Software Tools

HexView4.0 Pro

UserManual

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Revision history

Version	Date	Content
V 1.0	11.26.2020	First edition
V 1.1	07.20.2020	Password rules and template description
V 1.2	01.30.2021	Add Log and report content
V 1.3	02.02.2021	DB conversion
V 1.4	06.11.2021	New iteration function
V 1.5	07.02.2021	Firmware upgrade
V 1.6	07.08.2021	Error code
V 1.7	07.30.2021	Chart
V 1.8	07.08.2021	Vector diagram \ Custom entry
V 1.9	10.29.2021	Discovery
V 2.0	11.04.2021	IEC-21C
V 2.1	03.03.2022	HX645
V 2.2	03.28.2022	UI frame\Load object selection reading
V 2.3	05.26.2022	Remote connection update (C8.3)
V 2.4	10.20.2022	E-mode(Switching baud rate delay) (C8.1.3)
V 2.5	11.04.2022	Coverage products(C1.5) \ UTC(C11)
V 2.6	08.18.2023	ANSI

Introduction

Range: It's available for single and three phase meters, AMI meters ,mechanic meters and prepaid meters included.

Edition: HexView4.0 Pro compatible with the existing HexView4.0/3.0

Protocol: DLMS/HDLC,DLMS / COSEM Wrapper over TCP,Gateway,IEC-21,HX645,UTC,ANSI

Communication: Locally,Net(TCP,CSD)

Application: Fire ware,Test, Productand Maintenance on site

Language: English, French, Polish, Spanish

Calendar: The Gregorian calendar,Jalali Calendar,Nepal calendar etc.

InstallationWith.Net Framework 4.0 Software under: Win 7, Win 8, Win10 and above

Highlight

Users can change DB into an accessable formatthrough tool locally(except the special version such as Pakistan, Vietnam,Sri Lanka). If any questions, please contact us directly.

Users can change the DB through account or access, if there's any missing OBIS, the admin or other account whose access is more can open the function in the OBIS database.

If can't make sure whether the OBIS is available, users can select and read the whole OBIS list from meter and match the template in database, generating a related operation interface. This special function works only in the condition that the OBIS list of meter can be read and will be complete.

Table of contents

1. Overview 5
- **1.1 Functions** 6
- **1.2 Communication channels** 7
- **1.3 Communication protocols** 7
- **1.4 Copyright** 7
- **1.5 Coverage products** 7

2. Installation 8

3. Register 11
- **3.1 Introduction** 11
- **3.2 Operation** 11
- **3.3 Login** 13

4. Description of user interface 13
- **4.1 General** 13
- **4.2 Tool bar** 14
- **4.3 Device definition window with tree** 15
- **4.4 Function scheme window with tree** 17
- **4.5 Template window** 18
- **4.6 Status bar** 19

5. Permission 19
5.1 Role management 20
5.2 User management 22
5.3 Password modification 24
6.Customization 24
6.1 DB management 24
6.2 Device parameter 27
6.3 Client setting 27
6.4 Scheme management 28
6.5 OBIS object management 31
7. Data management 38
7.1 Import 39
7.2 Export 39
7.3 Report 39
7.4 Chart 40
8. Communication with DLMS 41
8.1 Device management 41
8.1.1 General 41
8.1.2 Communication medium 41
8.1.3 Protocol suite 43
8.1.4 Security mechanism 46
8.2 Local communication 51
8.2.1 Connection 52
8.2.2 Operation 52
8.3 Remote communication 54
8.3.1 TCP Client Connection 55
8.3.2 TCP Server Connection 60
8.4 Modem Communication 66
8.4.1 Connection 66
8.4.2 Operation 66
8.5 Template example 68
9. Communication with 21C 77
9.1 Device management 77
9.1.1 General 77
9.1.2 Communication medium 78
9.1.3 Protocol suite 79
9.1.4 Security mechanism 79
9.2 Local communication 80
9.2.1 Connection 80
9.2.2 Operation 80
9.3 Template example 83
10. Communication with HX645 85
10.1 Parameters configuration 85
10.1.1 Connection 85
10.1.2 Operation 86
10.2 AT Command 92
10.2.1 Operation 92
10.3 Firmware upgrade 95
10.3.1 Locally upgrade 95
10.3.2 Remotely upgrade 98
10.3.3 FTP upgrade 100
11. Communication with UTC ..... 错误!未定义书签。
11.1 Device management ..... 错误!未定义书签。

11.1.1 General ..... 错误!未定义书签。
11.1.2 Communication medium ..... 错误!未定义书签。
11.1.3 Protocol suite ..... 错误!未定义书签。
11.1.4 Security mechanism ..... 错误!未定义书签。
11.2 Local communication ..... 错误!未定义书签。
11.2.1 Connection ..... 错误!未定义书签。
11.2.2 Operation ..... 错误!未定义书签。
11.3 Template example ..... 错误!未定义书签。
12. Communication with ANSI ..... 错误!未定义书签。
12.1 Device management ..... 错误!未定义书签。
12.1.1 General ..... 错误!未定义书签。
12.1.2 Communication medium ..... 错误!未定义书签。
12.1.3 Protocol suite ..... 错误!未定义书签。
12.1.5 Security mechanism ..... 错误!未定义书签。
12.2 Local communication ..... 错误!未定义书签。
12.2.1 Connection ..... 错误!未定义书签。
12.2.2 Operation ..... 错误!未定义书签。
12.3 Template example ..... 错误!未定义书签。
System setting 107
View Log 110
Trace Log 110
System Log 111
Report 112
De-installation 113
Support 113
appendix 114
General description ..... 错误!未定义书签。
Examples ..... 错误!未定义书签。
Error code 114

1. OverView

HexView4.0 Pro is applicable for meters with the standarded protocol of company and support various functions from kinds of meters. It can be transferred via registration, password and access for inter use or to users on site. It can be connected to meter locally or via internet and used to read meter's data, set meters' parameter, upgrade the meter remotely, establish the archive of one or more meters, make new account, manage the account's access, import and export parameters, save the reading data, display the communication log etc, which helps to test, read the meter and get the certification.

1.1Functions

HexView4.0 Pro has such functions as following:

- Establish archive of one or more kind of equipment
- Establish roles whose accesses are different and many independent users
- Establish, import and get function list of meter through viarous methods
- Define the DB database by yourself
- Choose the template of function interface
- Choose the communication mode, encryption mode and authentication mode
- Choose communication medium
- Read meters' data
- Set meters' parameters
- Intialize the operation command
- Upgrade firmware locally or remotely
- Various choices for Client
- Various choices for different meter types
- Graphical: vector diagram ,Curve diagram
- Define OBIS or its structure by yourself
- Various choices for languages

- Display of different calendars
- Import and export data from operation interface
- Set the system parameters and menu
- Log trace: message of mistakes, alarm message and debugging message
- Applicable operating system: Win 7,Win 8,Win 10 and above

1.2Communication channels

HexView4.0 Pro supports communication channel as following:

- Local: Optical head, RS232, RS485
- Modem: PLC/RF, concentrator, collector, GPRS
- NetWork: TCP Client, TCP Server, CSD

1.3Communication protocols

HexView4.0 Pro supports communication protocol as following:

- DLMS / HDLC
- DLMS / COSEM Wrapper over TCP
- DLMS / Gateway
- IEC 62056-21
- HX645
- UTC
- ANSI

1.4Copyright

HexView4.0 Pro copyright belongs to Hexing Electrical Co.,Ltd and should comply to the conditions as following:

- Registration
- Encription dog(optional)
- Serial number
- Log in: Username and password

1.5Coverage products

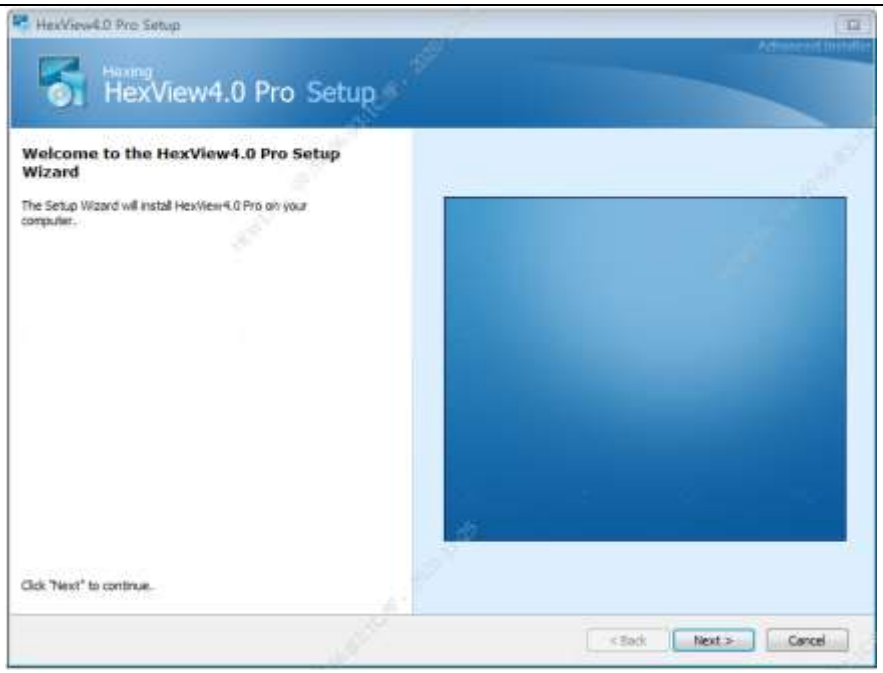
The products covered by HexView4.0 Pro are as follows. Users can select the corresponding chapters to read according to specific products:

Products	Communication	Chapter
	DLMS • Serial port • TCP-Client • TCP-Server • CSD • Gateway	8. Communication with DLMS
	21C • Serial port • RF	9. Communication with 21C
	HX645 • Serial port DLMS • Serial port • TCP-Client	10. Communication with HX645
	UTC • RS485 • Serial port	Specific version
	ANSI • Serial port	Specific version

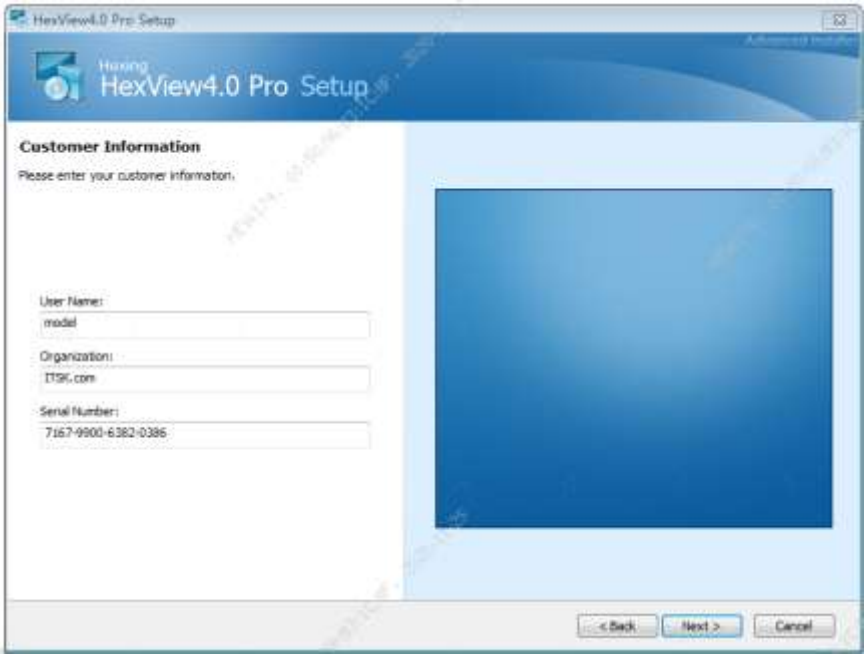
2. Installation

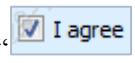
Double click“ HexView_V4.0Pro.exe ”

Click next

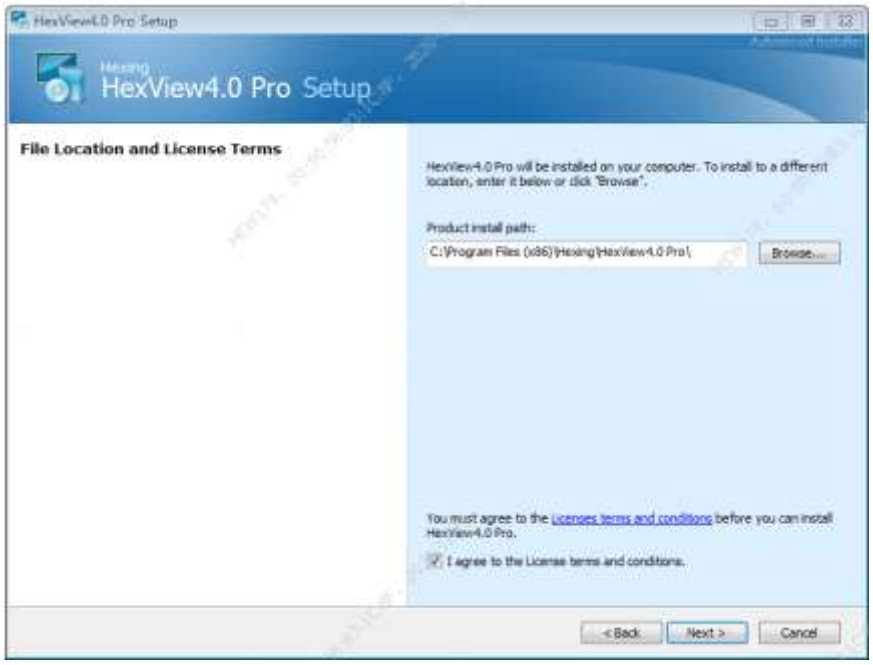


Default Serial Number (It has the same meaning as product ID, which is used to distinguish different versions) : 7167-9900-6382-0386

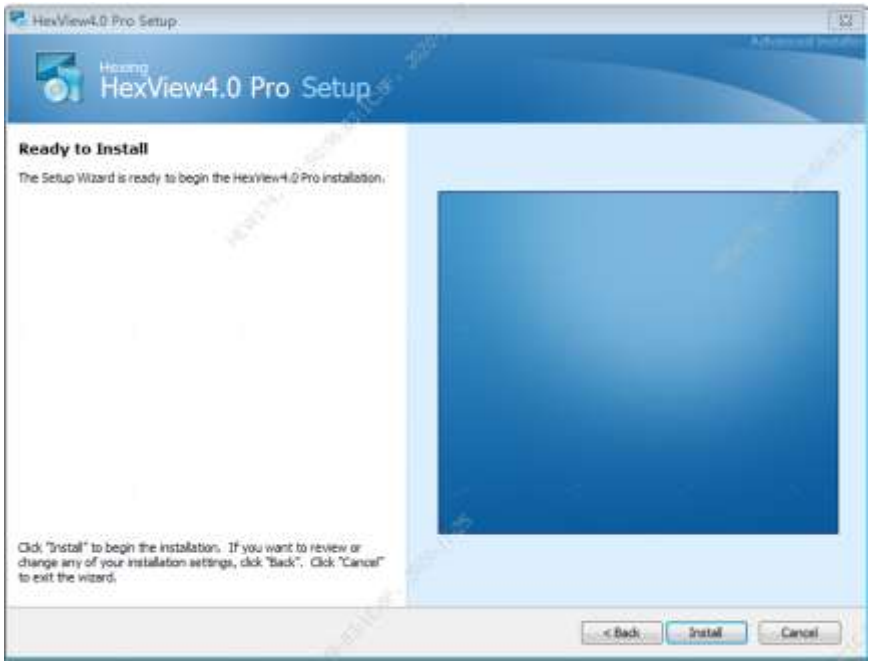


Select the install path and select " 

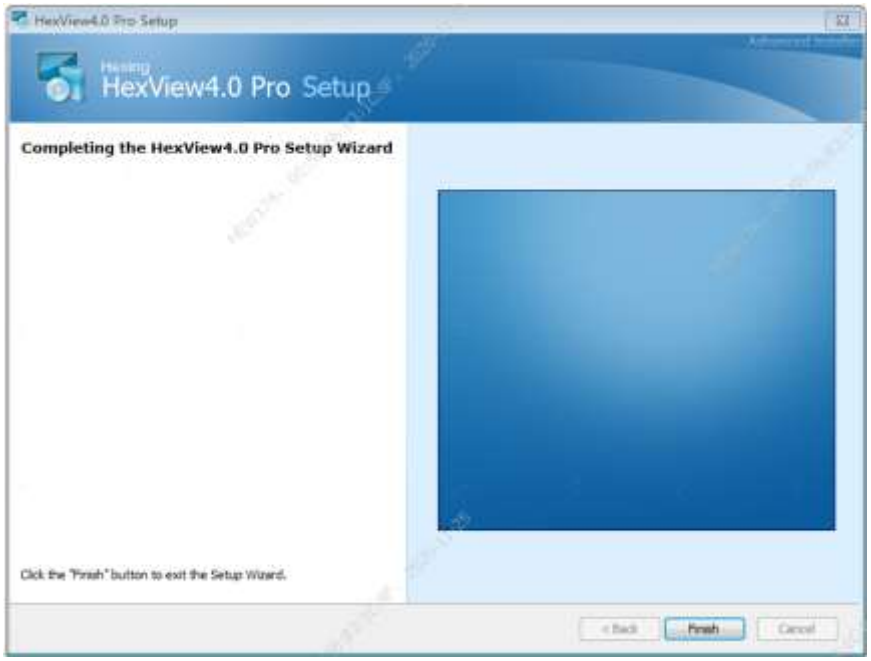
", Considering the location of the project library, choose the default installation path.



Click“Install”



Click“Finish”



After installation, there is a shortcut on the desktop

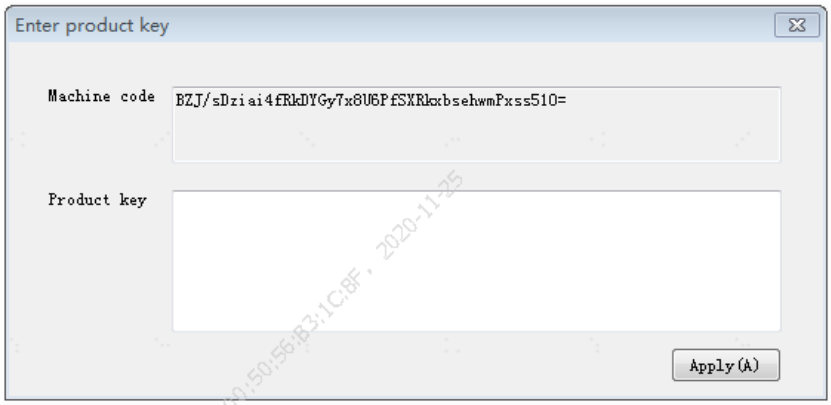
Double click the shortcut to start it.

3. Register

3.1 Introduction

For inter use or client on site ,it's necessary to get the authenrization before use. Only after successful registration , user can use the HexView4.0 Pro. For this computer, it's just need to register one time until the computer upgrades. If the operation system has been updated,users need to registrate once again.

3.2 Operation



Steps

Send the machine code to the responsible person and get the registration code.

Input the registration code

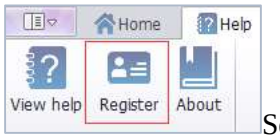
Click “Apply(A)” and finish registration

When registration finished.

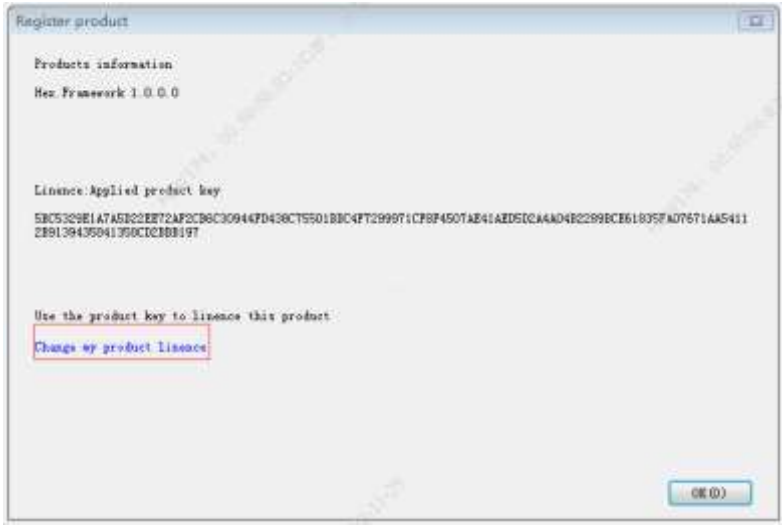
Re-registration: Re-registration is required in situations as following:

Registration validity changes

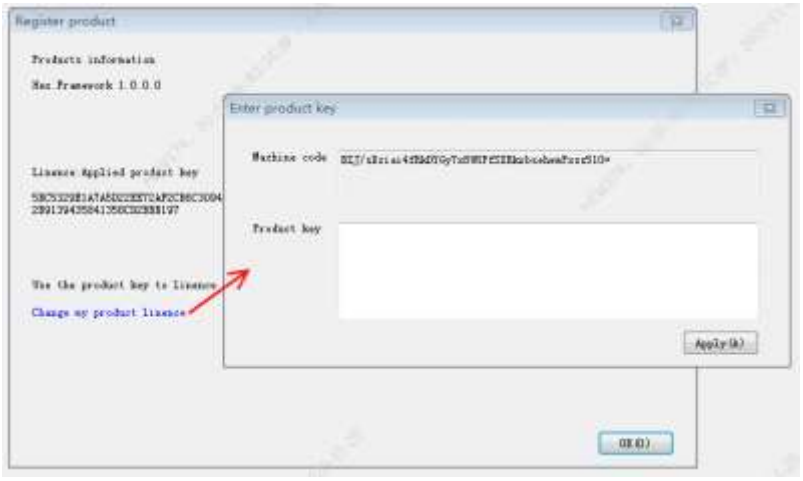
Need to add a encryption dog



Select“Registrate”and enter into the registration interface

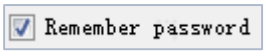


Click“Change my product linence”



3.3 Login

1 Log in with username and password, the default username:Customer, default password:123456. It's available to change the password in the password interface after log in.

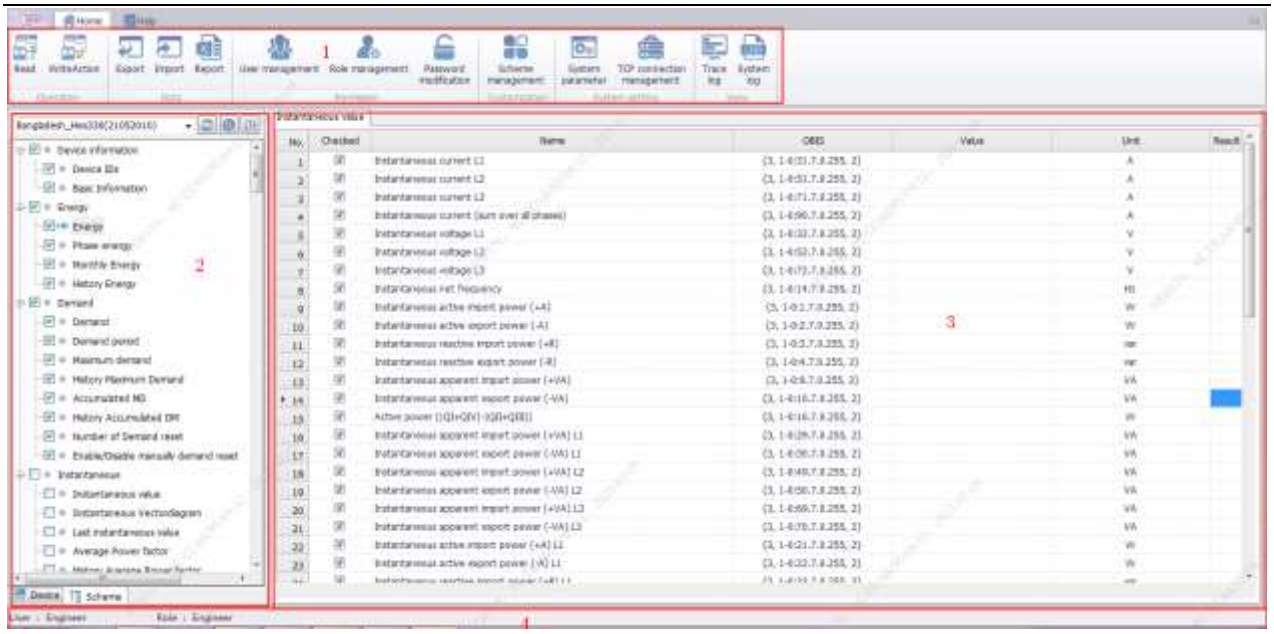
2 

: Save the password.

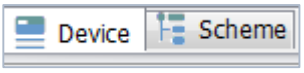
4. Description of user interface

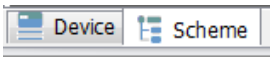
4.1 General

The user interface of the HexView4.0 Prosoftware comprises the following areas:



3 Tool bar: area 1

4 Device definition window with tree: area 2 

5 scheme window with tree: also area 2 

6 Template window: area 3

7 Status bar: area 4

8 Users can adjust the interface from right to left or up and down in consideration of cursor position.

9 The sign  on top right can help to hide theTool bar <expand the main interface for display of template

10 The sign  on top left is used to minimize,maximize and close the software.The sign  on top left is used for drop-down and select: the sign“  ”is for exit.

4.2 Tool bar

11 Read: Read meter data—energy, frozen and loadprofile.

12 Write Action: Set meter parameter and fullfile the command

13 Export: Export data from interface, including data on Demand and the set data.

14 Import: Import the data saved in previous interface(attention: just applicable for data from the same

DB)

15 Report: Export the corresponding report according to the interface options

16 User management: Establish, edit, delete, search and reset password.

17 Role management: Establish, edit, delete and search.

18 Password modification: Modify the user's password.

19 scheme management: DBManagement, common parameters configuration, set the Client and OBIS management(access for certain users)

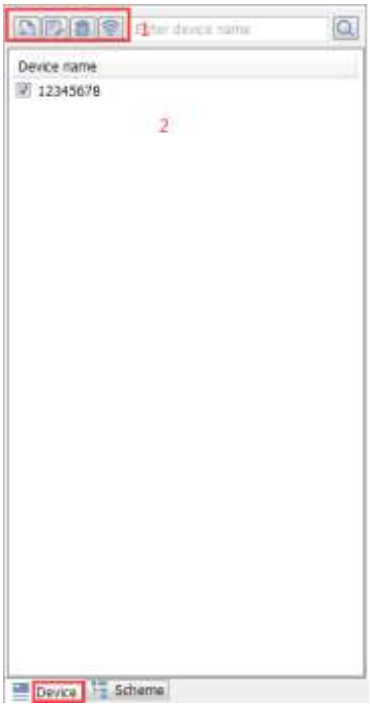
20 System parameter: Time format, calendar,language, number configuration and the definition for rules of user's password.

21 TCP connection management: Monitor the server IP and port remotely

22 Trace log: Monitor the log and message reminder

23 Chart: Reading data to generate chart

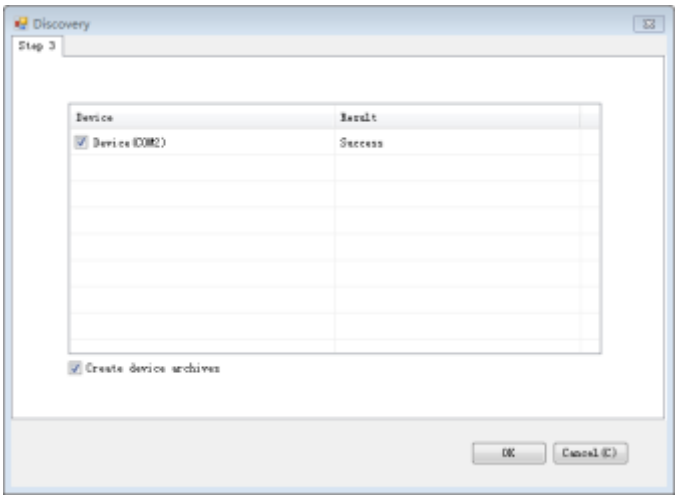
4.3 Device definition window with tree



24 " 

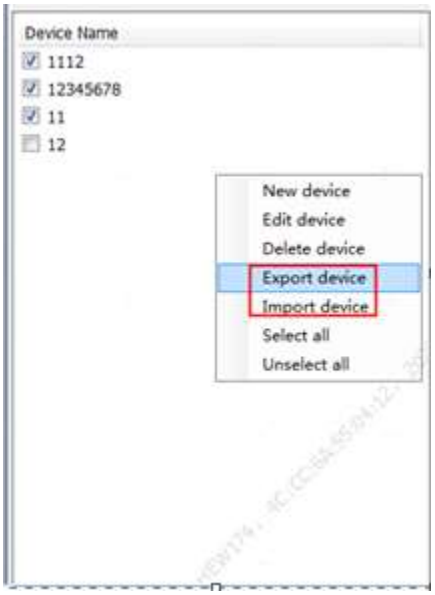
": Create,Edit, Delete,Discovery.

25 "  ": Automatic detection serial port and communication with meter

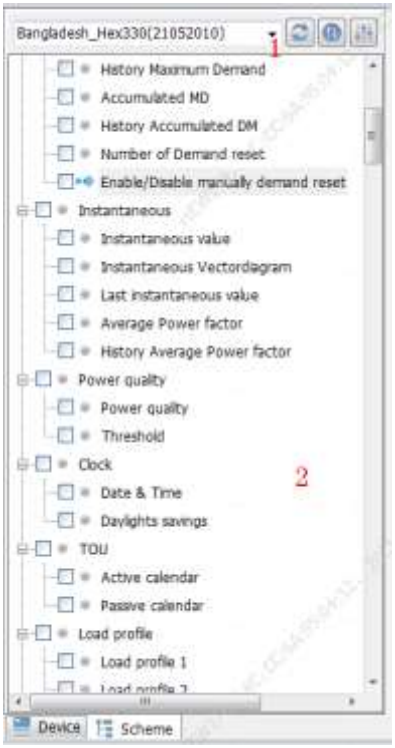


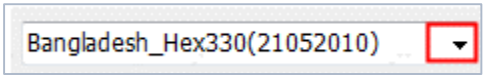
26 Device list: Select one device to operate one time

27 Export device: You can select multiple devices to export; Import device：Import equipment file



4.4 Function scheme window with tree

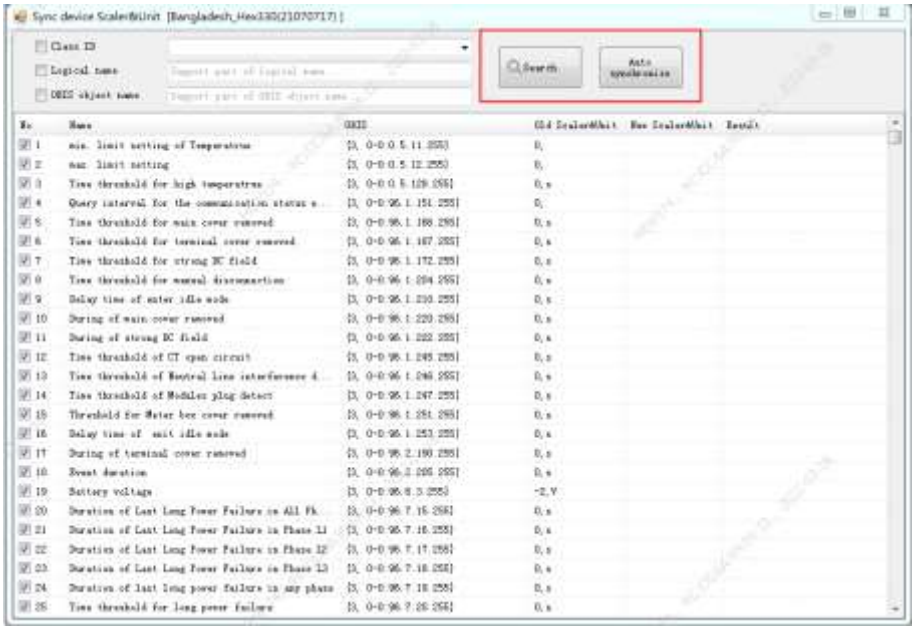


28 

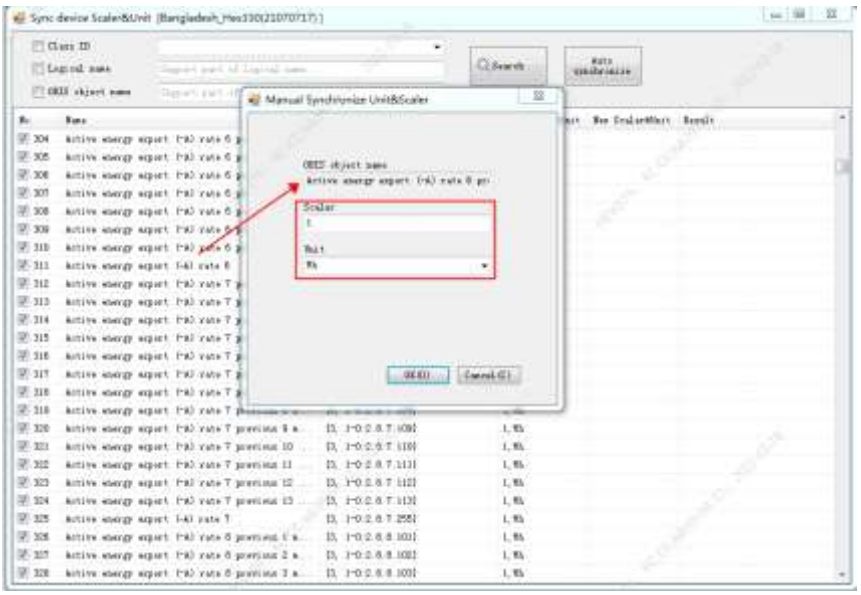
: Select DB from the drop-down box

29 Click“  ”to refresh the Function Tree

30 Click“  ”to synchronous dimension, Synchronize dimensions in the table. At the same time, you can double-click OBIS to modify units and dimensions manually.



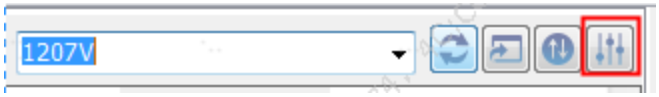
: OBIS or name by fuzzy search.

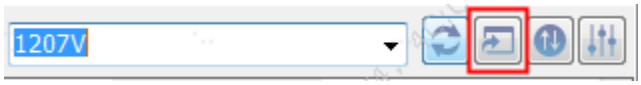


Double click OBIS to manually modify units and dimensions.

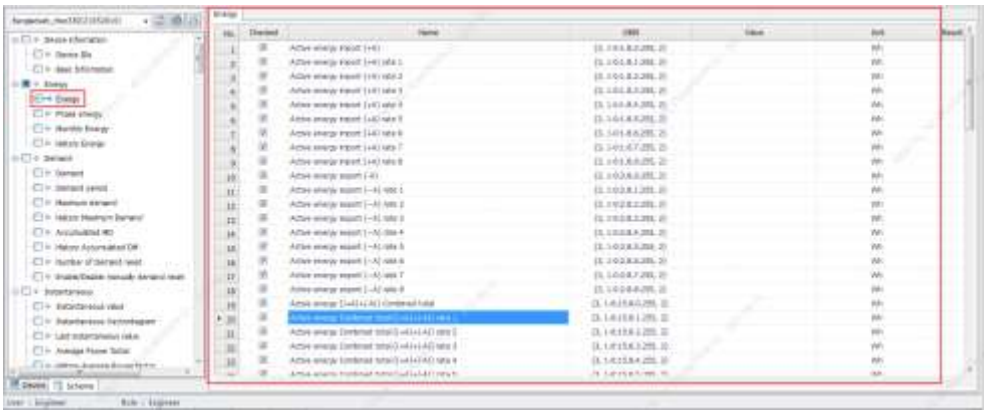
: Automatic synchronous meter unit dimension.

- Click“  ”to choose Client:only available to choose one Client one time(The meter supports 4 clients by default:Public\Pre.Est.\Management\Reading).



- The default Client is“Management”.
- Click“  ”to import DB. 

4.5 Template window



- Select the function item on left and the function interface will show on right side.

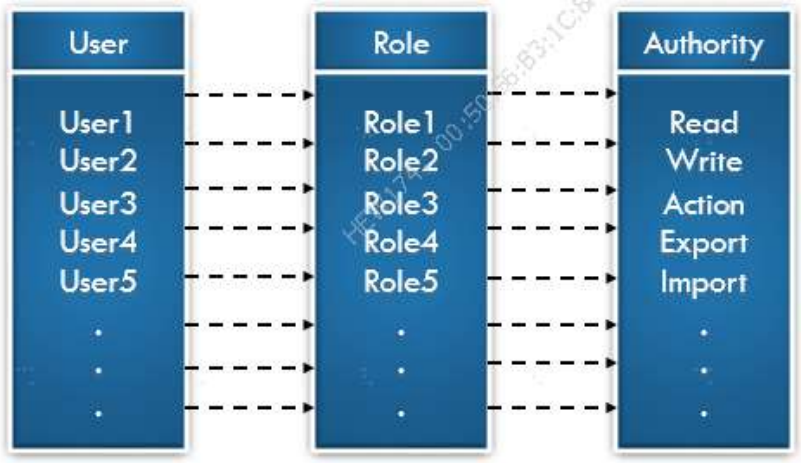
- Click different function items and change the function items.

