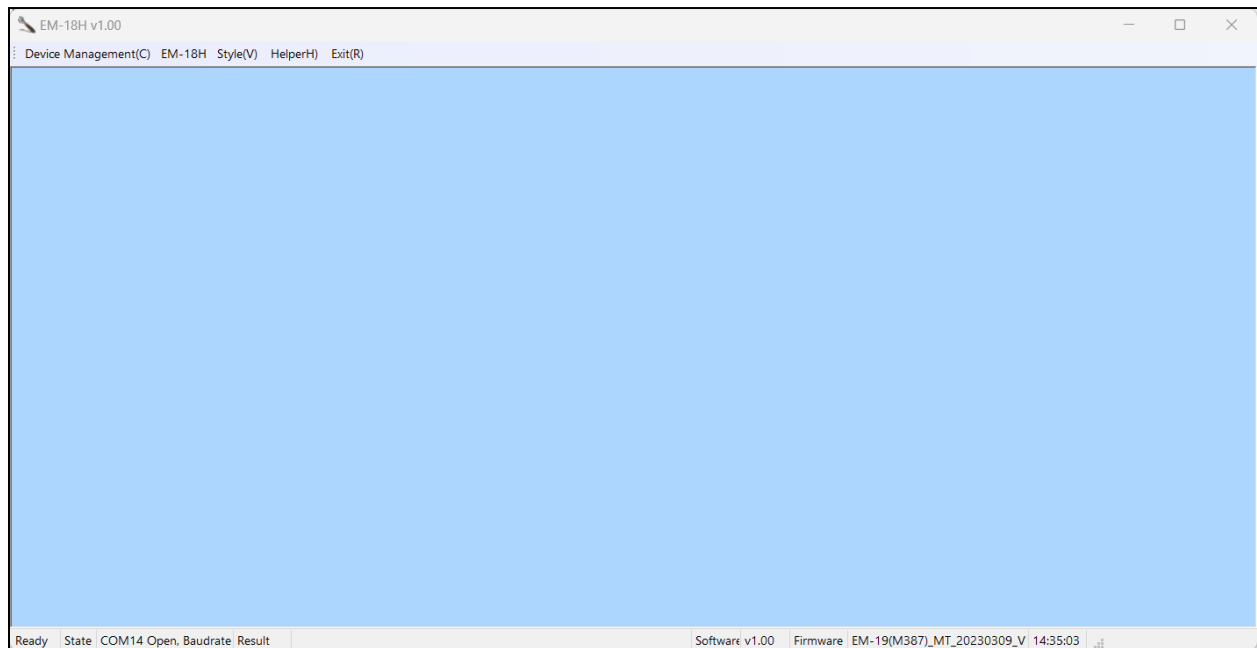


NFC Module operations using Software application

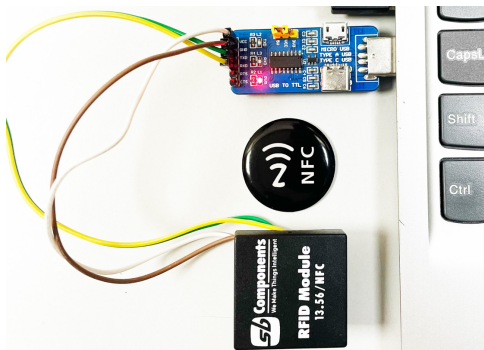
Download software folder and run .exe file provided on github:

https://github.com/sbcshop/NFC_Module/tree/main/softwares

Below is the interface of software



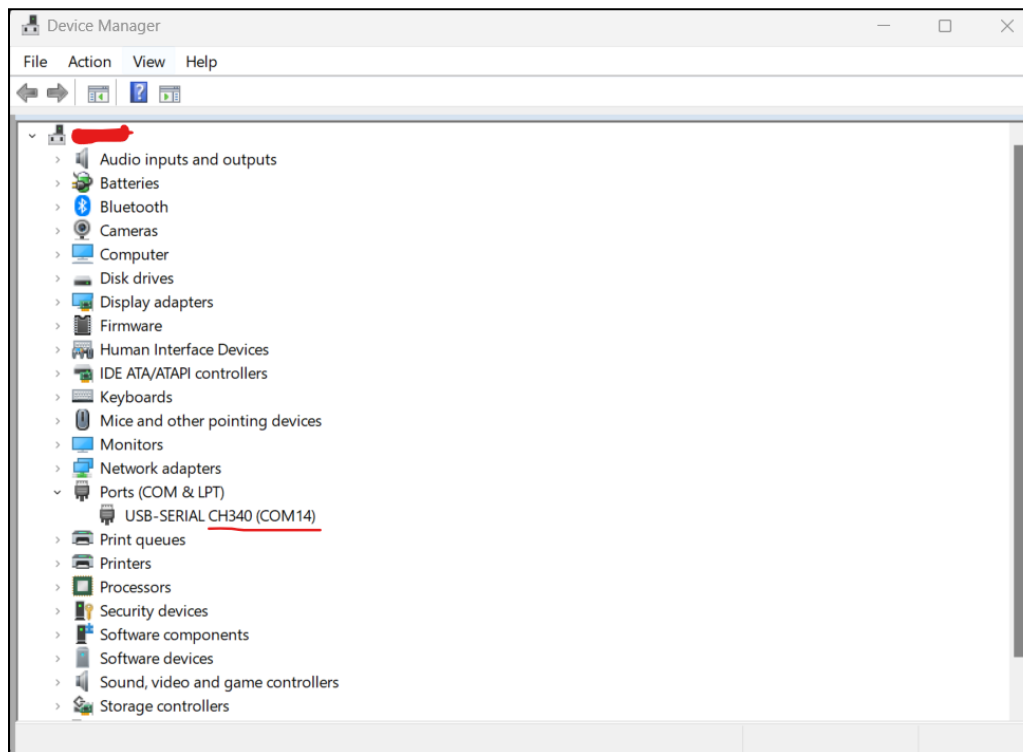
Here you will need an NFC module with any [USB to TTL converter](#), connect NFC module to usb port of computer using USB to TTL converter



