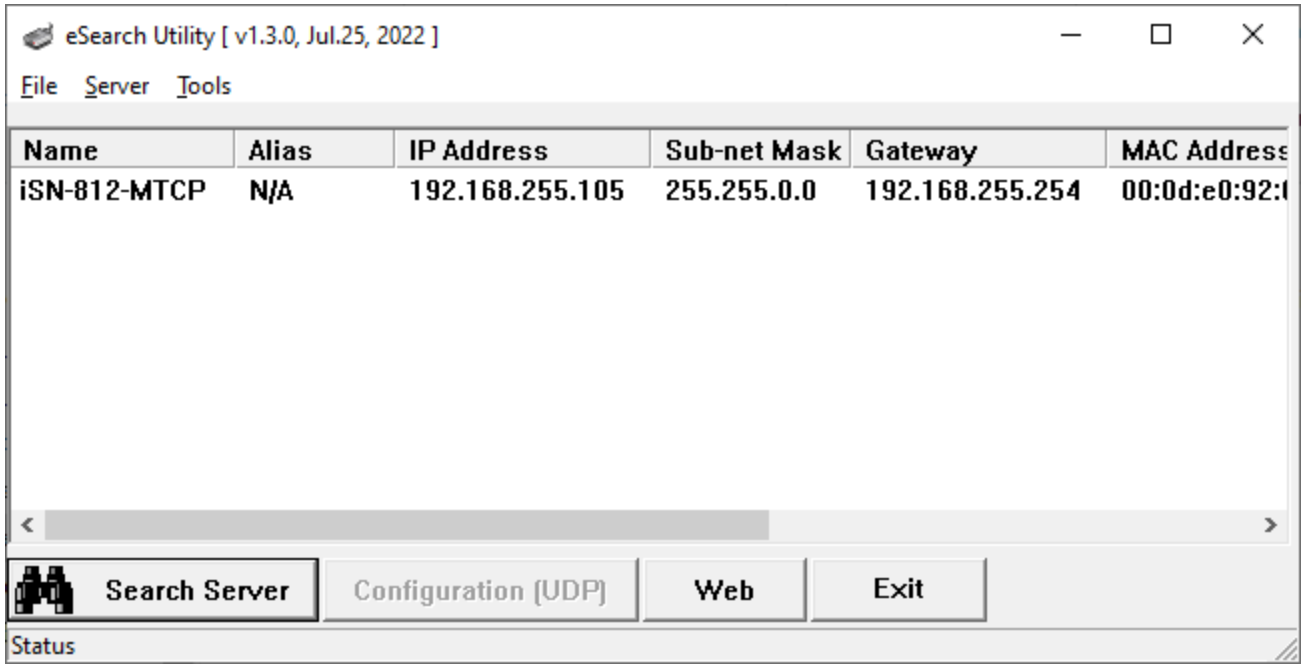
- Pre-install
  - Install-Package System.Data.SQLite
  - Install-Package Newtonsoft.Json -Version 13.0.1

➢ Configuring iSN-81x-MTCP as a Modbus TCP Server



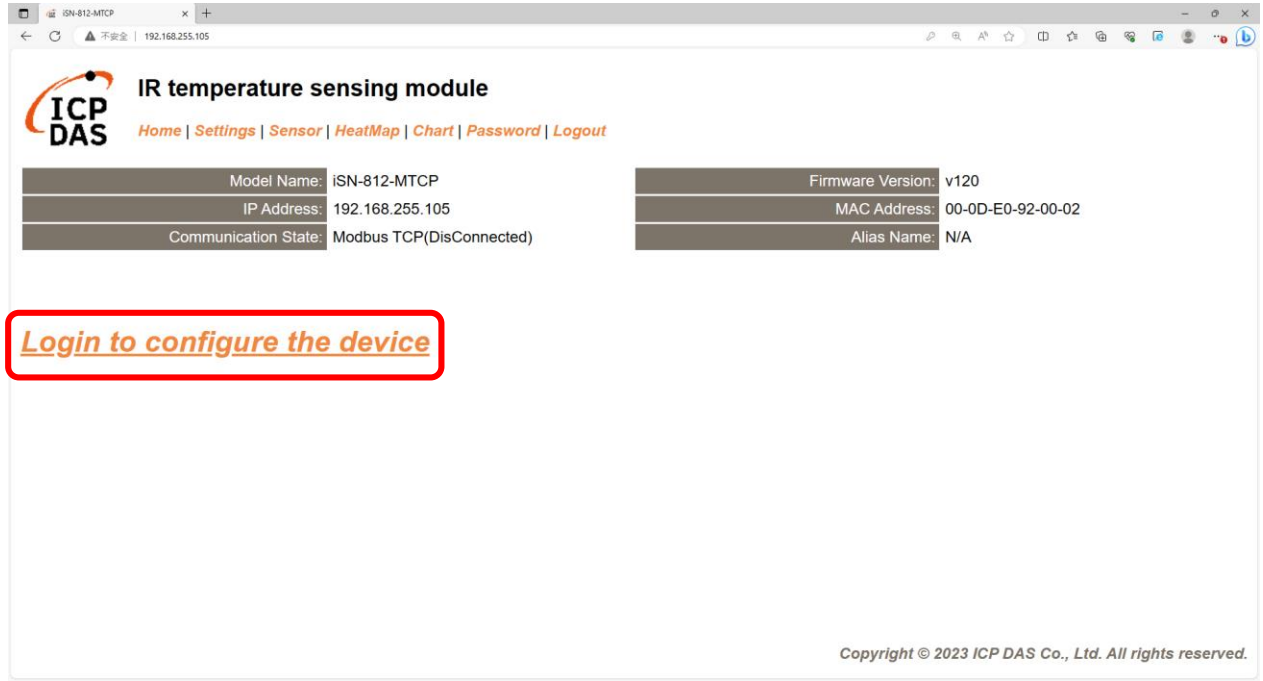
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

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



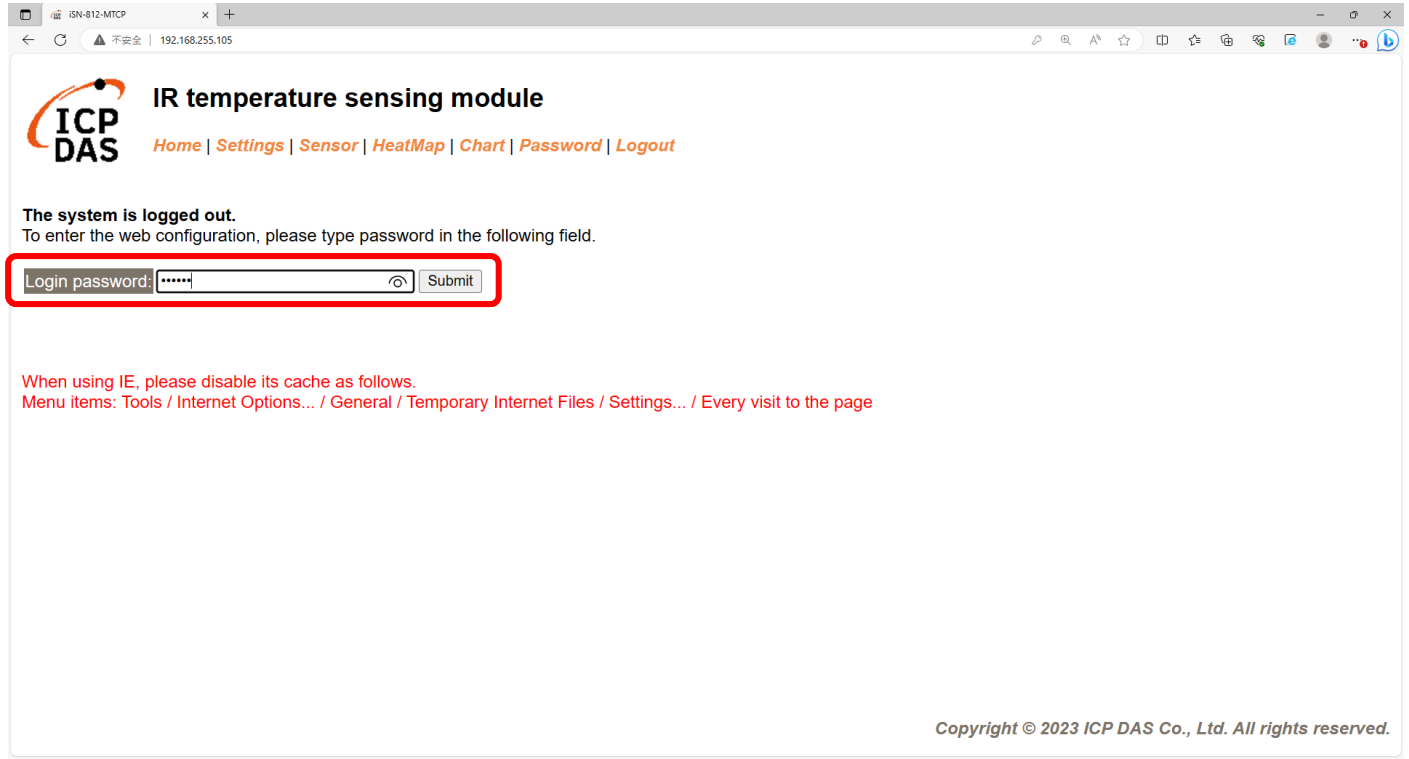
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Click ”Login to configure the device” to login



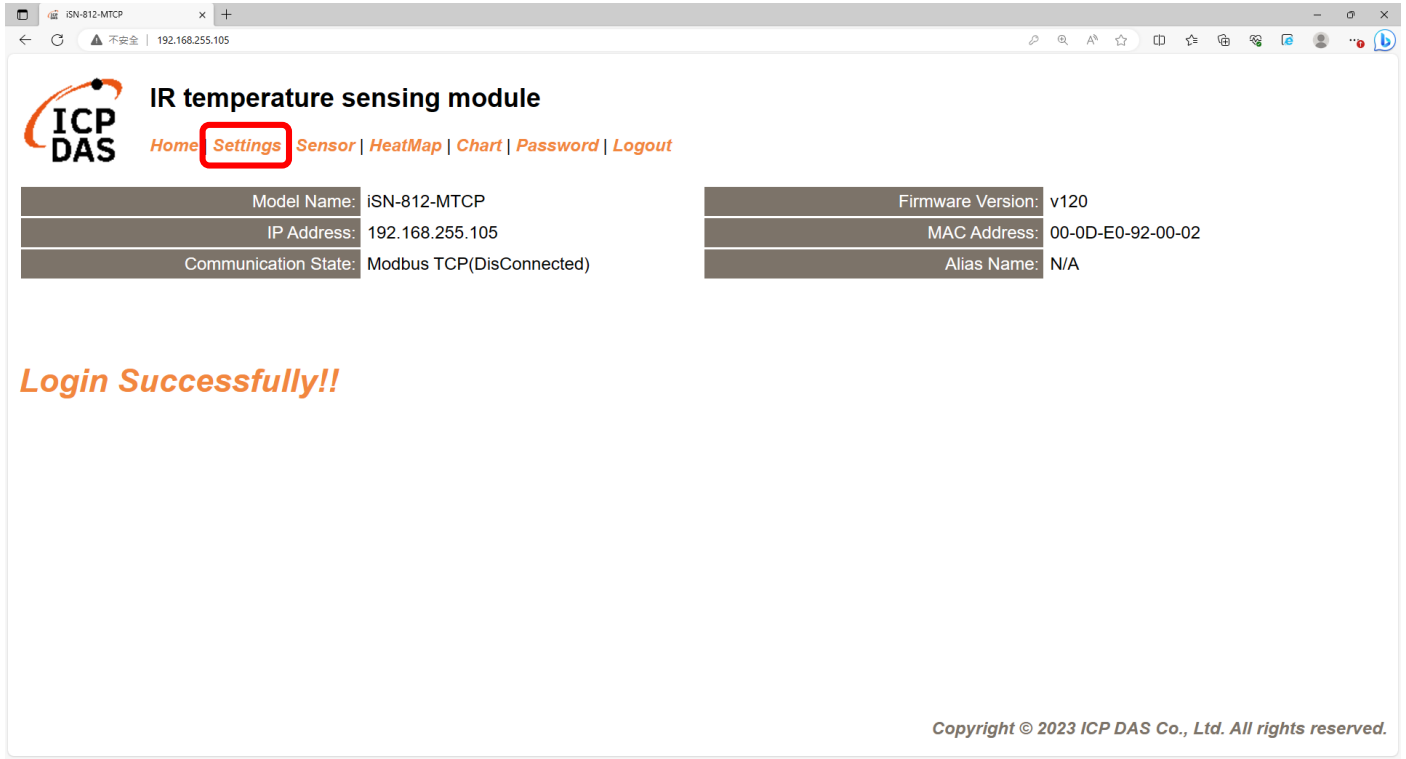
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Login(default password: admin)