4.6 Status bar

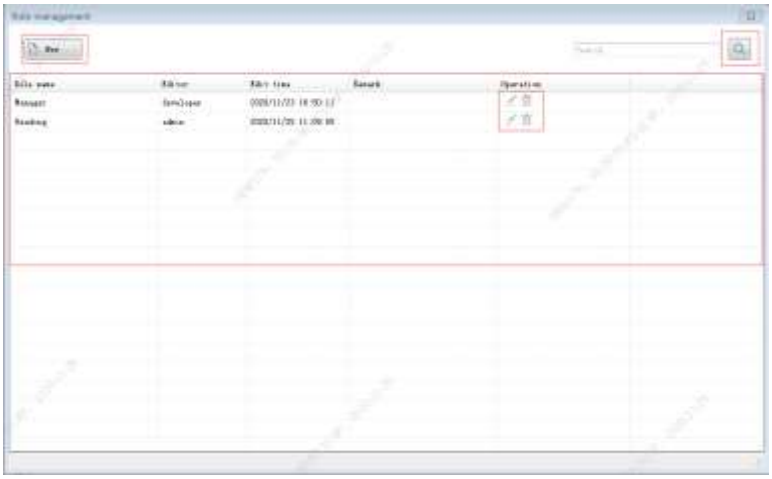
- This is the Username and corresponding role. 

5. Permission

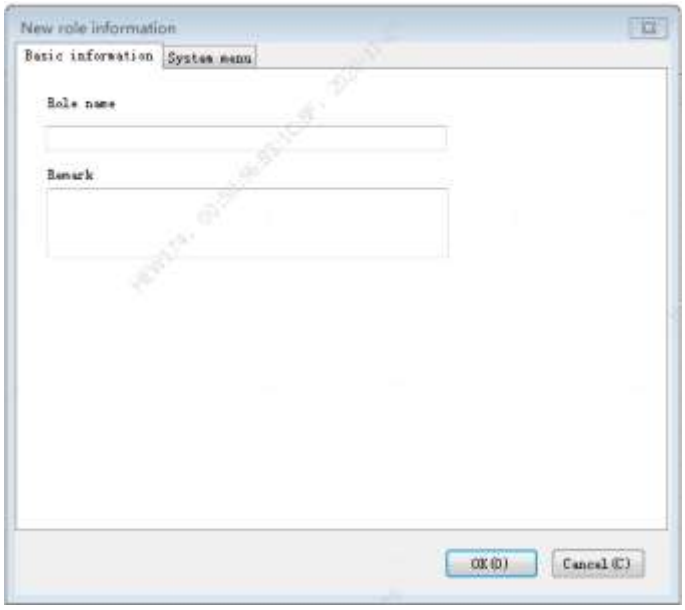
The relationship between role and user:establish new role before establishing a new user account;one user is for one role, but one role could be for more than one user.For each role is available to select various operation access and the user can select various roles.



5.1 Role management

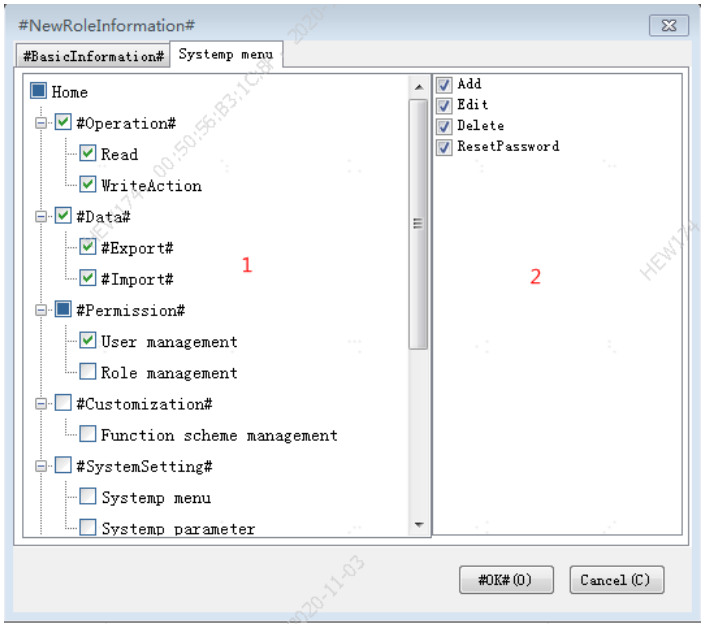


: Establish new role, input username and description.



- Role name: Enter a new role name
- Remark: Role Description

1. The left list is used for system menu.
2. The right list is for corresponding function to select



3. 

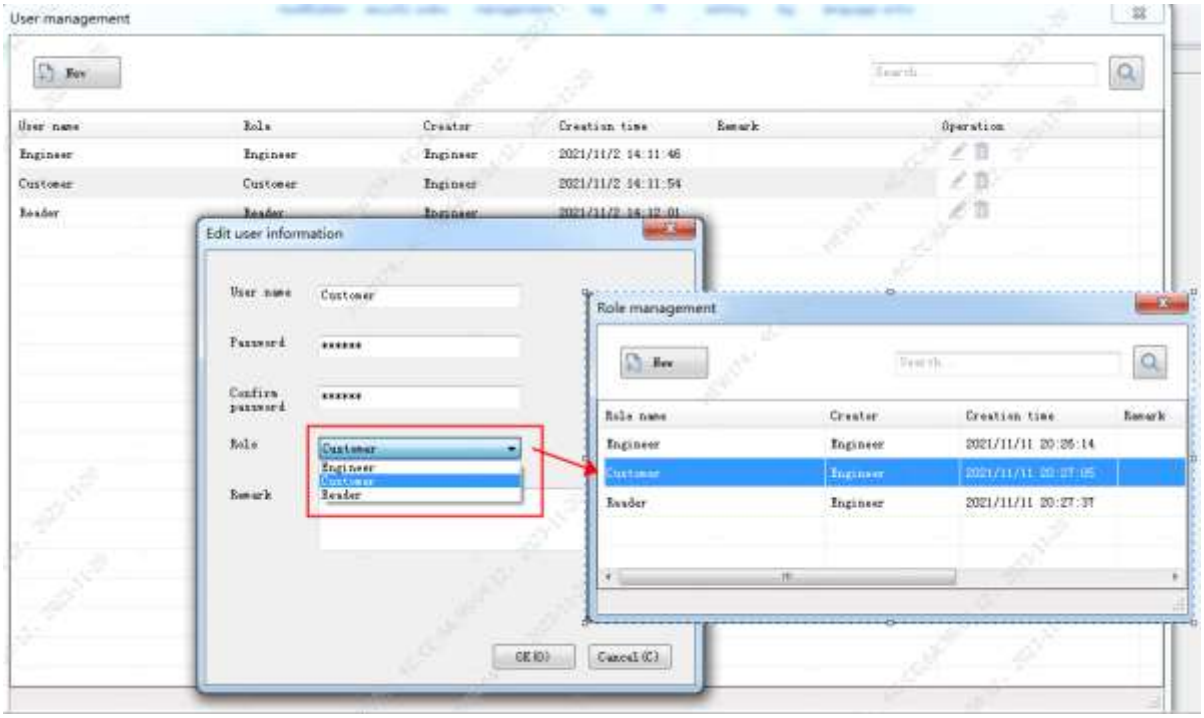
: Search by role names,

✧ After searching an account, you need to go back to the previous level, clear the content in the search box, and then click search.

4.  :Edit and delete.

5.2 User management

List of accounts that currently exist

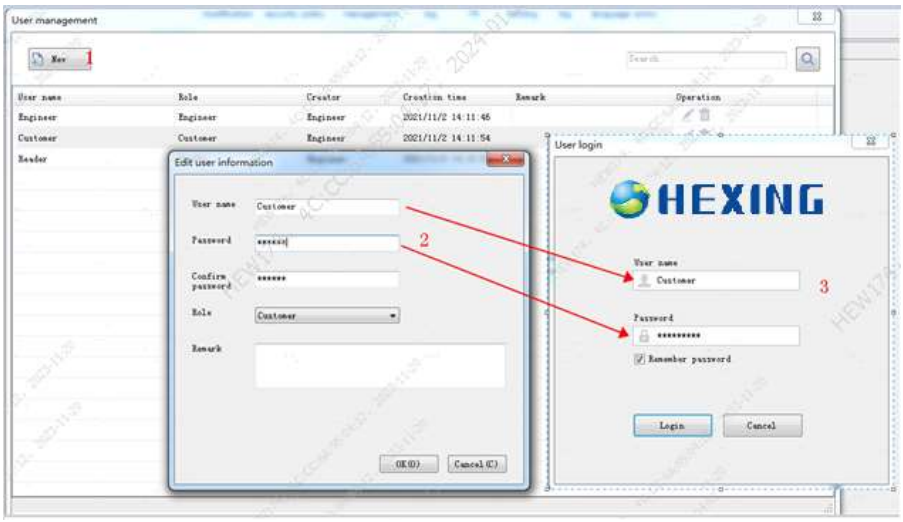


- User name: Enter a new user name
- Password: Enter the password corresponding to the new user
- Confirm password: Confirm the new password again
- Role: Select the corresponding role permissions for this user

- Remark: Describe user

: Establish new user,input username and passoword, then select the right role.

1) Click on new
2) Enter the above information, select character
3) Next time you log in, you can use a new account and password, The corresponding account password is shown in the following figure



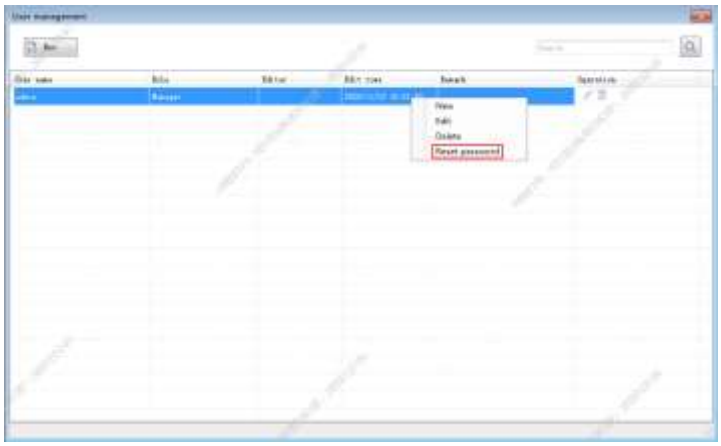
- Other functions:

: Search by username

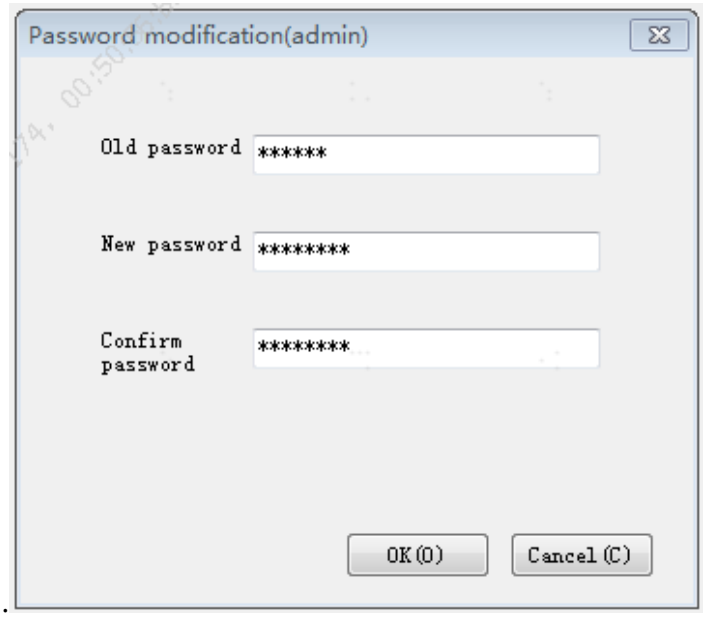
✧ After searching an account, you need to go back to the previous level, clear the content in the search box, and then click search.


: Edit or delete the selected account.

Right-click “Reset password”: The reset password is 000000



5.3 Password modification



- After modifying the password, the next login to the account requires the use of a new password

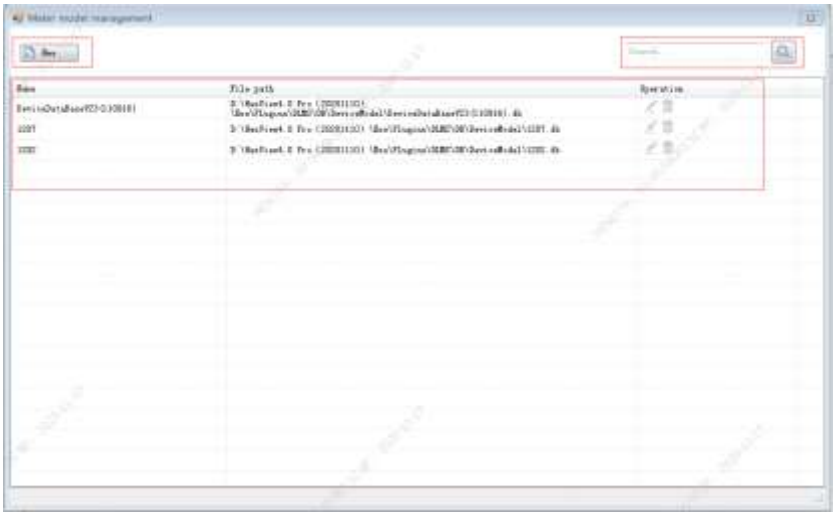
6.Customization

Customization includes five parts:DB Solution ManagementDevice Parameter ConfigurationCommunication Client Configuration,Function Solution Configuration,OBIS and its attribute,Solution Configuration.

The scheme management function is only available to internal engineers.

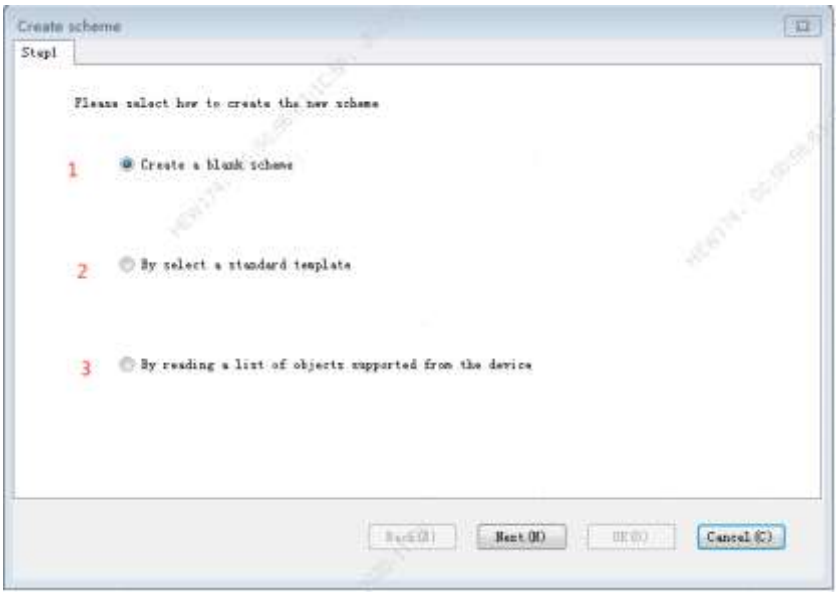
Taking DLMS as an example:

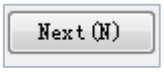
6.1 DB management



- “  ”:Edit and Delete DB file
- “  ”:Search by names of DB file
- “ 

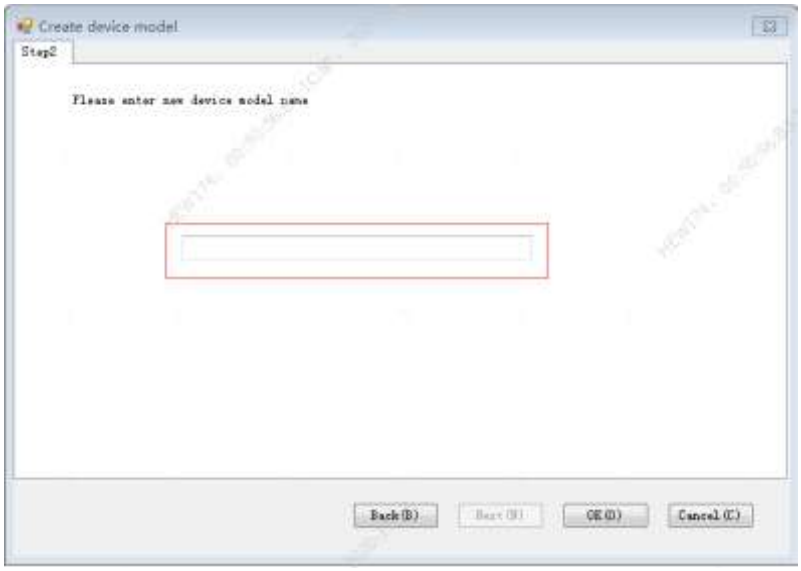
”:there are three ways of to establish new DB file as following:



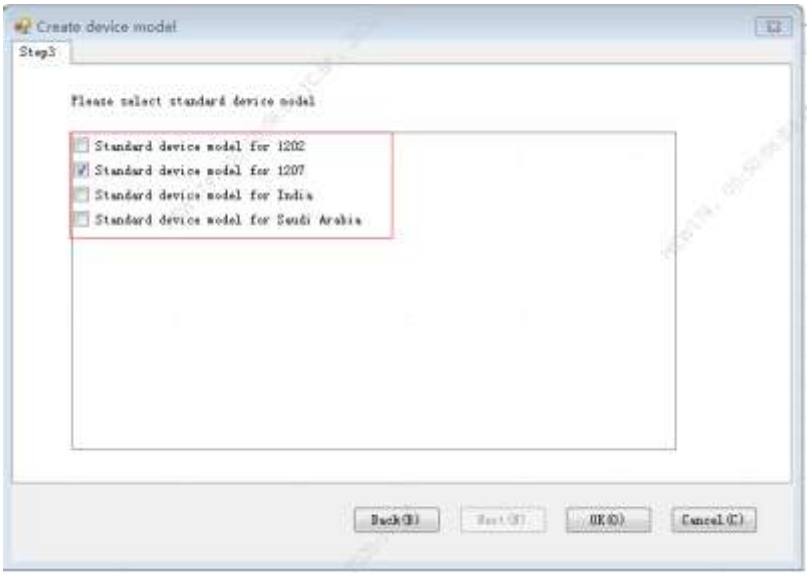
- Select one way and click“ 

”：input the name of DB file

◆ Select 1: Establish on the basis of the local DB

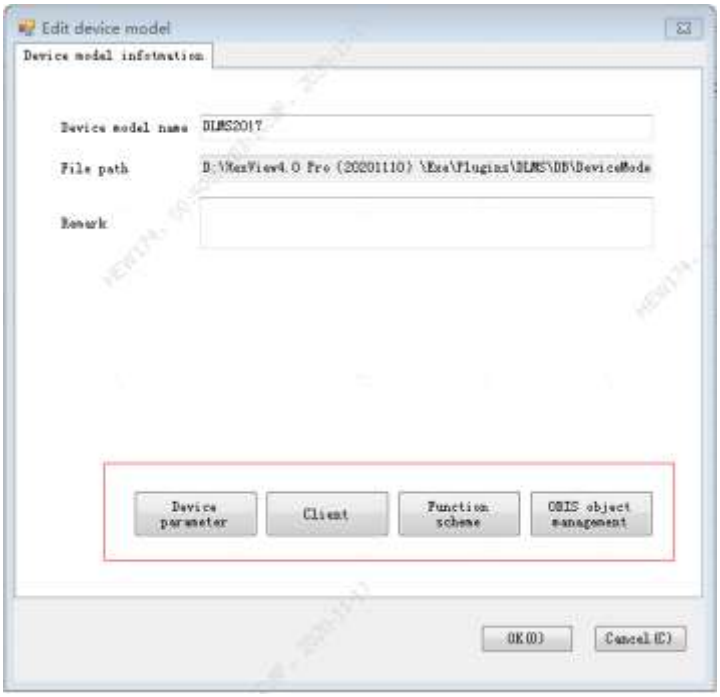


- Select2: select on the basis of standard general DB

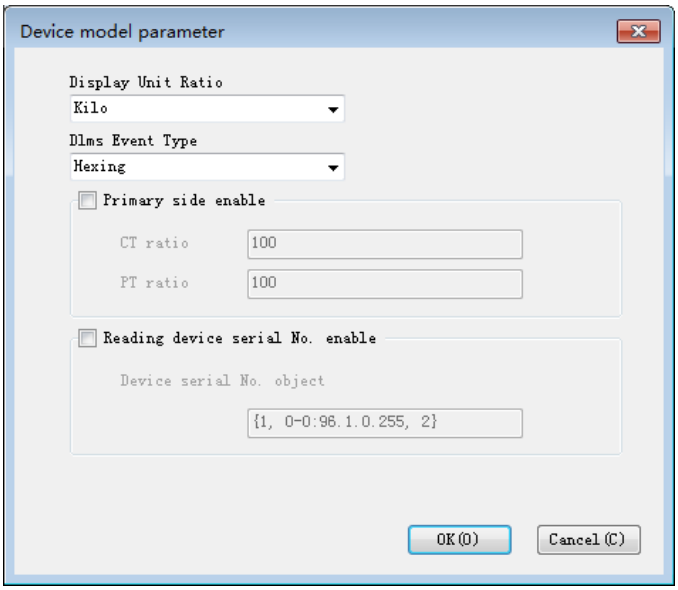


- Select3: Establish on the basis of OBIS list read from device Class 15“ 

”:Enter into Function Configuration Interface.

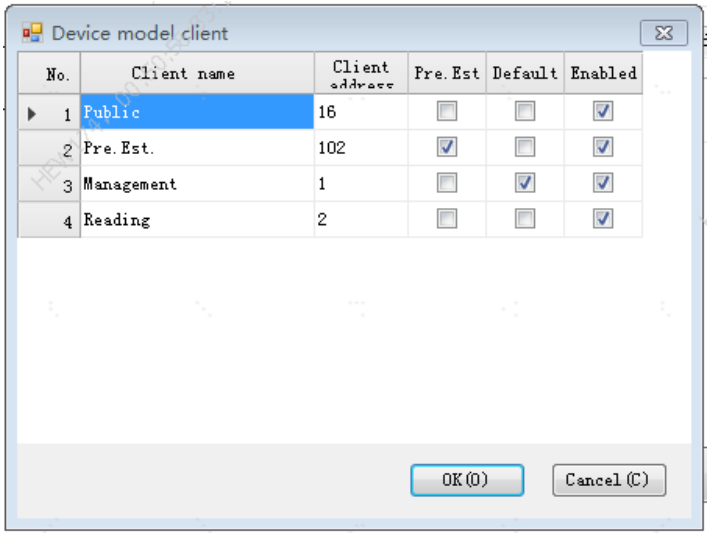


6.2 Device parameter



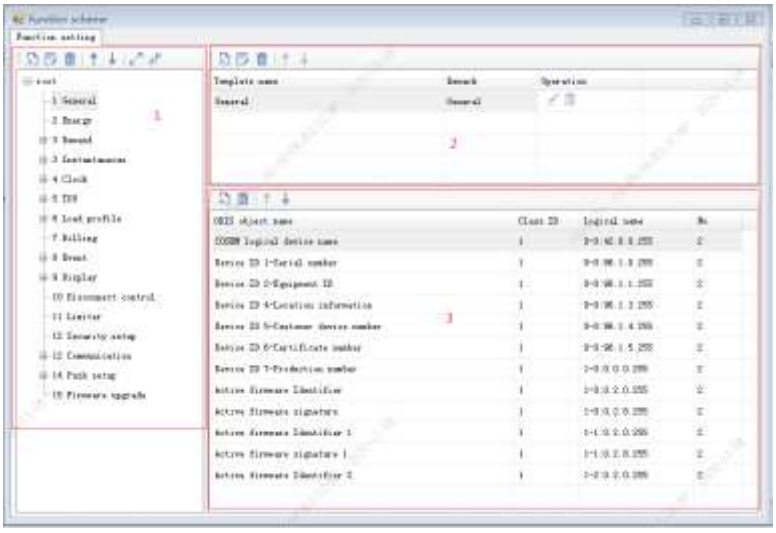
- “Data Display Unit”: Select ExtendedUint or DlmsCosemStandardUnit
- “Unit Scaler Source”: Select Device or DataBase

6.3 Client setting



- Client supports: Public,Pre.Est.,Management,Reading
- Client address: fixed
- Pre.Est: Default and multiple
- Default: Default and single
- Enabled: Enable and multiple

6.4 Scheme management

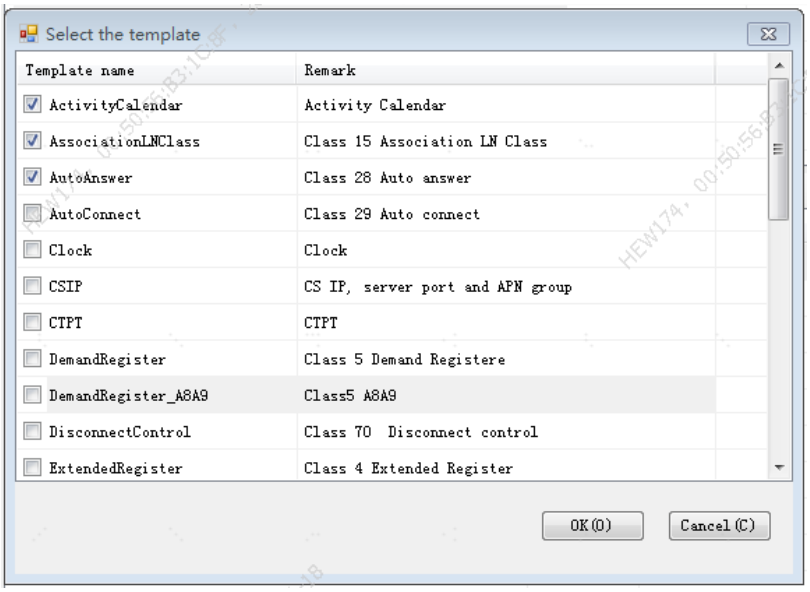


◆ Section1: Function Tree

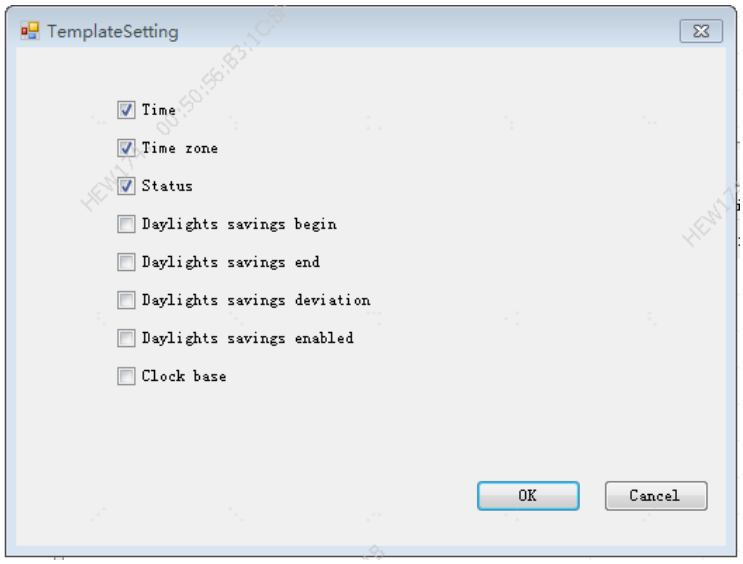
- “  ”:Establish,edit, delete,shift up and down,unfold and fold.
- Root: function node and can be separated.

◆ Section2: Function template

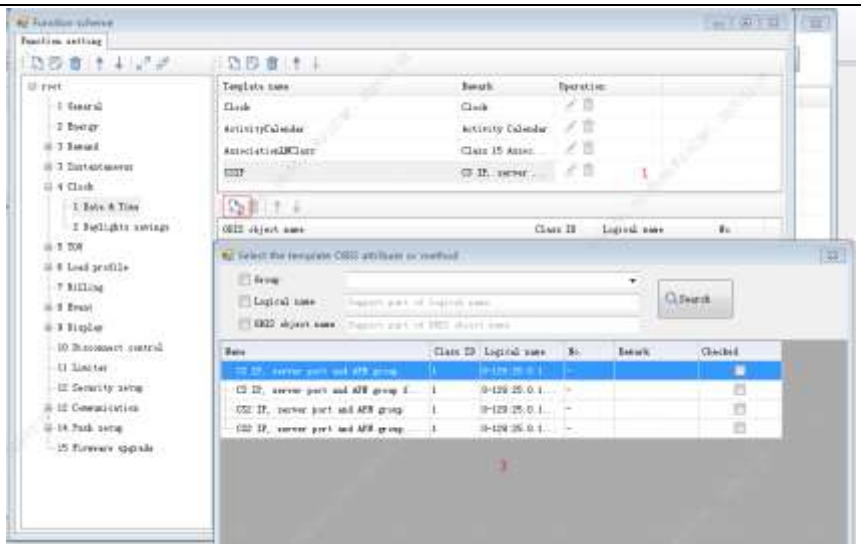
- “  ”：Establish, edit, delete, shift up and down.
- “  ”：Delete the existing template.
- “  ”：Available to select one or more templates.

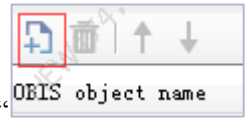


- “  ”：Edit the existing template and select function which the template supports.

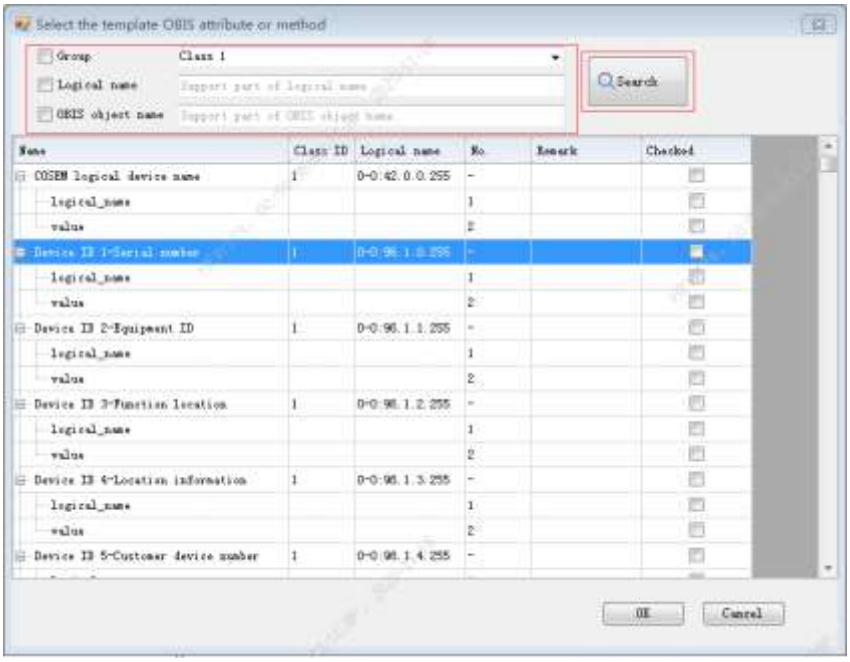


◆ Section 3：OBISConfigure OBIS



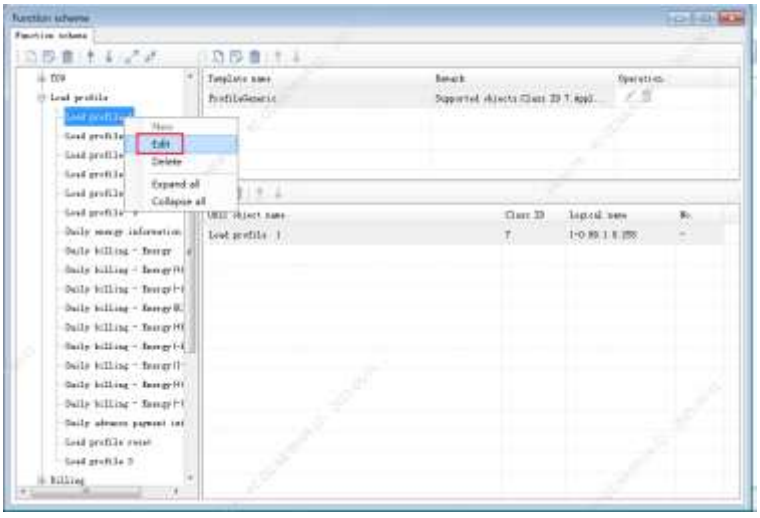
- OBISSelete template and configure OBIS.
- Select the template to add OBIS
- Click“ 

” to enter into OBIS configuration interface.
- Select OBIS: Attribute and solution
- Search OBIS: available to selectClass、Logical name、OBIS object name

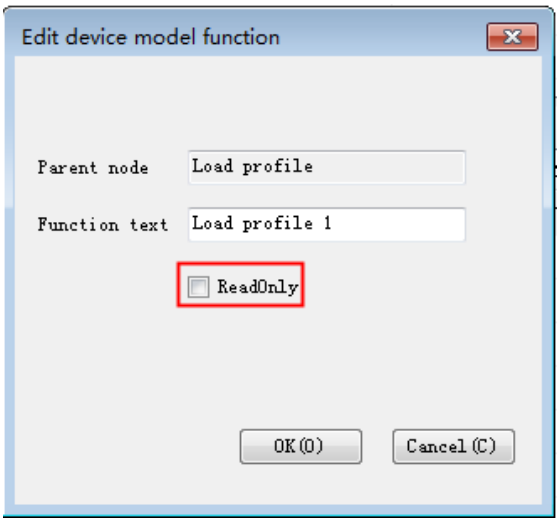


- For example: Specifies the selection range of capture objects.

- Edit: Configuration of read and write permission of function node.



- Read-write permission configuration

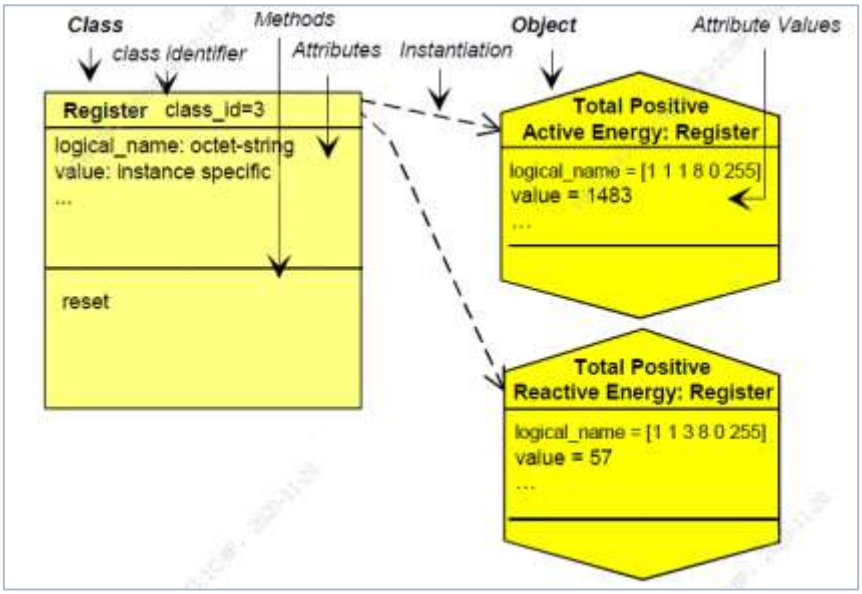


6.5 OBIS object management

An object is a collection of attributes and methods. Attributes represent the characteristics of an object. The value of an attribute may affect the behaviour of an object. The first attribute of any object is the logical_name. It is one part of the identification of the object. An object may offer a number of methods to either examine or modify the values of the attributes.

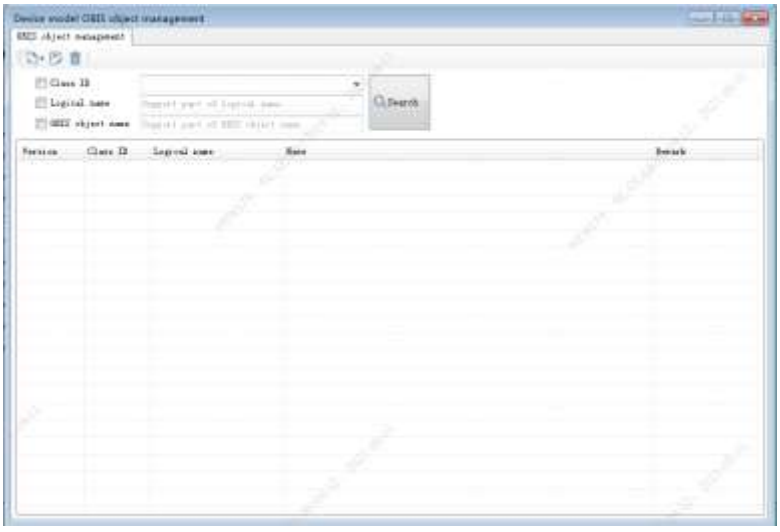
Objects that share common characteristics are generalized as an interface class, identified with a class_id. Within a specific IC, the common characteristics (attributes and methods) are described once for all objects. Instantiations of ICs are called COSEM interface objects.