| USB to TTL (CP2102 Variants) | NFC Module | Function |
|------------------------------|------------|-----------------|
| VCC | 5V | Positive Supply |
| GND | GND | Ground |
| TXD | TXD | UART Connection |
| RXD | RXD | UART Connection |
| USB to TTL (CH340 Variants) | NFC Module | Function |
| VCC | 5V | Positive Supply |
| GND | GND | Ground |
| TXD | RXD | UART Connection |
| RXD | TXD | UART Connection |

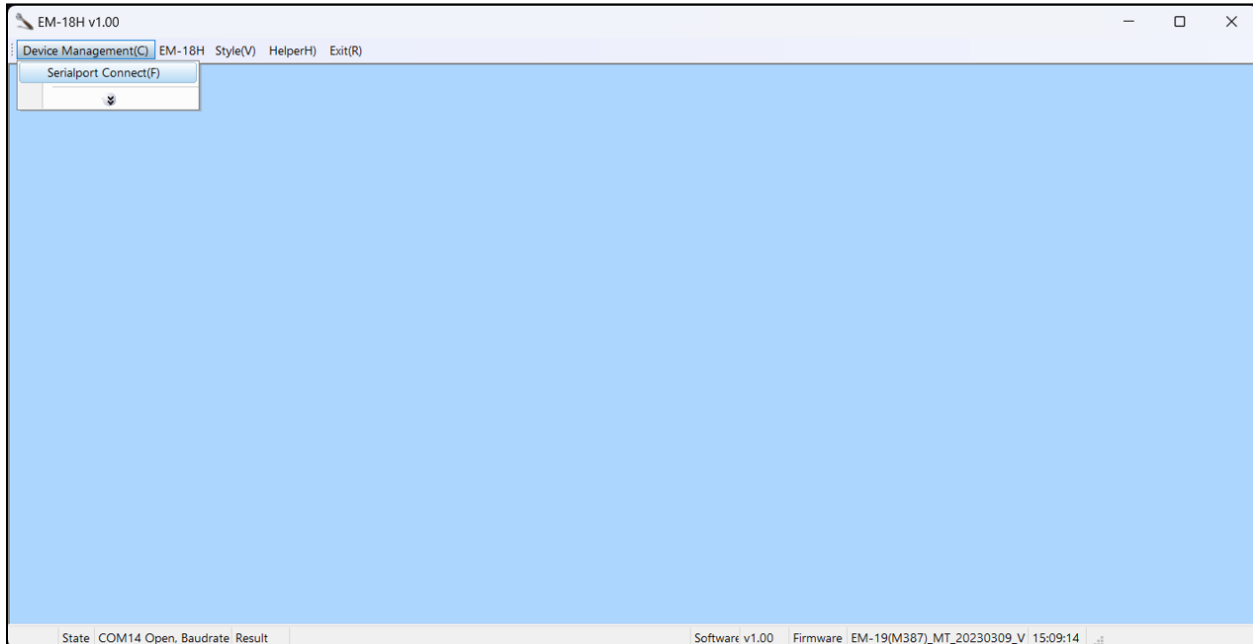
Note: Do cross connection of UART pins if module won't respond or showing connection failed in software application

Once the NFC Module and USB-TTL converter are connected, attach the converter to the USB port of the computer or laptop and check your COM Port in device manager.