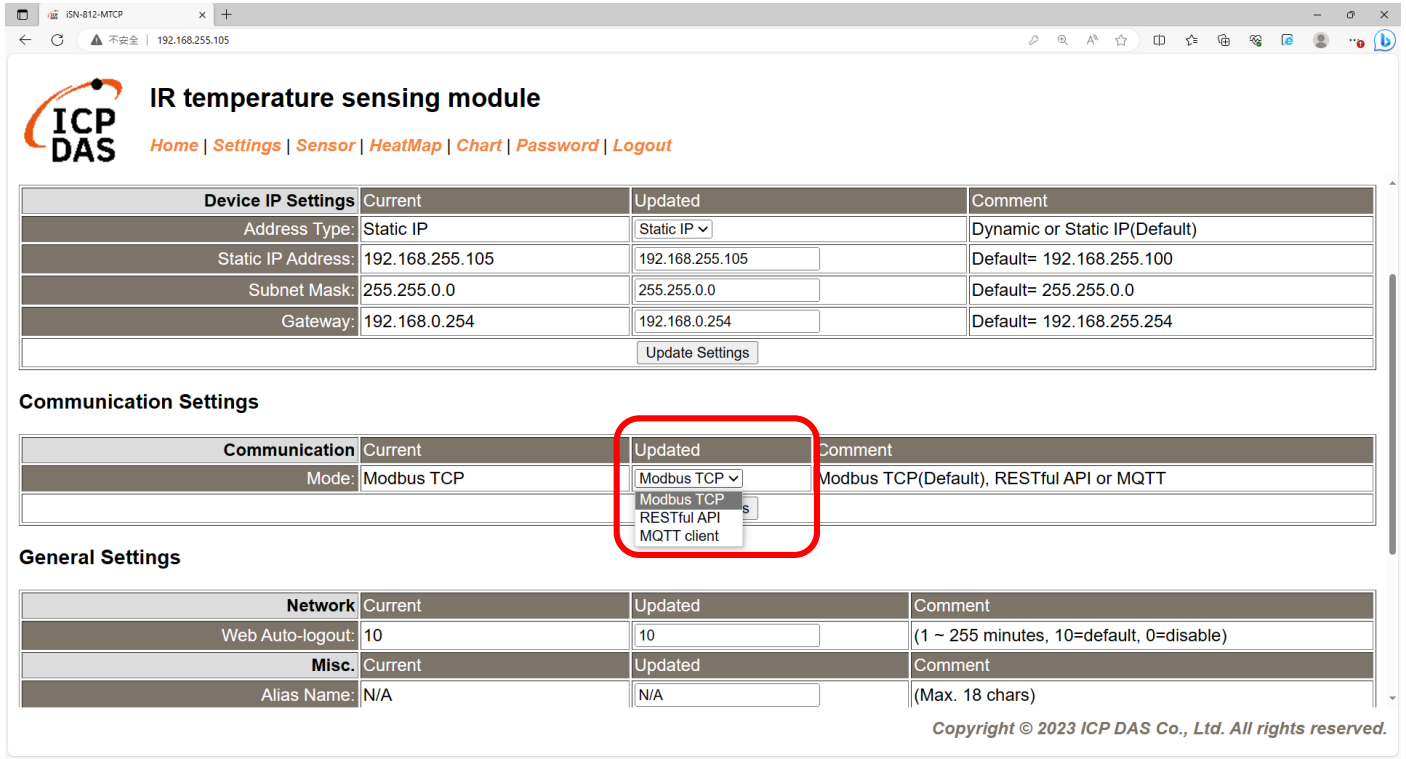
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Click ”Settings” to set communication mode



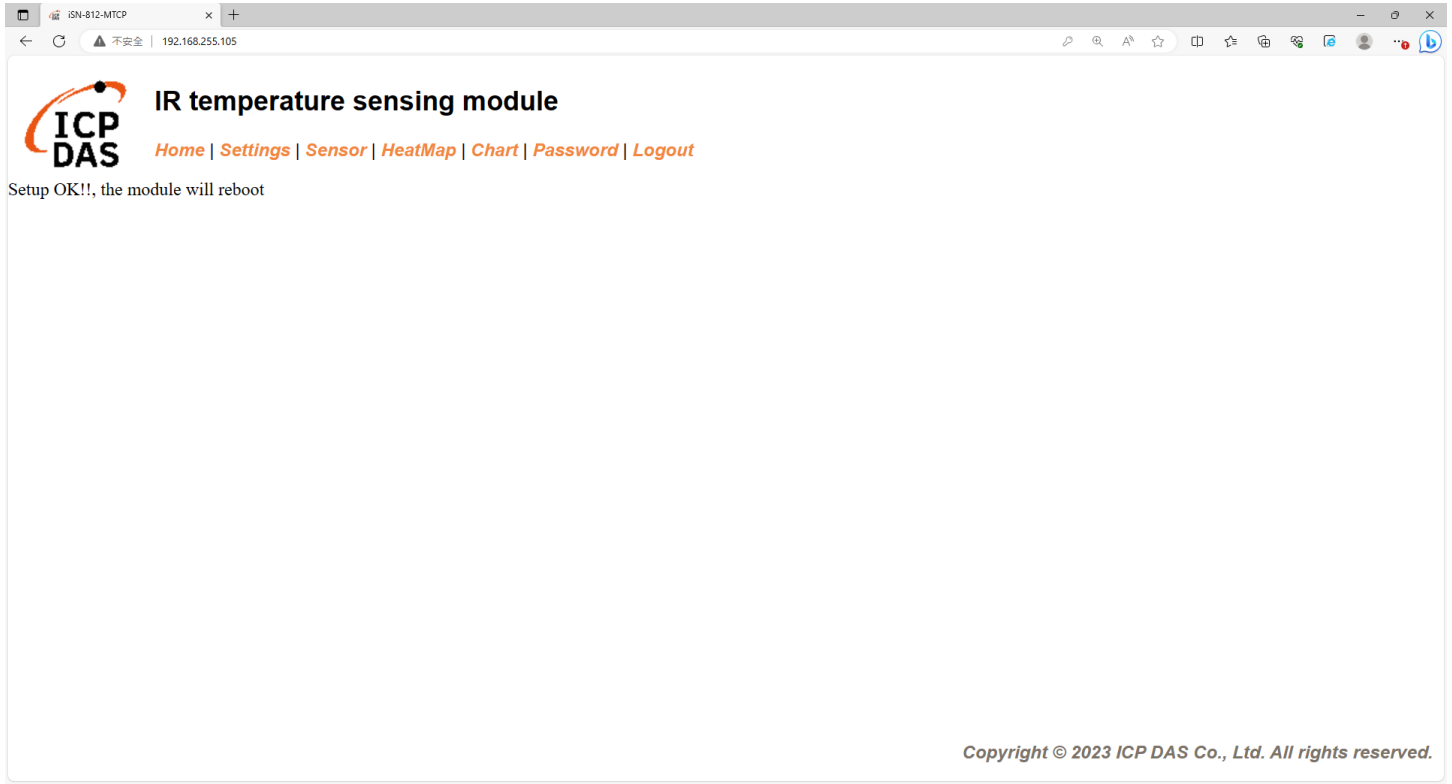
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Set communication mode to “Modbus TCP”



➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

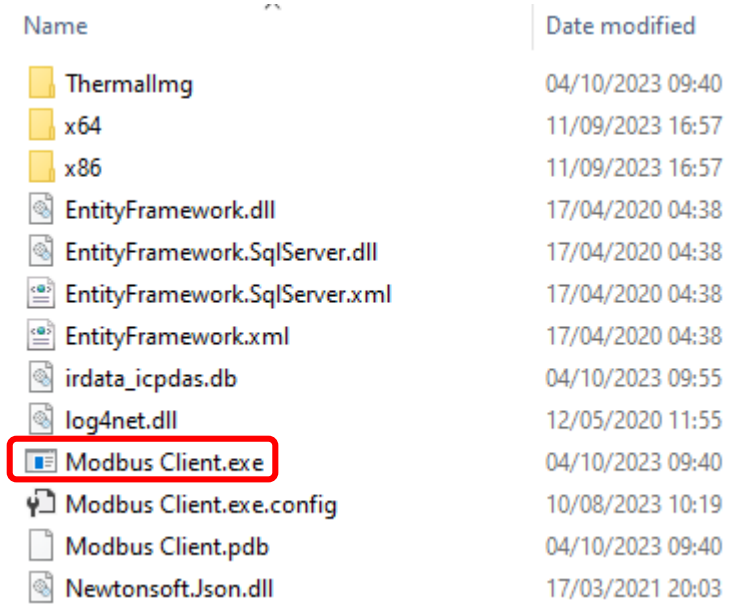
- Wait for reboot



➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

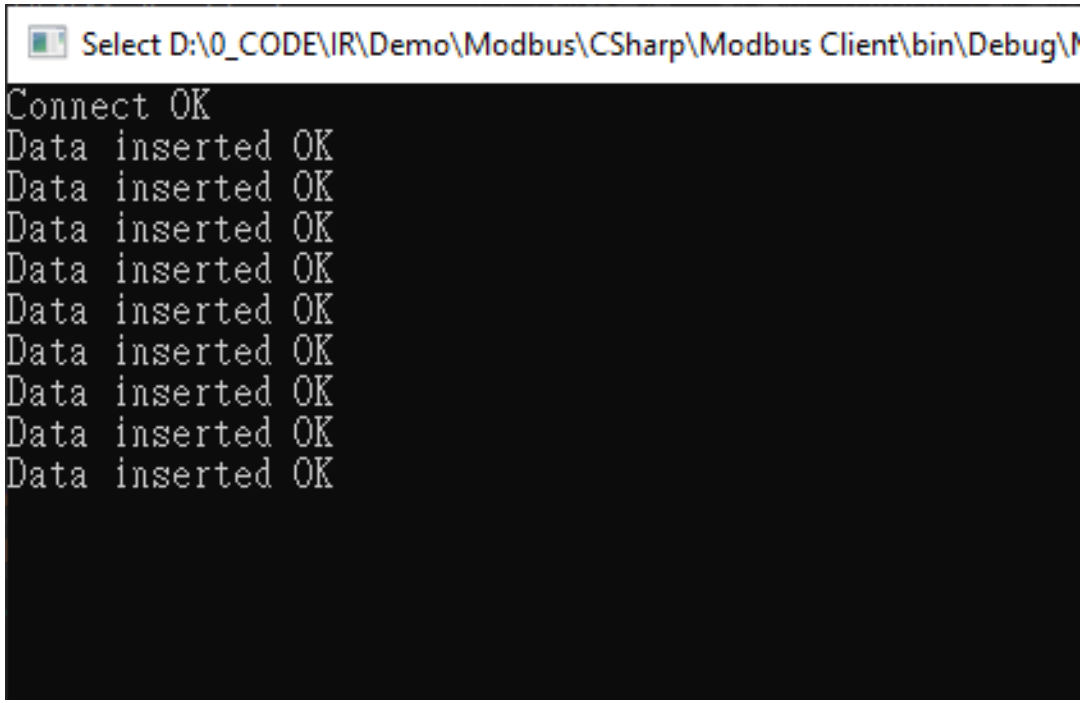
- To connect the demo program to iSN-81x-MTCP, you need to change the value “serverIP” to the IP of iSN-81x-MTCP in “Program.cs”
- IP of iSN-81x-MTCP=192.168.255.109
- Open “Modbus client.exe”

```
static string serverIP = "192.168.255.109";
```



➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- If the connection is successful, demo program will send request to get the data



➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

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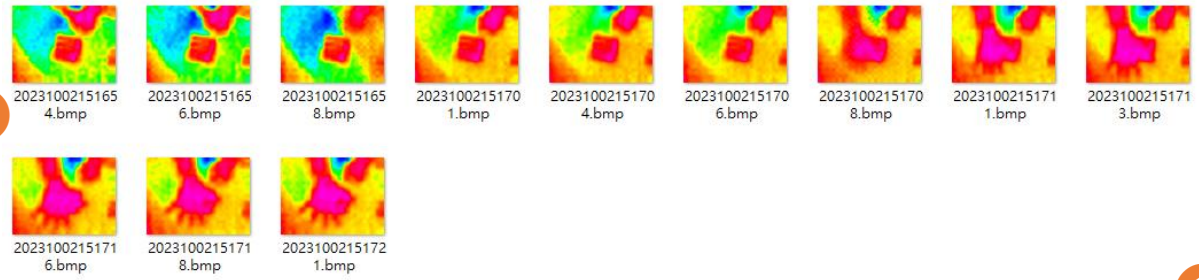
ThermalImg



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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 “func_irdata”, and then edit the value “dbname”.

```
public static void func_irdata(string jsondata)
{
    JsonTempData jsonObj = JsonConvert.DeserializeObje

    string dbname = "irdata_icpdas.db";
    string _connectionString = $"Data Source={dbname};
```

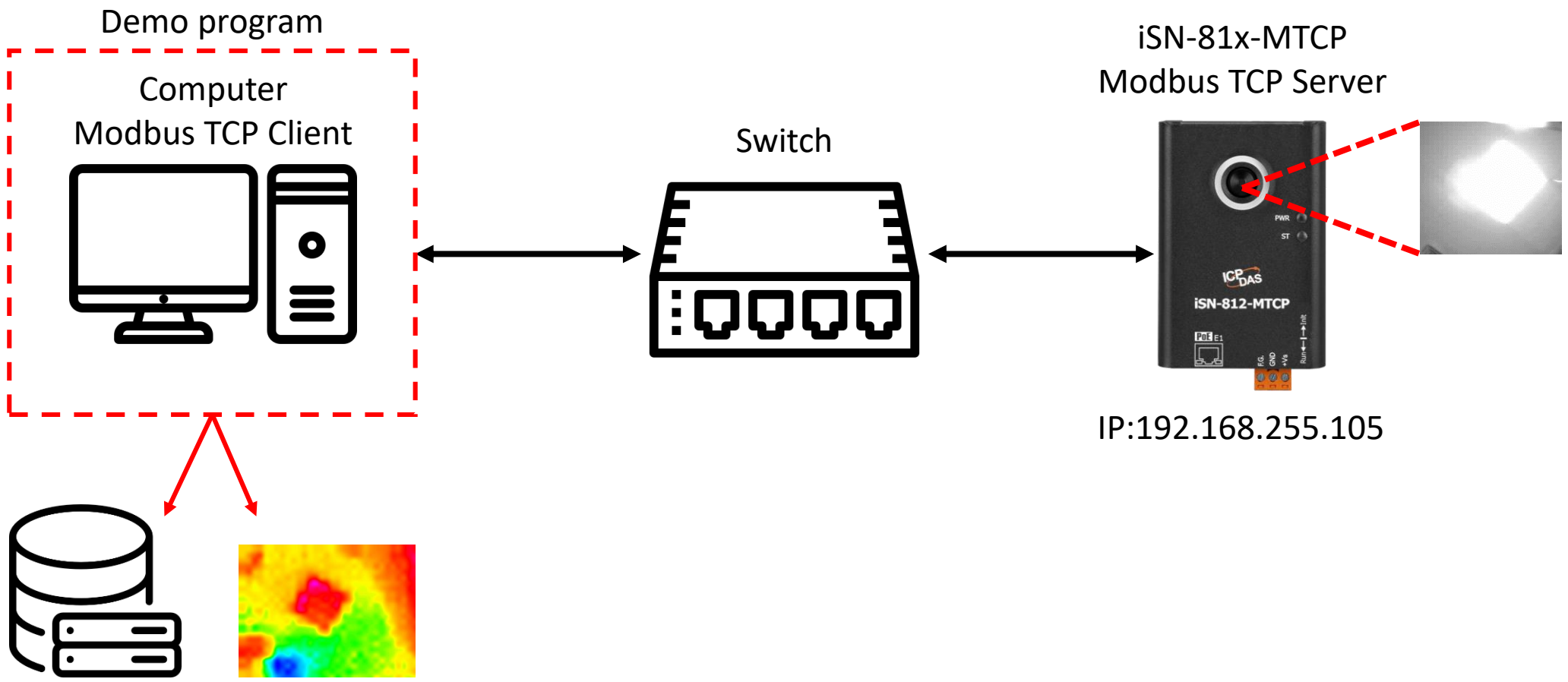
05

iSN-81x-MTCP ModbusTCP_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.

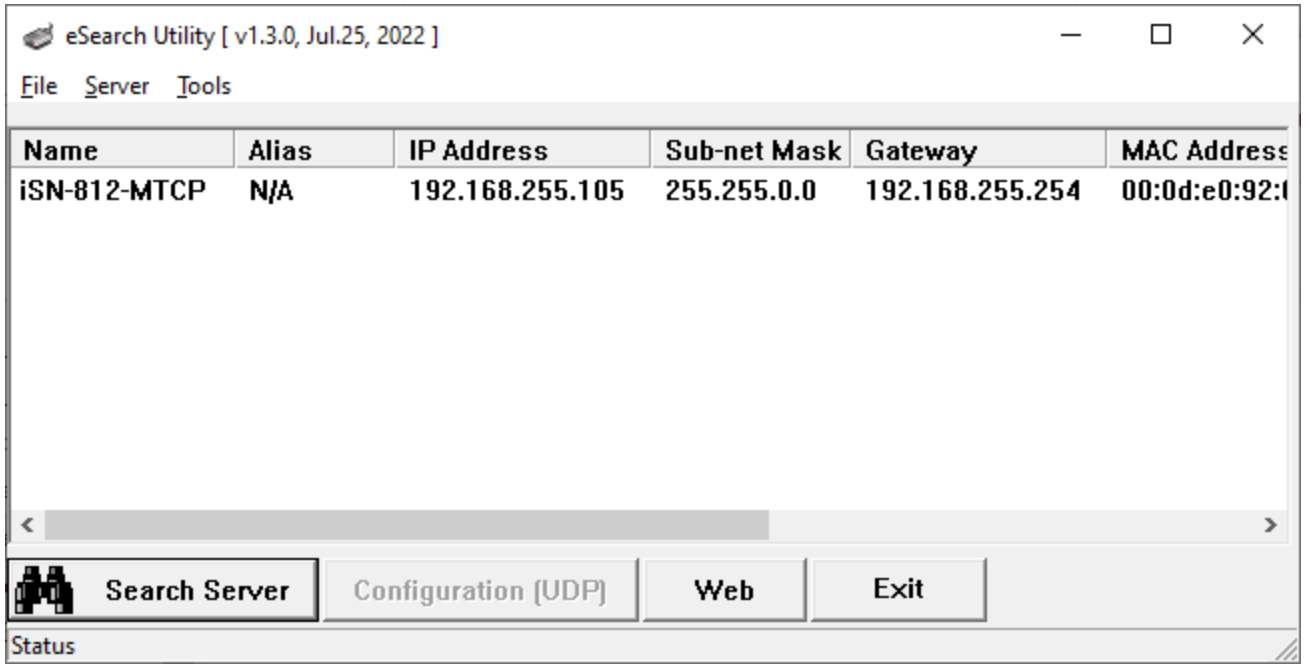
- Pre-install
  - npm install Sqlite3

➢ Configuring iSN-81x-MTCP as a Modbus TCP Server



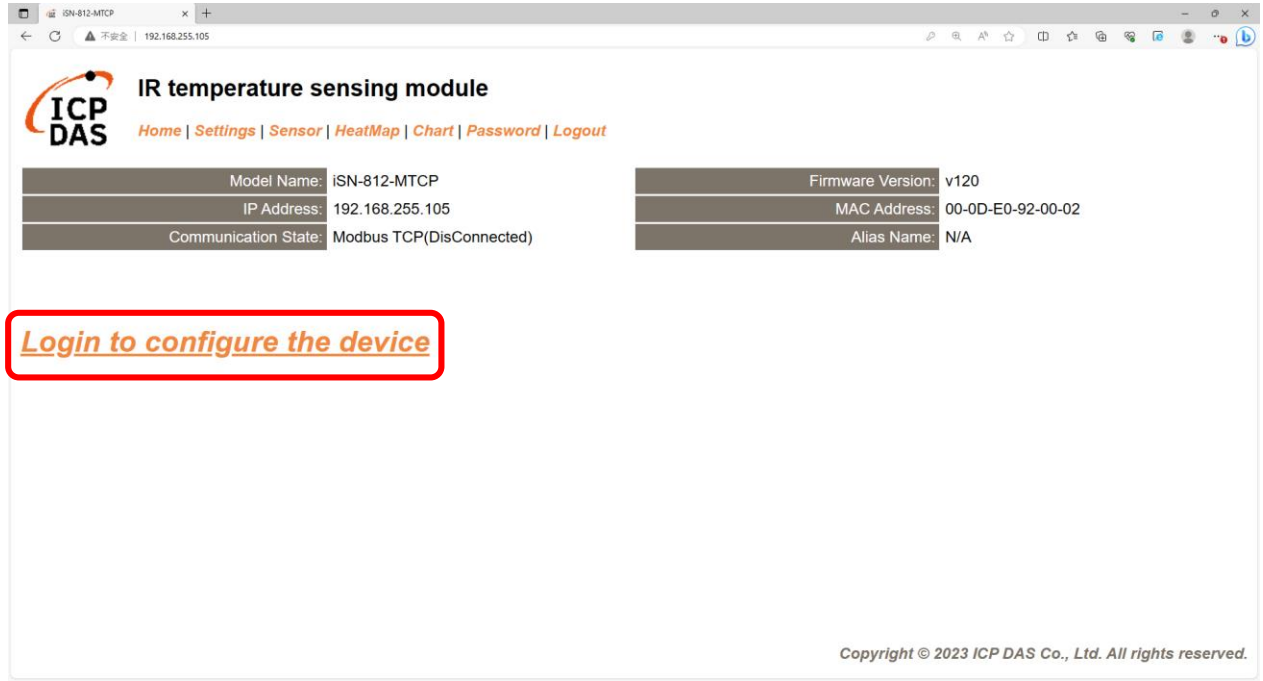
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