DLMS Example:



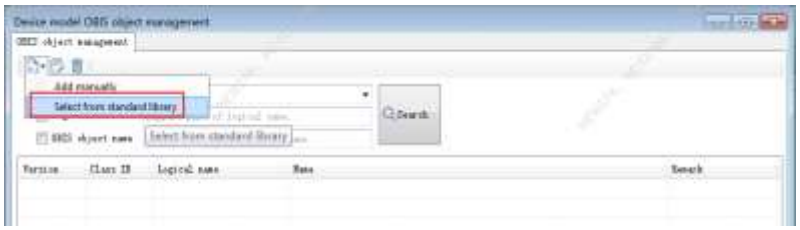
An interface class and its instances

◆ **Engineer:** OBIS permission

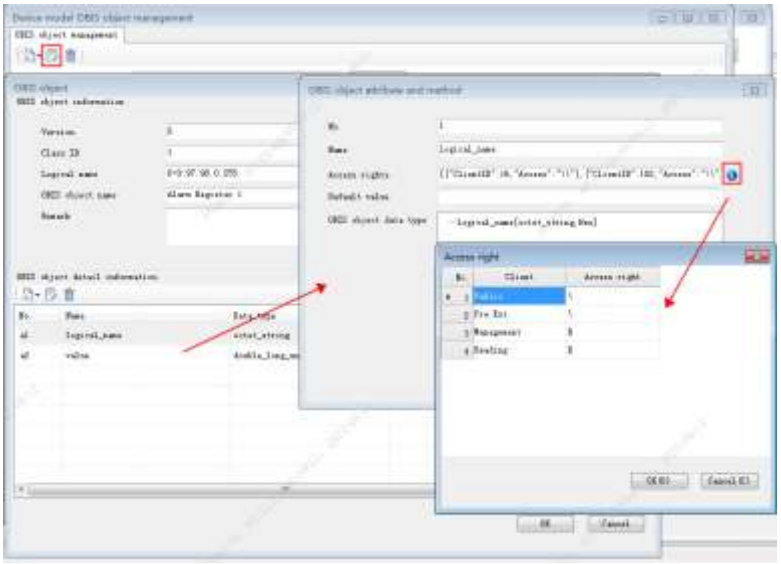


“  ”: Establish,edit, delete, shift up and down, unfold and fold.

“  ”: Add OBIS

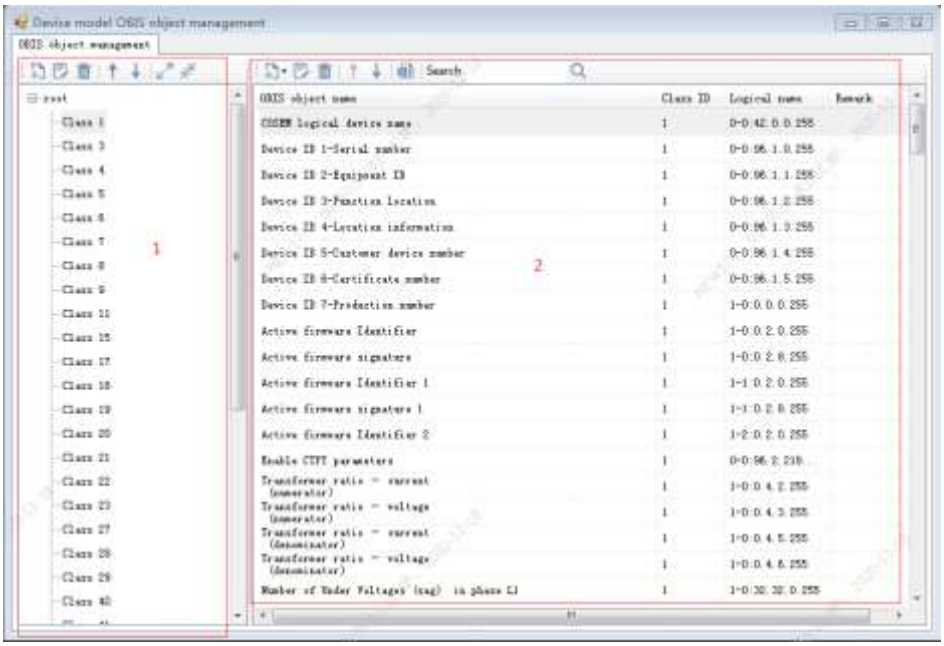


“  ”: Modify the read and write permissions of OBIS on different clients.



“  ”: Delete OBIS

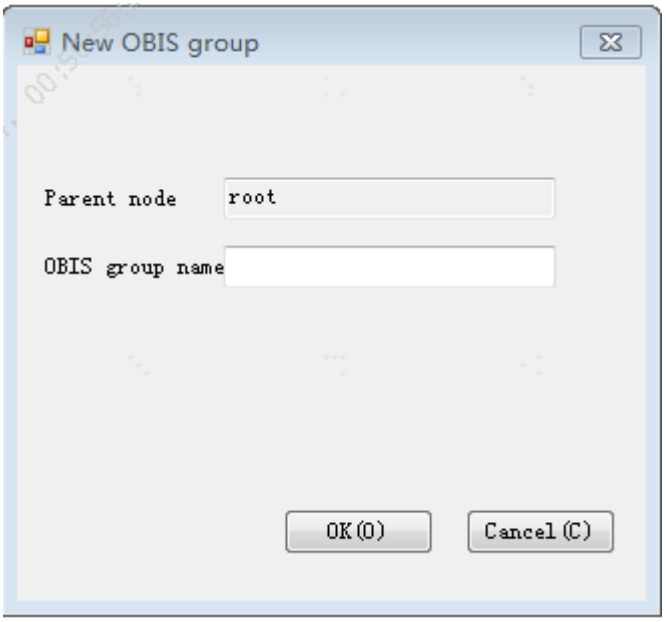
◆ **Developer:** OBIS permission



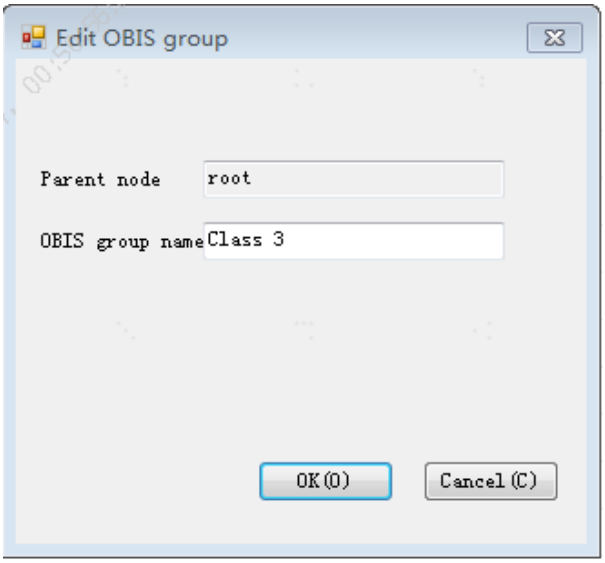
◆ **Section1: Rank by Class**

“  ”: Establish, edit, delete, shift up and down, unfold and fold.

“  ”: Add Class



“  ”: Edit the selected Class: name



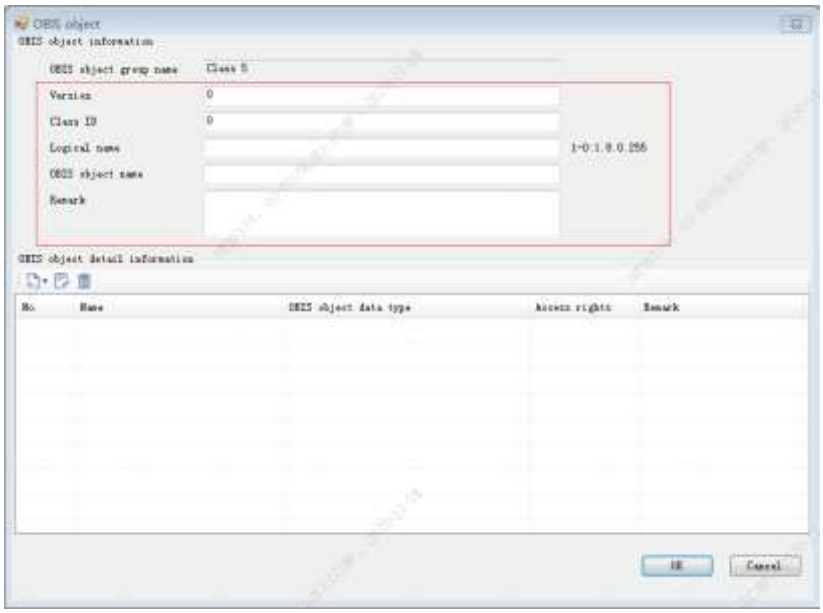
◆ **Section2: OBIS object configuration**

“  ”: Establish, edit, delete, shift up and down, export.

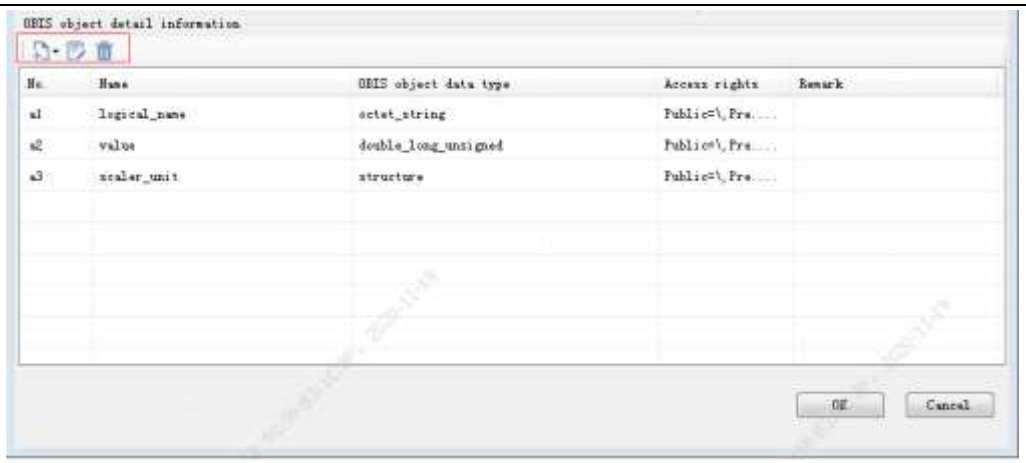
Context Menu :Establish, edit, delete and export.

“  ”: two ways to add

◆ **Add manually：add manually**

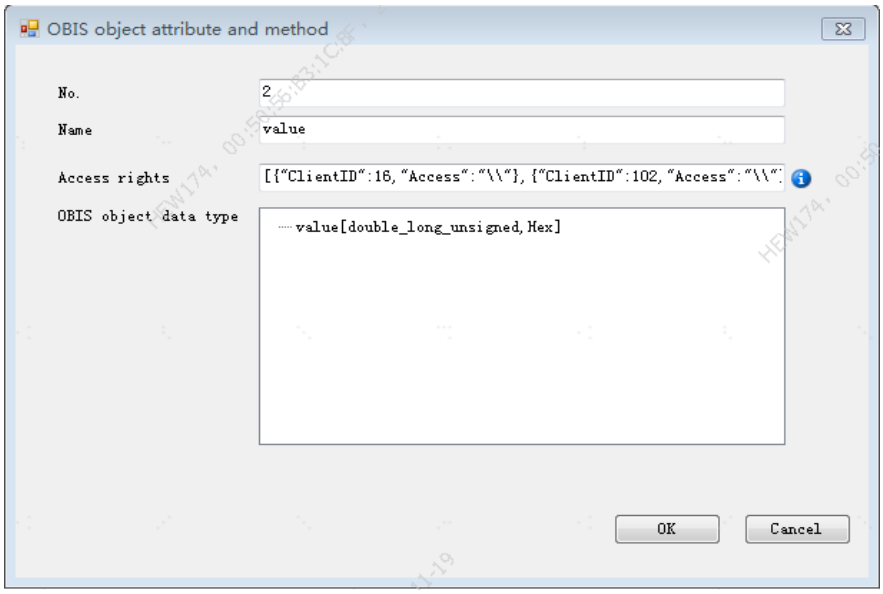


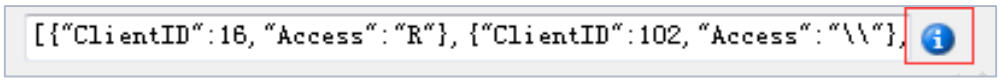
◆ **OBIS object detail information**



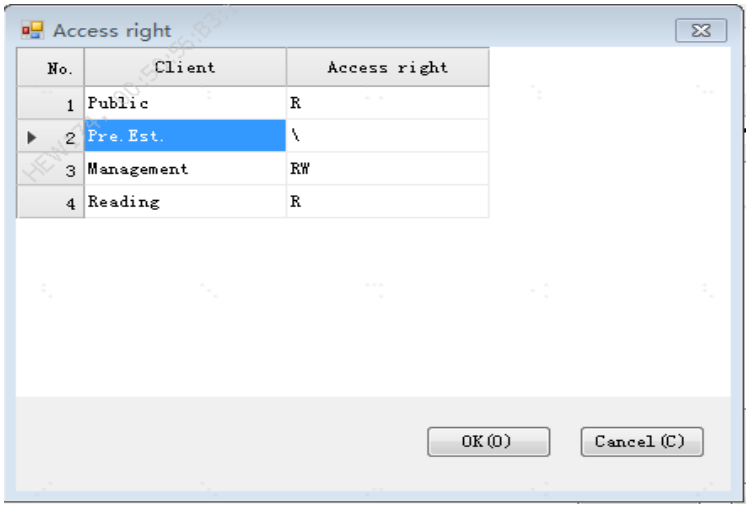
“  ”: Establish,edit and delete: attribute and solution

“  ”: Establish and edit: attribute and solution

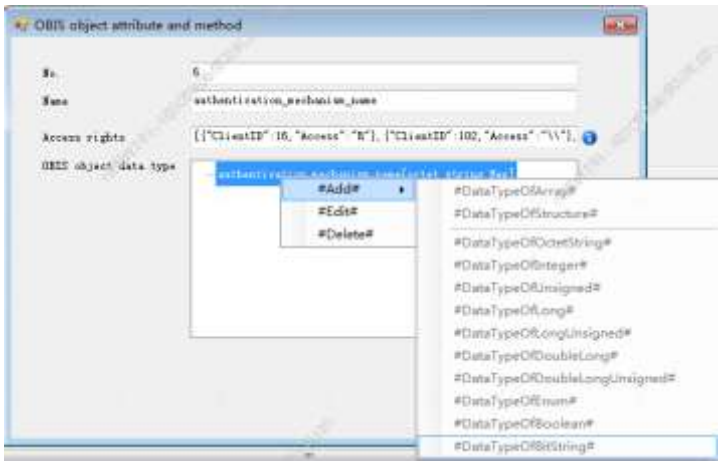




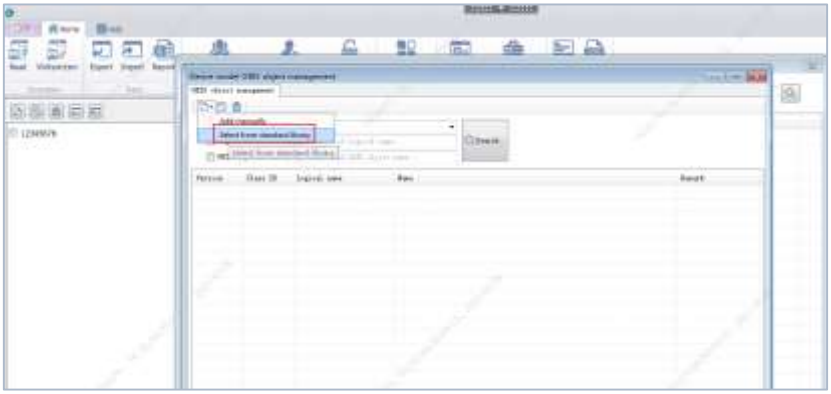
:



OBIS attribute and solution:configure on the basis of data structure and type, establish, edit and delete.

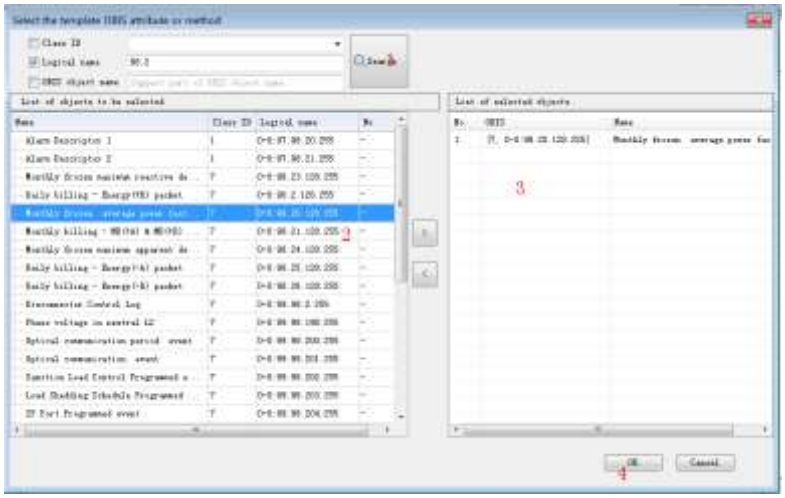


- **Select from standard library**



Select from standard library: Check the latest master database.

Search OBIS from general database, Add to project library.



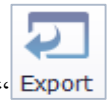
7. Data management

User can export the parameter configuration file.cfg as like,and the file can be encrypted or without encryption . The file can also act as import file for HHU if the DB file is the same one.Export

1) Click the node in Function Tree

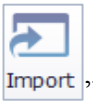
2) Click the function interface related to the nod

3) Configure right parameters as shown above

4) Repeat step 2 and 3, and configure the right parameters.Click“ 

”and export.cfgfile

7.1 Import

The .cfg file can send to other computer and avoid repeating configuration.Click“ 

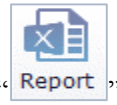
”and import the configuration file.

7.2 Export

The .cfg file can receive from other computer and avoid repeating configuration.Click“ 

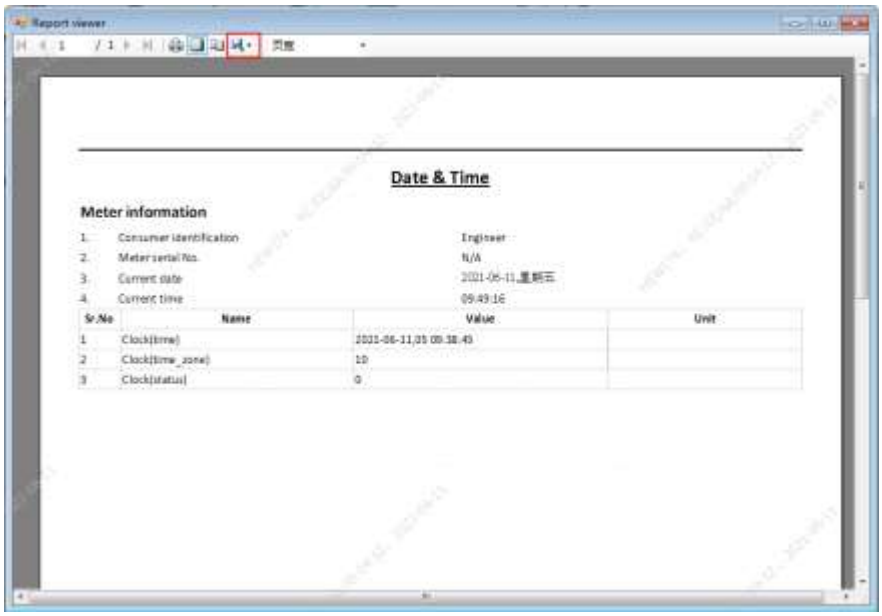
”and export the configuration file.

7.3 Report

Export report:The report file can receive from other computer and avoid repeating configuration.Click“ 

”and export the configuration file.

- Report Formats“ 
”:Excel,PDF,CSV



7.4 Chart

Copy data to generate charts, such as load and settlement data

6 Click" Chart " :

- Select different functions through the menu bar to generate corresponding charts

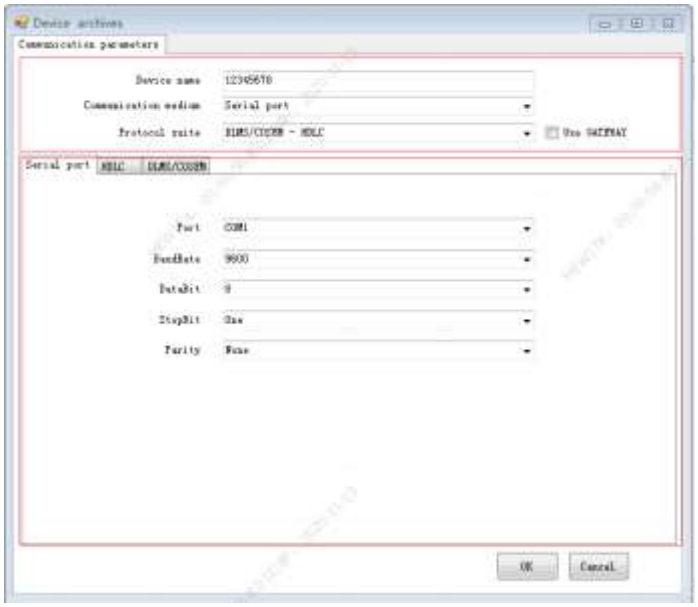
8. Communication with DLMS

This section gives an introductory example of how a communication connection is established to a device with the HexView4.0 Pro.

8.1 Device management

The Device management including: communication media and protocol.

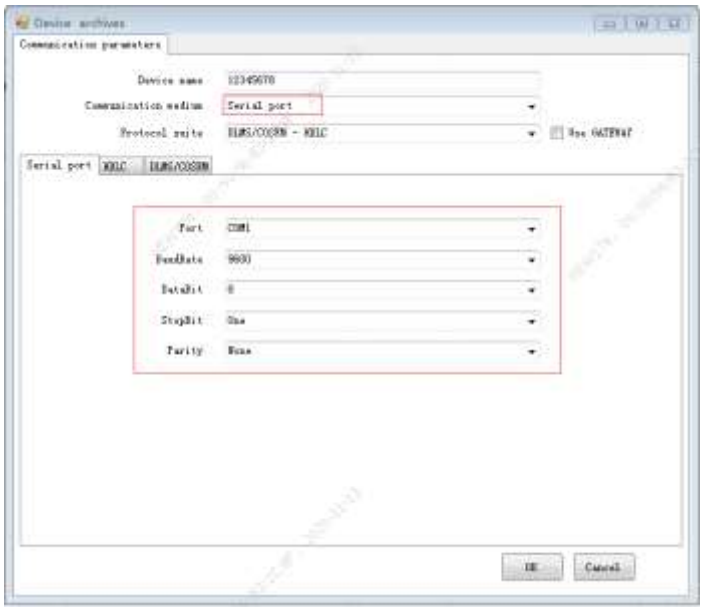
8.1.1 General



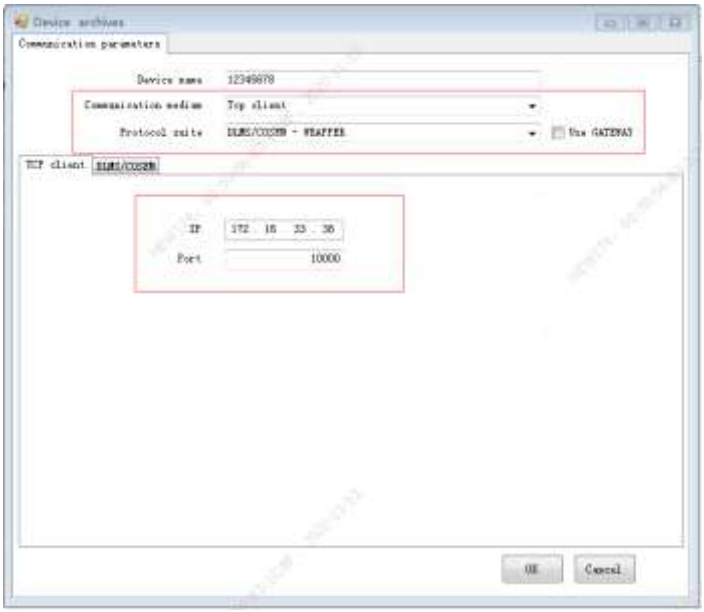
- Device name: Define by user himselfCommunication medium：User select by himself
- Protocol suite: User select by himself

8.1.2 Communication medium

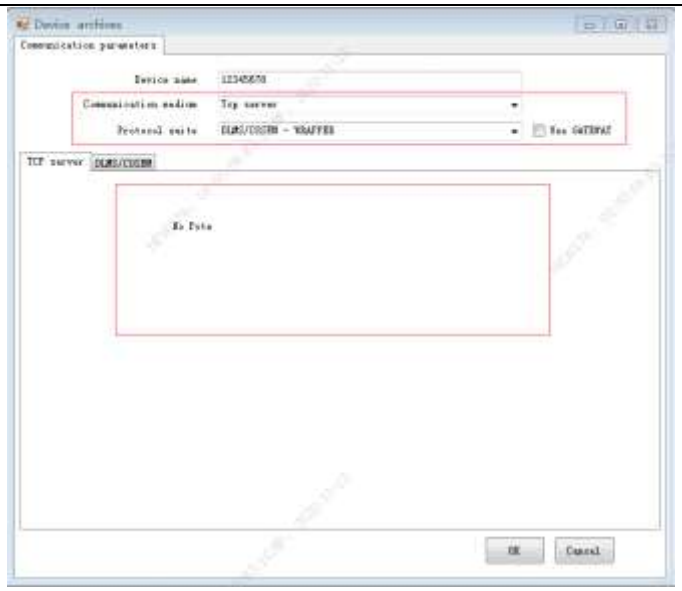
- Serial port: Local



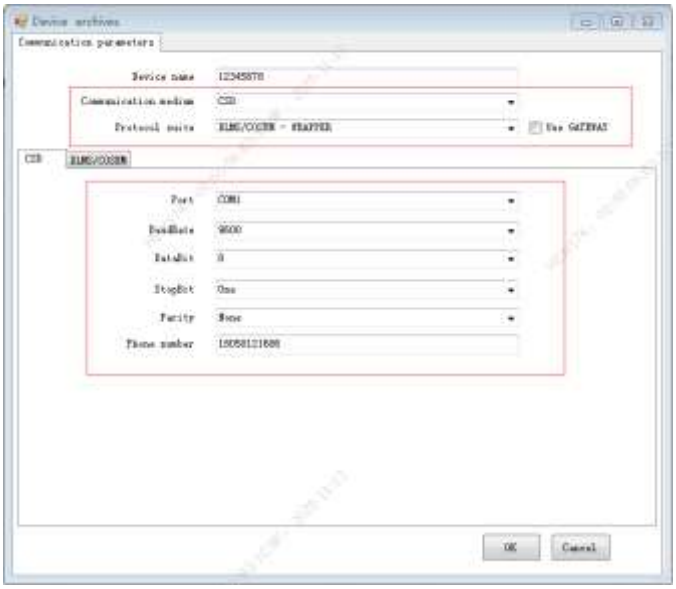
- TCP client:: Remote



- TCP server: Remote

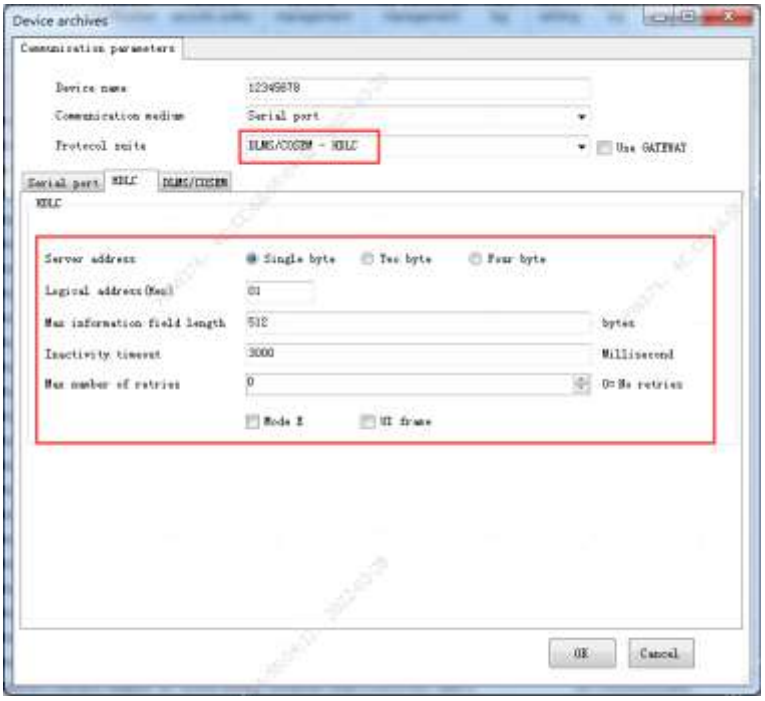


- CSD: Remote

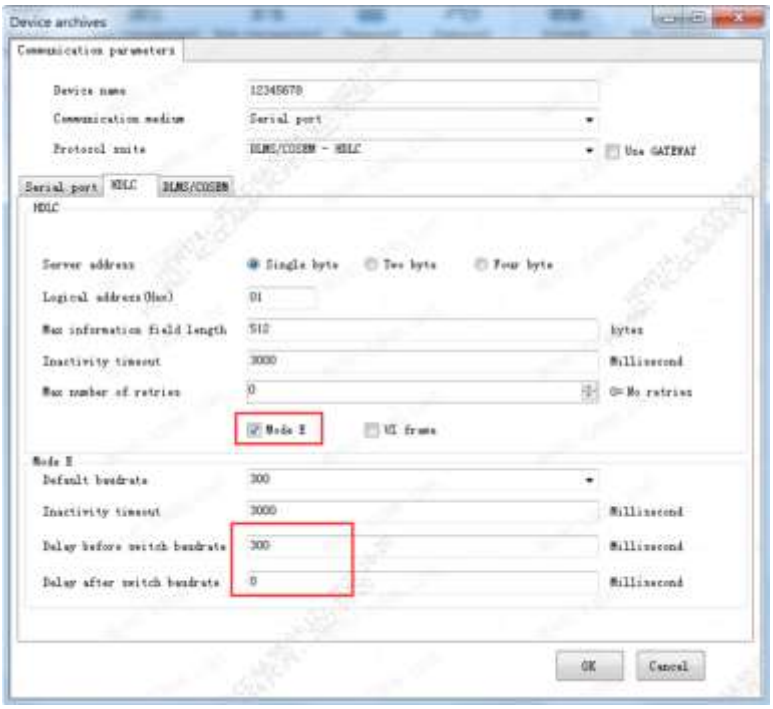


8.1.3 Protocol suite

- It supports three kinds of procotol as following: user can select anyone if meter supports
- DLMS/COSEM HDLC



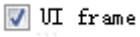
- Mode E: User can select if meter supportsUI from: N/A



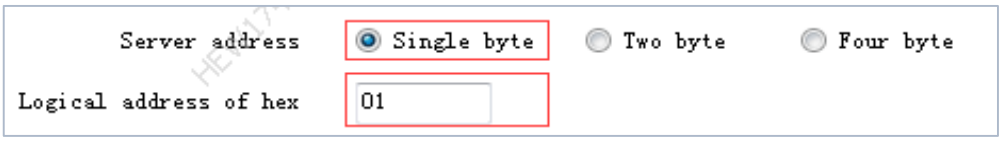
Delay before switch baudrate: The waiting time from the PC sending the baud rate switching frame to changing the serial port baud rate, default 300ms.

Delay after switch baudrate: Wait time after PC switches the new baud rate of the serial port, default 0ms

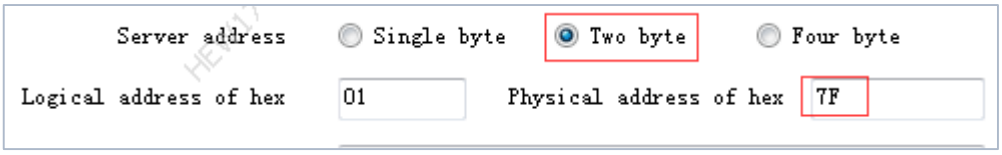
- UI frame: Support UI frame



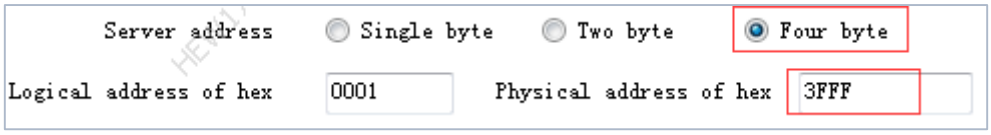
- Max number of retries: the maximum repsThe Client address: the default is 01
- The server address: logic address+physical addressOne-Byte address: HDLC with high level only



- Two-Byte address: One byte for DHLC with high level and one byte for HDLC with low level

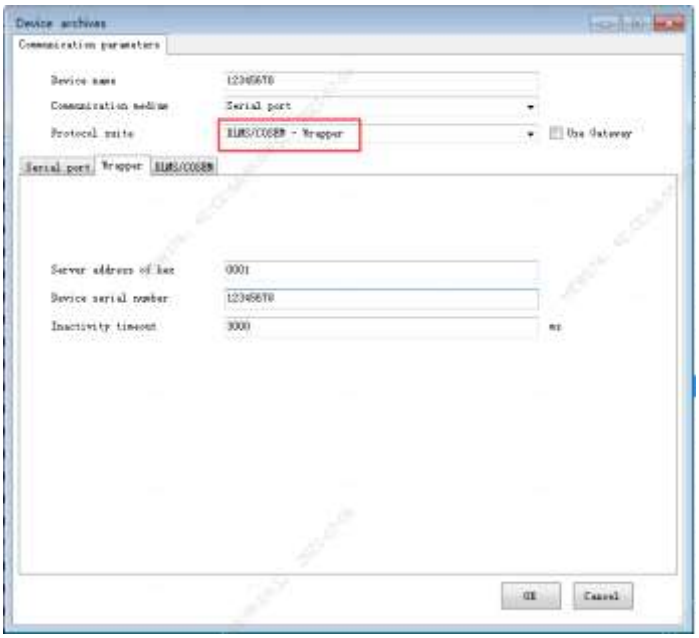


- Four-byte address: two bytes for HDLC with high level and two bytes for HDLC with low level.

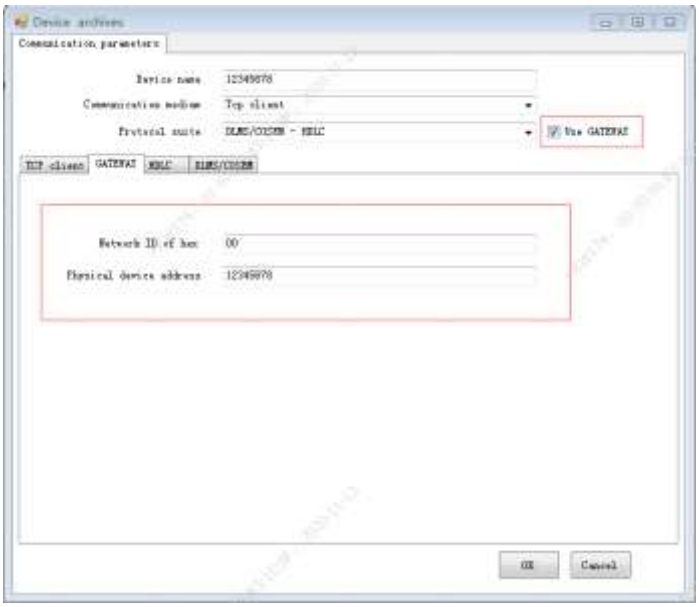


(for HDLC with low level address:0x7F/0x3FFF- is broadcast addressand0x00/0x0000 meansno-station, 0x01…0x0F/0x0001…0x000F means saved address,0x7E/0x3FFEmeansCALLING Physical device., Therefore, the address within 0x10…0x7D/0x0010…0x3FFD is available physical address for meters.).