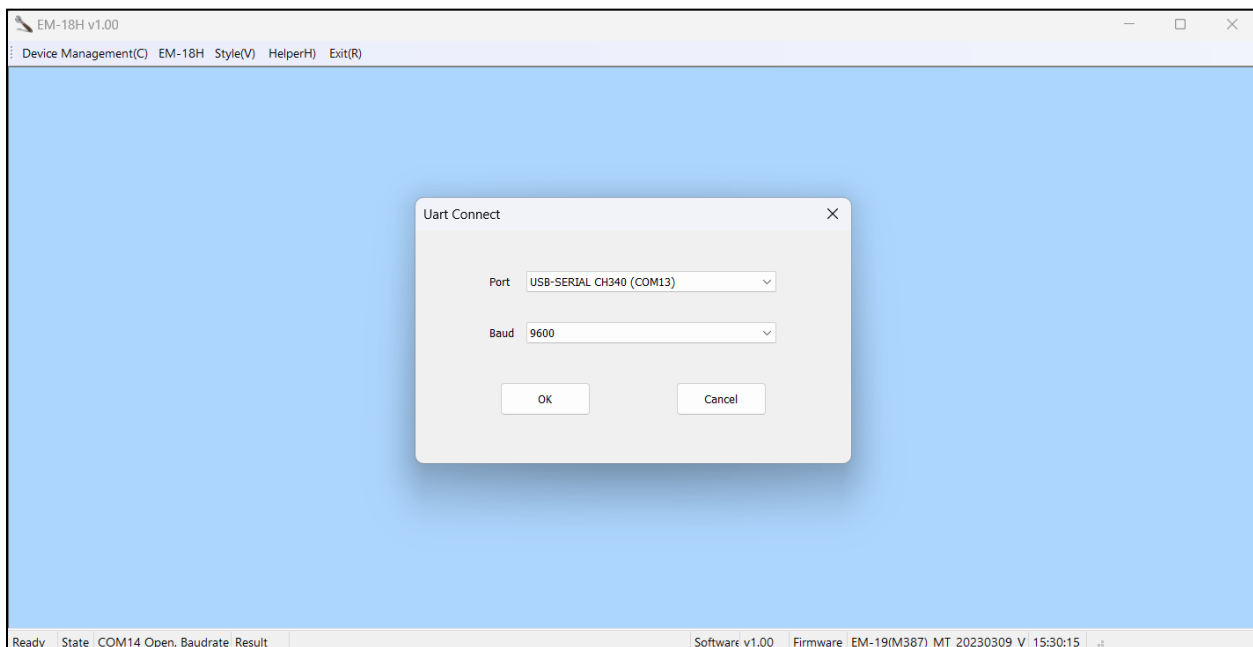


Login Operation:

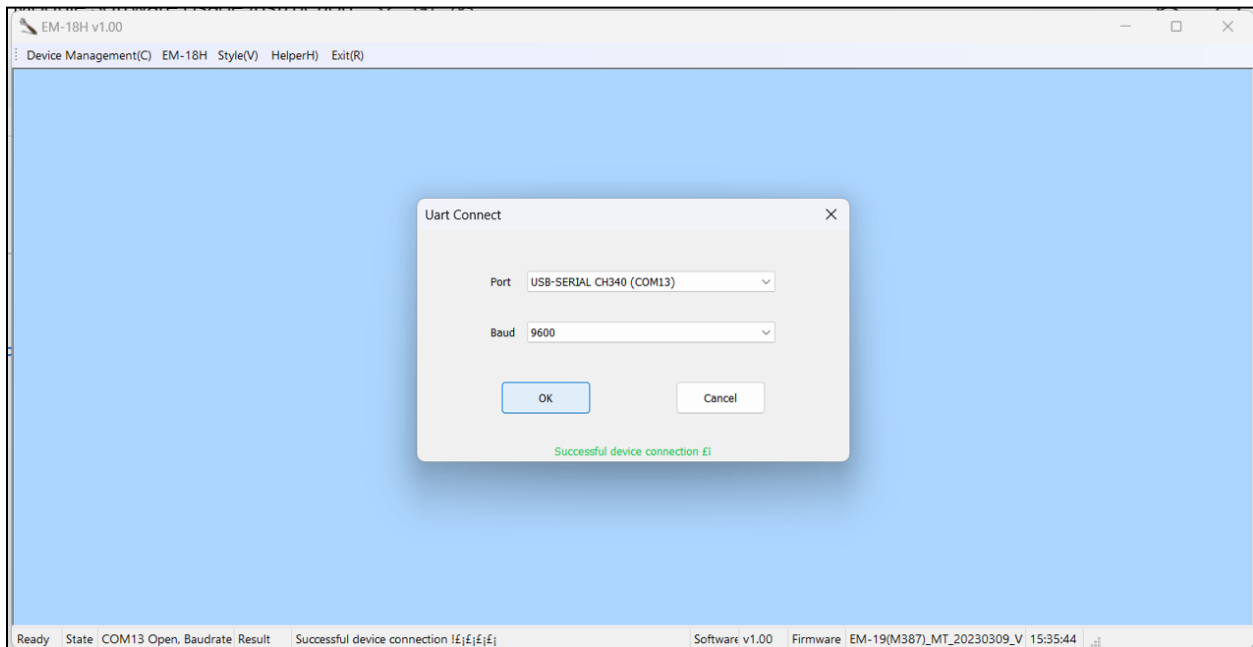
- With software interface open, Select Device Management > Serialport Connect(F),



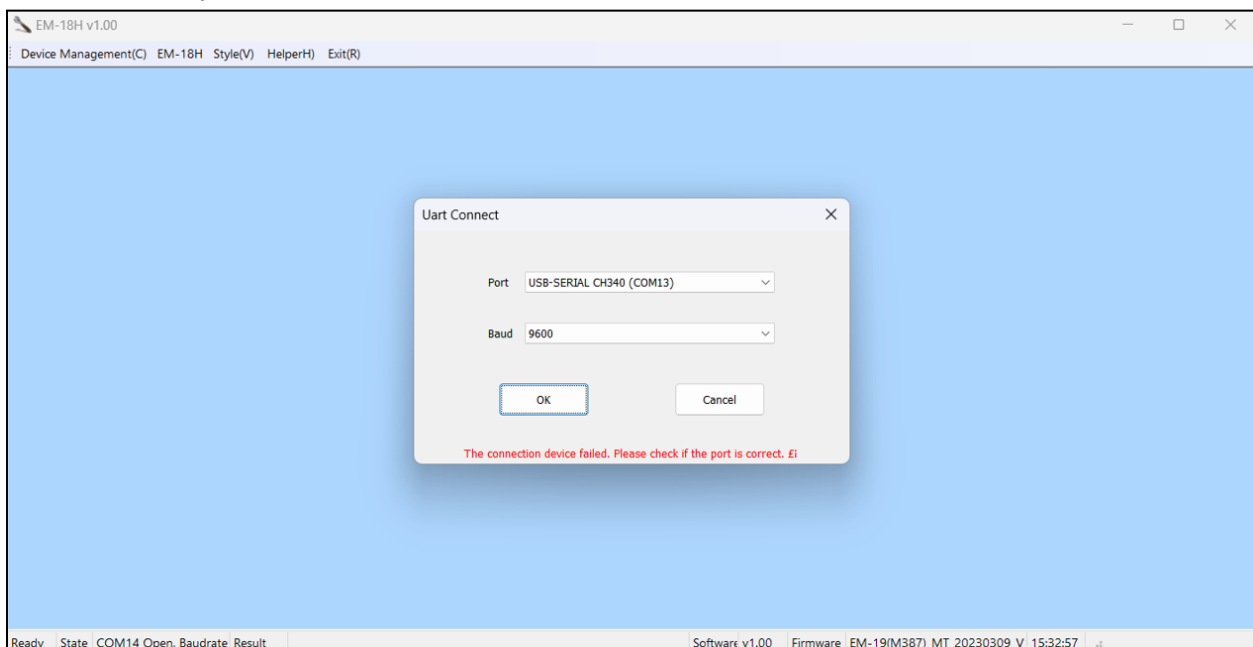
- Select the device with the correct COM port, and then select the baud rate of the device. Default provided with 9600. After this click OK.