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



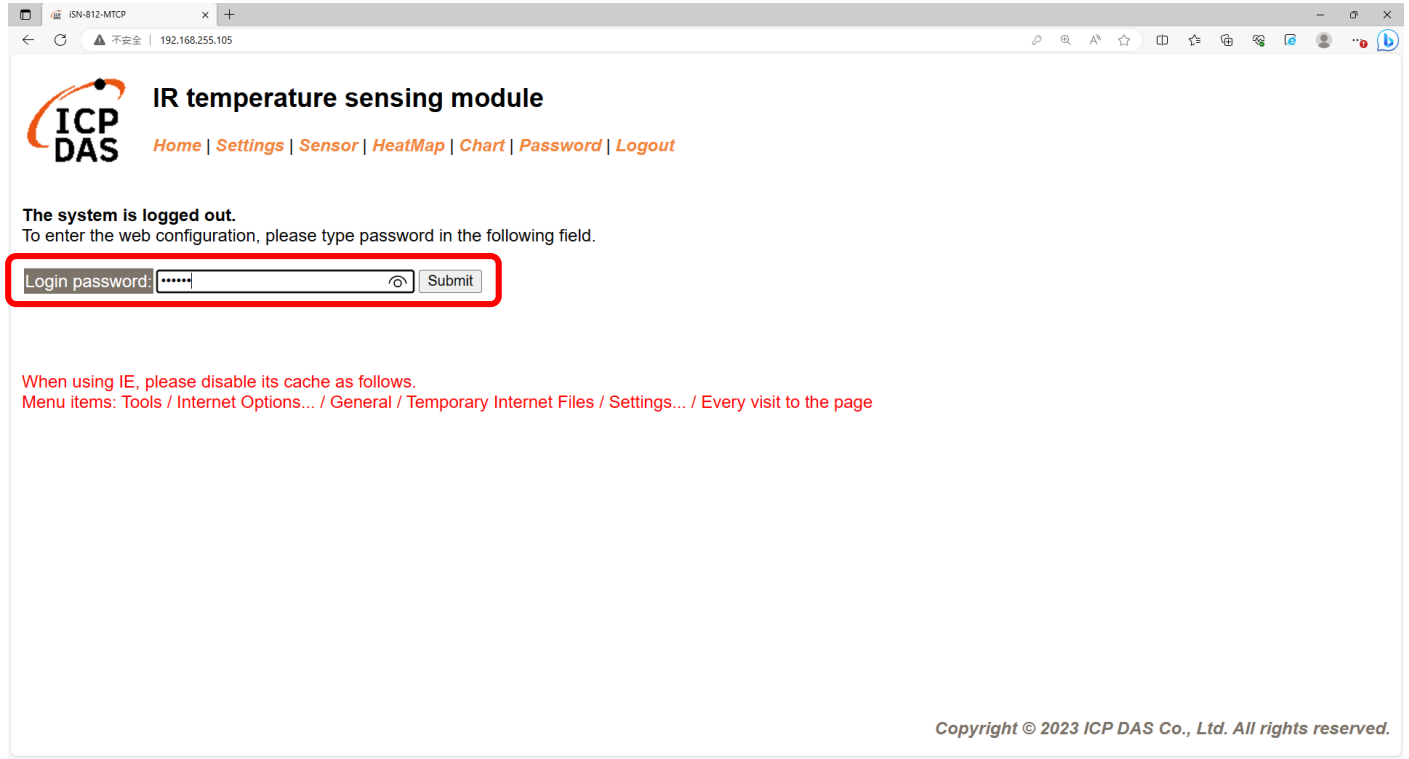
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Click ”Login to configure the device” to login



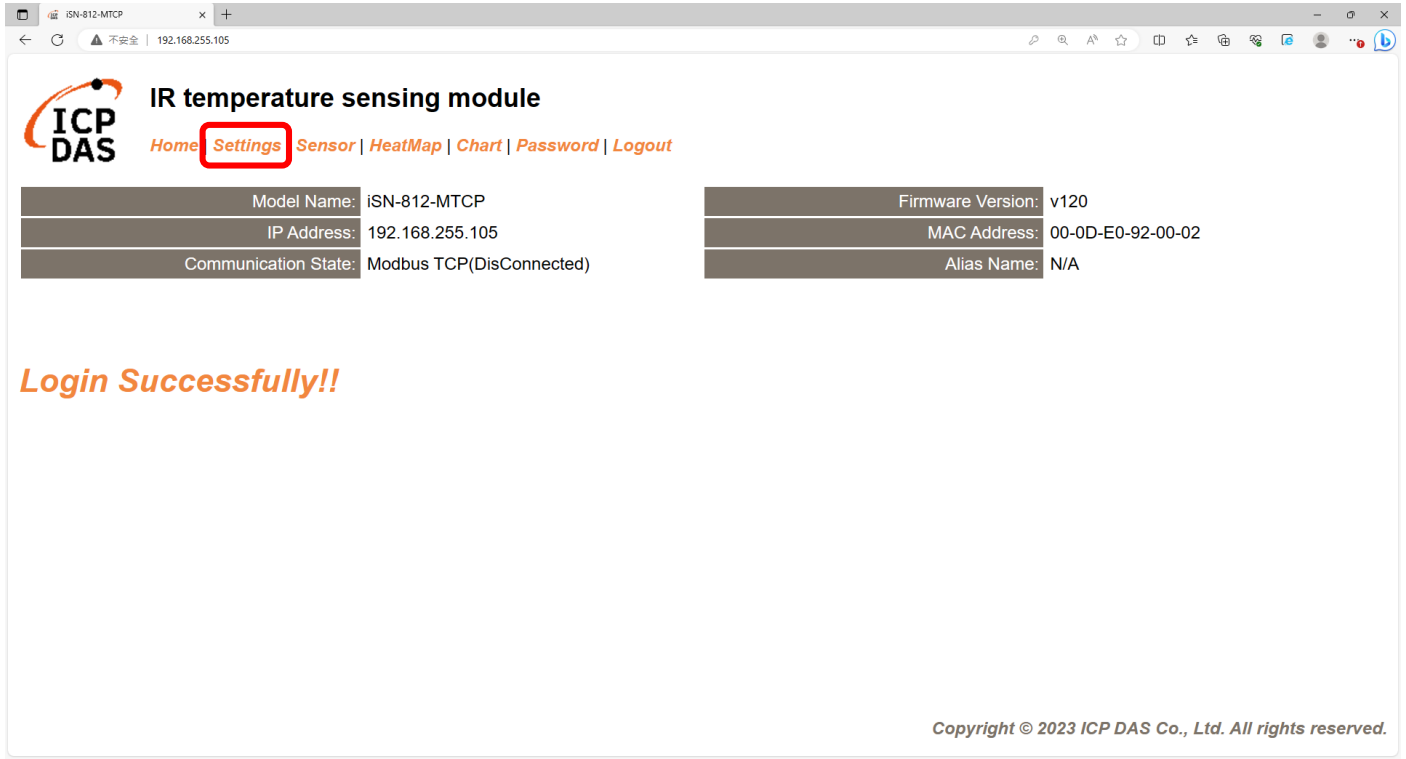
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Login(default password:admin)



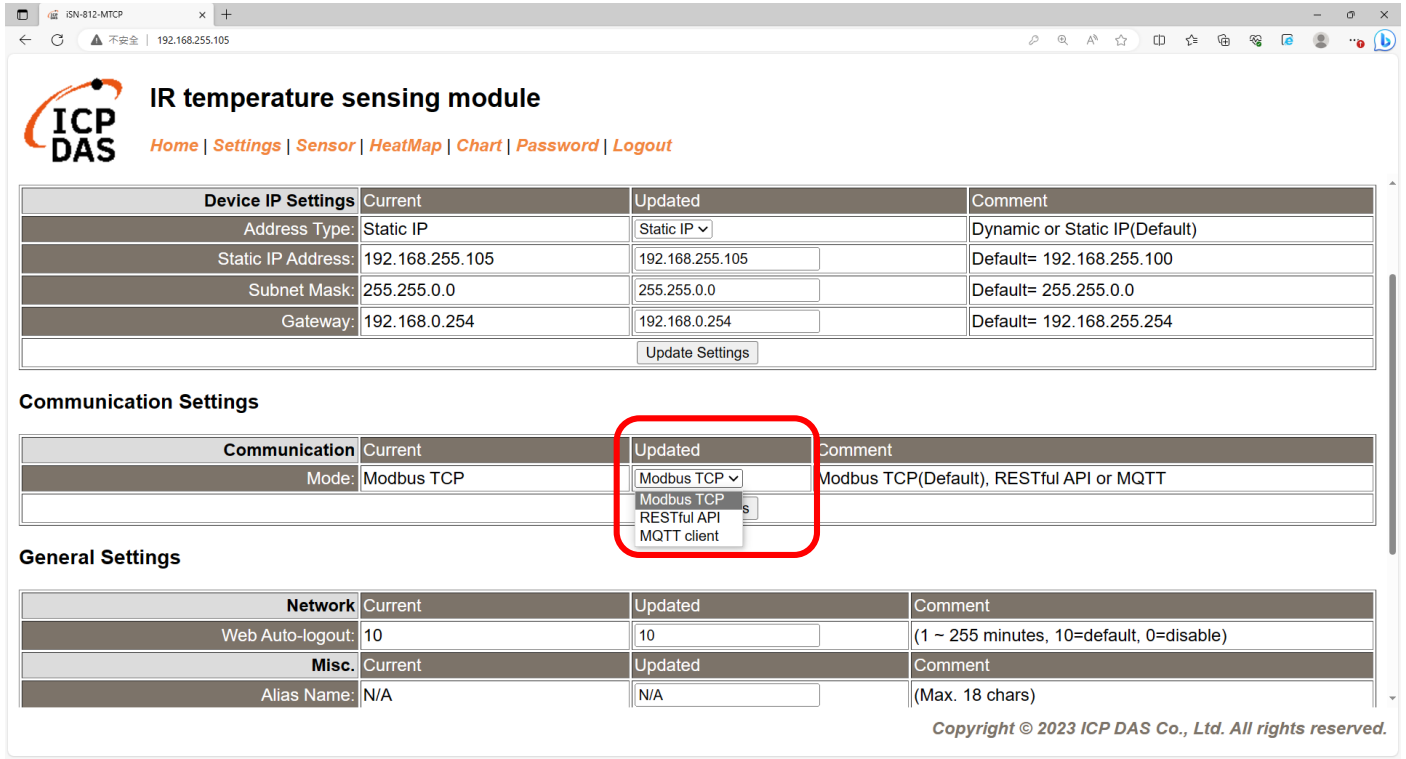
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Click ”Settings” to set communication mode



