



# HMI Ethernet download and pass through function

**User manual**

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# Catalog

<b>INTRODUCTION .....</b>	<b>1</b>
<b>1. VARIOUS WAYS TO DOWNLOAD PROGRAM .....</b>	<b>1</b>
1.1 RS232 SERIAL PORT DOWNLOAD .....	3
1.2 USB DOWNLOAD .....	3
1.3 LAN DOWNLOAD .....	4
1.4 WAN DOWNLOAD .....	6
1.4.1 Configuration .....	6
1.4.2 Download .....	9
<b>2. HMI AND PLC COMMUNICATION.....</b>	<b>9</b>
2.1 HMI SETTINGS .....	9
2.2 PLC CONFIGURATION (PLC HARDWARE V3.4.5 AND UP).....	12
2.3 CABLE MAKING .....	14
2.3.1 Cable making.....	14
2.3.2 Wiring mode (-NT model PLC port has no RS232) .....	15
<b>3. PASS THROUGH .....</b>	<b>16</b>
3.1 USB PASS THROUGH.....	16
3.2 LAN PASS THROUGH .....	17
3.3 WAN PASS THROUGH.....	18
<b>4. Q&amp;A .....</b>	<b>21</b>

# Introduction

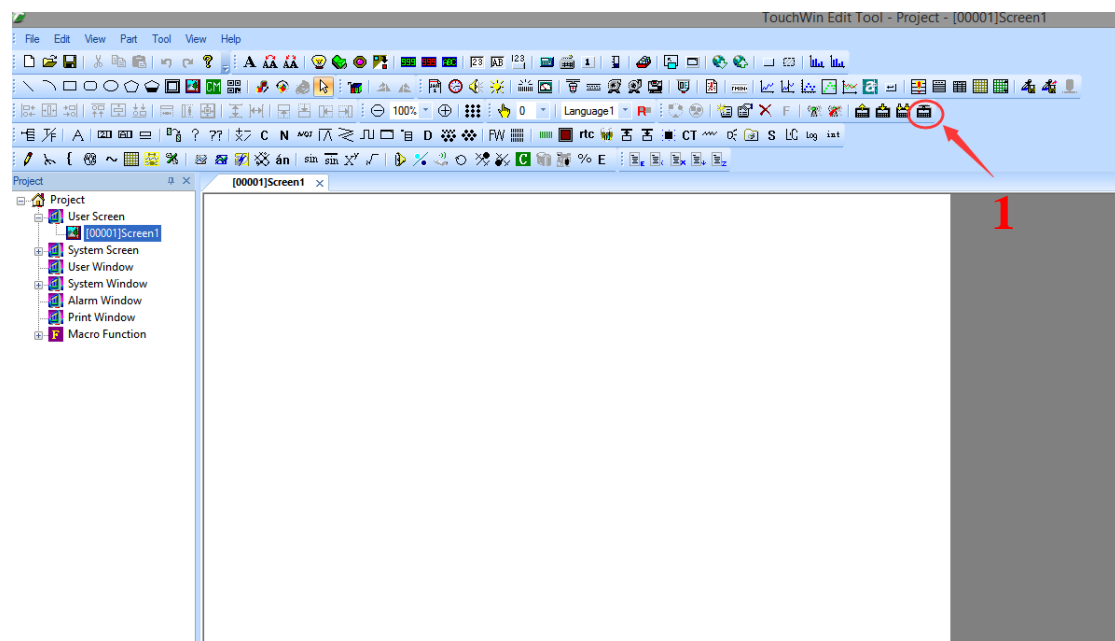
This manual mainly introduces TGM series HMI various download modes and pass through functions. The pass through function means that the computer does not need to connect to PLC, but only needs to connect the HMI to control the PLC, and download and monitor the PLC program. There are three ways of pass through: USB, LAN, WAN. This feature is only applicable to PLC that supports the Xnet protocol.

Pass through function requirements: the HMI is TGM series, software version v2.e and above; PLC hardware version V3.4.5 and above (body with Ethernet port PLC, hardware version V3.5.2 and above).

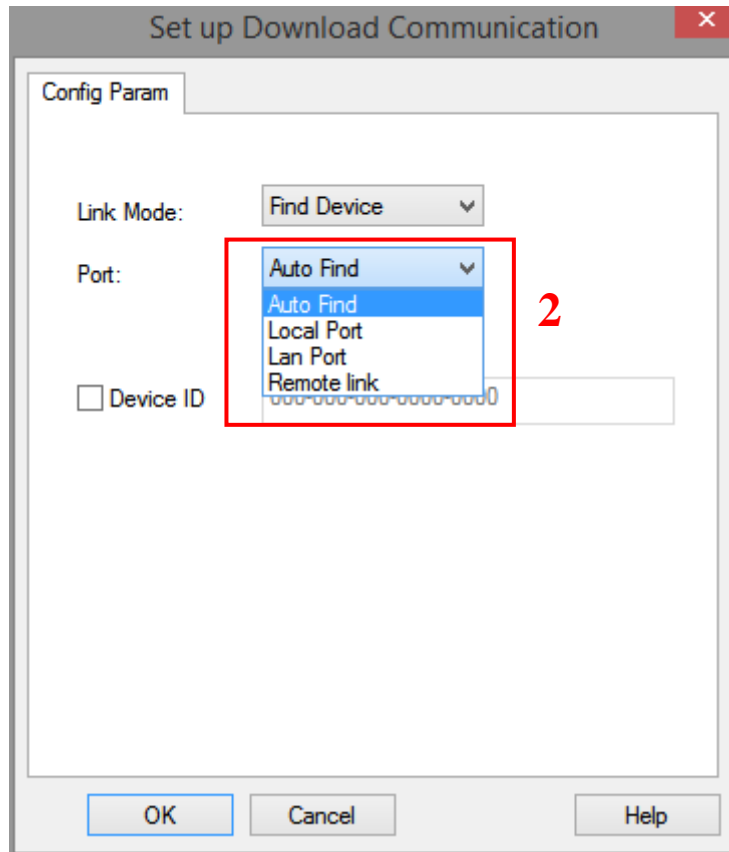
## 1. Various ways to download program

TGM series HMI has four download modes: RS232, USB, LAN and remote mode.

The mode can be set in HMI software, click the follow button to choose the mode.



**Fig. 1**



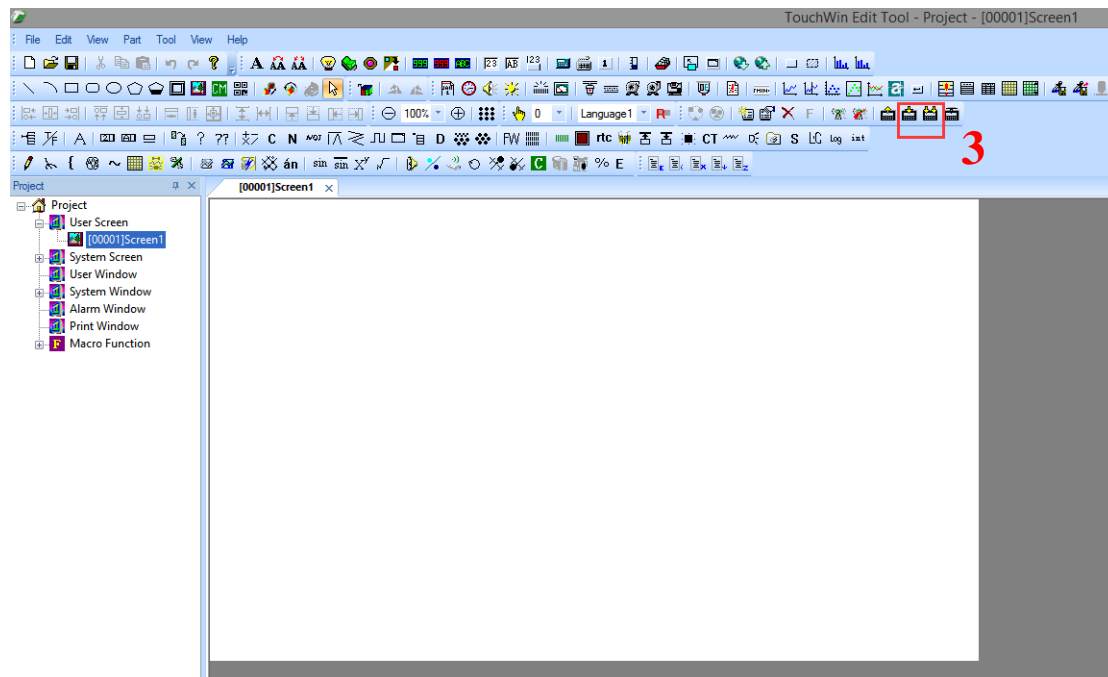
**Fig. 2**

Link mode: the mode to connect the HMI, please keep as default

Port: the port for PC to connect the HMI. Auto find is USB port, local port is RS232 serial port, LAN port is Ethernet port, remote link means WAN remote communication.