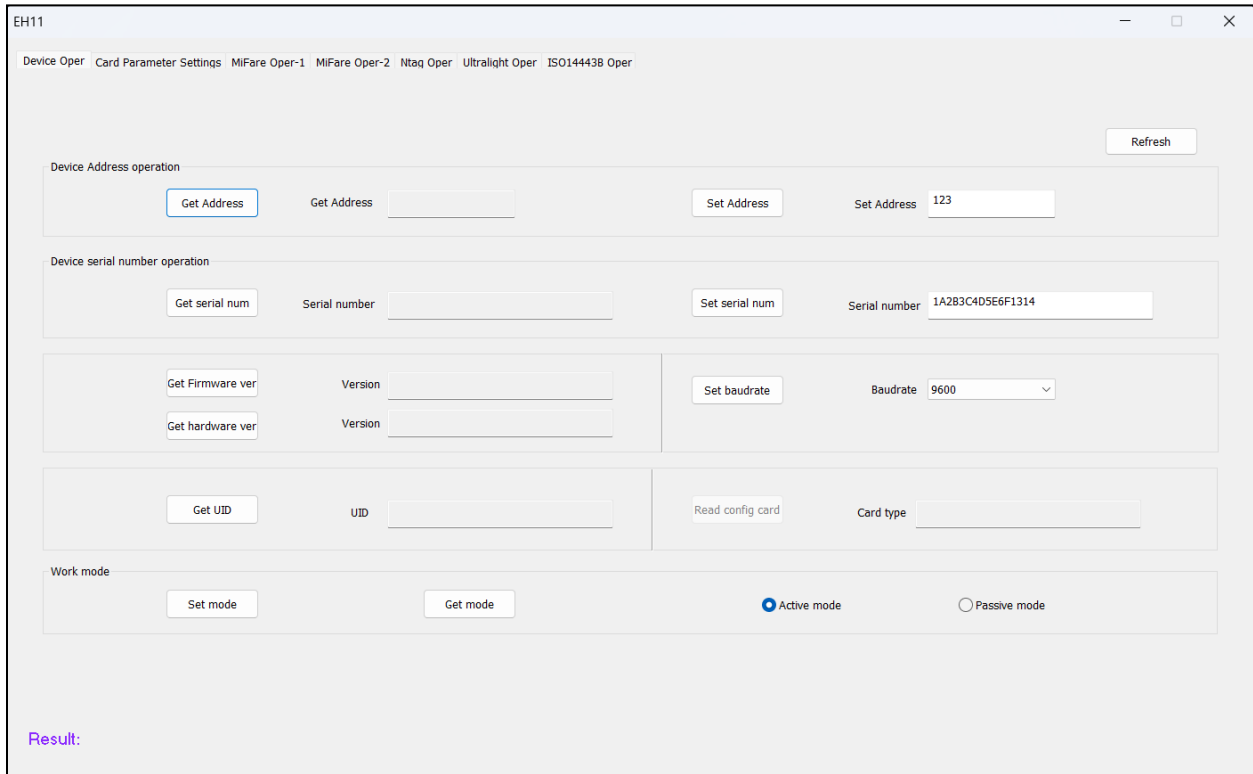
- If everything is fine you will get a success message as shown below, and the Uart connect window will disappear.



Note: Possible issue when connecting device, make sure serial connection is ok between NFC and TTL converter. Try reconnecting the TTL device by removing it from the USB port. This should resolve your issue.



After successfully login, click on the EM-18H option menu and so you will get the window below shown.



Device Oper:

This operation is about getting information about NFC module devices and you can modify information as per your requirement.

Operation Steps:

1. With interface open Select Device Oper, Click "Get Address" to view the device address information, "Get Serial Num" to view the serial number information, "Get Firmware Ver" to view the device firmware version number, and "Get Hardware Ver" to view the device hardware version number, respectively. "Get hardware ver" to view the device hardware version number.