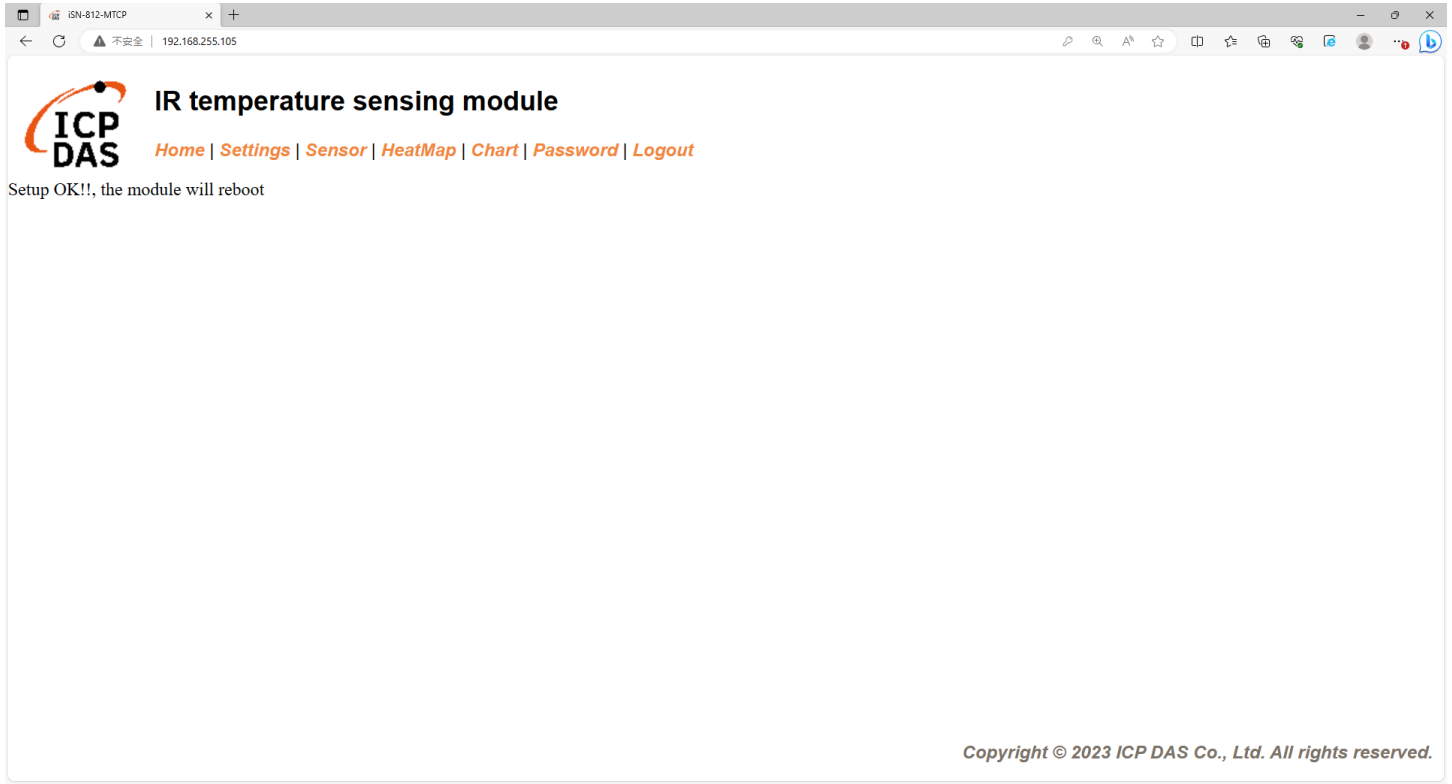
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Set communication mode to “Modbus TCP”



➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

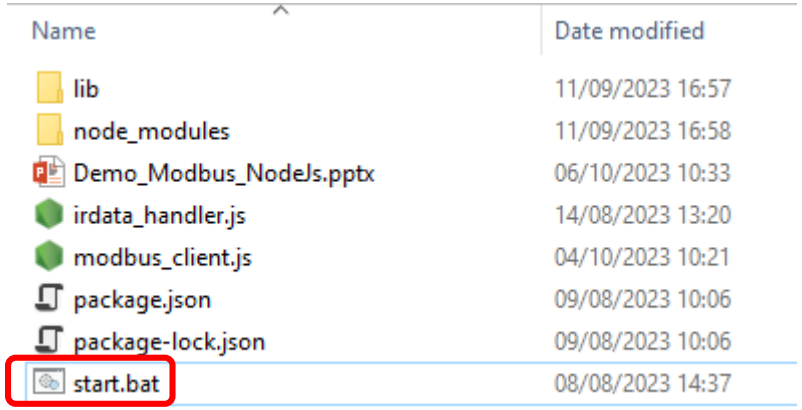
- Wait for reboot



➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

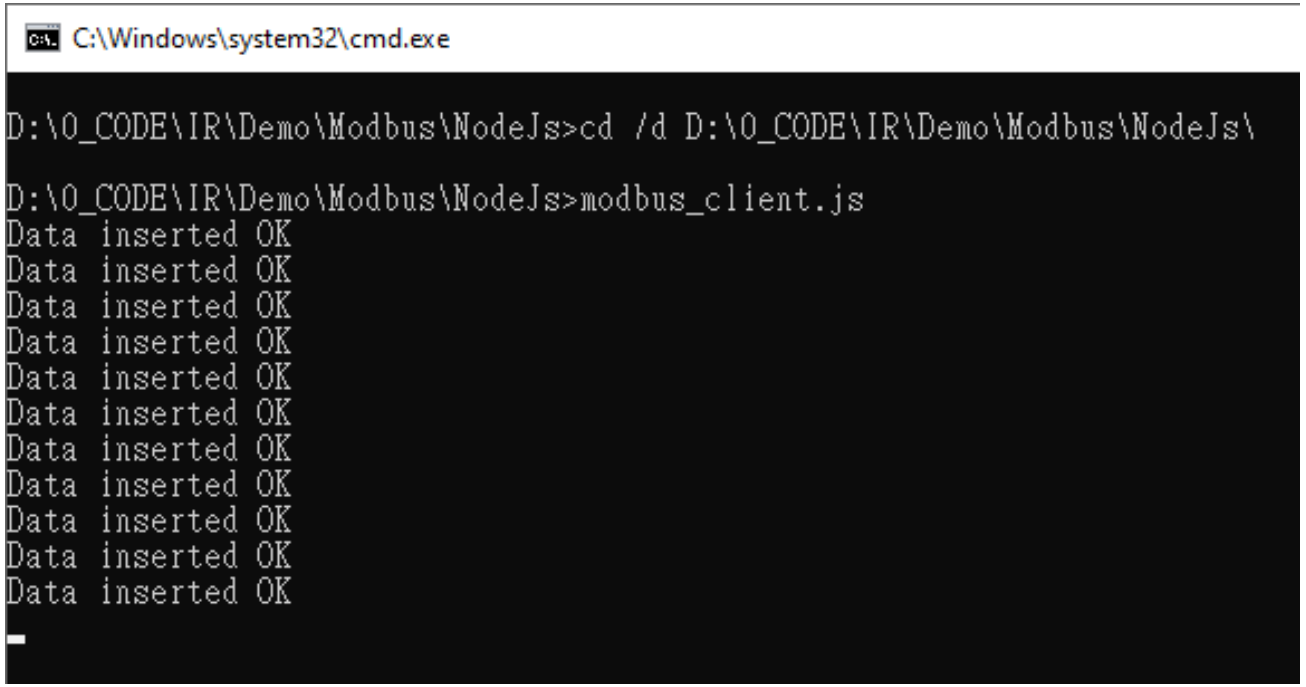
- To connect the demo program to iSN-81x-MTCP, you need to change the value “serverIP” to the IP of iSN-81x-MTCP in ” modbus_client.js”
- IP of iSN-81x-MTCP=192.168.255.109
- Open “start.bat”

```
const serverIP = "192.168.255.109";
```



➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

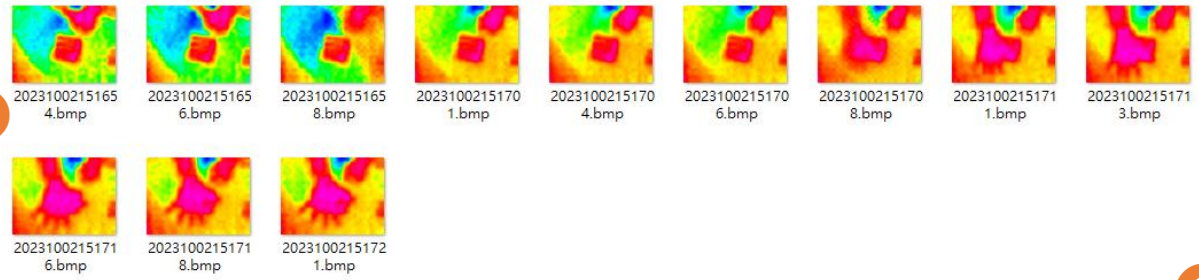
- If the connection is successful, demo program will send request to get the data



➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- 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

➢ 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.