Device ID: find the HMI by the ID. It needs to select this ID when the port is LAN and connect multiple HMI. If only one HMI, no need to choose this. If the port is remote link, this must be set. The ID can be found on the label of the HMI. You also can turn on switch 3 of HMI and restart the HMI, click IP setting to check the ID.

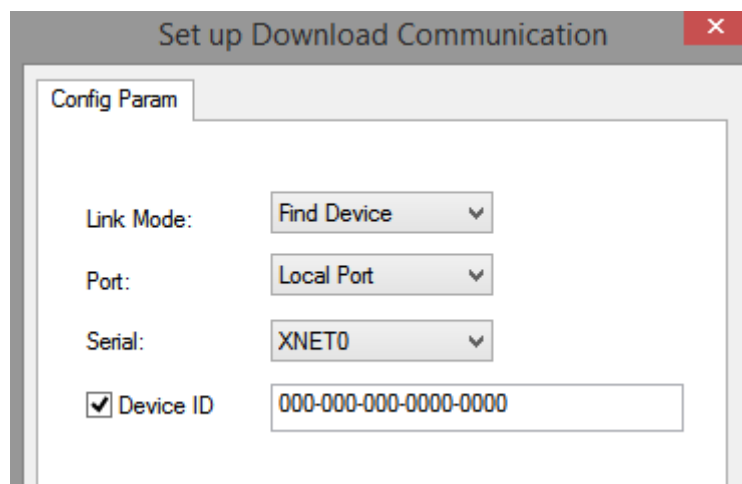
After setting, please click download button, it is shown as below image:



**Fig. 3**

## 1.1 RS232 serial port download

Connect the download port of HMI to PC with OP cable, choose local port and PC serial port in below window, then click download button to download program in HMI.



## 1.2 USB download

This mode no needs to set parameters. Please choose auto find in below window, then click download to download program in HMI.

Set up Download Communication

Config Param

Link Mode: Find Device

Port: Auto Find

☒ Device ID 000-000-000-0000-0000

Note: if the download is failed, please use config tool to find the HMI.

TouchWinLinkForm

FindDevice AddrLink

Protocol: XNet

LinkPort: Auto Try

☐ Find with ID

Device ID: - - - -

Find device

### 1.3 LAN download

It needs to connect HMI and PC with Ethernet cable for LAN download. Then set the IP of HMI and PC in the same gateway. Please choose LAN port in below window.

Set up Download Communication

Config Param

Link Mode: Find Device

Port: Lan Port

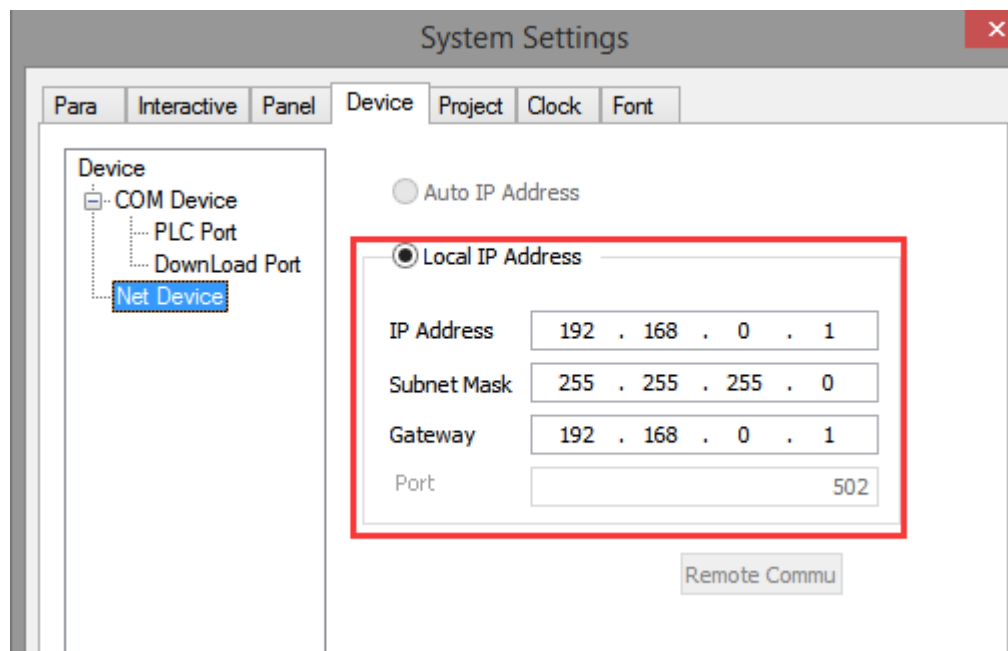
☒ Device ID 000-000-000-0000-0000

If one PC connects to multiple HMI simultaneously, device ID must be selected, the ID is used to identify the connected HMI. If only one HMI is connected, device ID is no need to selected. Please check the ID on the product label, or turn on switch 3 of HMI, and restart the HMI to check the ID in IP setting.

The defaulted HMI IP is 192.168.0.1, there are two methods to change the IP.

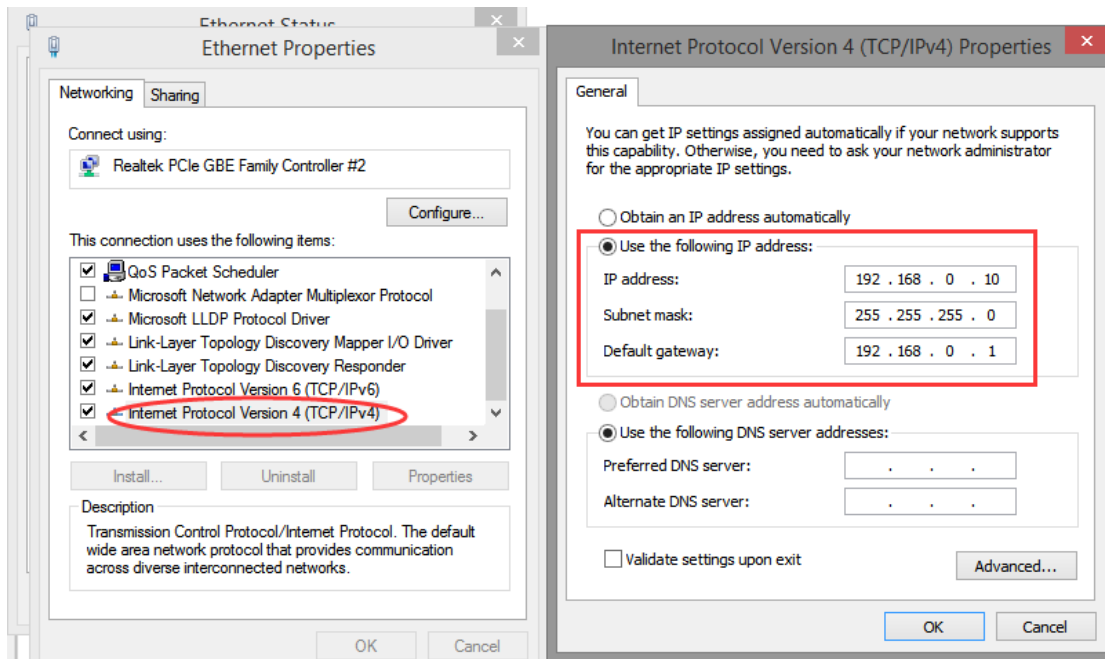
Method 1: open touchwin software, click file/setting/device/net device, then change the HMI IP, and download the program in HMI in USB mode.