EH11

Device Oper Card Parameter Settings MiFare Oper-1 MiFare Oper-2 Ntag Oper Ultralight Oper ISO14443B Oper

Refresh

Device Address operation

Get Address Get Address 123 Set Address Set Address 123

Device serial number operation

Get serial num Serial number Set serial num Serial number 1A2B3C4D5E6F1314

Get Firmware ver Version Set baudrate Baudrate 9600

Get hardware ver Version

Get UID UID Read config card Card type

Work mode

Set mode Get mode Active mode Passive mode

Result: Get the address successfully~ current mailing address = 123

2. If need to modify the address information and device serial number, click "Set Address" and "Set Serial Number".

Set Address Set Address 123

Set serial num Serial number 1A2B3C4D5E6F1314

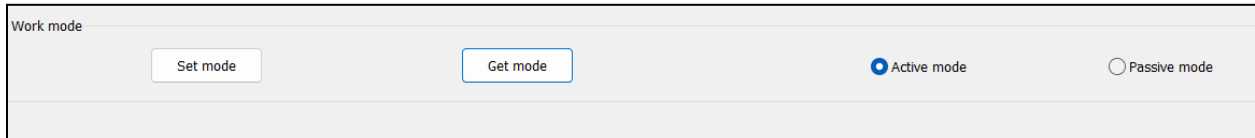
Set baudrate Baudrate 9600

Card parameter settings

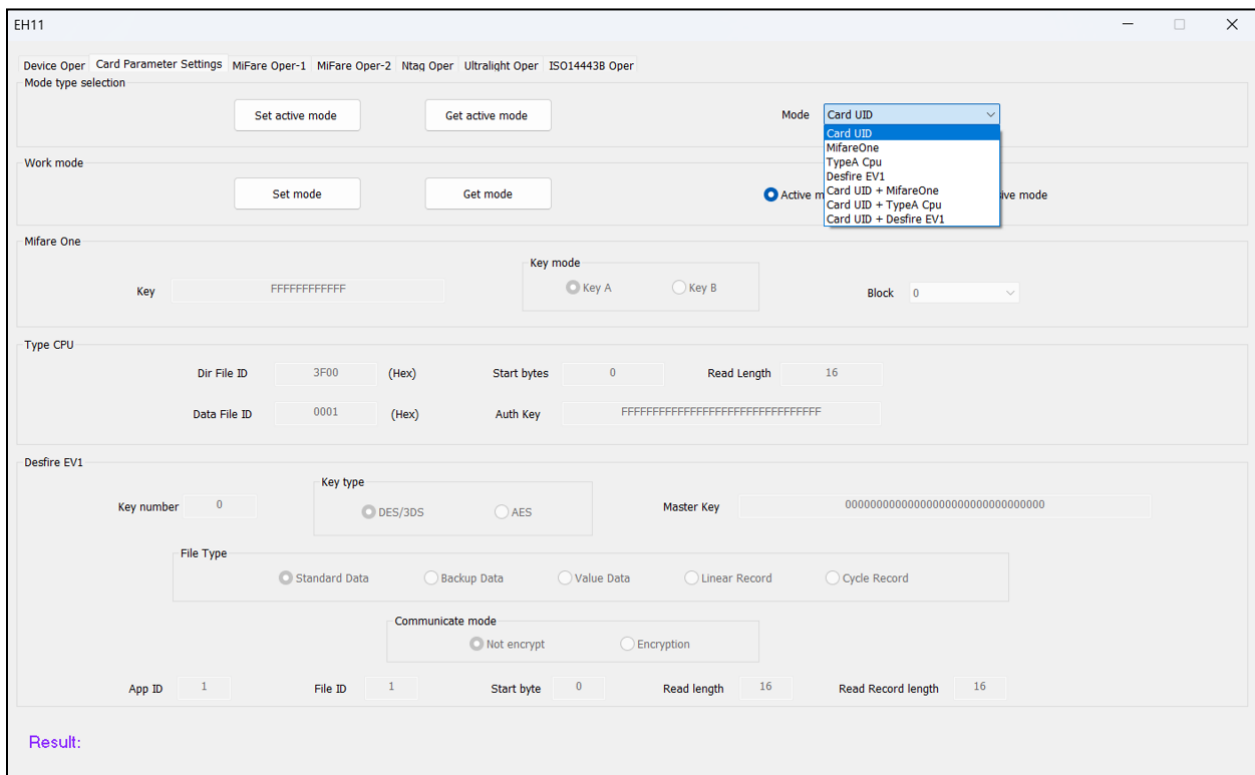
Set the working mode of the user card. Two modes are supported: active working mode and passive working mode.

Operation Steps: In the opened software interface, click "Card Parameters Settings".

1. Click "Get mode" to get the current working mode, check the passive working mode, click "Set mode" to set the working mode.



2. In the mode type select: Card UID, Mifare one, TypeA CPU, Desfire EV1, etc.



For example, after selecting Mifare one as the mode type, click "Set active mode" to set the corresponding parameter information. The bottom of the interface shows that the setting of active mode parameters is successful.

Result: Get work mode successfully

3. Set the key and key type of Mifare card under the Mifare one card.



Mifare One

Key:

Key type: ☒ Key A ☐ Key B

Block:

4. For example, after selecting TypeA CPU as the mode type, click "Set active mode" to set the corresponding parameter information.