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

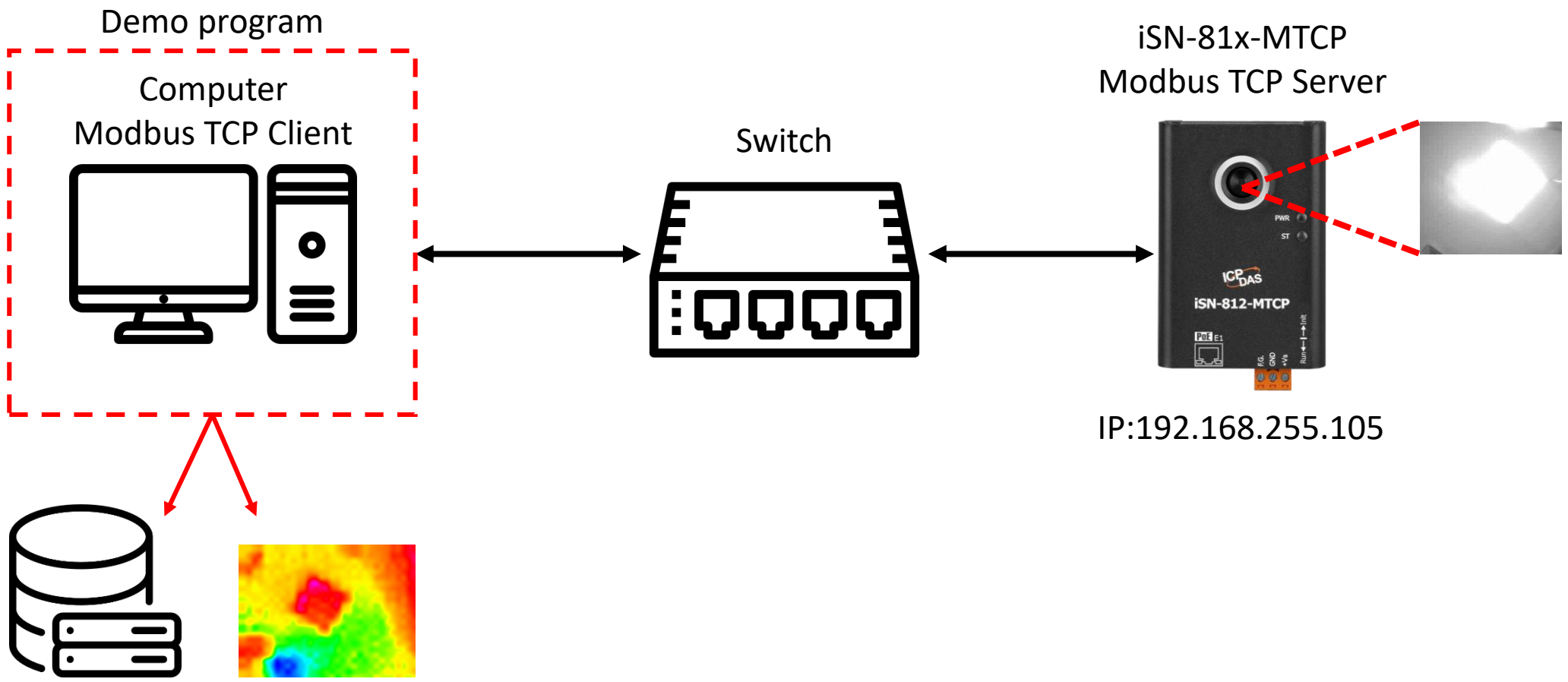
06

iSN-81x-MTCP ModbusTCP_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 pymodbus
  - pip install opencv-python
  - pip install numpy

➢ Configuring iSN-81x-MTCP as a Modbus TCP Server



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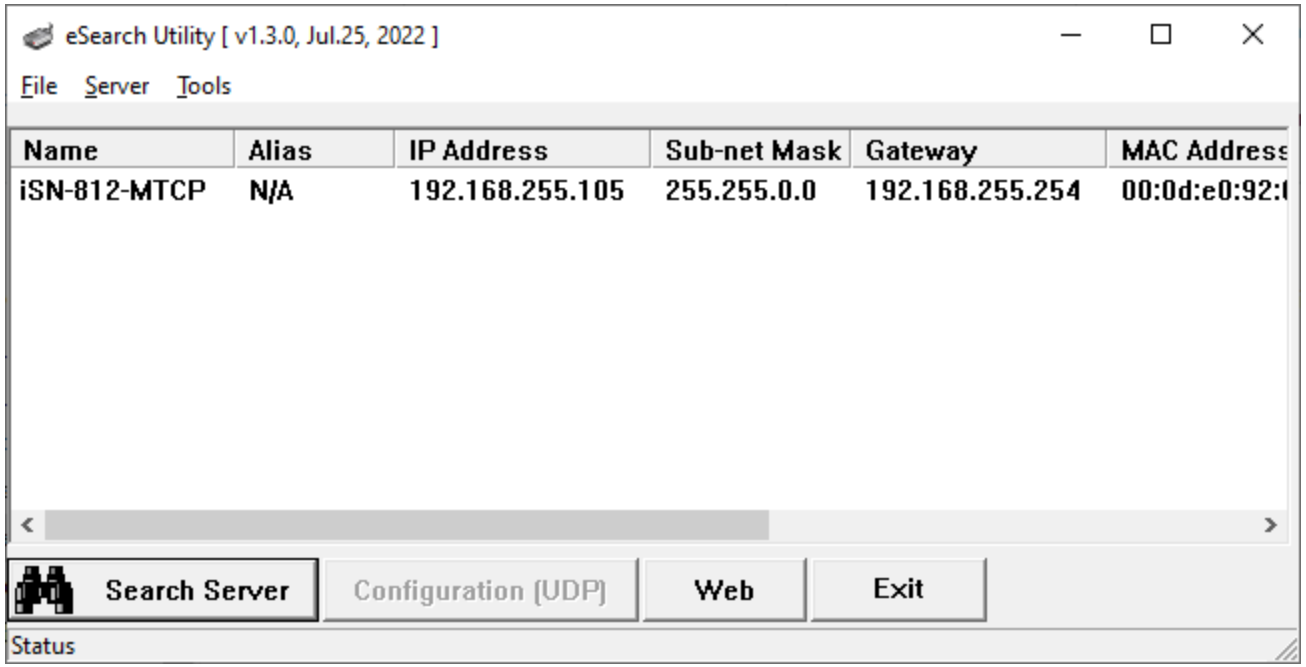

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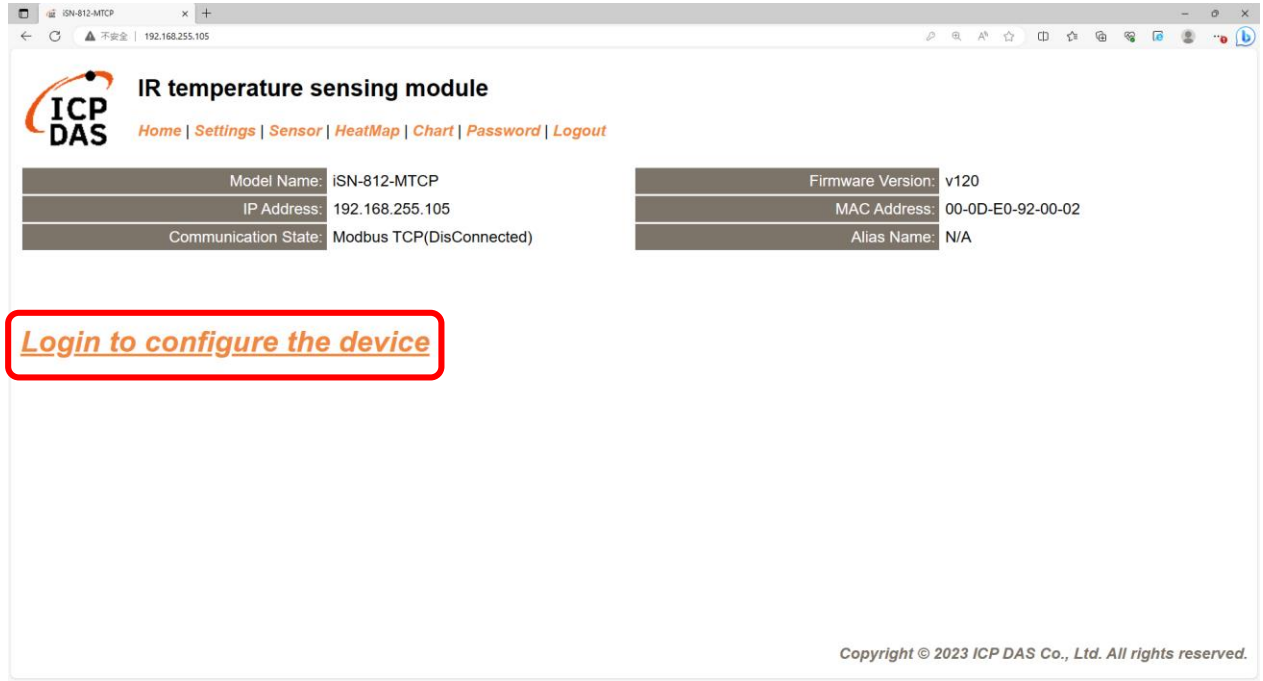
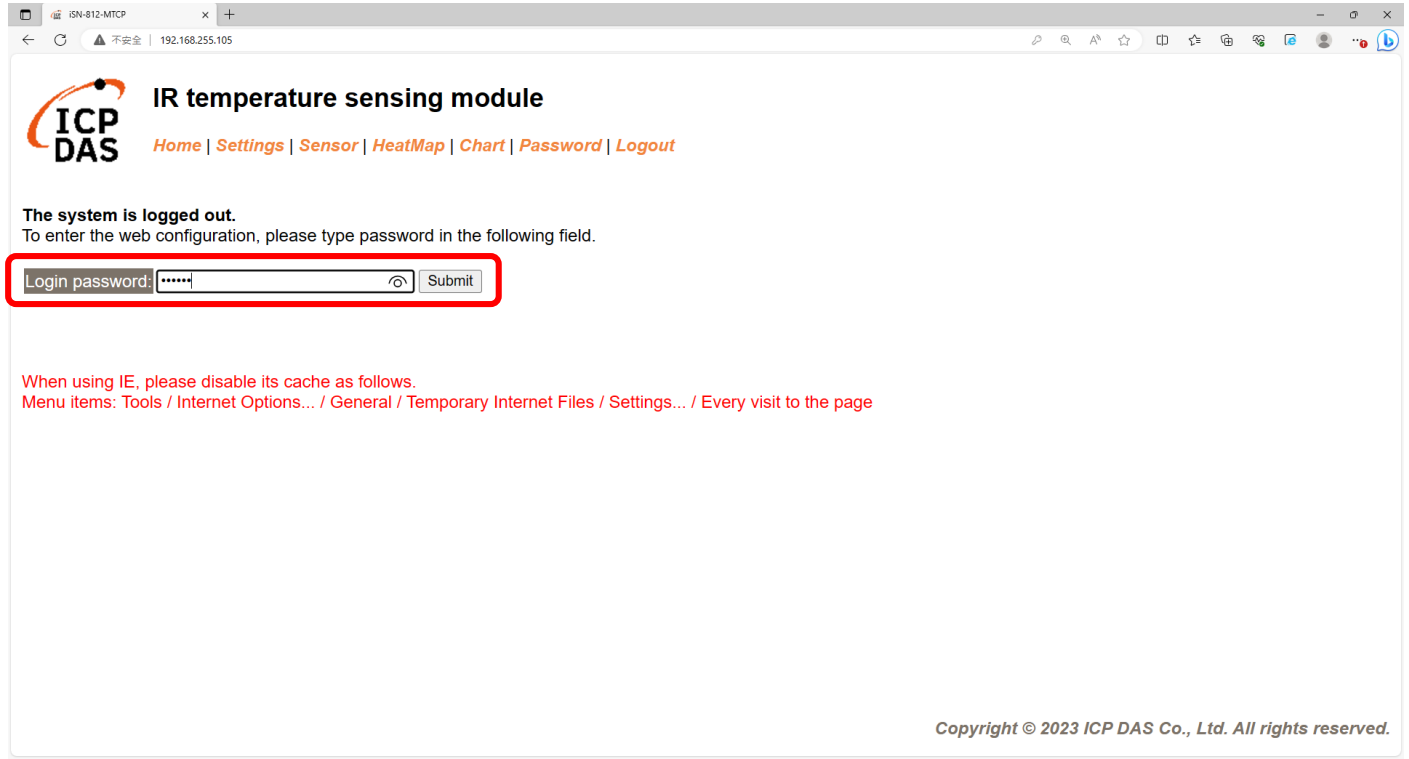
- Click ”Login to configure the device” to login