Method2: turn on switch 3 of HMI, restart the HMI, HMI will enter system screen, click IP setting to set the IP, then turn off switch 3 and restart HMI again.



Note: in this mode, the HMI connects PC through Ethernet cable, the PC IP and HMI IP must be in the same gateway. Please see below image how to set PC IP address.

For example: HMI IP is 192.168.0.1, so PC IP must be 192.168.0.X, subnet mask and gateway must be consistent.



## 1.4 WAN download

When using the WAN to download, the HMI and the computer do not need any connection, just connect the HMI to the router, the remote computer can connect the HMI through the remote communication mode. The HMI can only be downloaded remotely in remote mode, so you need to configure the HMI first, set the HMI to remote communication mode, and then download the configuration to the HMI by USB.

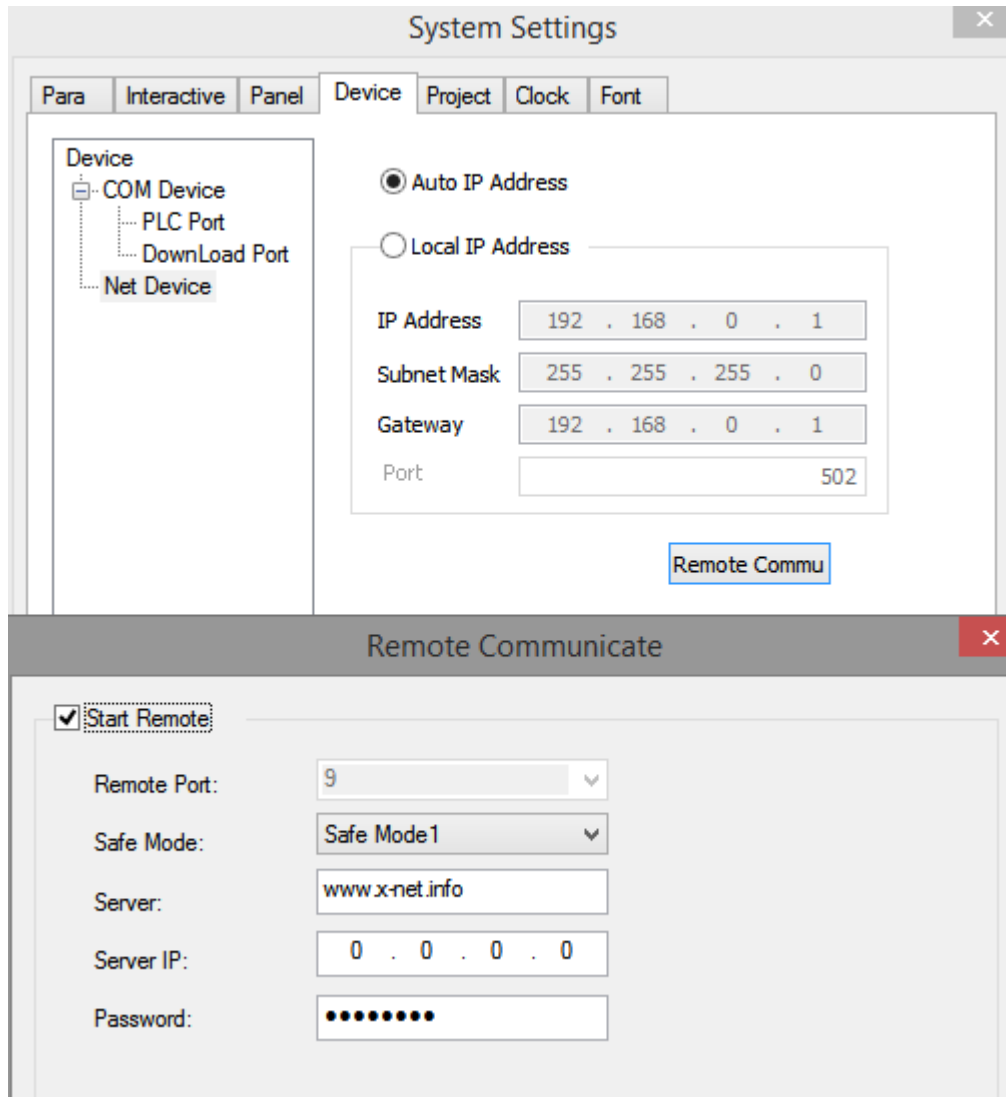
### 1.4.1 Configuration

First, the HMI needs to be configured into the remote communication mode, and the program will be downloaded into the HMI via USB, and the corresponding remote communication configuration will be downloaded into the HMI together. Click file/setting/device/net device to set HMI IP and remote link mode.

Auto IP address: assign the IP address of HMI through the router

Local IP address: manually set the IP address of HMI

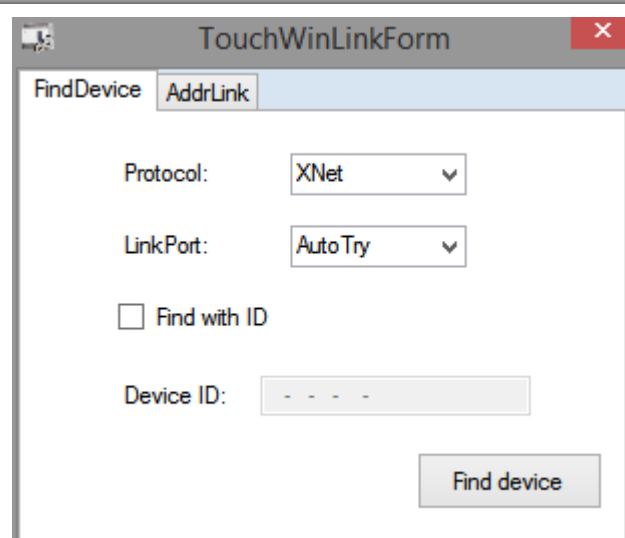
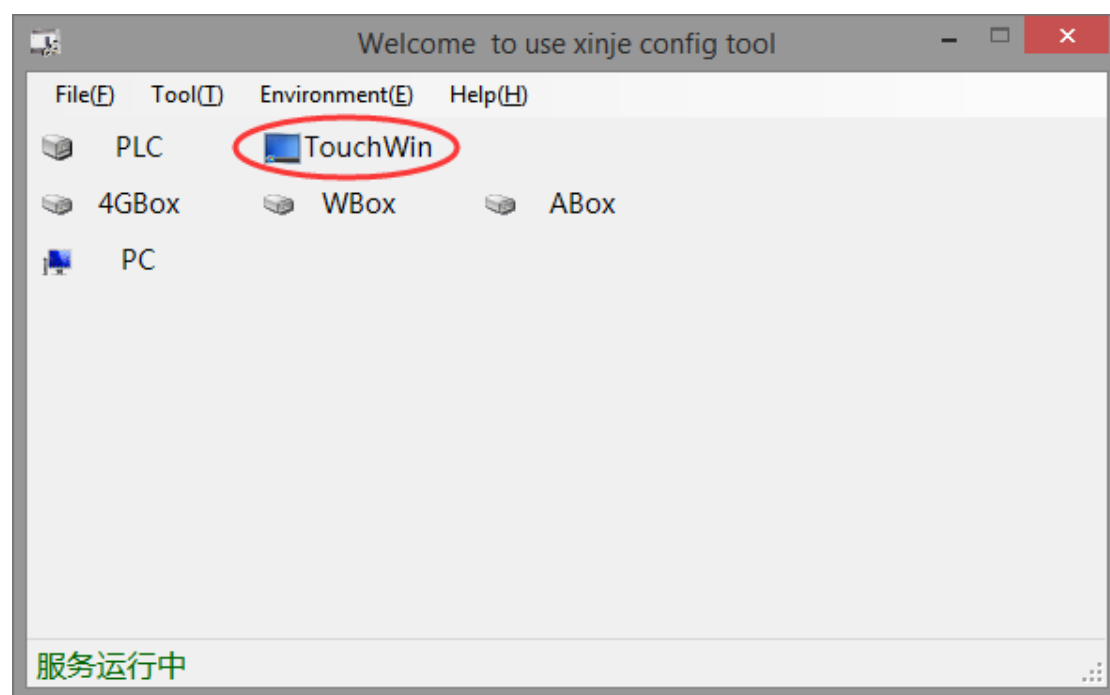




Click start remote to set the parameters.