Type CPU

Dir ID: (Hex)

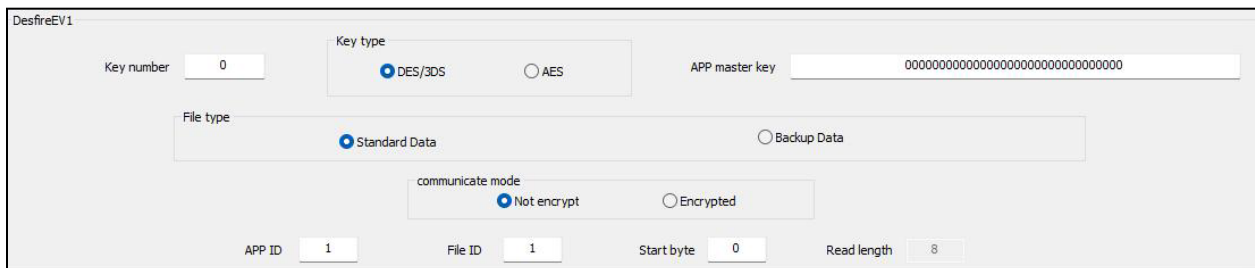
Start byte:

Read length:

File ID: (Hex)

Key:

5. For example, after selecting Desfire EV1 as the mode type, click "Set Active Mode" to set the corresponding parameter information.



DesfireEV1

Key number:

Key type: ☒ DES/3DS ☐ AES

APP master key:

File type: ☒ Standard Data ☐ Backup Data

communicate mode: ☒ Not encrypt ☐ Encrypted

APP ID: File ID: Start byte: Read length:

Mifare Oper

Support Mifare card reading & writing

Operation steps:

1. Select "Mifare oper-1".

(1) Place the Mifare card in the reading area of the antenna, click "Get card UID", the right side of the interface shows that the card is read successfully.



Read&Write operation

Get Card UID

Card UID:

Read Data

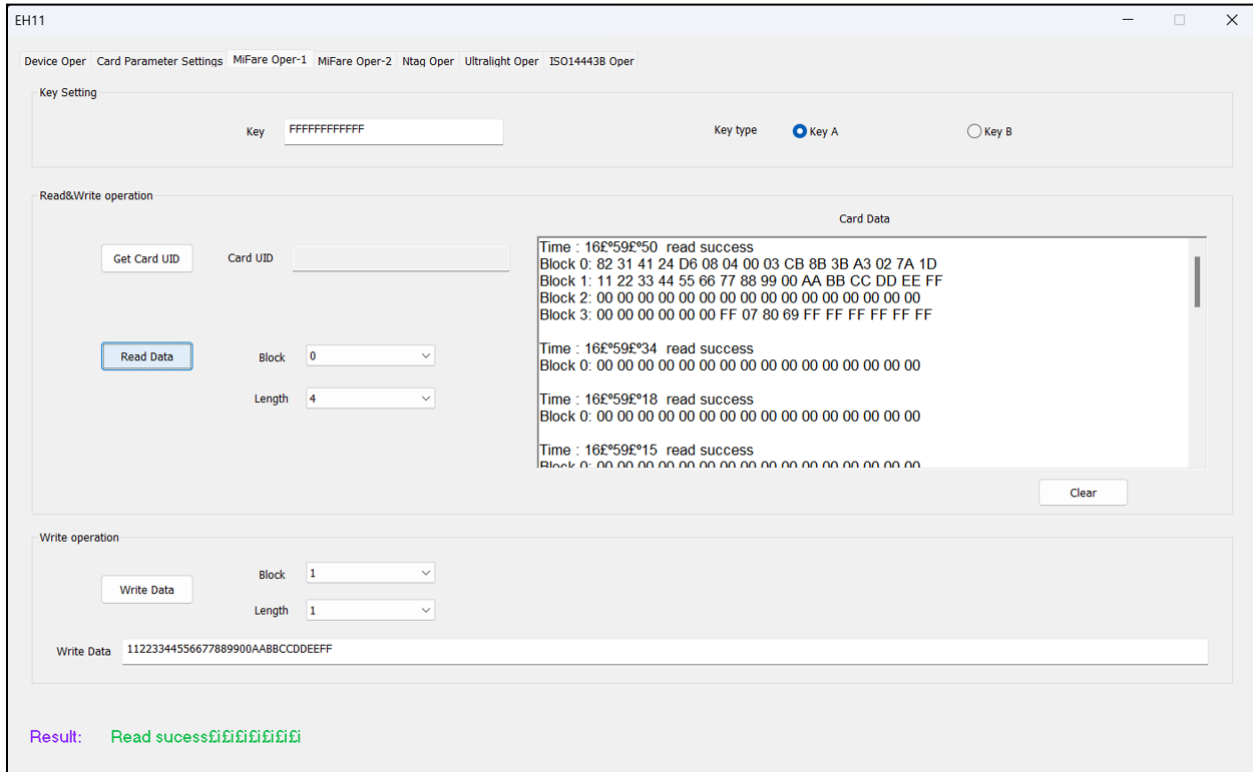
Block:

Length:

Card Data

Clear

(2) Select the block number and length that need to read and write, click "Read Data", the right side of the interface displays the card data information.



The screenshot shows the EH11 software interface with the following sections:

- Key Setting:** Key: FFFFFFFF, Key type: ☒ Key A, ☐ Key B.
- Read&Write operation:**
 - Get Card UID:** Card UID: [empty]
 - Read Data:** Block: 0, Length: 4.
 - Card Data:**

```
Time : 16£*59£*50 read success
Block 0: 82 31 41 24 D6 08 04 00 03 CB 8B 3B A3 02 7A 1D
Block 1: 11 22 33 44 55 66 77 88 99 00 AA BB CC DD EE FF
Block 2: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Block 3: 00 00 00 00 00 00 FF 07 80 69 FF FF FF FF FF
Time : 16£*59£*34 read success
Block 0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Time : 16£*59£*18 read success
Block 0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Time : 16£*59£*15 read success
Block 0: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```
 - Clear:** [button]
- Write operation:**
 - Write Data:** Block: 1, Length: 1.
 - Write Data:** 11223344556677889900AABBCCDDEEFF

Result: Read success 11223344556677889900AABBCCDDEEFF

(3) Select the block number and length of the data to be written, enter the written data, click "Write Card", and the interface shows that the card is written successfully.



The close-up shows the **Write operation** section with the following details:

- Write Data:** [button]
- Block:** 1
- Length:** 1
- Write Data:** 11223344556677889900AABBCCDDEEFF

2. Select "Mifare oper-2".

EH11

Device Oper Card Parameter Settings MiFare Oper-1 MiFare Oper-2 Ntag Oper Ultralight Oper ISO14443B Oper

Mifare Step oper Mifare Value oper

Card parameters

Key

Secto

☒ Key A ☐ Key B

Value block initialization

Initial value

Init

refresh

Recharge operation

value

Increment

Deduction operation

value

Deduction

Get balance

Balance

Get balance

Result: Reading balance success, the current balance = 1144201745

Ntag oper

Supports NTAG 213, NTAG 215, and NTAG 216 card types for read and write operations.

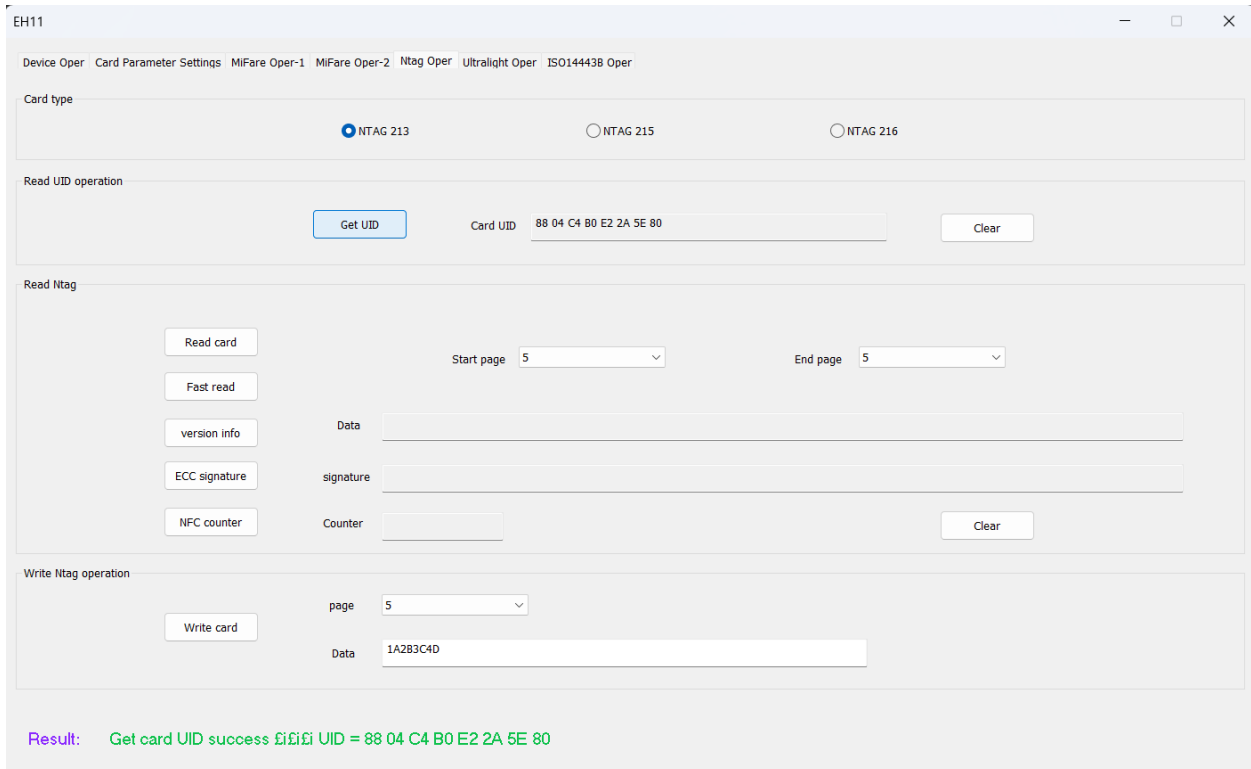
Operation steps:

1. Select "Ntag oper".
2. Select the type of NTAG card, NTAG 213, NTAG 215, NTAG 216 are supported.

Card type

☒ NTAG 213 ☐ NTAG 215 ☐ NTAG 216

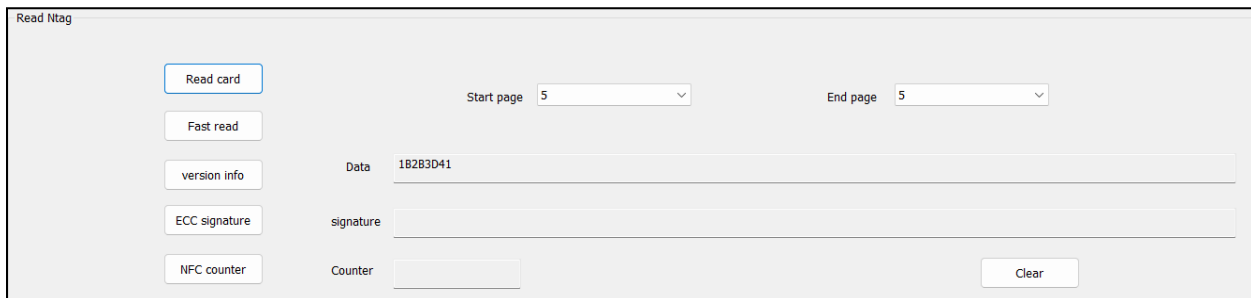
3. Click "Get UID" to view the physical card number of the card.



The screenshot shows the EH11 software interface. At the top, there are tabs for 'Device Oper', 'Card Parameter Settings', 'MiFare Oper-1', 'MiFare Oper-2', 'Ntag Oper', 'Ultralight Oper', and 'ISO14443B Oper'. The 'Ntag Oper' tab is selected. Below the tabs, there is a 'Card type' section with three radio buttons: 'NTAG 213' (selected), 'NTAG 215', and 'NTAG 216'. The 'Read UID operation' section contains a 'Get UID' button, a 'Card UID' field displaying '88 04 C4 B0 E2 2A 5E 80', and a 'Clear' button. The 'Read Ntag' section has several buttons: 'Read card', 'Fast read', 'version info', 'ECC signature', and 'NFC counter'. To the right of these buttons are input fields for 'Data', 'signature', and 'Counter', along with 'Start page' and 'End page' dropdown menus, both set to '5'. A 'Clear' button is also present. The 'Write Ntag operation' section has a 'Write card' button, a 'page' dropdown set to '5', and a 'Data' field containing '1A2B3C4D'. At the bottom, a green message reads: 'Result: Get card UID success 8804C4B0E22A5E80'.