1. DLMS/COSEM Wrapper



2. Gateway

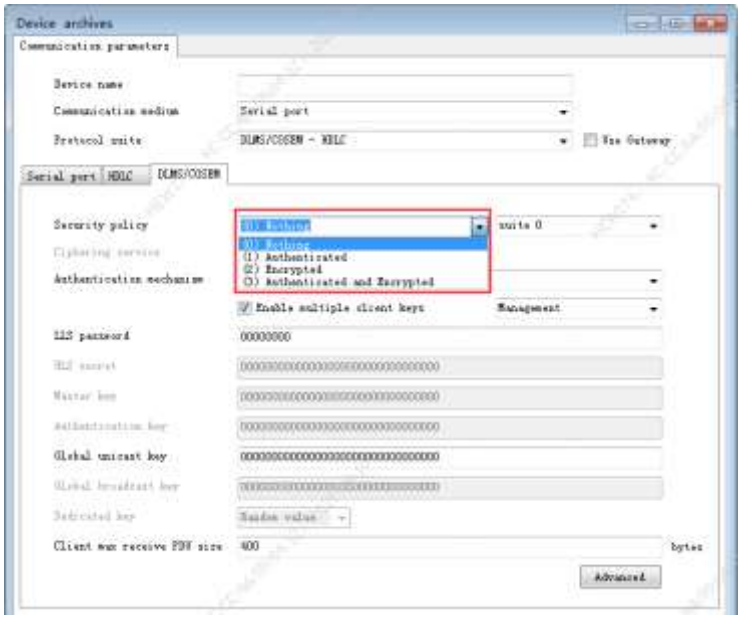


- Network ID: An internet sign in which message intened to transfer. If there is only one internet, then can configure as 0x00, and any value can be configurable.
- Physical device address: can configure as the communication address of meter.

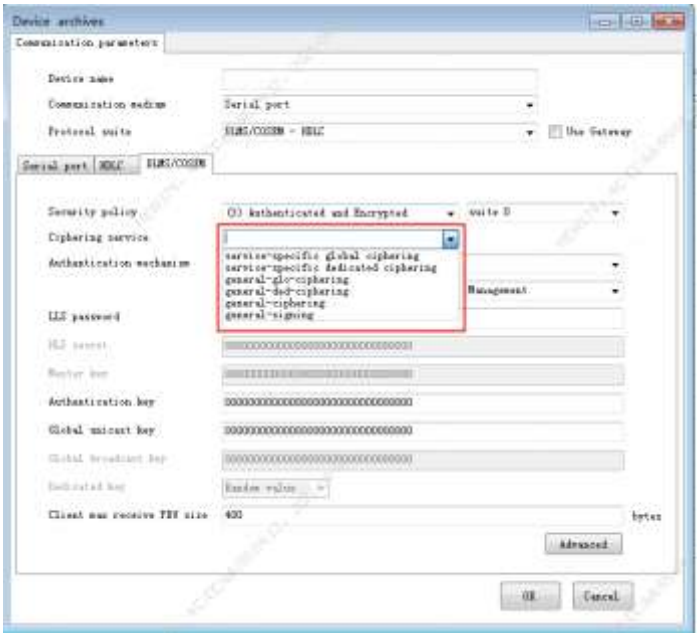
8.1.4 Security mechanism

◆ Security policy:

1) Nothing: No encryption and no authentication
2) Authenticated: Only authentication
3) Encrypted: Only encryption
4) Authenticated and Encrypted: Encryption+ authentication



5) Encryption and authentication come from Service-specific ciphering,general-ded-ciphering、general-glo-cipheringand general-ciphering, while signature comes fromgeneral-signing.



◆ There are four kinds of General-protection:

1) general-glo-ciphering

2) general-ded-ciphering

3) general-ciphering

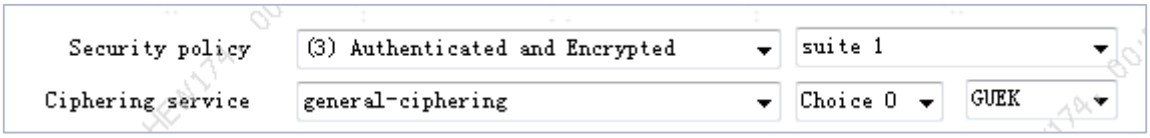
4) general-signing

◆ There are two kinds of Service-specific cipheringas following:

1) Service-specific global ciphering

2) Service-specific dedicated ciphering

◆ The Security policy activates under general-cipheringand general-signing:suite 1



(Attention: herein means the linkage mechanism of security policy)

◆ Authentication mechanism:

1) No security

2) LLS

3) HLS-AES-ECB-128

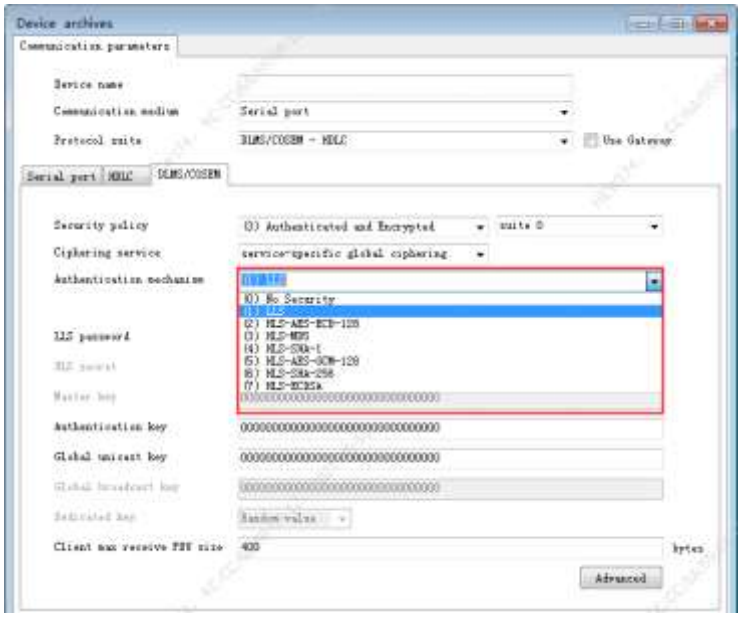
4) HLS-MD5

5) HLS-SHA-1

6) HLS-AES-GCM-128

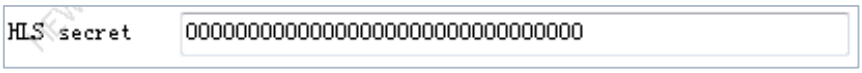
7) HLS-SHA-256

8) HLS-ECDSA



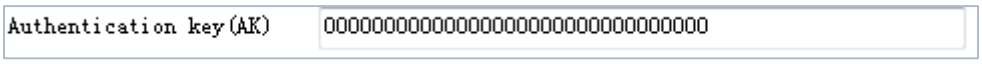
◆ LLS password: 4 byte

◆ HLS secret: 16 byte

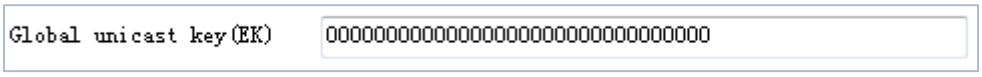


- Master key: 16 byte

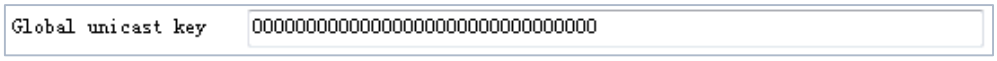
- Authentication key(AK): 16 byte



- Global unicast key(EK): 16 byte



- Global broadcast key: 16 byte



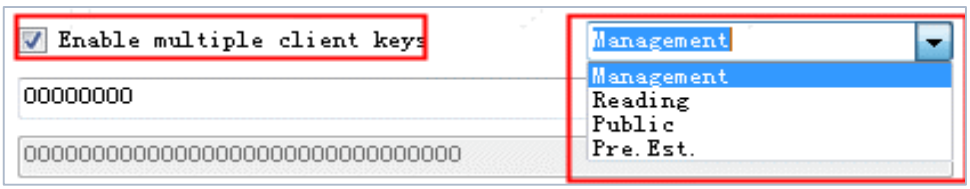
- Dedicated key(DK): comes form the Client,16 byte

1) Form randomly

2) Input value

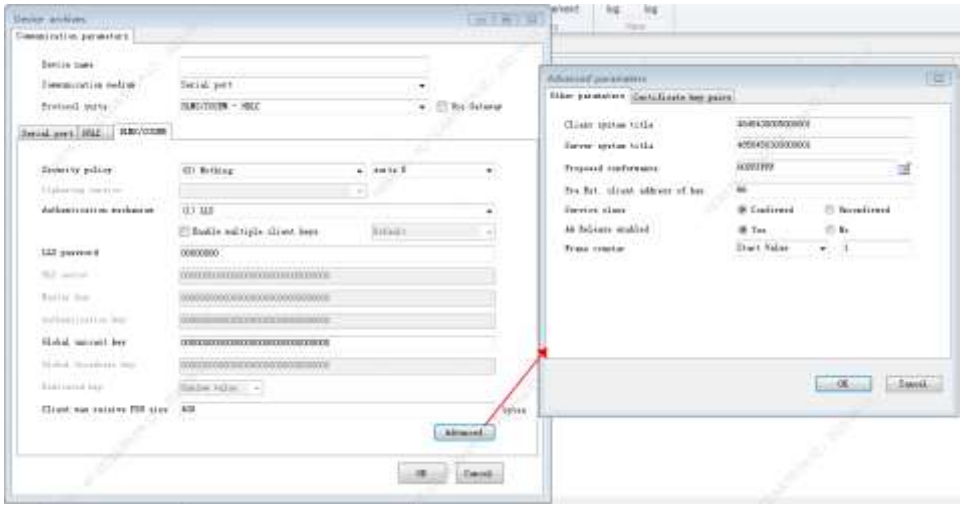
- Client max receivepdu size: The maximum receiving byte in application layer(default :400 byte)

- Enable multiple client keys: Select different clients and enter the secret key.

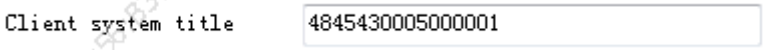


- Click“ 

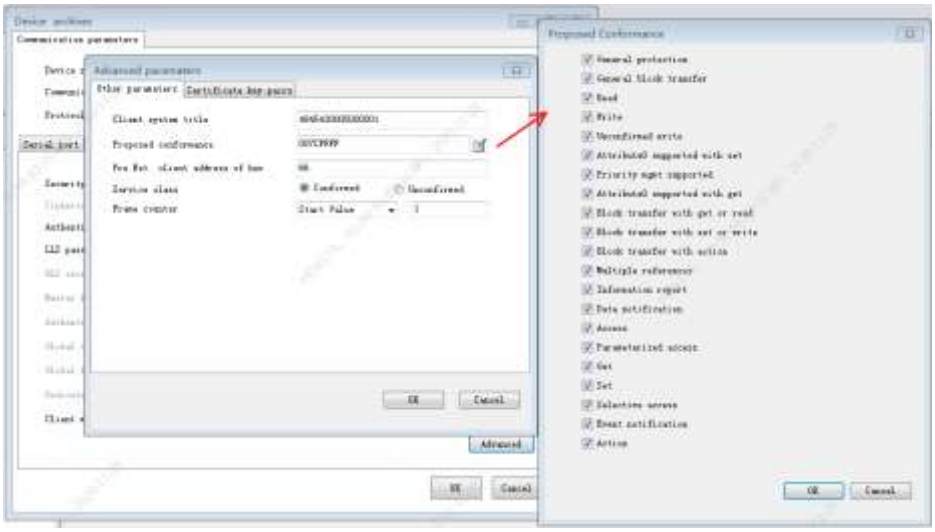
”: Enter into the interface to configure parameters high level in application layer.



- System title of Client--8bytes and the,system title of Client is fixed as0x48 45 43 00 05 00 00 01

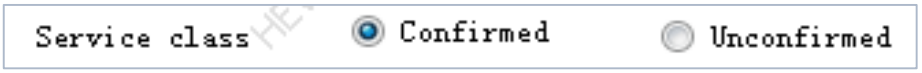


- proposed conformance:The sevice type which meter supports, such asGet, Set, Action……



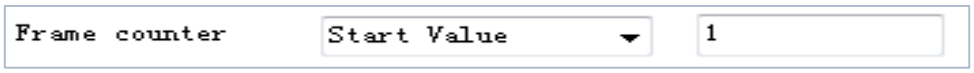
- Pre.Est. client address: 0x66means preconnection Client

- Service class: whether needs a confirmation between classes or not.(Confirmed or Unconfirmed)

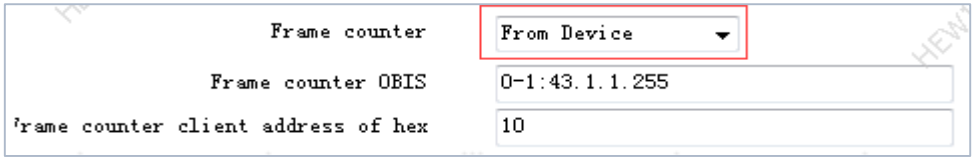


- Frame counter: The initial value can get from device or set as default.

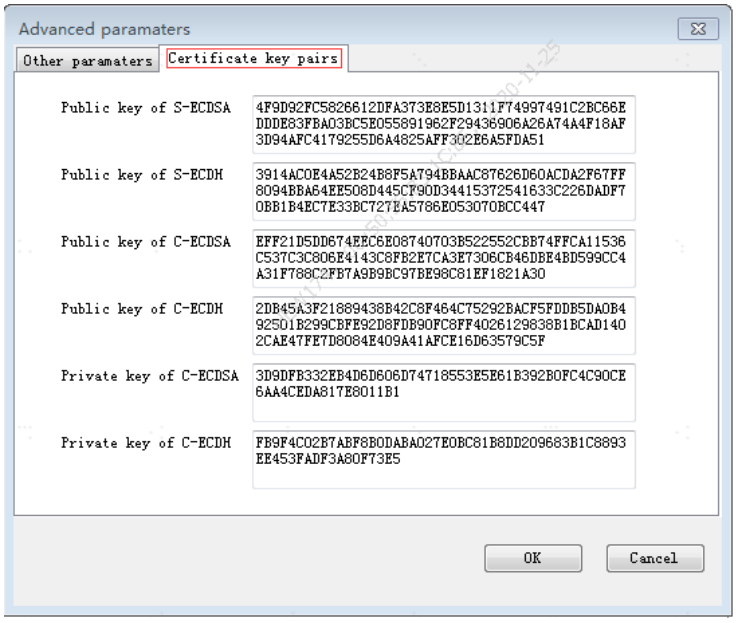
1) Start value(default:1)

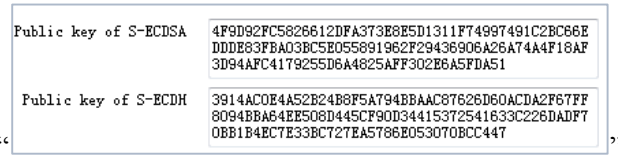


2) From Device(default obis:0-1:43.1.1.255;client address:10)

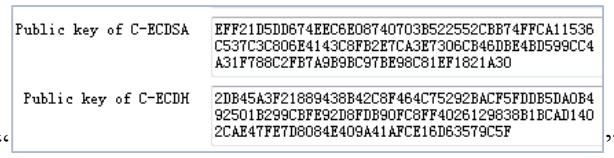


◆ general-signinguses ECDSAsignature、and ECDH algorithm:

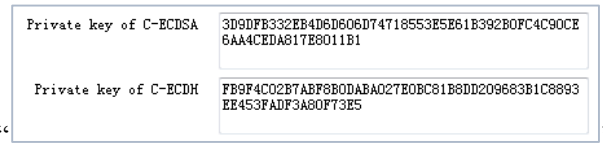




“”The public key for Server(meter)



“”The public key for Client(Hexview)



“”Private key for Client(Hexview) froms through special software.

8.2 Local communication

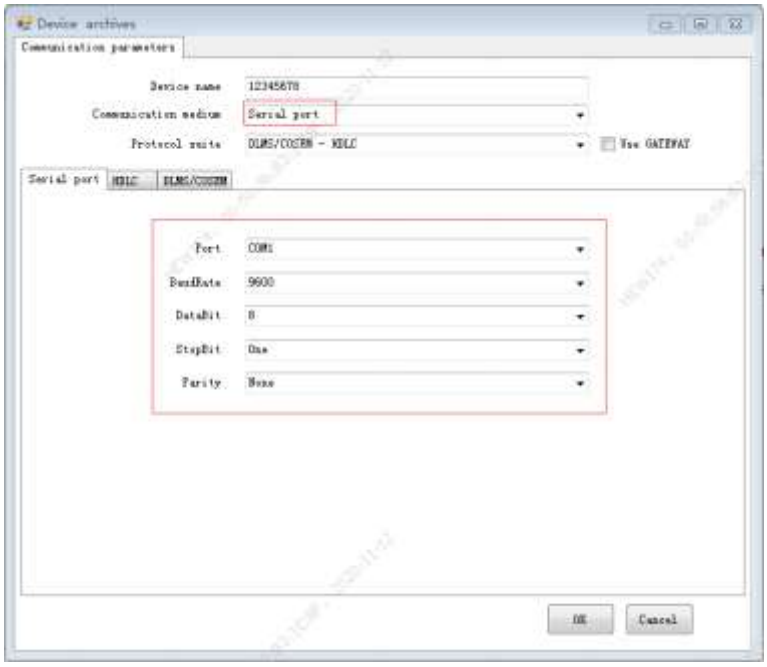
A device ready for operation and an optical reading head for connection to a serial interface (USB or COM port) are required for this purpose. The HexView4.0 Pro must also be installed on the PC and registered.

8.2.1 Connection

8.2.2 Operation

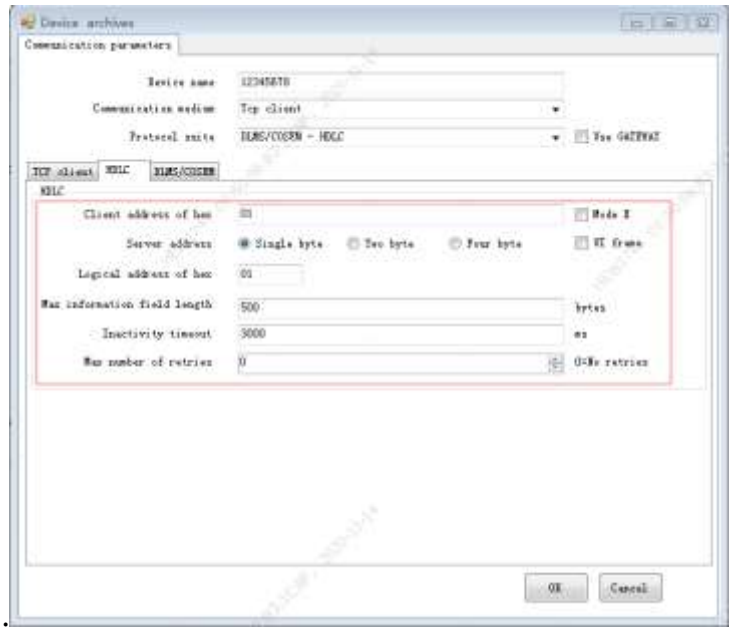
1. Connect to meter with optical port.

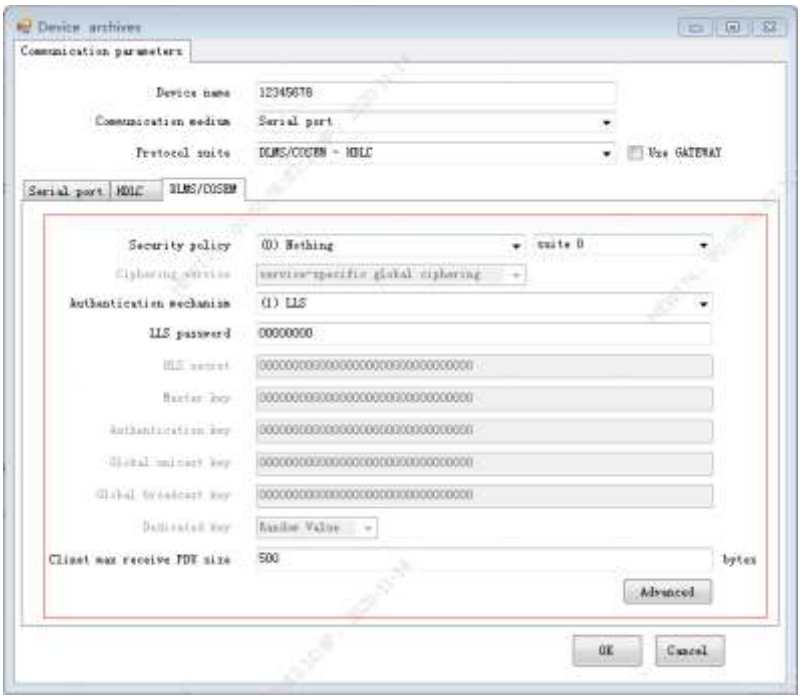
2. Configure the serial port and corresponding parameters.

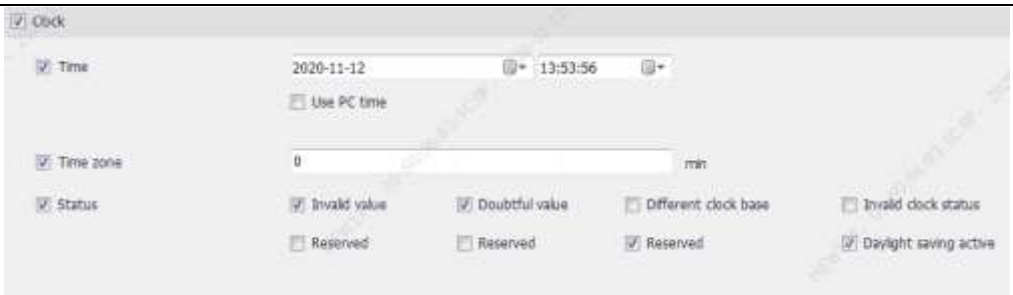


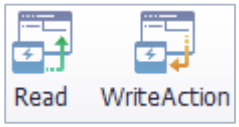
3.Select suitable DB for meter：

4.Configure parameters in Application Layer(It is obtained by default from the meter specification Generally select the default value).





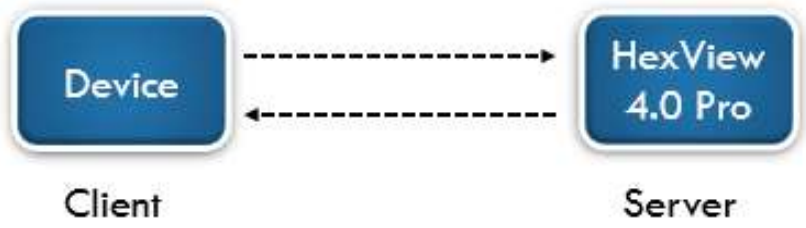


5.Click the WriteAction and operate: 

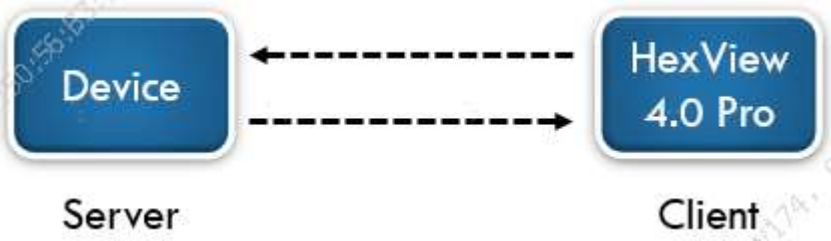
8.3 Remote communication

Connect point-point via internet through TCP.

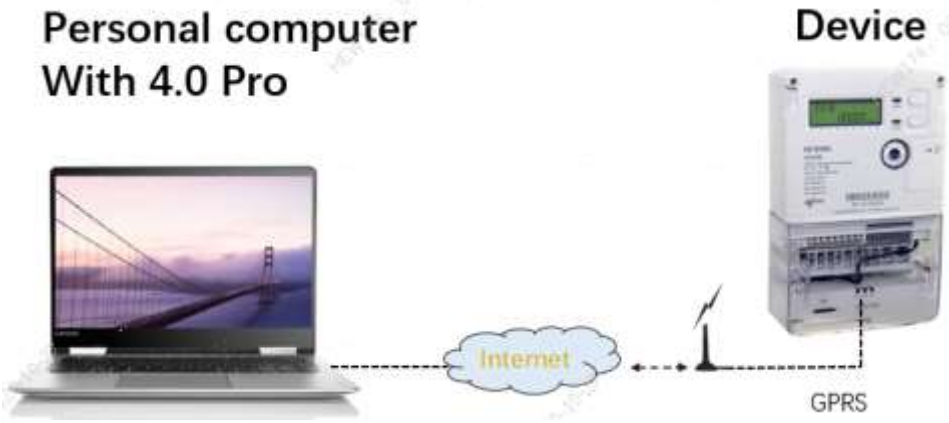
- TCP Server: Device serves as Client and HexView4.0 Pro serves as Server.



- TCP Client: Device serves as Server, while Hexview4.0 Pro serves as Client.



- Physical connection



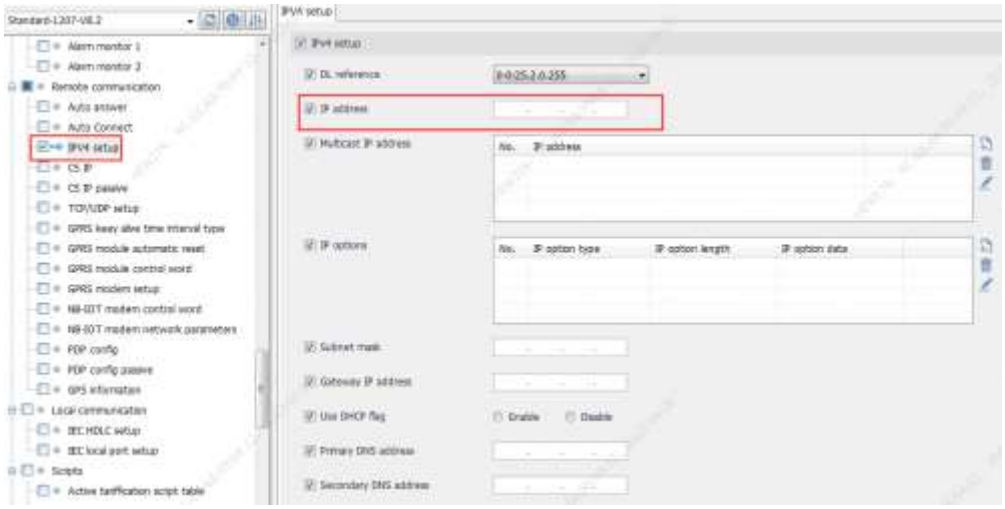
8.3.1 TCP Client Connection

Operation(TCP Client)

Step1:It's necessary for meter to have GPRS module and in module there should be a special SIM card.

- The connection is ok, if the IP of Sim card after Pinging shows as following

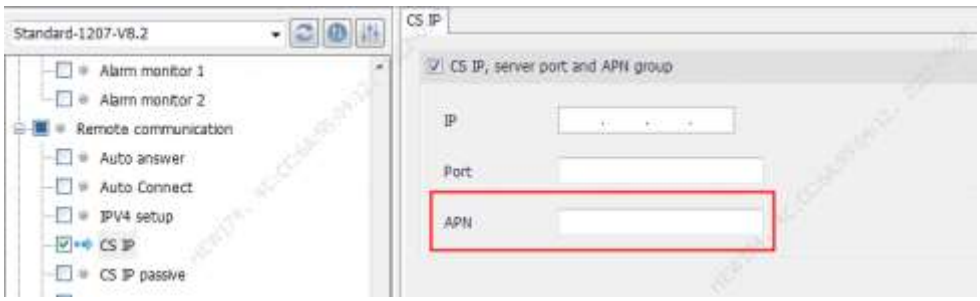
Step 2:The IP address of SIM card can be read through 4.0 pro:



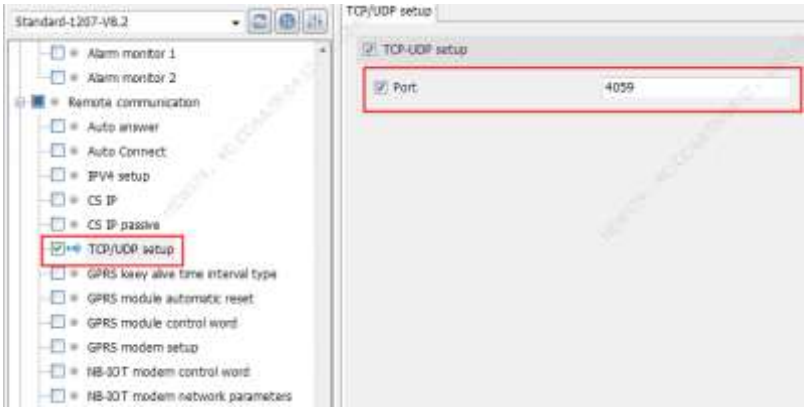
Step 3:Configure the GPRS module parameter

- The mode supported by module: Server Mode or Mixed Mode

Step 4:Configure APN: APN is provided by the network operator

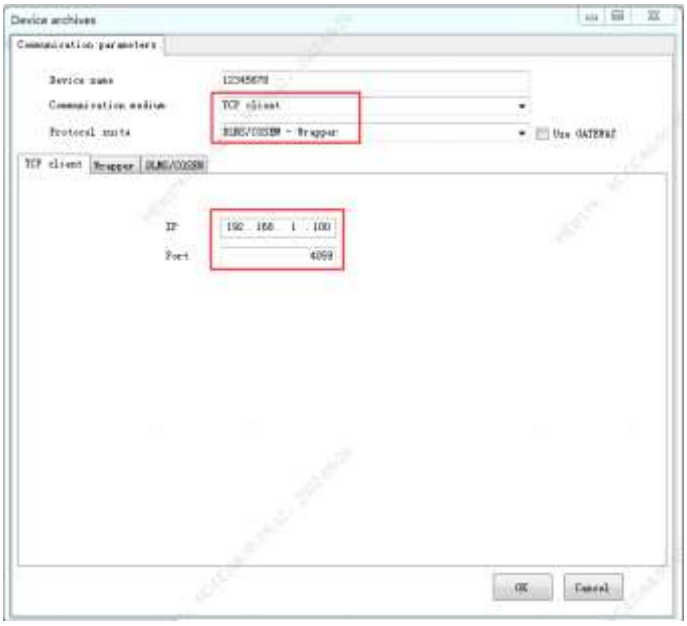


Step 5:Configure TCP Port: Module listening port , default 4059



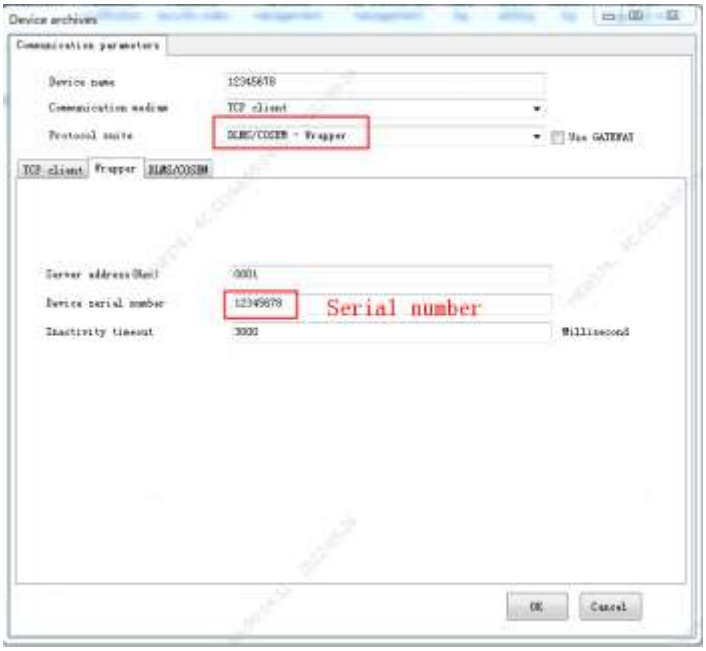
Step 6:Select the device in Device and click“ ”

Step 7: Select“Tcp client” in Device Archive and configure IP and port which is needed for remote connection.

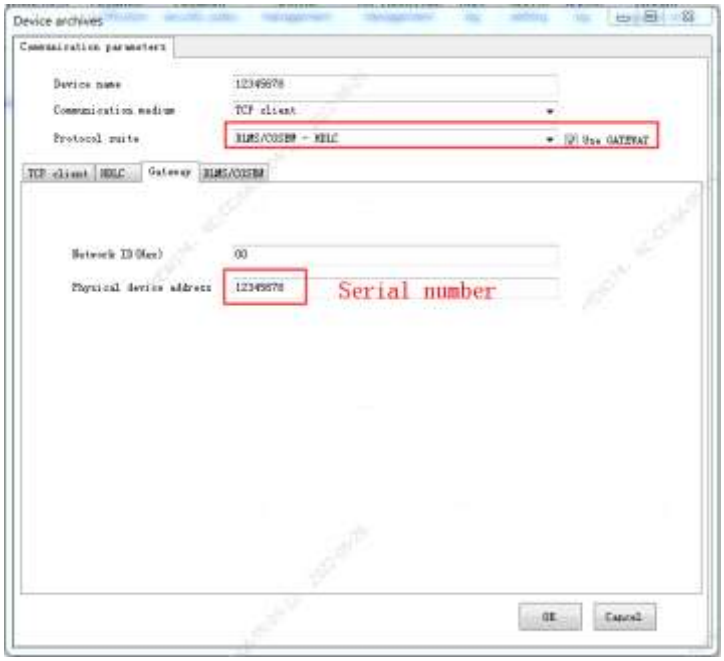


IP: From step2 Port: from step 5

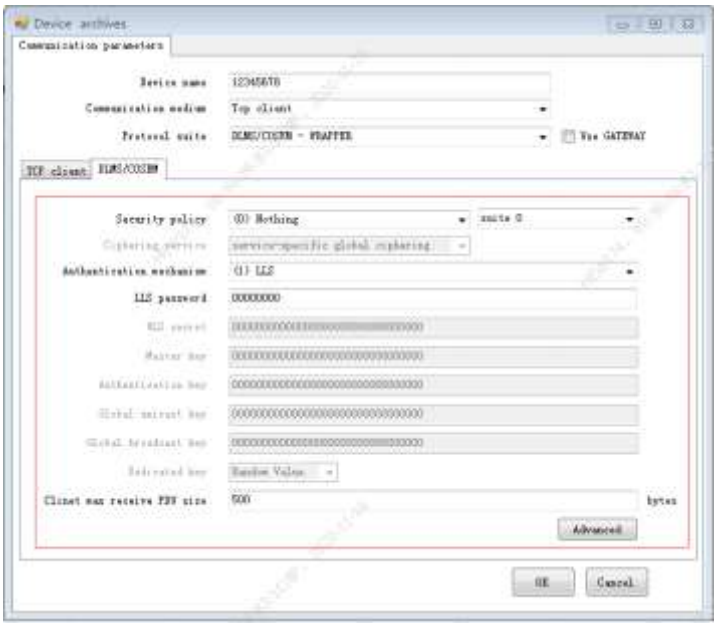
Step 8: Select“DLMS/COSEM - Wrapper”protocoland input the corresponding parameters.



- Or select Gateway：input parameters.



Step 9: Configure parameters of Application Layerencryption,authentication, etc.



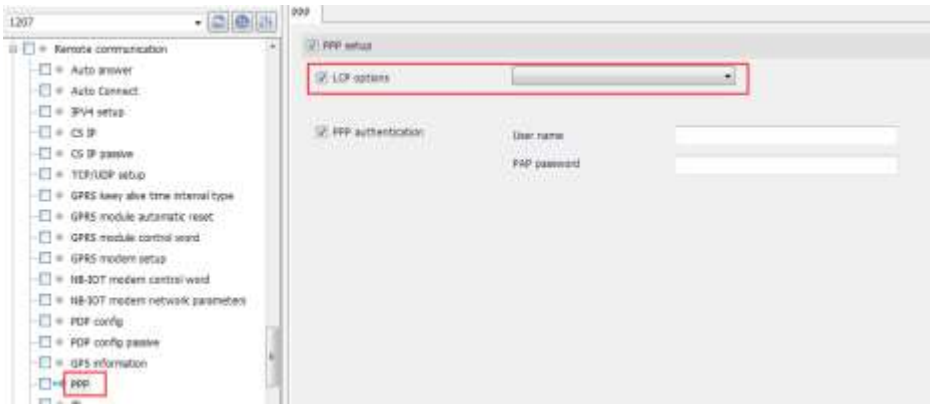
Step 10: Select suitable DB file for meter and connect locally.

Step : This step is optional

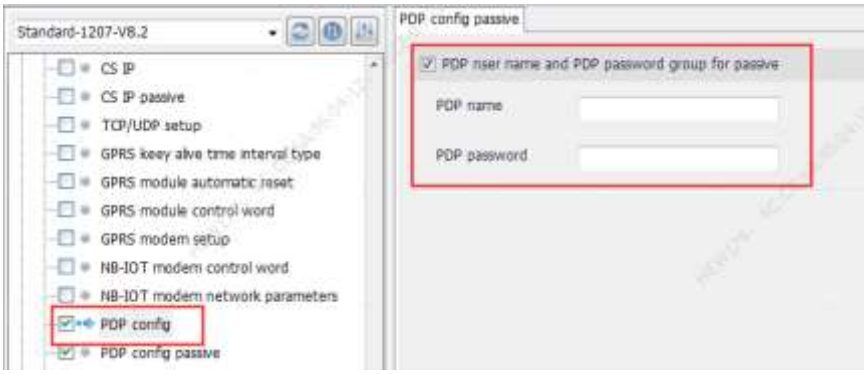
- Optional parameters: Optional according to user needs

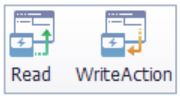
  The following parameters are configured according to the actual requirements of the operator

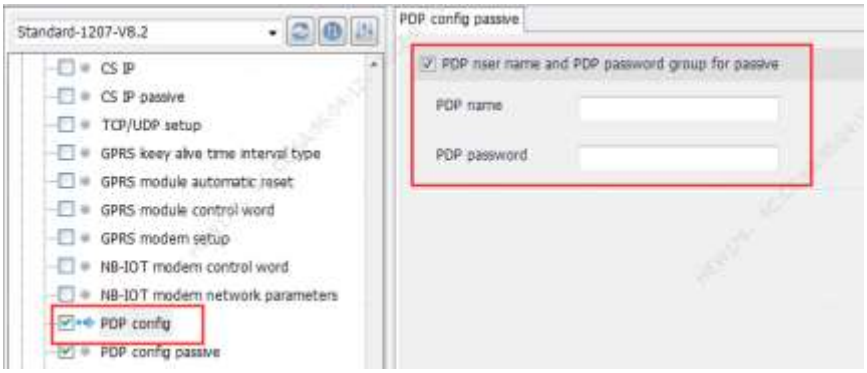
  - PPP authentication mode



- Primary PDP user name and password group



Step 11: Click : 

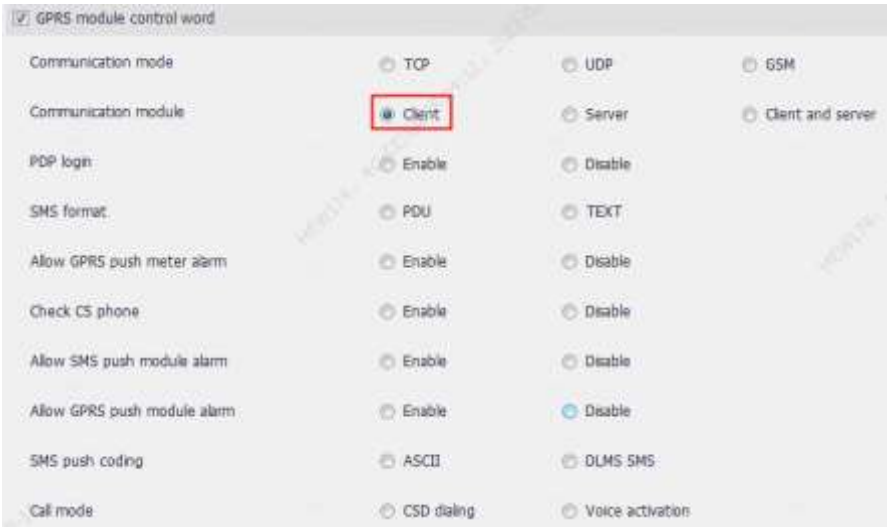


8.3.2 TCP Server Connection

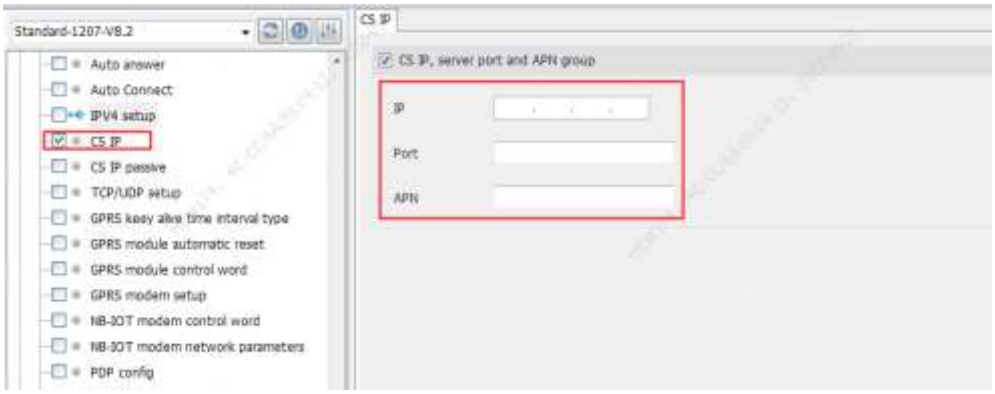
7 Operation(TCP Server)

Step 1:It’s necessary for meters to have a GPRS module and there should be a public Sim Card. 

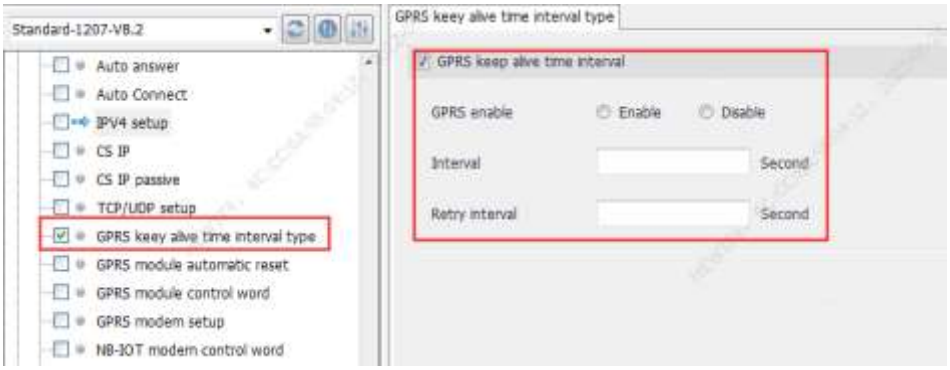
Step 2:Configure the module GPRS parameter locally at first(such as optical port)The mode supported by module:Client Mode



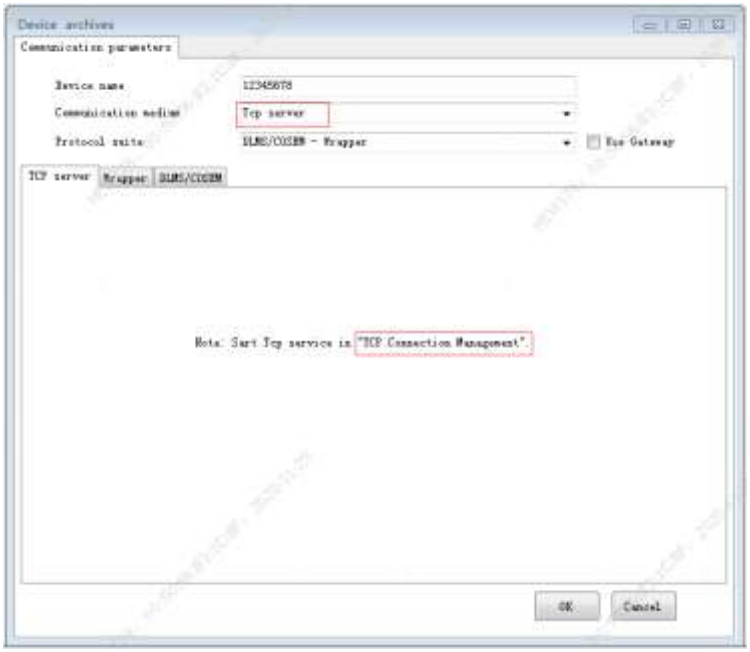
Step 3:Configure IP \ port\APN of Server



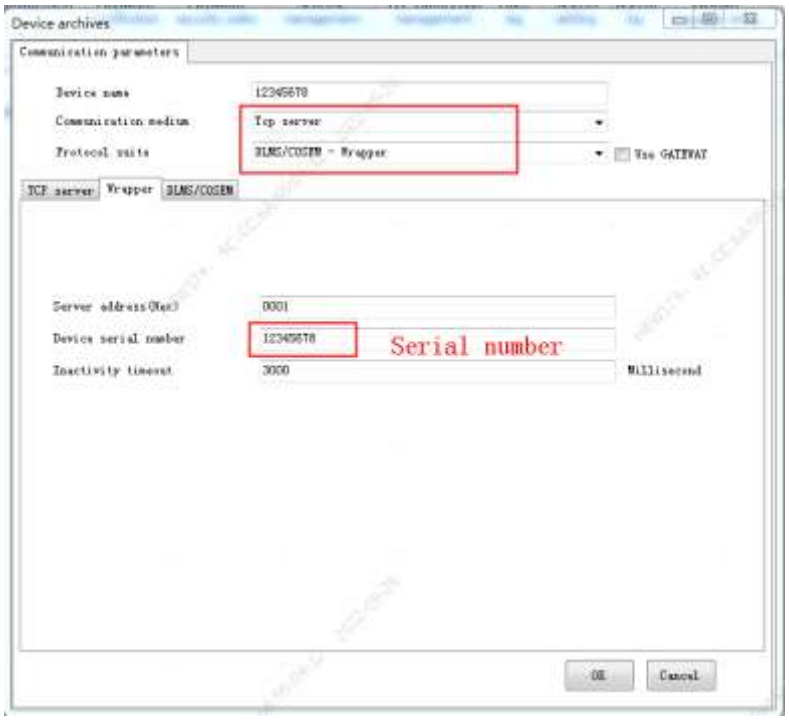
Step 4:Configure heartbeat: default 120s



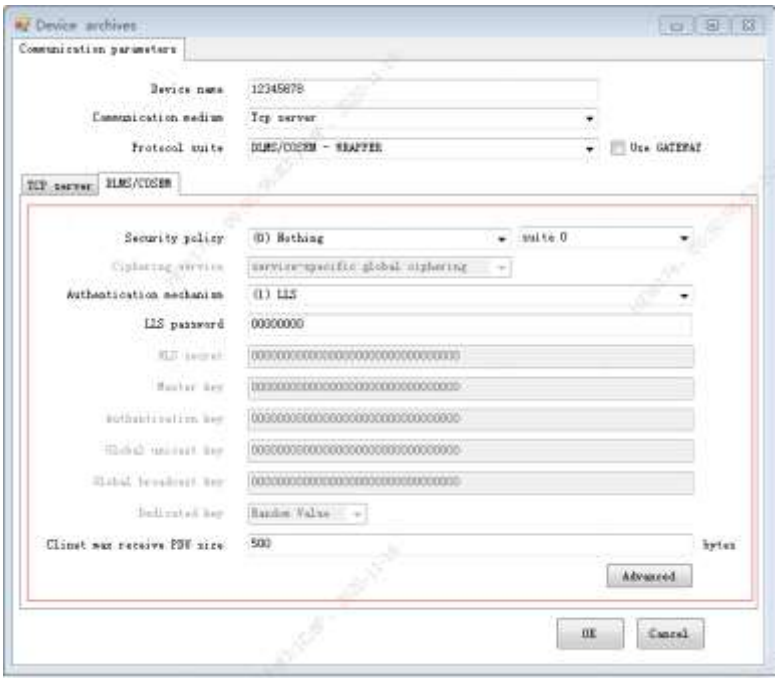
Step 5:Select “Tcp server”in Device archives



Step 6:Select“DLMS/COSEM - Wrapper”protocol and input the right parameters



Step 7:Configure parameters in Application Layer:encryption, authentication, key etc.

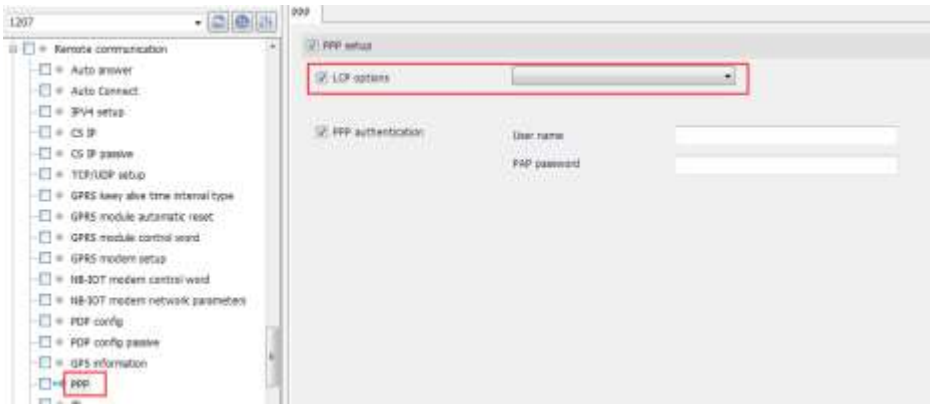


Step : This step is optional

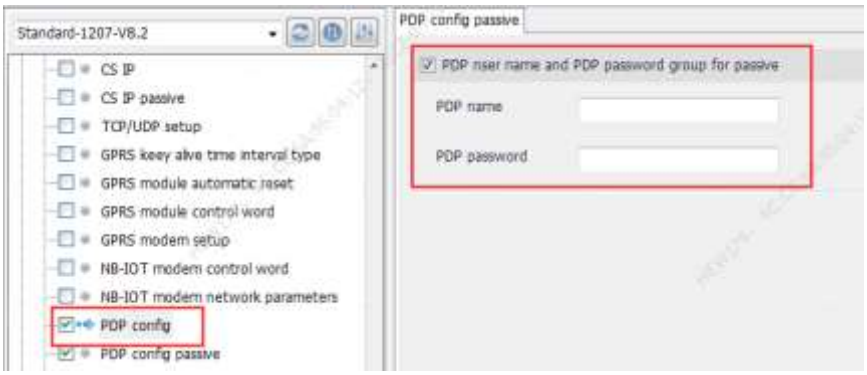
- Optional parameters: Optional according to user needs

The following parameters are configured according to the actual requirements of the operator

- PPP authentication mode



- Primary PDP user name and password group

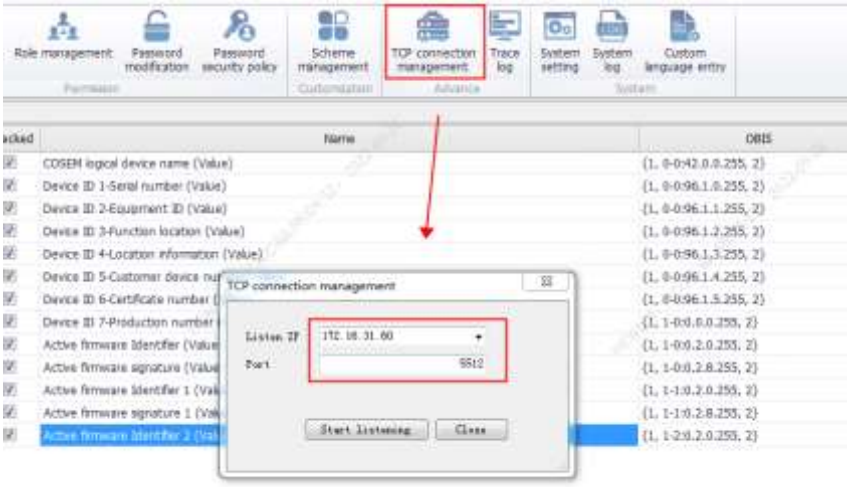


Step 8: Select the suitable DB file for meter, the same as locally.

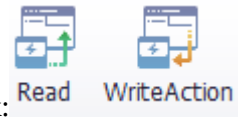
Step 9: Click “ 

” and enter into Service Listen interface, configure Listen IP and port.

Port: If the upper computer is used, it can be set randomly between 1-65534, preferably 1025-65534. Generally, it has special meaning within 1024. Default 5512.

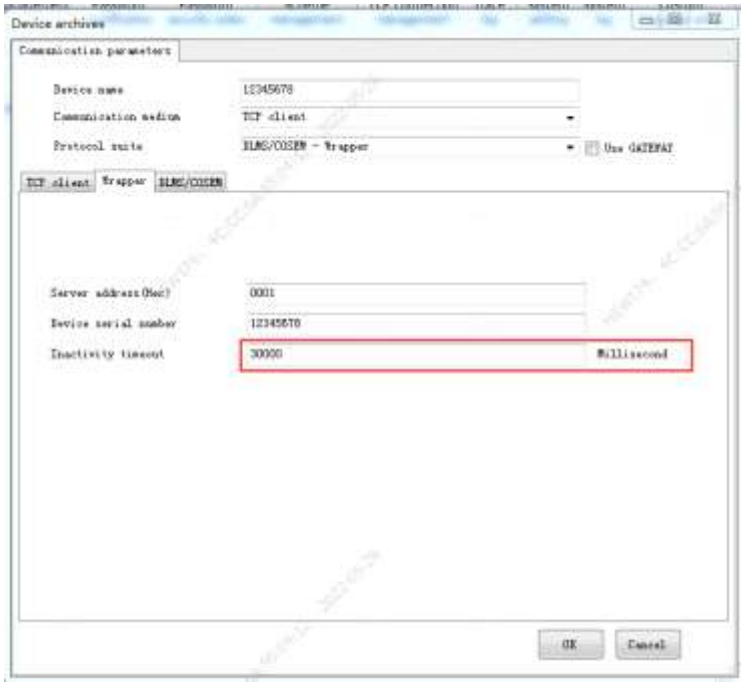


IP or port: From step3

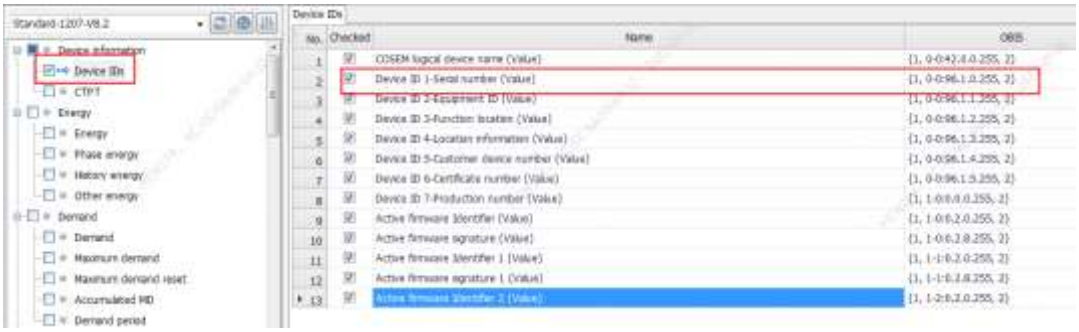
Step 10: Click: 

matters needing attention:

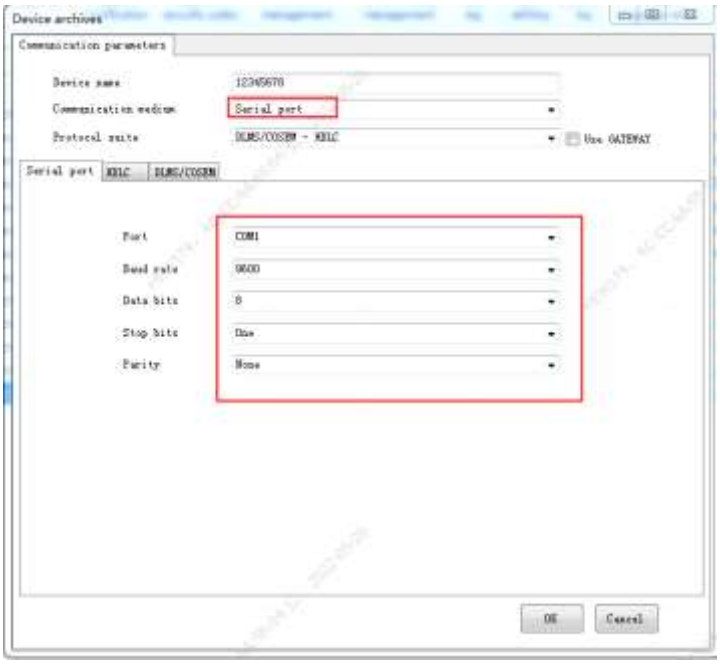
✓ When using TCP remote communication, the timeout is recommended to be set to 60s.



✓ When the meter is the client, note that the device serial number in the file must be consistent with the device serial number in the device login message (generally, the device serial number can be obtained by reading meter 0-0:96.1.0.255)



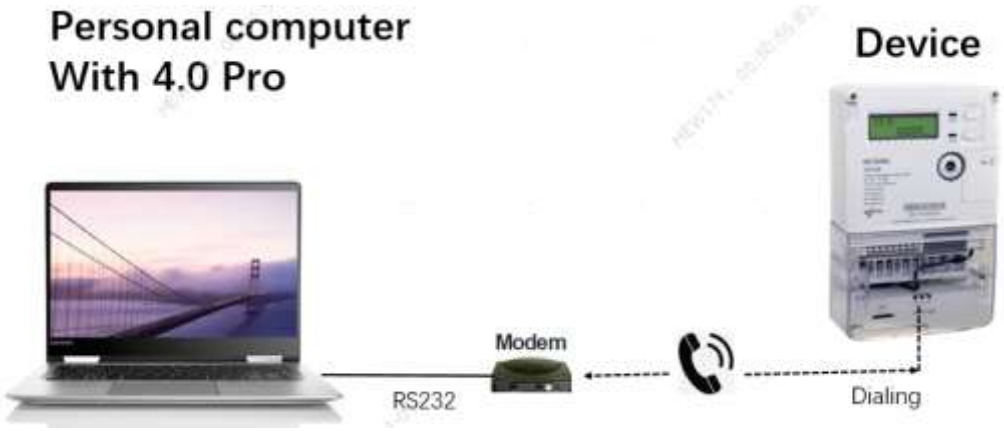
✓ The above parameters need to be configured locally, defaut: serial port (chapter 8.2)



8.4 Modem Communication

Hexview 4.0 pro connect to module via RS232(such as CSD modem) and module communicate with meter point-point DUN. Each meter distinguish from others by configured telenumber with DLMS protocol. A suitable module should be necessary for meter.

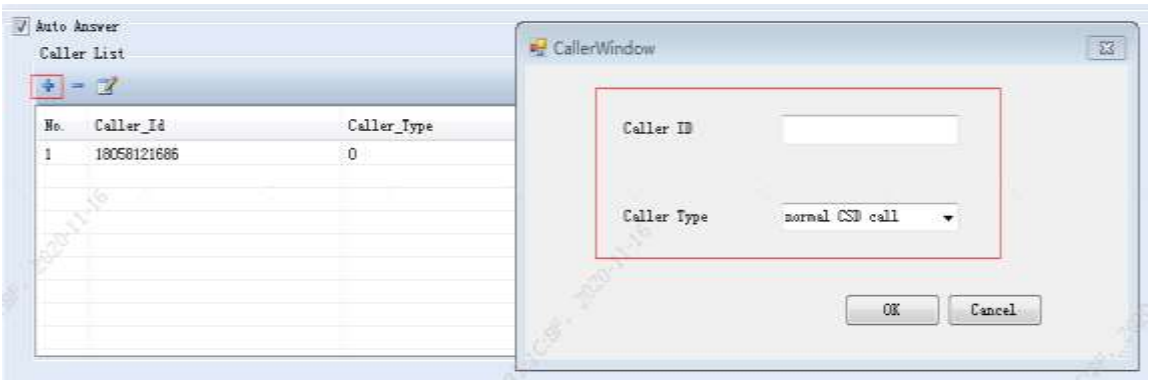
8.4.1 Connection



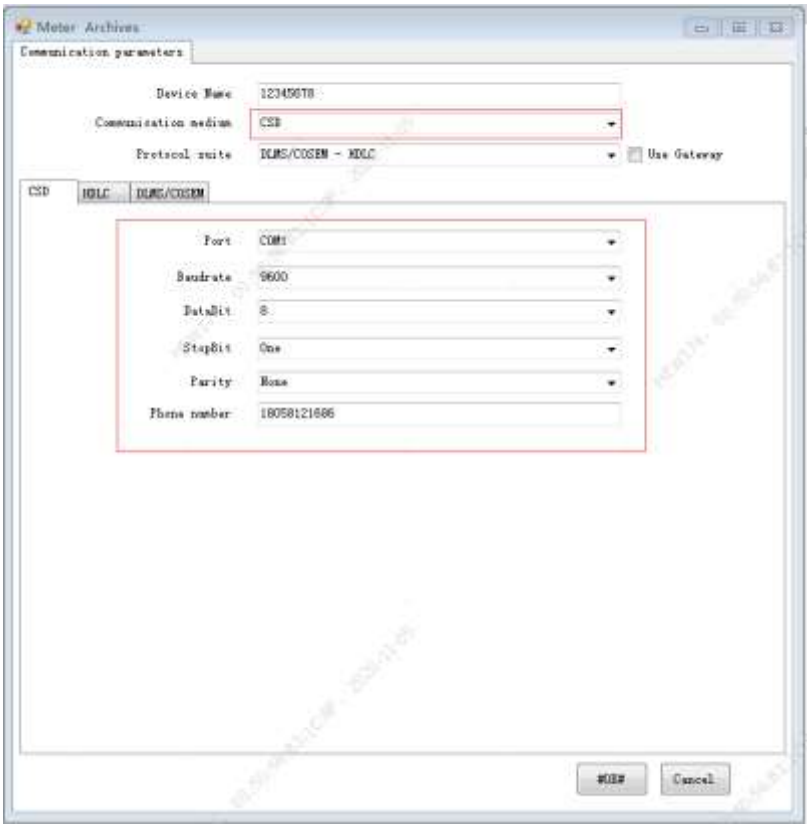
8.4.2 Operation

1. Communication module is necessary for meter and a sim card with fixed number will be also required.

2. Configure the module parameter locally(optical port) at first.

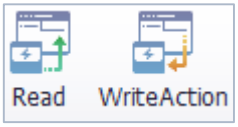


3. Configure parameter of serial port and sim card number needed for connecting device in Device archives.



4. Select suitable DB file for meter, same as locally.

5. Select function items in Tree, same as locally.

6. Click: 

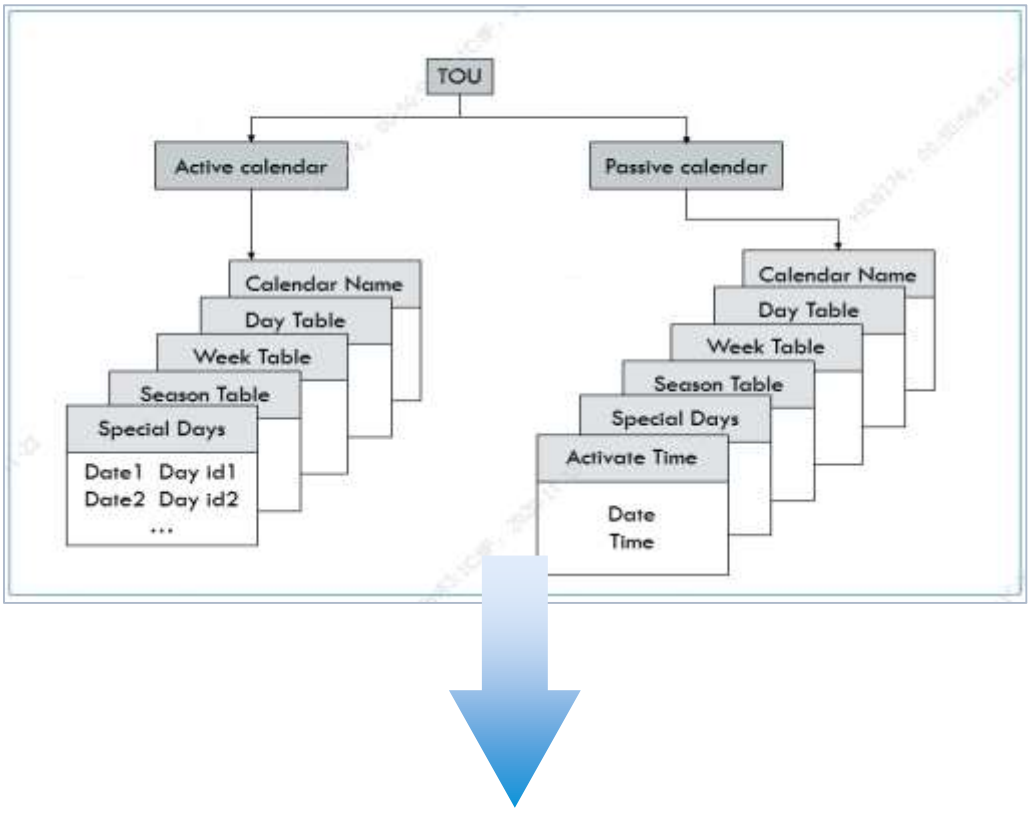
8.5 Template example

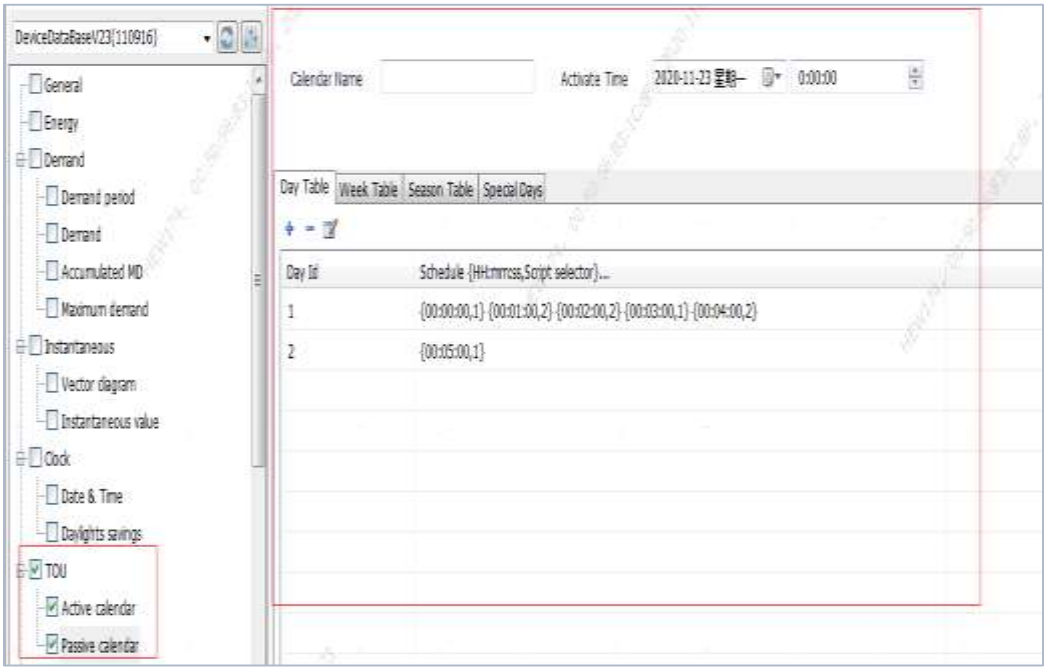
The function template should comply to the meter function:

- If the meter supports such function, but can't find the template in the Function Tree, it's available to add in the function template through high access
- If the meter doesn't support such function, but there is a template in the node of Function Tree, communication will fail and reminder as undefined OBIS.

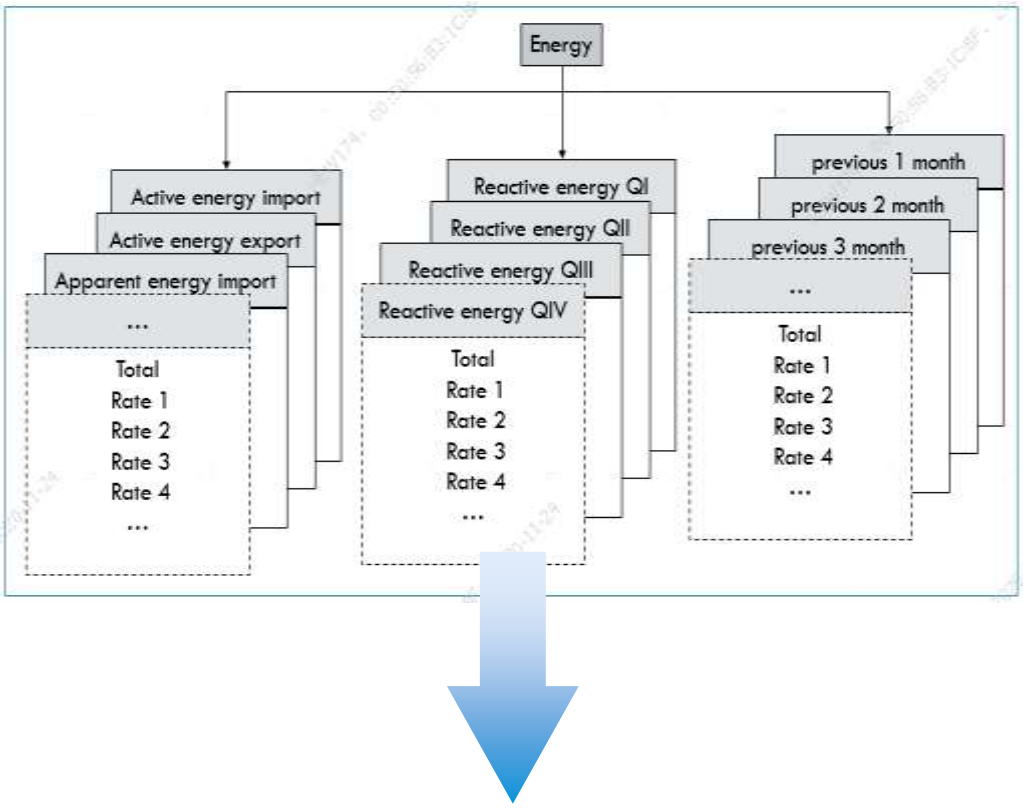
Some examples of template:

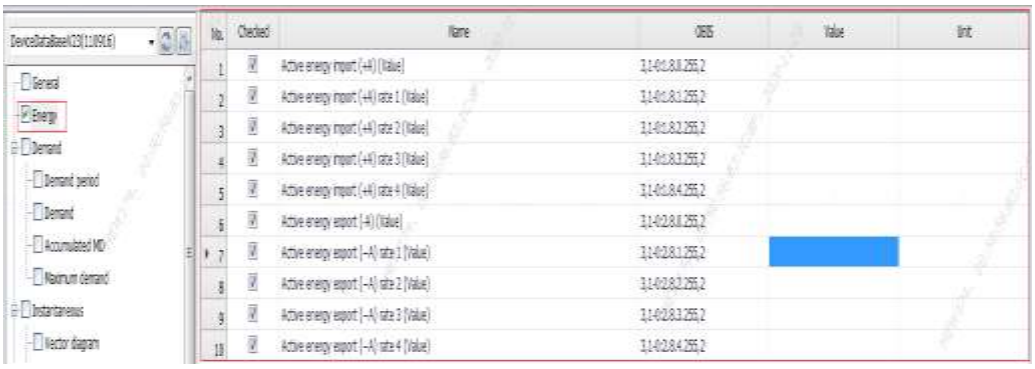
Example 1:TOU



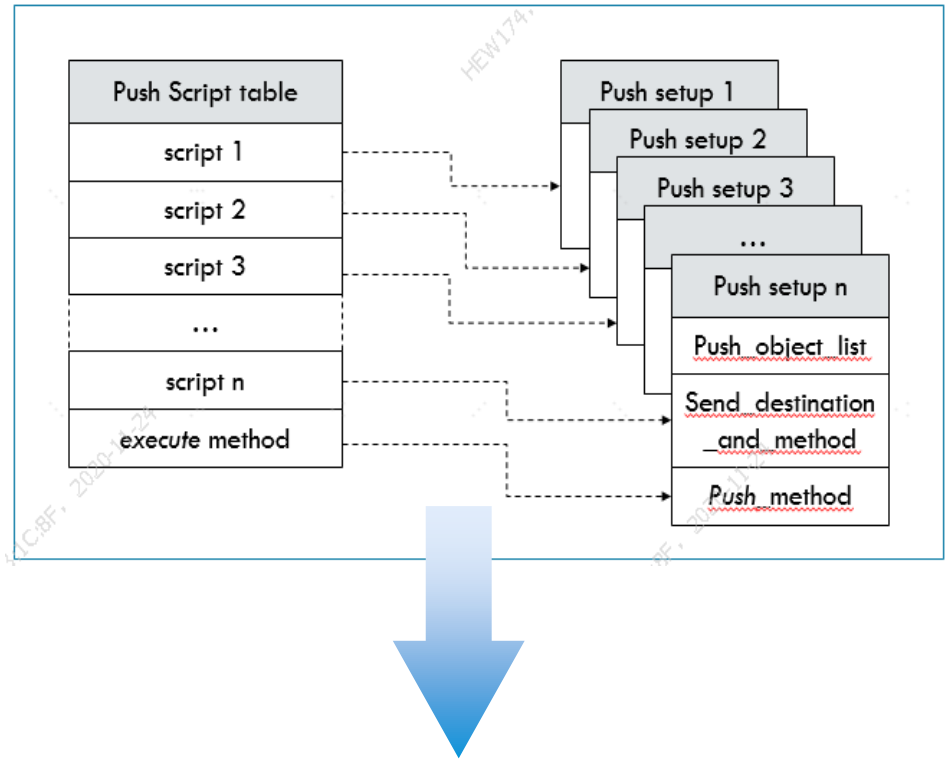


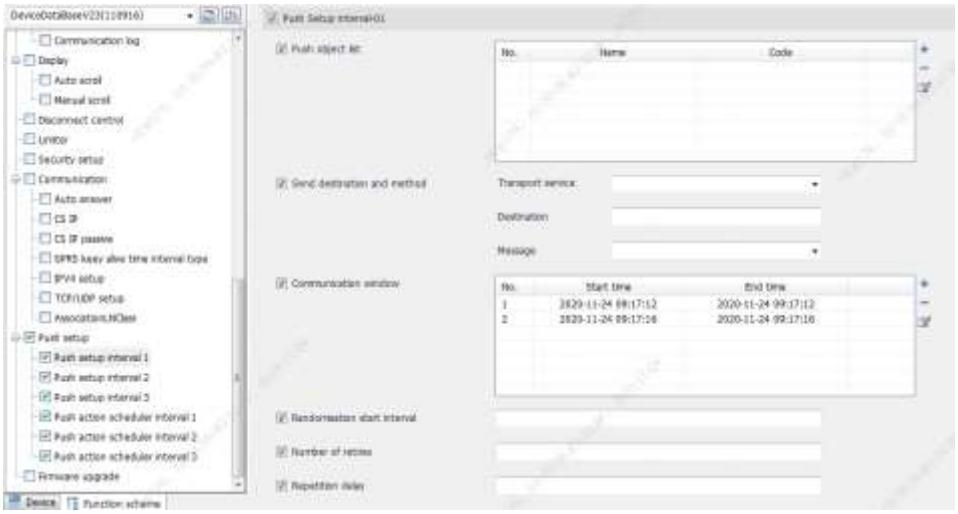
Example 2: Energy



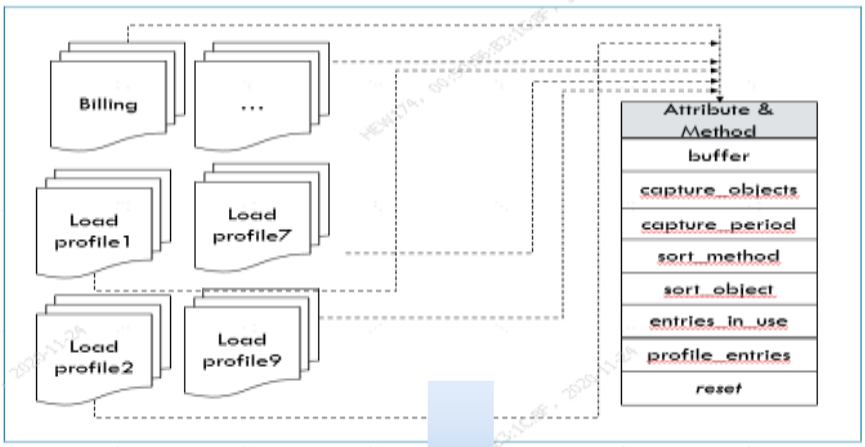


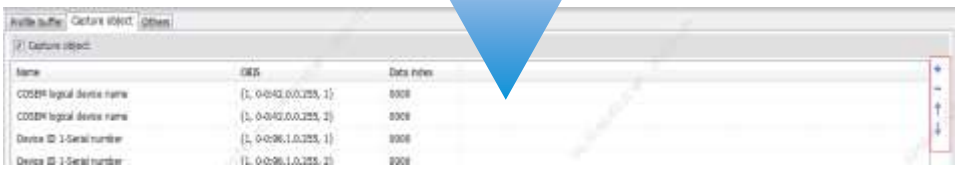
Example 3: Push





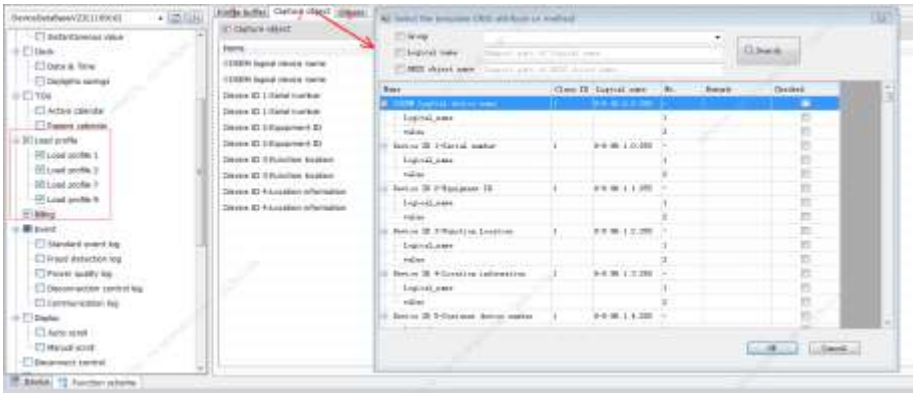
Example 4: Billing or Load profile





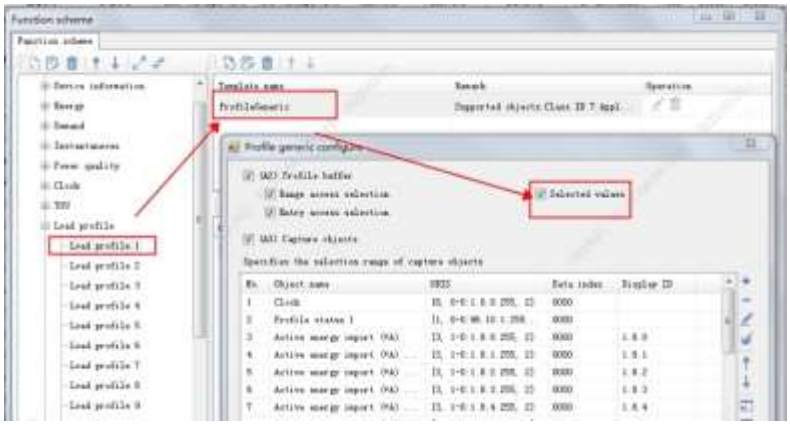
8 Click“ ”the list of configurable objects on right side

Corresponding list: All the OBIS in the general database can be selected.The condition for selection: the meter supports such object

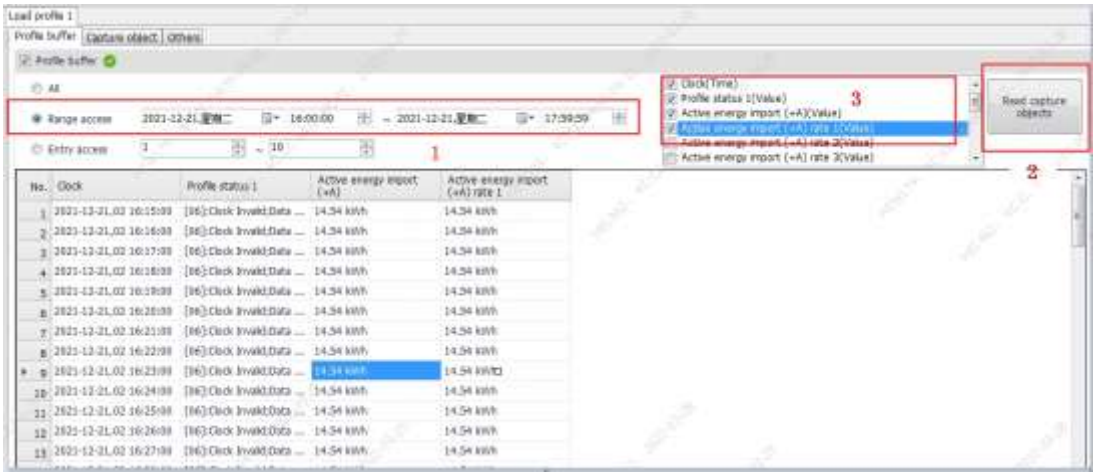


9 Load curve can be filtered and read by capture object

Load curve template parameter configuration:



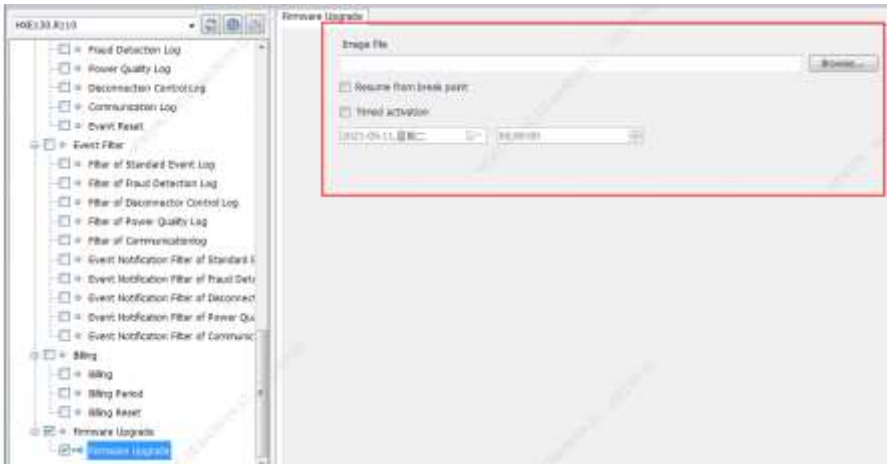
Mode 1: In the load curve reading interface, first select range access, then click the "read capture objects" button to read the current capture objects of the meter, check the capture objects to be filtered this time, complete the settings before reading, and finally click the "read" button to read the load data.



Mode 2: In the load curve reading interface, first select entry access, then click the "read capture objects" button to read the current capture objects of the meter, check the capture objects to be filtered

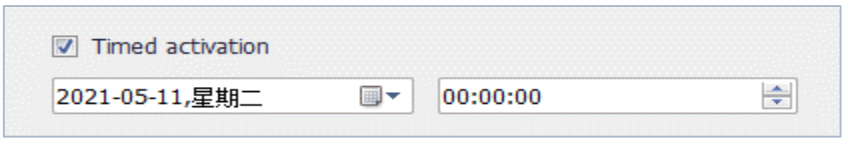
this time, complete the settings before reading, and finally click the "read" button to read the load data.

Example 5: Firmware update



Click“ Browse... ”and find the upgrade file, it supports two kinds of upgrade file:*.zip and *.bin

Select to upgrade in configured time: imput the configured time for upgrading



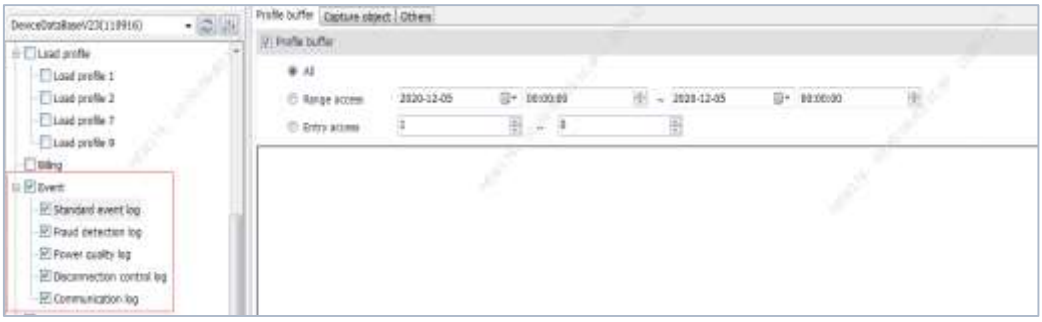
Resume from break point

Example 6: General

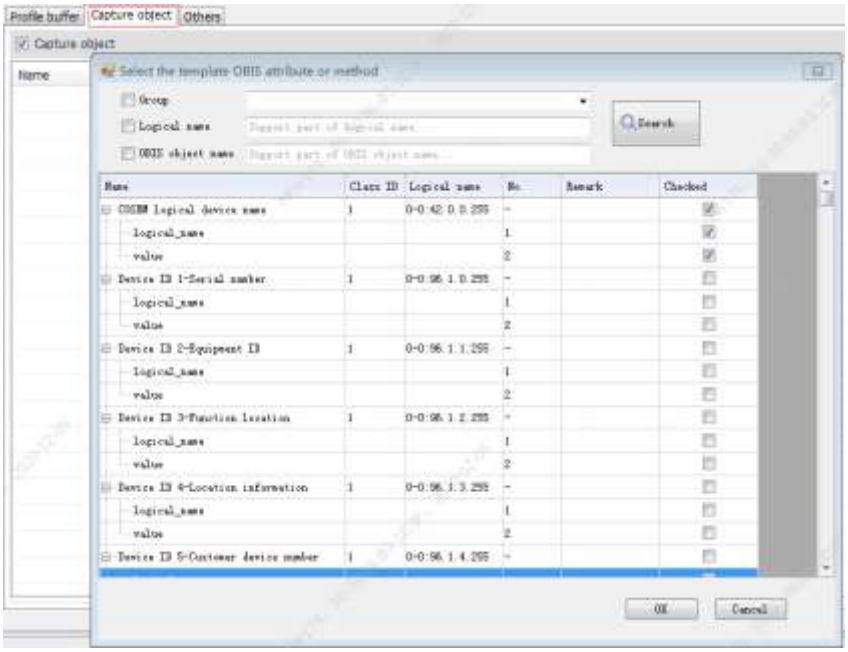
This template is used to match the main information of device, such as Device Number, firmware version, hardware version and function switch and production number.

Example 7：Event

This template is used to read the log of events and configure the objects and parameters of events.



“Profile buffer”：read the saved data of events“Capture object”：configure objects of events



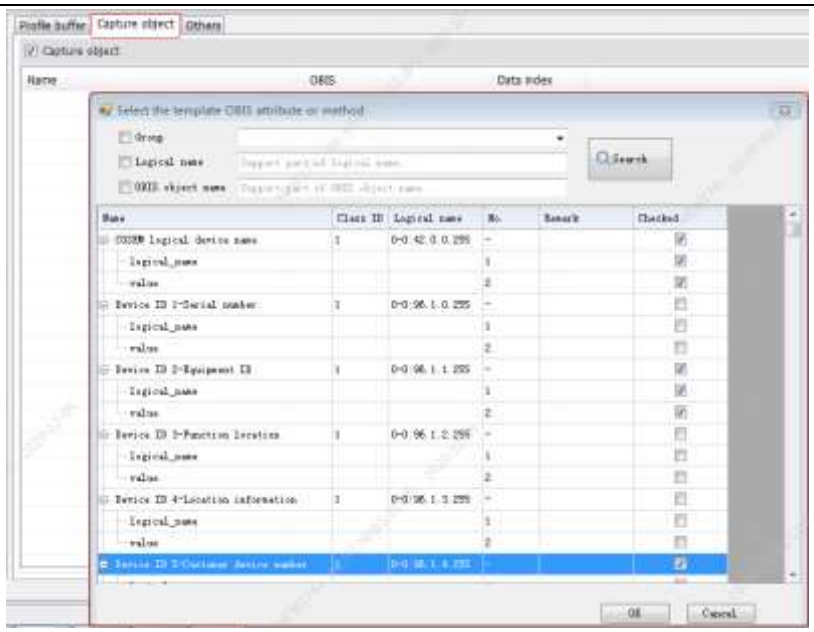
“Others”：the other parameters about events

Example 8：Display

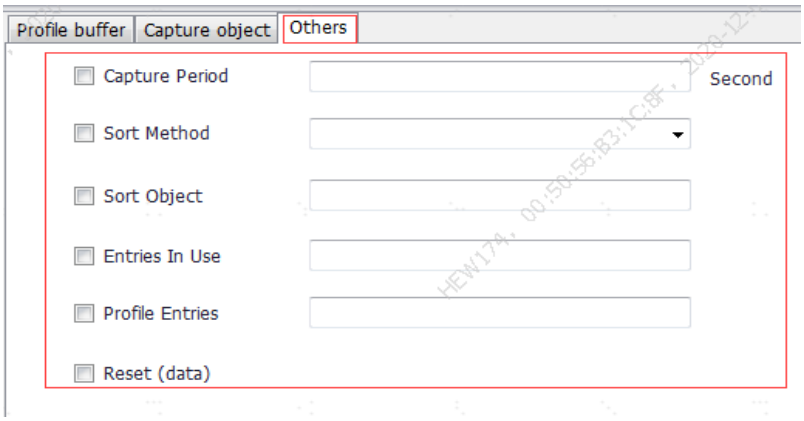
This template is used to read the objects of display

“Profile buffer”: read the objects of display

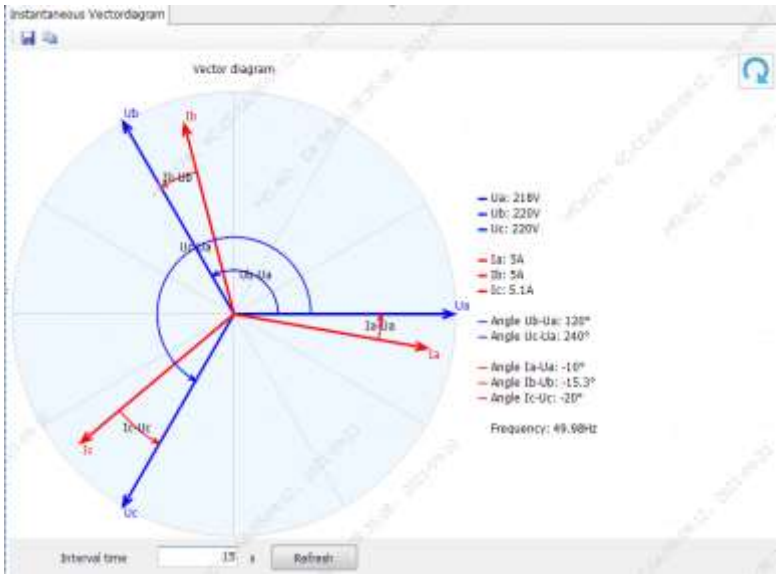
“Capture object”: Configure the objects of display



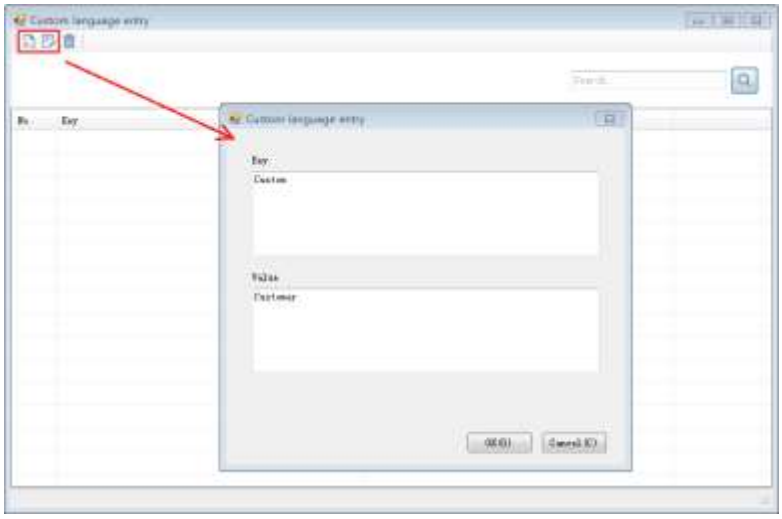
“Others”：The other parameters about events



Example 9：Vectordiagram



Example 10：Custom entry(Key:Existing entries; Value:User defined entry)



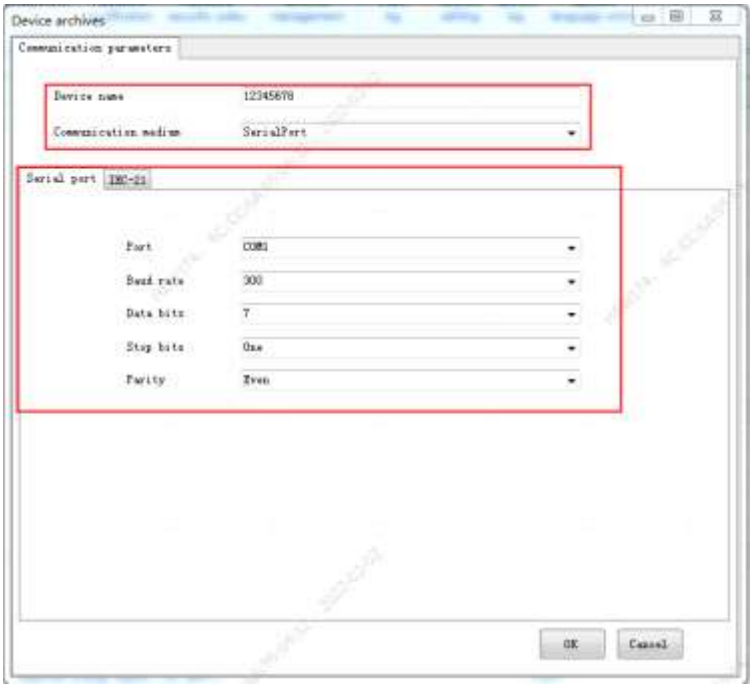
9. Communication with 21C

This section gives an introductory example of how a communication connection is established to a device with the HexView4.0 Pro.

9.1 Device management

The Device management including: communication media and protocol.

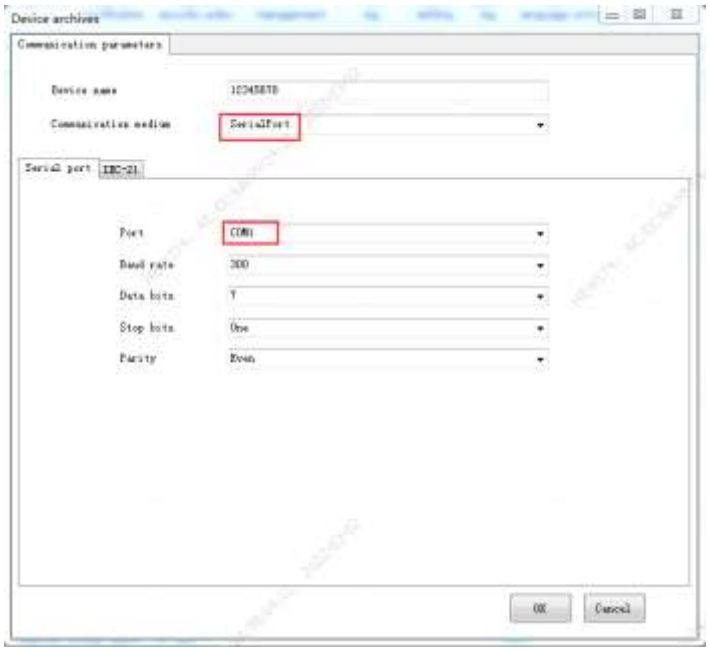
9.1.1 General



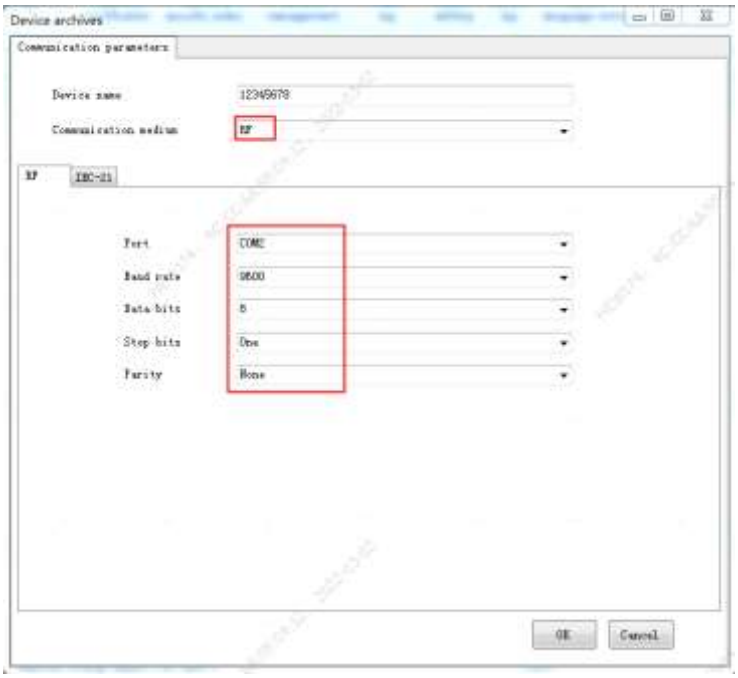
- Device name: Define by user himself
- Communication medium：User select by himself

9.1.2 Communication medium

- Serial port: Local

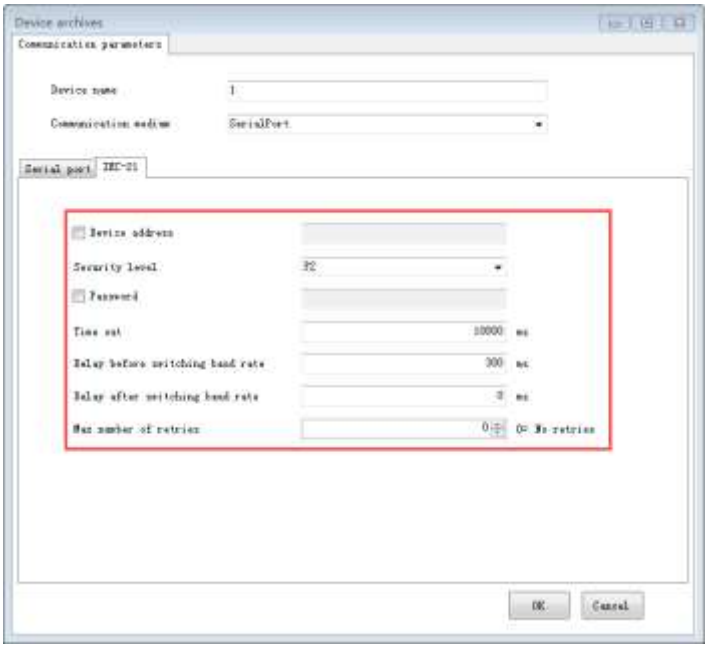


- RF: Model



9.1.3 Protocol suite

Communication parameter configuration: The default parameters are as follows



9.1.4 Security mechanism

Security policy:

- Device address: Select whether to communicate with meter number
- Security level:P1(Low password);P2(High password)

- Password: Select whether to communicate with password

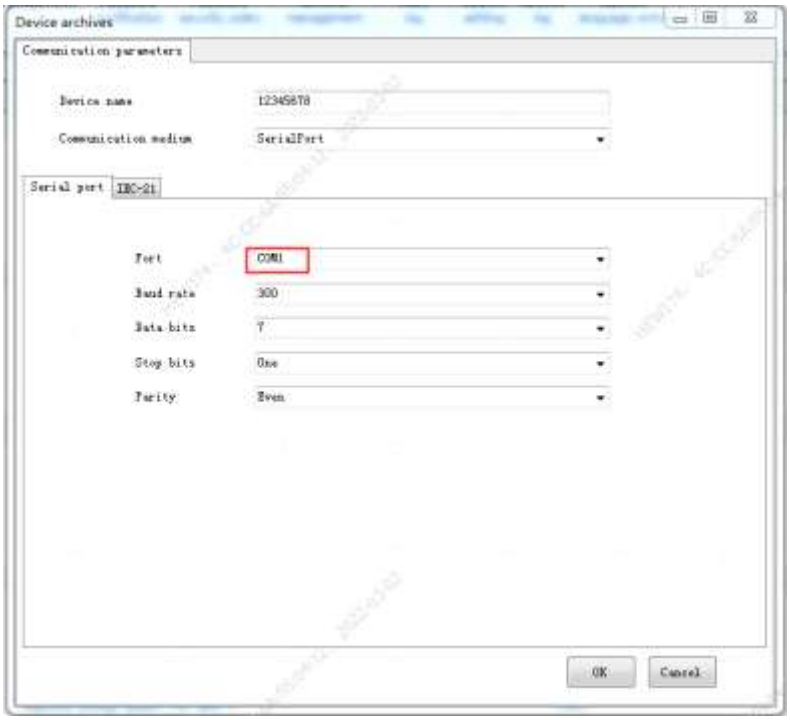
9.2 Local communication

A device ready for operation and an optical reading head for connection to a serial interface (USB or COM port) are required for this purpose. The HexView4.0 Pro must also be installed on the PC and registered.

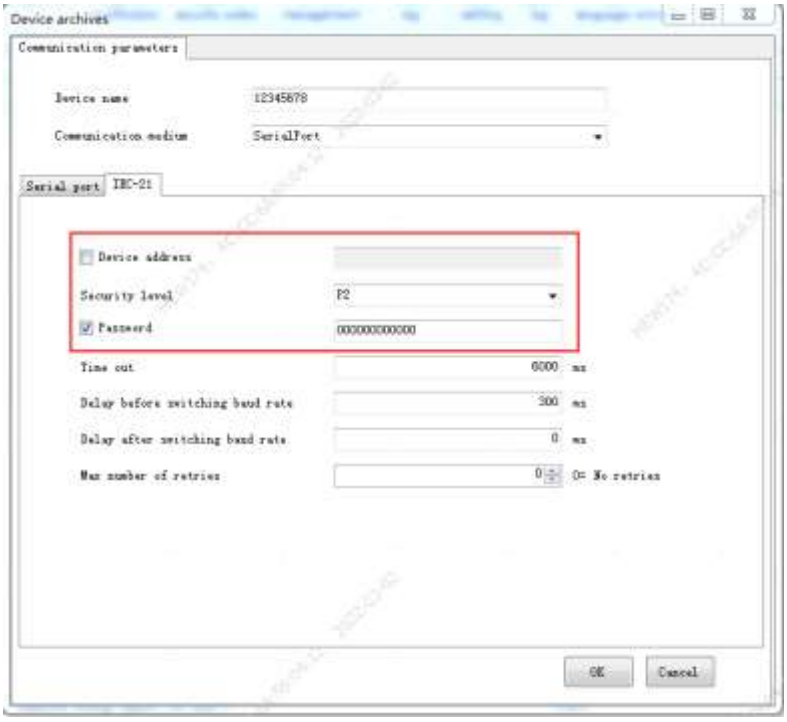
9.2.1 Connection

9.2.2 Operation

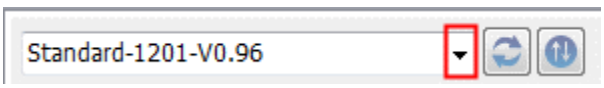
1. Connect to meter with optical port.
2. Configure the serial port.



3. Configure corresponding parameters.

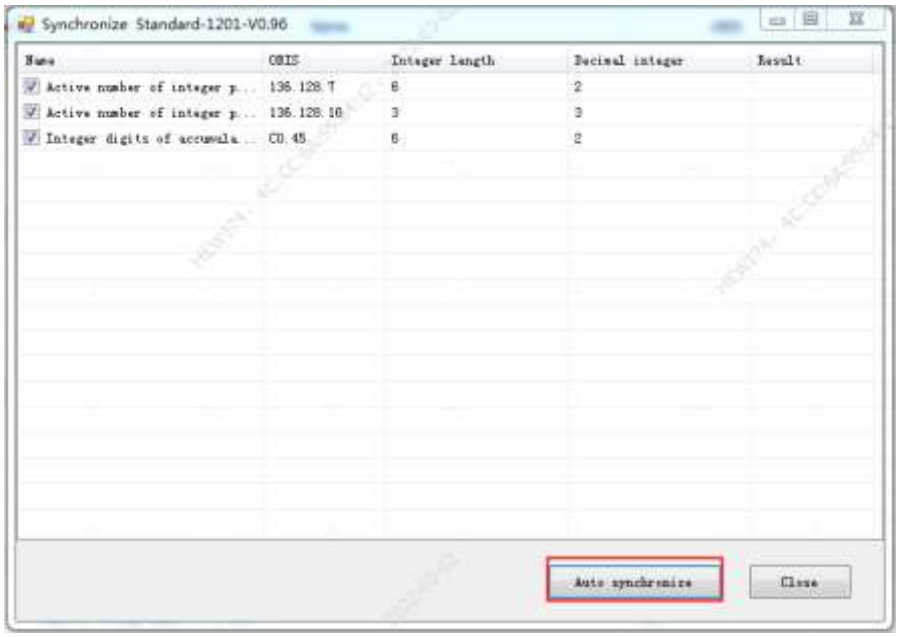


4.Select suitable DB for meter：



“  ”: By default, it is based on the total library dimension， You can use this button to synchronize the

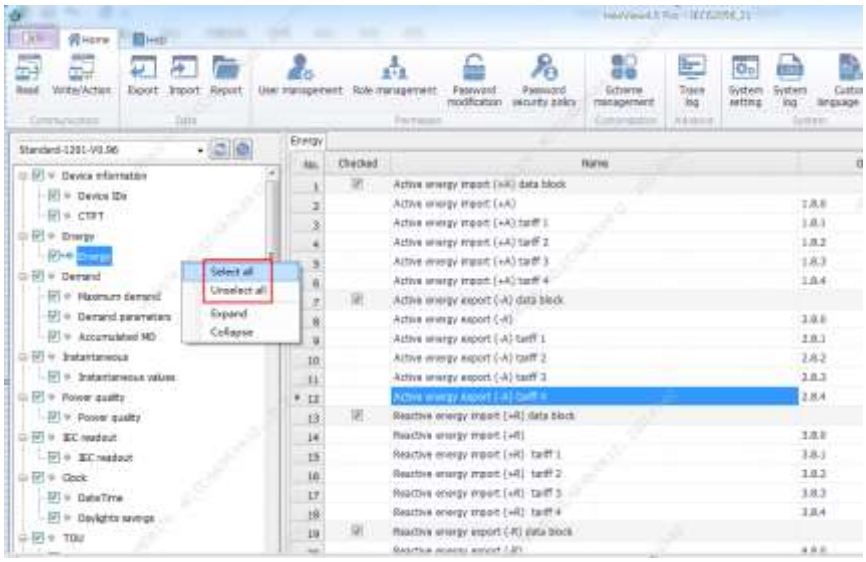
meter



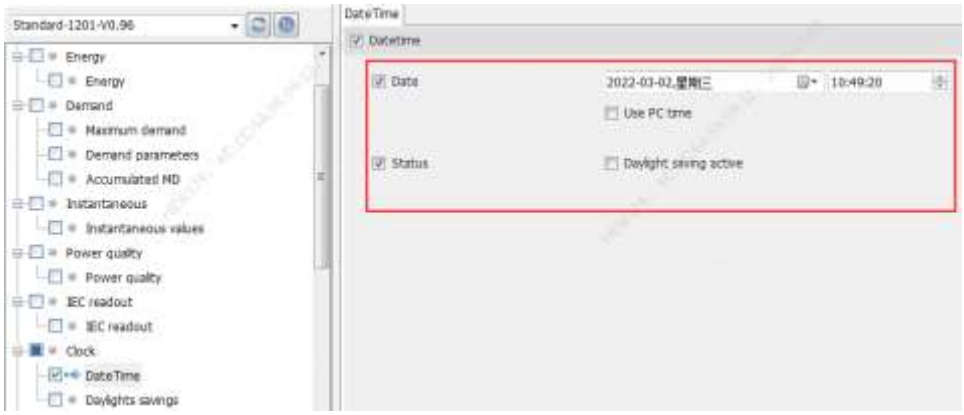
- Modify dimensions manually: Double click the item that you want to modify dimensions and units.

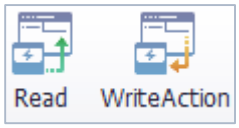
5. Select the function item in the Function Scheme.

- Right click: “Select all” and “Unselect all”are both available.



6.Select the item and change to the template interface,Users can read the meter data before changing them.



7.Click the WriteAction and operate: 

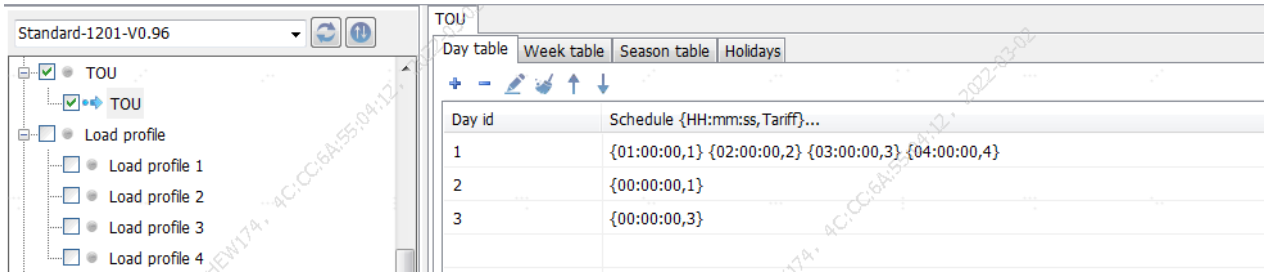
9.3 Template example

The function template should comply to the meter function:

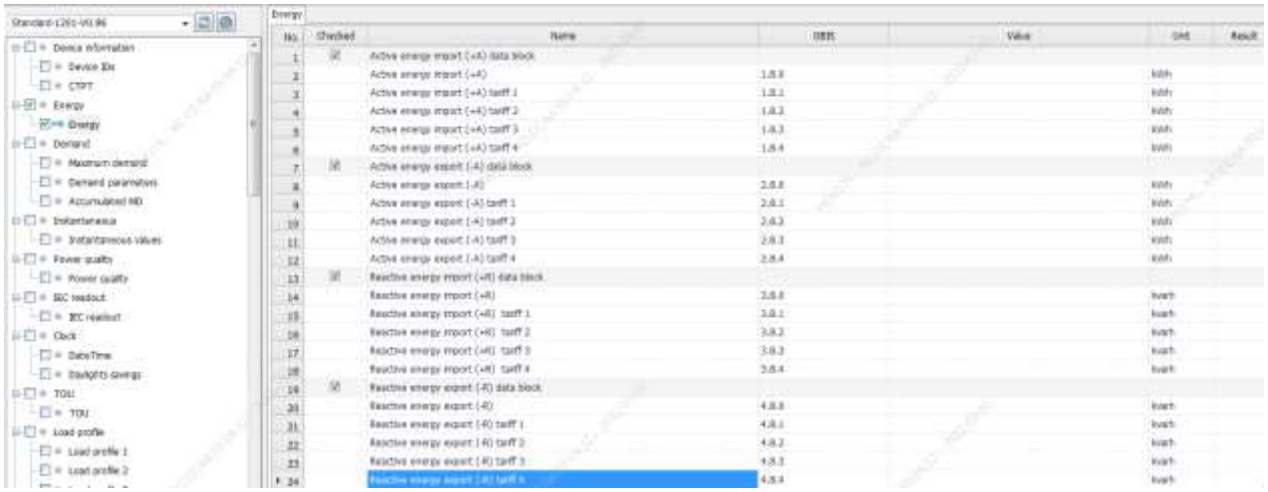
- If the meter supports such function, but can't find the template in the Function Tree, it's available to add in the function template through high access
- If the meter doesn't support such function, but there is a template in the node of Function Tree, communication will fail and reminder as undefined ID.

Some examples of template:

Example 1:TOU



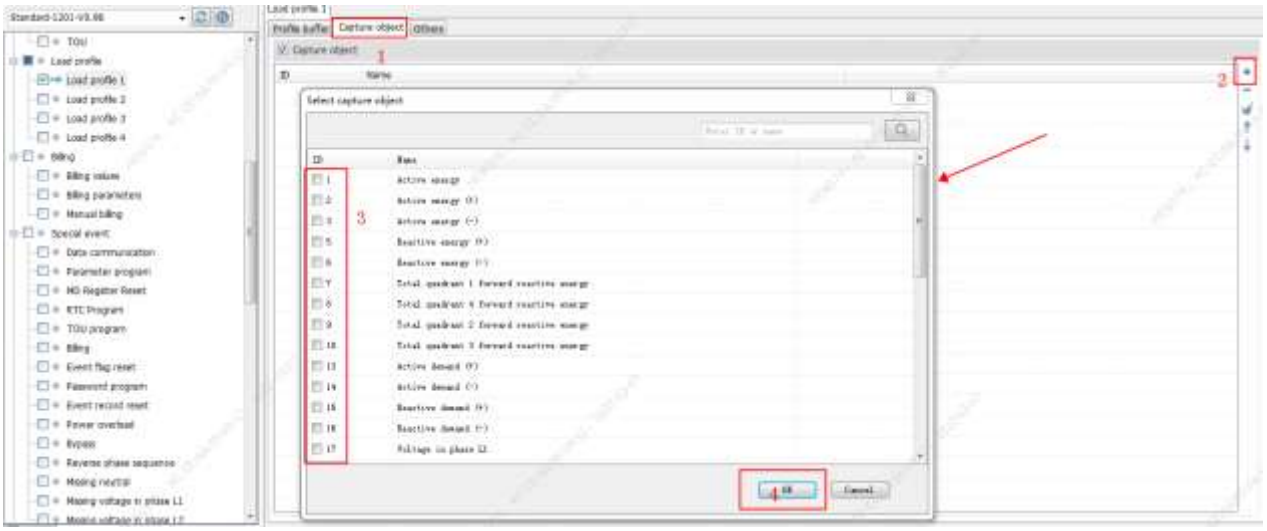
Example 2:Energy



Example 3:Event

Example 4:CTPT

Example 5:Profile



10. Communication with HX645

This section gives an introductory example of how a communication connection is established to a device with the HexView4.0 Pro.

1) Modem support RS232 serial port communications to 2G/3G/4G wireless data.
2) Modem support DLMS/COSEM local communication protocol transfer to remote communication protocol.
3) Modem support SMS configuration parameters.
4) Modem support RS232 configuration parameters in local.
5) Modem support firmware upgrade locally and remotely.
6) Modem support to do filtering for spam SMS.
7) Modem support up to 10 authorized phone number and can be programmed.
8) Modem have a watchdog, timing reset system and can be programmed.
9) Modem have a backup power supply that can last at least 2 minutes.

10.1 Parameters configuration

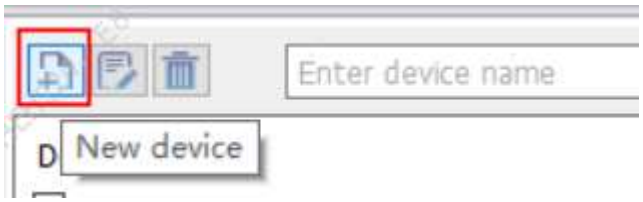
A device ready for operation and an optical reading head for connection to a serial interface (USB or COM port) are required for this purpose. The HexView4.0 Pro must also be installed on the PC and registered.

10.1.1 Connection

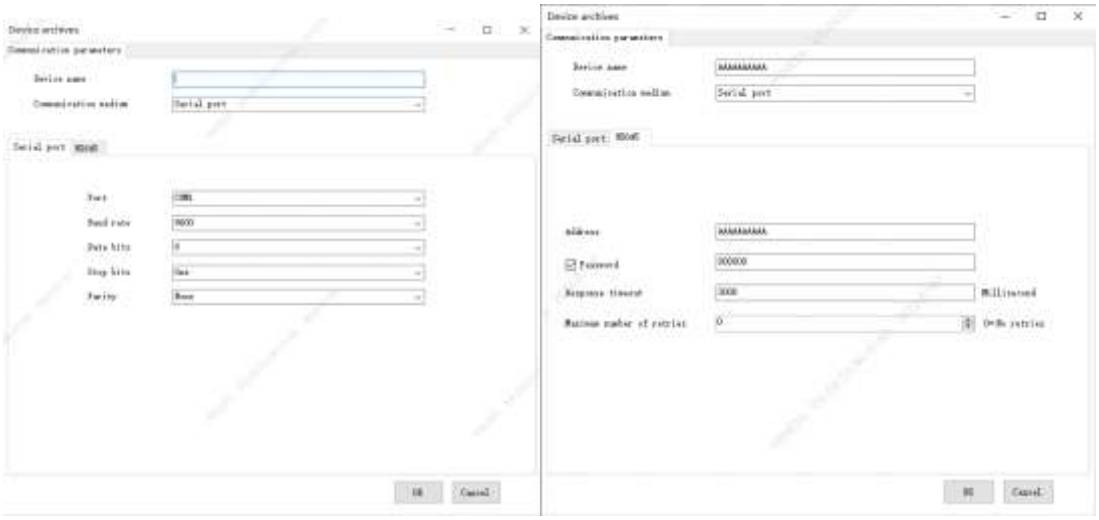
10.1.2 Operation

- Device management

- Add device

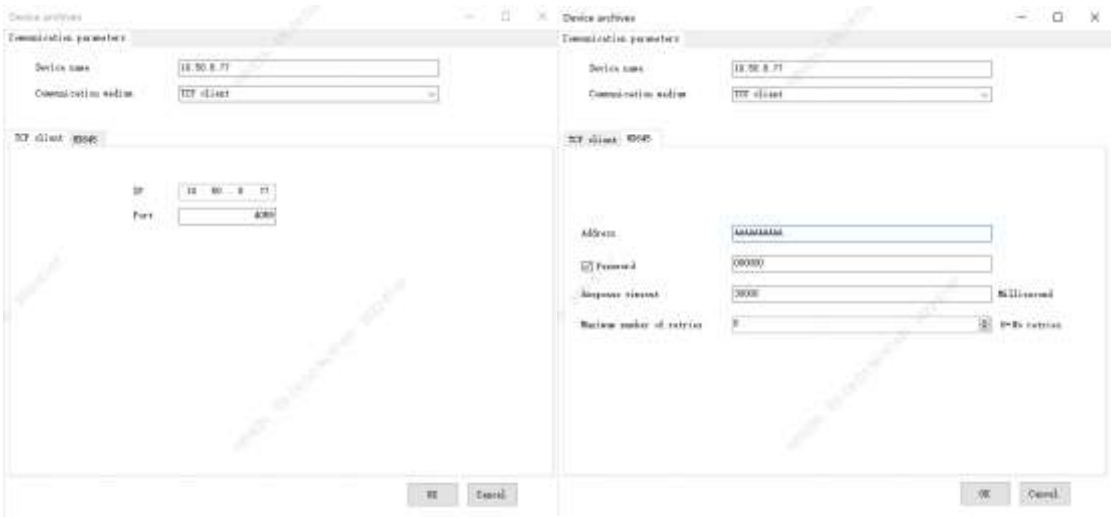


- Local communication



Device name: Define by user himself
Communication medium：Serial port
Port: The actual serial port used
Baud rate: 9600 (default)
Data bits: 8 (fixed)
Stop bits: One (fixed)
Parity: None (fixed)
Address: AAAAAAAAAA (fixed)
Password: 000000 (default)
Response timeout: 3000 (default)
Maximum number of retries: 0 (default)

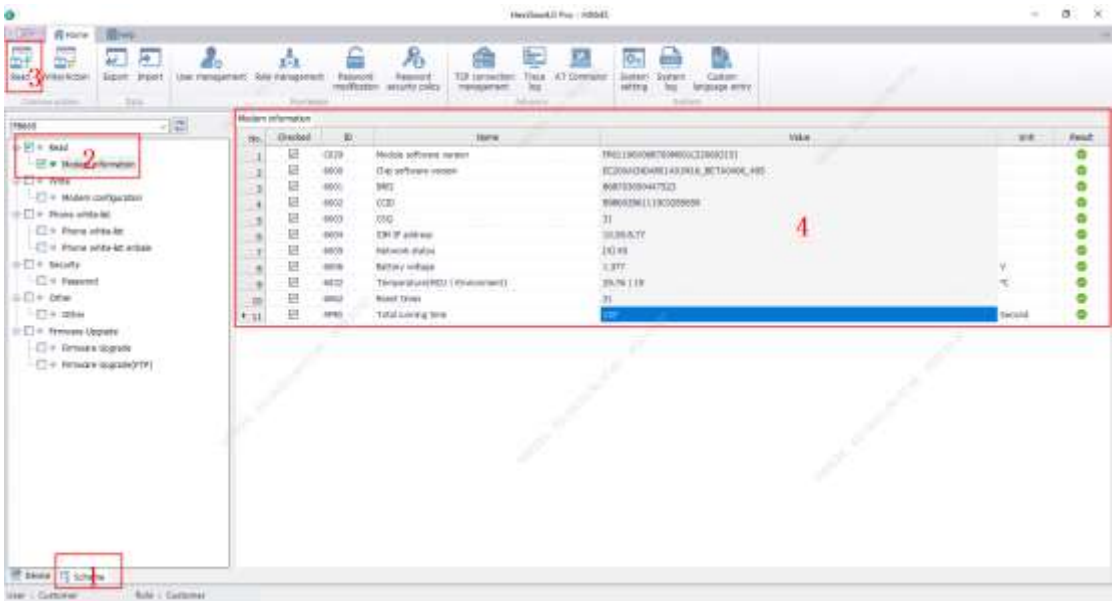
- Remote communication (PCSW as client)



Device name: Define by user himself
Communication medium：TCP client
IP: The address of the SIM card IP on the device
Port: The listening port of the device, 4059 (default)
Address: AAAAAAAAAA (fixed)
Password: 000000 (default)
Response timeout: 30000 (Adjust according to the actual environment)
Maximum number of retries: 0 (default)

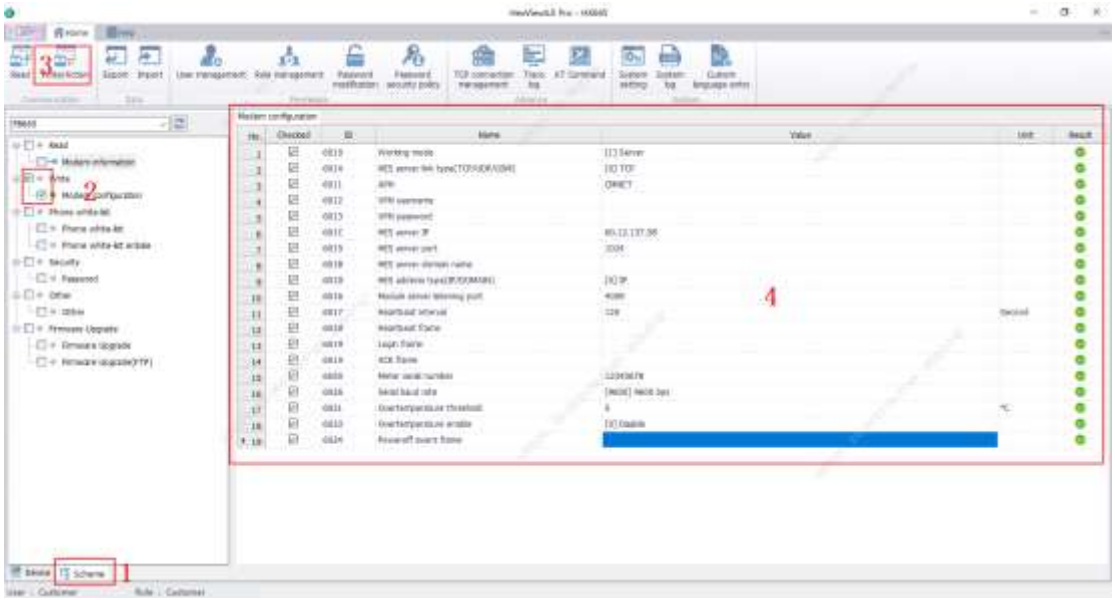
- Read

When you want to operate the modem, need to select an operating device first.



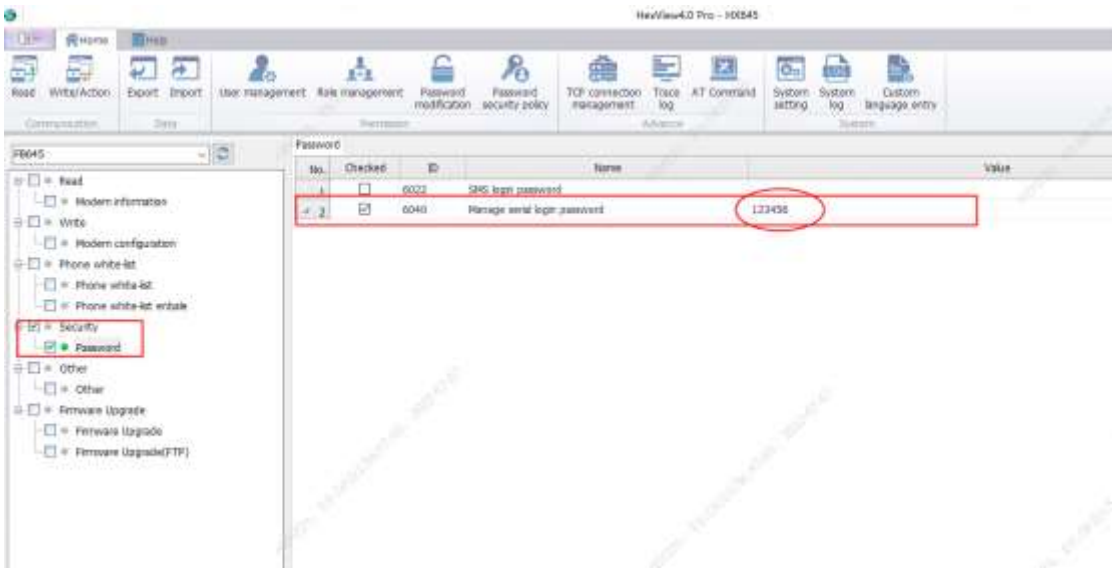
- Write

When you want to operate the modem, need to select an operating device first.

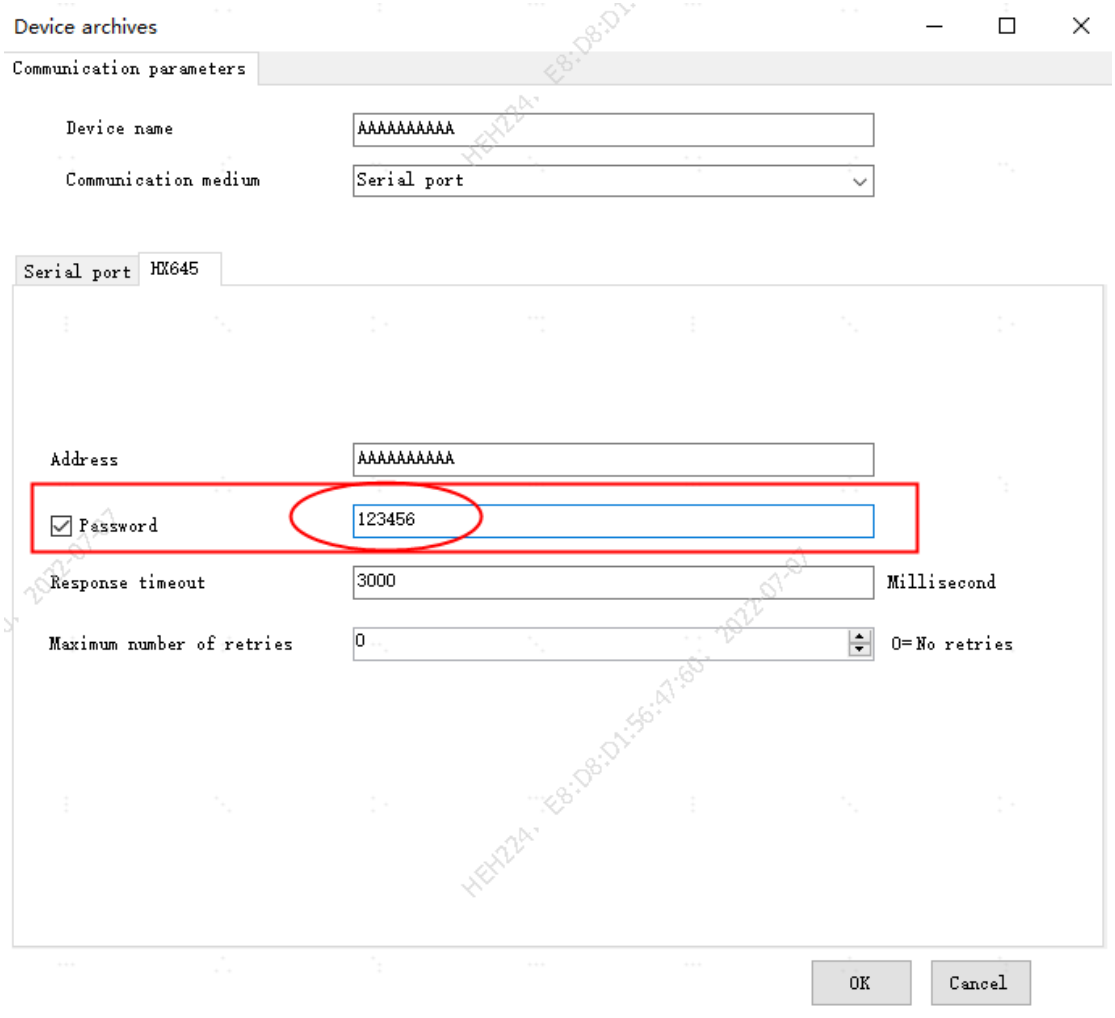


- Password of modem

Modem password can be programmed, click the password button and input new password, then click write button set to modem.



But when you write operation, need input old password again. If old password is wrong, modem will reject to change password to new one.



- Parameter configuration

Working mode

1) Modem support 3 working mode that is client, server and mix.
   A．In client mode, the modem connect to server with IP address and port.
   B．In server mode, the modem establish listener ports, waiting to be connected.
   C．In mix mode, modem support both client mode and server mode.
2) Sever mode need a fixed IP private network SIM card, so if the modem does not have a fixed IP private network SIM card, the sever mode is not recommended.
3) In server or mix mode, according to the SIM card of IP and server listening port, remote PC software actively connect to the modem.
4) In mix mode, if the modem use the common SIM card, the server mode cannot working, because the IP address is random, but the client mode is not affected.
5) About TCP or UDP mode, we advise user choose TCP mode to ensure the communication data reliability.

GPRS parameters configuration

Serial communication baud rate setting

Communication Baud rate can be set to 2400/4800/9600/19200/38400/57600

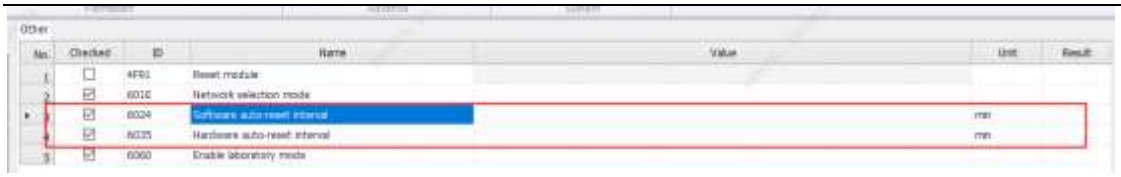
Over temperature protection function

Over temperature protection function

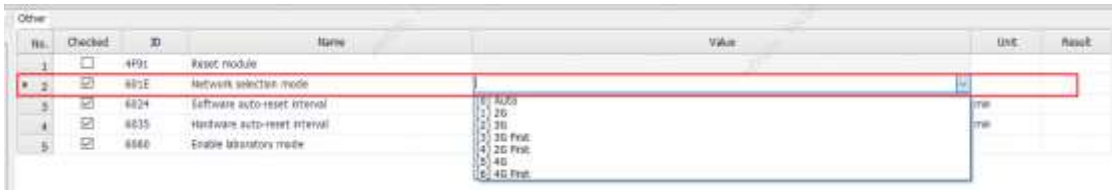
In client mode, the last gasp function can be configured. The reported content can be set as follows.

Timing reset

Modem have a watchdog, soft reset system and can be programmed to 0-1440min. Hard reset system and can be programmed to 0-14400min.

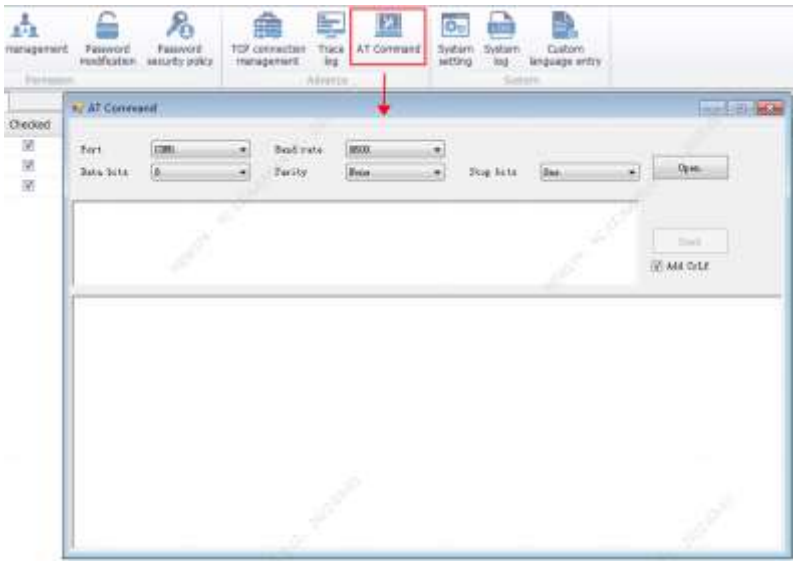


Network selection mode



10.2 AT Command

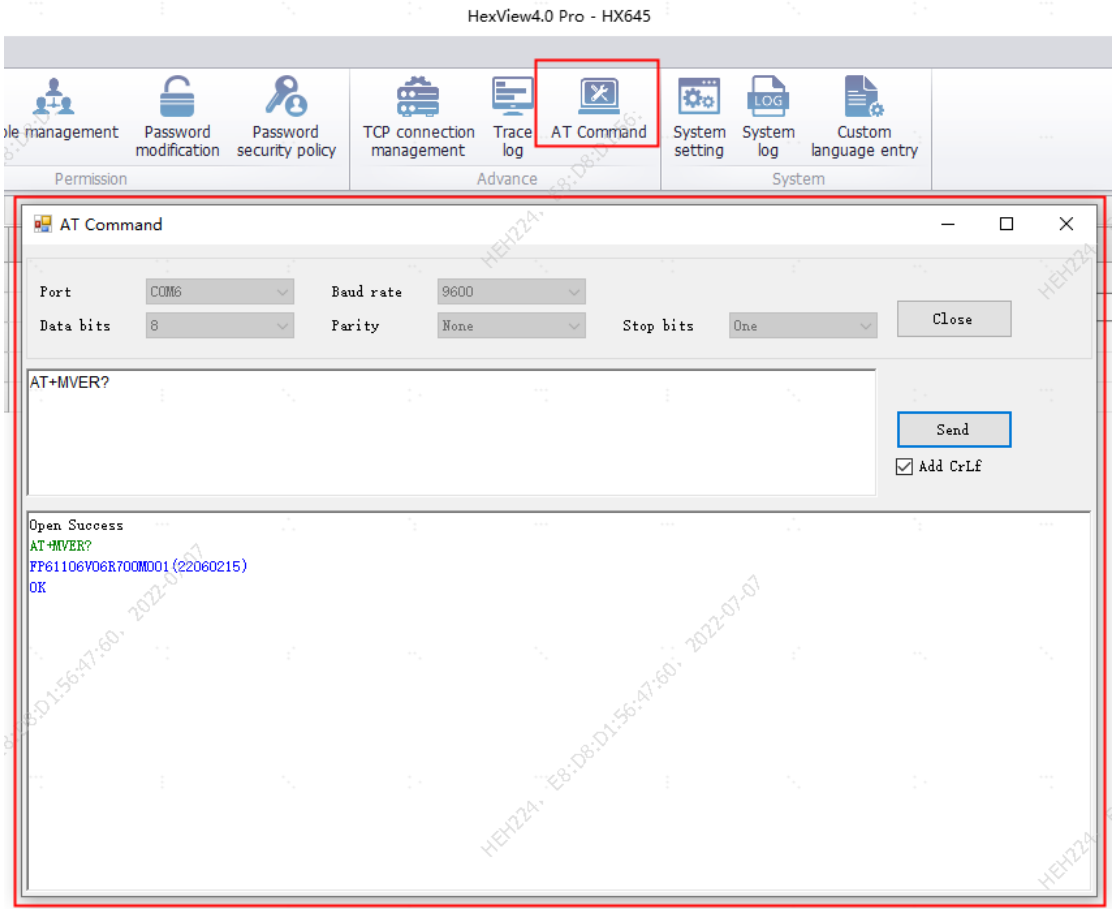
Used to send AT command to the modem.



10.2.1 Operation

AT command

Through the PC software, the modem can receive and execute standard AT command.

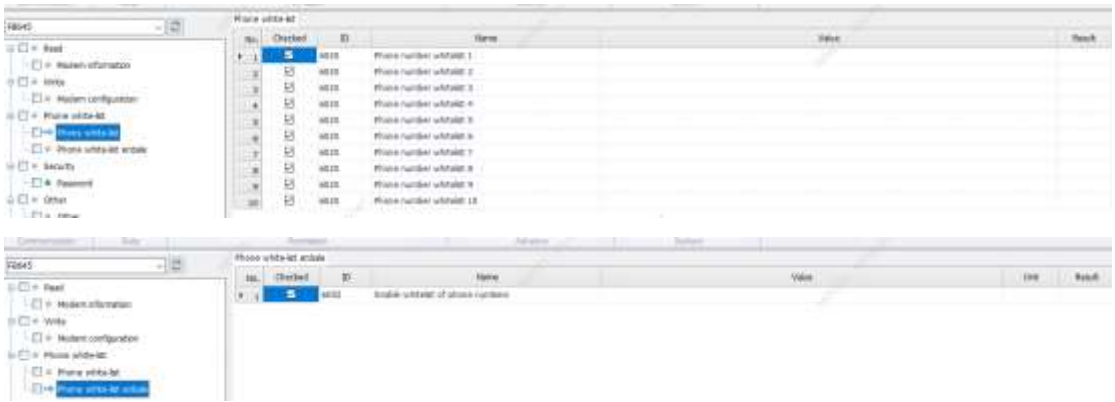


SMS parameters configuration

Through phone send short message can setting modem parameters.

Phone number setting

Modem support up to 10 Modem support up to 10 authorized phone number and can be programmed.



SMS Setting format (AT+)

1、Get data format

2、Request: Frame head “AT+” + 4 bytes command 1 code + frame type “?” + separator line feeds + Frame

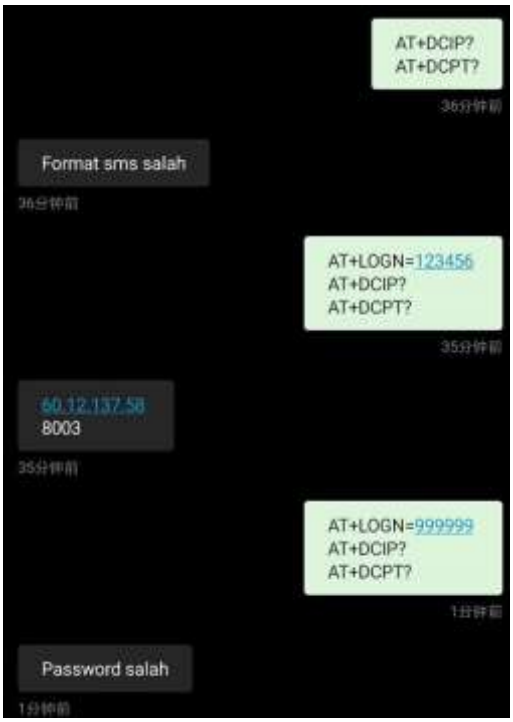
head “AT+” + 4 bytes command 2 code + frame type “?” + separator line feeds +…+ frame type “?”.

3、Receive: Data fields + separator line feeds + data fields + separator line feeds +…+ data fields.

For example:

//get master IP and port

If a SMS password is set, a password must be included before each SMS operation. Otherwise the reply Format sms salah.



//get master IP and port

//Format sms salah

//get master IP and port with correct password

//IP=60.12.137.58, PORT=8003

//get master IP and port with wrong password

//Password salah

4、Set data format

- Request: Frame head “AT+” + 4 bytes command 1 code + ”=” + data fields + separator line feeds + Frame head “AT+” + 4 bytes command 2 code + ”=” + data fields + separator line feeds +…+ data fields.

5、Receive: 2 bytes result code+ separator line feeds + 2 bytes result code + separator line feeds +…+ 2 bytes result code.

For example:

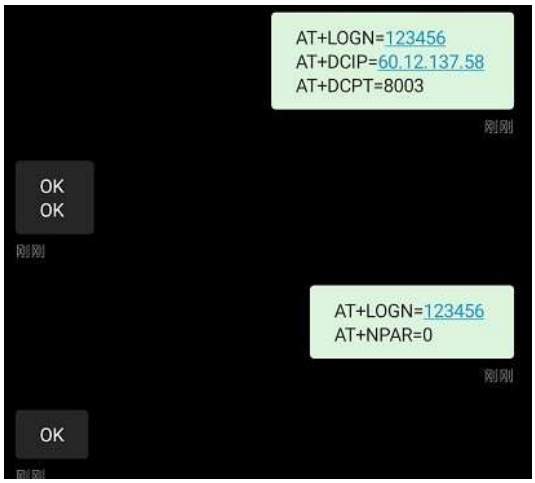
//IP=60.12.137.58, PORT=8145

//result code are successful.

//reset modem to run with new parameter

//active new parameters

If a SMS password is set, a password must be included before each SMS operation. Otherwise the reply Format sms salah.



//Password=123456
//IP=60.12.137.58,PORT=8145

//result code are successful.

//reset modem to run with new parameter

6、Result code

If the format is wrong, reply "Format sms salah";

if the password is incorrect, reply "Password salah".

Note: more information see the appendix 1

10.3 Firmware upgrade

Firmware upgrade

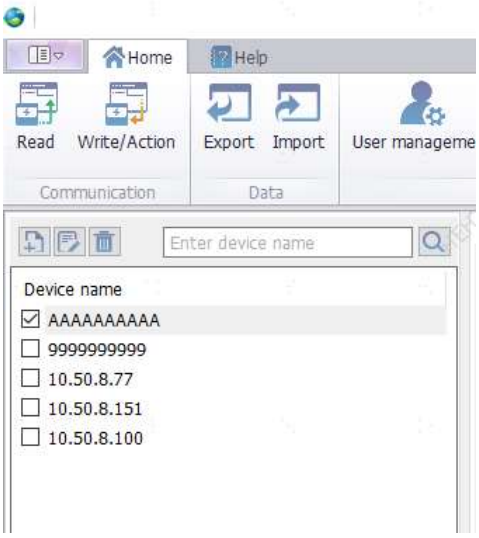
Modem support to upgrade the firmware locally and remotely.

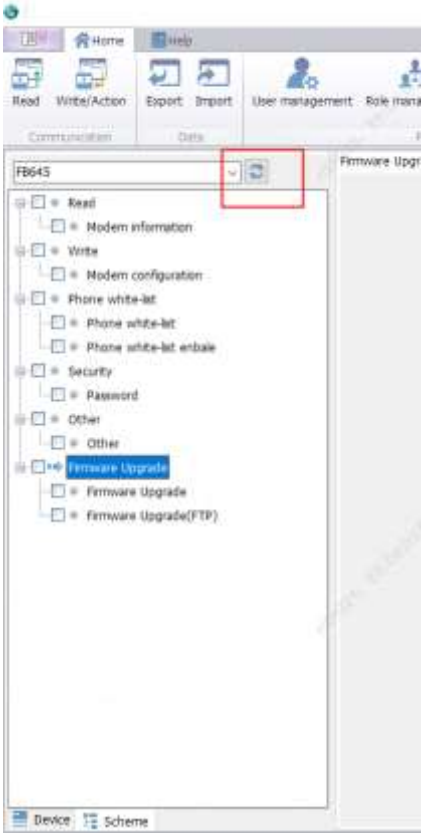
10.3.1 Locally upgrade

Locally upgrade (only a single upgrade)

Use pc software "HexView4.0 Pro" upgrade firmware, through the RS232 port connect PC computer.

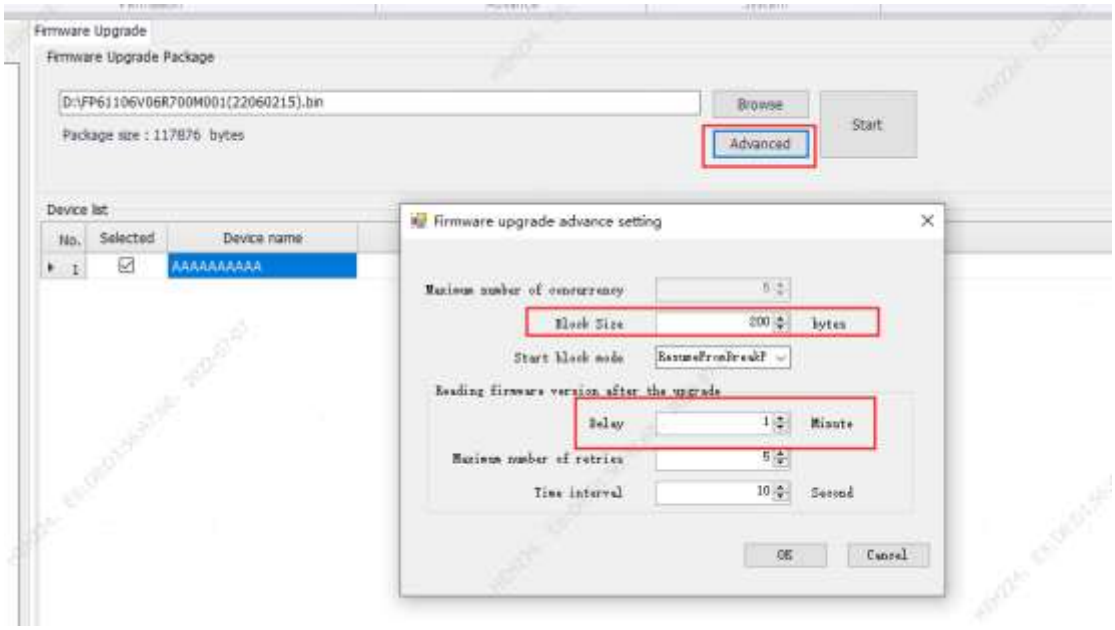
a) First select the device you want to operate, refresh scheme.

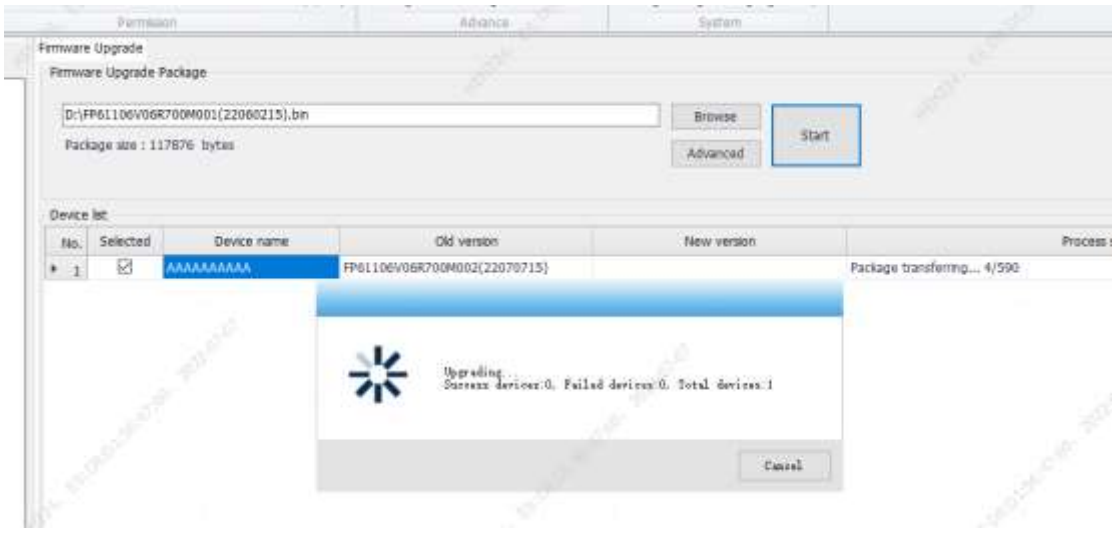




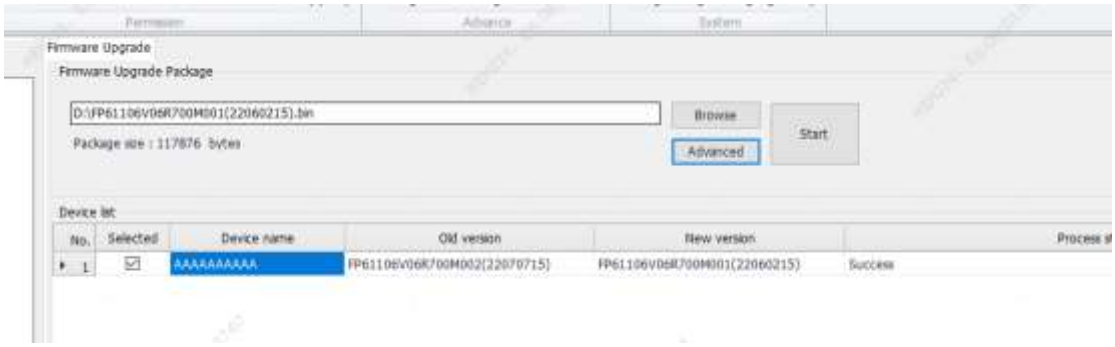
b) Select upgrade type. “Scheme”—“Firmware Upgrade”.

c) Import the upgrade package (.bin), and then modify the size of block and click the "Start" button, default size of block is 200byte.





c) Wait some minutes, the upgrade is successful.

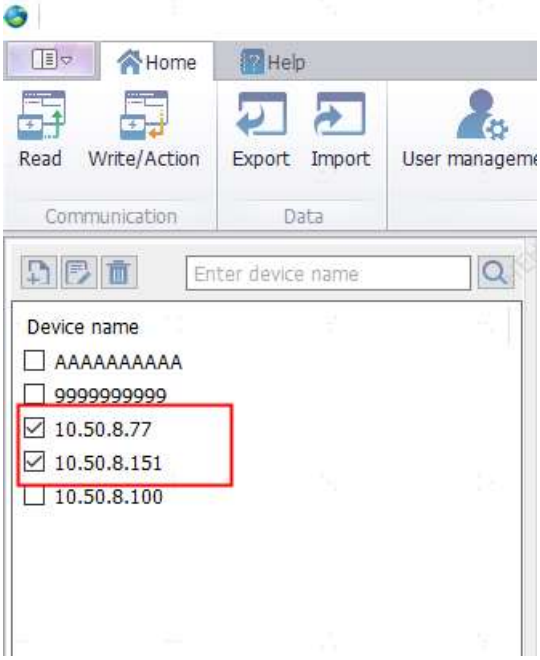


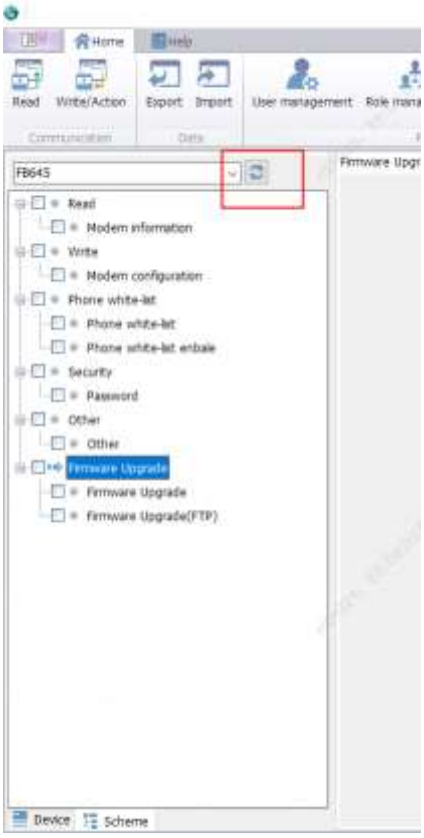
10.3.2 Remotely upgrade

Remotely upgrade (TCP, static IP)

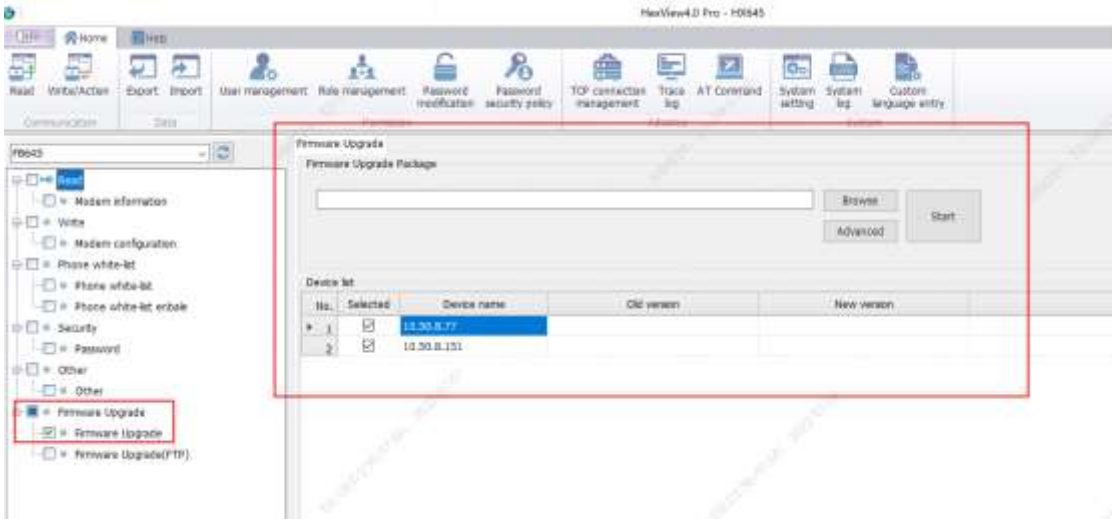
Use pc software “HexView4.0 Pro” upgrade firmware, and establish a TCP connection with the device (server) through pc software (client).

a) First select the device you want to operate, refresh scheme.

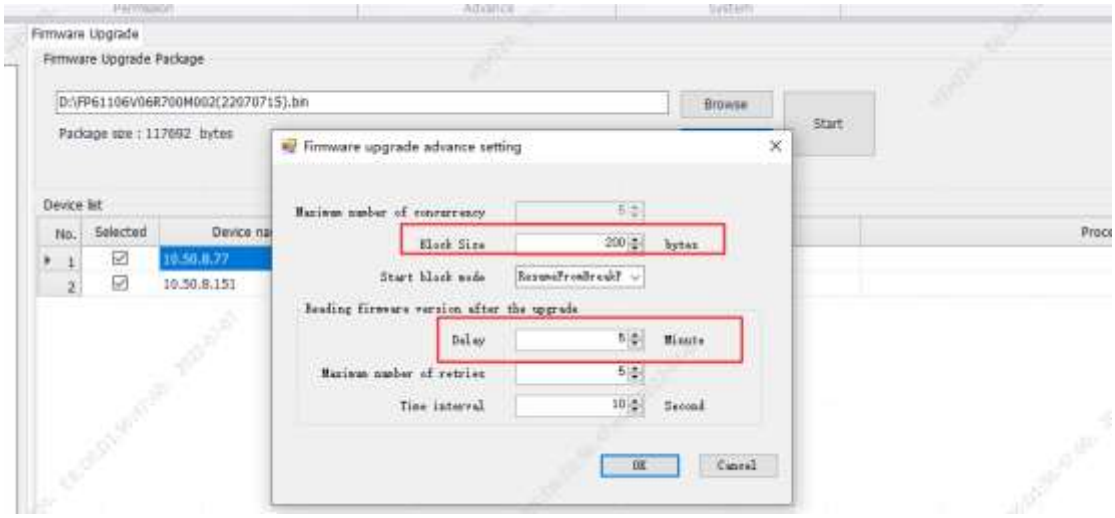




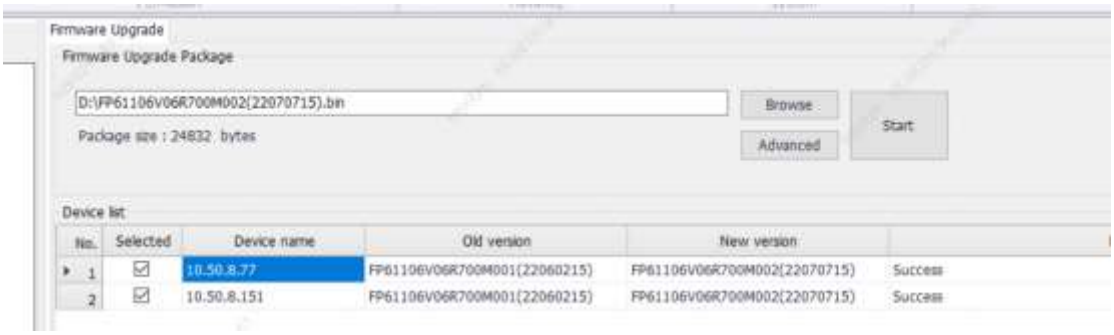
b) Select upgrade type. “Scheme”—“Firmware Upgrade”.



c) Import the upgrade package (.bin), and then modify the size of block and click the “Start” button, default size of block is 200byte.

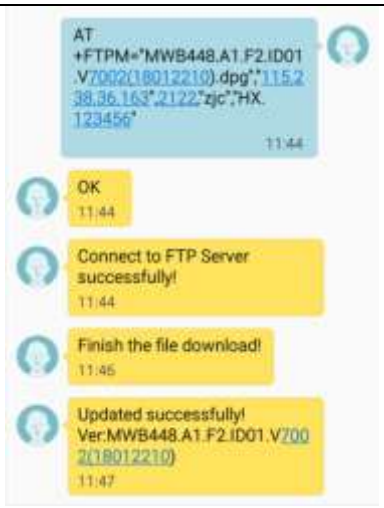


c) Wait some minutes, the upgrade is successful.



10.3.3 FTP upgrade

- **FTP upgrade (SMS)**



a) First send a SMS message about upgrade filename by authorized phone number (eg: AT+FTPM="MWB448.A1.F2.ID01.V7002(18012210).dpg",2122,"zjc","HX.123456").

b) Then waiting for modem connect to FTP server.

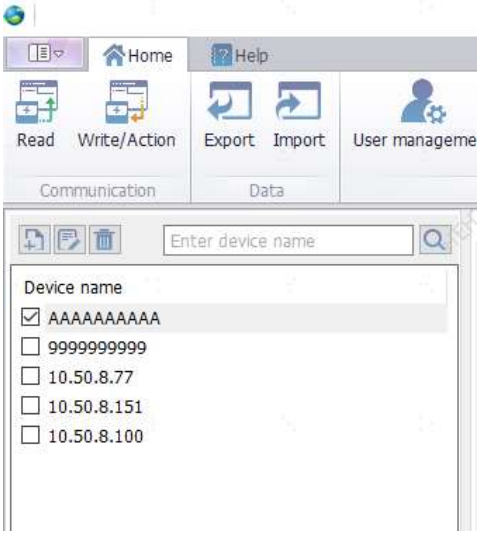
c) Next through GPRS/3G network to upgrade the firmware.

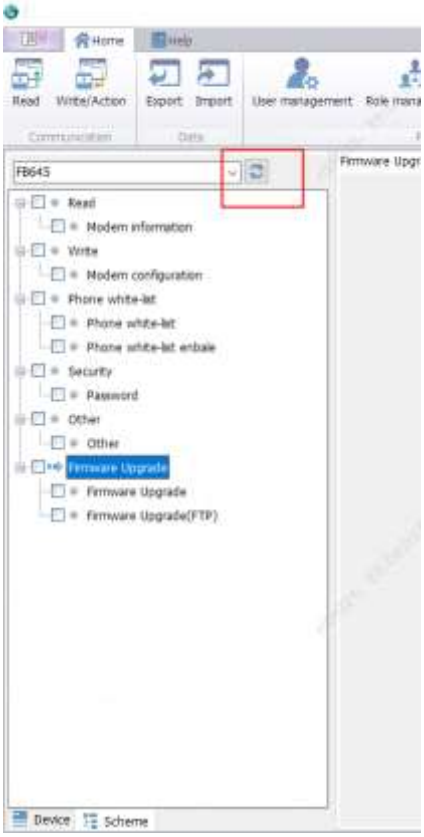
d) After that we will receive a successful upgrade reminder message SMS, if the upgrade is successful.

- **FTP upgrade (TCP)**

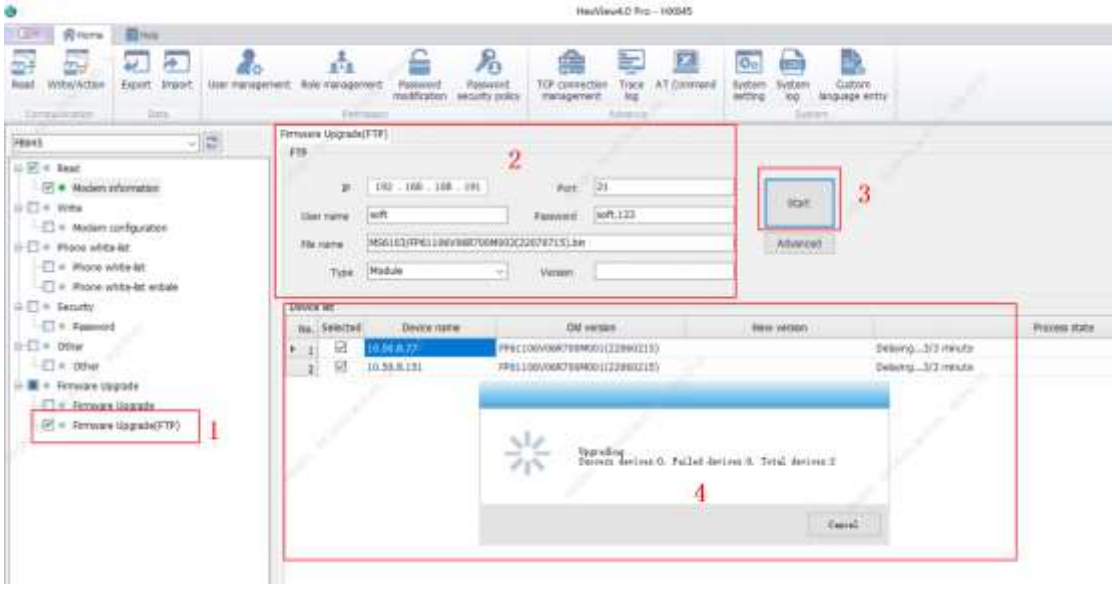
Use pc software "HexView4.0 Pro" upgrade firmware, and establish a TCP connection with the device (server) through pc software (client).

a) First select the device you want to operate, refresh scheme.





b) Select upgrade type. “Scheme”—“Firmware Upgrade(FTP)”.




HexView4.0 Pro - HX645
Read
Write/Action
Export
Import
User management
Role management
Password modification
Password security policy
TCP connection management
Trace log
AT Command
System setting
System log
Custom language entry
FB645
Read
Modem information
Write
Modem configuration
Phone white-list
Phone white-list
Phone white-list enbale
Security
Password
Other
Other
Firmware Upgrade
Firmware Upgrade
Firmware Upgrade(FTP)
Firmware Upgrade(FTP)
FTP
IP
192 . 168 . 108 . 191
Port
21
User name
soft
Password
soft.123
File name
Type
Module
Version
Start
Advanced
Device list
No.
Selected
Device name
Old version
New version
1
10.36.8.77
2
10.36.8.151
Success
Success

- **Appendix 1**

Description	property	command	Length	e.g.	Explain
Acknowledgement frame	W/R	AKFM	2 + frame length (MAX 32 char)	02OK	02: frame length; OK: Acknowledgement frame Frame just text mode.
Reset cycle	W/R	ATRE	4	120	Reset cycle can be set to 1 until 1440 minutes Suggest more than 5min
Baud rate	W/R	BAUD	2	05	03: 2400; 04: 4800; 05: 9600; 07:19200; 08: 38400; 09:57600;
CCID code	R	CCID	19/20		Only read
Local communication password	R	CODE	6	000000	Password is 000000 (ASCII)
Current Temperature	R	CPUT	/	4125, 2400	CPU's temperature: 4125:41.25 ℃ CPU Ambient temperature: 2400:24.00 ℃
Domain name	W/R	DCDN	2+domain name length (MAX 64 char)	14www.hxgroup.cn	14: domain name length is 14; www.hxgroup.cn: domain name
Server IP	W/R	DCIP	15 (MAX)	60.12.137.58	IP=60.12.137.58
Server port	W/R	DCPT	5 (MAX)	8001	Range: 1024-65535
Event frame	W/R	ETFM	2 + frame length (MAX 64 char) + ID (1 char) + End char	16ALARM;1234567893#	16: frame length + 1; ALARM;123456789: Event frame 3: other (ID: 0: IMEI; 1: CCID; 2: meter ID; 3: other) #: End char Frame just text mode.
FTP upgrade	W/R	FOTA/ FTPM	"file_name", "IP/domain", port, "username", "password", Type	AT+FOTA=" FP60740V05R700M001(20110317)","192.168.108.191", 21,"soft","soft.123",1	Send upgrade filename; Read upgrade status type: 1: MCU 2: CHIP

			100 (MAX)		
APN	W/R	GAPN	2 + apn length (MAX 64 char)	05CMNET	05: APN length is 5; CMNET: APN
Heart cycle	W/R	HBCY	5	120	Heart cycle can be set to 10 until 65535 seconds
Heartbeat frame	W/R	HBFM	2 + frame length (MAX 32 char) + ID (1 char) + End char	15DRLI;1234567893#	15: frame length + 1; DRLI;123456789: Heartbeat frame 3: other (ID: 0: IMEI; 1: CCID; 2: meter ID; 3: other) #: End char Frame just text mode.
Hard Reset cycle	W/R	HRST	5	120	Reset cycle can be set to 0 until 14400 minutes Suggest more than 5min
IMEI code	R	IMEI	15		Only read
SIM card IP	R	LCIP	/	60.12.137.58	IP=60.12.137.58; only read
Register mode	W/R	LDTP	1	0	0: IP; 1: Domain name
Login frame	W/R	LGFM	2 + frame length (MAX 32 char) + ID (1 char) + End char	16LOGIN;1234567893#	16: frame length + 1; LOGIN;123456789: Login frame 3: other (ID: 0: IMEI; 1: CCID; 2: meter ID; 3: other) #: End char Frame just text mode.
SMS Login Password	W	LOGN	6	123456	Password is 123456 (ASCII)
Listen port	W/R	LSPT	5 (MAX)	18008	Range: 1024-65535
CSQ signal strength	R	MCSQ/CSQ	/	21	CSQ: 21; only read
Flash/RAM	R	MEMO	/	+FLASH: 89131997,134217728 +RAM: 25948728,33554432	FLASH size: All: 134217728B Use: 89131997B RAM size: All: 33554432 Use: 25948728
Modem model	R	MMOD	/	Hexing HXM 300	Only read

Meter number	W/R	MTNO	16 (MAX)	201603310007	Meter number: 201603310007; only for connect hexing's AMR meter.
Firmware version	R	MVER	/	FP60740V05R700M001(20110317)	Only read
Active new parameters	W	NPAR	0	0	0: active new parameters
Network status	R	NSTA	1	2	2:2G; 3:3G; 4: 4G; only read
Network Mode	W/R	NSTM	1	3	0: Auto; 1:2G only; 2:3G only; 3: 3G first; 4: 2G first; 5:4G only; 6: 4G first;
Transmission protocol	W/R	NTCP	1	0	0: TCP; 1: UDP; 2: GSM
Phone number 0	W/R	NUM0	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number
Phone number 1	W/R	NUM1	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number
Phone number 2	W/R	NUM2	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number
Phone number 3	W/R	NUM3	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number
Phone number 4	W/R	NUM4	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number
Phone number 5	W/R	NUM5	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number
Phone number 6	W/R	NUM6	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number
Phone number 7	W/R	NUM7	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number
Phone number 8	W/R	NUM8	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number

Phone number 9	W/R	NUM9	2 + phone number length	138615005710500	13: phone number length; 8615005710500: Phone number
Over temperature protection enable	W/R	OTPE	1	1	0: close 1: open
Over temperature protection threshold	W/R	OTPT	5 (MAX)	6000	6000: 60.00℃ (Min) Accuracy of temperature: 0.01 ℃
Serial port parameters	R	PORT	3	8N1	8bits data; No parity; 1bit stop
SMS Password	W/R	SMSC	6	123456	Password is 123456 (ASCII)
Send SMS	W	SSMS	136 (MAX)	8615005710500,AT+NSTM =1	8615005710500: Phone number ,: Separator; AT+NSTM=1: send data; Frame just text mode.
Debug AT command	W	TEST	136 (MAX)	AT+CSQ	AT+CSQ: AT command
User name	W/R	USER	2 + user name length (MAX 32 char)	03AMI	03: user name length is 3; AMI: PDP user name
Work mode	W/R	WKMD	1	0	0: client; 1: server; 2: mix
Password	W/R	WORD	2 + password length (MAX 32 char)	03AMI	03: password length is 3; AMI: PDP password

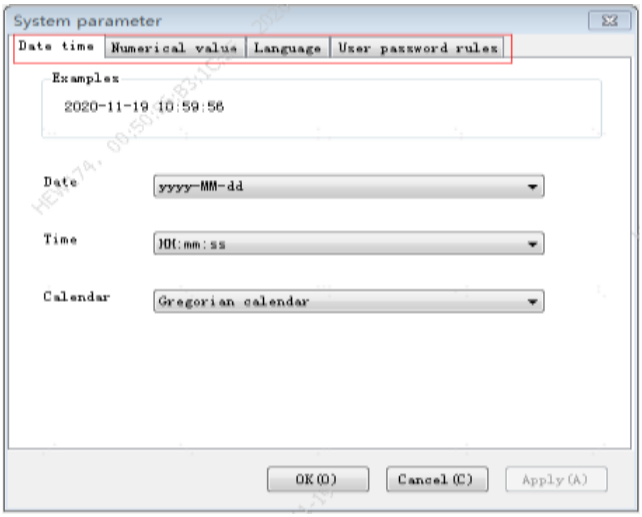
System setting

User can customize system menu and parameter by himself as likes.**System parameter**

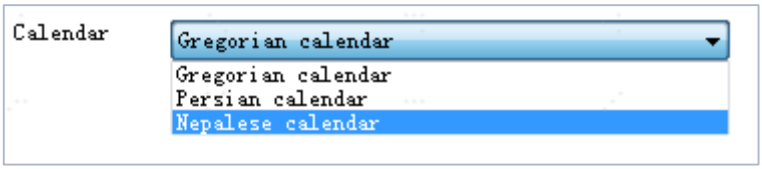
Customized parameters by user After configuration click“ 

”, then click“ 

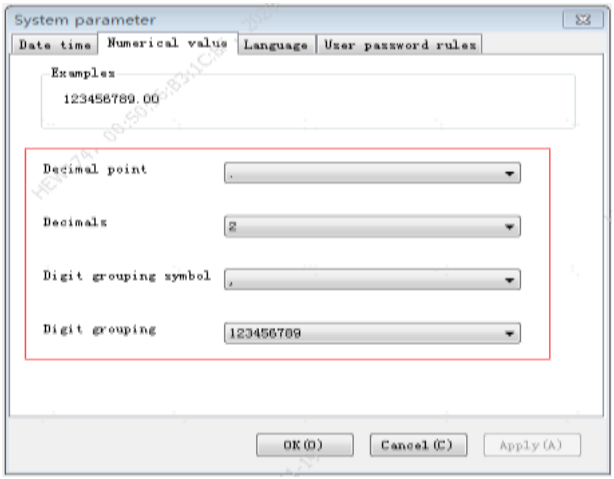
”, parameters will be activated after restarting the HexView4.0 Pro.



User can configure the right time, date and calendar in his own computer as he likes.



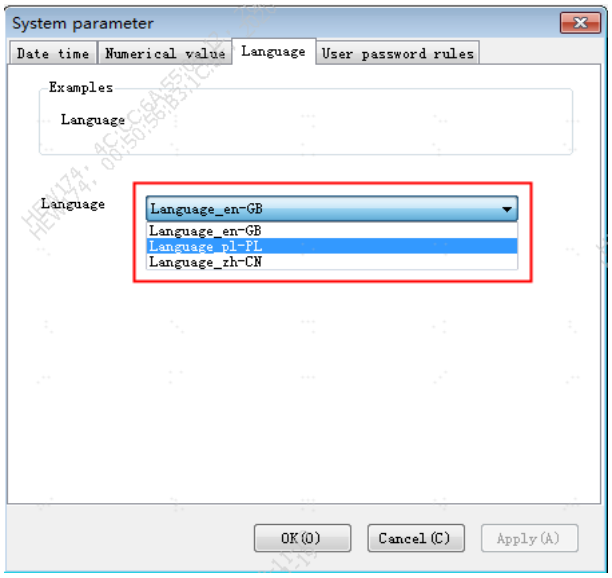
- **Digital format**



Decimal point: You can chose ".or,"

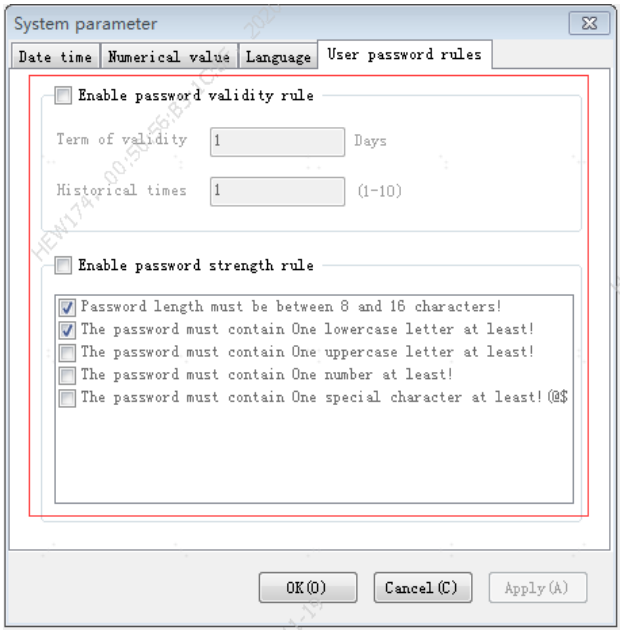
If you choose Digit grouping symbol ",". Digit grouping display 123456789; If you choose Digit grouping symbol ".",Digit grouping display 123,456,789

- **Change language**



(HexView4.0 Pro needs to be restarted after changing language.)

- **The password rule**



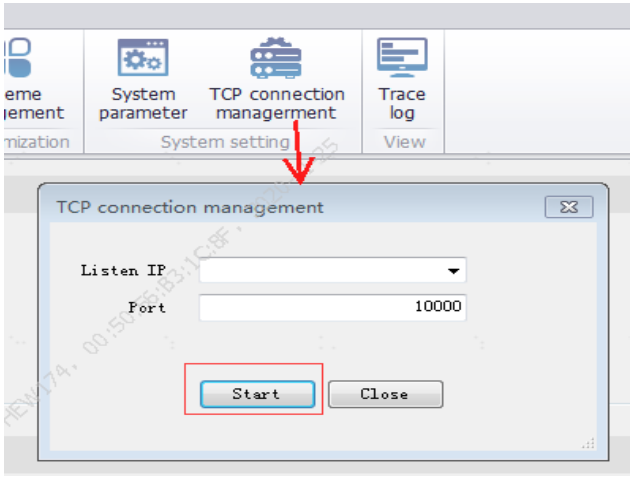
“ 

”: Password validity

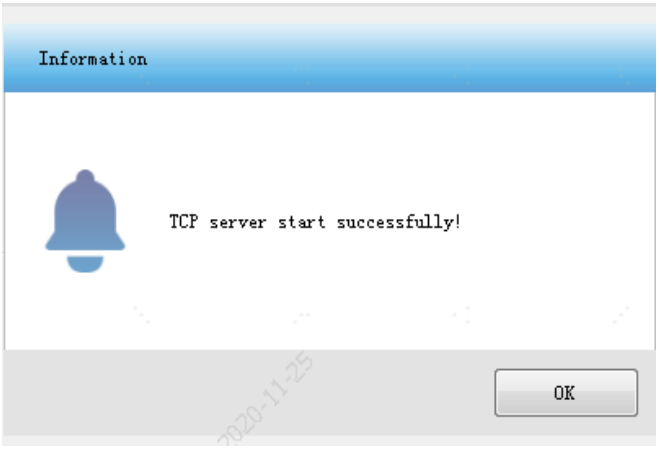
“ 

”: New password should be different from the old one.TCP connection management

It’s applicable for “TCP Server” in communication, configure ServerIPand Port, start Listen



◆ **Click“Start”and start to listen remotely.**

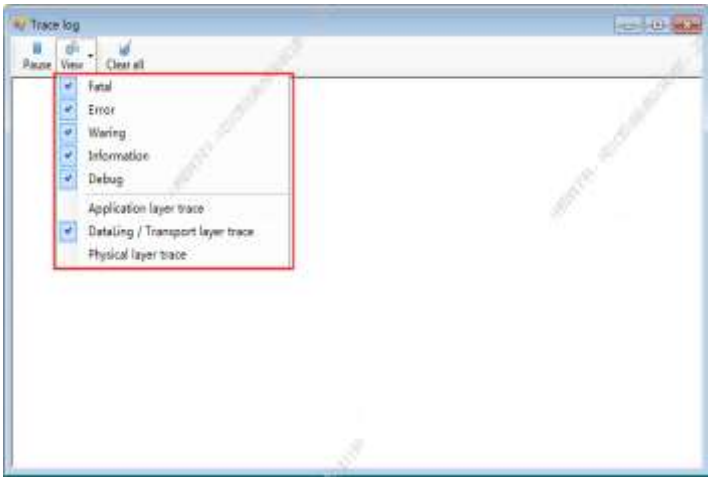


View Log

Trace Log

Trace log function“ 

”, “ 
”or“ 
” is used to start or end tracing log.“ 
”is used to select log type, “ 
”is used to clear all logs, and the monitor types such as:



- Fatal: fatal error information
- Error: error informationWaring: Alarm informationInformation: Reminder information
- Debug: Debug information
- Application layer trace: Information about application layer
- DataLing/transport layer trace: Information about data ling
- Physical layer trace: information about physical layer

System Log

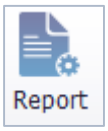
System log function“ 

”, “  ”is used to select log type,“ 

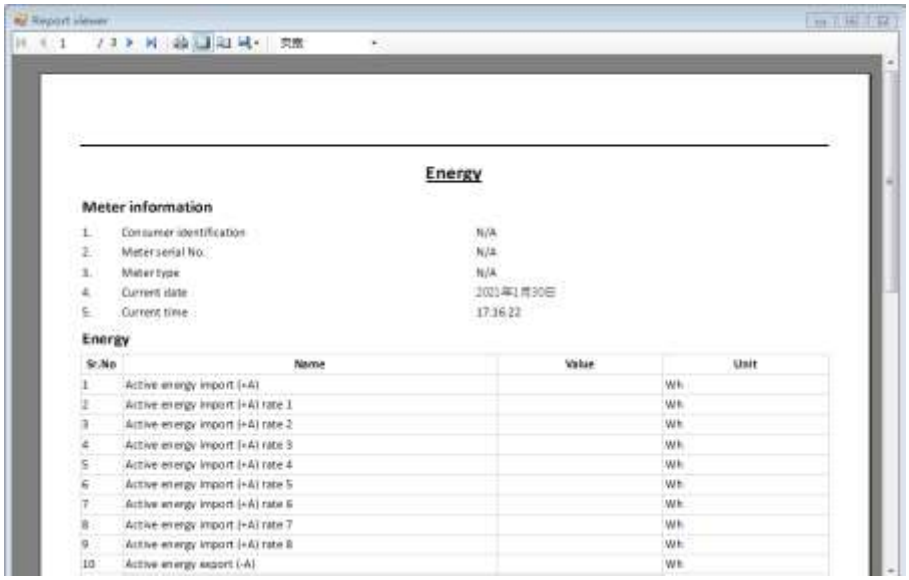
”is used to export log,“  ”is used to clear all logs，and the monitor types such as:

- Type: The type of the log
- Operator: Logged in user
- Device: What piece of equipment is operating
- Date and time: Operating time

Report



: Export the data what readed on the interface. The export format is excel/ PDF/word.



Energy

Meter information

1.	Consumer identification	N/A
2.	Meter serial No.	N/A
3.	Meter type	N/A
4.	Current date	2021年1月30日
5.	Current time	17:16:22

Energy

Sr.No	Name	Value	Unit
1	Active energy import (+A)		Wh
2	Active energy import (+A) rate 1		Wh
3	Active energy import (+A) rate 2		Wh
4	Active energy import (+A) rate 3		Wh
5	Active energy import (+A) rate 4		Wh
6	Active energy import (+A) rate 5		Wh
7	Active energy import (+A) rate 6		Wh
8	Active energy import (+A) rate 7		Wh
9	Active energy import (+A) rate 8		Wh
10	Active energy export (-A)		Wh

De-installation

There are two ways to uninstall the Hexview 4.0 pro:

Click“Start”and find“HexView4.0 Pro”from the whole items of software, open it and find“Uninstall”command and uninstall the software by installation instruction.Click“Start” and find the programme from Control Panel and select “HexView4.0 Pro” from programme lists, uninstall it.

Support

If there is any problem when using Hexview 4.0 Pro, please check as following:

1) If communication fails, it is recommended to use automatic connection to detect communication.”  ”

2) Check whether the meter display is light or not.

3) Check the connection of optical port right or not(input and output).Check wheter it connects the meter with computer in local communication.

4) Check whether the DB file matches meter.Check wheter the serial port in Device Archive is right or not.Check whether the sim card and computer are in the same LAN.

5) Check the signal light shines or not when moudel is in communication.

6) Refer to the related chapters in User Manual.It the above instructions do not work, please contact with responsible specialists.

appendix

Error code

Error code	Error description
10000	Failed to open serial port
10001	Serial port sending data failed
10002	Serial port baud rate switch failed
11000	Failed to establish TCP connection
11001	TCP failed to send data
12000	TCP connection failed
12001	TCP server data sending failed
12002	Failed to start TCP monitoring

20001	Link layer timeout
20002	Link layer transmission times overrun
20003	The link layer receives unexpected message
20004	Link layer message format error
30001	Application layer timeout
30002	Application layer receives unexpected APDU
30003	The APDU length of the application layer is too long, which is larger than the
30004	Encryption services not supported by application layer
30009	Other application layer errors
31001	Application layer handshake failed (rejected permanent)
31002	Application layer handshake failed (rejected transient)
32001	Application layer dataaccessresult error: hardware fault
32002	Application layer dataaccessresult error: temporary failure
32003	Application layer dataaccessresult error: read write denied
32004	Application layer dataaccessresult error: object undefined
32009	Application layer dataaccessresult error: object class inconsistent
32011	Application layer dataaccessresult error: object unavailable
32012	Application layer dataaccessresult error: type unmatched
32013	Application layer dataaccessresult error: scope of access violated
32014	Application layer dataaccessresult error: data block unavailable
32015	Application layer dataaccessresult error: long get aborted
32016	Application layer dataaccessresult error: no long get in process
32017	Application layer dataaccessresult error: long set aborted
32018	Application layer dataaccessresult error: no long set in process
32019	Application layer dataaccessresult error: data block number invalid
32250	Application layer dataaccessresult error: other reason
33001	Application layer actionresult error: hardware fault
33002	Application layer actionresult error: temporary failure
33003	Application layer actionresult error: read write denied

33004	Application layer actionresult error: object undefined
33009	Application layer actionresult error: object class inconsistent
33011	Application layer actionresult error: object unavailable
33012	Application layer actionresult error: type unmatched
33013	Application layer actionresult error: scope of access violated
33014	Application layer actionresult error: data block unavailable
33015	Application layer actionresult error: long get aborted
33016	Application layer actionresult error: no long get in process
33250	Application layer actionresult error: other reason
50001	Illegal data type
50002	Illegal data value
50003	Unsupported attribute
50005	No read permission (client permission limit)
50007	No write permission (client permission limit)
50008	No execution permission (client permission limit)