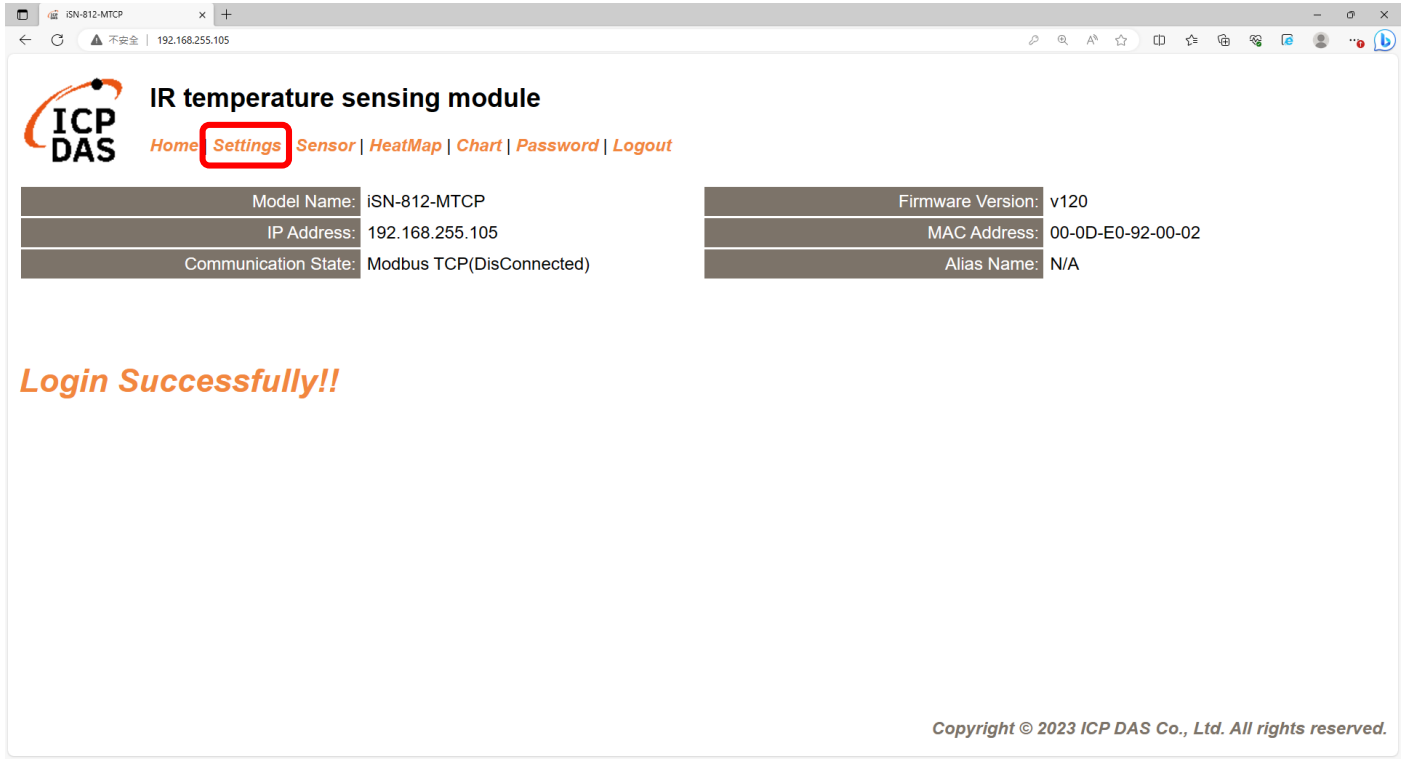
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Login(default password:admin)



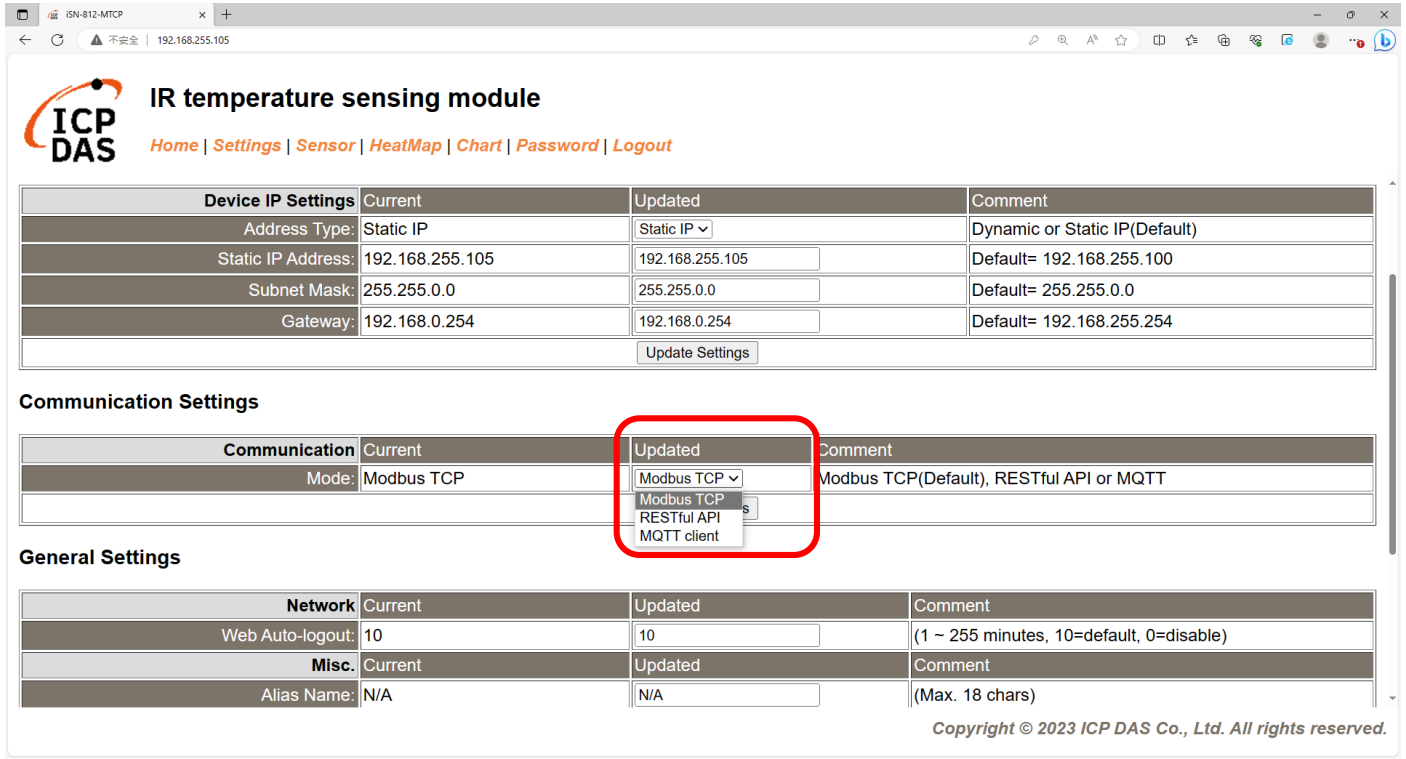
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Click ”Settings” to set communication mode



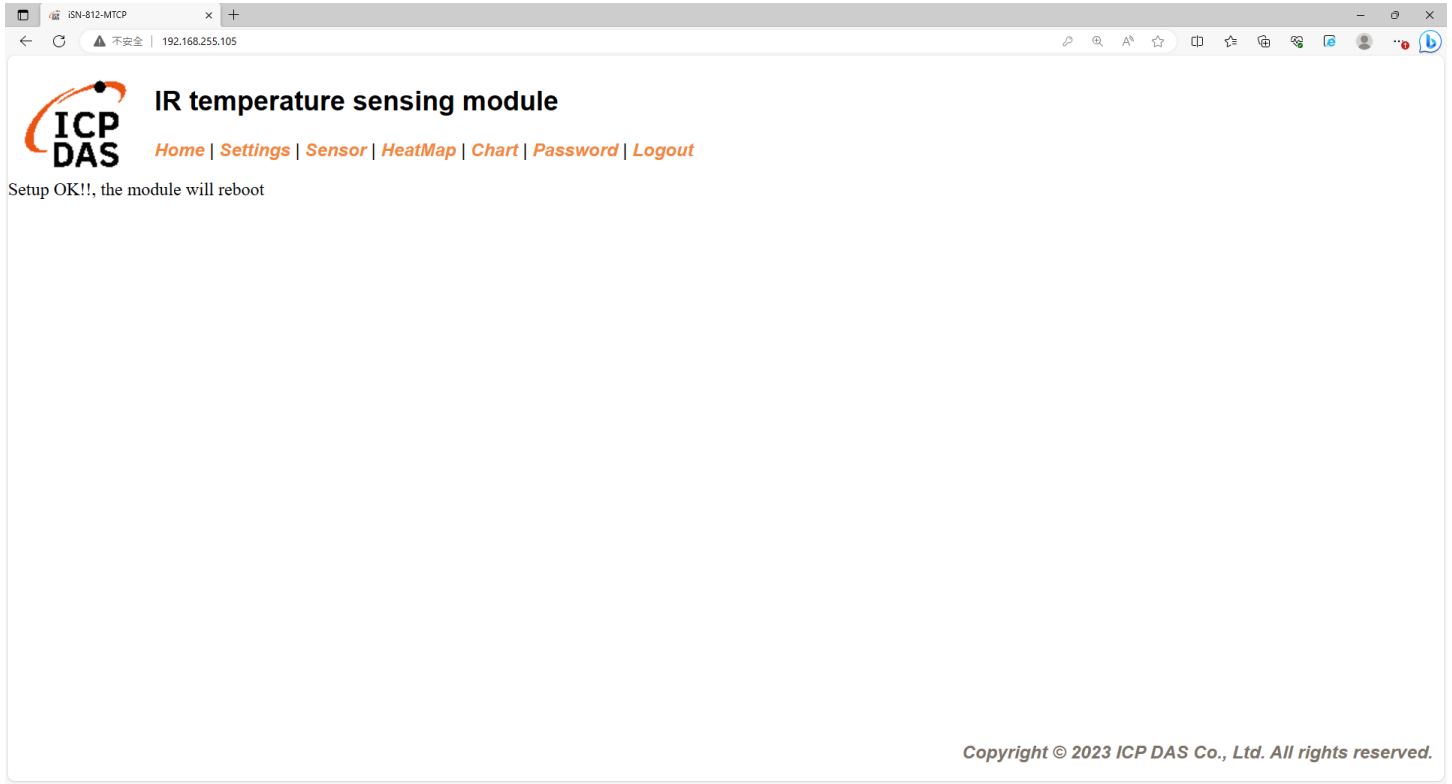
➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Set communication mode to “Modbus TCP”



➢ Configuring iSN-81x-MTCP as a Modbus TCP Server

- Wait for reboot



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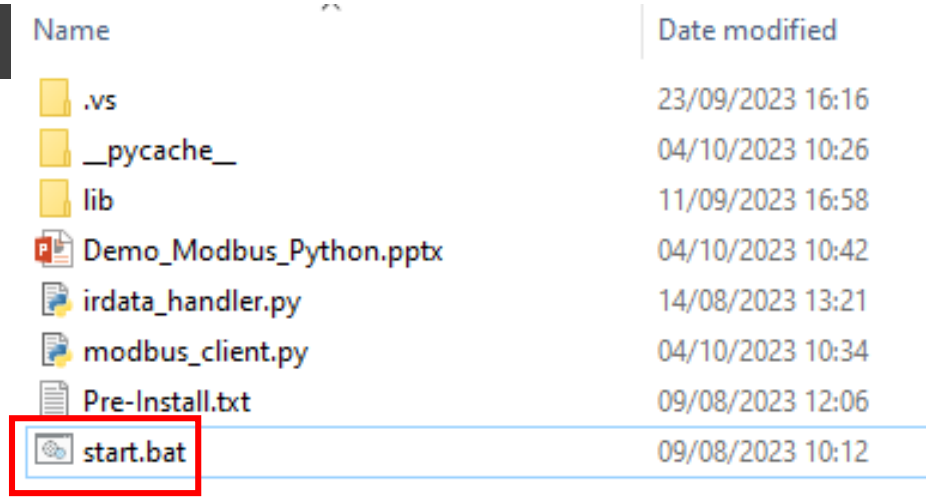

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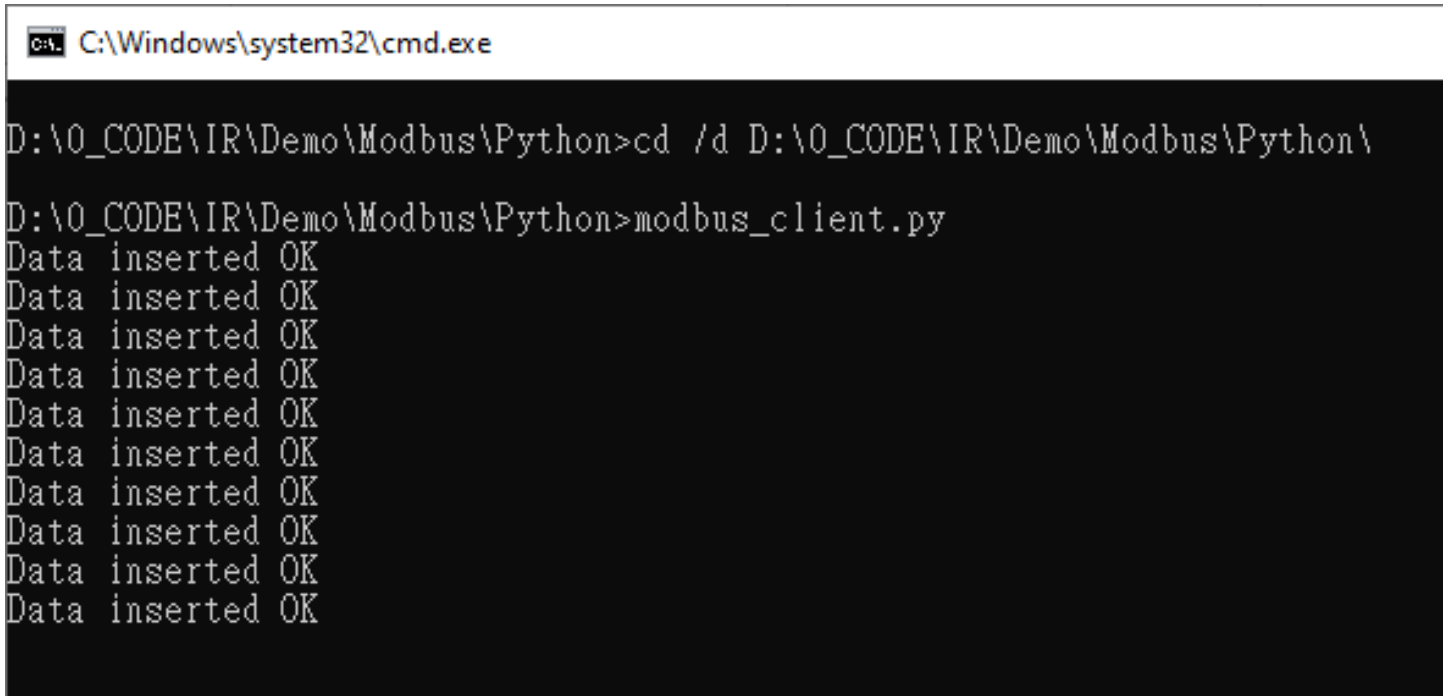
- If the connection is successful, demo program will send request to get the data



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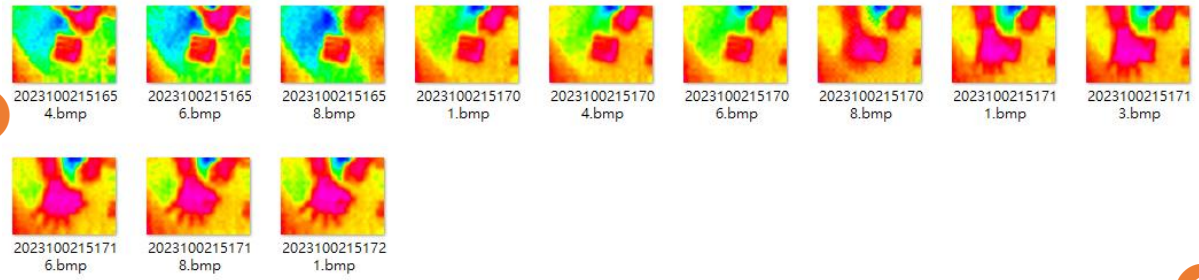

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2023-10-02 15:16:58	00-0D-E0-92-00-02	iSN-812-MTCP	31.1,31.9,32	D:\0_CODE\IR\Demo\RESTfu
2023-10-02 15:17:01	00-0D-E0-92-00-02	iSN-812-MTCP	31.2,30.9,32	D:\0_CODE\IR\Demo\RESTfu
2023-10-02 15:17:04	00-0D-E0-92-00-02	iSN-812-MTCP	30.1,31.2,31	D:\0_CODE\IR\Demo\RESTfu
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2 →MAC Address of iSN-81x-MTCP
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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.

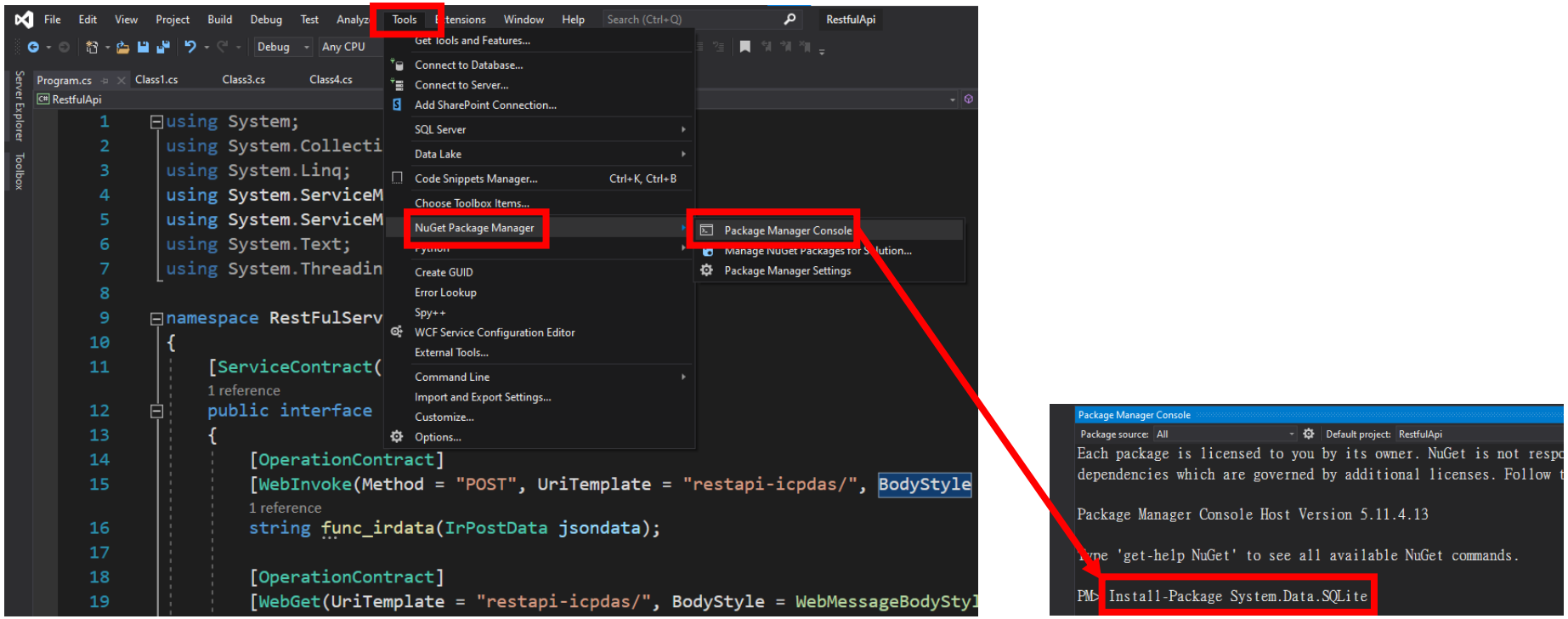
```
conn = sqlite3.connect('irdata_icpdas.db')
```

07

How to install Lib

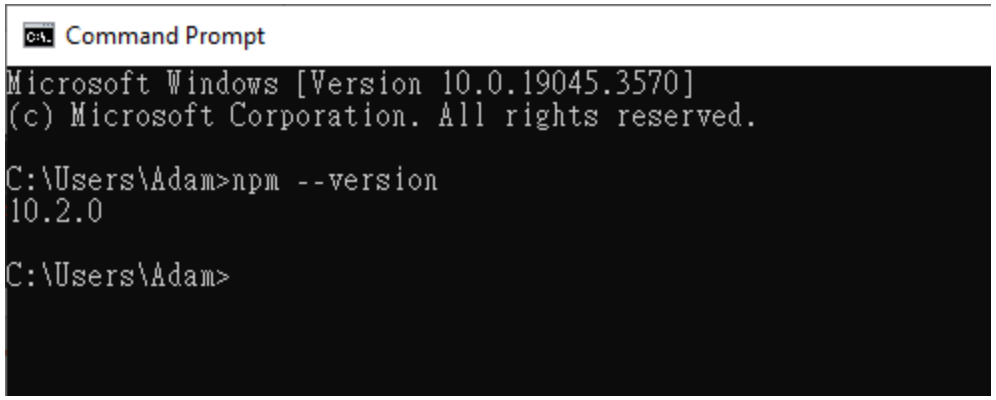
➢ How to install Lib in CSharp

- 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)



➢ 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)