- Remote port: defaulted HMI remote port is 9, cannot be changed.
- Safe mode: HMI supports safe mode 1, cannot be changed.
- Server: please use xinje server [www.x-net.info](http://www.x-net.info).
- Server IP: the IP of HMI remote communication, when the server is correct, this item no need to set, if the server is not filled in, please set correct IP, xinje server defaulted IP is 61.160.67.86.
- Password: Set the authentication password for remote communication. Only the correct password can be logged in successfully. The default password of HMI is 12345678. (note: the safe mode and password here are the same as the safe mode and password in the download protocol stack, so the two places should be consistent.)

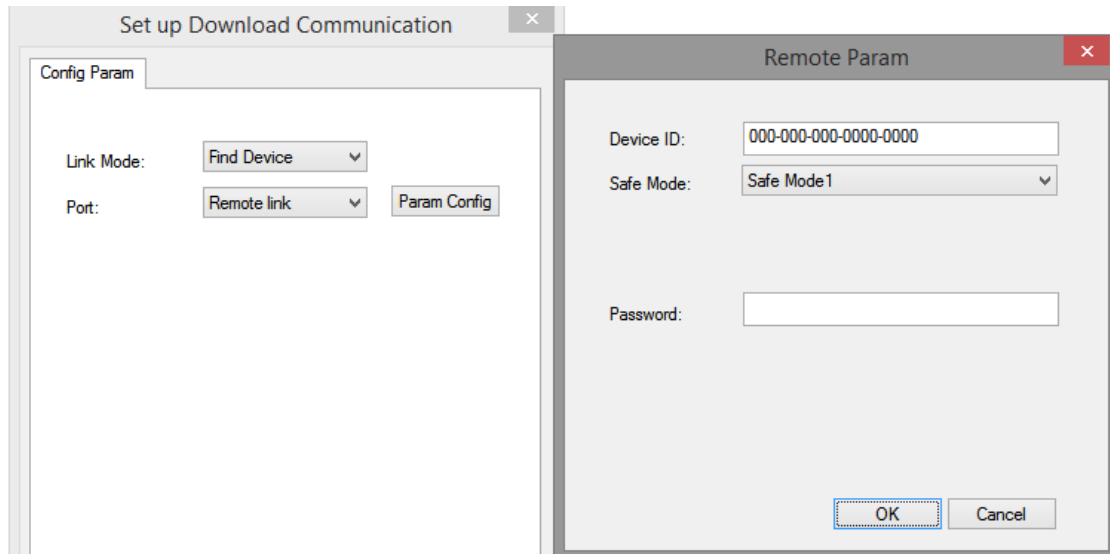
After the parameters are set in the software, the program is downloaded into the HMI via USB. In WAN mode, the HMI needs to power on again before it takes effect. The Ethernet parameters in the HMI can also be read through the configuration tool. (note: config software can only read HMI information, so writing is not supported temporarily)



## 1.4.2 Download

Connect the Ethernet port of the HMI to the router, select "remote link" in the download communication setup, and click "parameter configuration".

- Device ID: the ID number marked on the HMI label of TGM series (the "-" in the middle cannot be omitted);
- Safety mode: the HMI supports safety mode 1, which is not optional;
- Password: the authentication password of the remote communication used by the machine can be logged in successfully only if the password is correct;



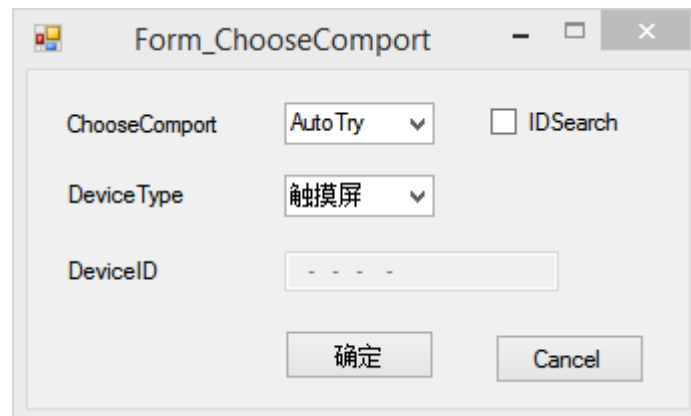
## 2. HMI and PLC communication

Since the pass through function is implemented based on the XNET protocol, it is necessary to use the configuration tool to set the TGM series HMI and PLC to XNET mode respectively, so as to ensure that the HMI and PLC communicate normally in the XNET protocol. PLC hardware version required V3.4.5 and above.

### 2.1 HMI settings

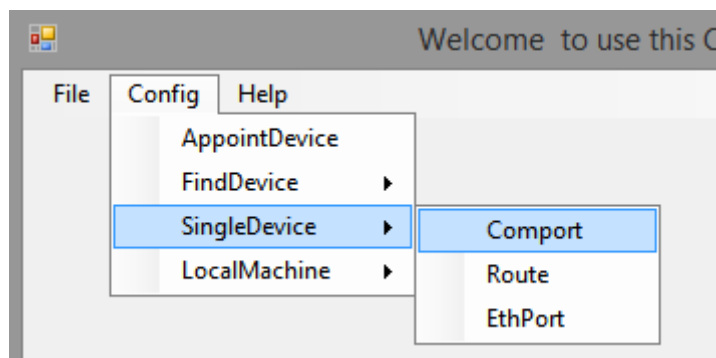
1. Create the HMI program. Select "xnet series" from the PLC port. Download the program in the HMI.
2. Connect the USB-B port of the HMI to the computer through the USB cable, and power on the HMI;
3. Double-click the shortcut on the desktop or open the "XINJEConfig" configuration tool in the start menu;
4. Open configuration - find device -XNet find

5. choose the PC com port, after the connection is successful, it will display the config tool initial interface.

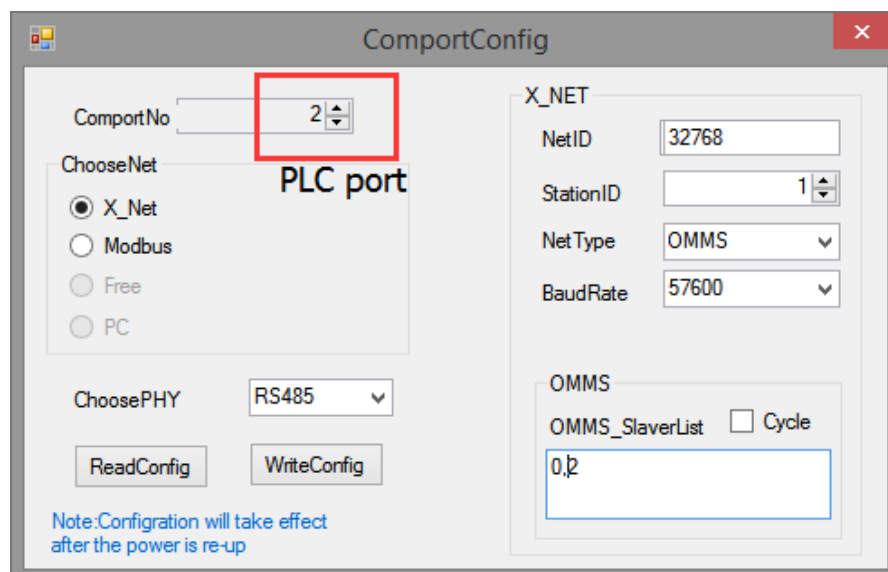


If the device is successfully found, it will jump to the initial screen automatically. If the connection fails, a connection failure window will pop up. Please check whether the serial port is wrong and close other software that occupies the serial port. If you can't connect, you can turn on the device manager to check that the driver is properly installed.

6. after the connection is successful, click config—singledevice—comport.

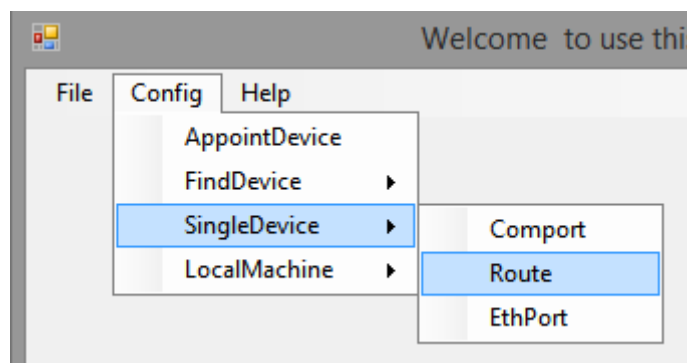


7. set the parameters in below window, click write then close the window.

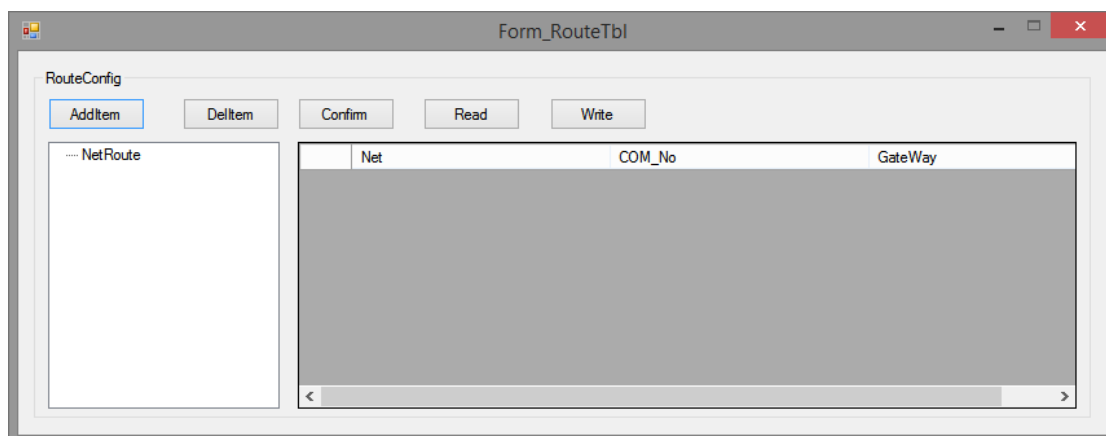


- Com port no: 1 is the Download (Download port) of the HMI, and 2 is the PLC port of the HMI. Users can select the serial port according to the actual communication.
- Choose net: select x-net.
- Choose PHY: when RS232 is selected, it is RS232 communication (-nt type PLC is not supported), and it is RS485 communication when RS485 is selected.
- Network ID: refers to the communication network number of two devices that need to communicate. The network number of devices in the same network must be the same. The customer can set the range of 1-32767.
- Station ID: in OMMS mode, HMI station ID must be defined as 1.
- Net type: select the OMMS type (that is, the single-HMI mode).
- Baud rate: the maximum baud rate of PLC port, download port and -nt model of the TGM series screen is 115200, and the maximum port rate of -nt model PLC is 3M.
- Cycle: when PLC supports motion bus, tick cycle.
- OMMS slave list: slave station numbers of devices connected by HMI, separated by commas. For example, one HMI is connected to two PLCs, and the station number of two PLCs is station 2 and station 3. When the HMI is configured, it is set to 0, 2 and 3 in the slave list, otherwise it will not be able to communicate.

8. click config—single device—route:



9. read the HMI configuration, click additem to set the parameters, then click write.



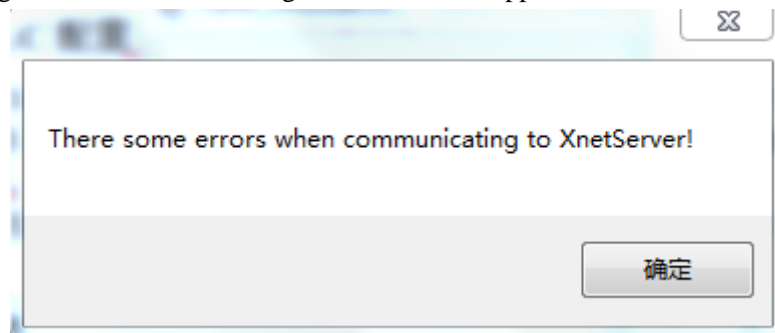
- Net: the network number set in the serial port configuration.
- Com\_no: serial port number in serial port configuration.
- Gateway: it is 0 in the same network. For different network, it is the station no. that transit device entered serial port.

Note: for cross - network communication, PLC hardware must be V3.3 above.

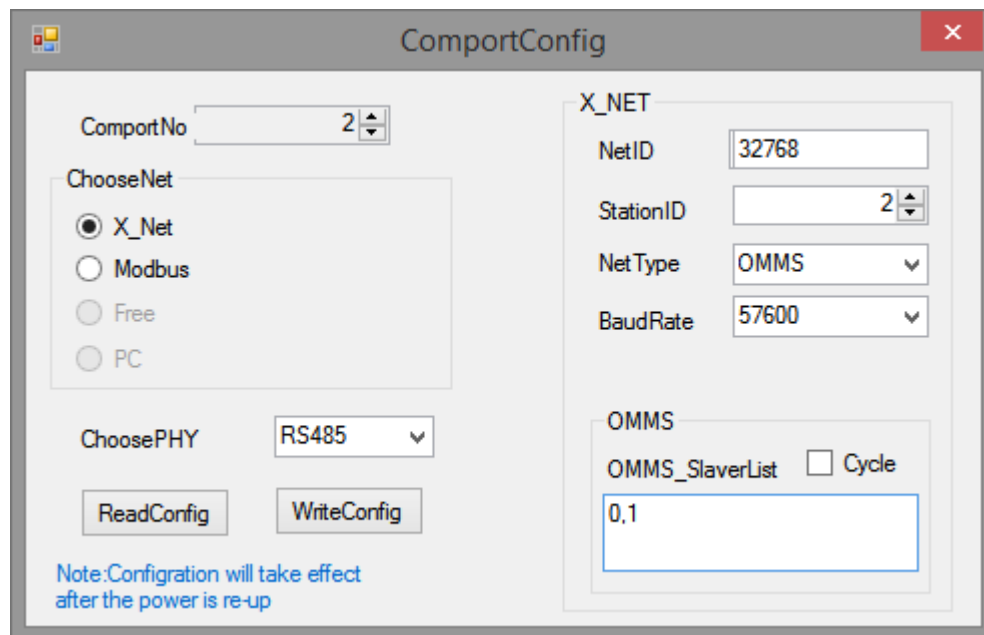
After the configuration is completed, please power on the HMI again to make the setting effective.

## 2.2 PLC configuration (PLC hardware V3.4.5 and up)

Connect the PLC to the computer through USB cable or port1 RS232, power the PLC, and repeat the OMMS manual configuration step 3-6. If PLC and computer communication is not normal, the corresponding error message will appear. At this time, you need to restart Config software and configure again until the error message below does not appear.





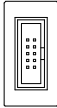
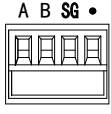
7. set the parameters in below window, then click writeconfig.



**Comport no:** PLC serial port no., user can choose the port as actual communication port.

XD series PLC communication port definition and function:

Name	Appearance	Interface definition	Serial port no.
Port1		RS232 port	1
Port2	A, B port	RS485 port	2

USB □		USB port	
Port3		Left extension ED port	3
Port4 Port5	 Up extension BD (left Port4, right Port5)	RS232/RS485/optical fiber port	4, 5

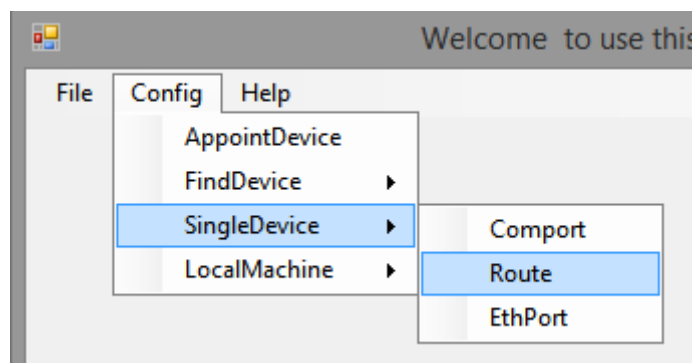
Station ID: defines the PLC station number in the communication network, range 1~100. The station number of the object in the HMI program corresponds to the PLC station ID here. Note: the PLC station number can only be 2 in OMMS auto match mode.

Net type: OMMS: one-HMI-one-device, one-HMI-multi-device. TBN: multi-HMI one-device, multi-HMI multi-device. Please choose it according to actual conditions.

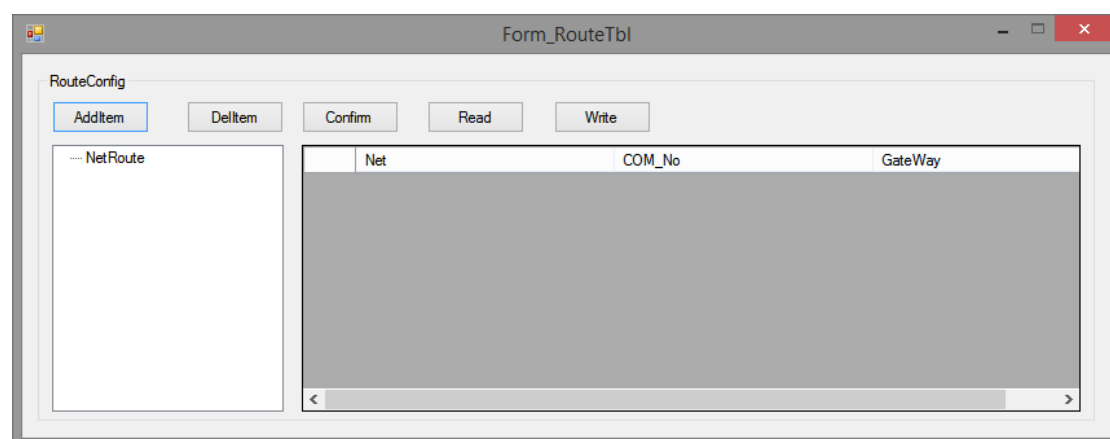
Baud rate: HMI and PLC baud rate must be consistent.

Other parameters and Settings can be found in the above HMI Settings.

Click config—single device—route:



First read the PLC settings, then click add item, set the parameters then click writeconfig.



After the configuration is completed, please power on the PLC again to make the setting effective.

## 2.3 Cable making

Model	Com type	PLC port cable	Download port cable
TGM	RS485	Fig 1	Fig 1
	RS232	Fig 3	
TGM765-NT	RS485	Fig 2	Fig 1
	RS232	\	Fig 3
TGM865-NT	RS485	Fig 2	Fig 1
	RS232	\	Fig 3
TGMA63-NT	RS485	Fig 2	Fig 1
	RS232	\	Fig 3

### 2.3.1 Cable making

#### 1. TGM series (RS485 mode)

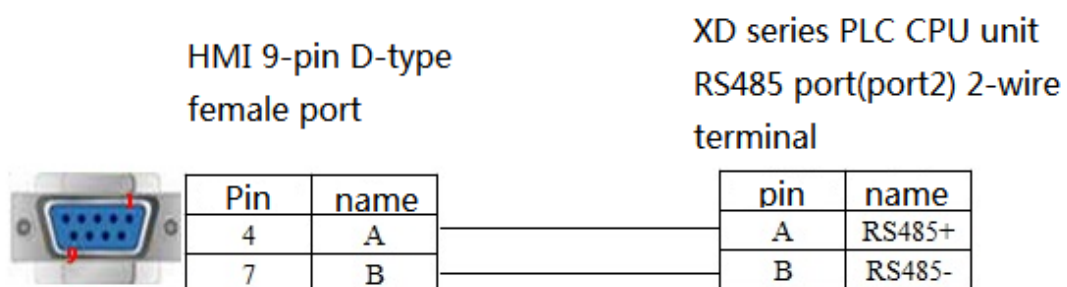


Fig 1

#### 2. -NT model PLC port RS485 mode

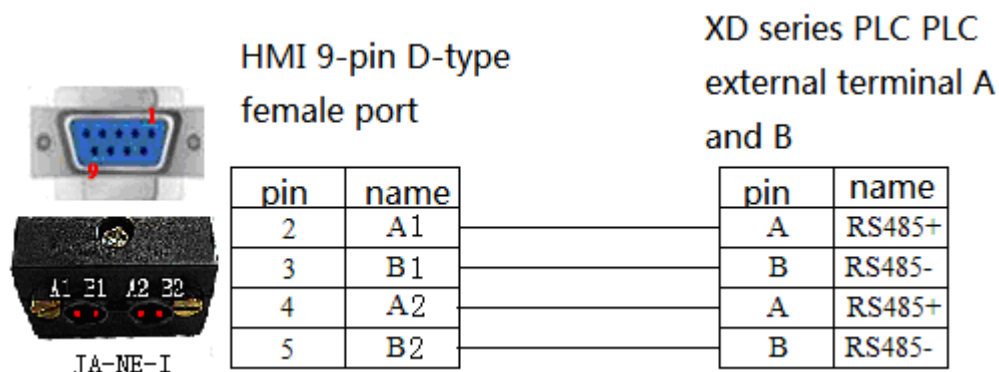
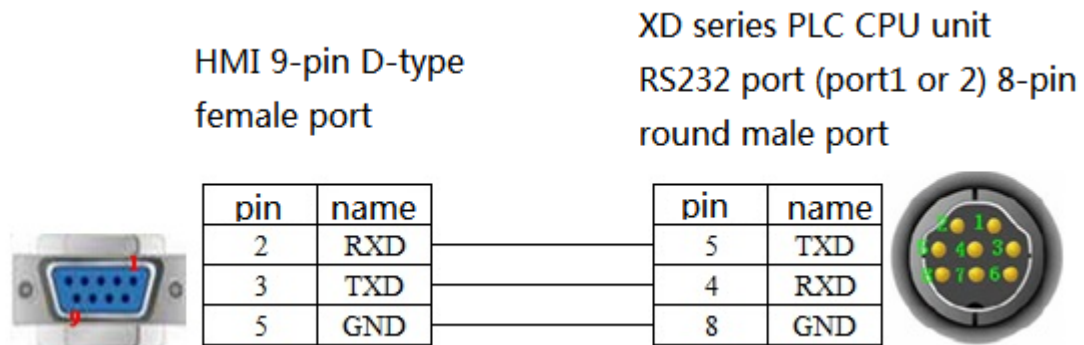


Fig 2

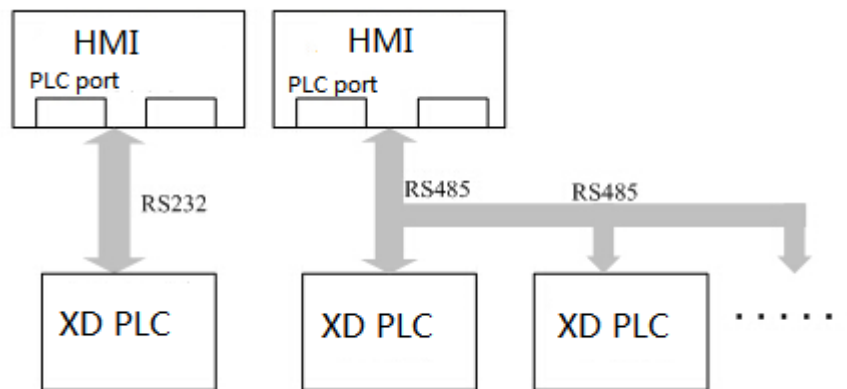
**Note:** can be used together with JA-NE-I, easy to connect the wire.



### 3. TGM (download port) RS232 mode

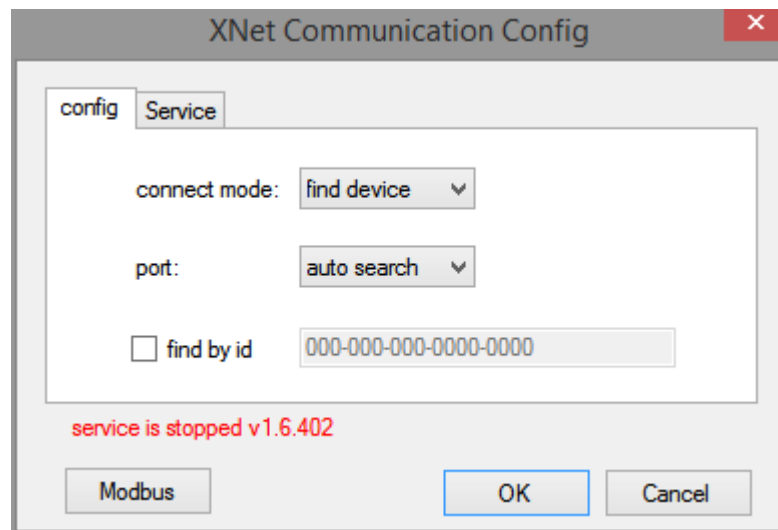


#### 2.3.2 Wiring mode (-NT model PLC port has no RS232)



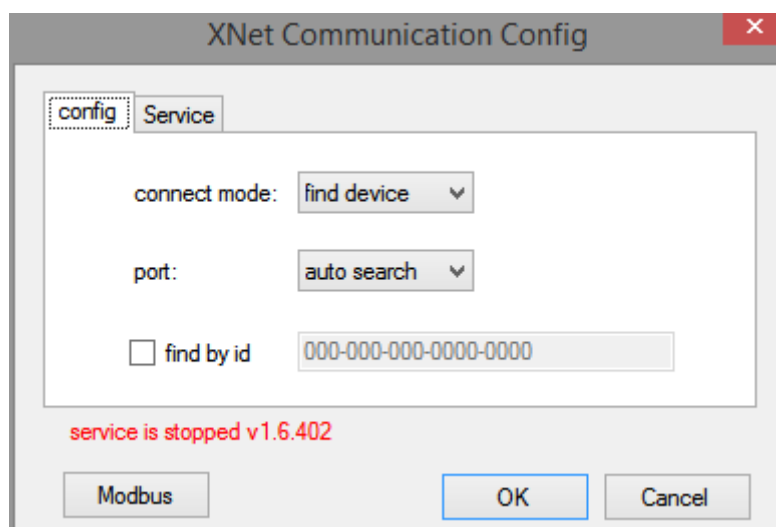
### 3. Pass through

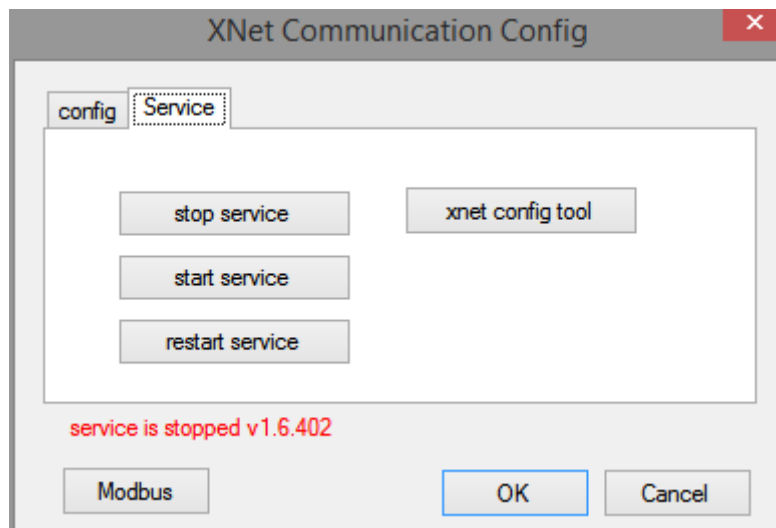
On the premise that HMI and PLC can communicate normally through XNet, pass through can be performed, connecting the computer with HMI through USB, network cable or WAN, opening XD series programming software – software serial port config-- XNet protocol, and setting the connection in the open interface.



#### 3.1 USB pass through

Connect the HMI to the computer with a USB cable, choose auto search port in software serial port config, or choose find by id (find PLC as ID, only the PLC with Ethernet port has ID number). click restart service, then click ok. Now user can monitor the PLC. If the error appears, please use config tool to find the HMI.



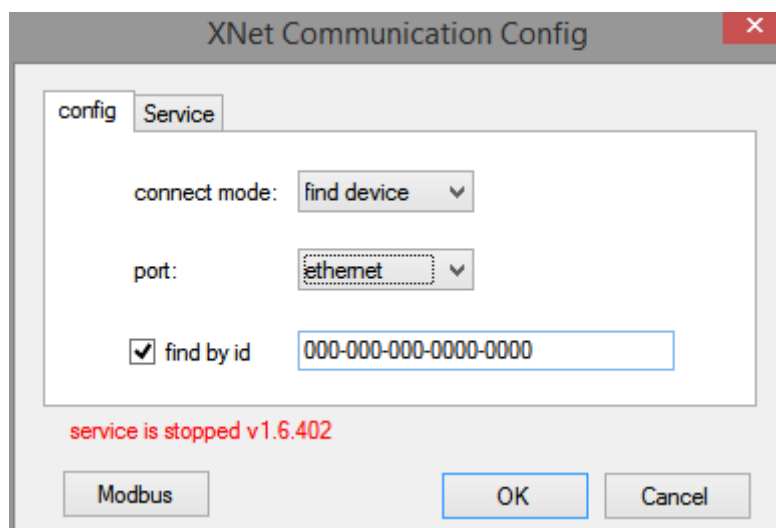


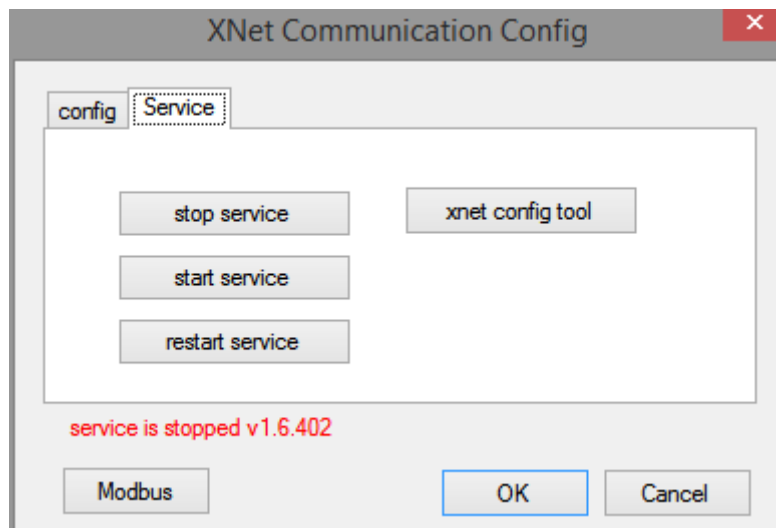
After the connection is successful, PLC software lower right corner will show “run” and scanning period, user can monitor and download program of PLC now.

### 3.2 LAN pass through

In LAN mode, PC connects HMI through Ethernet cable, set the IP of PC and HMI in the same gateway (refer to LAN download).

Make sure HMI and PLC communicates normally in Xnet mode, open PLC programming software, set ethernet port in software serial port config, click restart service and ok.

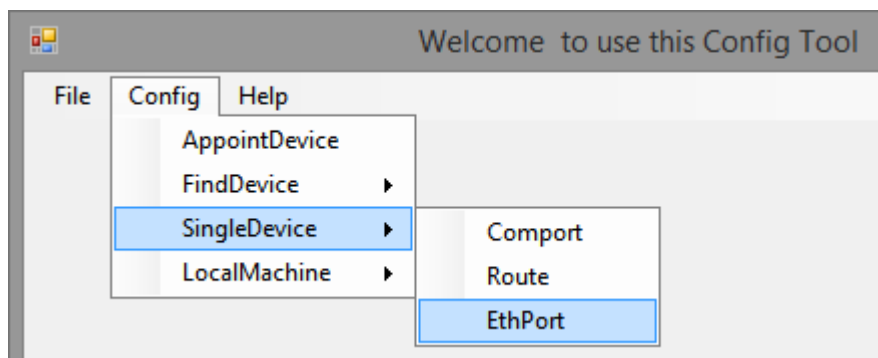




After the connection is successful, PLC software lower right corner will show “run” and scanning period, user can monitor and download program of PLC now.

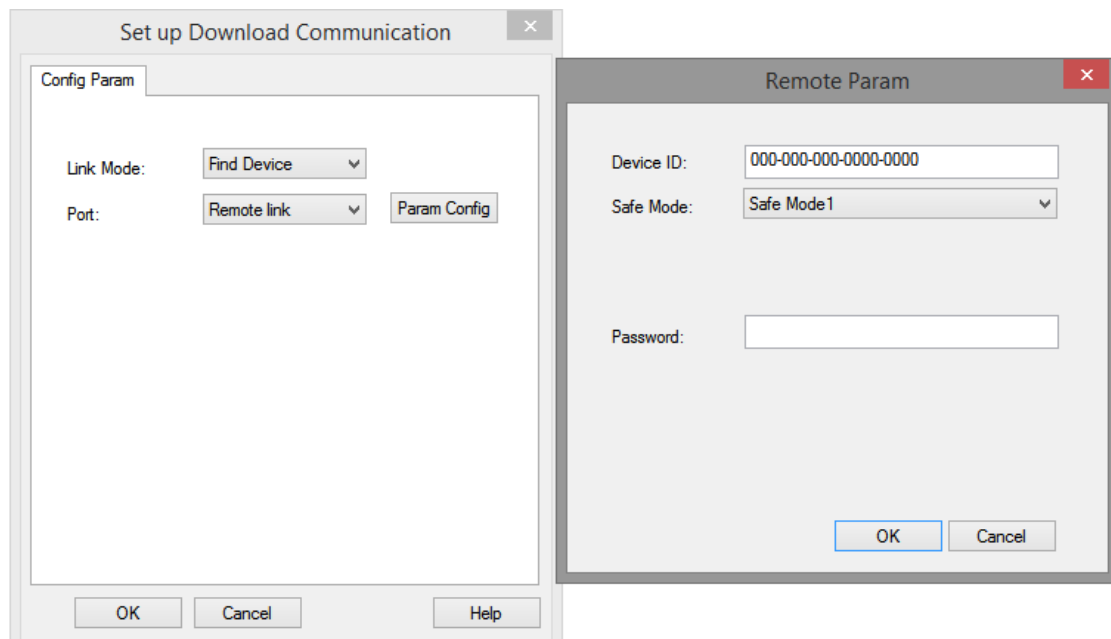
### 3.3 WAN pass through

In WAN mode, HMI must be in remote communication mode, read Ethernet info to know the HMI configurations in config tool software. HMI and PC are in the network.

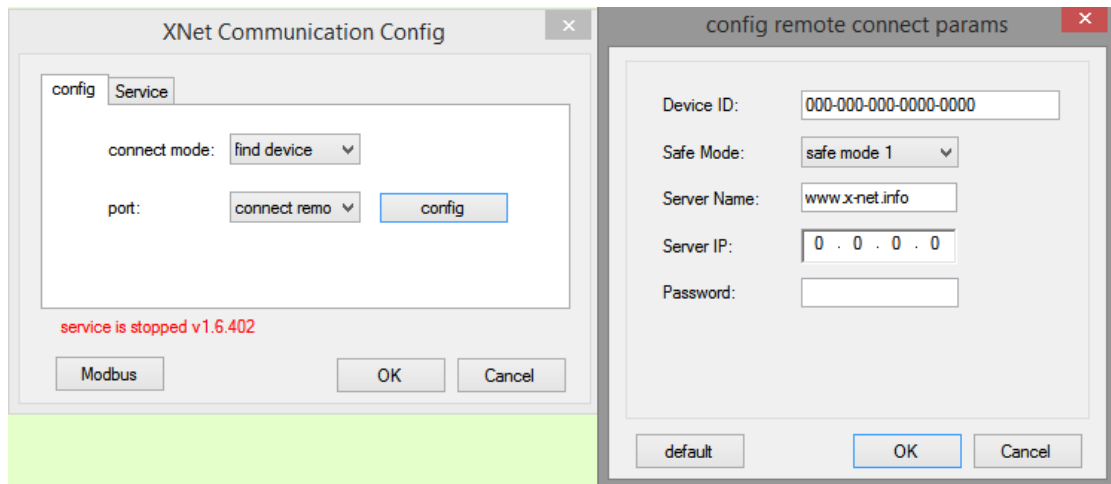




When HMI communicates with PLC via Xnet normally, open the touchwin software, set HMI to remote link in the download communication setup window (refer to WAN download), HMI connects to the router. Open the PLC software, choose connect remote in serial port config window, then click the parameter config to set the parameters.



HMI software Touchwin settings



XD PLC software XDPpro settings

Device ID: remote linked HMI ID (turn on switch 3 of HMI, restart HMI, check the ID in IP settings)

Safe mode: mode 1 cannot be changed.

Server name: Xinje server is www.x-net.info

Server IP: server IP of remote communication, when the server name is filled in, this IP no needs to set. Xinje server IP is 61.160.67.86.

Password: remote communication password, when the password is correct, the pass through function can be performed.

After clicking ok, user can monitor and download PLC program now. If it cannot connect, please turn on switch 3 of HMI and restart the HMI, check the IP settings. Check the remote log in LED, the LED ON means HMI connected to xinje server successfully, then please check whether PC has connected to Internet. If the LED is OFF, that means the HMI has not connected to xinje server, please check the router, server name and password.

After the connection is successful, PLC software lower right corner will show “run” and scanning period, user can monitor and download program of PLC now.

## 4. Q&A

If pass through is unsuccessful, please check the following aspects:

1. Check whether the connected HMI supports pass through function. At present, only the TGM series HMI supports pass through and network connection.
2. Check whether the connected PLC supports the Xnet protocol. Currently, the pass through function only supports PLC with Xnet protocol.
3. Check whether the computer has installed the latest version of config tool (software version requires V1.6.398 and above). No connection can be established between the software and the HMI if config cannot find the HMI. The computer needs to install the latest version of config software to find the touch screen.
4. Check whether communication is established between HMI and PLC. The premise of pass through is that the HMI and PLC should communicate normally through the Xnet protocol. If the communication between the HMI and PLC is not successful, the function of pass through cannot be achieved.
5. Please note when downloading or passing through in the LAN: the software cannot automatically recognize the network card driver, only the network card of the computer itself can be identified. If you can't download or pass through in the LAN, you can turn on your network settings to see if there are multiple network cards in your computer, and disable the extra ones temporarily (e.g., wireless card, USB port, etc.).

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