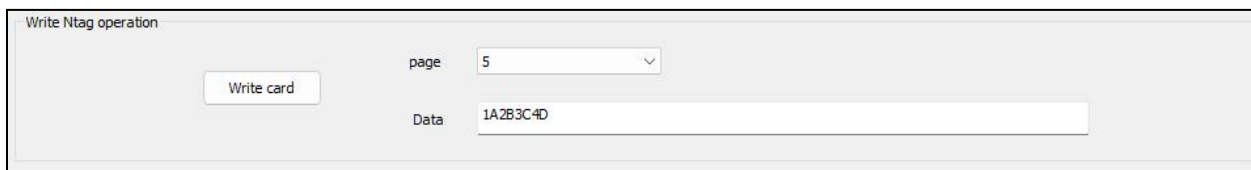
Note : The first click reads the UID error to prevent repeated uploads of the same card number and the need to switch to a different card.

4. At the bottom of the "Read Ntag" area, select the start page and end page, and click the read card, version info, and other operations.



This screenshot shows a close-up of the 'Read Ntag' section. It includes the 'Read card', 'Fast read', 'version info', 'ECC signature', and 'NFC counter' buttons. The 'Start page' and 'End page' dropdown menus are both set to '5'. The 'Data' field displays '1B2B3D41'. There are also 'signature' and 'Counter' fields, and a 'Clear' button.

5. At the bottom of the "Write Ntag operation" area, select the page, enter the card number data, and click Write Card to write the card number data.



This screenshot shows a close-up of the 'Write Ntag operation' section. It features a 'Write card' button, a 'page' dropdown set to '5', and a 'Data' field containing '1A2B3C4D'.

EH11

Device Oper Card Parameter Settings MiFare Oper-1 MiFare Oper-2 Ntag Oper Ultralight Oper ISO14443B Oper

Card type

☒ NTAG 213
 ☐ NTAG 215
 ☐ NTAG 216

Read UID operation

Get UID
 Card UID 88 04 C4 80 E2 2A 5E 80
 Clear

Read Ntag

Read card
 Start page 5 End page 5

Fast read

version info
 Data 0004040201001303

ECC signature

signature 69B099C0CF1252FFF22A2B4A6CB7E3876728549EA5A21141CB85D16A04A4441A

NFC counter

Counter
 Clear

Write Ntag operation

Write card
 page 5

Data 1A2B3C4D

Result: Read Ntag specific ECC signature successfully

Data logs:

EH11

Device Oper Card Parameter Settings MiFare Oper-1 MiFare Oper-2 Ntag Oper Ultralight Oper ISO14443B Oper

Card UID display

☐ Open CMD prompt
 Open
 close
 Clear

Êÿ ¼Ÿ
 [2023-08-26 18:04:38-496] send: A8 D0 00 01 00 01 00 D0 A9
 [2023-08-26 18:04:38-496] receive: A8 D0 00 01 00 02 00 7B A8 A9
 [2023-08-26 18:04:42-645] send: A8 E0 00 26 00 01 00 C7 A9
 [2023-08-26 18:04:42-645] receive: A8 E0 00 26 00 01 01 C6 A9
 [2023-08-26 18:04:44-146] send: A8 F0 00 37 00 02 00 05 C0 A9
 [2023-08-26 18:04:44-146] receive: A8 F0 00 37 00 05 00 1B 2B 3D 41 8E A9
 [2023-08-26 18:04:47-677] send: A8 80 00 39 00 06 00 05 1A 2B 3C 4D FAA9
 [2023-08-26 18:04:47-677] receive: A8 80 00 39 00 01 00 B8 A9
 [2023-08-26 18:04:49-627] send: A8 90 00 3C 00 01 00 AD A9
 [2023-08-26 18:04:49-627] receive: A8 90 00 3C 00 21 00 69 B0 99 C0 CF 12 52 FF F2 2A 2B 4A 6C B7 E3 87 67 28 54 9E A5 A2 11 41 CB 85 D1 6A 04 A4 44 1AA2 A9

Passive mode

Read UID
 Card UID

Result: