11 PLC Protocol

Last modified by Hunter on 2023/02/04 11:08

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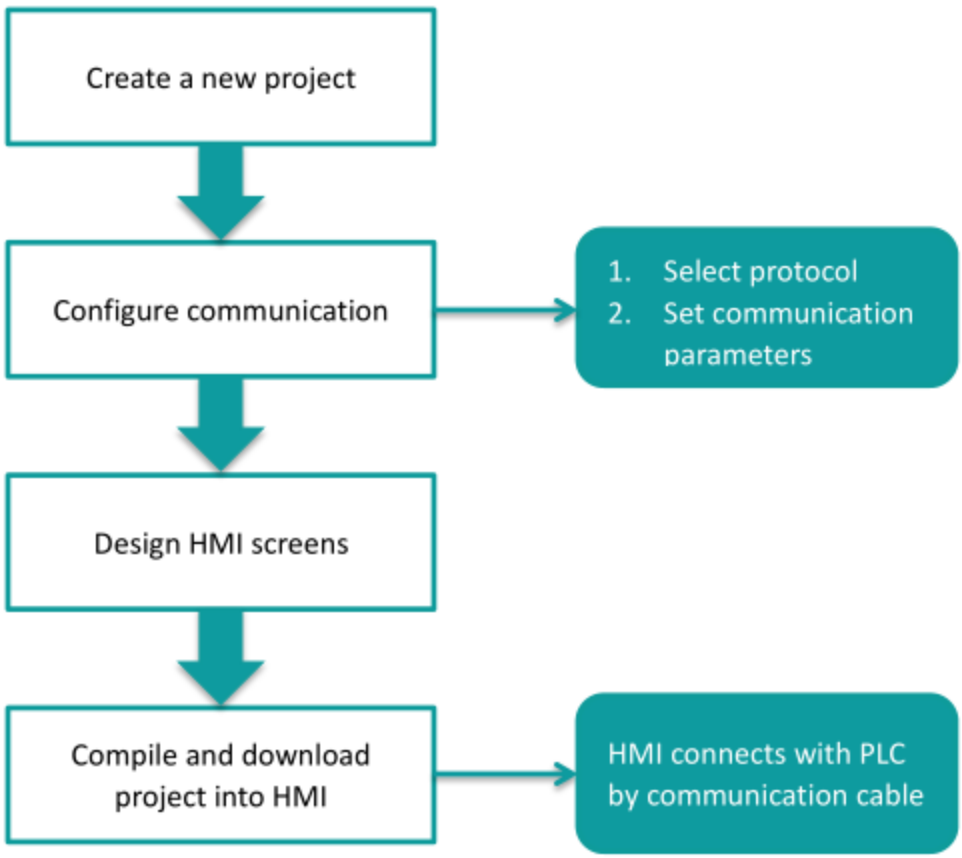
Introduction

This chapter contains information on configuring the communication between device and HMI.

General Procedure

During configuring communication in PIStudio. The following components and conditions is indeed at least.

- One PI HMI
- One connected controller (for example PLC)
- One Cable Wiring



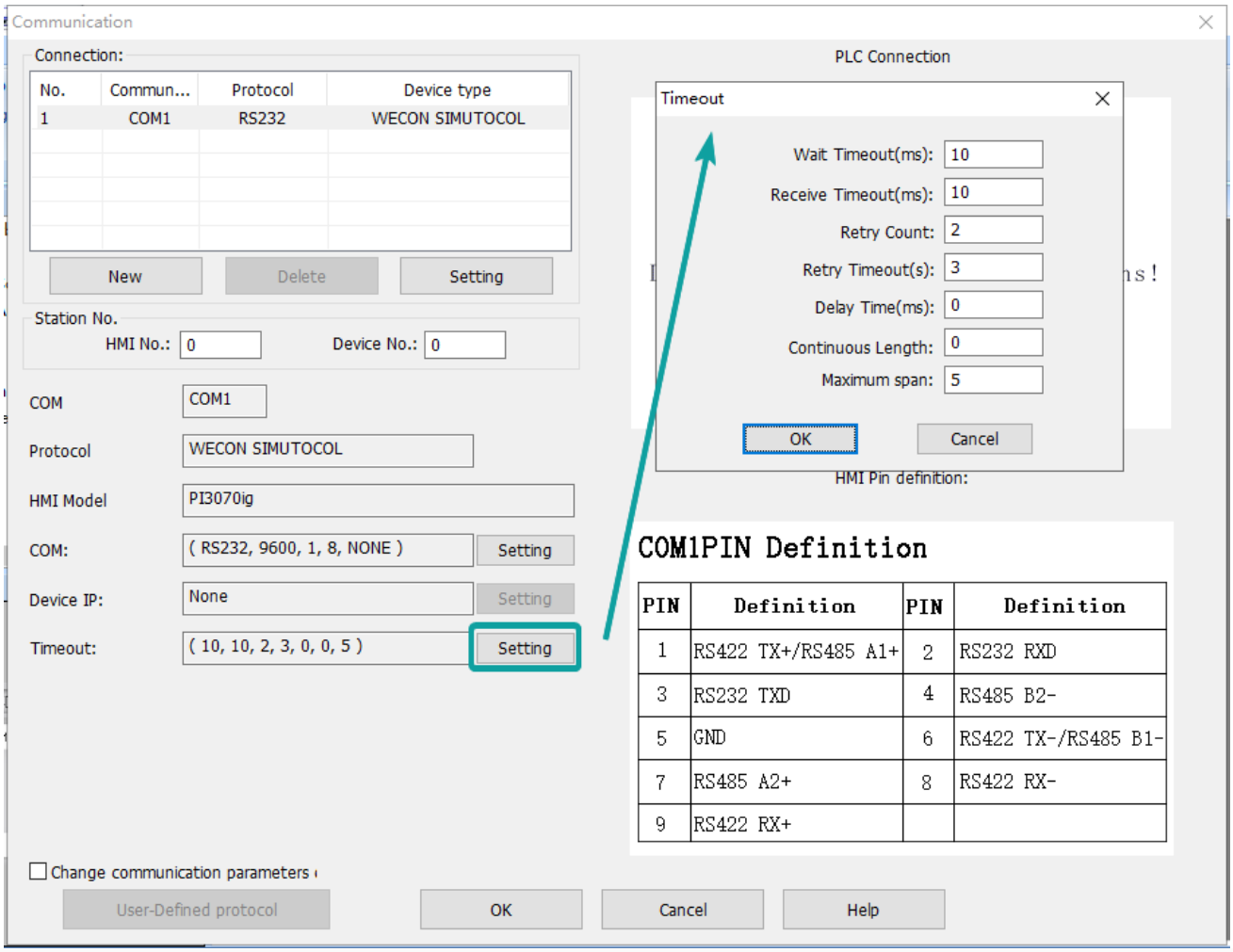
User need to select controller protocol and set communication parameters in HMI project. Please note to set same communication parameter between controller and HMI project. After finishing project, user could download HMI project into HMI and connect HMI with controller by Cable Wiring. Thena simple automation system would be established.

Communication Settings

For example, controller is WECON LX3V series PLC and HMI is PI8070. Please set communication protocol, and set communication parameters in the [Communication].

Timeout

The follwoing are description for the timeout settings from [Communication].



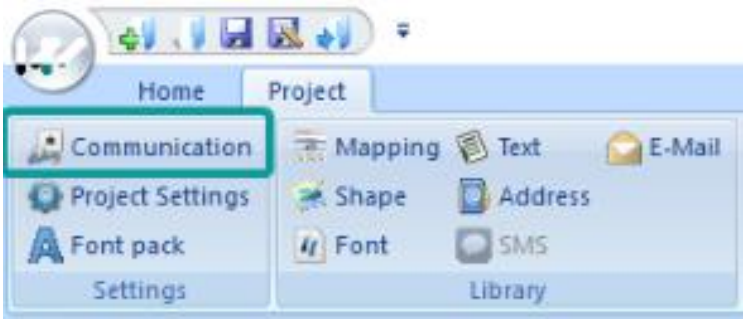
- Wait Timeout(ms): The time HMI waits for a response from the PLC.
- Receive Timeout(ms): The longest waiting interval between the HMI receiving two characters.
- Retry Count: The number of retries when there is no response in the communication between HMI and PLC.
- Retry Timeout(s): The PLC will not be accessed during the Retry Timeout period when there is no response in the communication between HMI and PLC.
- Delay Time(ms): The speed at which the HMI communicates with the device.
- Continuous Length: Default value 0 means the maximum length specified by each protocol. Addresses dealt by Maximum Span settings, its read length for single time, if the Continouous Length is 1, which means it will

read/write the every register one by one. If the length of Maximum Span is greater than or equal to the Continuous Length, the continuous read/write will be performed in groups according to Continuous Length.

- Maximum Span: Set the interval for reading PLC addresses. If there exists two same register type addresses, their interval is less than the set value of Maximum Span, then they will be integrated into a continuous address, otherwise it will be divide into two independent addresses.

Operating Procedure

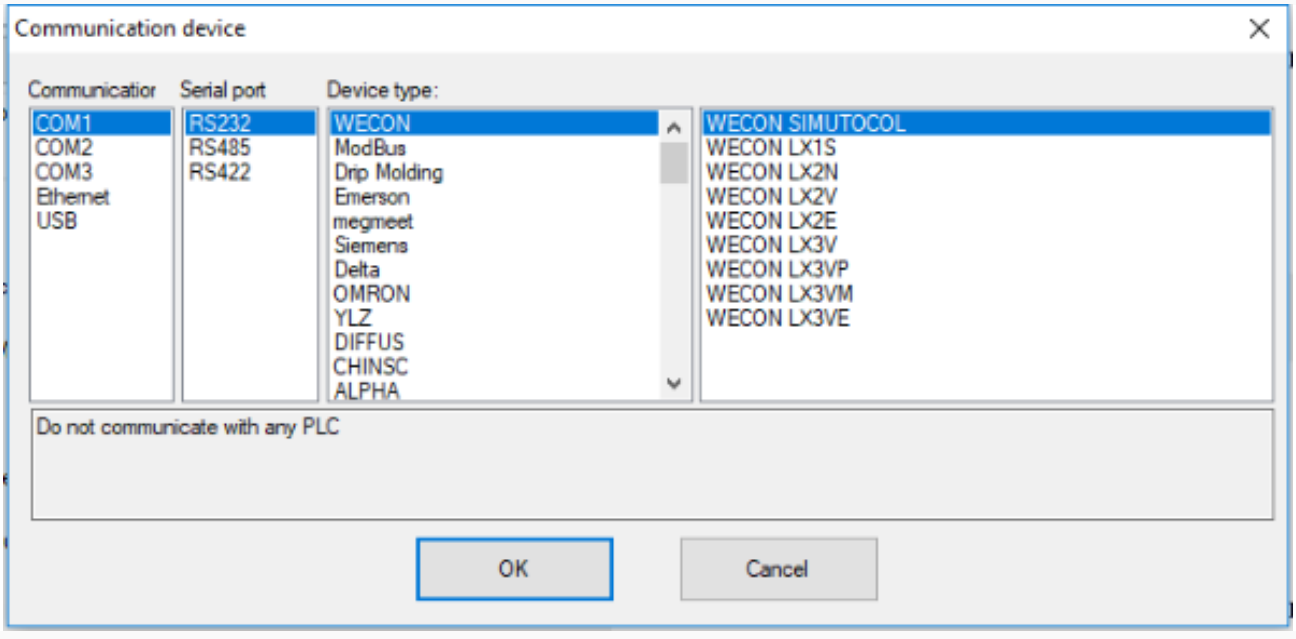
After creating the [Quick_Start] project,select the [Project]->[Communication].



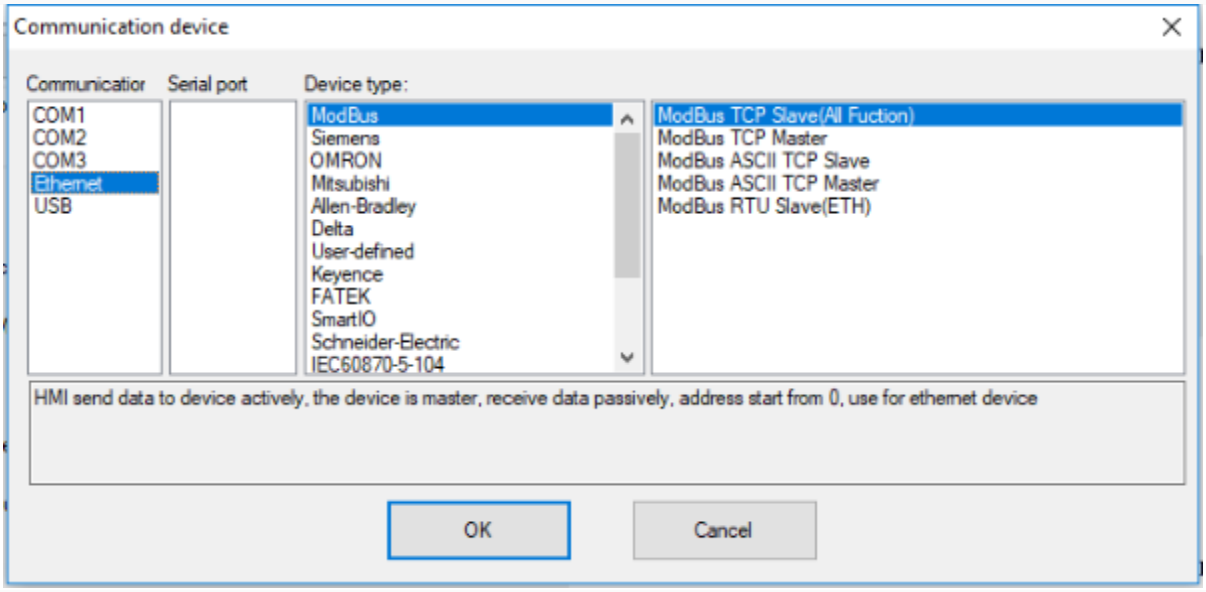
Click “Setting” to open protocol setting windows.

Select communication protocol, users could select serial port, Ethernet port, CAN port or USB.

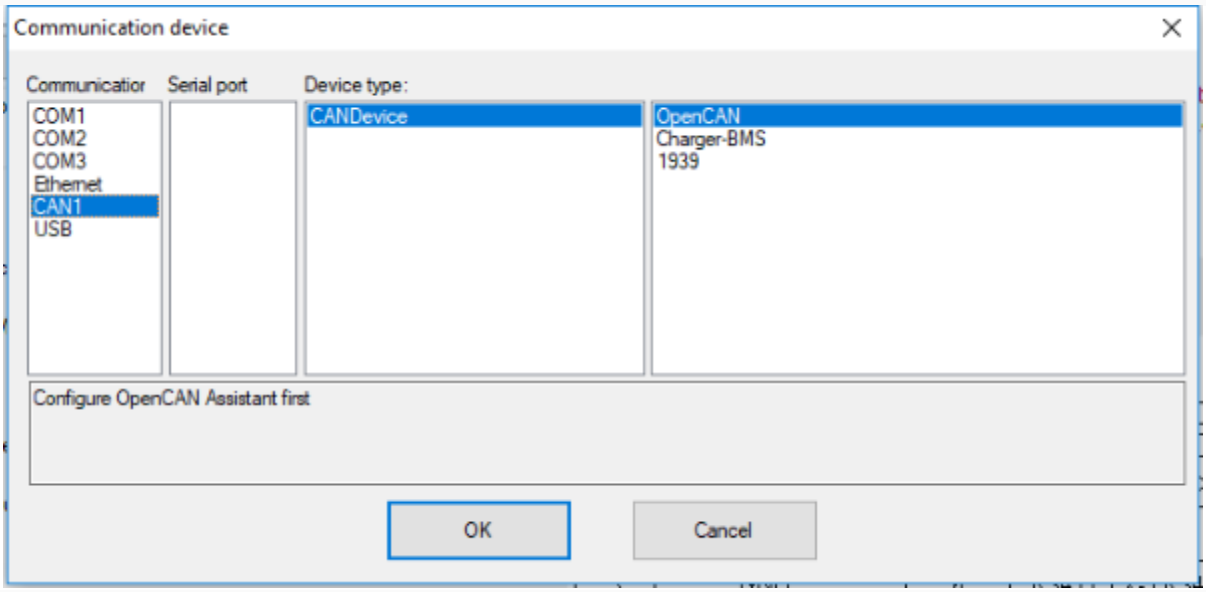
- Serial port:



- Ethernet port:



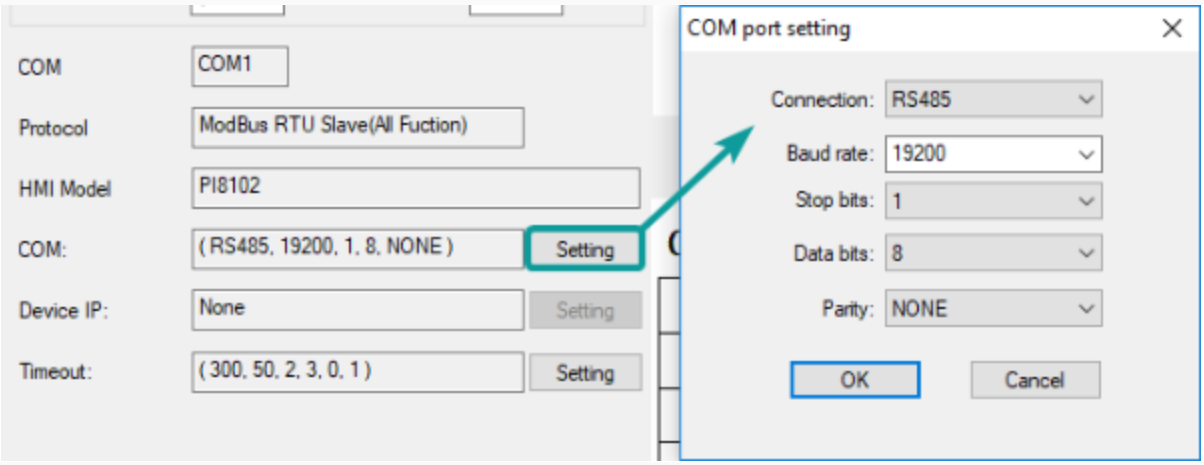
- CAN port (In COM1):



- USB port:

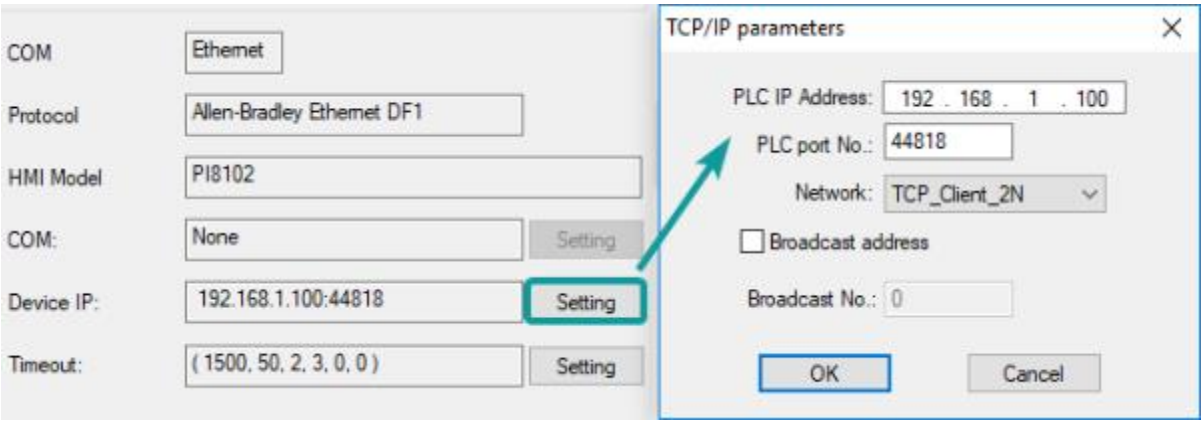
About parameters for communication, PLC default communication parameters have been written to PIStudio, the user can adjust them according to the actual situation.

- Serial port:



- Ethernet port

Please note, during using Ethernet port, please set HMI IP in [Project Setting], the detailed, please refer to [Project Setting] chapter.



Click [OK] button to save settings and close the dialog;

Create communication with WECON PLC

LX3V Serial Protocol

Supported series: WECON LX2V/ LX2E/ LX3V/LX3VP/LX3VE/LX3VM

HMI Settings

Item	Settings	Note
Protocol	WECON LX2V/ LX2E/ LX3V/LX3VP/LX3VE/LX3VM	

Connection	RS422/RS485	
Baud rate	9600	
Data bit	7	
Parity	EVEN	
Stop bit	1	
PLC station No.	1	

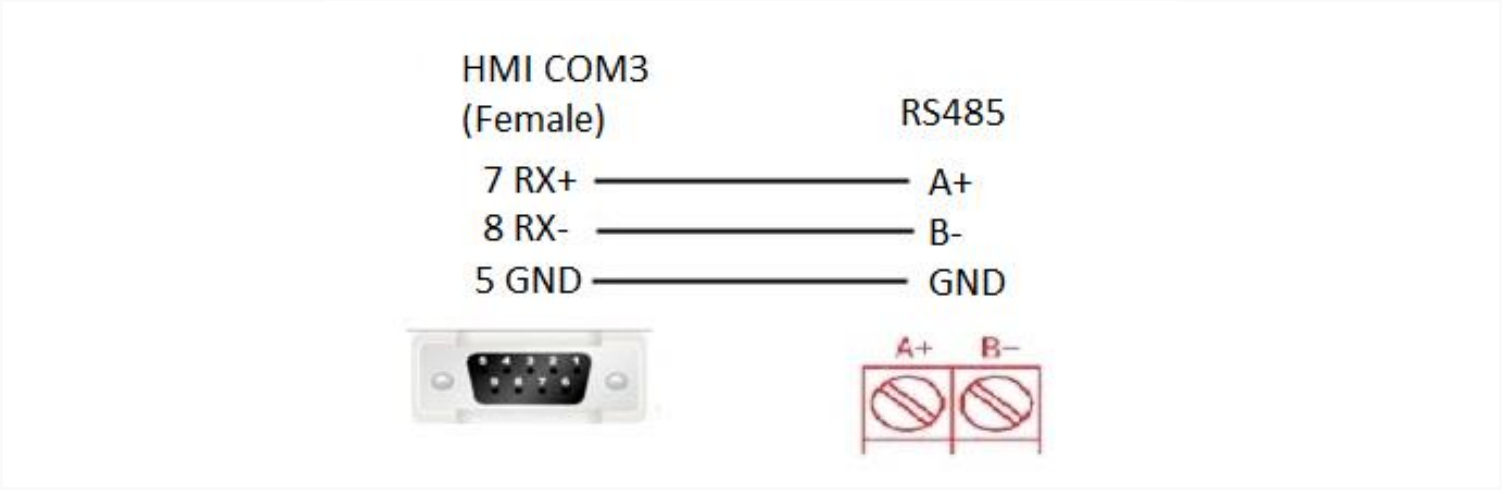
Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	Xo	0~303237	
	Y	Y	Y o	0~303237	
	M	M	M d	0~99999	
	T	T	T d	0~99999	
	C	C	C d	0~99999	
	S	S	S d	0~99999	
Word	X	X	Xo	0~303237	
	Y	Y	Y o	0~303237	

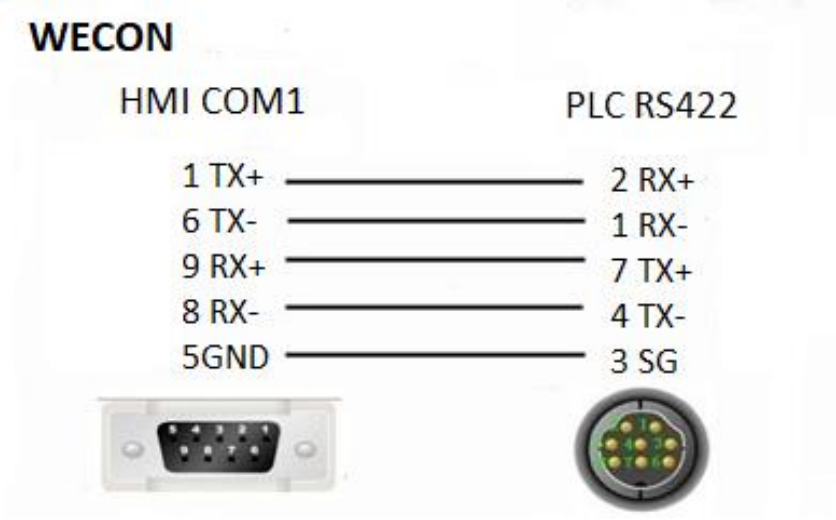
	M	M	M d	0~99999	
	T	T	T d	0~99999	
	C	C	C d	0~199	
	D	D	D d	0~7999	
	S	S	S d	0~99999	
	SD	SD	SD d	8000~9999	

Cable Wiring

- **RS485**



- **RS422**



✎**Note:**

- HMI COM3 is available in PI8000 series and COM3 is in COM2(hardware PIN 7 and PIN 8) .
- If PLC <= 20 points,such as LX3V-1208/LX3V-0806 PLC,PLC RS485A and RS485B mean PLC COM2 RS485+ and RS485- .PLC COM2 can support modbus. Please refer to PLC COM2 setting manual.

https://drive.google.com/drive/folders/13rgso7oUlatZQN_SNEcJCcN4toEdDPoP?usp=sharing

HMI settings

Download PIStudio Software

Please visit the link below to get the latest version PIstudio for HMI programming:

- Download link

Create a new HMI project connect with PLC

Check the link below for the video to show you how to get started with a new project

- Video

For more videos, please visit our Youtube channel: http://www.youtube.com/user/Wecon2004/videos

General

HMI could communicate with PLC and support many PLC protocols. It is easy to operate and set communication parameters. This demo shows how to make a communication with PLC device, use WECON LX3V Series PLC as an example.

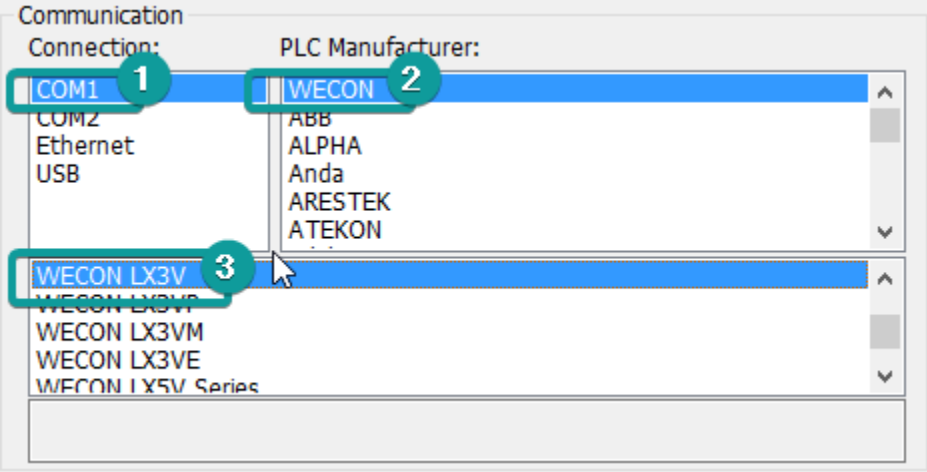
Protocol settings

The communication between two devices requires a protocol. The following contents show the steps of protocol settings.

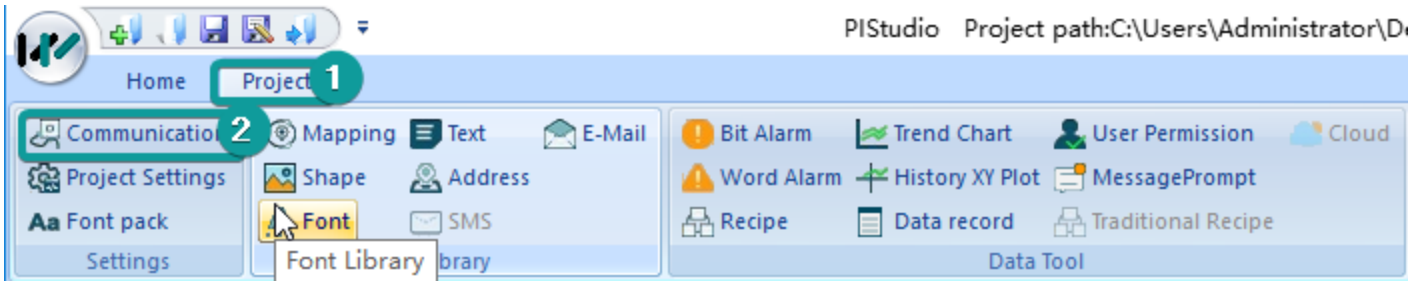
Please select the protocol, when creating a new project.

1. Select the COM port for communication;

2. PLC type: It means PLC brand, like WECON;
3. PLC model: It shows the model of PLC, such as LX3V;

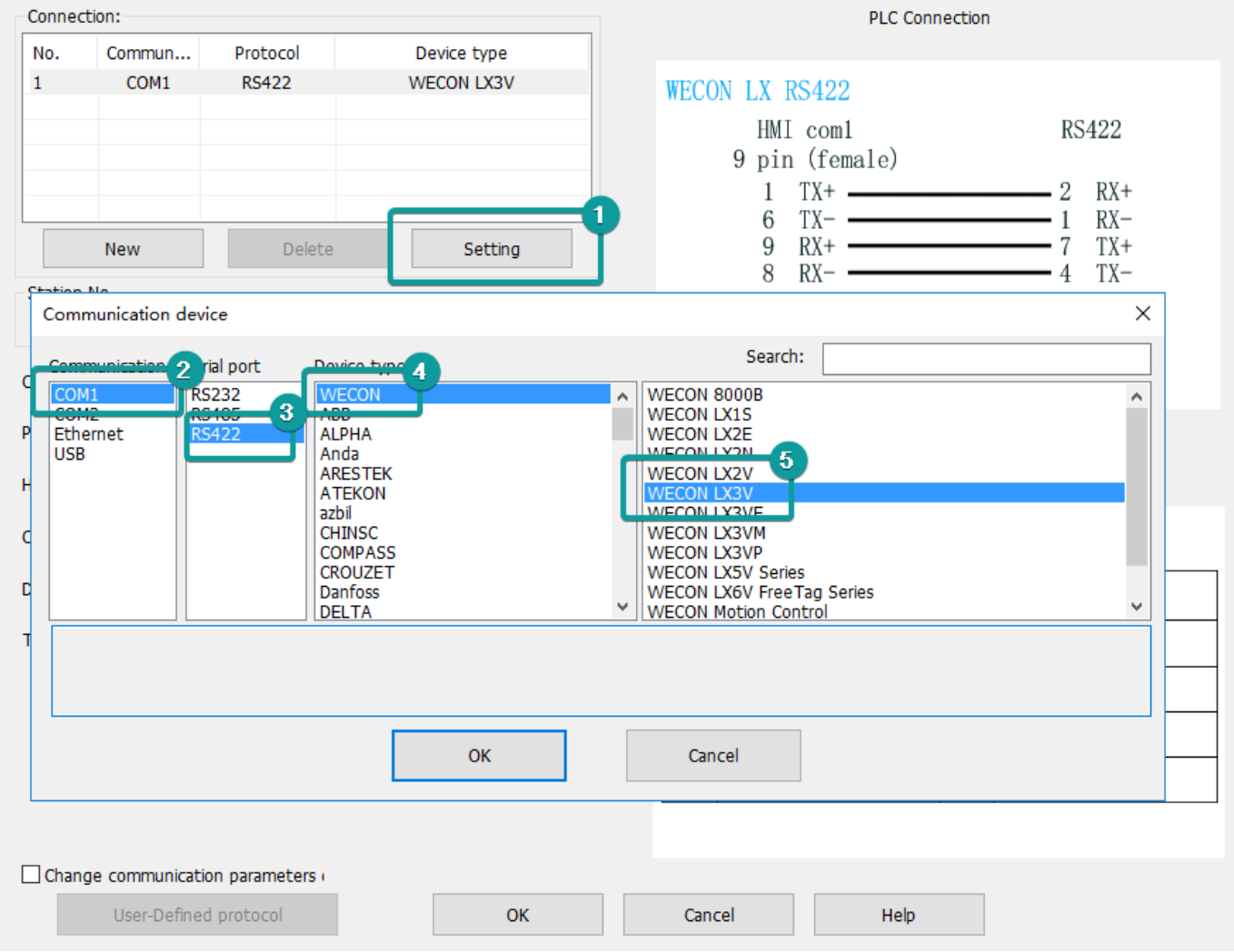


If you want to change the protocol for existing project, please click [Program] → [Communication] to open the [Communication] windows, shown as the following figure.



The steps to change the protocol for project are as follows.

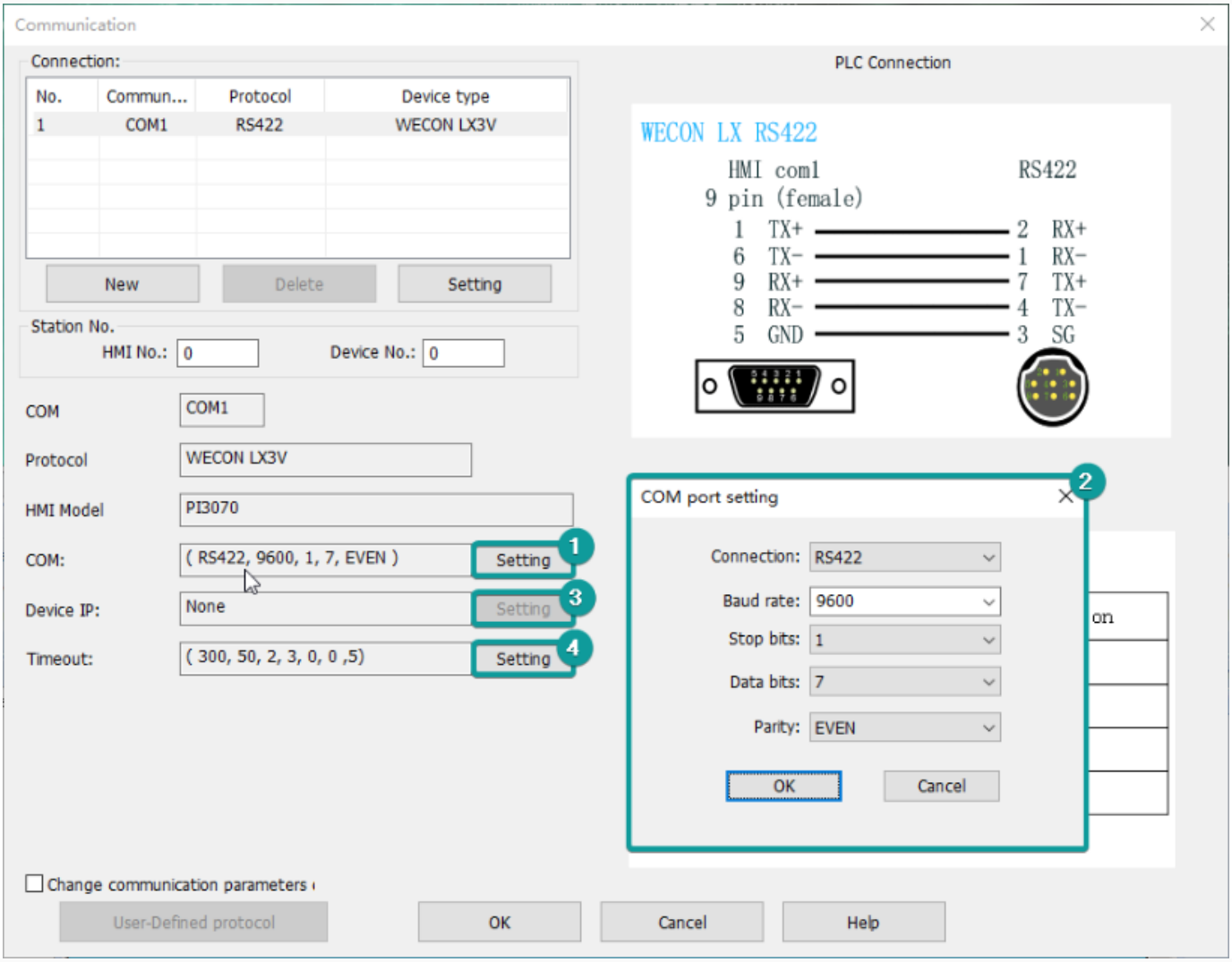
1. Click [Setting] to open the [Communication device] window;
2. Select communication port, such as COM1;
3. Select Serial port for communication, such as RS422;
4. Select device type (device brand), such as WECON;
5. Select the protocol for communication, such as WECON LX3V;



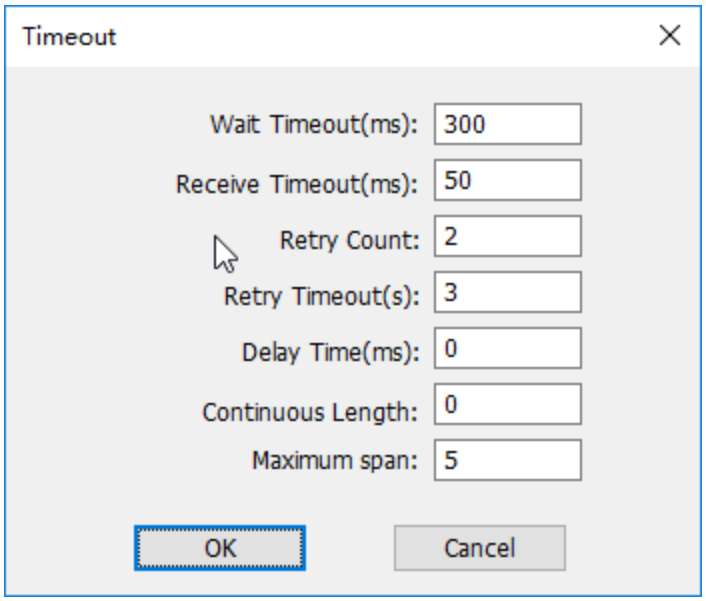
Parameter settings

The parameters settings are in [Communication] window, shown as following below.

1. Click [Setting] to open the [COM port setting] window;
2. Set the parameters such as [connection], [Baud rate] and so on;

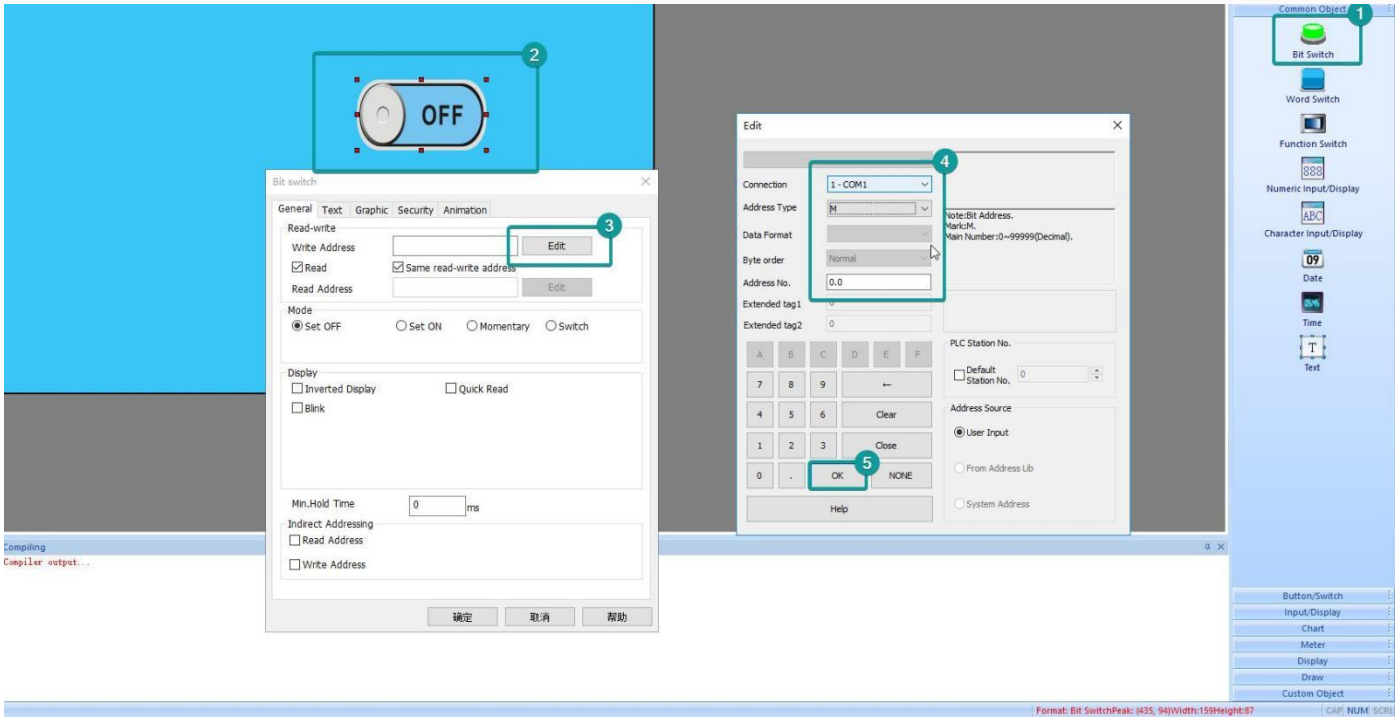


3. Click [Setting] to open [Timeout] setting window, you could set the parameters according your requirements, or just use the default value.

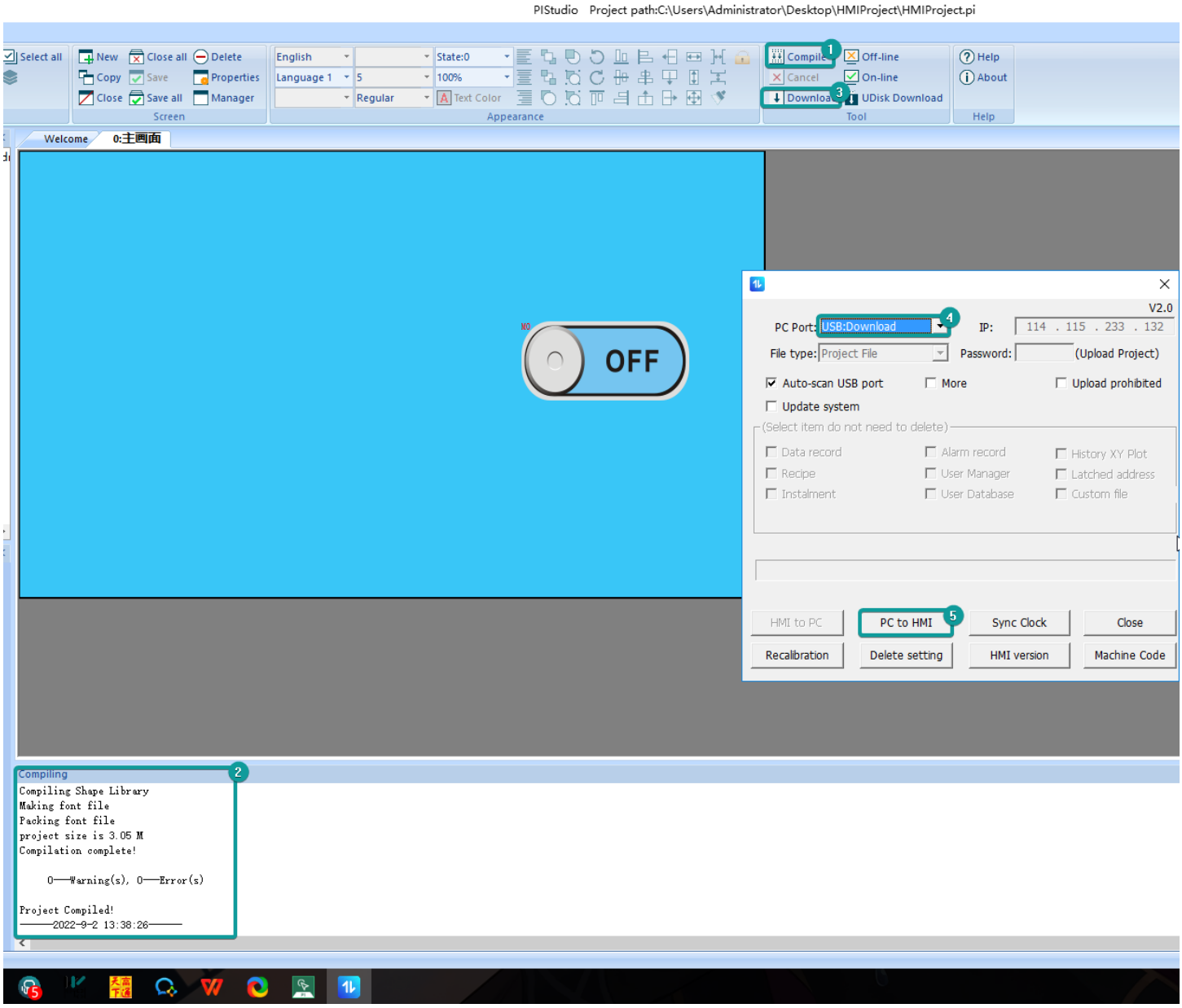


Set PLC address in HMI screen

1. Place the objects to HMI screen;
2. Double-click the object to open the setting window;
3. Click “Edit” to open the address setting windows;
4. Connection: select the serial port in HMI;
5. Address type: All the PLC address types will be display in this list, such as M;
6. Address No.: Please input the number of this address, such as 0;

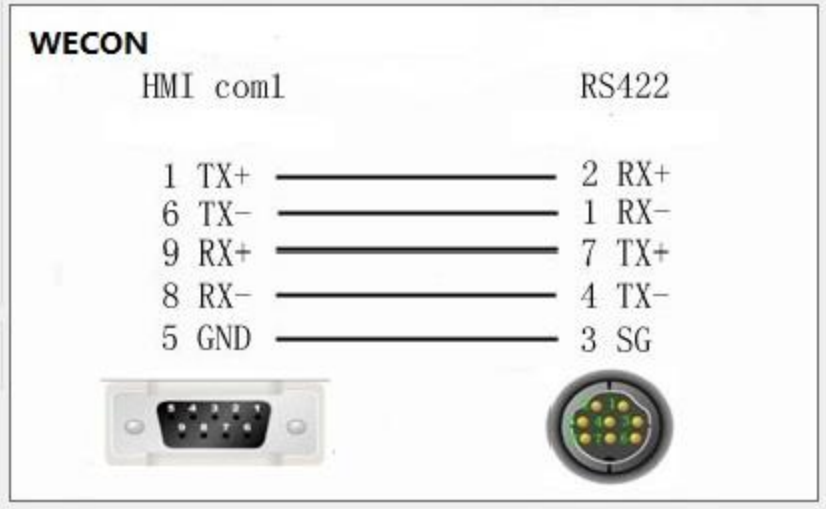


HMI Compilation Download



Communication cable

In order to ensure the stability of communication, please use the twisted-pair communication cable with good grounding. The following figure shows the pin out definition.



HMI communication PLC use Modbus

- HMI setting: https://docs.we-con.com.cn/bin/view/PIStudio/12.PLC%20protocols/
- PLC setting: https://docs.we-con.com.cn/bin/view/PLC%20Editor/8.1.%09Communication/

PLC settings

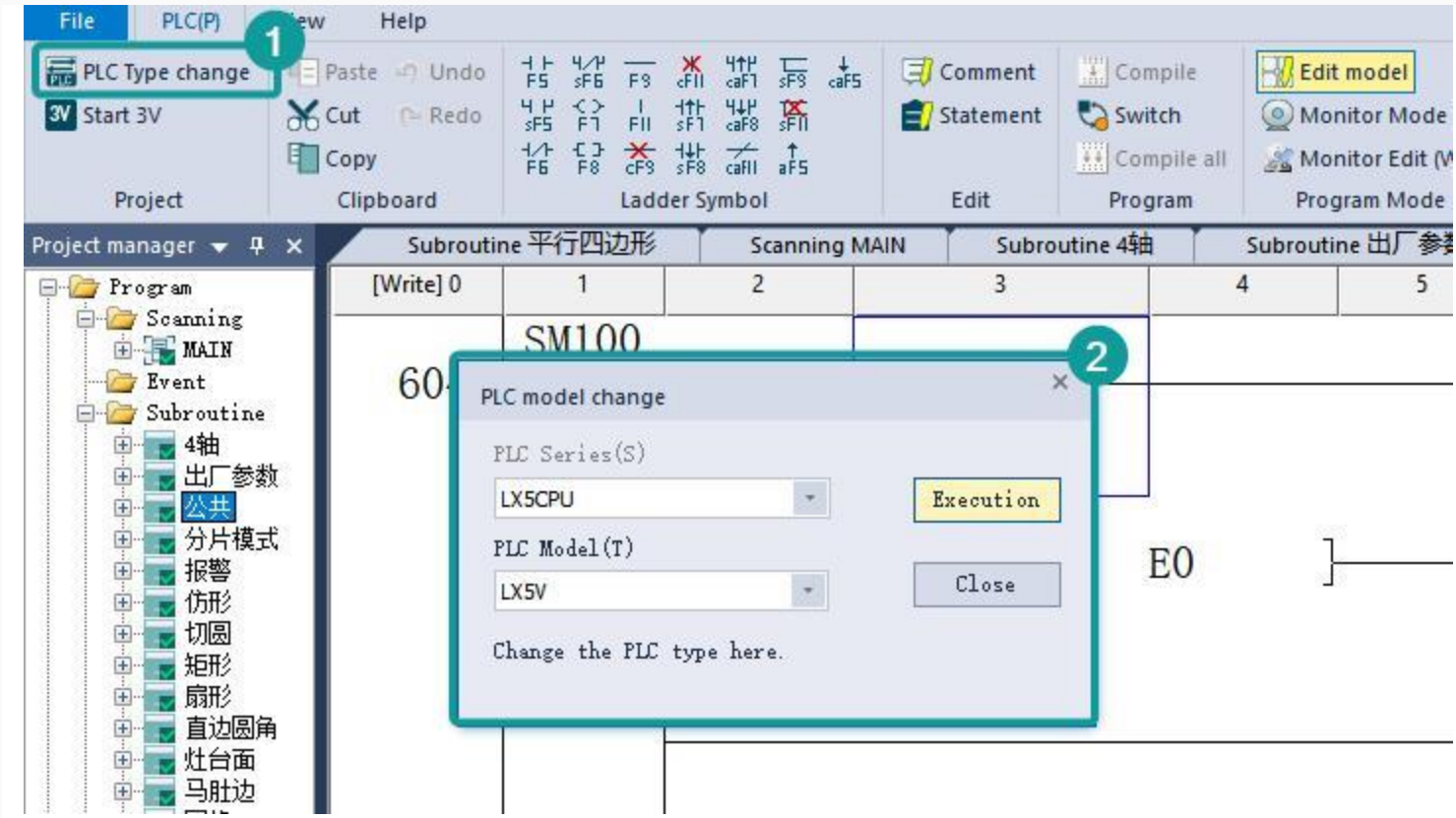
Download PLC Software

Please visit below link to get the latest version PLC Editor for HMI programming

- LX3V:Download link
- LX5V:Download link

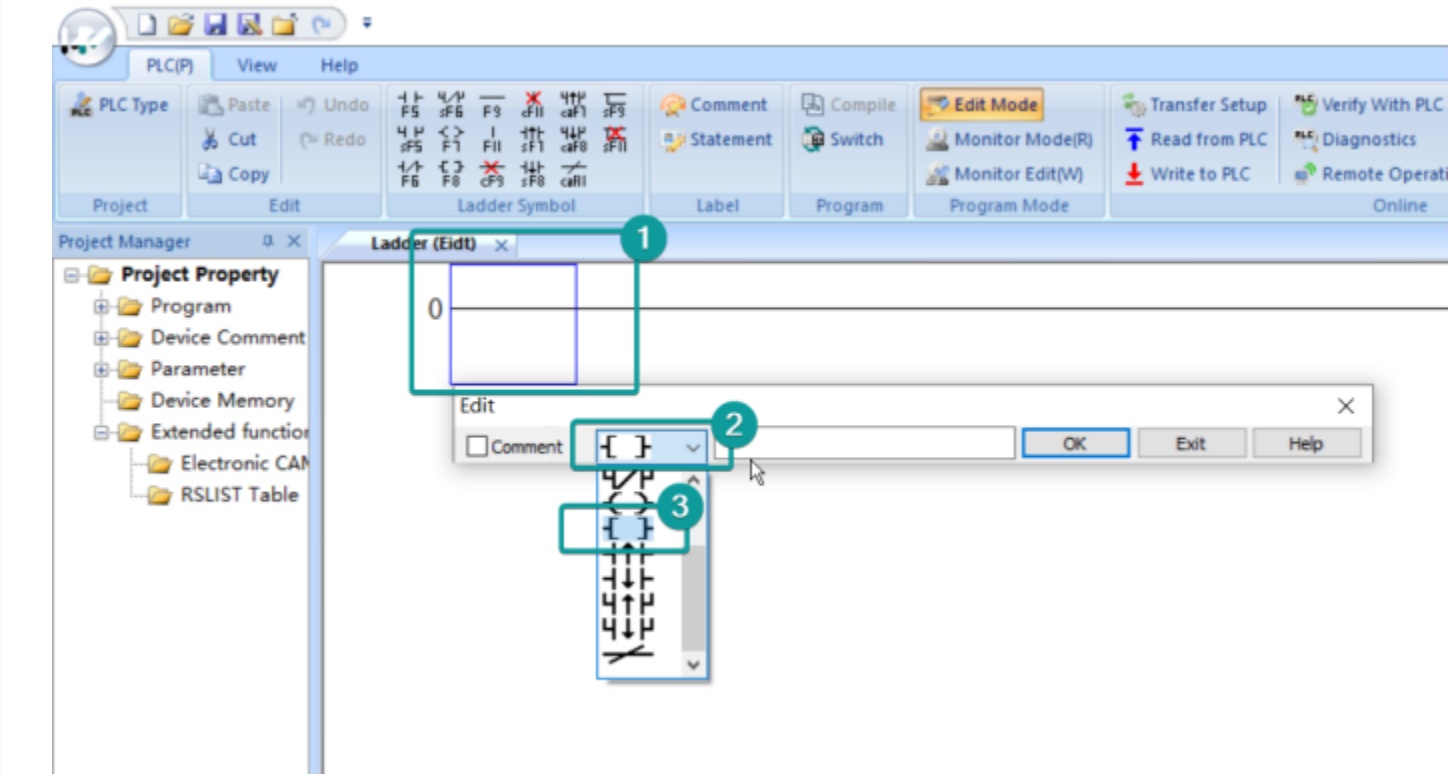
Start a new PLC project

Start a new PLC project by clicking “New” on the left top corner of screen, select the PLC mode from the drop-down list.

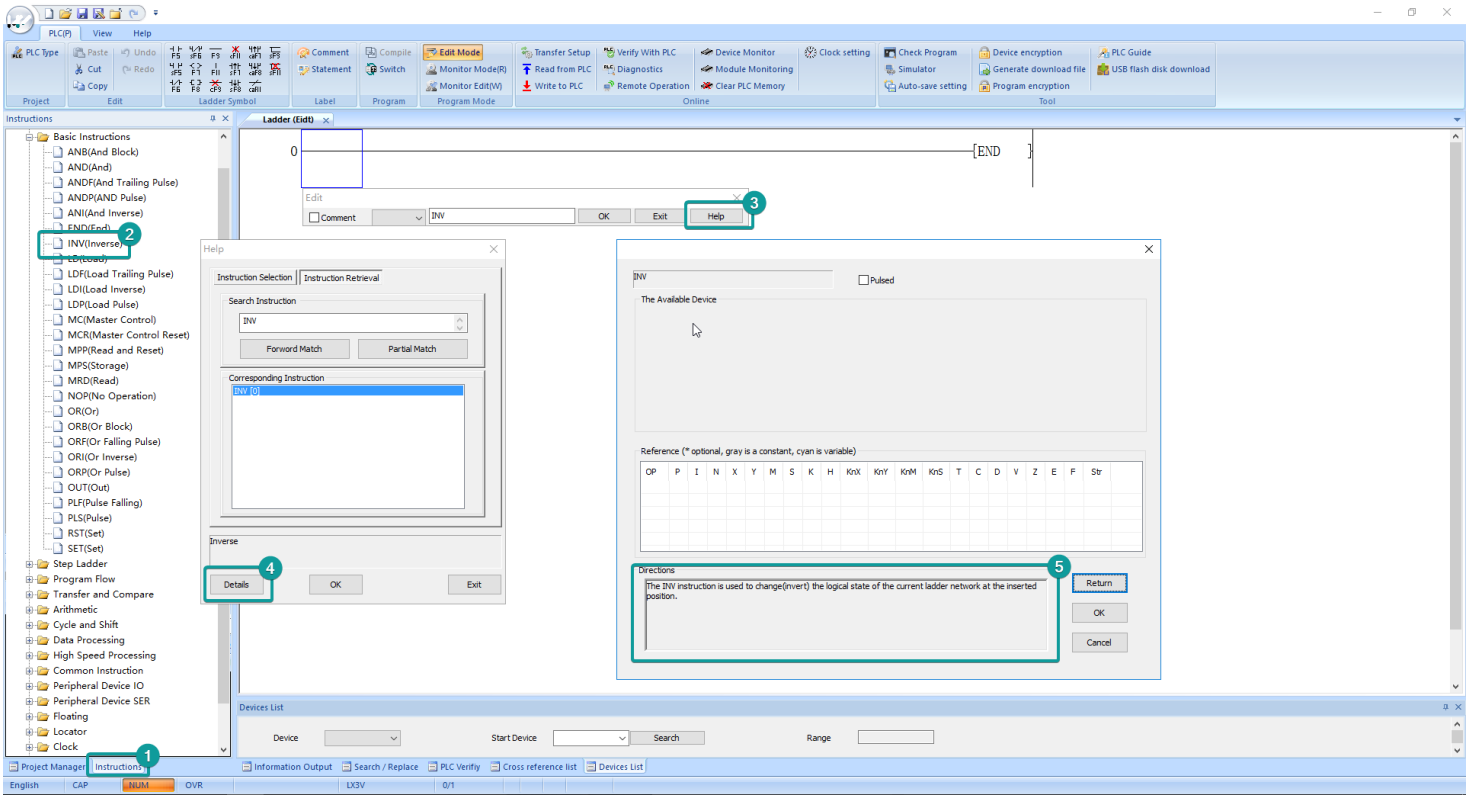


Add a new instruction

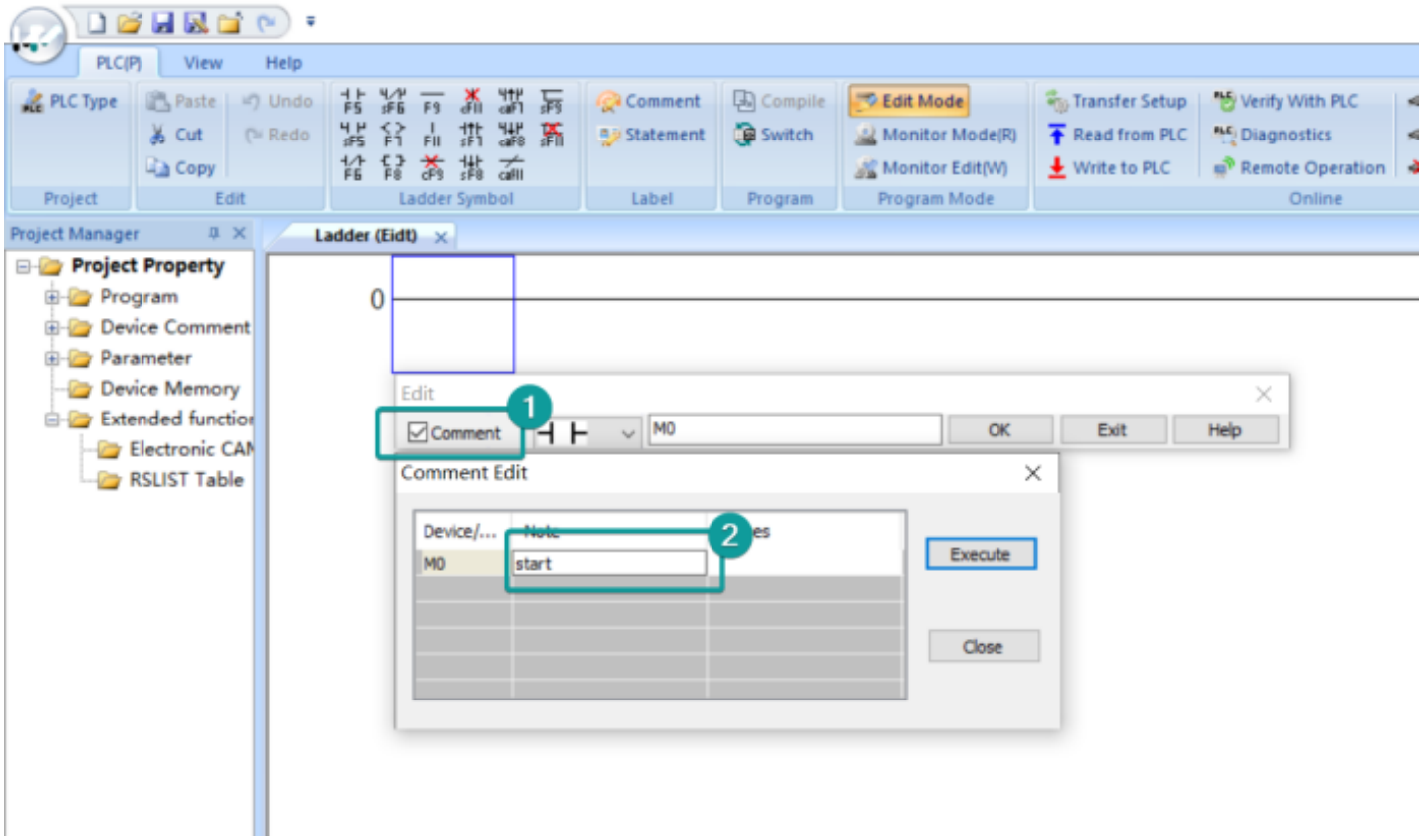
Double click on the ladder, select the ladder symbol (instruction) from the drop-down list, then enter the address for this symbol.



You could also select the ladder symbol from the menu bar directly.

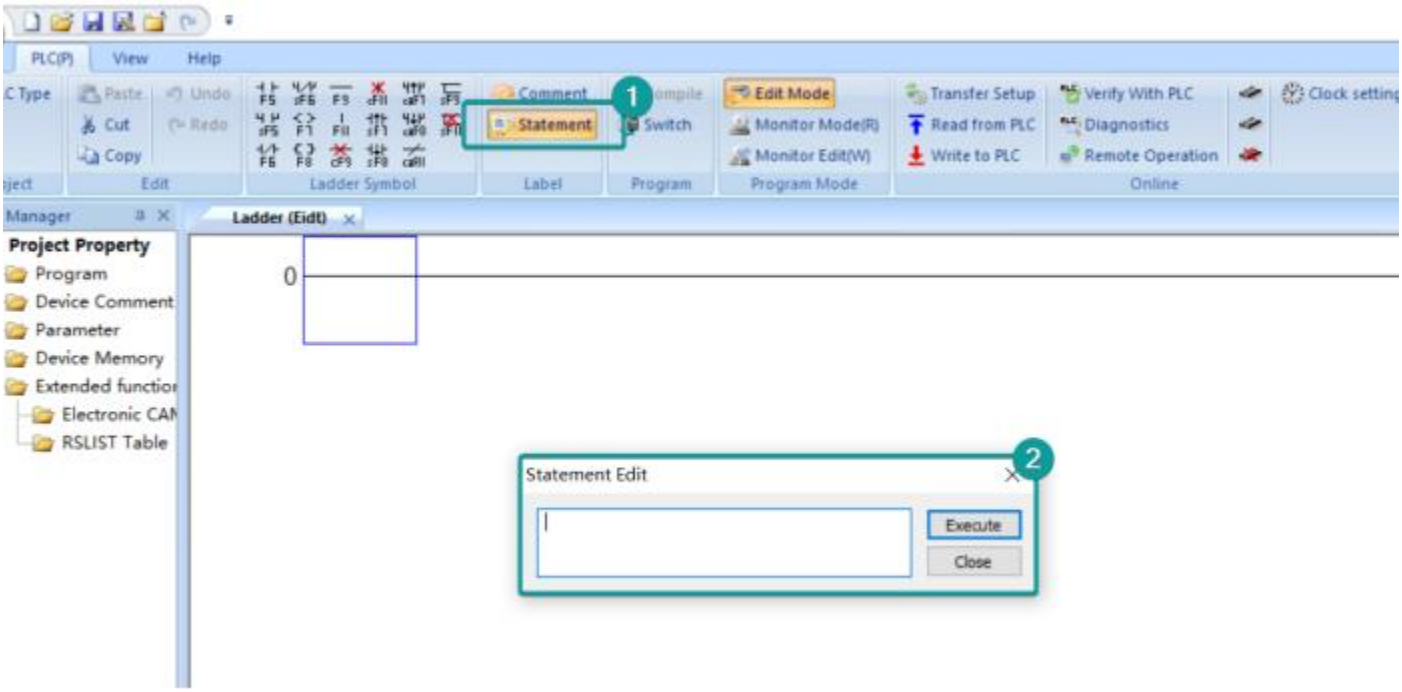


Add comment to PLC program



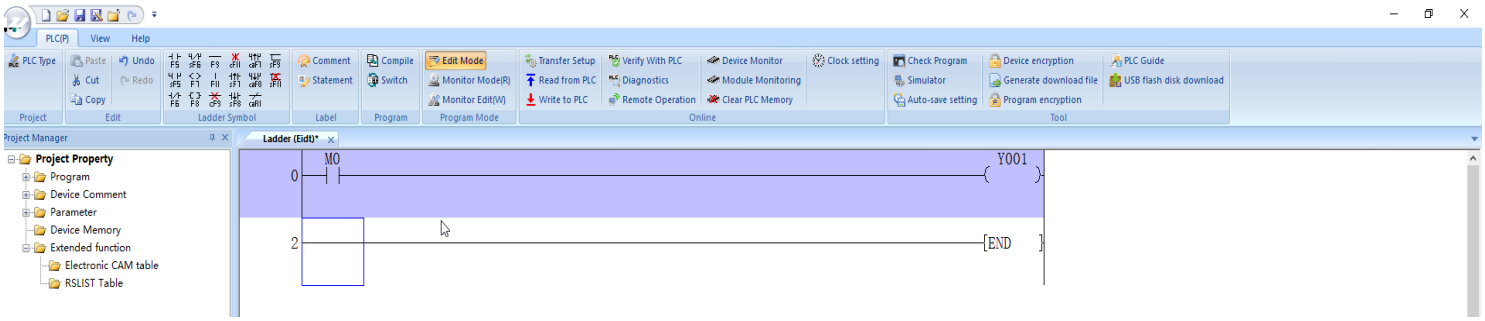
Add the statement to PLC program

Add the statement by single click on “Statement”, when finished, single click on “Statement” again to go back to Ladder edit.



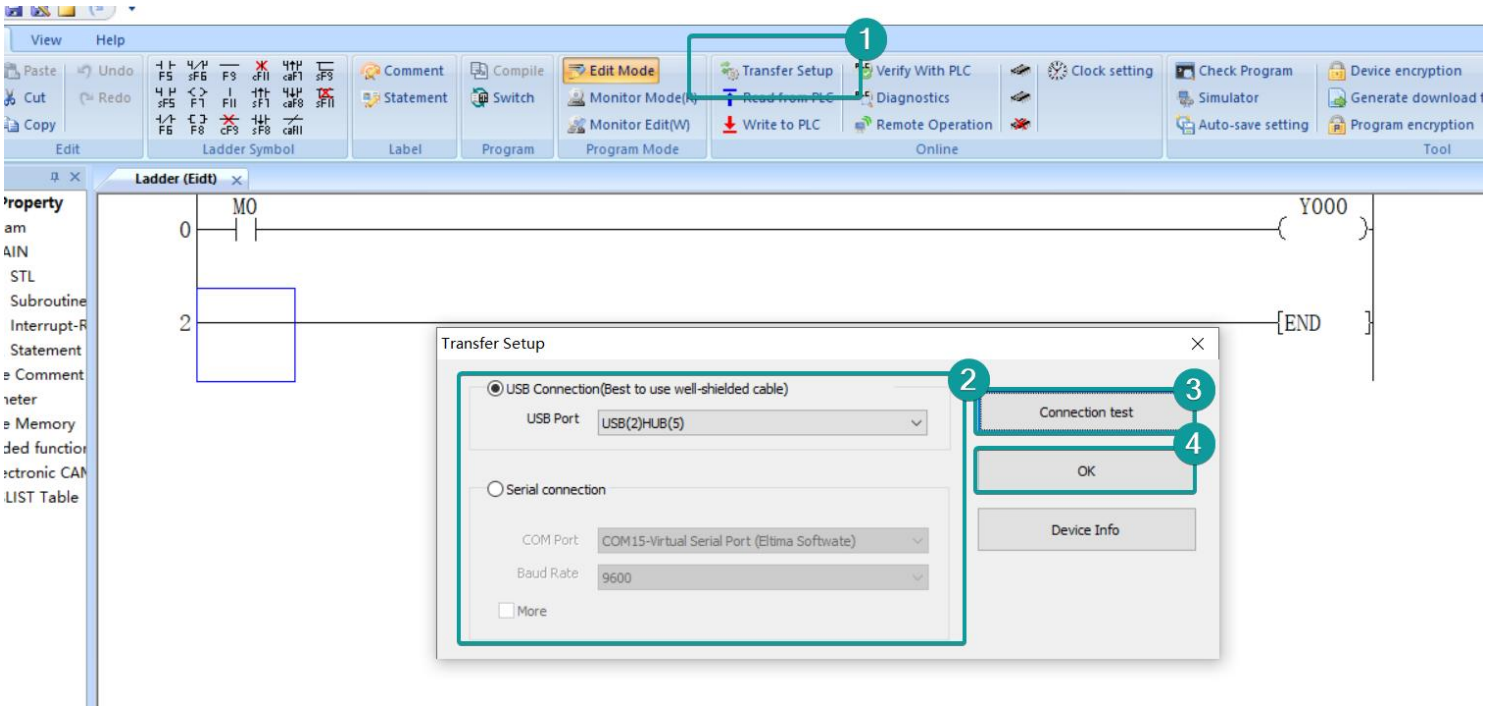
Compile

You need to compile the PLC program before downloading or running Off-line simulator. The background color will be changed from purple to white when there is no error.



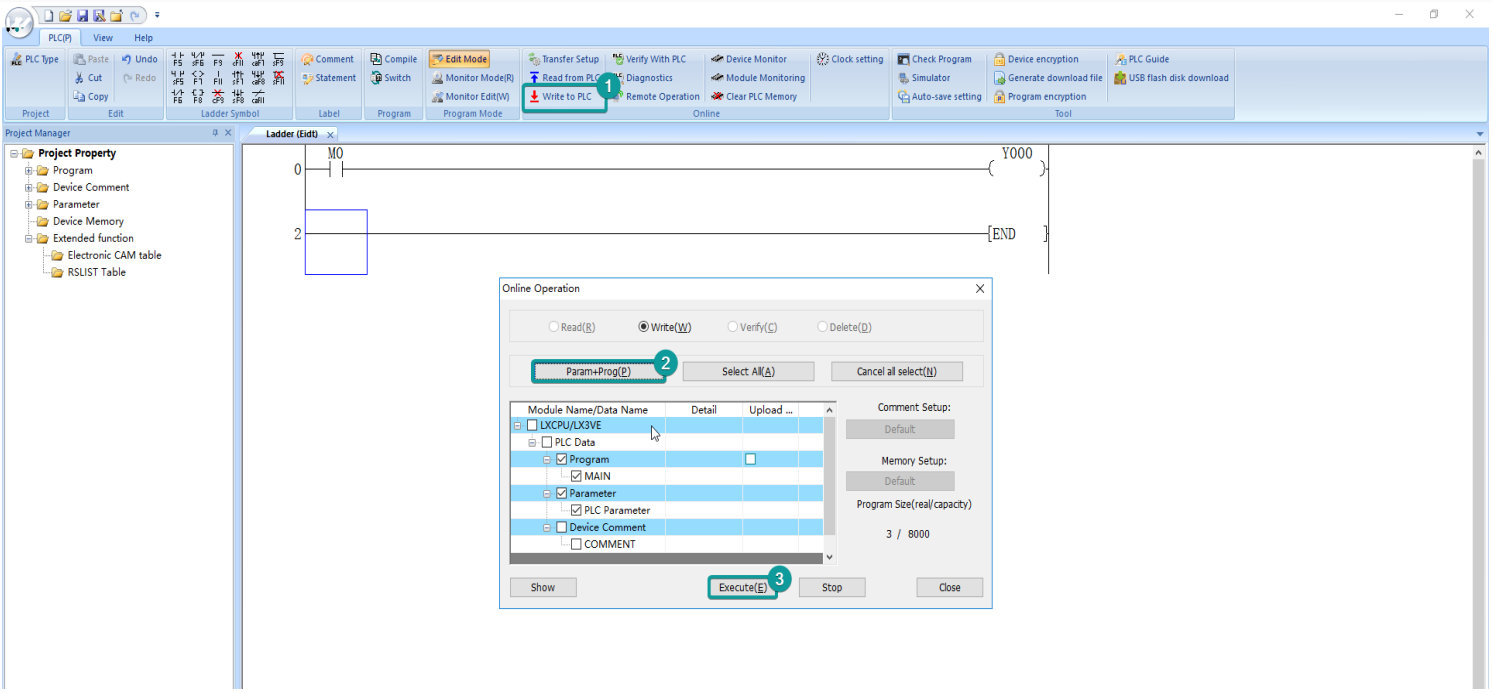
Download setting

Click on “Transfer Setup” to select download mode.



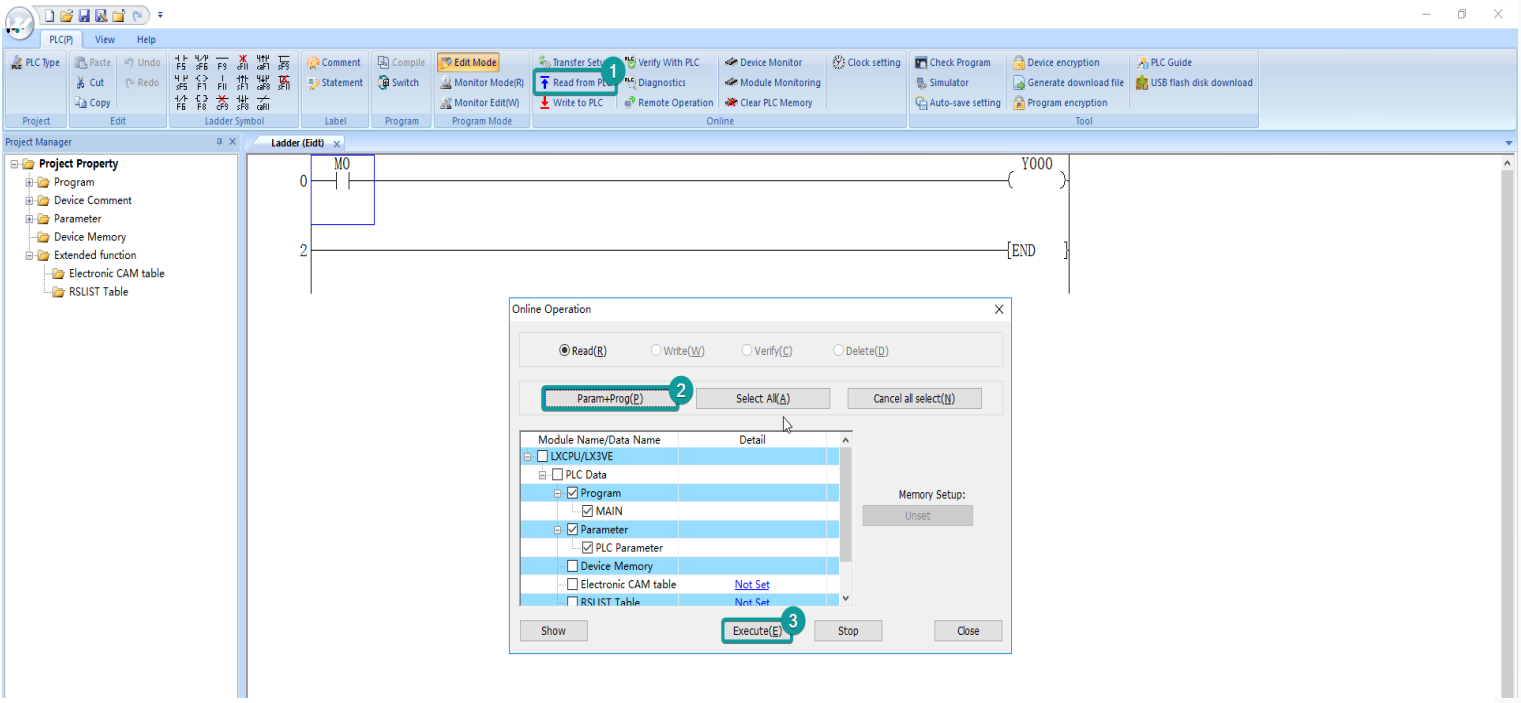
Download PLC program to PLC

Quick select the parameters and main program of PLC program, then download to PLC, “Yes”-”Yes”-”OK”



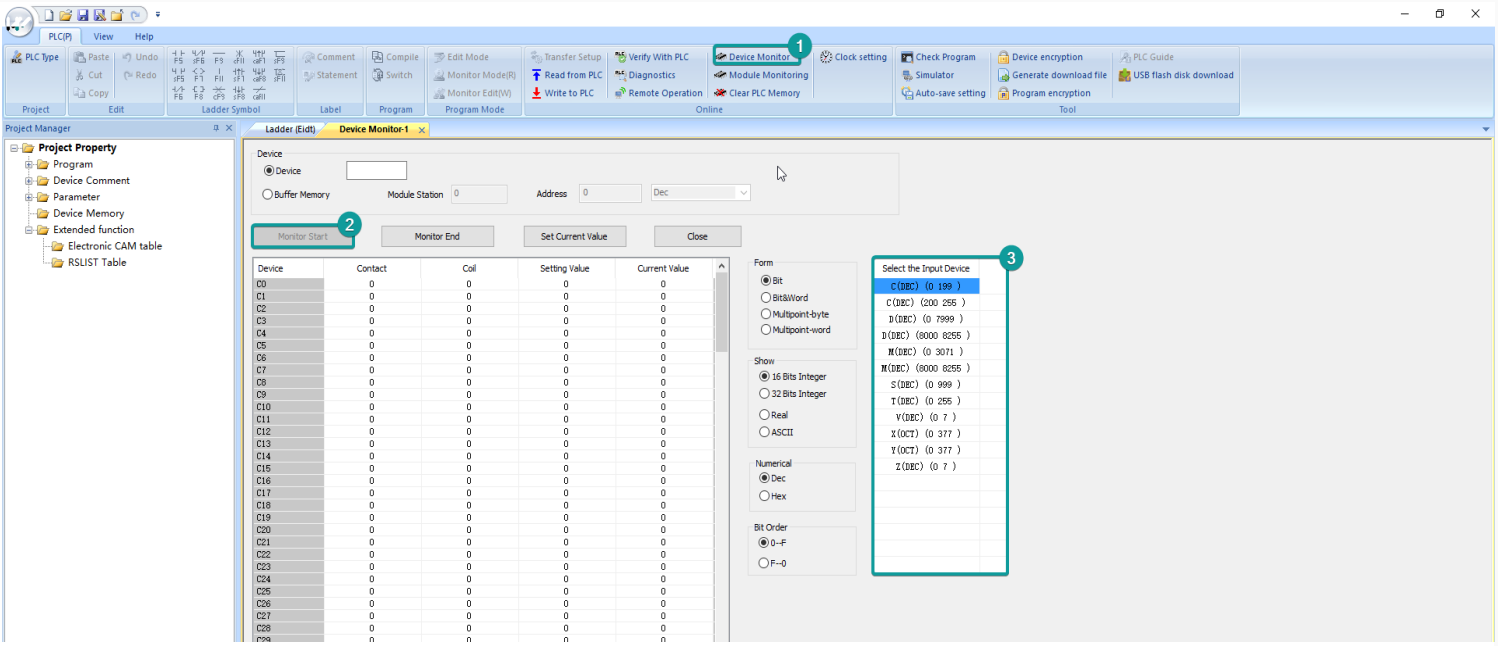
Upload PLC program from PLC

Read the PLC program from PLC to computer.



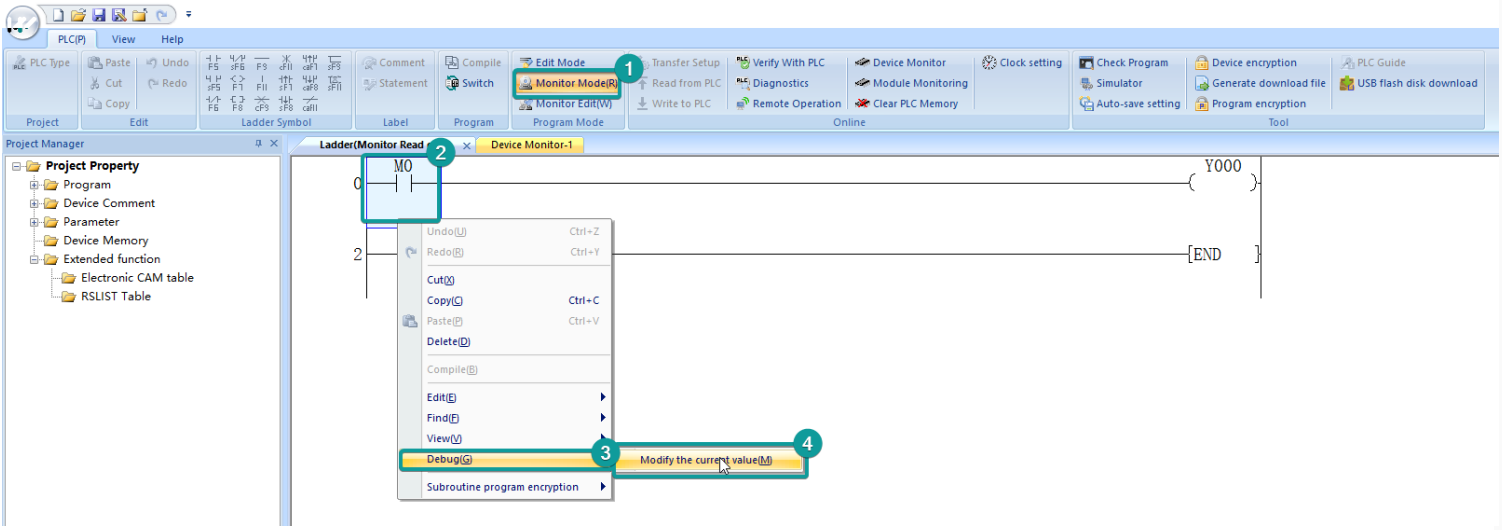
Device monitor

Monitor the value of certain address in PLC, double click “Current value” to change the value in this address.



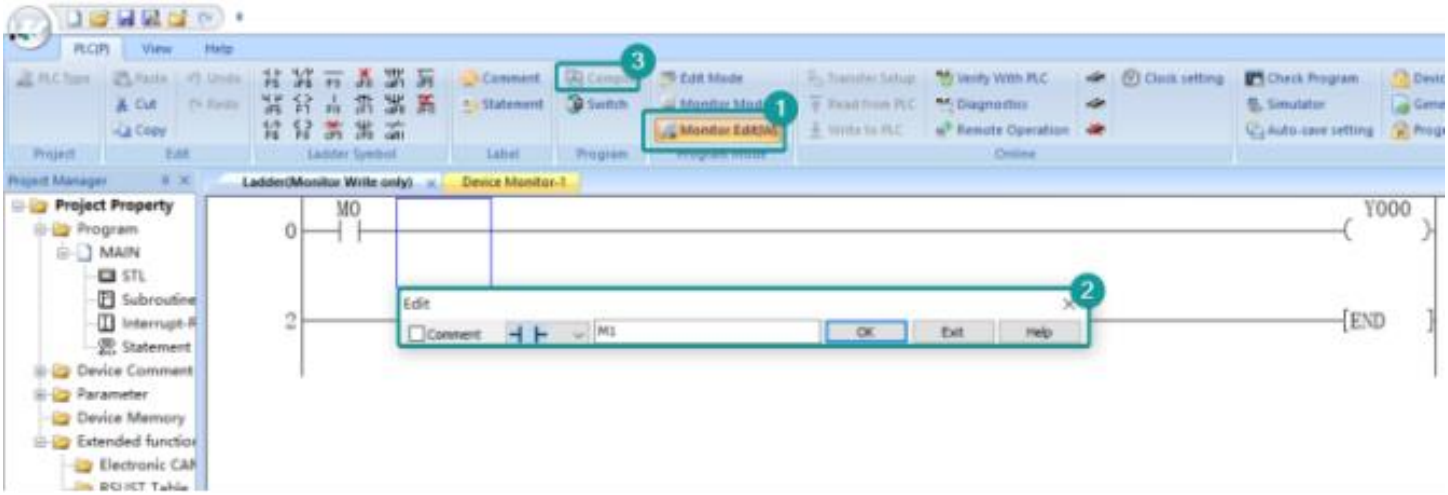
Online monitor

Monitor the each address in PLC by online monitor. Changing the state or value in PLC is also allowd.



Monitor edit

In this mode, you could edit the PLC program during PLC is running.

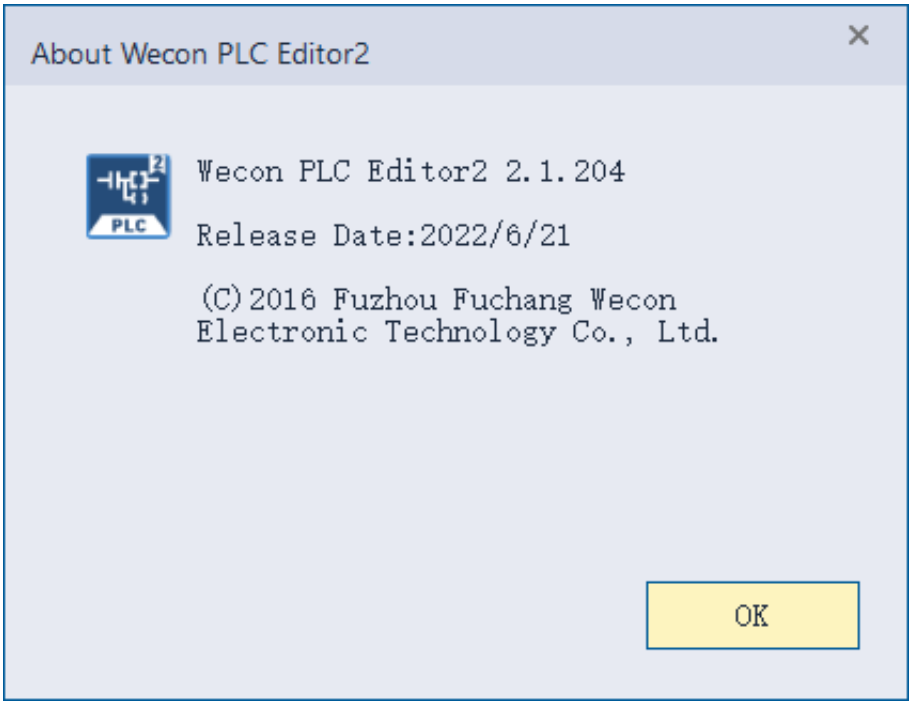


LX5V Serial Protocol

This example introduces the establishment of serial port communication between Wecon HMI and LX5V, including three parts: PLC software configuration, HMI software configuration, and hardware wiring.

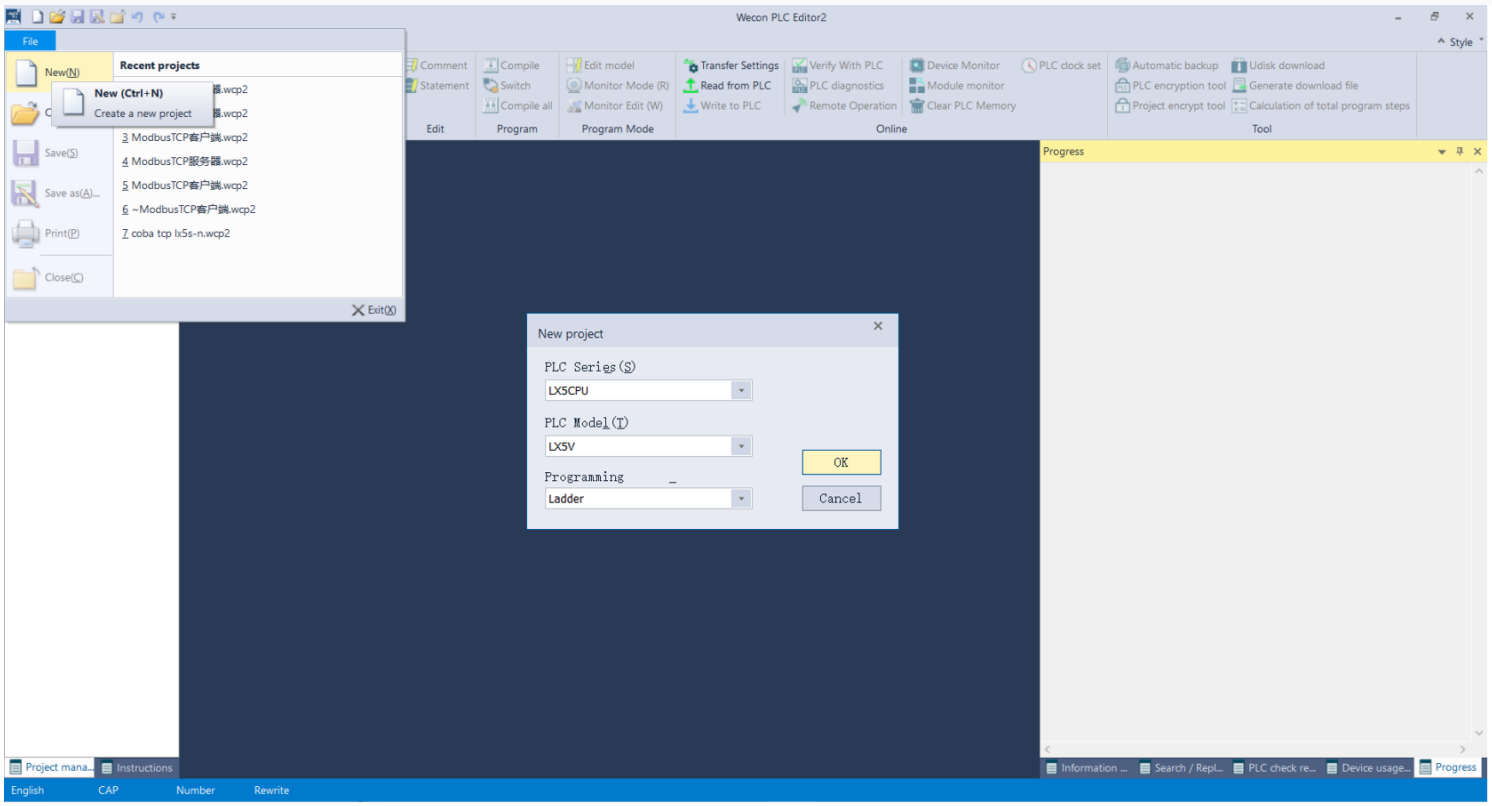
Software configuration of PLC

PLC programming software



New PLC project

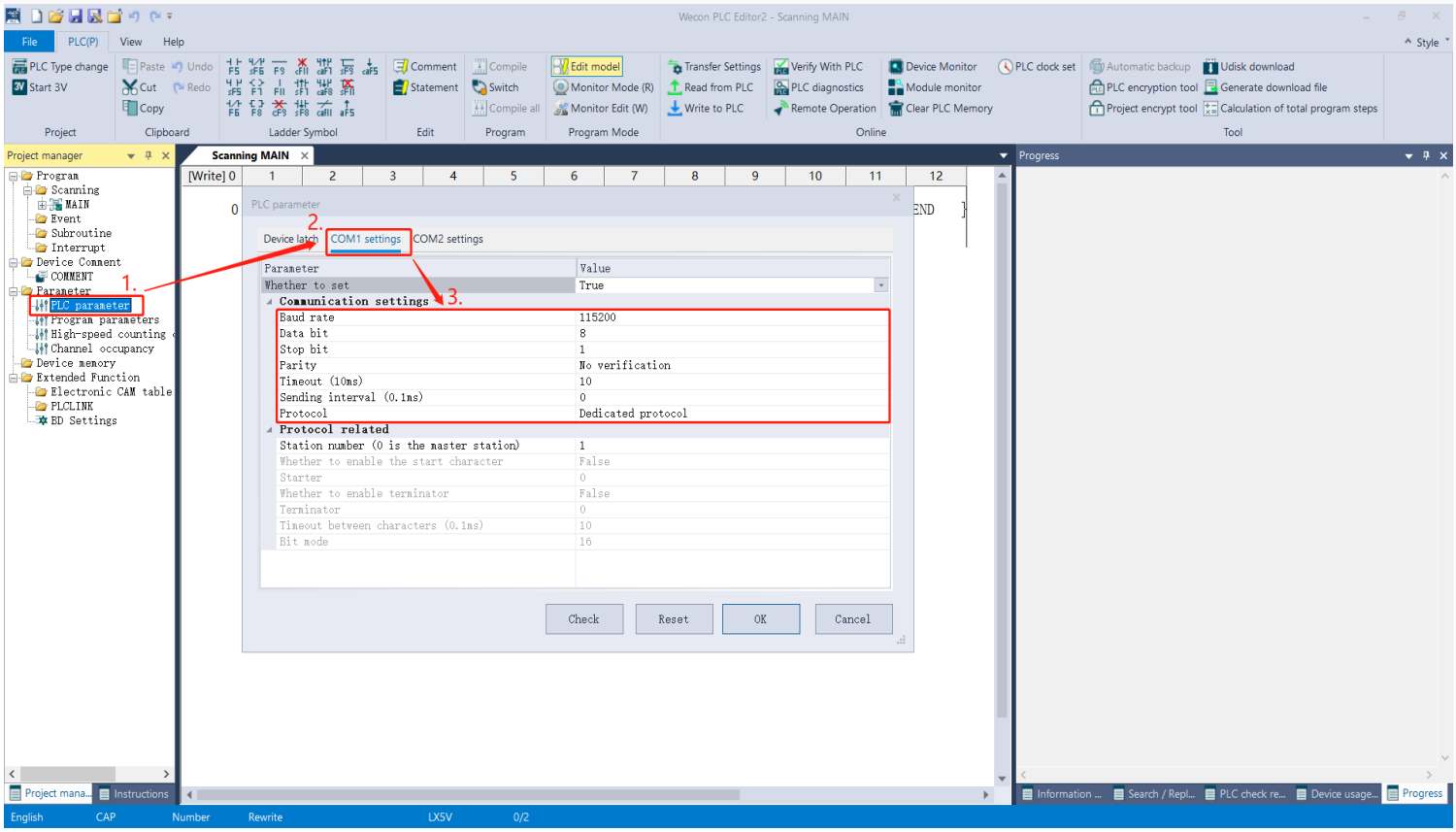
Click "New Project" and select the PLC model.



Set Serial port parameters

Follow the steps below to configure Serial port parameters.

- Baud rate：115200
- Data bit：8
- Stop bit：1
- Parity：No verification

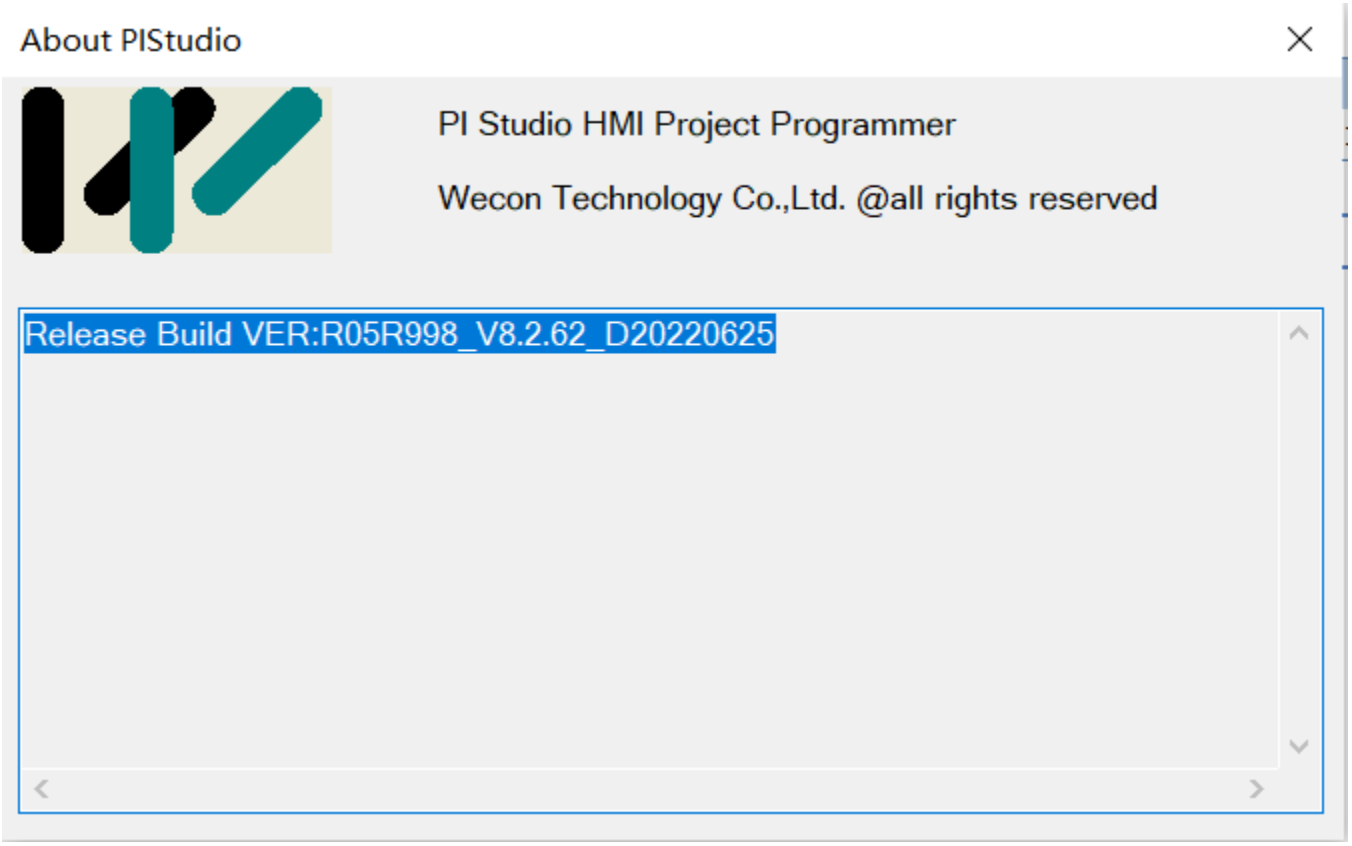


Registers list

Classification	Length	Description	Register	Range	Number
User registers	Bit	Input	X	0 to 1777	Octal number
	Bit	Output	Y	0 to 1777	Octal number
	Bit	Internal relay	M	0 to 7999	Decimal number
	Bit	Step relay	S	0 to 4095	Decimal number
	Bit/word	Timer	T	0 to 511	Decimal number
	Bit/word	Counter	C	0 to 255	Decimal number
	Bit/double word	Long counter	LC	0 to 255	Decimal number
	Bit/double word	High-speed counter	HSC	0 to 15	Decimal number
	Word	Data Register	D	0 to 7999	Decimal number
	Word	Data Register	R	0 to 29999	Decimal number
System registers	Bit	Special	SM	0 to 4095	Decimal number
	Word	Special register	SD	0 to 4095	Decimal number
Index registers	Word	Index register	[D]	0 to 7999	Decimal number
	Word	Index register	V	0 to 7	Decimal number
	Double word	Long index register	Z	0 to 7	Decimal number
Nested	Bit	Nested	N	0 to 7	Decimal number
Pointer	-	Pointer	P	0 to 4095	Decimal number
Constant	-	Decimal constant	K	-	Decimal number
	-	Hexadecimal constant	H	-	Hexadecimal number
	Single precision floating point	Real constant	E	-	-

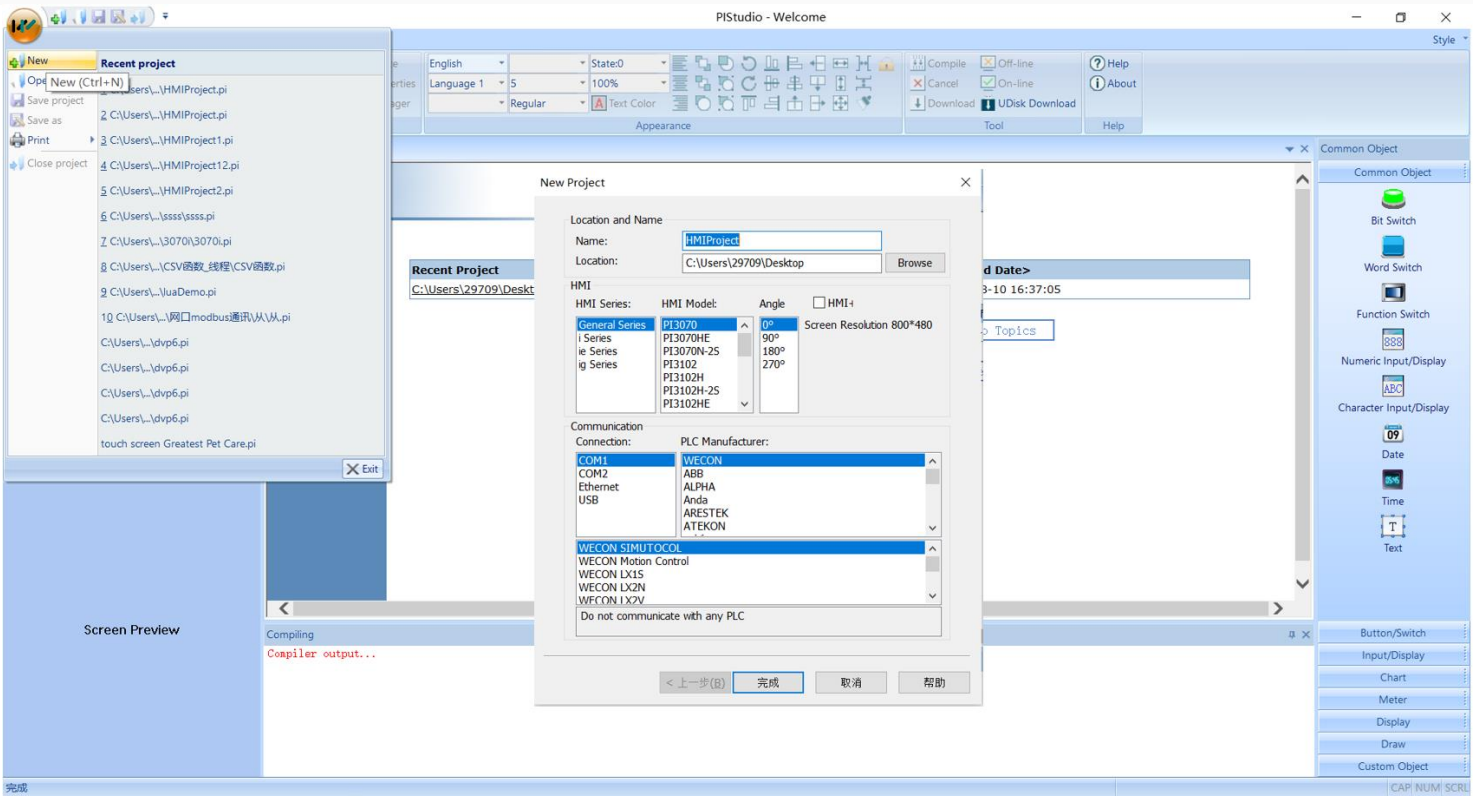
HMI software configuration

HMI programming software



New HMI project

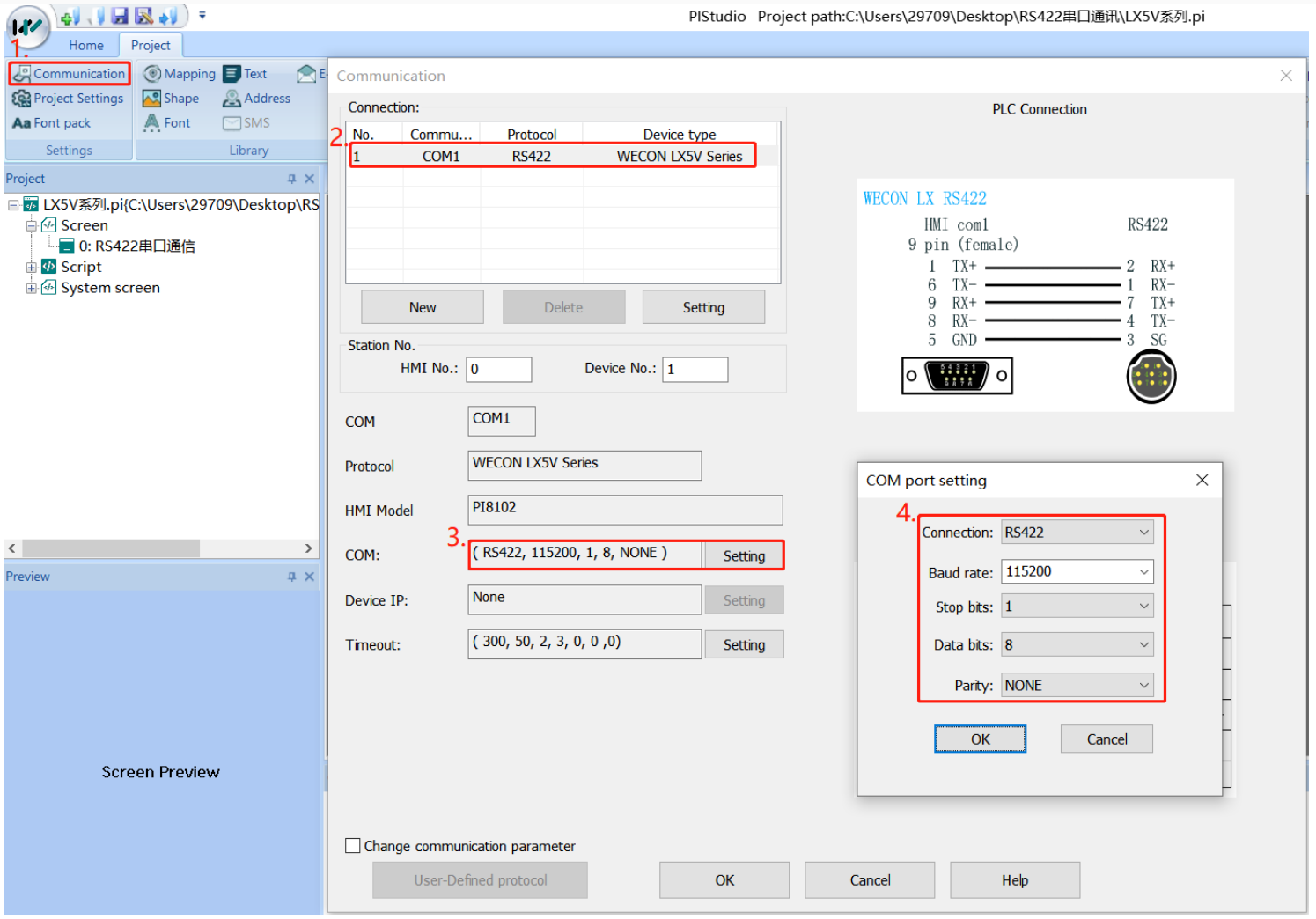
Click New Project and select the HMI model.



Set communication port parameters

Click the communication configuration button on the left to find the communication protocol with LX5V. After selecting the protocol, configure the communication parameters of the COM port.

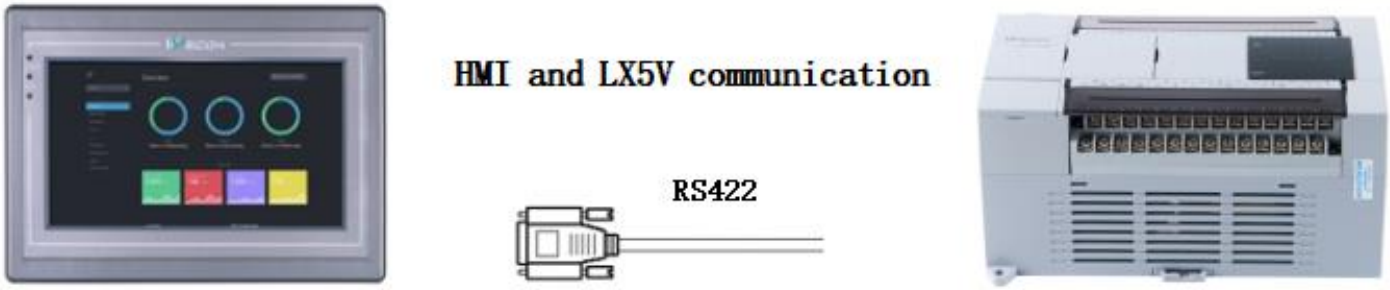
- Baud rate：115200
- Data bit：8
- Stop bit：1
- Parity：No verification

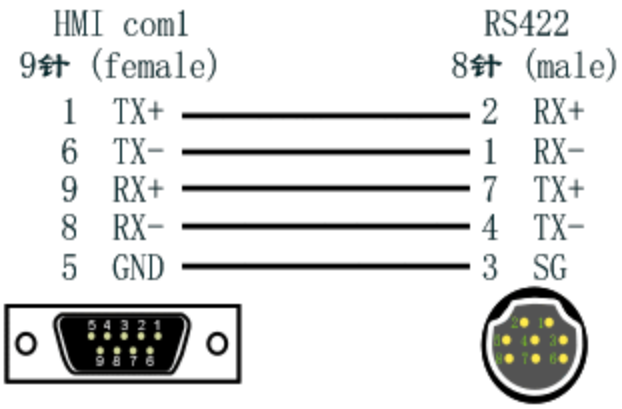


hardware connection

Hardware wiring diagram

This example introduces WeconHMI with LX5V PLC to establish communication through serial port. The connection diagram is as follows:





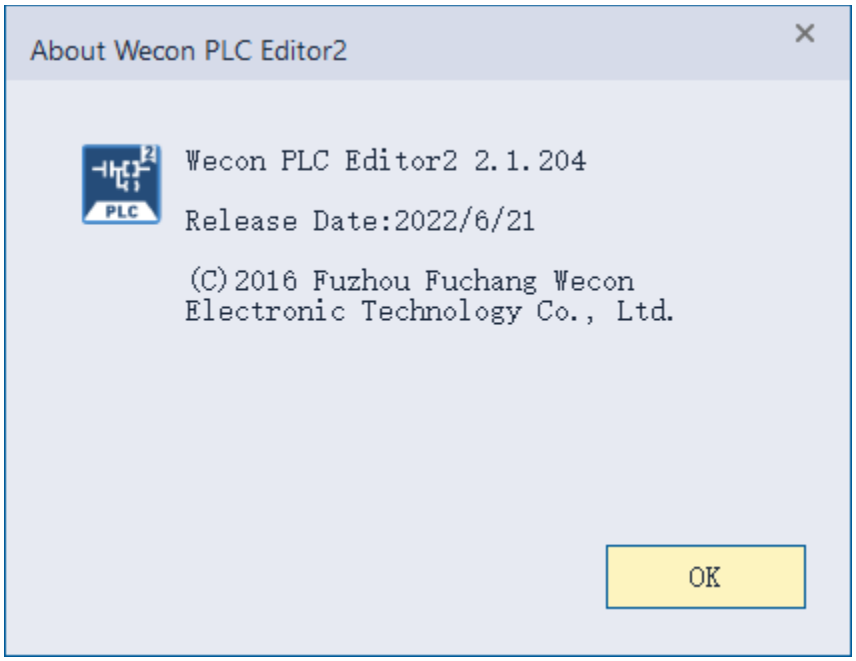
The above are all the steps for establishing serial port communication between Wecon HMI with LX5V PLC.

LX5V-N Ethernet protocol

This example introduces the establishment of Ethernet communication between Wecon HMI and LX5V, including three parts: PLC software configuration, HMI software configuration, and hardware wiring.

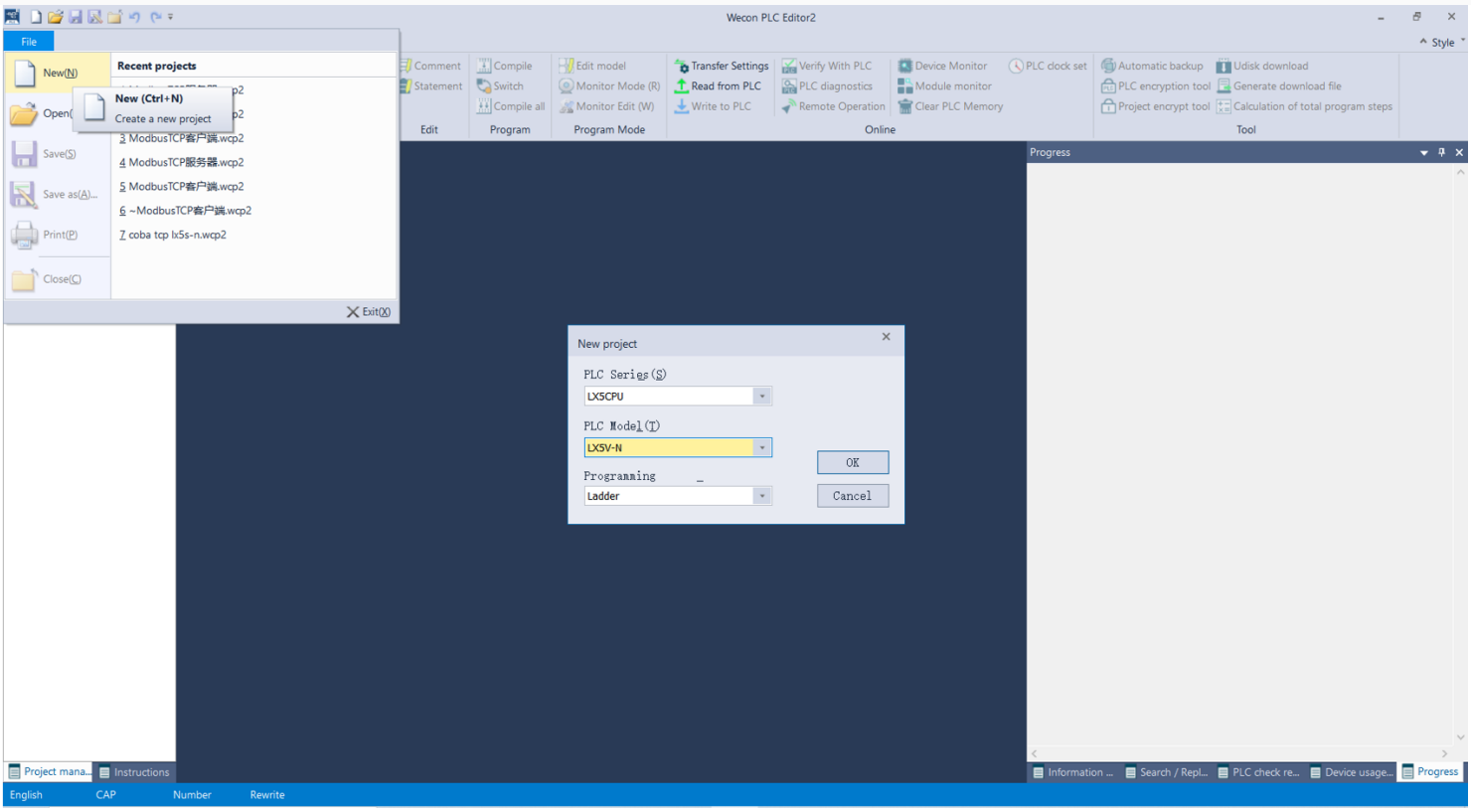
Software configuration of PLC

PLC programming software



New PLC project

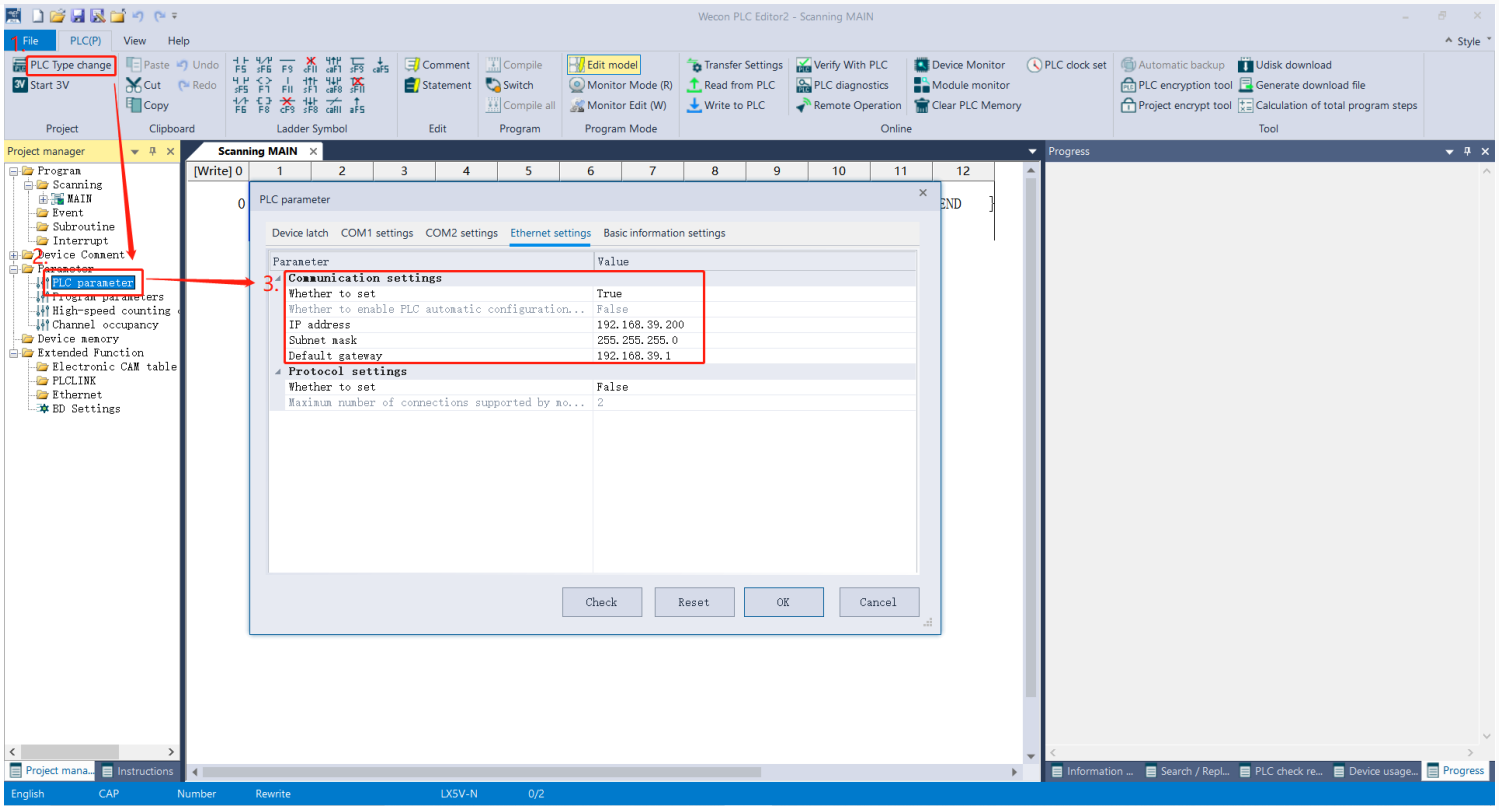
Click New Project and select the PLC model.



Set Ethernet port parameters

Follow the steps below to configure Ethernet parameters

- PLC IP address：192.168.39.200
- default gateway：192.168.39.1
- subnet mask：255.255.255.0

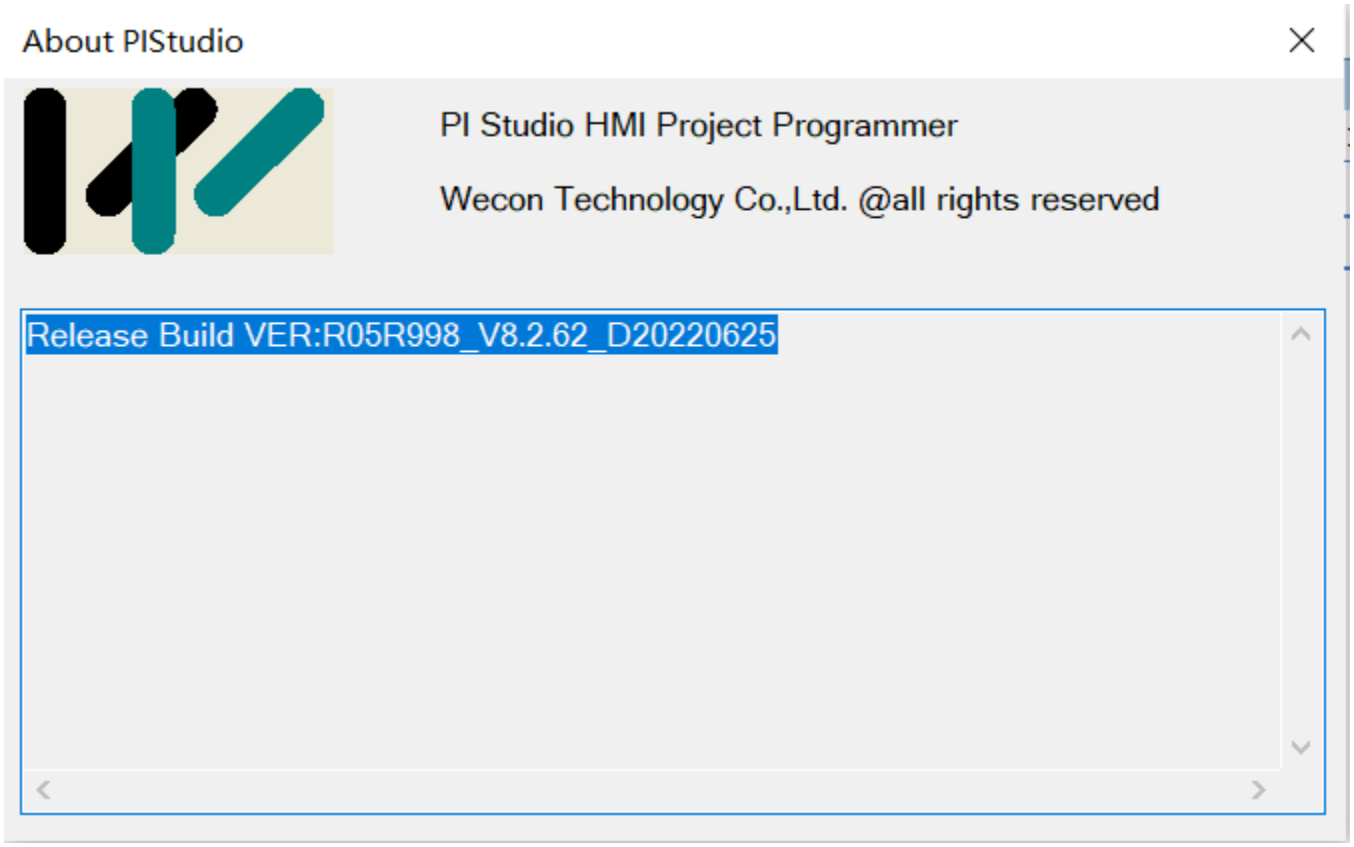


Registers list

Classification	Length	Description	Register	Range	Number
User registers	Bit	Input	X	0 to 1777	Octal number
	Bit	Output	Y	0 to 1777	Octal number
	Bit	Internal relay	M	0 to 7999	Decimal number
	Bit	Step relay	S	0 to 4095	Decimal number
	Bit/word	Timer	T	0 to 511	Decimal number
	Bit/word	Counter	C	0 to 255	Decimal number
	Bit/double word	Long counter	LC	0 to 255	Decimal number
	Bit/double word	High-speed counter	HSC	0 to 15	Decimal number
	Word	Data Register	D	0 to 7999	Decimal number
	Word	Data Register	R	0 to 29999	Decimal number
System registers	Bit	Special	SM	0 to 4095	Decimal number
	Word	Special register	SD	0 to 4095	Decimal number
Index registers	Word	Index register	[D]	0 to 7999	Decimal number
	Word	Index register	V	0 to 7	Decimal number
	Double word	Long index register	Z	0 to 7	Decimal number
Nested	Bit	Nested	N	0 to 7	Decimal number
Pointer	-	Pointer	P	0 to 4095	Decimal number
Constant	-	Decimal constant	K	-	Decimal number
	-	Hexadecimal constant	H	-	Hexadecimal number
	Single precision floating point	Real constant	E	-	-

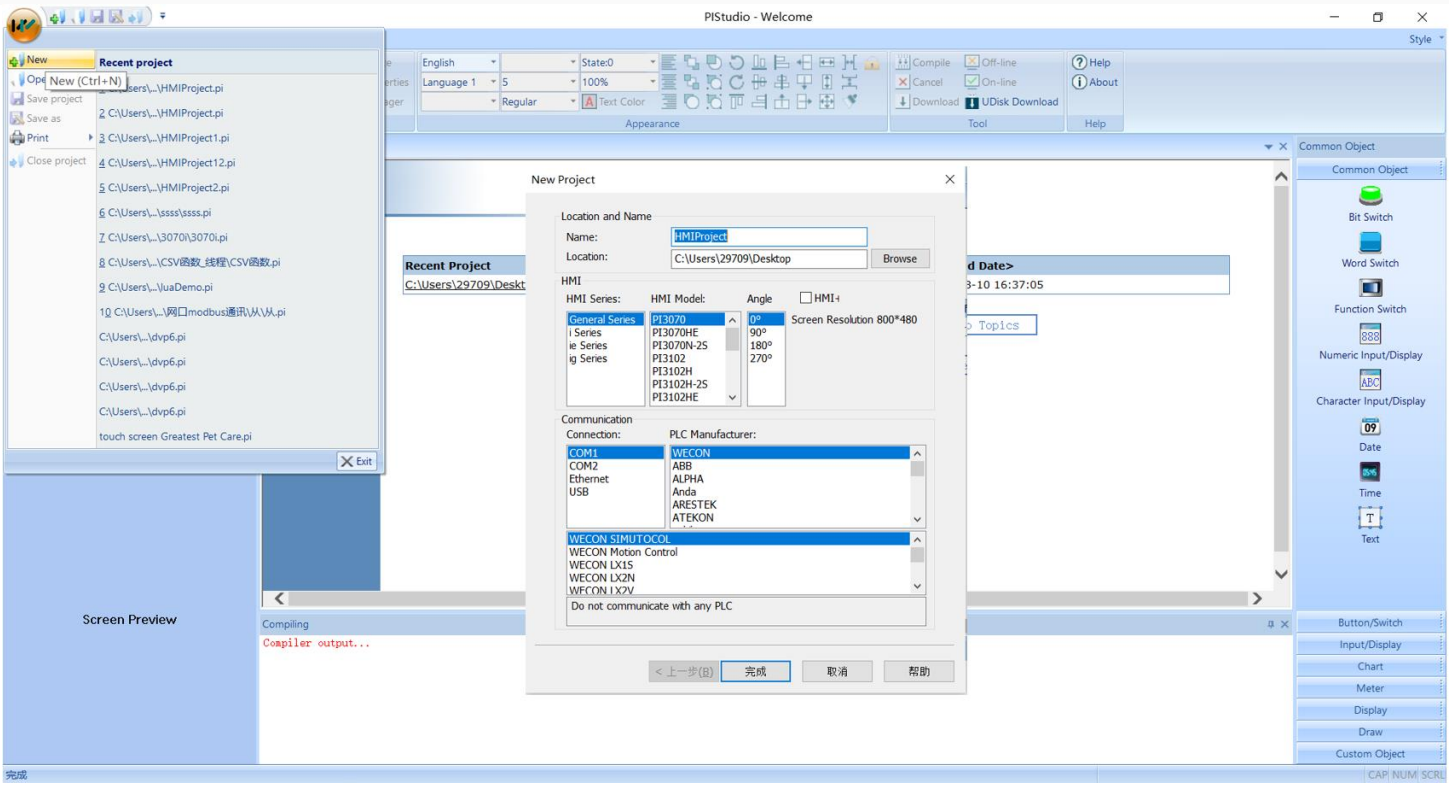
HMI software configuration

HMI programming software



New HMI project

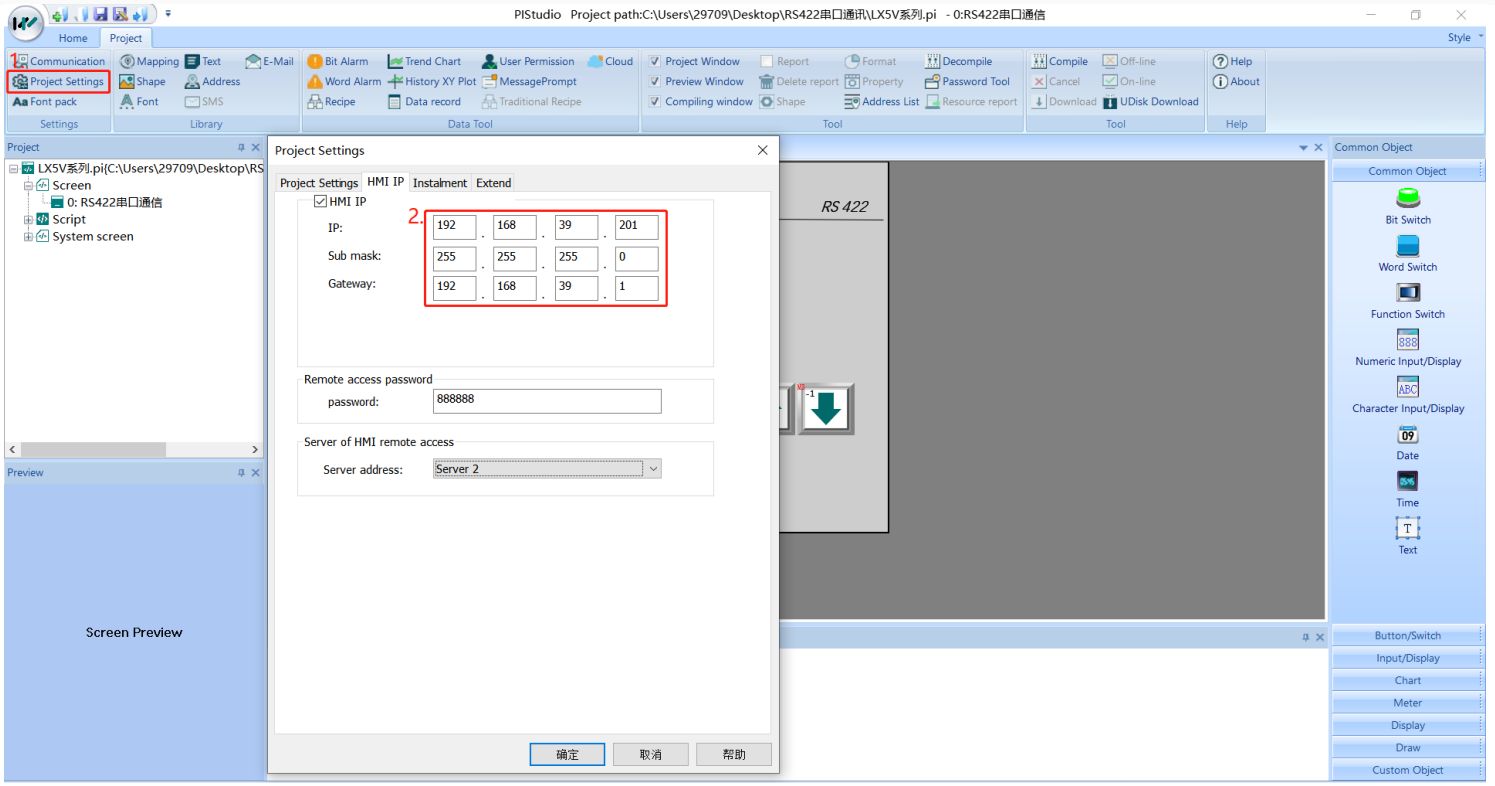
Click New Project and select the HMI model.



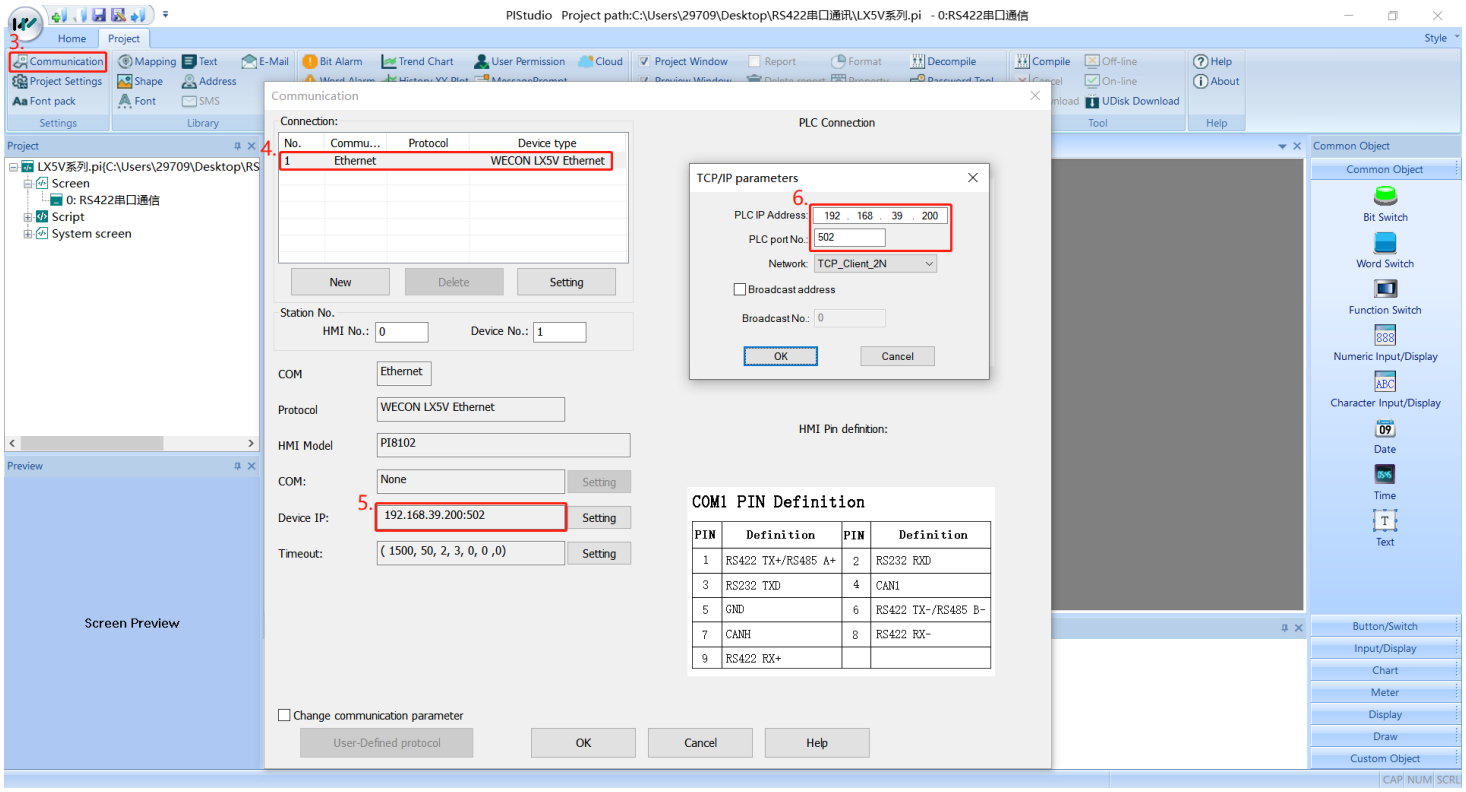
Set communication port parameters

Click the project setting button on the left to configure the IP address of the HMI machine to ensure that the HMI and PLC IP remain in a local area network.

- HMI IP address：192.168.39.201
- Default gateway：192.168.39.1
- Subnet mask：255.255.255.0

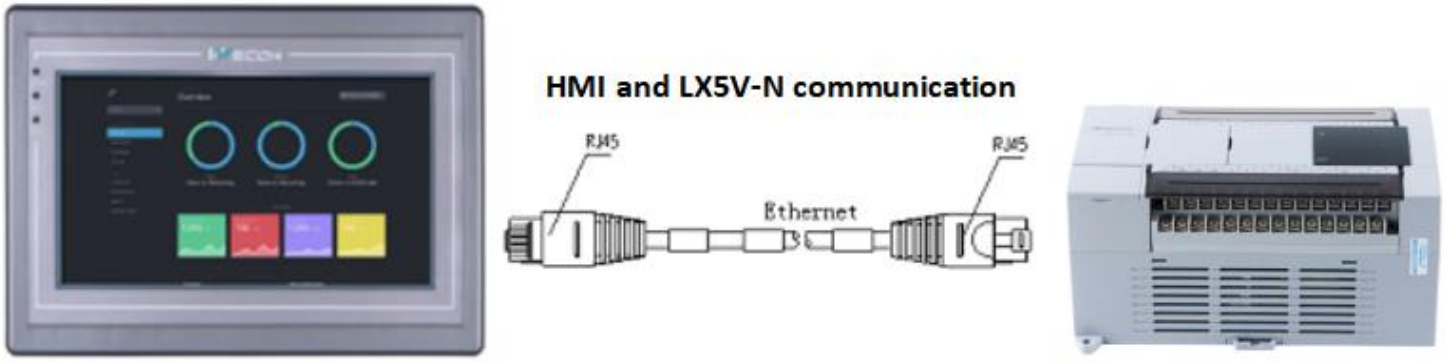


Next, click Communication Settings to configure the IP of the HMI communication object.



Hardware connection

This example introduces WeconHMI with LX5V-N PLC to establish communication through ethernet. The connection diagram is as follows:



The above are all the steps for establishing ethernet communication between Wecon HMI with LX5V PLC.

Create communication with ABB PLC

AC500 Protocol

Support Series: ABB AC500

HMI Settings

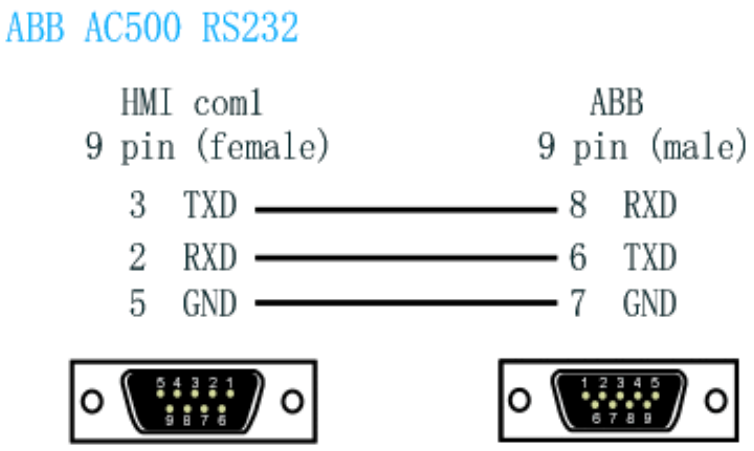
Item	Recommended	Note
Protocol	ABB AC500	
Connection	RS232	
Baud rate	19200	
Stop bits	1	
Data bits	8	
Parity	EVEN	
PLC Station No.	1	

HMI Station No.	0	

Address List

Type	Device registers	Format	Range	Note
Bit	MX	MXdddd.oo	0.0~8191.7	
Word	MW0	MW0ddddd	0~32767	
	MW1	MW1ddddd	0~32767	

Cable Wiring



Create communication with Rockwell PLC

DF1 Protocol

MicroLogix 1000/1100/1200/1400/1500; SLC 5/03 5/04 5/05; PLC-5

HMI Settings

Item	Recommended	Note

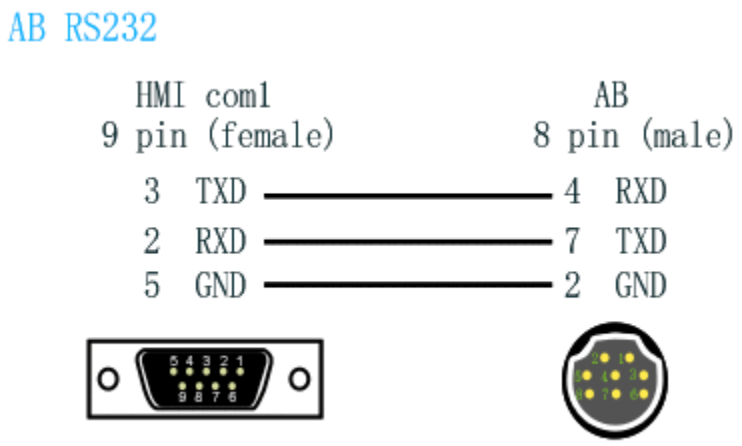
Protocol	Rockwell DF1	
Connection	RS232	
Baud rate	19200	
Stop bits	1	
Data bits	8	
Parity	None	
PLC Station No.	1	
HMI Station No.	0	

Address List

Type	Device registers	Format	Range	Note
Bit	I	I ddd.dd	0.0~255.15	Only able to communicate with file number I1
	O	O ddd.dd	0.0~255.15	Only able to communicate with file number O0
	B	B nnhh.dd	0.0~ffff.15	Only able to communicate with file number B3
	S	S ddd.dd	0.0~255.15	Only able to communicate with file number S2

	N	N nnhh.dd	0.0~ffff.15	Only able to communicate with file number N7
Word	S	S ddd	0~255	Only able to communicate with file number S2
	TS	TS nnhh	0~ffff	Only able to communicate with file number T4 (Timer Preset Value)
	TP	TP nnhh	0~ffff	Only able to communicate with file number T4 (Timer Accumulator Value)
	CS	CS nnhh	0~ffff	Only able to communicate with file number C5 (Counter Preset Value)
	CP	CP nnhh	0~ffff	Only able to communicate with file number C5 (Counter Accumulator Value)
	N	N nnhh	0~ffff	Only able to communicate with file number N7

Cable Wiring



DF1 Advanced Protocol

MicroLogix 1000/1100/1200/1400/1500; SLC 5/03 5/04 5/05; PLC-5

HMI Settings

Item	Recommended	Note
Protocol	Rockwell DF1 Advanced	
Connection	RS232	
Baud rate	19200	
Stop bits	1	
Data bits	8	
Parity	None	
PLC Station No.	1	
HMI Station No.	0	

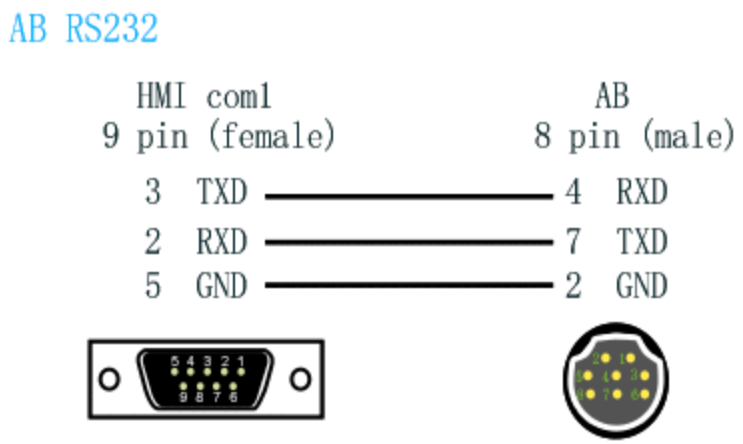
Address List

Type	Device registers	Format	Range	Note
Bit	I1	I1ddd.dd	0.0~255.15	Only able to communicate with file number I1
	O0	O0ddd.dd	0.0~255.15	Only able to communicate with file number O0
	S2	S2ddd.dd	0.0~255.15	Only able to communicate with file number S2

	B3	B3ddd.dd	0.0~255.15	Only able to communicate with file number B3
	BN	BNddddd.dd	0.0~99255.15	Bit data file B0~B99 First two digits is for file number For example, BN13001.00 represents file number B13, address 001, the 0th bit.
	N7	N7ddd.dd	0.0~255.15	Only able to communicate with file number N7
	NN	NNddddd.dd	0.0~99255.15	Integer data file bit format N0~N99 First two digits is for file number For example, NN13001.00 represents file number N13, address 001, the 0th bit.
Word	S2	S2ddd	0~255	Only able to communicate with file number S2
	T4S	T4Sddd	0~255	Only able to communicate with file number T4 (Timer Preset Value)
	T4P	T4Pddd	0~255	Only able to communicate with file number T4 (Timer Accumulator Value)
	TNS	TNSddddd	0~99255	Timer Preset Value First two digits is for file number For example, TNS99255 represents file number T99, address 255.
	TNP	TNPddddd	0~99255	Timer Accumulator Value First two digits is for file number For example, TNP99255 represents file number T99, address 255.

	C5S	C5Sddd	0~255	Only able to communicate with file number C5 (Counter Preset Value)
	C5P	C5Pddd	0~255	Only able to communicate with file number C5 (Counter Accumulator Value)
	CNS	CNSddddd	0~99255	Counter Preset Value First two digits is for file number For example, CNS99255 represents file number C99, address 255.
	CNP	CNPddddd	0~99255	Counter Accumulator Value First two digits is for file number For example, CNP99255 represents file number C99, address 255.
	N7	N7ddd	0~255	Only able to communicate with file number N7
	NN	NNddd	0~99255	Integer data file First two digits is for file number For example, NN99255 represents file number N99, address 255.
Double Word	F8	F8ddd	0~255	Only able to communicate with file number N7
	FN	FNddddd	0~99255	Floating point data file First two digits is for file number For example, FN99255 represents file number F99, address 255.
	LN	LNddddd	0~99255	Long

Cable Wiring



MicroLogix Protocol

MicroLogix 1000/1100/1200/1400/1500; SLC 5/03 5/04 5/05 PLC-5

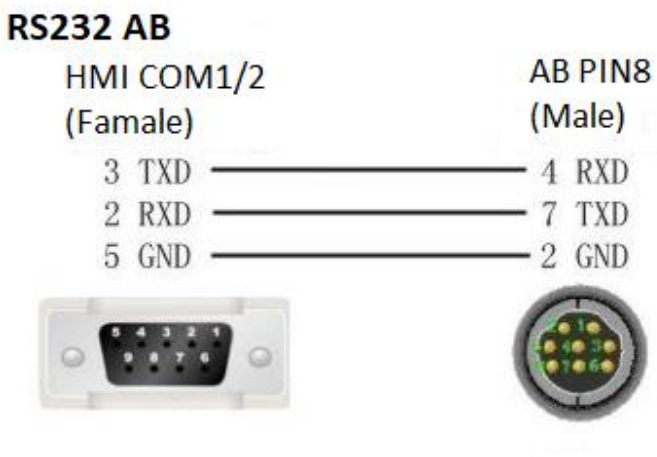
HMI Settings

Item	Settings	Note
Protocol	Allen-Bradlley MicroLogix	
Connection	RS232	
Baud rate	19200	
Data bit	8	
Parity	None	
Stop bit	1	
PLC station No.	1	

Address List

Type	Device registers	Format	Range	Note
Bit	I	I d.d	0.0~255.15	
	O	O d.d	0.0~255.15	
	B	B nnhh.dd	0.0~ffff.15	nn: block number (hex)
	S	S d.d	0.0~255.15	
	N	N nnhh.dd	0.0~ffff.15	nn: block number (hex)
Word	S	S d	0~255	
	TS	TS nnhh	0~ffff	nn: block number (hex)
	TP	TP nnhh	0~ffff	
	CS	CS nnhh	0~ffff	
	CP	CP nnhh	0~ffff	
	N	N nnhh	0~ffff	
	C	C nnhh	0~ffff	
	T	T nnhh	0~ffff	
	R	R nnhh	0~ffff	

Cable Wiring



CompactLogix FreeTag Ethernet protocol

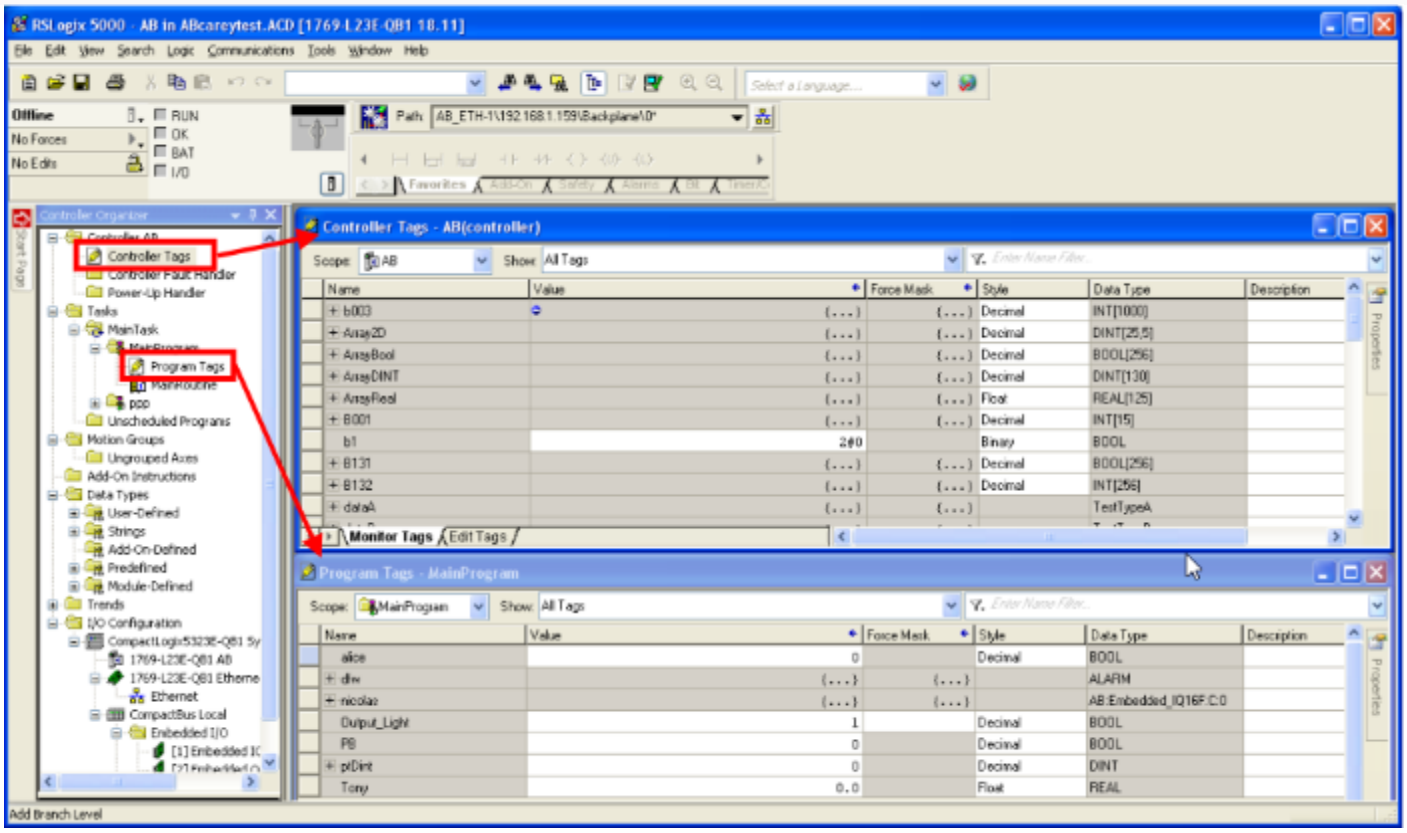
Allen-Brandly CompactLogix

HMI Settings

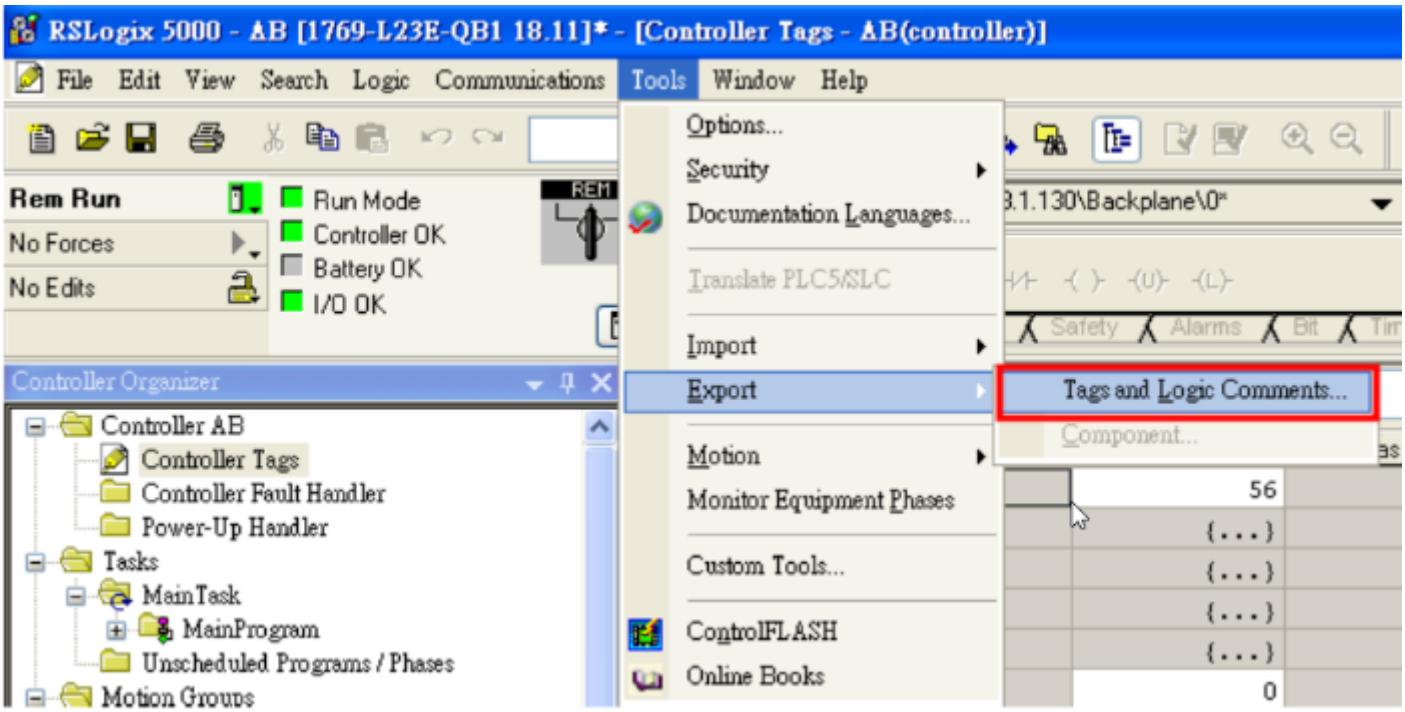
Items	Settings	Note
Protocol	Allen-Brandley FreeTag Ethernet/IP (CompactLogix)	
Connection	Ethernet	
Port No.	44818	

PLC Setting

Create new tags

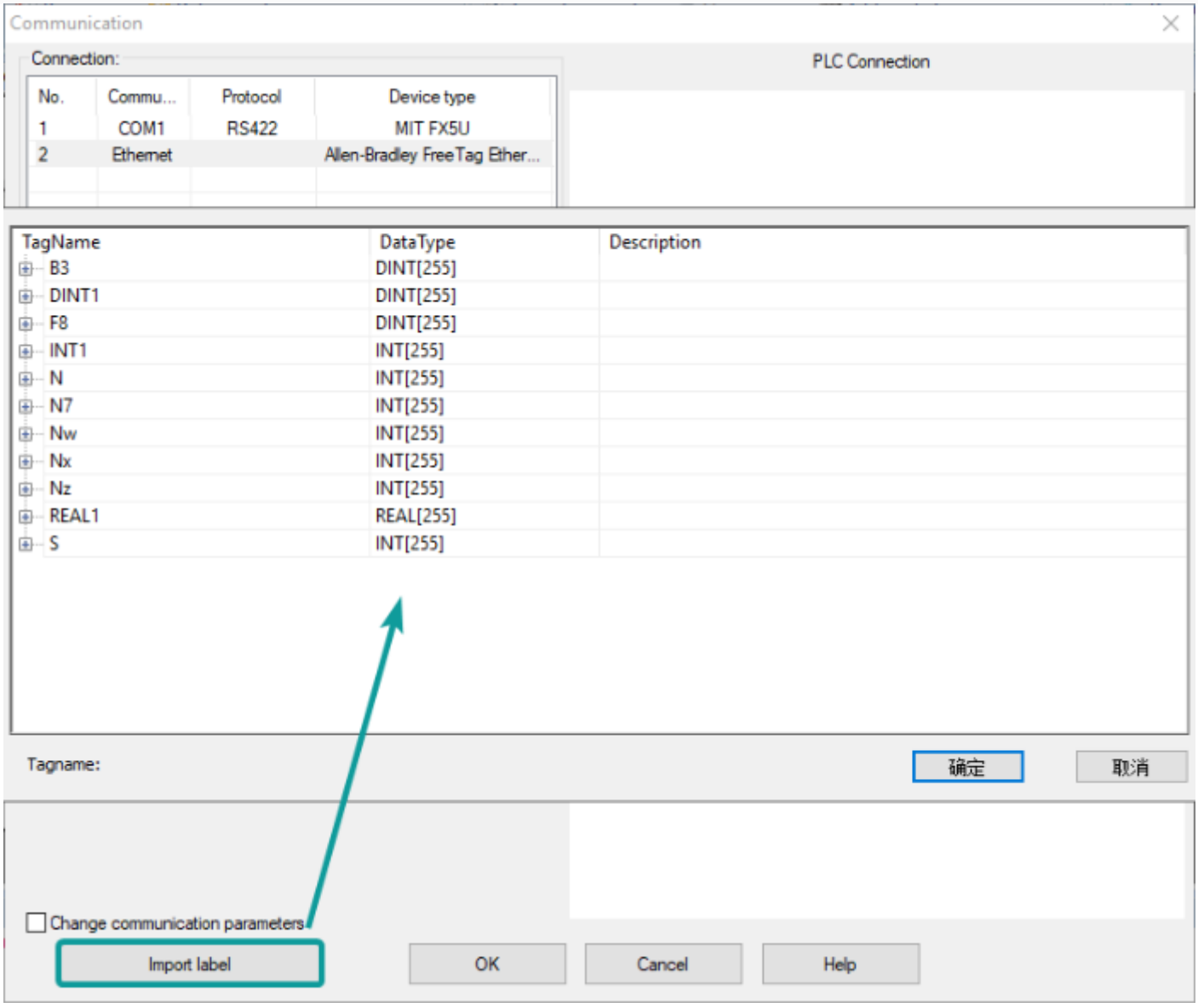


Export tags to CSV file. ([Tools] » [Export] » [Tags and Logic Comments])



Import labels, please open [Communication] window and click [Import label];

Select csv file, all tags will be displayed as belows;



✎**Note:**

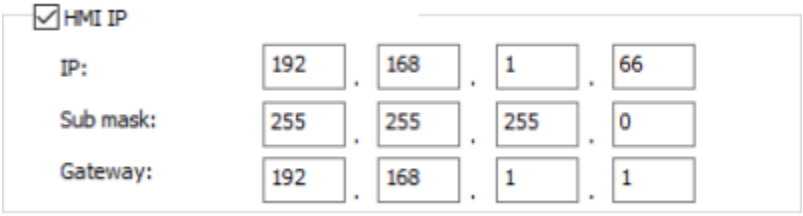
Because in different region, the separation symbol is different, we suggest you check this before you want to import your tags. To open csv file as text format.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
TYPE	SCOPE	NAME	DESCRIPTI	DATATYPE	SPECIFIER	ATTRIBUTES							
TAG		Local:1:C		AB:Embedded_Discre		(ExternalAccess := Read/Write)							
TAG		Local:1:I		AB:Embedded_Discre		(ExternalAccess := Read/Write)							
TAG		Local:1:O		AB:Embedded_Discre		(ExternalAccess := Read/Write)							
TAG		B3		DINT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							
TAG		DINT1		DINT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							
TAG		F8		DINT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							
TAG		INT1		INT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							
TAG		N		INT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							
TAG		N7		INT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							
TAG		Nw		INT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							
TAG		Nx		INT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							
TAG		Nz		INT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							
TAG		REAL1		REAL[255]		(RADIX := Float, Constant := false, ExternalAccess := Read/Write)							
TAG		S		INT[255]		(RADIX := Decimal, Constant := false, ExternalAccess := Read/Write)							

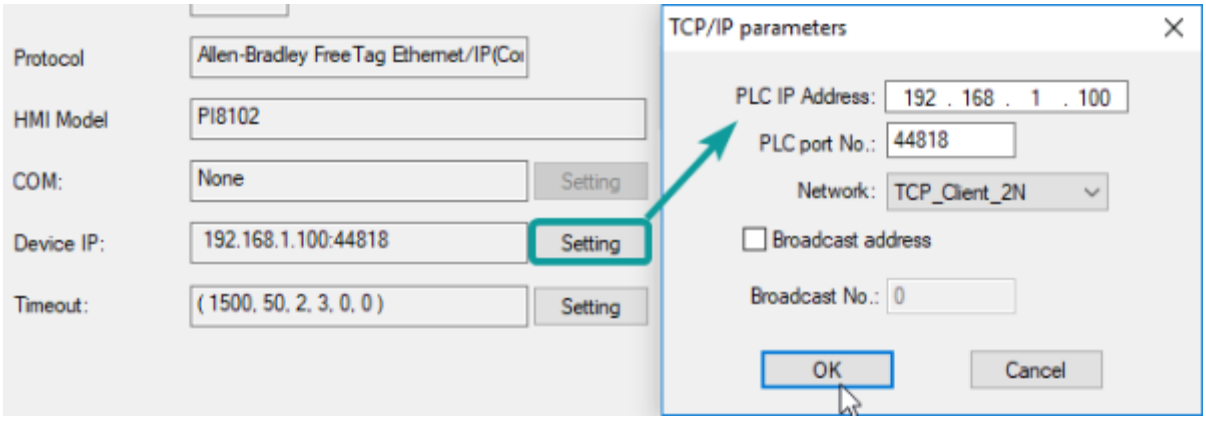
The directory of changing system settings: [Control Panel] -> [Date, Time, Language,and Regional Options] -> [Change the format of numbers, dates, and times]->[Customize]-> [List separator]. Please select [,] and export CSV file after setting.

Communication settings in HMI

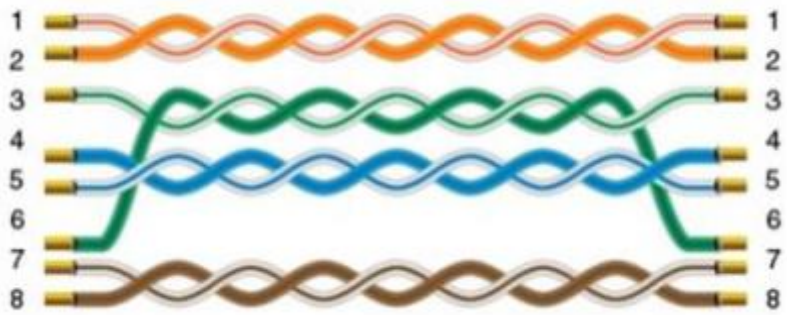
Enable HMI Ethernet in [Project Settings];



Set PLC IP in [Device IP] settings;



Cable Wiring



MicroLogix 1200 protocol

The operational address is determined by the connection of Allen-Bradley PLC to HMI. For extension modules or other special conditions, refer to allen-Bradley PLC instruction manual. The following is an example of allen-bradley MicroLogix1200.

- **Bit address I:** The address ranges from 0.0 to 255.15. The value of the data before the decimal point ranges from 0 to 255 (decimal). The value from 0 to 15 after the decimal point is the sub address (decimal).
- **Bit address B:** The address ranges from 000.0 to fff.15. The first f from left to right represents the block number (hexadecimal); The second and third f from left to right represent the word address (hexadecimal). The value 0 to 15 after the decimal point reprensents the sub address (decimal).
- **Word address S:** The word address ranges from 0 to 255 (decimal).
- **Word address TS:** The address ranges from 000.0 to ffff. The first and second f from left to right represents the block number (hexadecimal); The third and fourth f from left to right represent the word address (hexadecimal).

✎**Note:** Register address TP, CS, CP, N, F and TS address edit are same. D indicates decimal, and F indicates hexadecimal. Different PLC models may support different registers. See the following table.

PLC bit address type	**Address format**	**Address range**
I	dd.dd	I 0.0 ~ 255.15
O	dd.dd	O 0.0 ~ 255.15
B	fff.dd	B 000.0 ~ fff.15
S	dd.dd	S 0.0 ~ 255.15
N	ffff.dd	N 000.0 ~ fff.15
PLC word address type	**Address format**	**Address range**

S	ddd	S0 ~ 255
TS	ffff	TS0 ~ FFFF
TP	ffff	TP0 ~ FFFF
CS	ffff	CS0 ~ FFFF
CP	ffff	CP0 ~ FFFF
N	ffff	N0 ~ FFFF
F	ffff	F0 ~ FFFF

Create communication with Siemens PLC

S7-200 Smart Ethernet Protocol

Supported Series: Siemens S7-200 SMART Series Ethernet Module.

Website: http://www.siemens.com/entry/cc/en/

HMI Setting

Items	Settings	Note
Protocol	Simens S7-200 Smart Ethernet	
Connection	Ethernet	
Port No.	102	
PLC station No.	2	

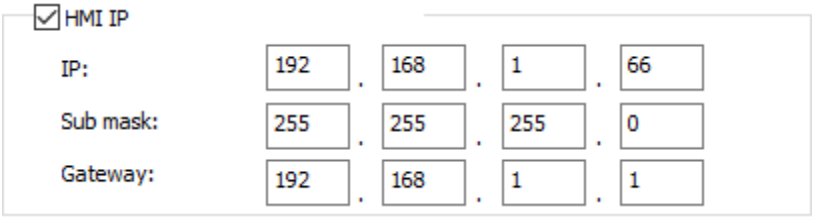
Address List

Type	Device register	HMI register	Format	Range	Note
Bit	I	I	I ddddd.o	0.0~99999.7	
	Q	Q	Q ddddd.o	0.0~99999.7	
	V	VWbit	VWbit ddddd.o	0.0~99999.7	
	V	V	V ddddd.o	0.0~99999.7	
	M	M	M ddddd.o	0.0~99999.7	
	SM	SM	ddddd.o	0.0~99999.7	
	S	S	ddddd.o	0.0~99999.7	Read only
	T	T	ddddd	0~99999	Timer state, read only
	C	C	ddddd	0~99999	Counter state, read only
Word	I	IW	IW ddddd	0~99999	
	Q	QW	QW ddddd	0~99999	
	AI	AIW	AIW ddddd	0~99999	
	AQ	VB	VB ddddd	0~99999	
	V	VW	VW ddddd	0~99998	VW0=VB (0~1) VW2=VB (2~3)

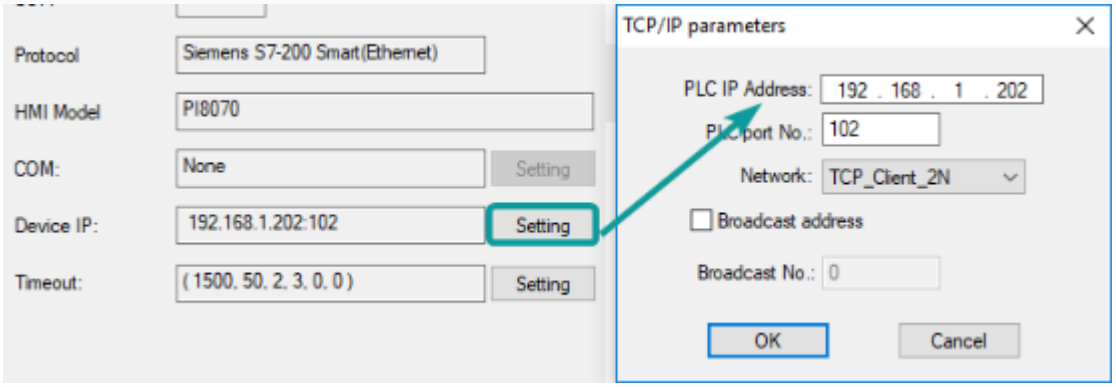
					Address value is a multiple of 2
	V	VD	VD ddddd	0~99998	VD0=VB (0~3) VD2=VB (4~7) Address value is a multiple of 4
	M	MB	MB ddddd	0~99999	
	M	MW	MW ddddd	0~99999	MW0=MB(0~1) MW2=MB(2~3) Address value is a multiple of 2
	M	MD	MD ddddd	0~99999	MD0=MB(0~3) MD4=MB(4~7) Address value is a multiple of 4
	T	TW	TW ddddd	0~99999	Value of timer
	C	CW	CW ddddd	0~99999	Value of counter
	W	SW	SW ddddd	0~99999	

Communication Settings

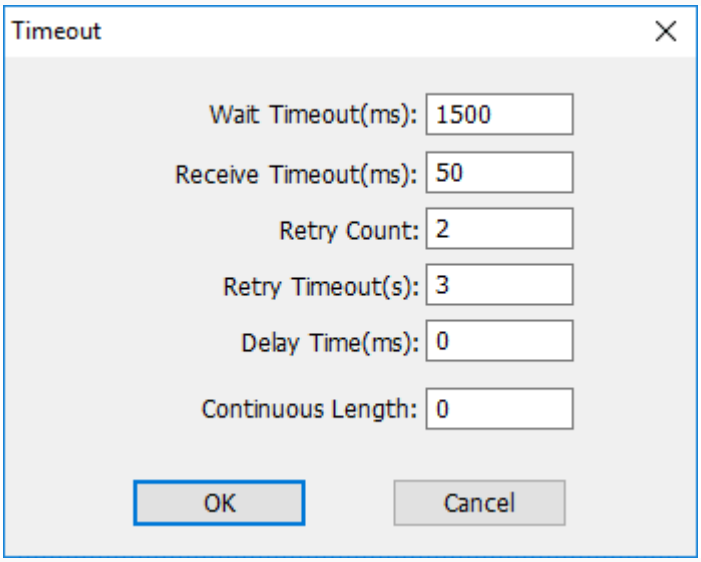
Enable HMI Ethernet in [Project Settings];



Set PLC IP in [Device IP] settings;

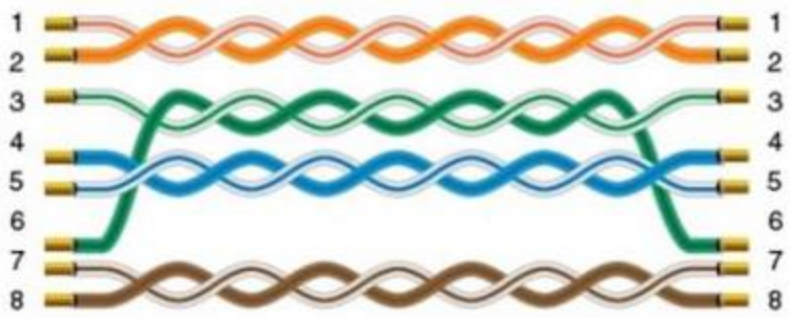


- PLC IP Address: PLC IP
- PLC pot No.: 102(fixed)
- Network:TCP_Client_2N(fixed)



- Wait timeout: depend on actual network situation (more than 1500 ms)

Cable Wiring



S7-300 Ethernet Protocol

Supported Series: Siemens S7-300 series PLC

HMI Setting

Items	Settings	Note
Protocol	Simens S7-300 Ethernet	
Connection	Ethernet	
Port No.	102	
PLC station No.	2	Need to be same as the PLC setting

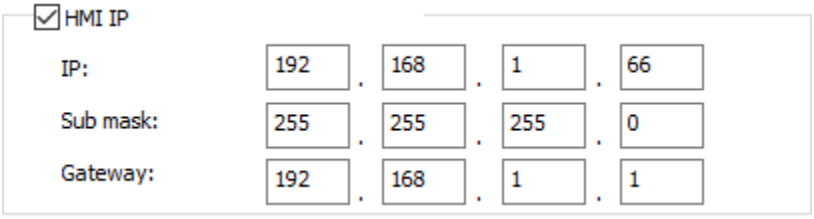
Address List

Type	Device register	HMI register	Format	Range	Note
Bit	I	I	I ddddd.o	0.0~99999.7	
	Q	Q	Q ddddd.o	0.0~99999.7	
	M	M	M ddddd.o	0.0~99999.7	
	DB0.DB~DB99.DB	DBxDBD	DBxDB nndddd.o	0.0~99999999.7	nn: block number; dddd: address;
Word	I	IW	IW ddddd	0~99999	
	Q	QW	QW ddddd	0~99999	
	M	MB	MB ddddd	0~99999	
		MW	MW ddddd	0~99999	MW0=MB(0~1) MW2=MB(2~3) Address value is a multiple of 2

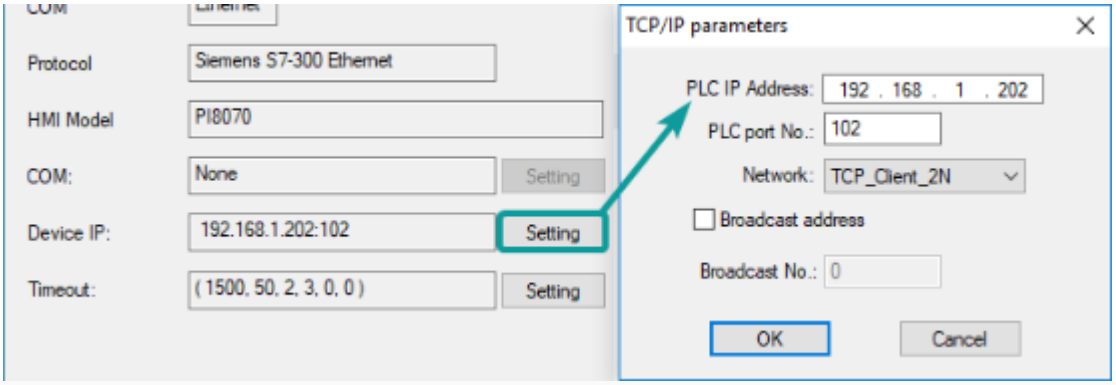
		MD	MD ddddd	0~99999	MD0=MB(0~3) MD4=MB(4~7) Address value is a multiple of 4
	DB0.DB~DB99.DB	DBxDBB	DBxDBB nndddd	0~99999999	nn: block number; dddd: address
		DBxDBW	DBxDBW nndddd	0~99999999	
		DBxDBD	DBxDBD nndddd	0~99999999	

Communication Settings

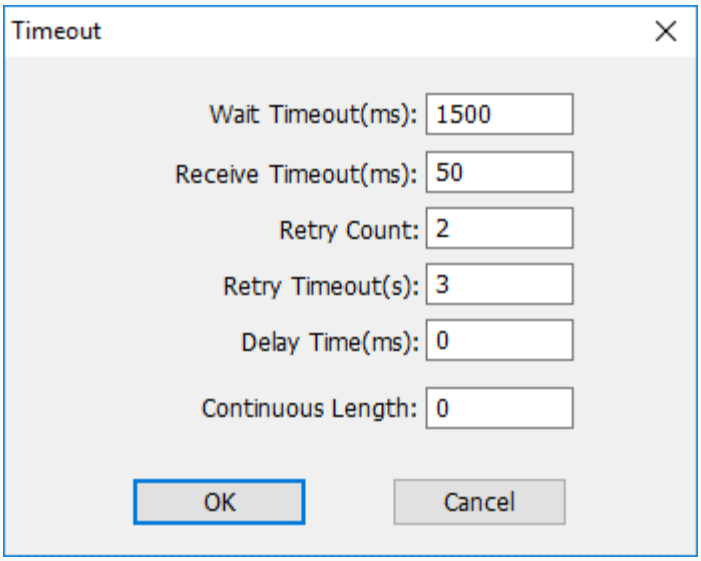
Enable HMI Ethernet in [Project Settings];



Set PLC IP in [Device IP] settings;

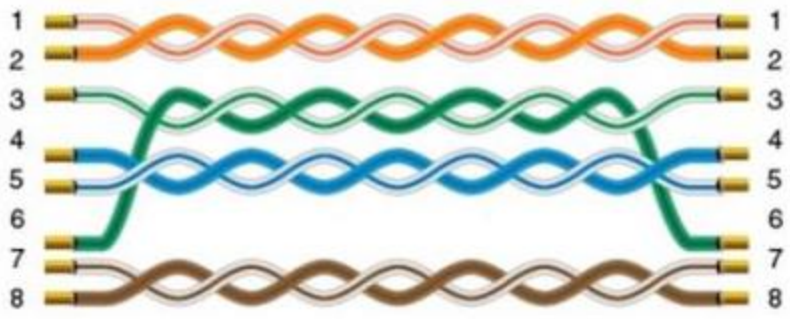


- PLC IP Address: PLC IP
- PLC pot No.: 102(fixed)
- Network:TCP_Client_2N(fixed)



- Wait timeout: depend on actual network situation (more than 1500 ms)

Cable Wiring



S7-1200 Ethernet Protocol

Supported Series: Siemens S7-1200

HMI Setting

Items	Settings	Note
Protocol	Siemens S7-1200	
Connection	Ethernet	
Port No.	102	

PLC station No.	2	

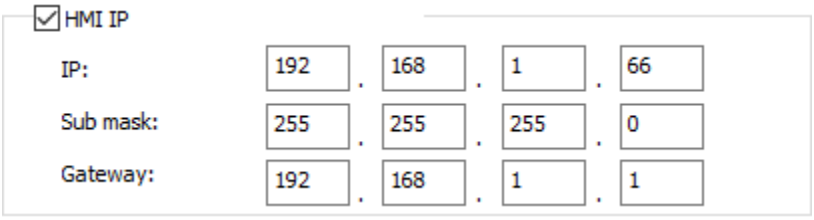
Address List

Type	Device register	HMI register	Format	Range	Note
Bit	I	I	M d.o	d:0--9999 o:0-7	
	Q	Q	Q d.o	d:0--9999 o:0-7	
	M	M	M d.o	d:0--9999 o:0-7	
	DB0.DB-DB99.DB	DBxDB	DBxDBnndddd.o	nn:0-9999, dddd:0-9999, o:0-7	nn:DB No. dddd:address value o: digit address
Word	M	MB	MB d	d:0-99999	
	M	MW	MW d	d:0-99999	MW0=MB(0~1) MW2=MB(2~3) Address value is a multiple of 2
	M	MD	MD d	d:0-99999	MD0=MB(0~3) MD4=MB(4~7) Address value is a multiple of 4
	I	IW	IW d	d:0-99999	
	Q	QW	QW d	d:0-99999	
	DB0.DB-DB99.DB	DBxDBB	DBxDBBnndddd	nn:0-9999	nn:DB No. dddd:address value

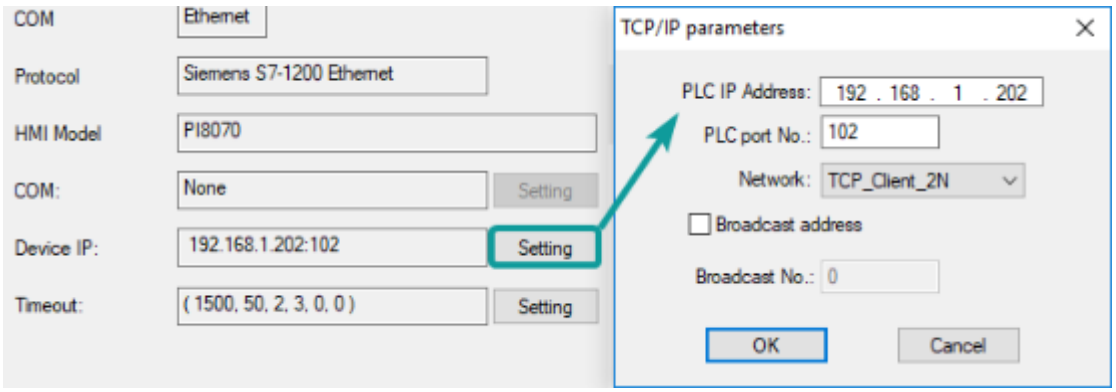
				dddd:0-9999	
	DB0.DB-DB99.DB	DBxDBW	DBxDBWnndddd	nn:0-9999 dddd:0-9999	nn:DB No. dddd:address value Address value is a multiple of 2
	DB0.DB-DB99.DB	DBxDBD	DBxDBDnndddd	nn:0-9999 dddd:0-9999	nn:DB No. dddd:address value Address value is a multiple of 4

Communication Settings

Enable HMI Ethernet in [Project Settings];



Set PLC IP in [Device IP] settings;



✎Note:

- The S7-1200 supports simultaneous connection of three devices, so the driver supports simultaneous access to PLC by three touch screens.
- HMI access PLC, use S7 protocol, access PLC TSAP 02.01 (S7-1200 PROFINET interface only supports three connections, the default support), detailed reference to the system manual of S7-1200.
- S7-1200 String type, the default first two bytes are used to store the maximum character and valid characters, so the text data will be shifted back one word address. When interacting with the data, what way this address plc is displayed with is unknown. And because of an extra word of data causes us to display the wrong. The solution

is if we use String, then the actual data address we want to operate on is actually shifted back two bytes, so as long as the address on the project is shifted back 2 bits to correspond with the actual data address.

- HMI operation character length needs to be set to 2 times the length of the Siemens character for proper display.

PLC Settings

Add BD

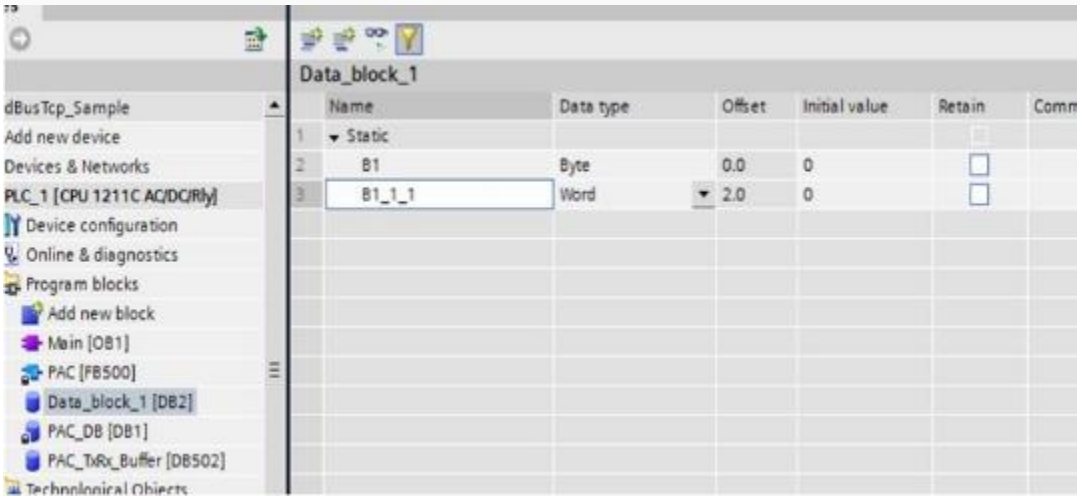
- Please uncheck [Symbolic access only] option;

Address settings, using BD2 as example.

- DB×DBB2xxxx, DB×DBW2xxxx, DB×DBD2xxxx for accessing data of DB2 in B1.
- 2 represent DB block number
- xxxx represent address

Such as:

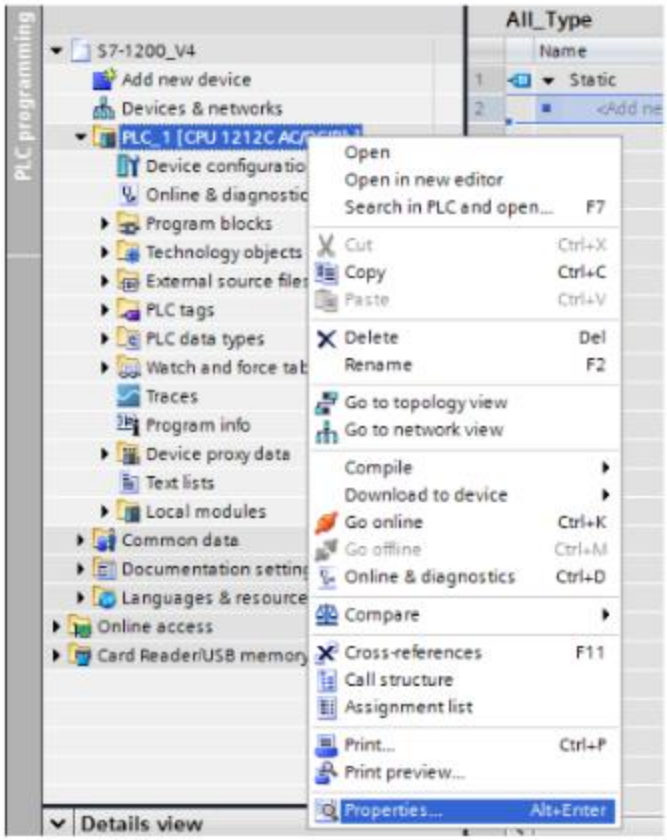
- DBxDBB20000 = DB2.DBB0
- DBxDBW20004 = DB2.DBW4



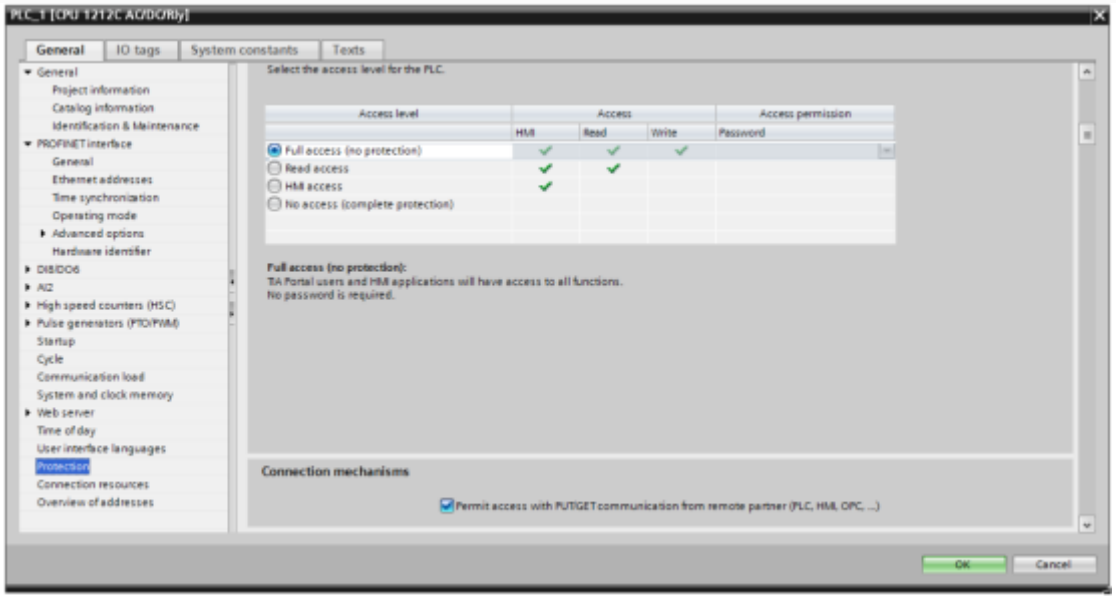
How to connect with S7-1200 Firmware V4.0

PLC configuration

- Double click [device configuration] in Siemens via software
- Double click [protection] to enter protection configuration screen



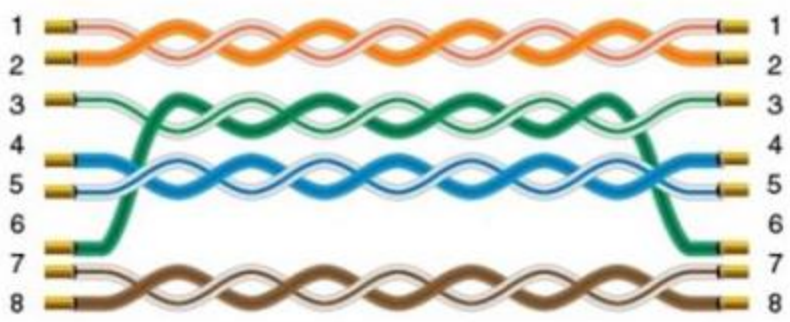
- Check [Permit access with PUT / GET communication from remote partner (PLC, HMI, OPC, ...)]



DB settings

- Right click [DB], select [properties]
- Uncheck [optimized block access]

Cable Wiring



S7-XXX Ethernet Protocol

Supported Series: Siemens S7-400, S7-1200 and S7-1500

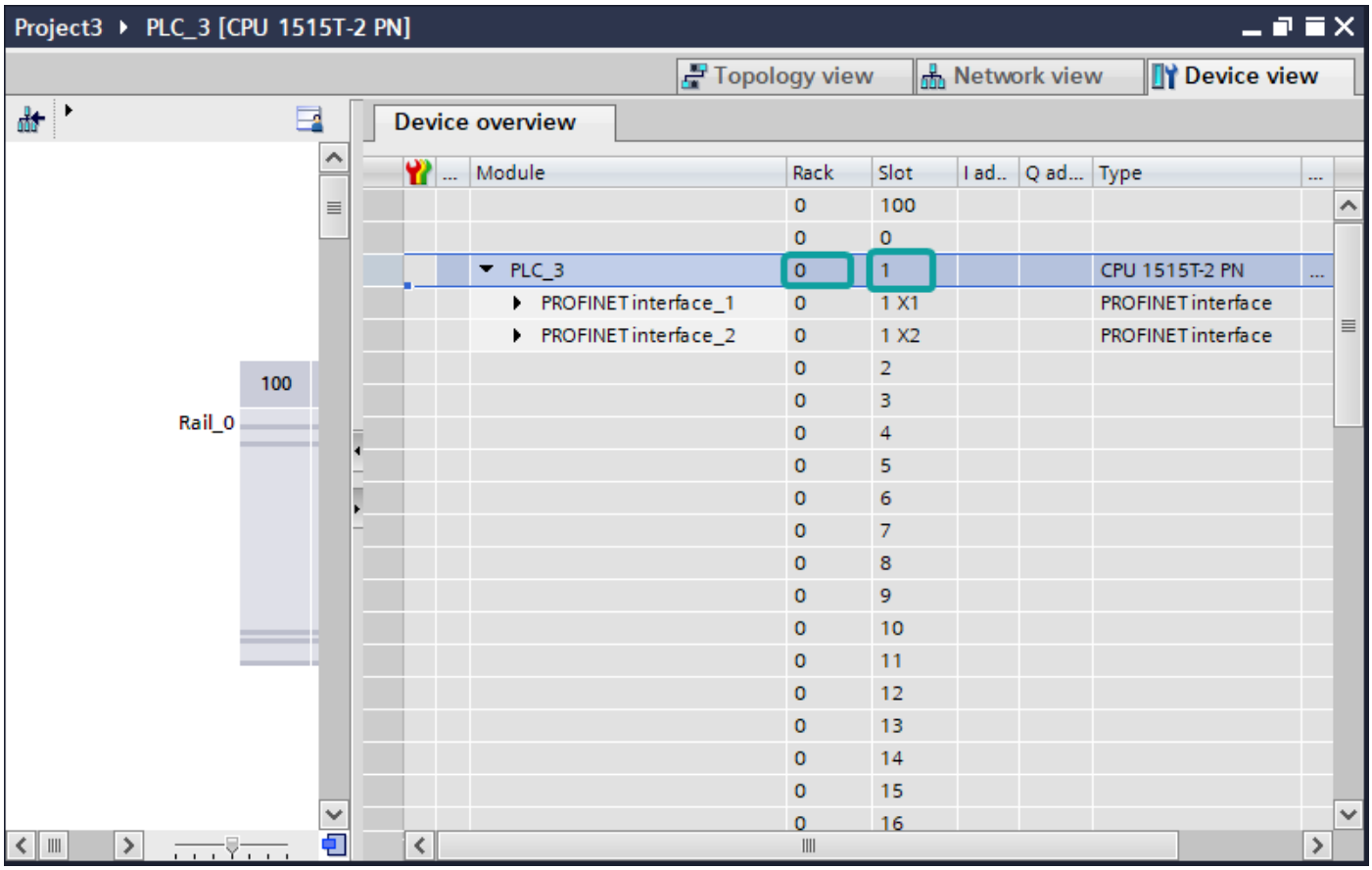
HMI Setting

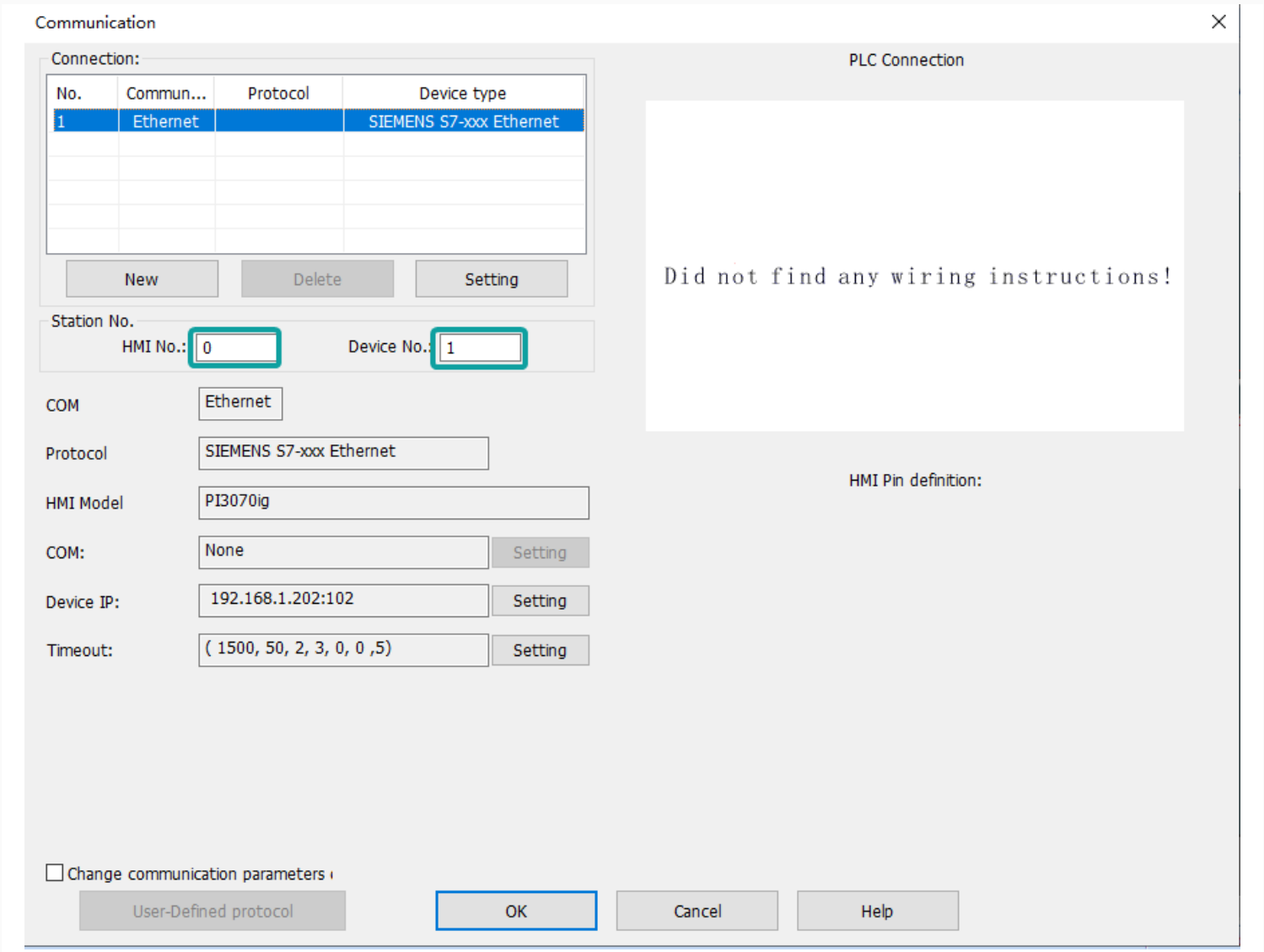
Items	Settings	Note
Protocol	Siemens S7-XXX	

Connection	Ethernet	
Port No.	102	
Device No.	Slot (Default 1 for S7-1500/ 2 for S7-1200/ 3 for S7-400)	
HMI No.	Rack (Default as 0)	

Slot from TIA Portal is equal to Device No. of PIStudio

Rack from TIA Portal is equal to HMI No. of PIStudio





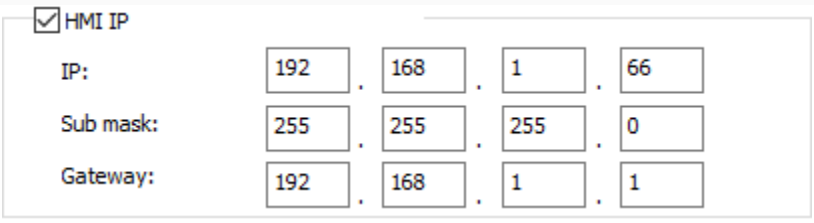
Address List

Type	Device register	HMI register	Format	Range	Note
Bit	I	I	M d.o	d:0--9999 o:0-7	
	Q	Q	Q d.o	d:0--9999 o:0-7	
	M	M	M d.o	d:0--9999	

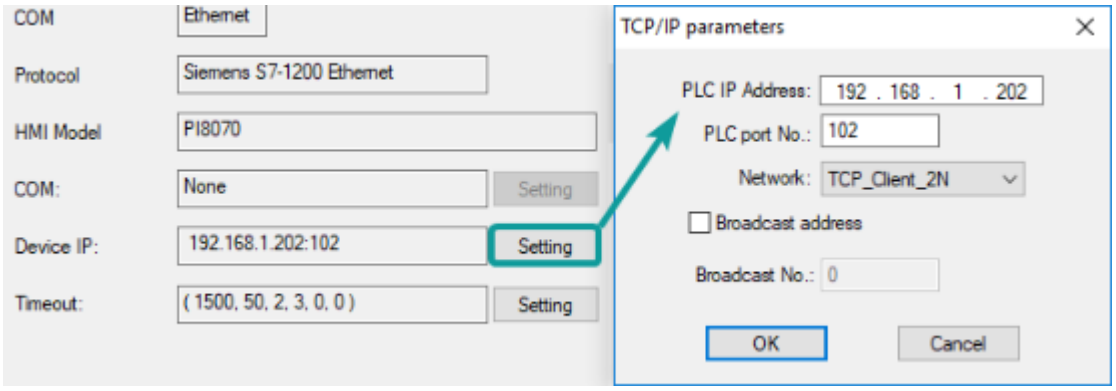
				o:0-7	
	DB0.DB-DB99.DB	DBxDB	DBxDBnndddd.o	nn:0-9999, dddd:0-9999, o:0-7	nn:DB No. dddd:address value o: digit address
Word	M	MB	MB d	d:0-99999	
	M	MW	MW d	d:0-99999	MW0=MB(0~1) MW2=MB(2~3) Address value is a multiple of 2
	M	MD	MD d	d:0-99999	MD0=MB(0~3) MD4=MB(4~7) Address value is a multiple of 4
	I	IW	IW d	d:0-99999	
	Q	QW	QW d	d:0-99999	
	DB0.DB-DB99.DB	DBxDBB	DBxDBBnndddd	nn:0-9999 dddd:0-9999	nn:DB No. dddd:address value
	DB0.DB-DB99.DB	DBxDBW	DBxDBWnndddd	nn:0-9999 dddd:0-9999	nn:DB No. dddd:address value Address value is a multiple of 2
	DB0.DB-DB99.DB	DBxDBD	DBxDBDnndddd	nn:0-9999 dddd:0-9999	nn:DB No. dddd:address value Address value is a multiple of 4

Communication Settings

Enable HMI Ethernet in [Project Settings];



Set PLC IP in [Device IP] settings;



✎Note:

- The S7-1200 supports simultaneous connection of three devices, so the driver supports simultaneous access to PLC by three touch screens.
- HMI access PLC, use S7 protocol, access PLC TSAP 02.01 (s7-1200 PROFINET interface only supports three connections, the default support), detailed reference to the system manual of S7-1200.

Cable Wiring

LOGO Ethernet Protocol

Supported Series: Siemens Logo 0BA0, 0BA1 series

HMI Settings

Items	Settings	Note

Protocol	Siemens LOGO	
Connection	Ethernet	
Port No.	102	
PLC station No.	2	

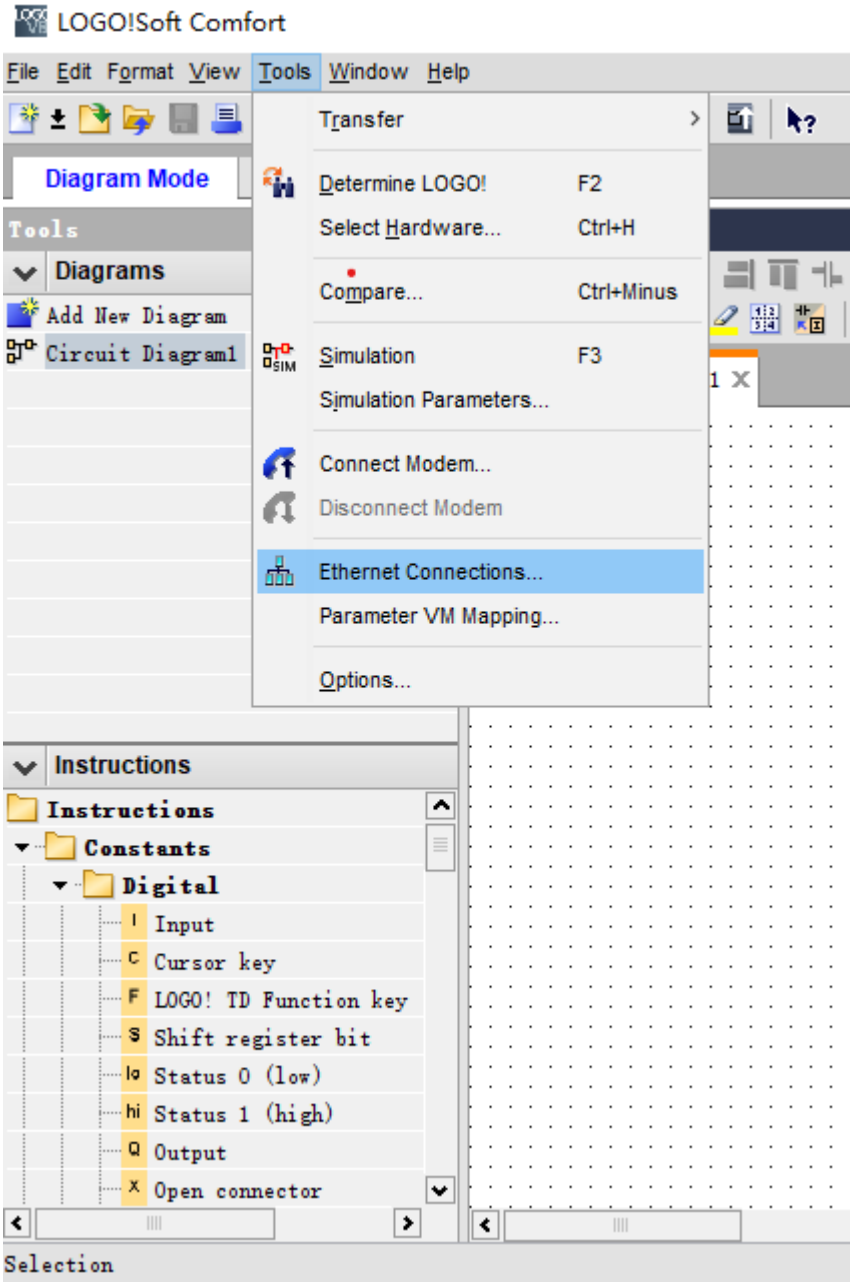
Address List

Number	Address Type	Data Type	Range	DB Address	PLC Address
1	RTC	Word	1-7	DB1.DBX984.0	0x001ec0
2	VB	Byte	0-1469	DB1.DBX0.0	0x000000
3	VD	Double Word	0-1466	DB1.DBX0.0	0x000000
4	VW	Word	0-1468	DB1.DBX0.0	0x000000
5	NAQ	Word	1-32	DB1.DBX1406.0	0x002bf0
6	NAI	Word	1-64	DB1.DBX1262.0	0x002770
7	AM	Word	1-64	DB1.DBX1118.0	0x0022f0
8	AQ	Word	1-16	DB1.DBX1072.0	0x002180
9	AI	Word	1-16	DB1.DBX1032.0	0x002040
10	I	Bit	1-64	DB1.DBX1024.0	0x002000

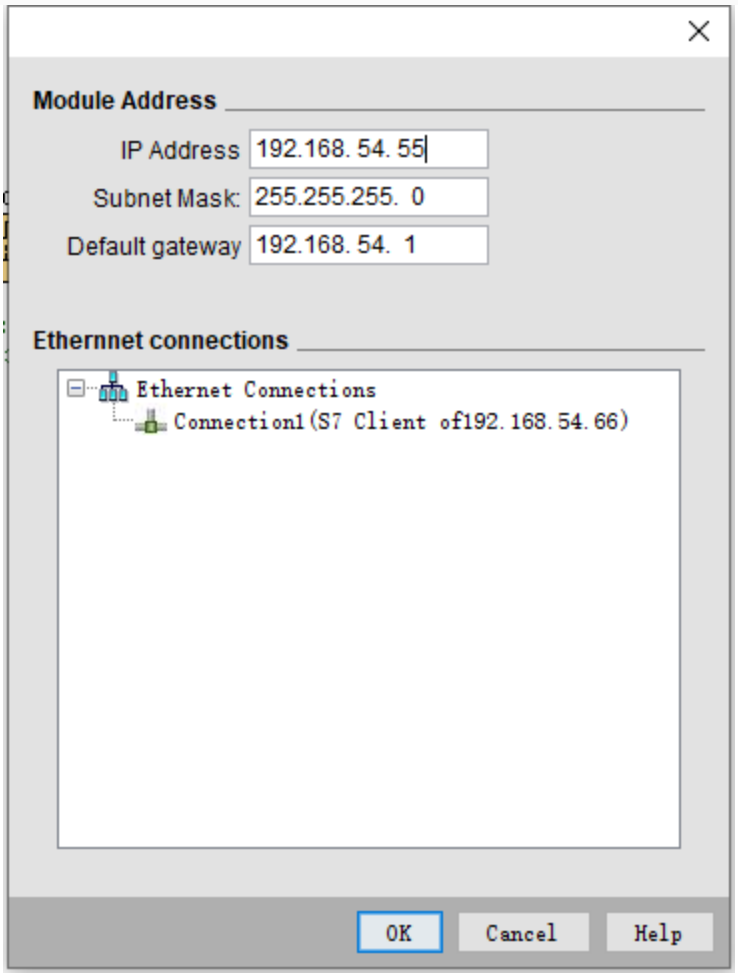
11	Q	Bit	1-64	DB1.DBX1064.0	0x002140
12	M	Bit	1-112	DB1.DBX1104.0	0x002280
13	NI	Bit	1-128	DB1.DBX1246.0	0x0026f0
14	NQ	Bit	1-128	DB1.DBX1390.0	0x002b70
15	V	Bit	0-14697	DB1.DBX0.0	0x000000

PLC Settings in LOGO Software:

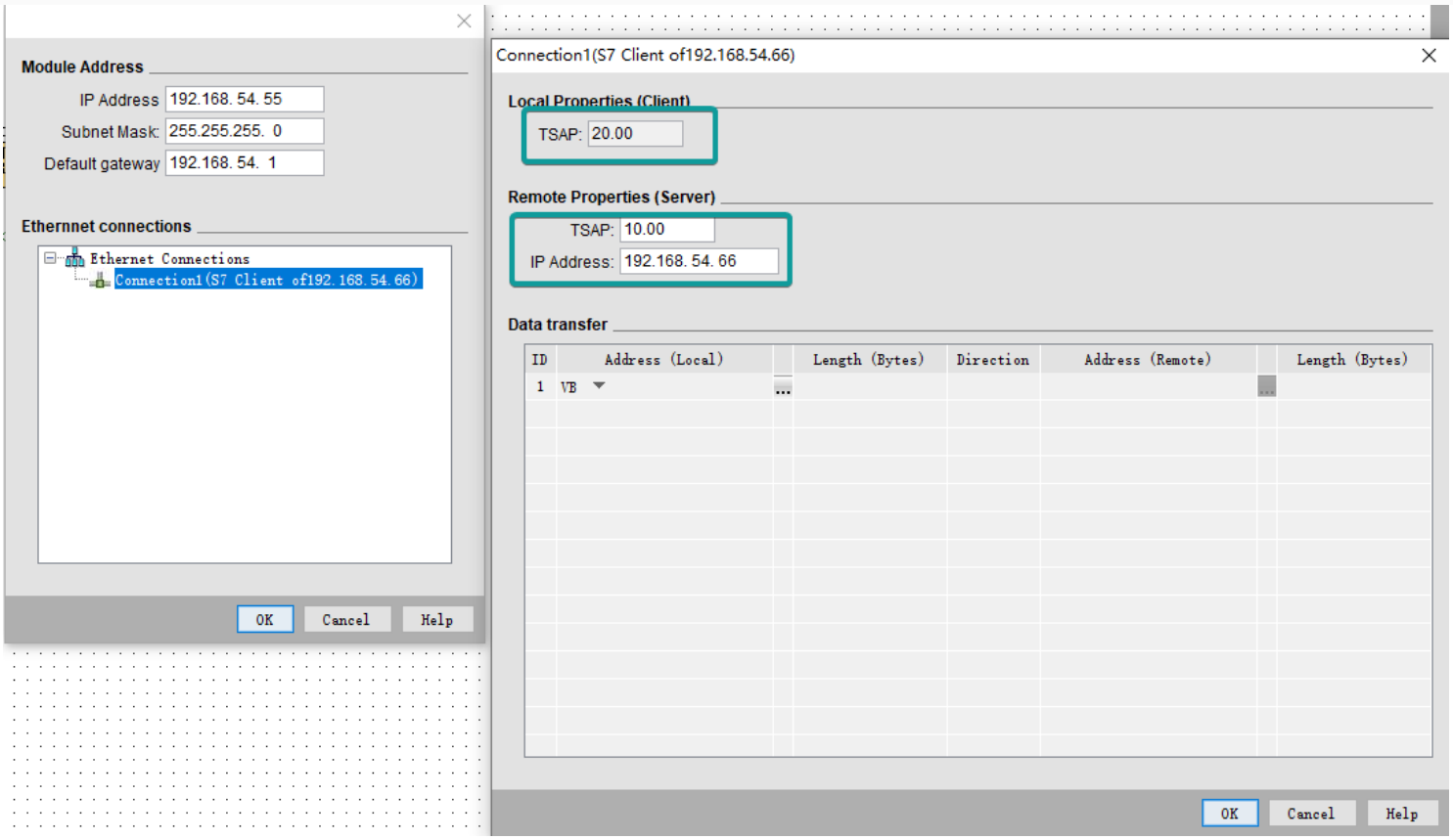
Click [Tools]--[Ethernet Connections],shown as below.



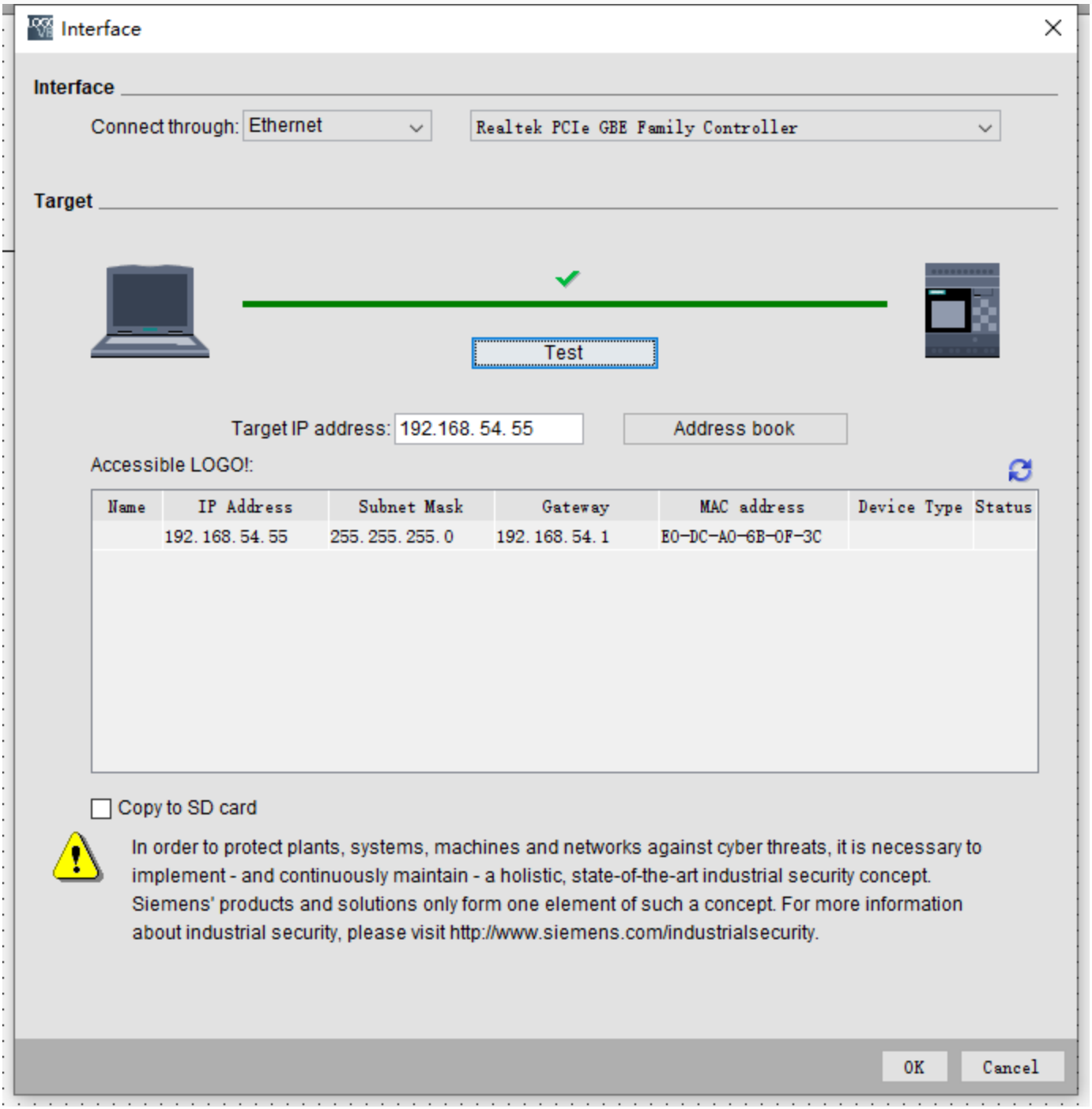
Set Ethernet connection parameter. IP, Subnet Mask, shown as below.



TSAP set:The value set by local TSAP is the remote TSAP set in HMI. PLC's remote TSAP is the opposite,shown as below.

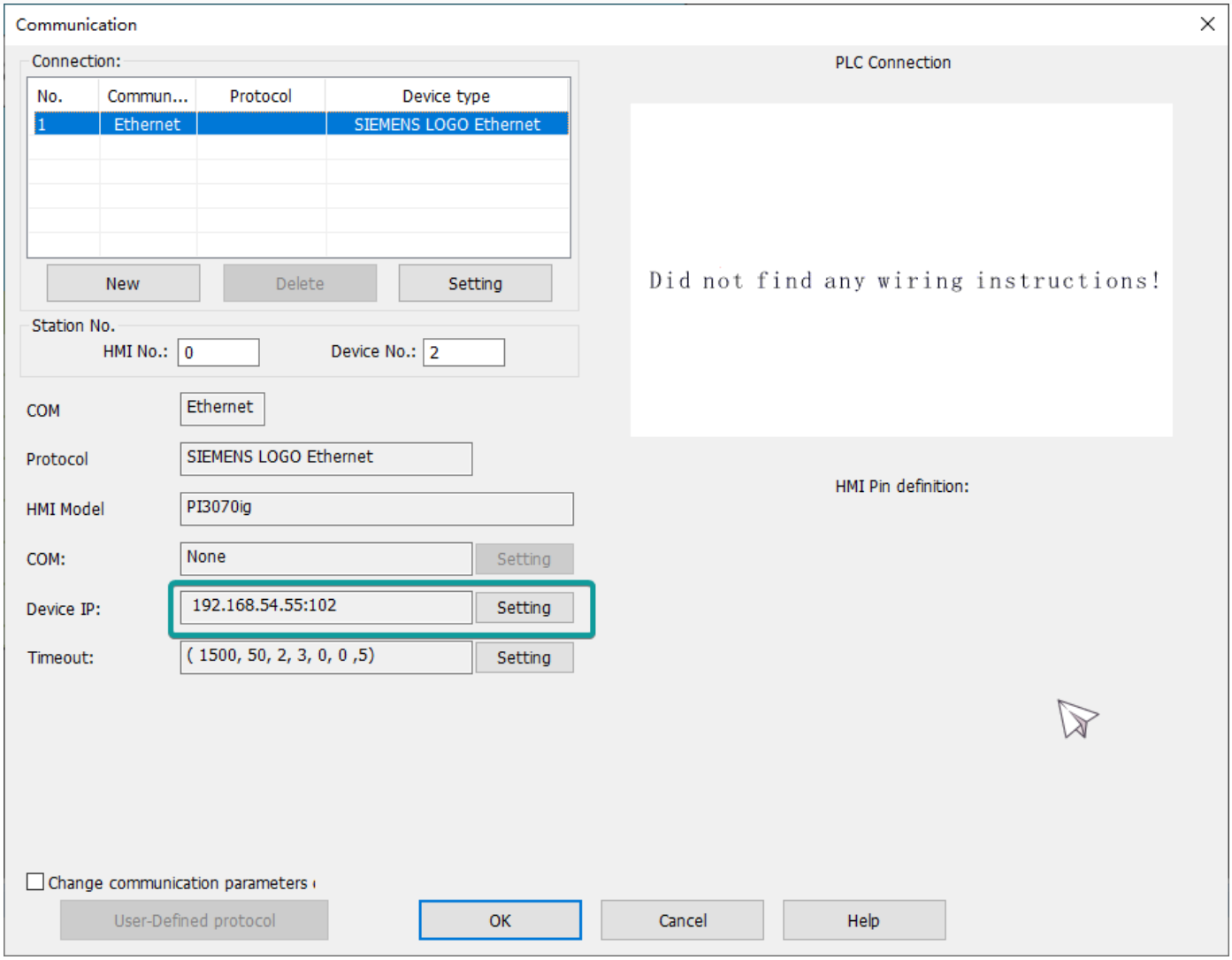


Download Project: Click "Address book" to add the IP address to be downloaded (fi."Detect" to check whether the IP address can be detected. Then click “ok”, and the system will prompt that PLC will be "STOP" mode. Click “YES” to start download.

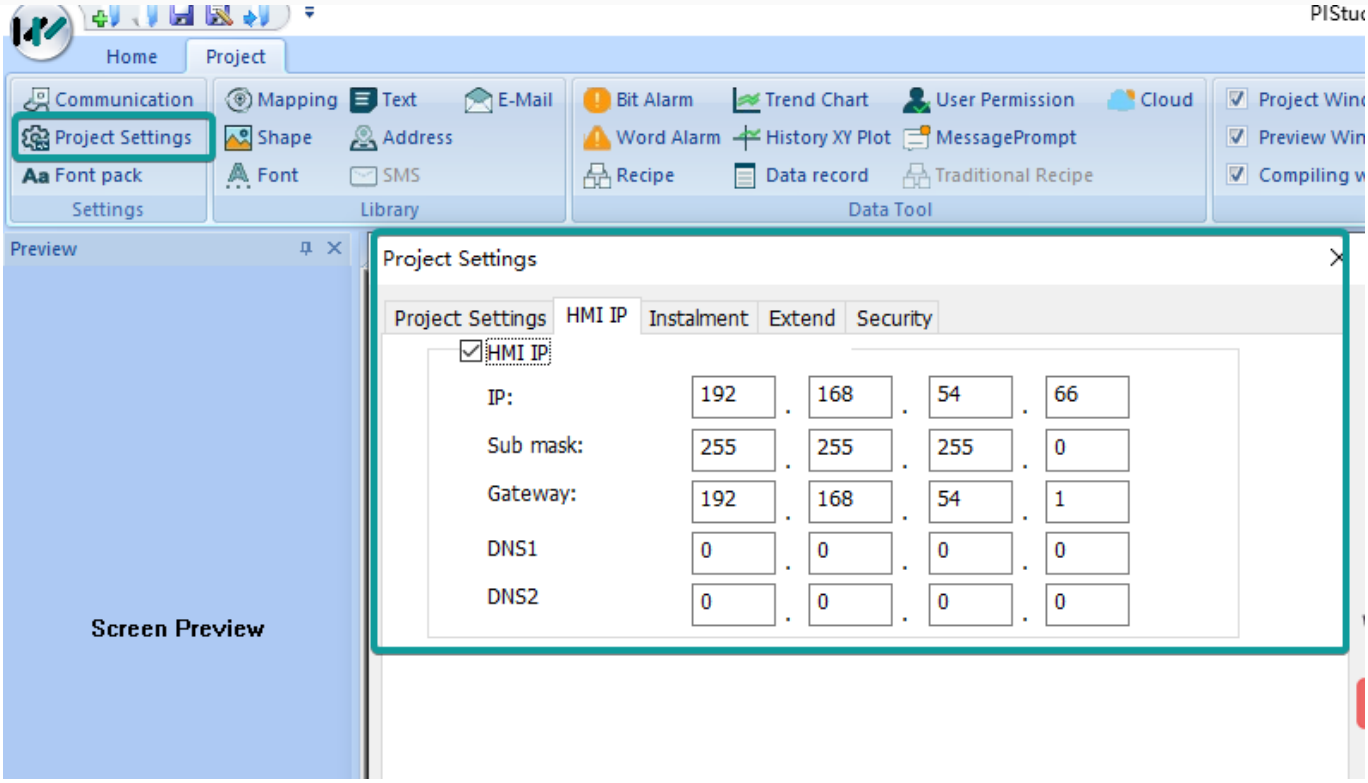


HMI Communication Settings

Set PLC IP in [Device IP] settings;



Enable HMI Ethernet in [Project Settings];

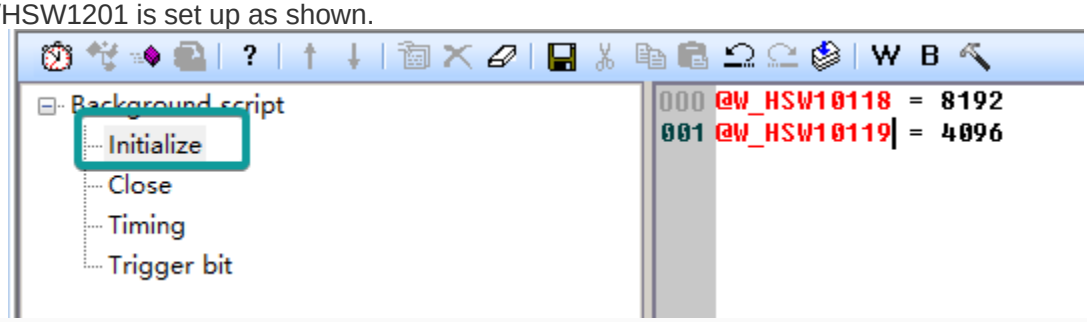


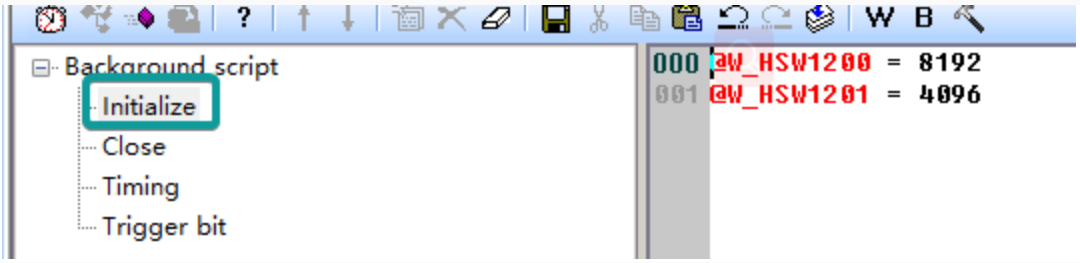
TSAP setting

- Regarding the setting of PLC TSAP, HMI provides system special address for setting, it is recommended to run in HMI script initialization, write PLC TSAP to corresponding system special register.
- HSW10118/HSW1200 = local TSAP of HMI, this is remote TSAP of PLC.
- HSW10119/HSW1201 = Remote TSAP of HMI, this is local TSAP of PLC.
- PI, PI+, i series (1.0 system): use HSW10118, HSW10119.
  ie, ig series: use HSW1200, HSW1201.
  HMI V2.0: use HSW1200, HSW1201.

✎Note:

- The data of TSAP is hexadecimal format. For example: the remote TSAP configured in the PLC is set to 20.00, then HSW10118/HSW1200 should be set to 0x2000, that is, HSW10118/HSW1200=8192.
- HSW10119/HSW1201 is set up as shown.





- AI word address and Ibit address are read-only and cannot be written on HMI.
- VW address should be even number address, such as VW0, VW2, VW4..., because in the address rule of Siemens PLC, the value of odd number address is equal to the value of previous even number address. For example VW1 = VW0.
- VD address should be multiple of 4, because it occupies two VW addresses, such as VD0, VD4, VD8...
- Written value of RTC cannot exceed 255.

Cable Wiring

S7-300 232

HMI Setting:

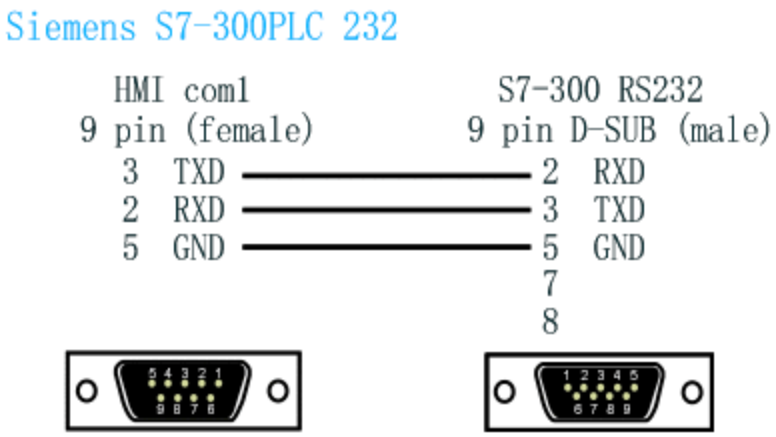
Parameters	Recommended	Options	Notes
PLC type	SIEMENS S7-300		
PLC I/F	RS232		
Baud rate	19200	9600,19200	
Data bits	8		

Parity	Odd		
Stop bits	1		
PLC sta. no.	2		Must be same as the PLC setting.

Device Address

Bit/Word	Device type	Format	Range	Memo
Bit	I	DDDDo	0 ~ 40957	Input (I)
Bit	Q	DDDDo	0 ~ 40957	Output (O)
Bit	M	DDDDo	0 ~ 40957	Bit Memory
Word	DB1 to DB99	DDDDDo	0 ~ 655327	
Word	IW	DDDD	0 ~ 4095	Input (I)
Word	QW	DDDD	0 ~ 4095	Output (O)
Word	MW	DDDD	0 ~ 4095	Bit Memory
Double word	MD	DDDD	0 ~ 4094	
Double word	DBDn	FFFFFDDDD	0 ~ 655359999	Data Register Double Word (must be even)
Byte	MB	DDDD	0 ~ 4095	Bit Memory Byte

Cable Wiring



Create communication with Mitsubishi PLC

FX1S, 1N, 2N Series Protocol

Supported Series: Mitsubishi FX1S, FX1N, FX2N series

HMI Settings

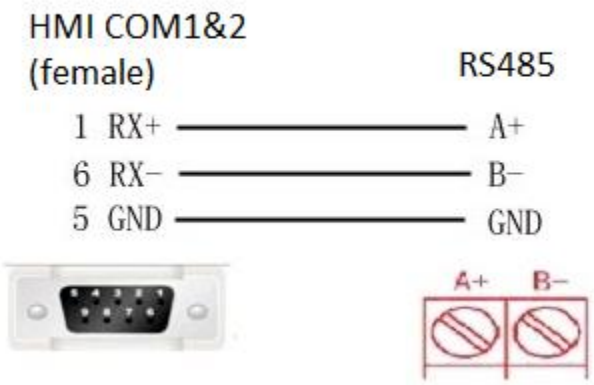
Item	Settings	Note
Protocol	Mitsubishi FX1S/FX1N/FX2N	
Connection	RS422/RS485/RS232	
Baud rate	9600~115200	
Data bit	7/8	
Parity	EVEN/Odd/None	
Stop bit	1/2	
PLC station No.	1~255	

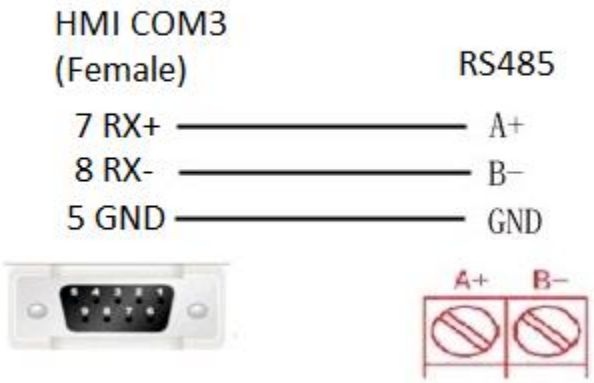
Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	Xo	0~303237	
	Y	Y	Y o	0~303237	
	M	M	M d	0~99999	
	T	T	T d	0~99999	
	C	C	C d	0~99999	
	S	S	S d	0~99999	
	SM	SM	SM d	8000~9999	
Word	X	X	Xo	0~303237	
	Y	Y	Y o	0~303237	
	M	M	M d	0~99999	
	T	T	T d	0~99999	
	C	C	C d	0~199	
	D	D	D d	0~7999	
	S	S	S d	0~99999	
	SD	SD	SD d	8000~9999	

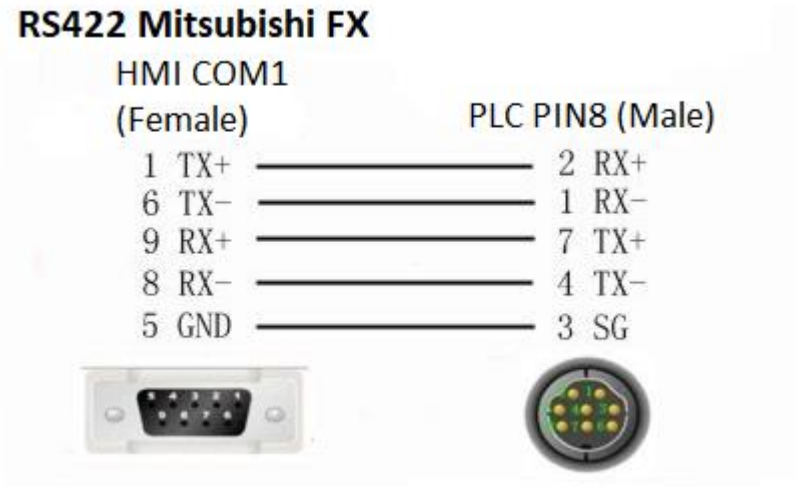
Cable Wiring

- **RS485**





- **RS422**



✎**Note:** COM3 only available in PI8000/PI9000 series.

FX3U/3G/3GA serial protocol

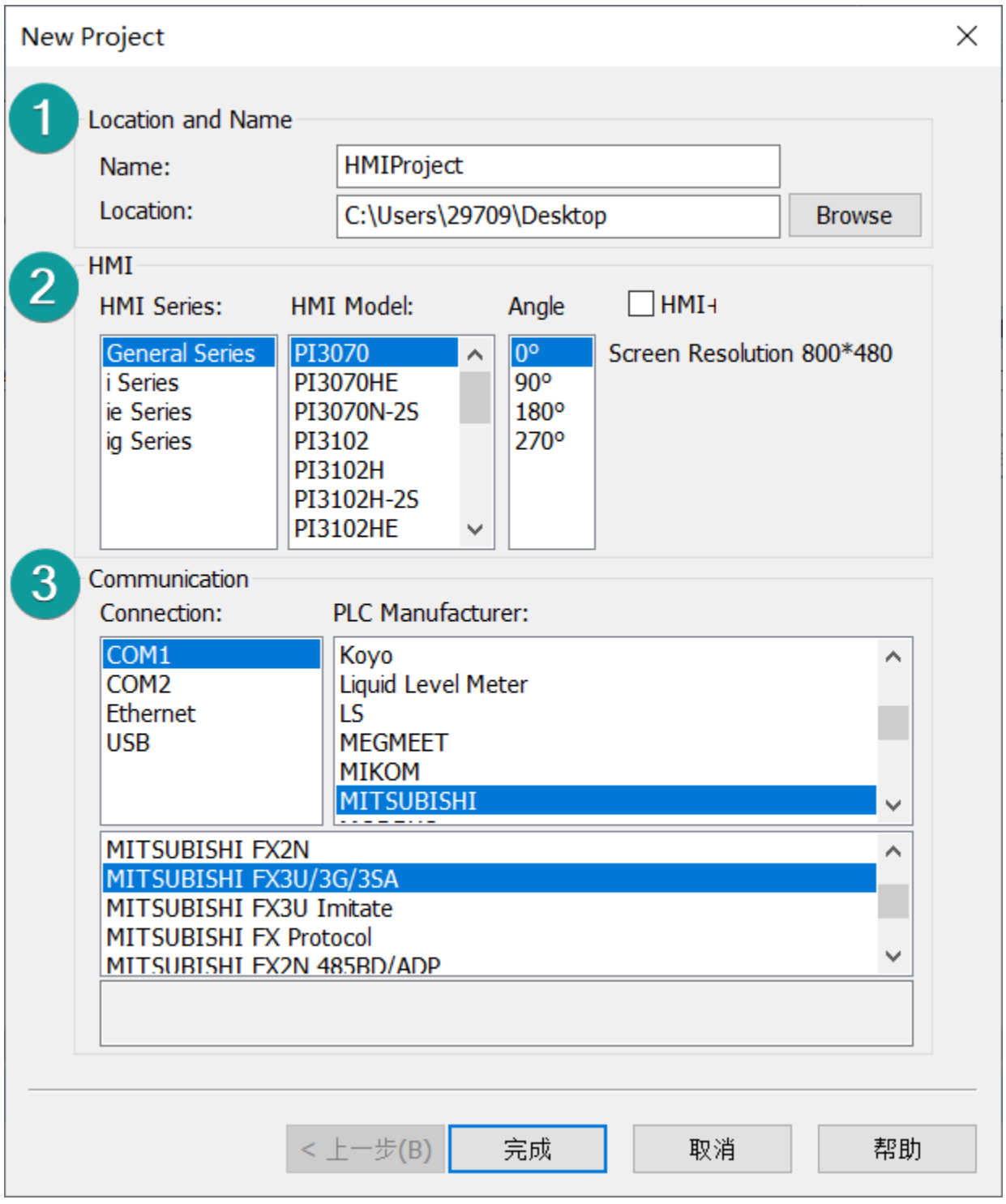
HMI Settings

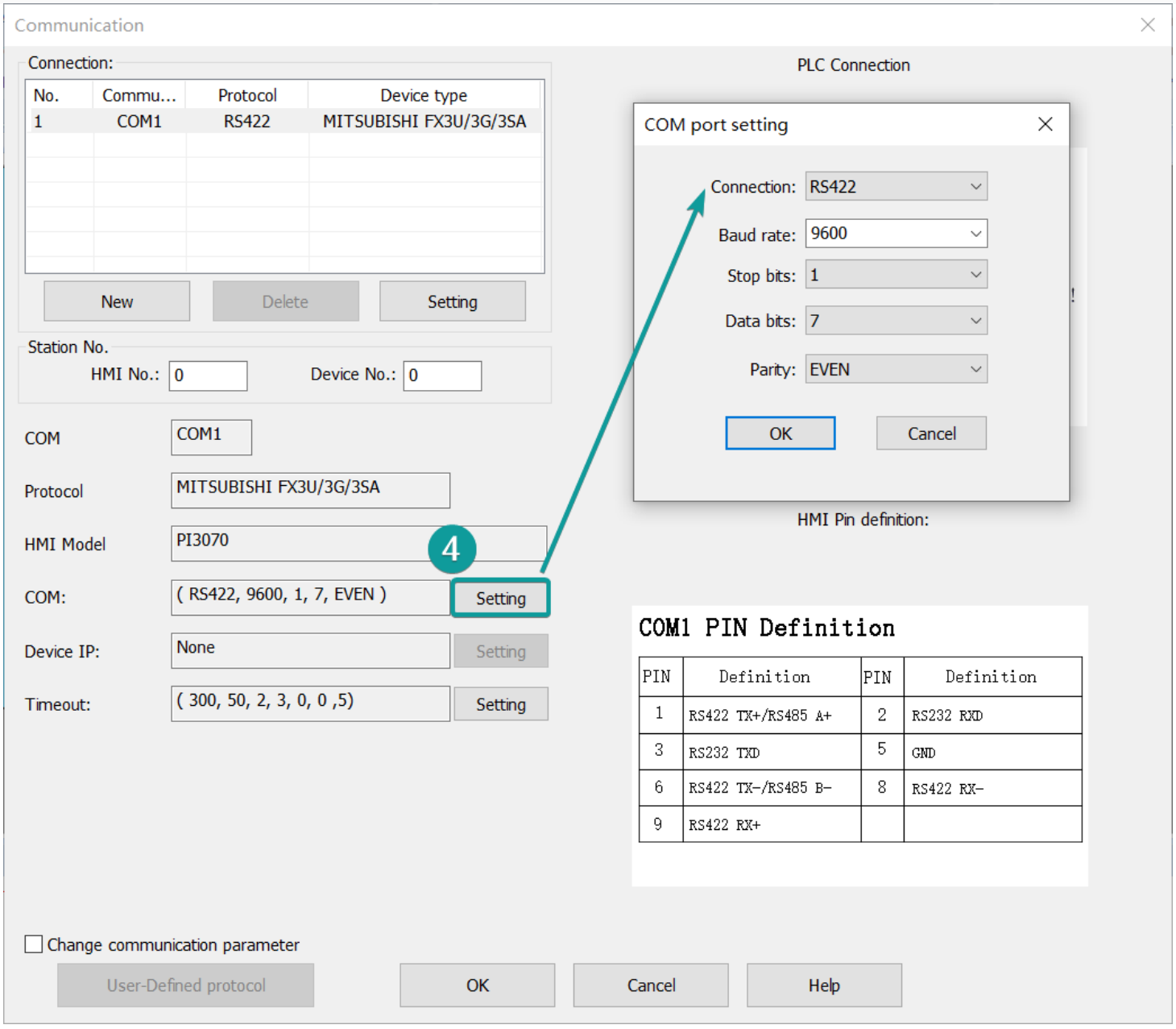
Item	Settings	Note
Protocol	Mitsubishi FX3U/3G/3GA	
Connection	RS422	
Baud rate	9600~115200	
Data bit	7/8	
Parity	EVEN/Odd/None	
Stop bit	1/2	
PLC station No.	1~255	

Address List

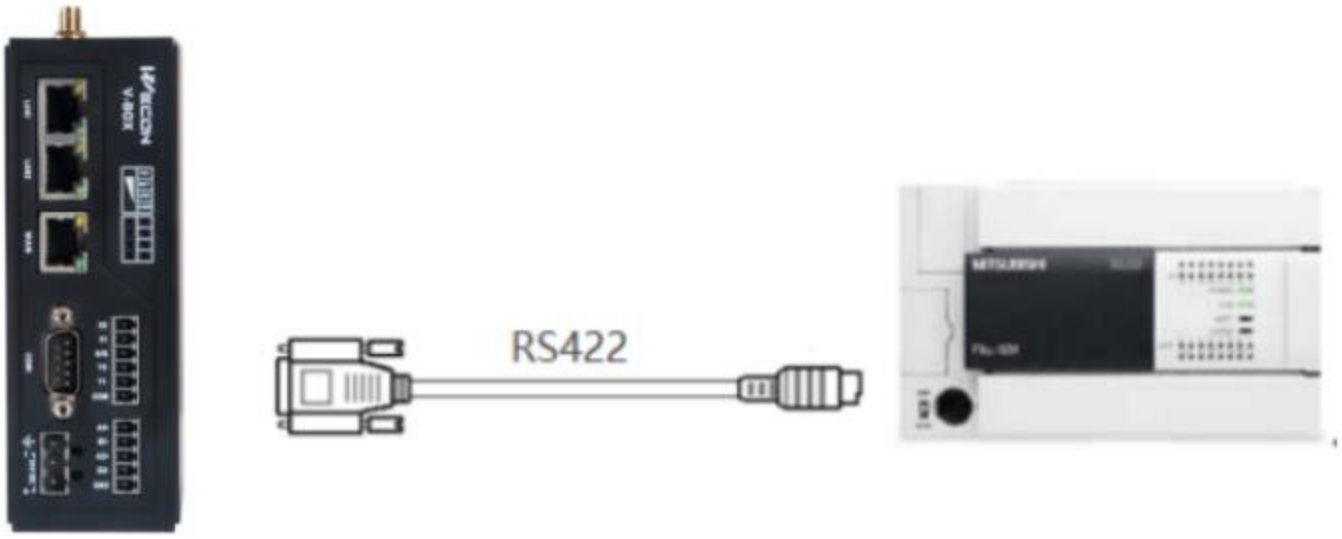
Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	Xo	0~303237	
	Y	Y	Y o	0~303237	
	M	M	M d	0~99999	
	T	T	T d	0~99999	
	C	C	C d	0~99999	
	S	S	S d	0~99999	
	SM	SM	SM d	8000~9999	
Word	X	X	Xo	0~303237	
	Y	Y	Y o	0~303237	
	M	M	M d	0~99999	
	T	T	T d	0~99999	
	C	C	C d	0~199	
	D	D	D d	0~7999	
	S	S	S d	0~99999	
	SD	SD	SD d	8000~9999	

Configure the communication protocol

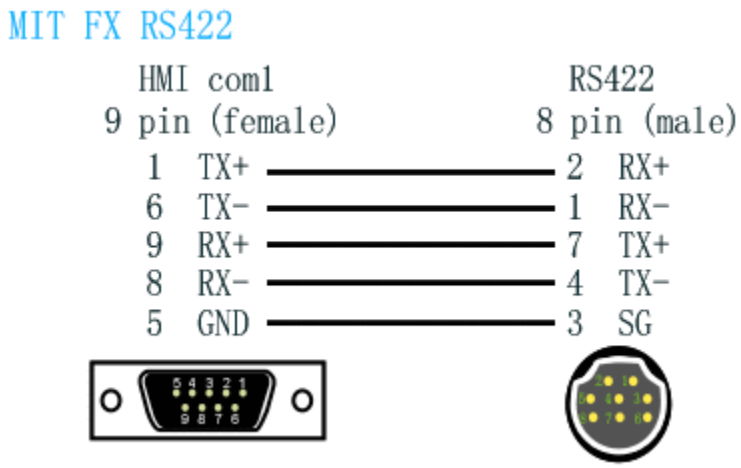



Communication
Connection:
No.
Commu...
Protocol
Device type
1
COM1
RS422
MITSUBISHI FX3U/3G/3SA
New
Delete
Setting
Station No.
HMI No.:
0
Device No.:
0
COM
COM1
Protocol
MITSUBISHI FX3U/3G/3SA
HMI Model
PI3070
4
COM:
(RS422, 9600, 1, 7, EVEN)
Setting
Device IP:
None
Setting
Timeout:
(300, 50, 2, 3, 0, 0 ,5)
Setting
PLC Connection
COM port setting
Connection:
RS422
Baud rate:
9600
Stop bits:
1
Data bits:
7
Parity:
EVEN
OK
Cancel
HMI Pin definition:
COM1 PIN Definition
PIN
Definition
PIN
Definition
1
RS422 TX+/RS485 A+
2
RS232 RXD
3
RS232 TXD
5
GND
6
RS422 TX-/RS485 B-
8
RS422 RX-
9
RS422 RX+
Change communication parameter
User-Defined protocol
OK
Cancel
Help

Wiring



Pin Definition Diagram



FX3U Ethernet Protocol

Mitsubishi FX3U series PLC

HMI Settings

Items	Settings	Note
Protocol	Mitsubishi FX3U	
Connection	Ethernet	

Port No.	5009	Must be the same as the PLC setting
PLC station No.	0	

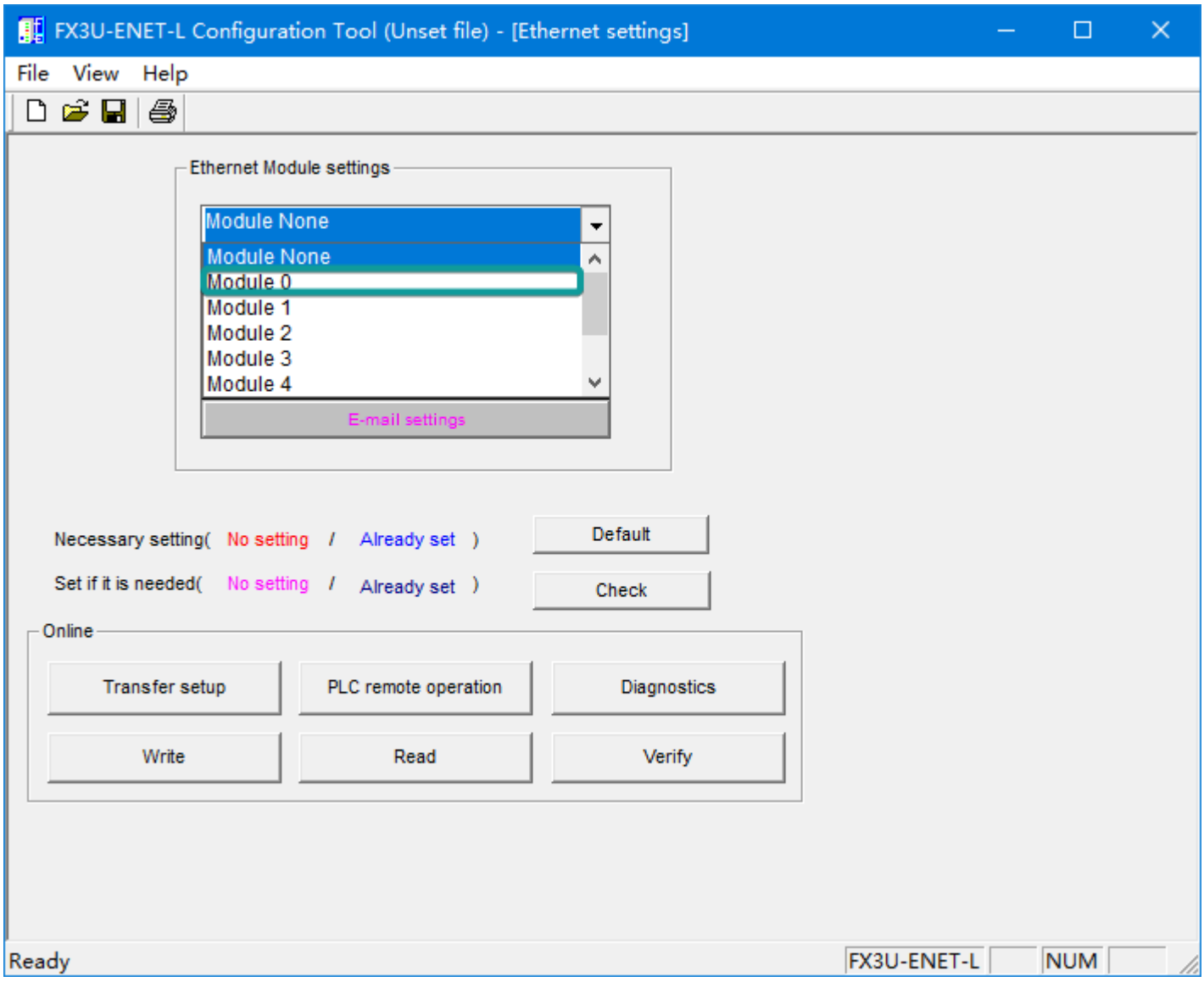
Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	X OOO	0~377	
	Y	Y	Y OOO	0~377	
	M	M	M DDDD	0~7679	
	SM	SM	SM DDDD	8000~8511	
	S	S	S DDDD	0~4095	
	TS	TS	TS DDD	0~511	
	CS	CS	CS DDD	0~255	
Word	CN	CN	CN DDD	0~199	
	TN	TN	TN DDD	0~511	
	D	D	D DDDD	0~7999	
	SD	SD	SD DDDD	8000~8511	

	R	R	R DDDDD	0~32767	

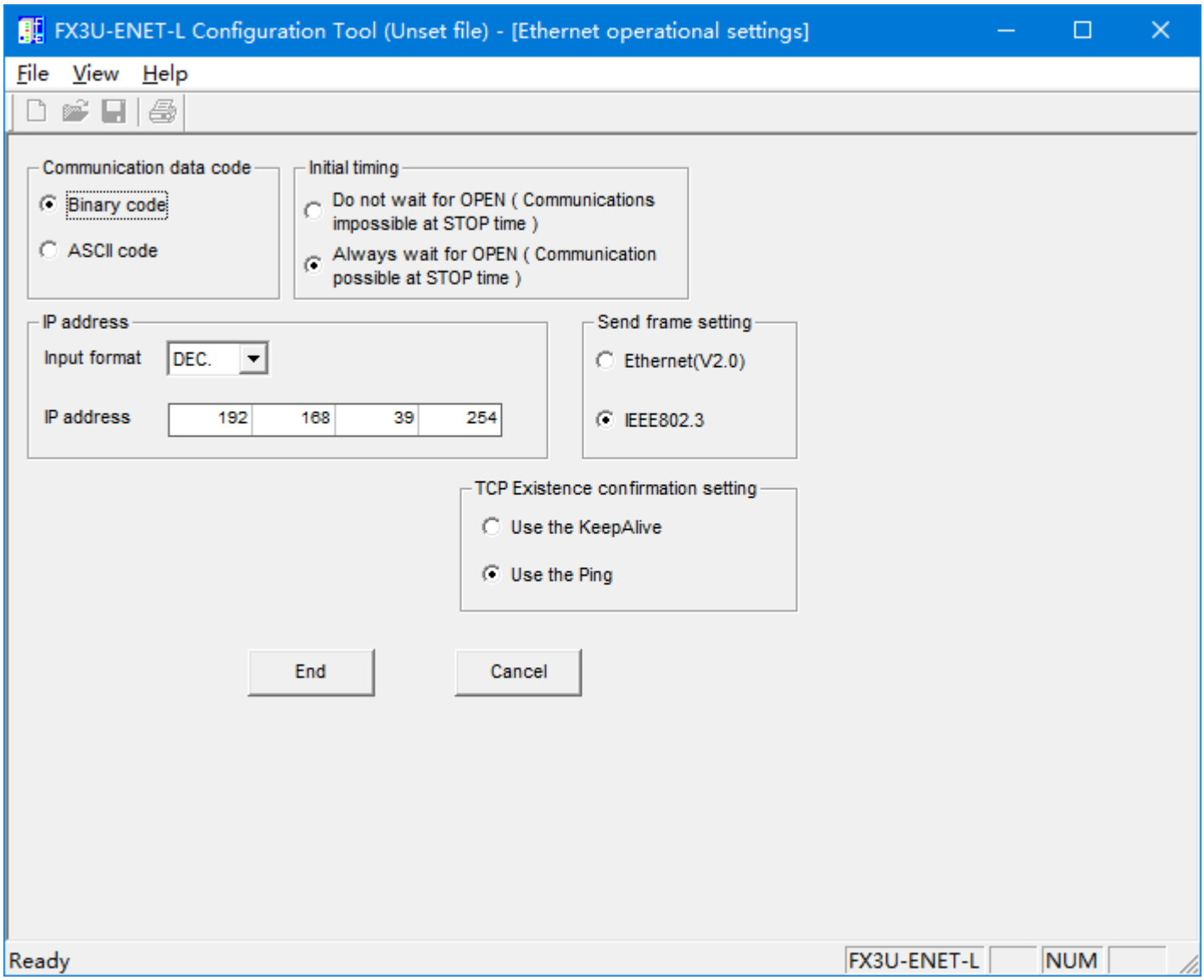
Ethernet Module Settings

FX3U-ENET-L module configuration
Set up the FX3U-ENET-L Ethernet module settings as follows.
Select the module location, which in this document is Module 0.



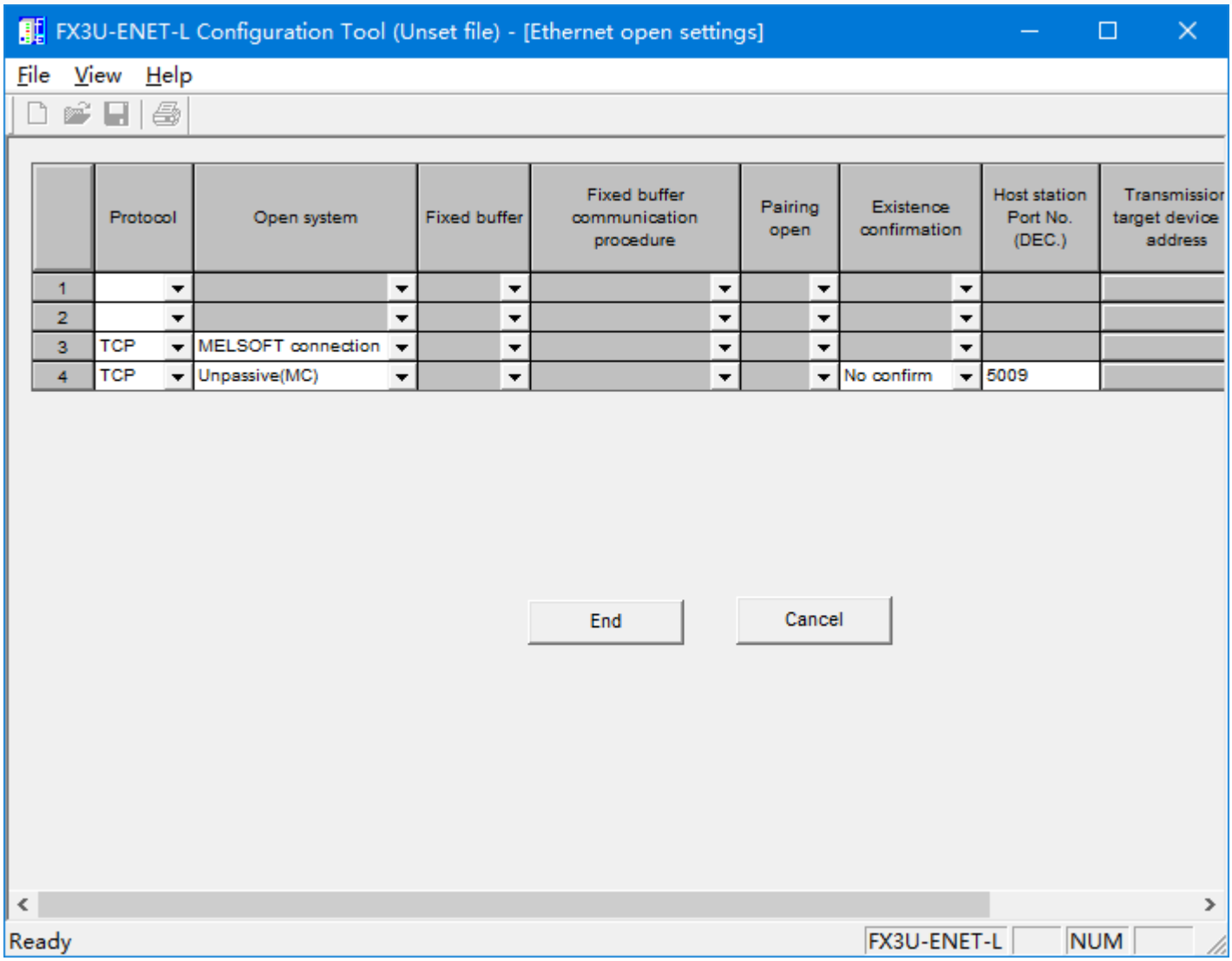
Select "Operational setting" to enter the following screen.

The Ethernet module IP is set to 192.168.39.254 in this document, and other options are default.



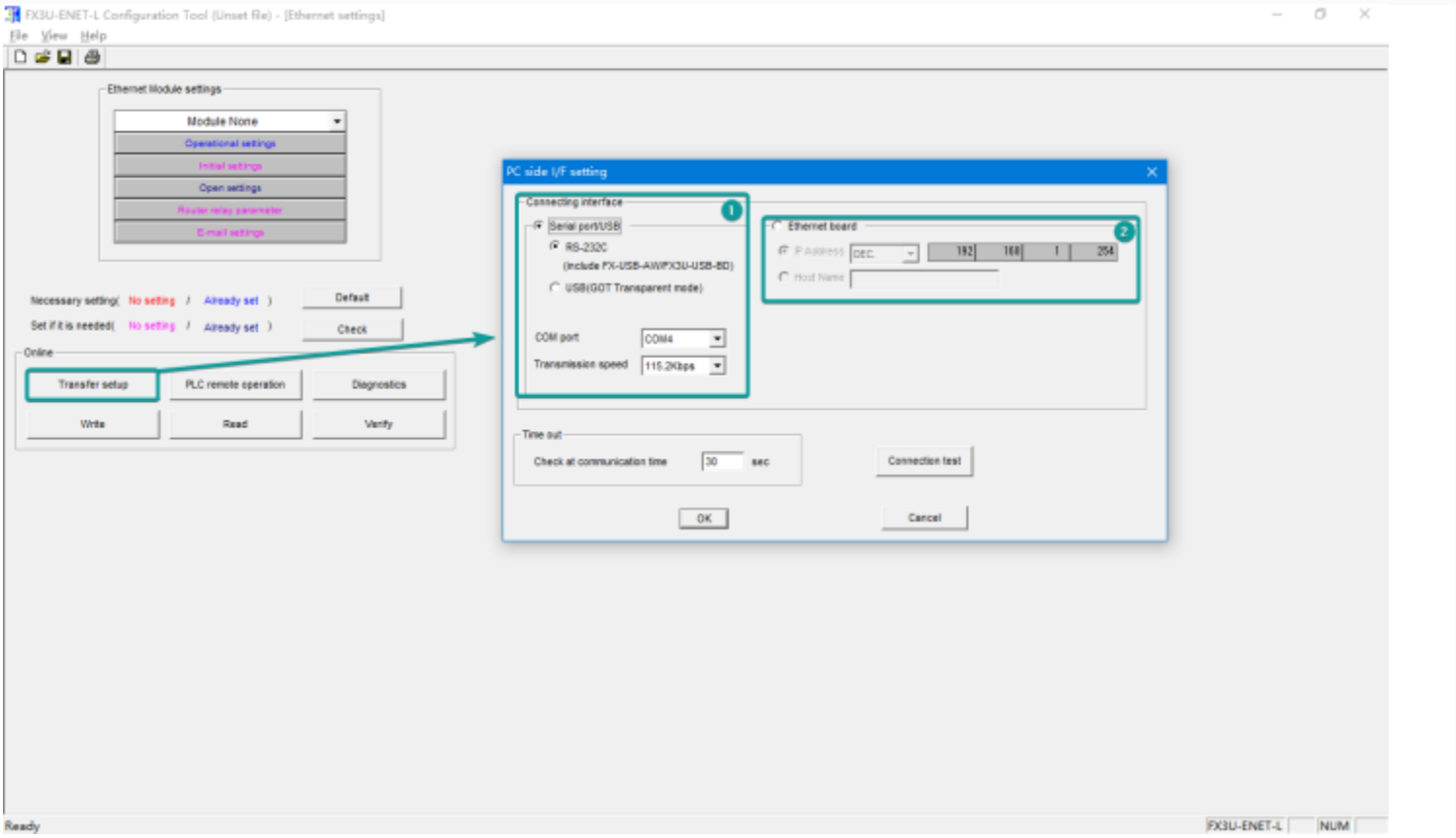
Select "Open setting" to enter the setting interface, the settings are as follows.

The third item "Protocol" selects TCP, and "Open system" selects MELSOFT connection, which allows the Mitsubishi programming software GX works2 to communicate with the FX3U via the Ethernet module.

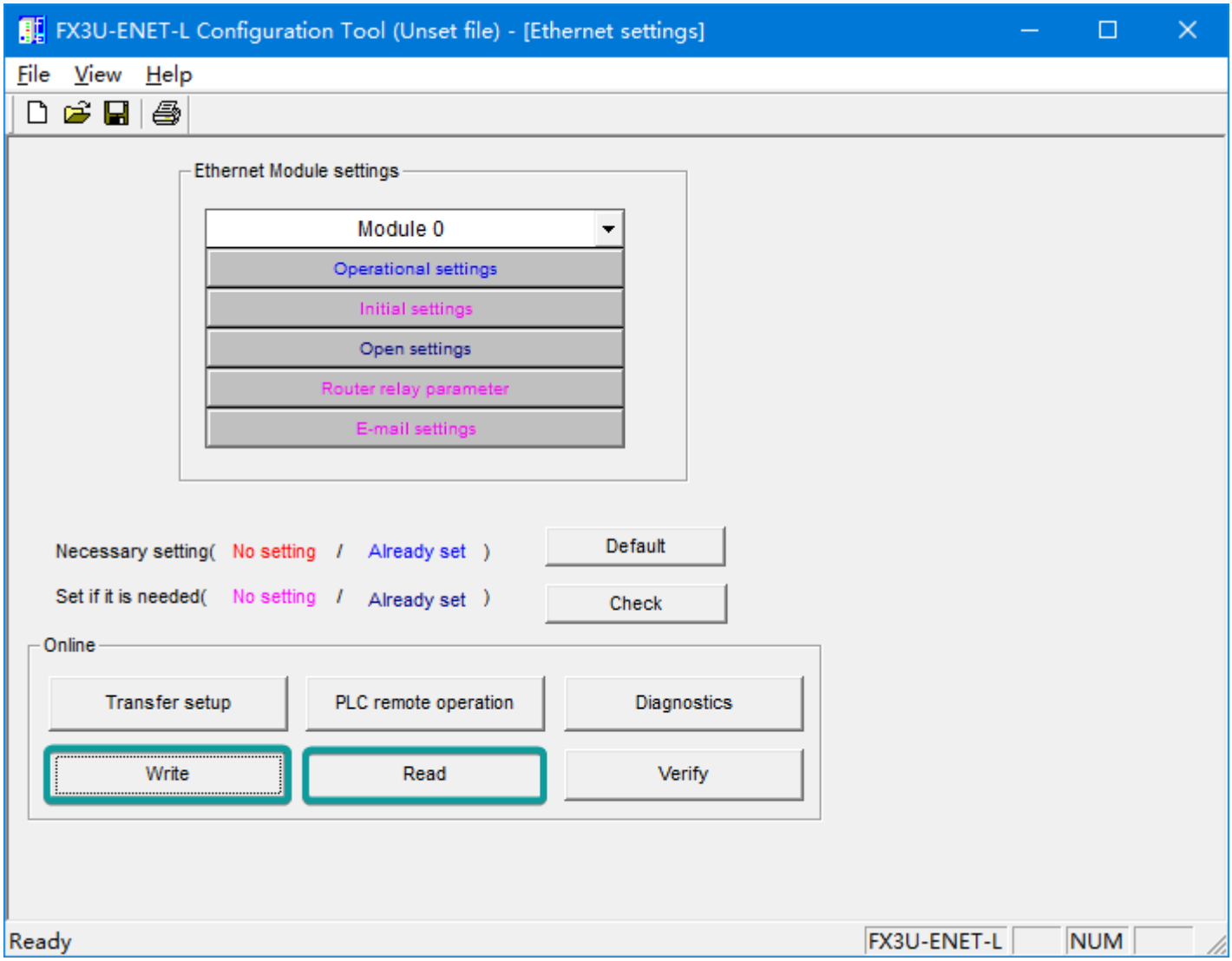


Click on "transter setup" - "PC side I/F setting", see the following figure.

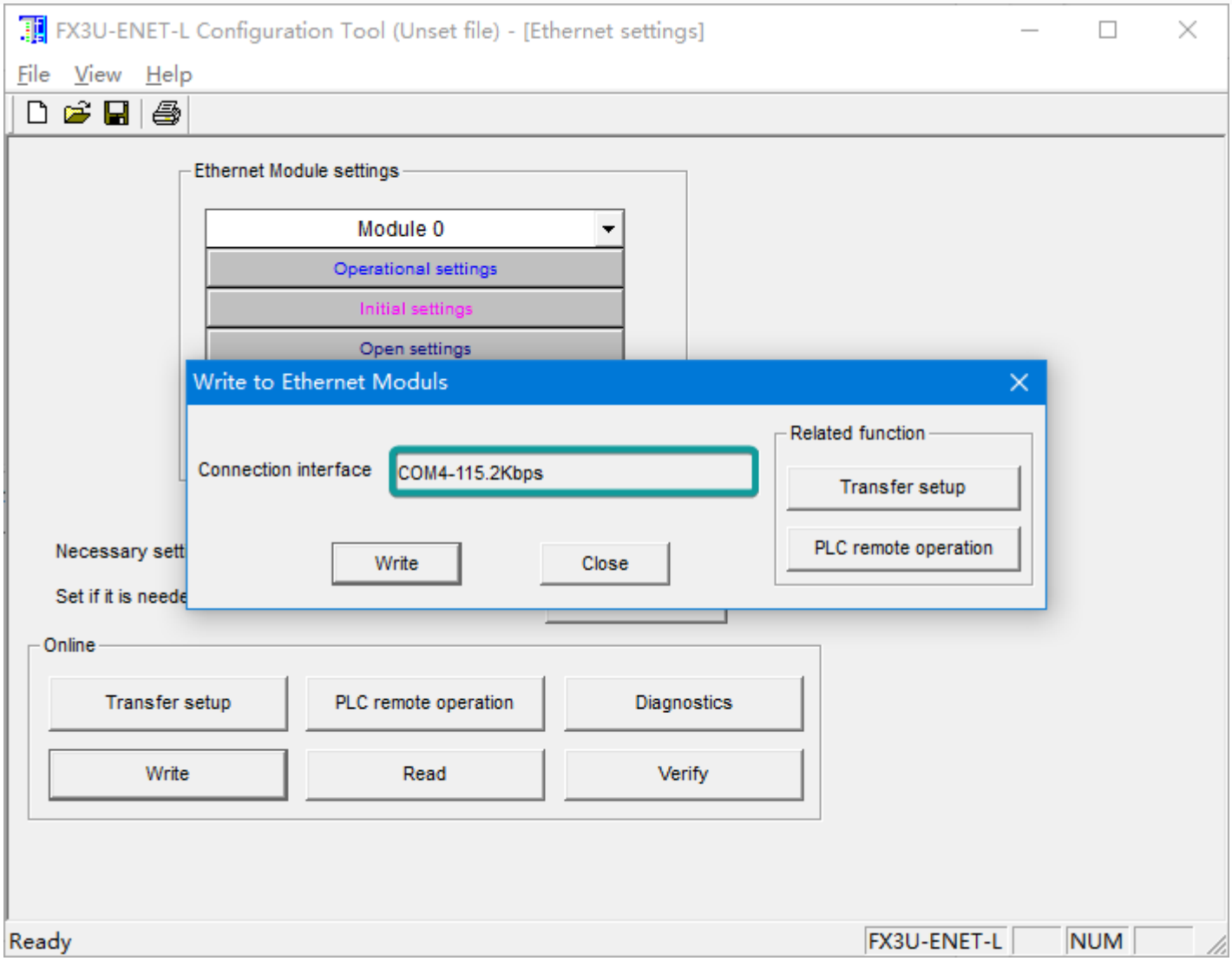
After setting, the first download must use the programming cable, as shown in the figure; after that, can use the IP set in the "Ethernet board" to communicate directly with the network cable.



Read and write data from the Ethernet module



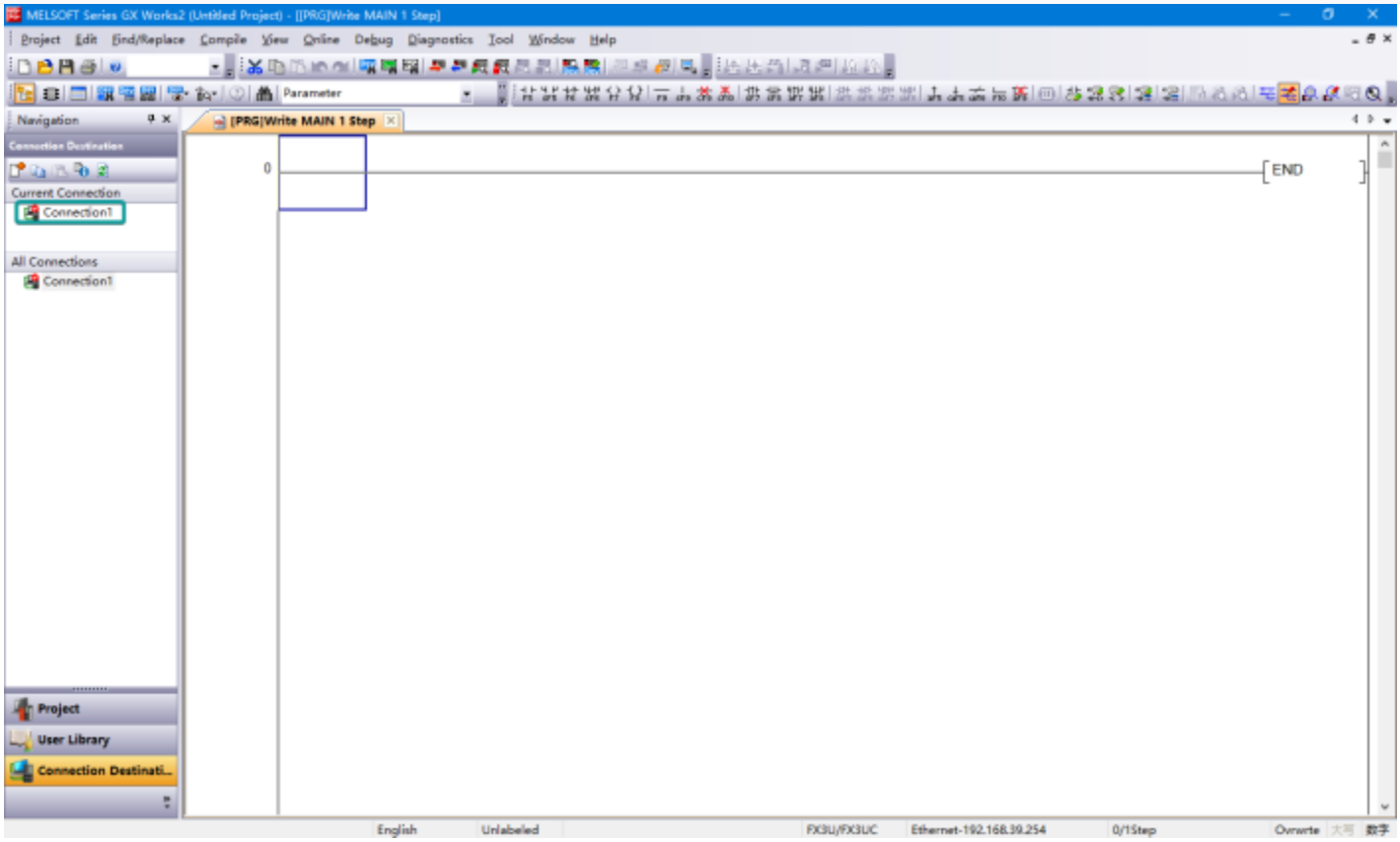
Set "Transter setup" to COM communication, and read or write operation as shown below



PLC Settings (GX Works 2)

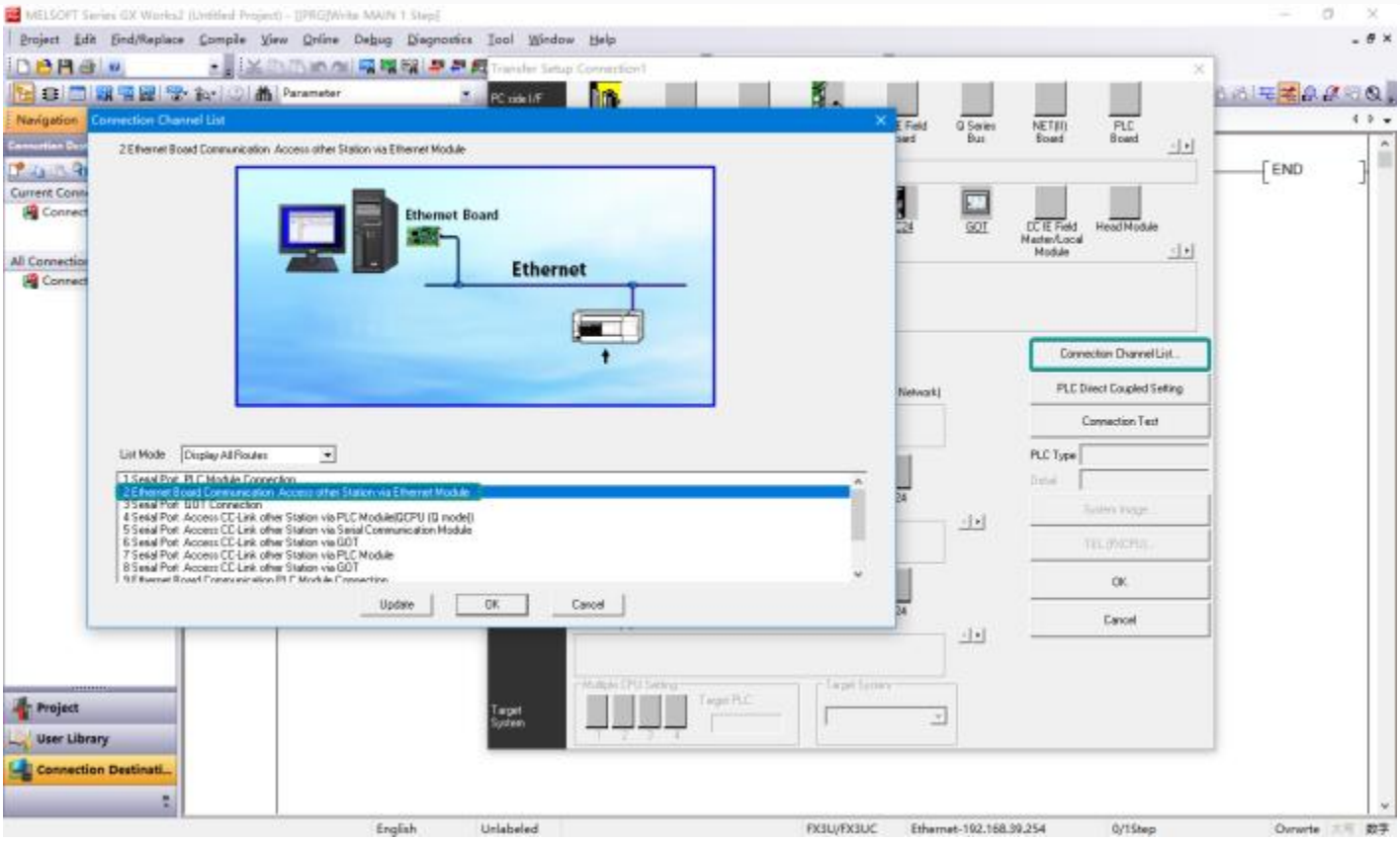
Create a blank FX5U project

Find Current Connection in the navigation

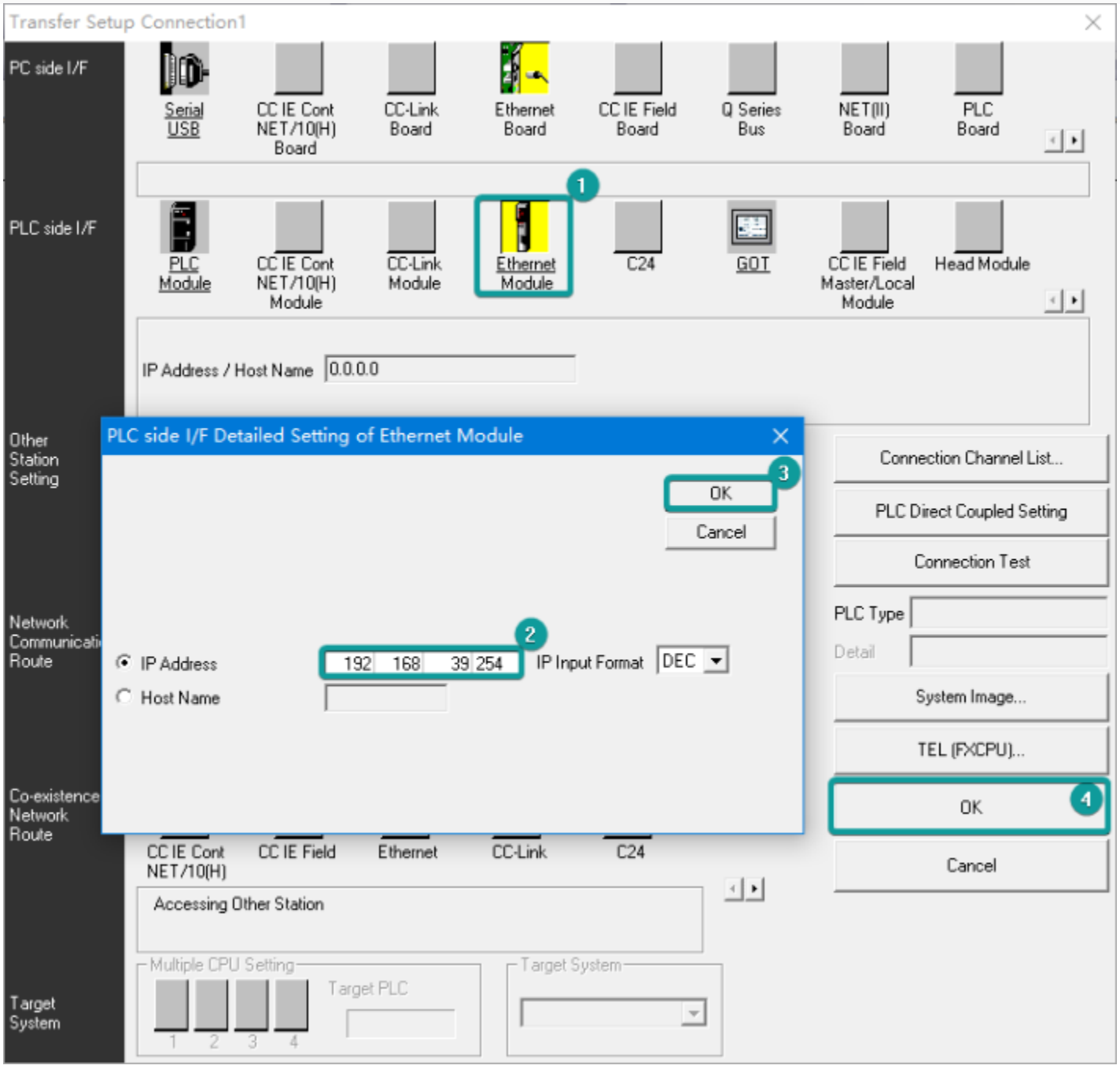


Select Connection Channel List

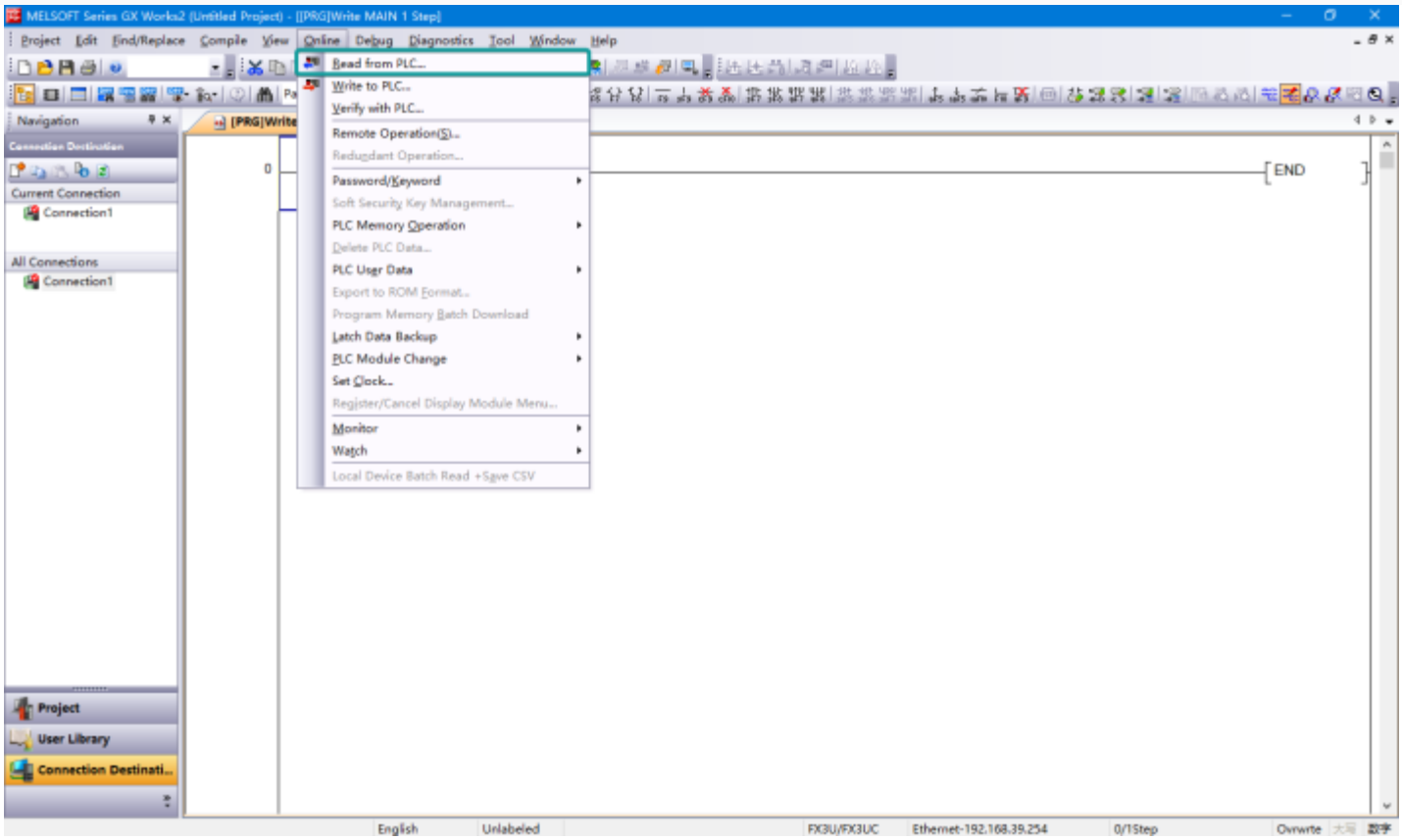
Select Ethernet board communication

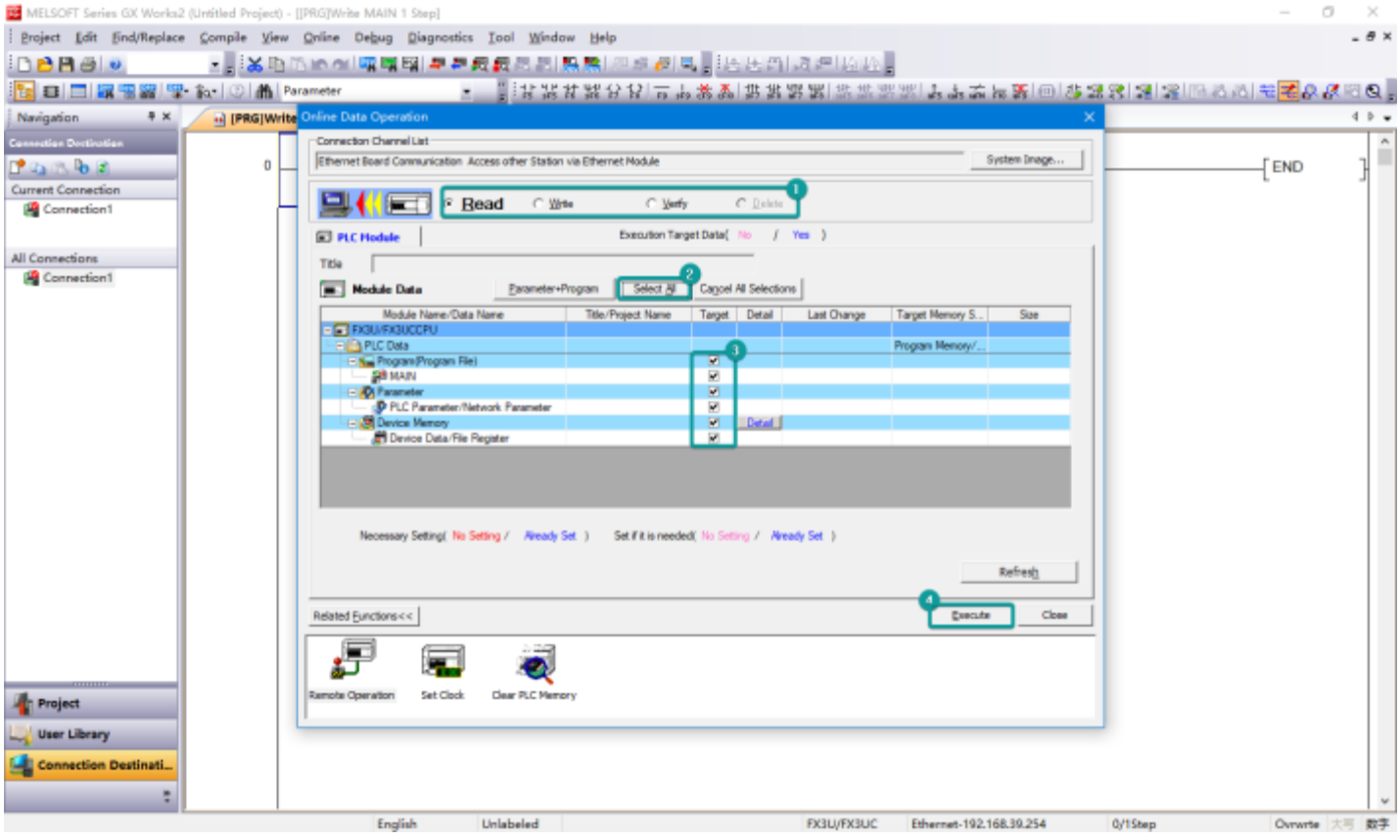


Select Ethernet Module
Set the IP address of the PLC

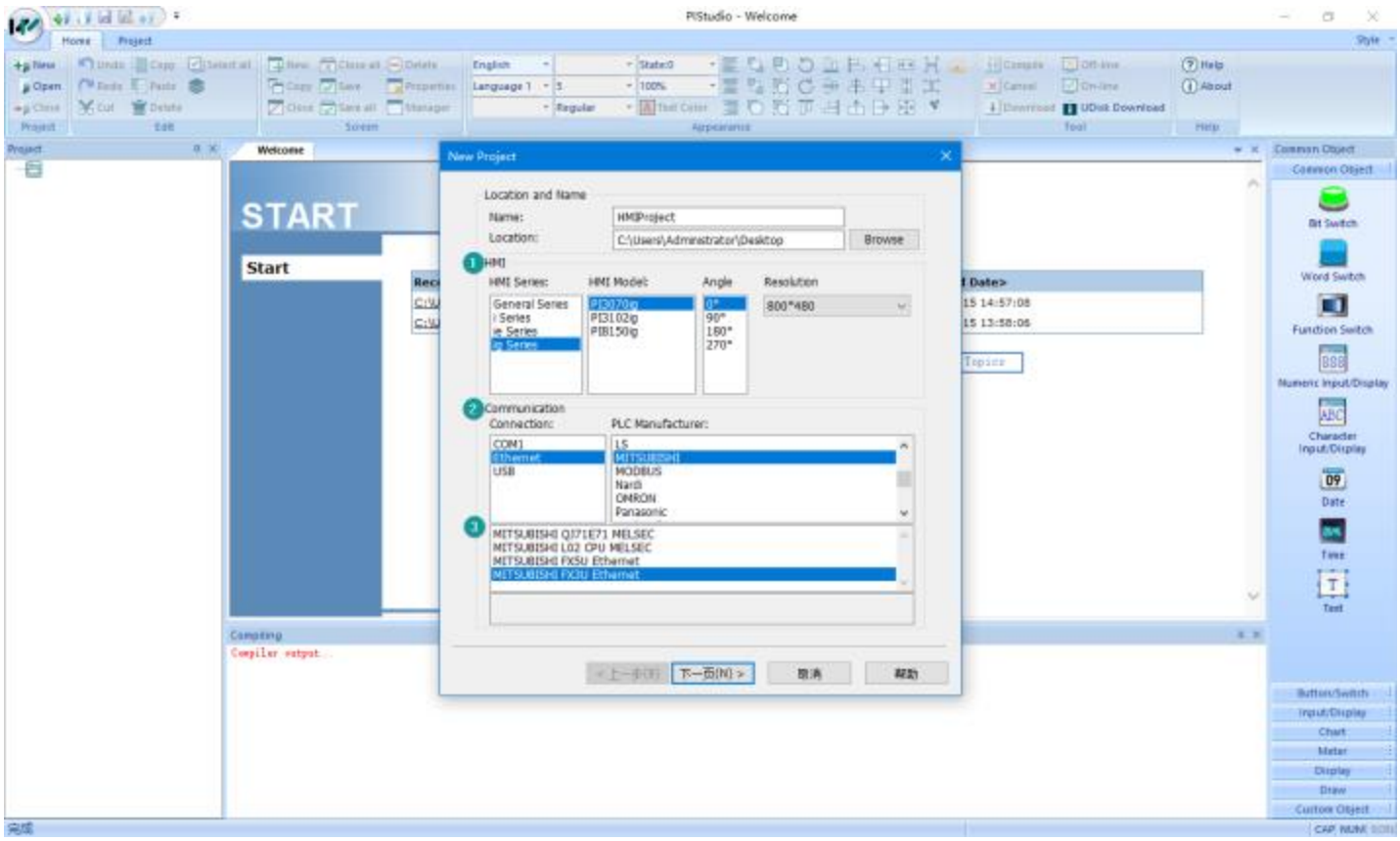


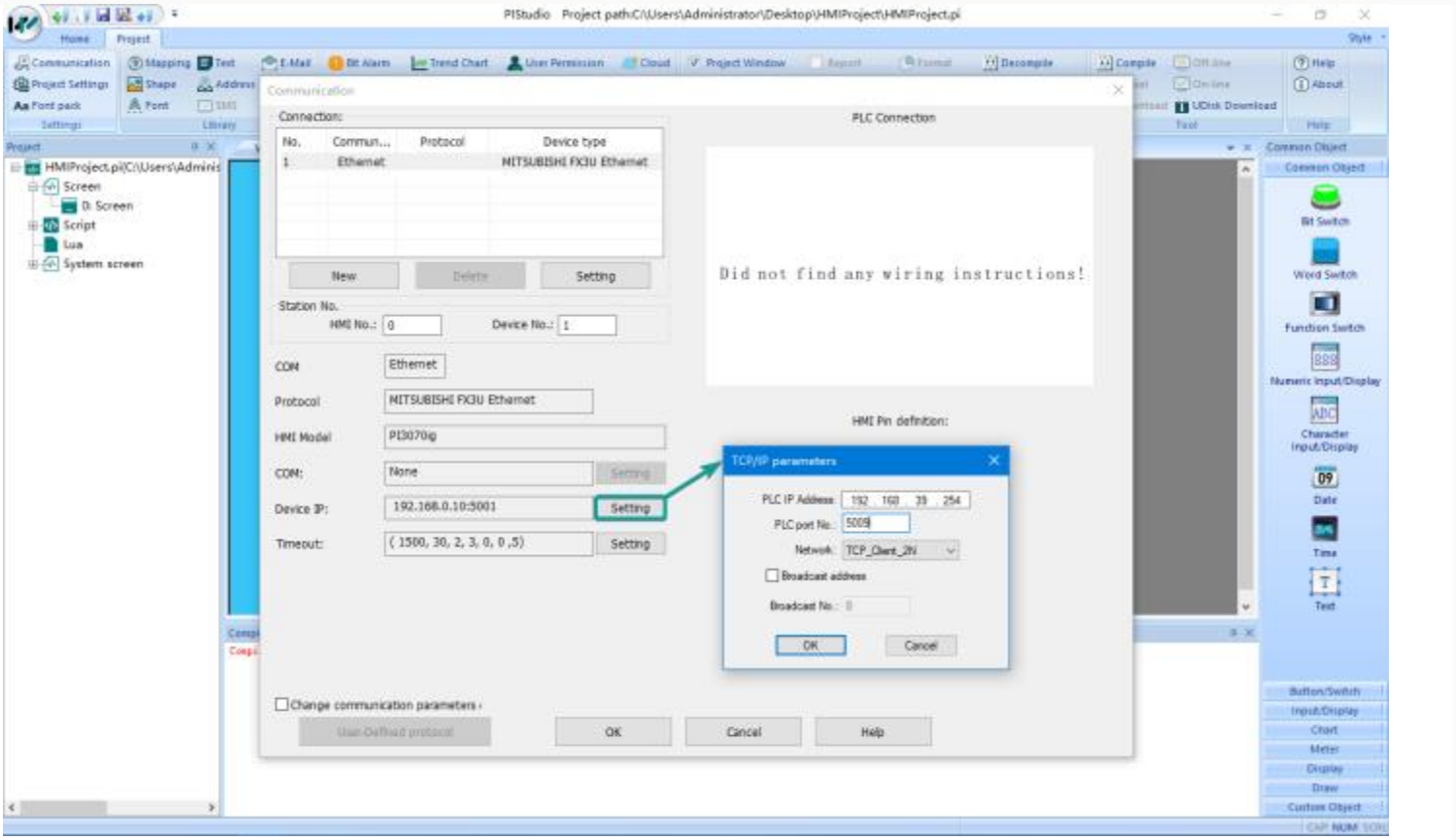
Read or write PLC data, in this document is read

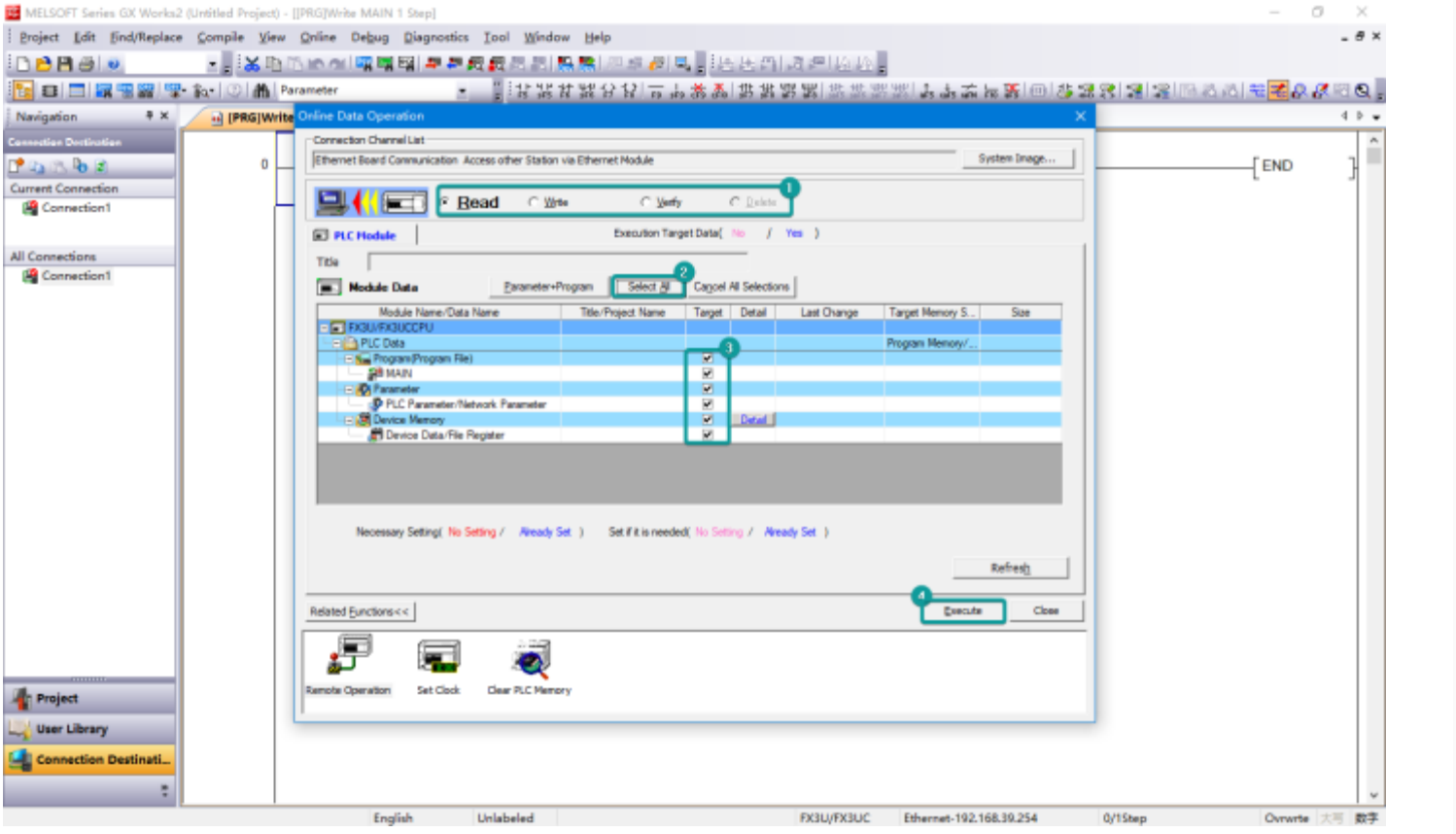

MELSOFT Series GX Works2 (Untitled Project) - [[PRG]Write MAIN 1 Step]
Project Edit Find/Replace Compile View Online Debug Diagnostics Tool Window Help
Read from PLC...
Write to PLC...
Verify with PLC...
Remote Operation(S)...
Redundant Operation...
Password/Keyword
Soft Security Key Management...
PLC Memory Operation
Delete PLC Data...
PLC User Data
Export to ROM Format...
Program Memory Batch Download
Latch Data Backup
PLC Module Change
Set Clock...
Register/Cancel Display Module Menu...
Monitor
Watch
Local Device Batch Read +Save CSV
Navigation
Connection Destination
Current Connection
Connection1
All Connections
Connection1
[PRG]Write
END
Project
User Library
Connection Destinati...
English
Unlabeled
FX3U/FX3UC
Ethernet-192.168.39.254
0/1Step
Ovrwrte


MELSOFT Series GX Works2 (Untitled Project) - [[PRG]Write MAIN 1 Step]
Project Edit Find/Replace Compile View Online Debug Diagnostics Tool Window Help
Parameter
Navigation
Online Data Operation
Connection Channel List
Ethernet Board Communication Access other Station via Ethernet Module
System Image...
Read
Write
Verify
Delete
PLC Module
Execution Target Data(No / Yes)
Title
Module Data
Parameter+Program
Select All
Cancel All Selections
Module Name/Data Name
Title/Project Name
Target
Detail
Last Change
Target Memory S...
Size
FX3U/FX3UCCPU
PLC Data
Program Memory/...
Program/Program File)
MAIN
Parameter
PLC Parameter/Network Parameter
Device Memory
Detail
Device Data/File Register
Necessary Setting(No Setting / Already Set)
Set if it is needed(No Setting / Already Set)
Refresh
Related Functions<<
Execute
Close
Remote Operation
Set Clock
Clear PLC Memory
[PRG]Write
END
Project
User Library
Connection Destinati...
English
Unlabeled
FX3U/FX3UC
Ethernet-192.168.39.254
0/1Step
Ovrwrte

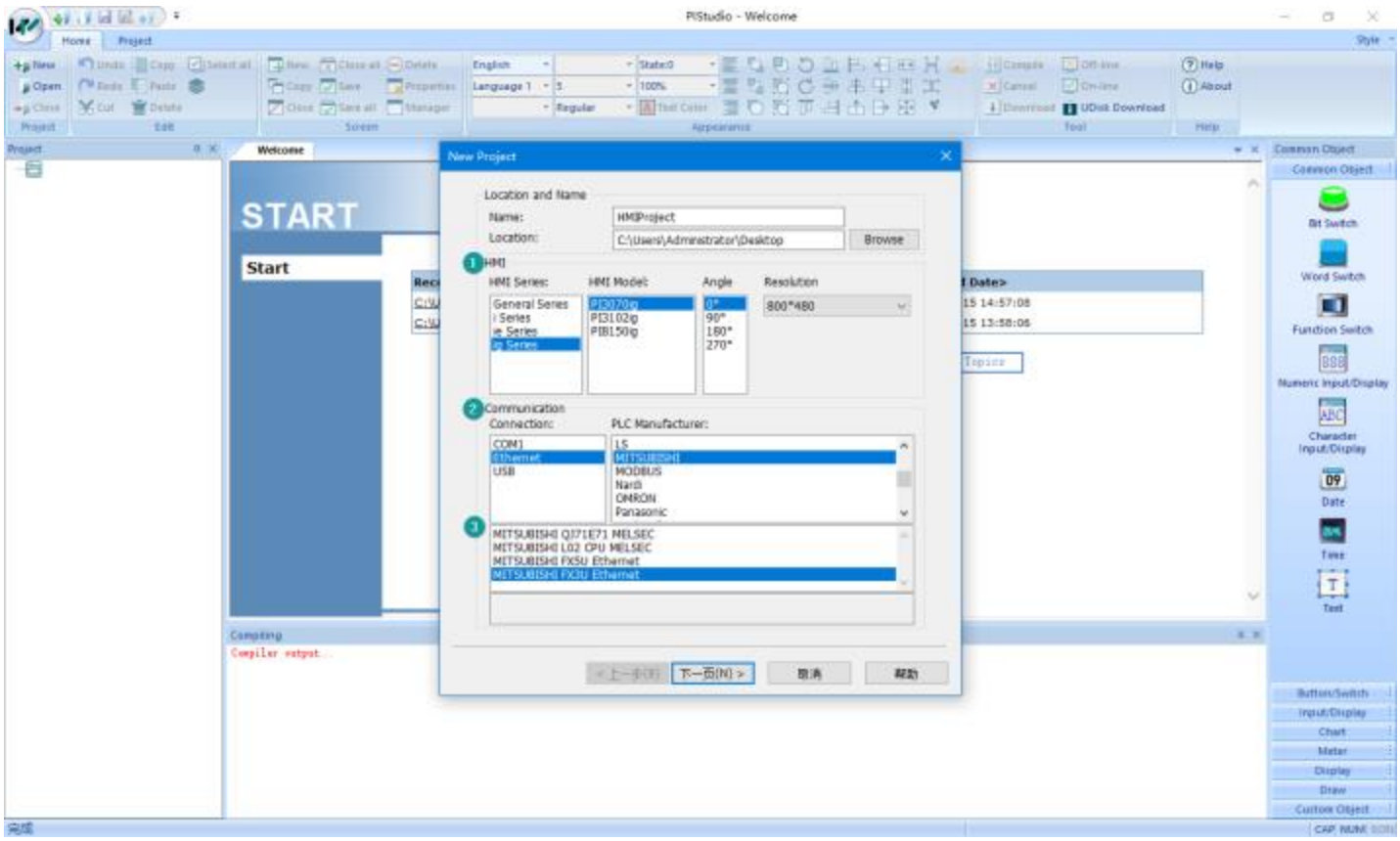
HMI Communication Setting

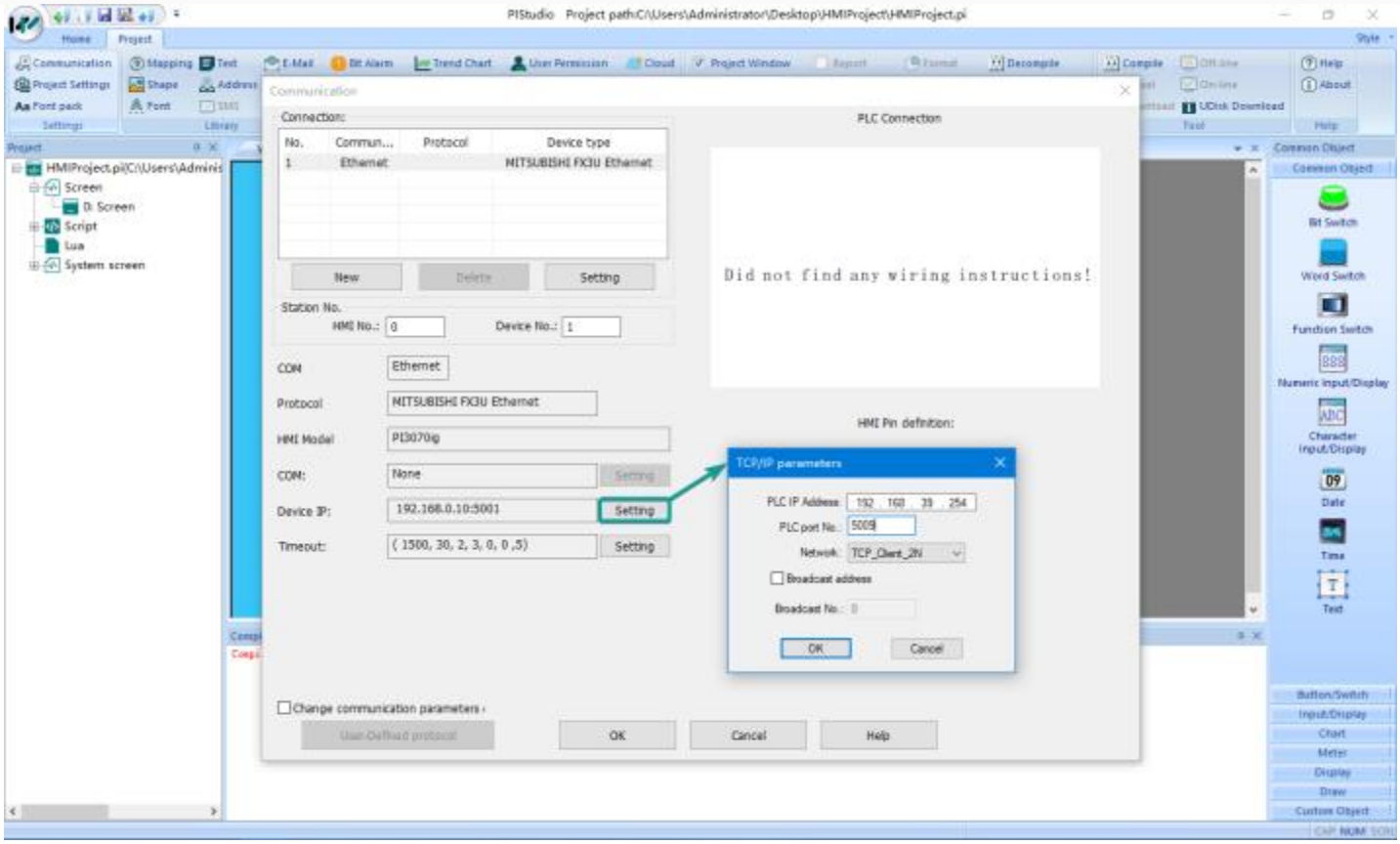



PIStudio Project path:C:\Users\Administrator\Desktop\HMIProject\HMIProject.pi
Communication
Connection:
No.
Commun...
Protocol
Device type
1
Ethernet
MITSUBISHI FX3U Ethernet
New
Delete
Setting
Station No.
HMI No.:
0
Device No.:
1
COM
Ethernet
Protocol
MITSUBISHI FX3U Ethernet
HMI Model
PI3070ip
COM:
None
Device IP:
192.168.0.10:5001
Setting
Timeout:
(1500, 30, 2, 3, 0, 0 ,5)
PLC Connection
Did not find any wiring instructions!
HMI Pin definition:
TCP/IP parameters
PLC IP Address
192 168 39 254
PLC port No.:
5009
Network:
TCP_Client_2N
Broadcast address
Broadcast No.:
OK
Cancel
Change communication parameters
User-Defined protocol
OK
Cancel
Help


MELSOFT Series GX Works2 (Untitled Project) - [[PRG]Write MAIN 1 Step]
Project Edit Find/Replace Compile View Online Debug Diagnostics Tool Window Help
Navigation
Online Data Operation
Connection Channel List
Ethernet Board Communication Access other Station via Ethernet Module
System Image...
Read
Write
Verify
Delete
PLC Module
Execution Target Data(No / Yes)
Title
Module Data
Parameter+Program
Select All
Cancel All Selections
Module Name/Data Name
Title/Project Name
Target
Detail
Last Change
Target Memory S...
Size
FX3U/FX3UCCPU
PLC Data
Program Memory/...
Program(Program File)
MAIN
Parameter
PLC Parameter/Network Parameter
Device Memory
Device Data/File Register
Necessary Setting(No Setting / Already Set)
Set if it is needed(No Setting / Already Set)
Refresh
Related Functions<<
Execute
Close
Remote Operation
Set Clock
Clear PLC Memory
END
Current Connection
Connection1
All Connections
Connection1
Project
User Library
Connection Destinati...
English
Unlabeled
FX3U/FX3UC
Ethernet-192.168.39.254
0/1Step
Ovrwrte

HMI Communication Setting





FX5U Serial Port Protocol

Mitsubishi FX5U series PLC

HMI Settings

Item	Settings	Note
Protocol	Mitsubishi FX5U	
Connection	RS422/RS485	
Baud rate	9600	
Data bit	7	
Parity	Odd	

Stop bit	1	
PLC station No.	1~255	Need to be the same as PLC settings

Address List

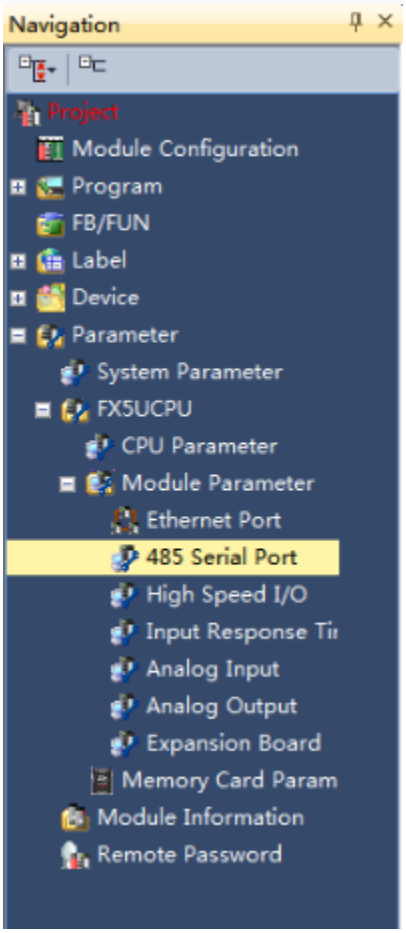
Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	X o	0~303237	
	Y	Y	Y o	0~303237	
	M	M	M d	0~99999	
	B	B	B h	0~7FFF	
	F	F	F d	0~32767	
	SB	SB	SB h	0~7FFF	
	TS	TS	TS d	0~1023	
	TC	TC	TC d	0~1023	
	STS	STS	STS d	0~1023	
	STC	STC	STS d	0~1023	
	CS	CS	CS d	0~1023	
	CC	CC	CC d	0~1023	

	SM	SM	SM d	0~9999	
	L	L	L d	0~32767	
	S	S	S d	0~4095	
Word	W	W	W h	0~3FF	
	TN	TN	TN d	0~1023	
	STN	STN	STN d	0~1023	
	CN	CN	CN d	0~1023	
	R	R	R d	0~32767	
	SW	SW	SW h	0~7FFF	
	Z	Z	Z d	0~23	
	D	D	D d	0~7999	
	SD	SD	SD d	0~11999	

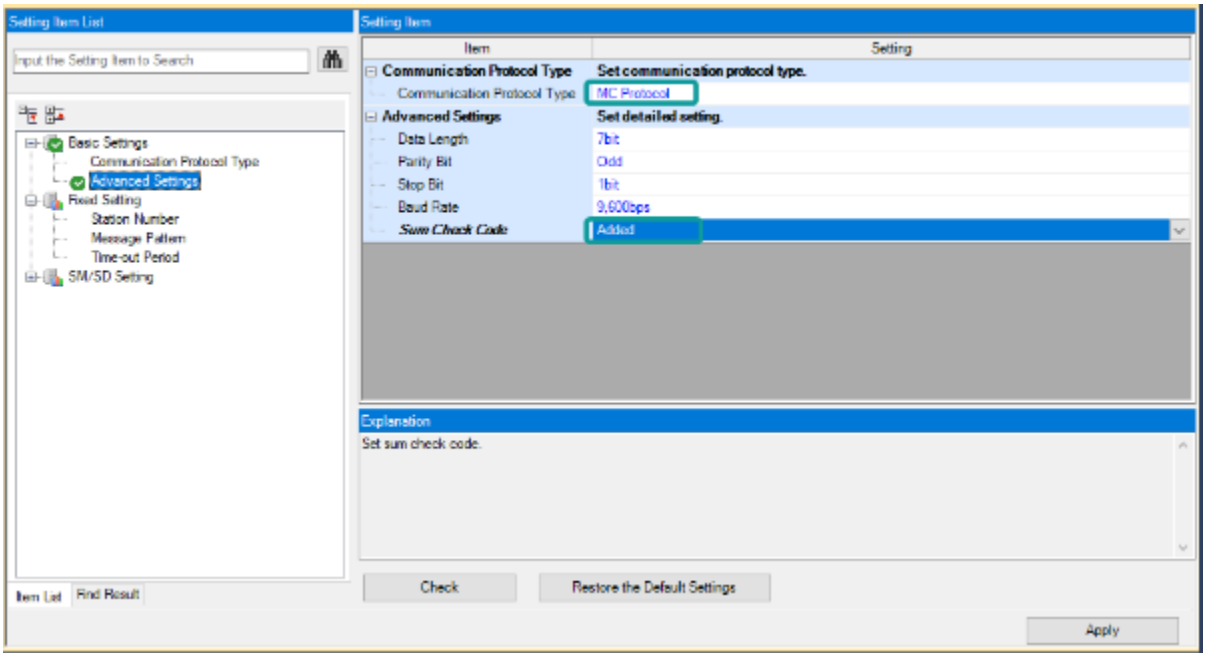
PLC Settings (GX Works 3)

Create a blank FX5U project

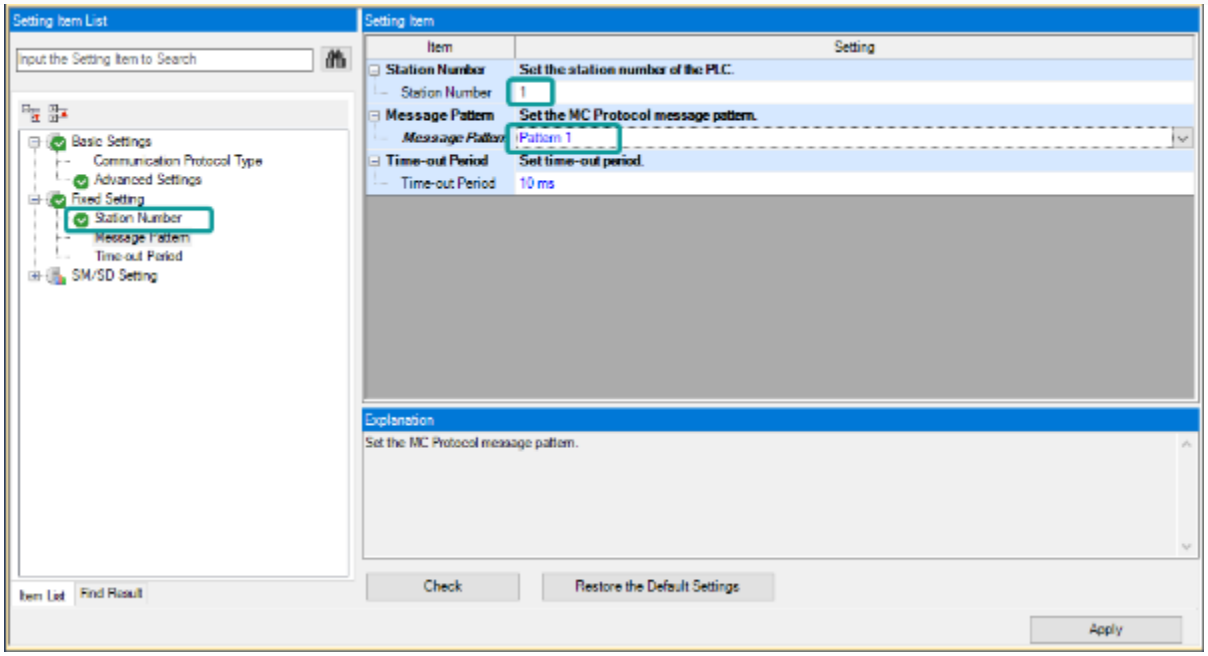
Find the 485 serial port module in the system navigation bar and double click to enter the settings.



Select protocol in the setting item, and set parameters.

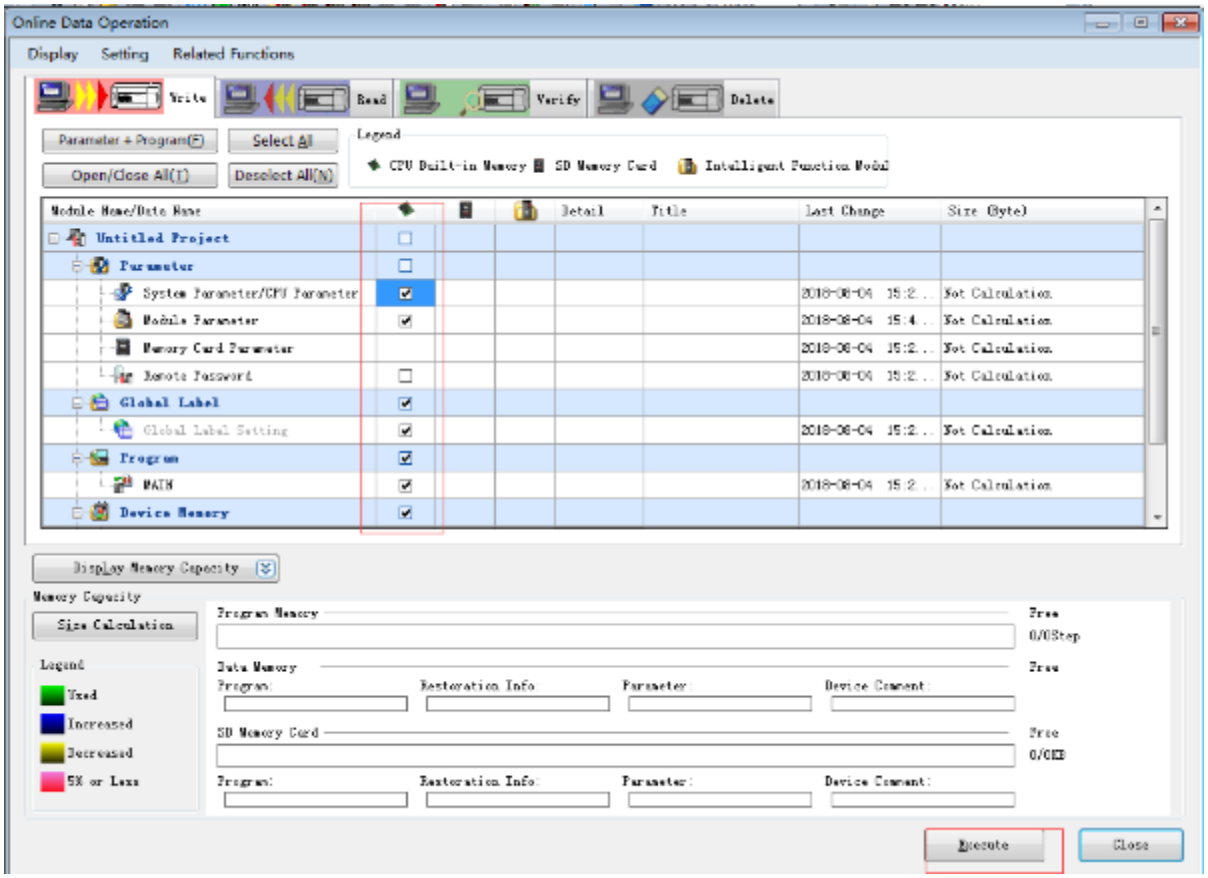


Set station number, and [Message Pattern] (Pattern 1 or Pattern 4)



Click the [Apply] button to finish the setting.

Click download and select the items as below, then click [execute] to download the configuration to PLC.

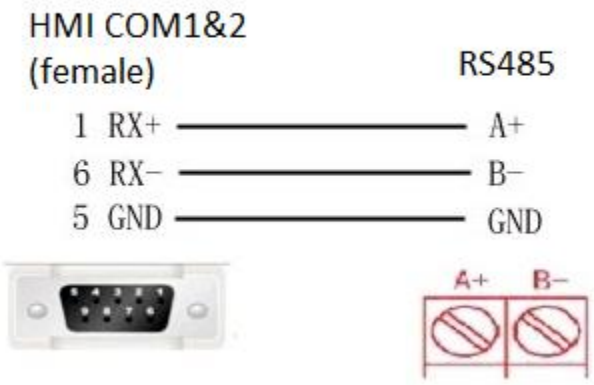


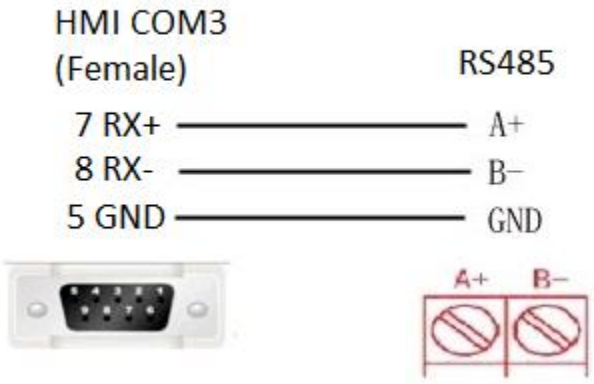
As soon as download is completed, connect PLC with serial port, then configure it in the [Specify Connection Destination Connection].

Done.

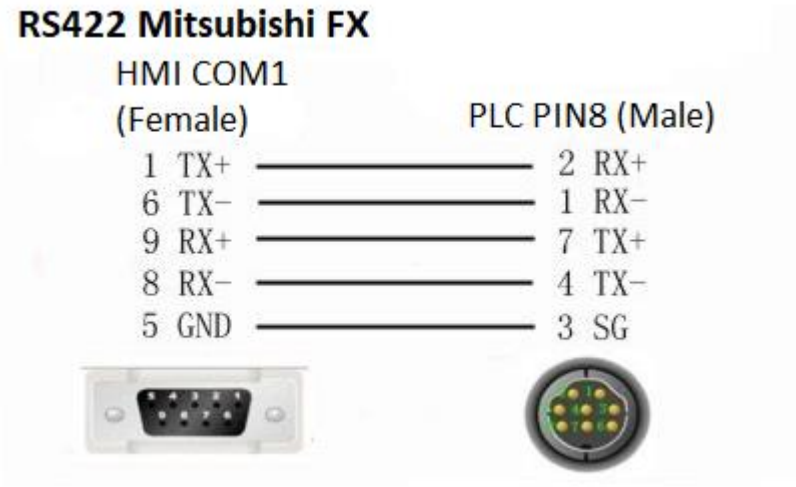
Cable Wiring

- **RS485**





- **RS422**



✎**Note:** COM3 only available in PI8000/PI9000 series.

L02 Serial Protocol

Mitsubishi L02 series CPU built-in serial port.

HMI Settings

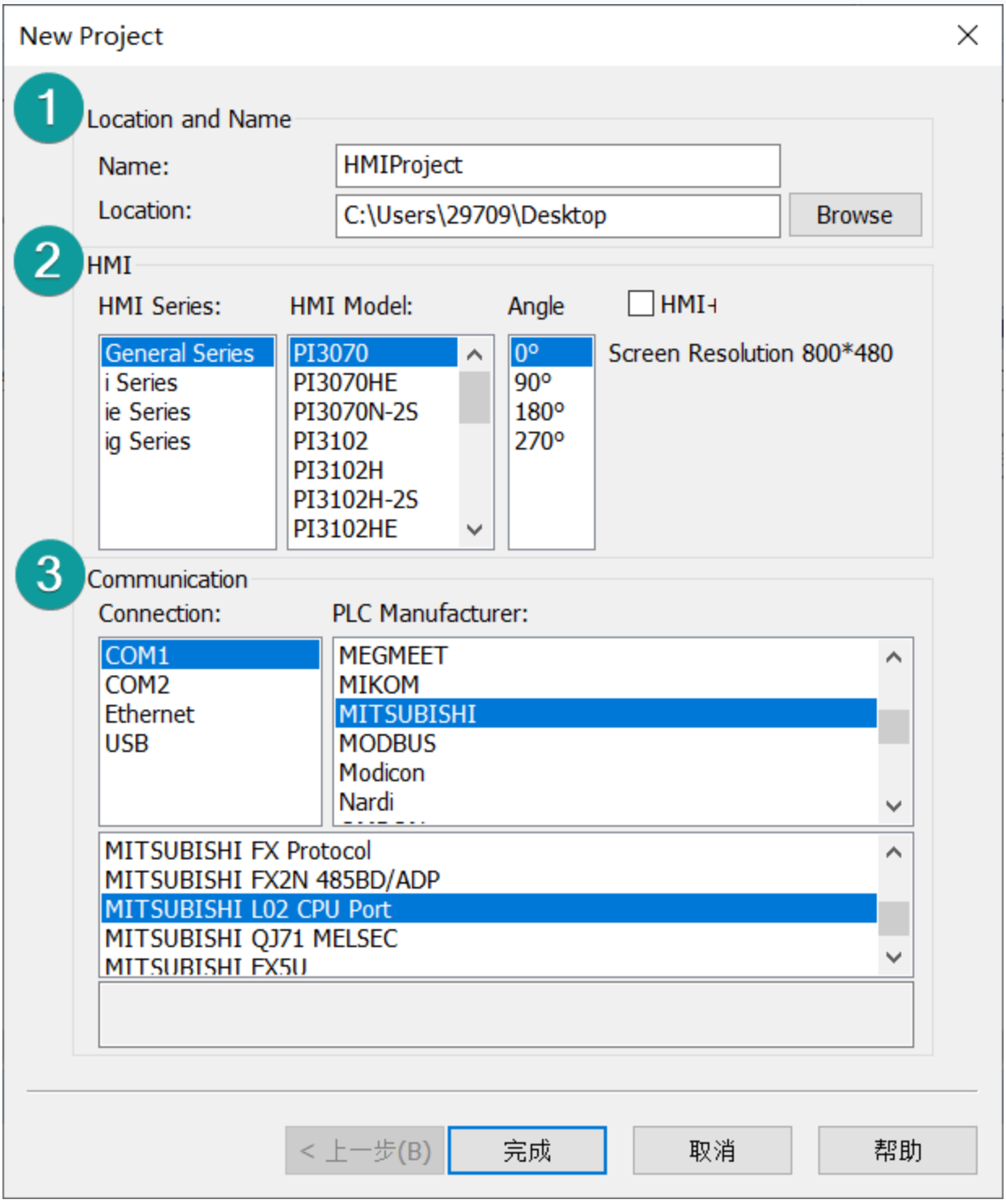
Item	Settings	Note
Protocol	Mitsubishi L02	
Connection	RS422	
Baud rate	115200	
Data bit	8	
Parity	Odd	
Stop bit	1	
PLC station No.	1~255	Need to be the same as PLC settings

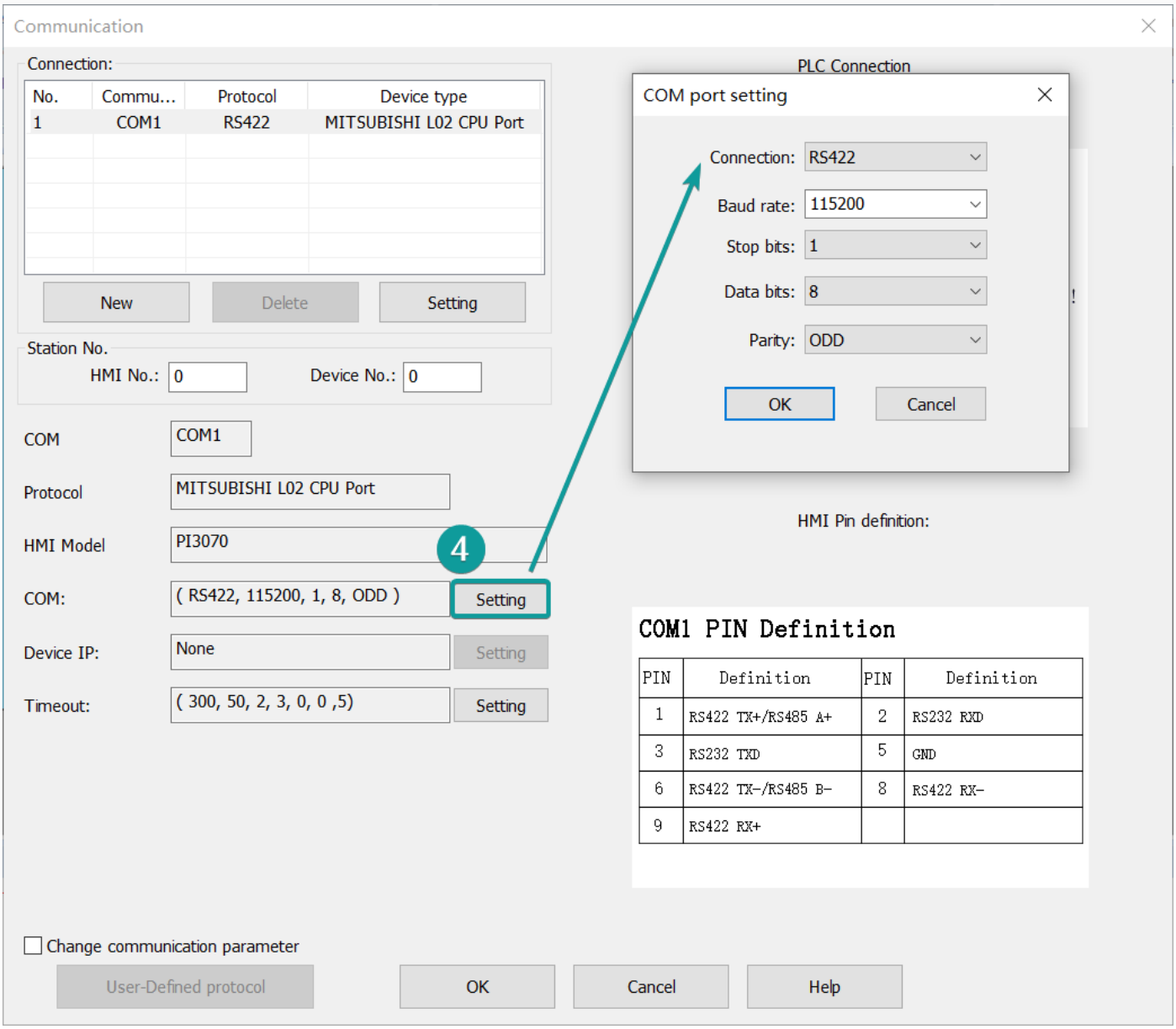
Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	X h	0~FFFF	
Bit	Y	Y	Y h	0~FFFF	
Bit	M	M	M d	0~9999	
Bit	L	L	L d	0~9999	
Bit	F	F	F d	0~9999	
Bit	B	B	B h	0~FFFF	
Bit	V	V	V d	0~2047	
Bit	TC	TC	TC d	0~9999	
Bit	SS	SS	SS d	0~9999	
Bit	SC	SC	SC d	0~9999	
Bit	CS	CS	CS d	0~9999	
Bit	CC	CC	CC d	0~9999	
Bit	SB	SB	SB h	0~FFFF	
Bit	SM	SM	SM d	0~2047	
Bit	STS	STS	STS d	0~1023	

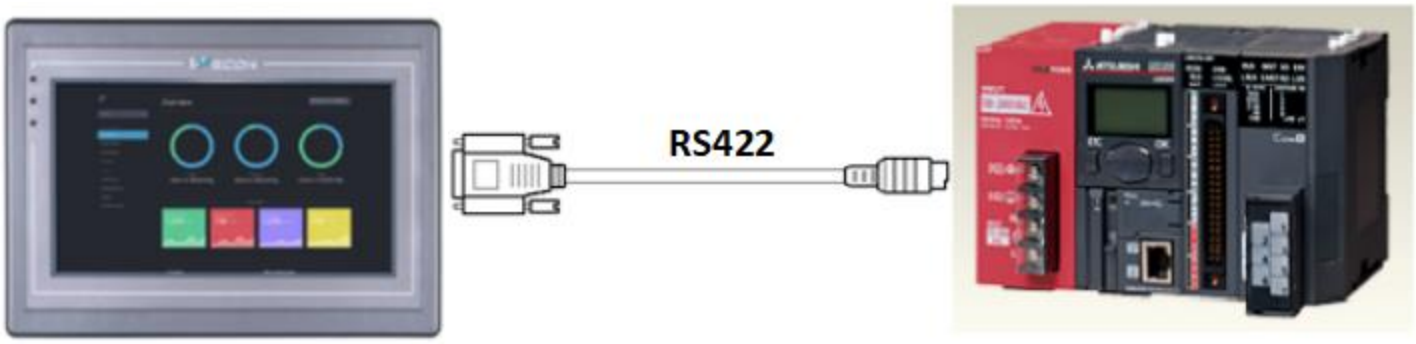
Bit	S	S	S d	0~9999	
Bit	DX	DX	DX h	0~FFFF	
Bit	DY	DY	DY h	0~FFFF	
Bit	TS	TS	TS d	0~9999	
Bit	Dbit	Dbit	Dbit d.d	0~99999.0~15	
Word	W	W	W h	0~FFFF	
Word	TN	TN	TN d	0~99999	
Word	SN	SN	SN d	0~99999	
Word	CN	CN	CN d	0~99999	
Word	R	R	R d	0~99999	
Word	SW	SW	SW h	0~FFFF	
Word	Z	Z	Z d	0~99999	
Word	ZR	ZR	ZR h	0~FFFF	
Word	D	D	D d	0~99999	

Communication Settings

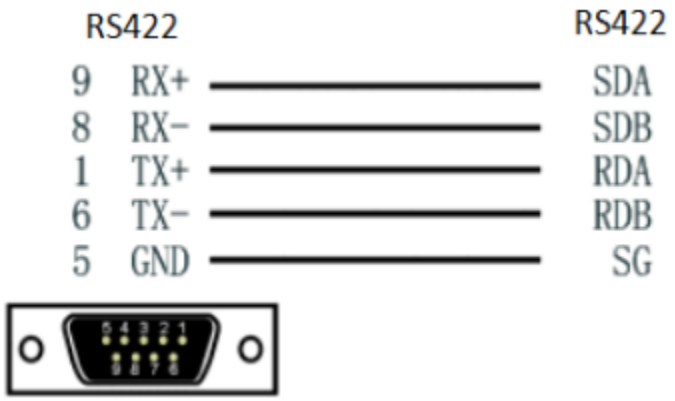

New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI-H
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
MEGMEET
MIKOM
MITSUBISHI
MODBUS
Modicon
Nardi
MITSUBISHI FX Protocol
MITSUBISHI FX2N 485BD/ADP
MITSUBISHI L02 CPU Port
MITSUBISHI QJ71 MELSEC
MITSUBISHI FX5U
< 上一步(B)
完成
取消
帮助



Cable Wiring



Pin Definition Diagram



L02 MELSEC (Ethernet) Protocol

Mitsubishi Q series CPU built-in Ethernet port.

HMI Settings

Items	Settings	Note
Protocol	MIT L02 CPU MELSEC	
Connection	Ethernet	
Port No.	1025	Must be the same as the PLC setting
PLC station No.	0	Must be the same as the PLC setting

Address List

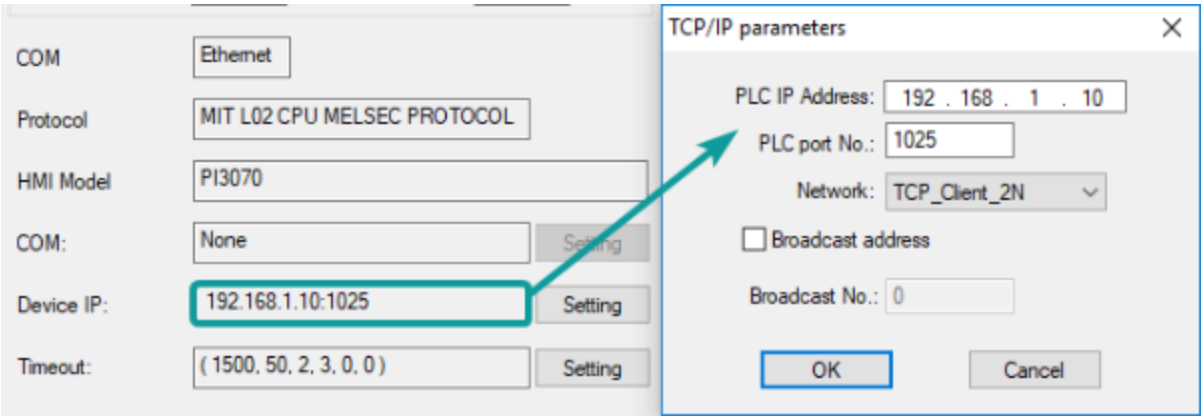
Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	X h	0~FFFF	
Bit	Y	Y	Y h	0~FFFF	
Bit	M	M	M d	0~9999	
Bit	L	L	L d	0~9999	
Bit	F	F	F d	0~9999	
Bit	B	B	B h	0~FFFF	
Bit	V	V	V d	0~2047	
Bit	TC	TC	TC d	0~9999	
Bit	SS	SS	SS d	0~9999	
Bit	SC	SC	SC d	0~9999	
Bit	CS	CS	CS d	0~9999	
Bit	CC	CC	CC d	0~9999	
Bit	SB	SB	SB h	0~FFFF	
Bit	SM	SM	SM d	0~2047	

Bit	STS	STS	STS d	0~1023	
Bit	S	S	S d	0~9999	
Bit	DX	DX	DX h	0~FFFF	
Bit	DY	DY	DY h	0~FFFF	
Bit	TS	TS	TS d	0~9999	
Bit	Dbit	Dbit	Dbit d.d	0~99999.0~15	
Word	W	W	W h	0~FFFF	
Word	TN	TN	TN d	0~99999	
Word	SN	SN	SN d	0~99999	
Word	CN	CN	CN d	0~99999	
Word	R	R	R d	0~99999	
Word	SW	SW	SW h	0~FFFF	
Word	Z	Z	Z d	0~99999	
Word	ZR	ZR	ZR h	0~FFFF	
Word	D	D	D d	0~99999	

Communication Settings

Enable HMI Ethernet in [Project Settings];

Set PLC IP in [Device IP] settings;

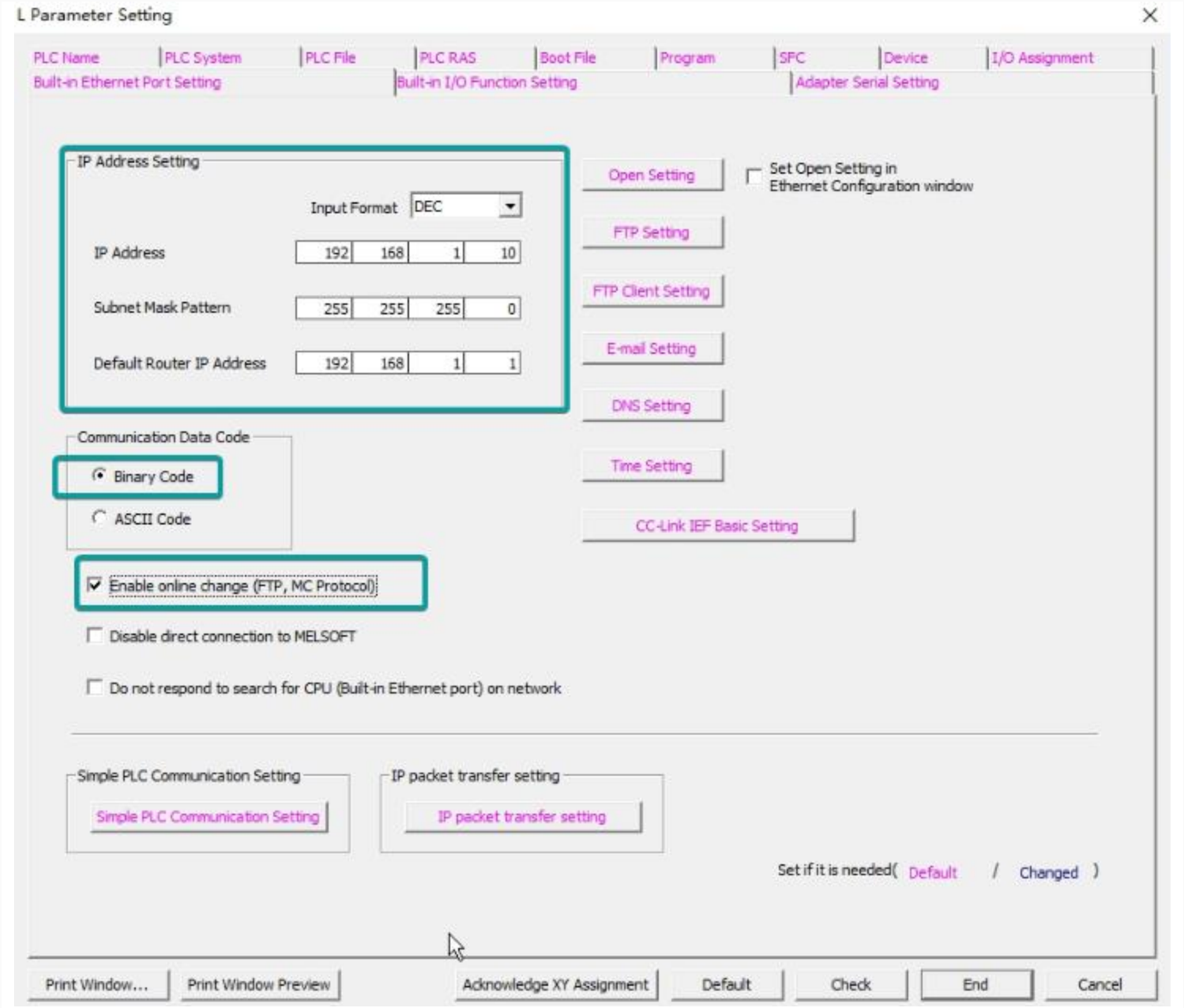


PLC Settings (GX Works2)

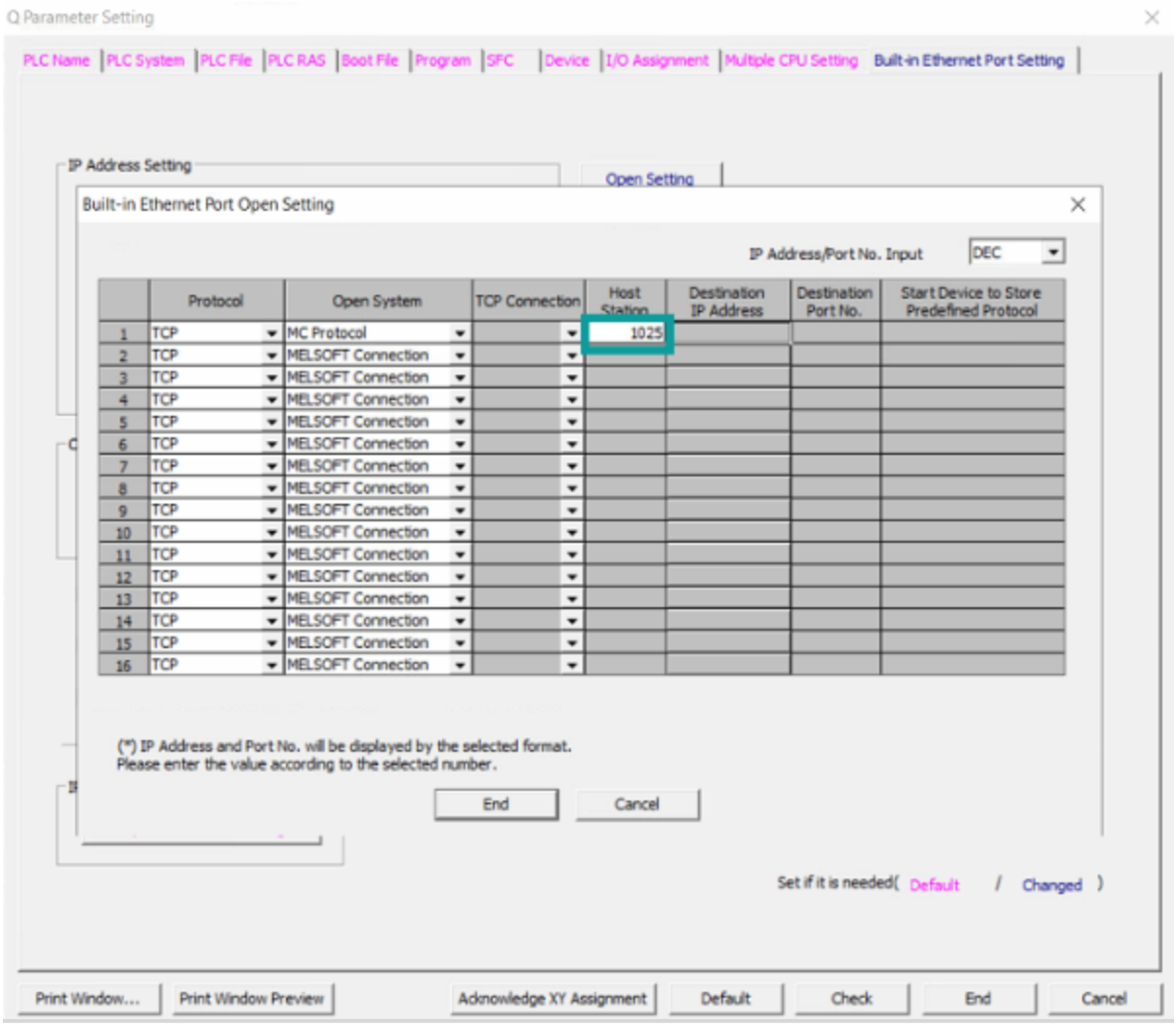
Create a project

Set PLC IP, subnet mask and gateway;

Select [Binary Code] as communication data code;



Set PLC port number, for example 1025

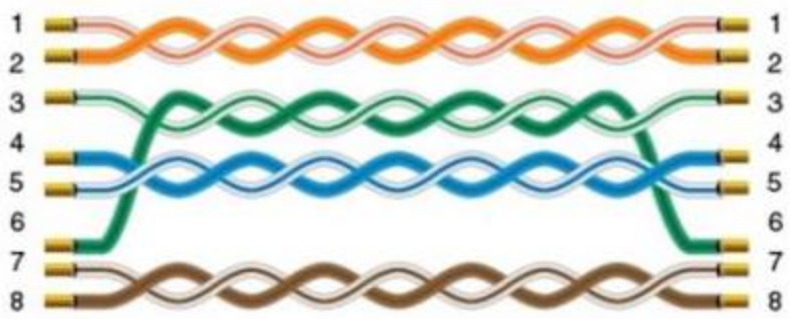


Save settings;

Download project into PLC device;

Restart PLC device;

Cable Wiring



QJ71C24N MELSEC Protocol

Mitsubishi QJ71C24N communication module built-in serial port;

HMI Settings

Items	Settings	Note
Protocol	MIT QJ71 MELSEC	
Connection	422	
Baud rate	9600	
Data bit	8	
Parity	ODD	
Stop bit	1	
PLC station No.	1~255	Need to be the same as PLC settings

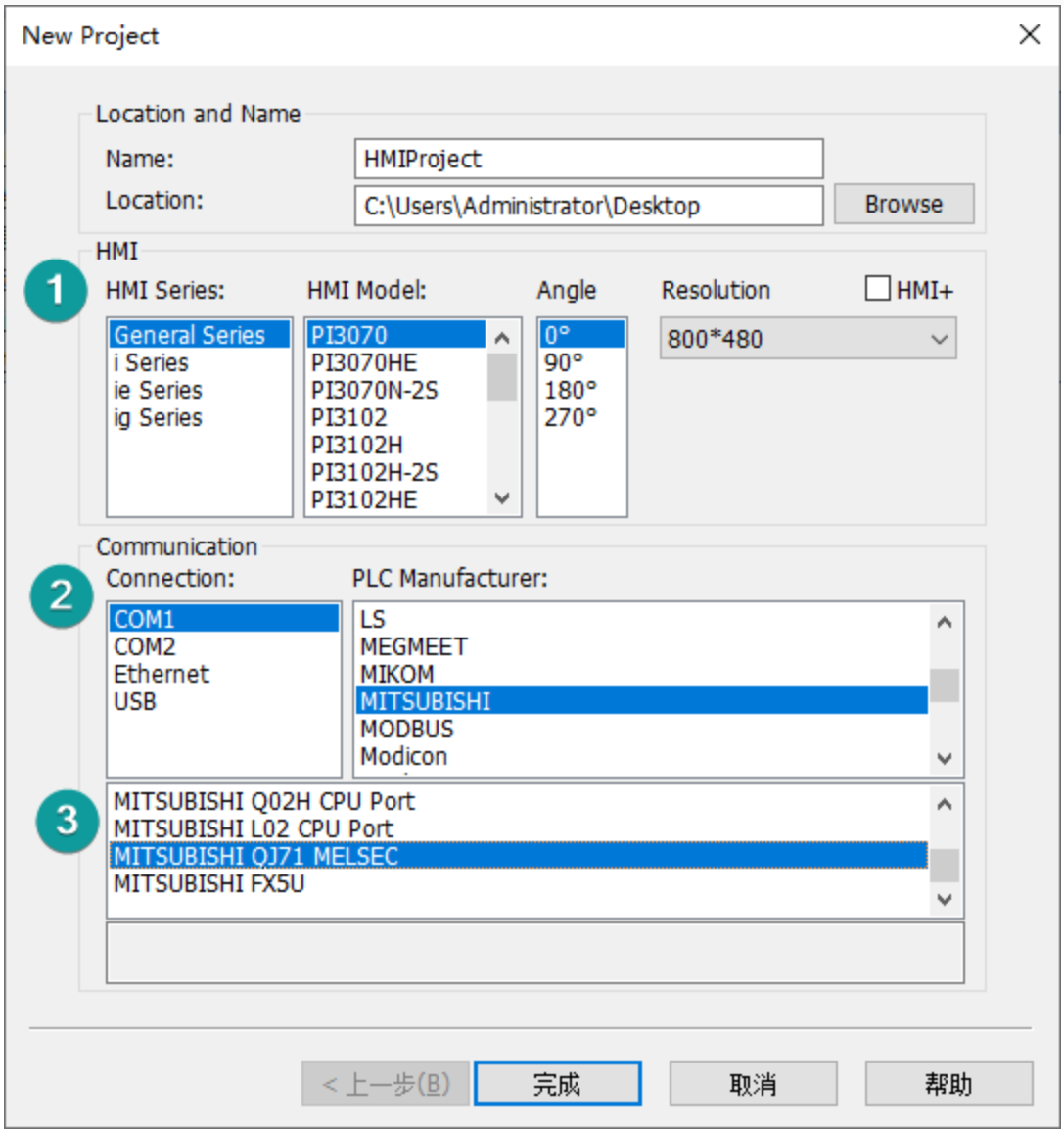
Address List

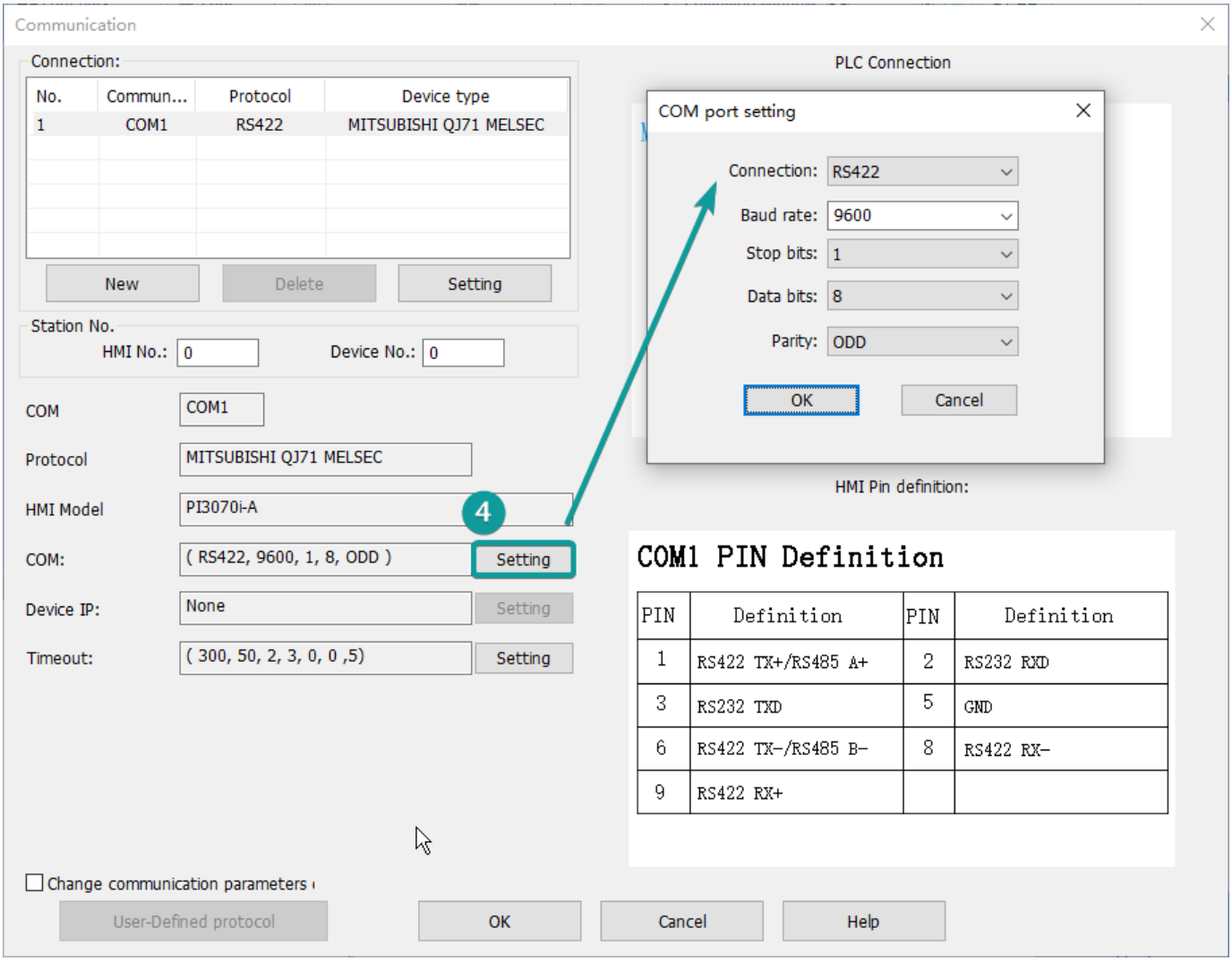
Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	X FFFF	0~1FFF	
	Y	Y	Y FFFF	0~1FFF	
	M	M	M DDDDD	0~99999	
	L	L	L DDDD	0~8191	
	F	F	F DDDD	0~2047	

	V	V	V DDDD	0~2047	
	B	B	B FFFF	0~1FFF	
	TS	TS	TS DDDD	0~2047	
	TC	TC	TC DDDD	0~2047	
	SS	SS	SS DDDD	0~2047	
	SC	SC	SC DDDD	0~2047	
	CS	CS	CS DDDD	0~1023	
	CC	CC	CC DDDD	0~1023	
	SB	SB	SB FFF	0~7FF	
	S	S	S D	0~8191	
	DX	DX	DX FFFF	0~1FFF	
	DY	DY	DY FFFF	0~1FFF	
	SM_	SM_	SM_ DDDD	8000~9999	
	SM	SM	SM DDDD	0~2047	
Word	SD	SD	SD DDDD	0~2047	
	D	D	D DDDDD	0~12287	

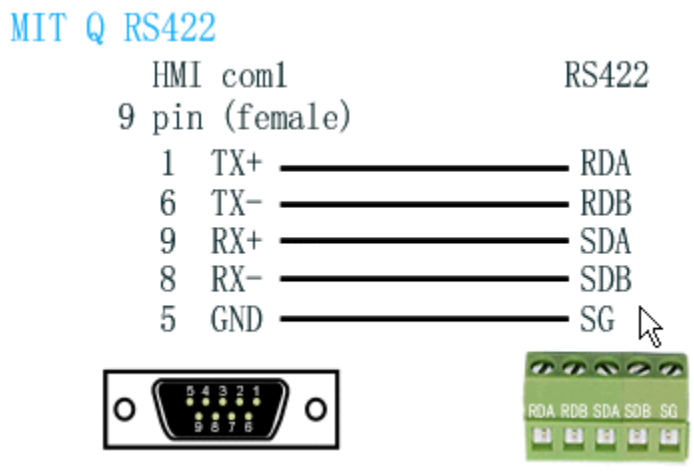
	W	W	W FFFF	0~1FFF	
	TN	TN	TN DDDD	0~2047	
	SN	SN	SN DDDD	0~2047	
	CN	CN	CN DDDD	0~1023	
	R	R	R DDDDD	0~32767	
	SW	SW	SW FFF	0~7FF	
	Z	Z	Z D	0~15	
	ZR	ZR	ZR FFFFF	0~FE7FF	

Communication Settings


New Project
Location and Name
Name:
HMIProject
Location:
C:\Users\Administrator\Desktop
Browse
HMI
1
HMI Series:
HMI Model:
Angle
Resolution
HMI+
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
800*480
Communication
2
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
LS
MEGMEET
MIKOM
MITSUBISHI
MODBUS
Modicon
3
MITSUBISHI Q02H CPU Port
MITSUBISHI L02 CPU Port
MITSUBISHI QJ71 MELSEC
MITSUBISHI FX5U
< 上一步(B)
完成
取消
帮助



Pin Definition Diagram



QJ71E71 MELSEC Protocol

Mitsubishi QJ71E71 Ethernet communication module;

HMI Settings

Items	Settings	Note
Protocol	MIT QJ71E71 MELSEC	
Connection	Ethernet	
Port No.	1025	Must be the same as the PLC setting
PLC station No.	0	Must be the same as the PLC setting

Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	X h	0~1FFF	
	Y	Y	Y h	0~1FFF	
	M	M	M d	0~99999	
	L	L	L d	0~8191	
	F	F	F d	0~2047	
	B	B	B h	0~1FFF	
	V	V	V d	0~2047	

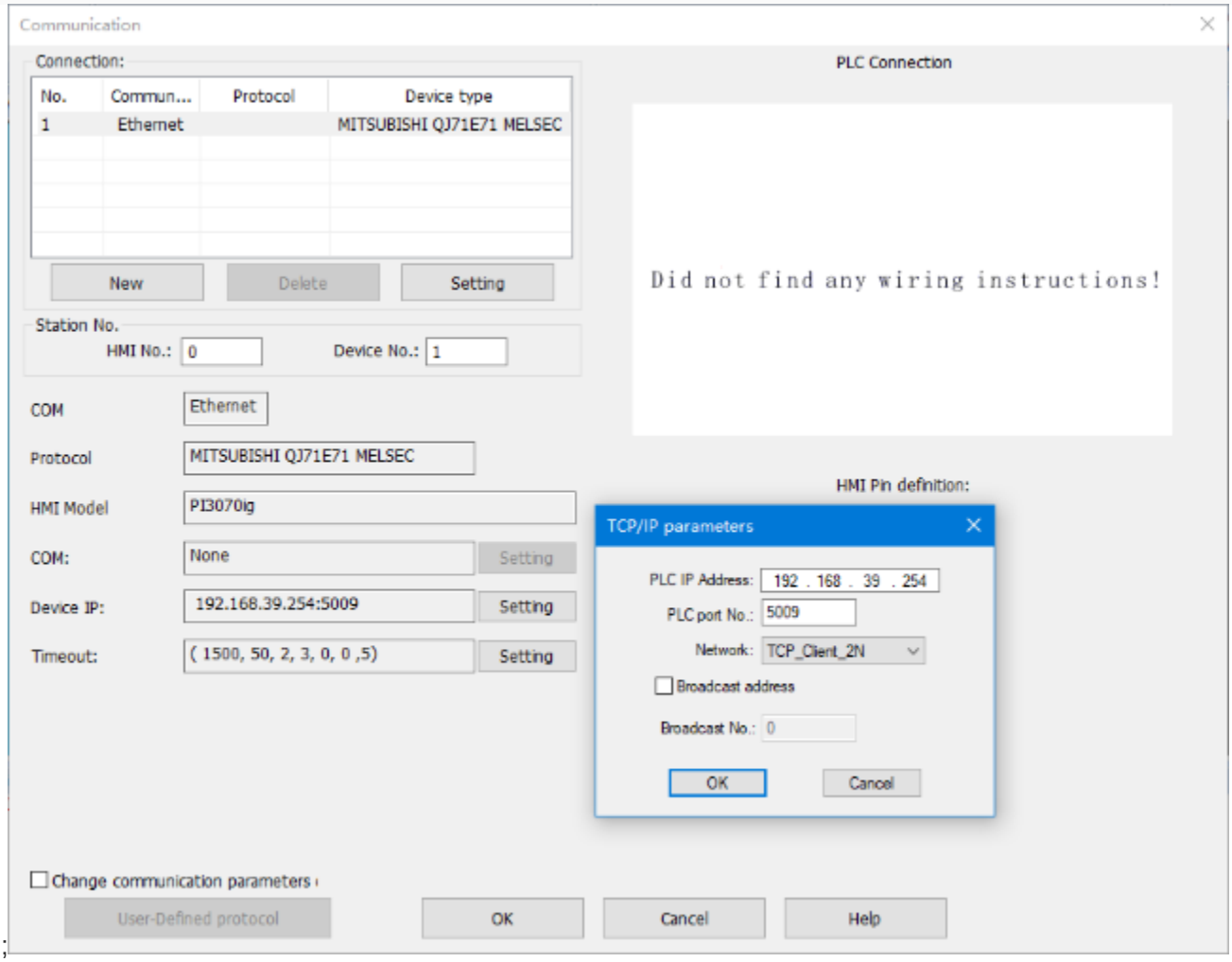
	TS	TS	TS d	0~2047	
	TC	TC	TC d	0~2047	
	SS	SS	SS d	0~2047	
	SC	SC	SC d	0~2047	
	CS	CS	CS d	0~1023	
	CC	CC	CC d	0~1023	
	SB	SB	SB h	0~7FF	
	S	S	S d	0~8191	
	DX	DX	DX h	0~1FFF	
	DY	DY	DY h	0~1FFF	
	SM	SM	SM d	8000~9999	
Word	SD	SD	SD d	0~2047	
	D	D	D d	0~12287	
	W	W	W h	0~1FFF	
	TN	TN	TN d	0~2047	
	SN	SN	SN d	0~2047	

	CN	CN	CN d	0~1023	
	R	R	R d	0~32767	
	SW	SW	SW h	0~7FF	
	Z	Z	Z d	0~15	
	ZR	ZR	ZR h	0~FE7FF	

HMI Communication Settings

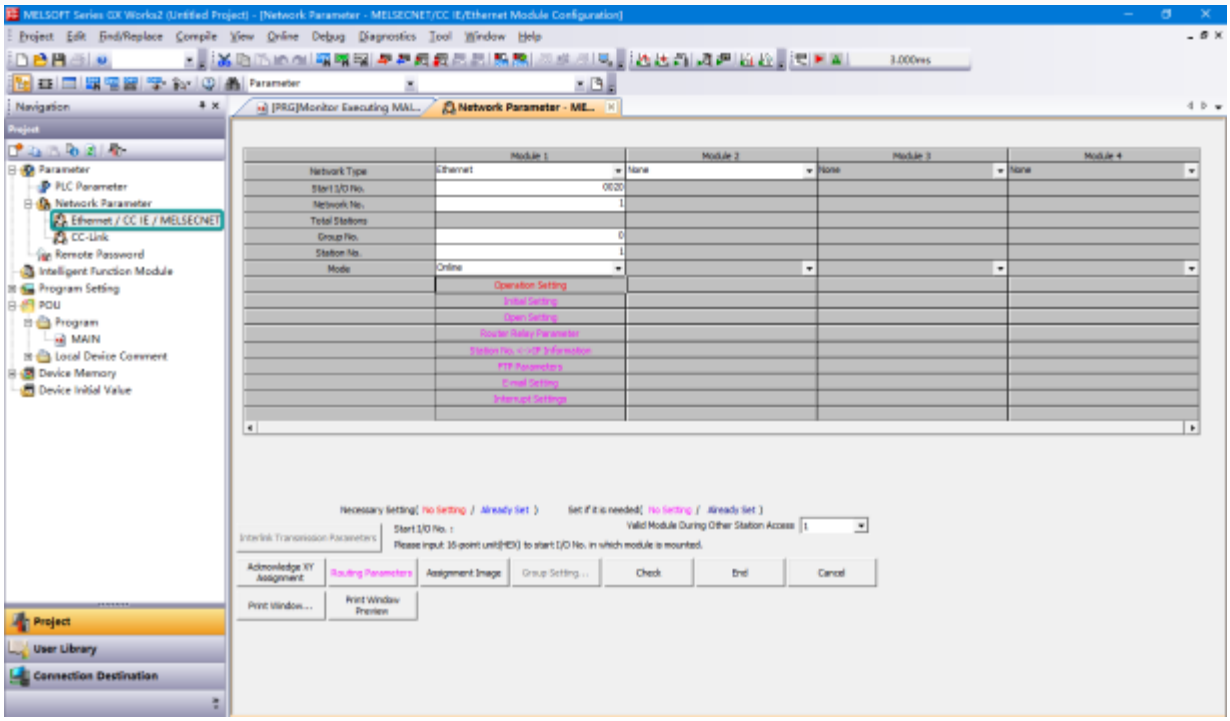
1) Enable HMI Ethernet in [Project Settings];

2) Set PLC IP in [Device IP] settings

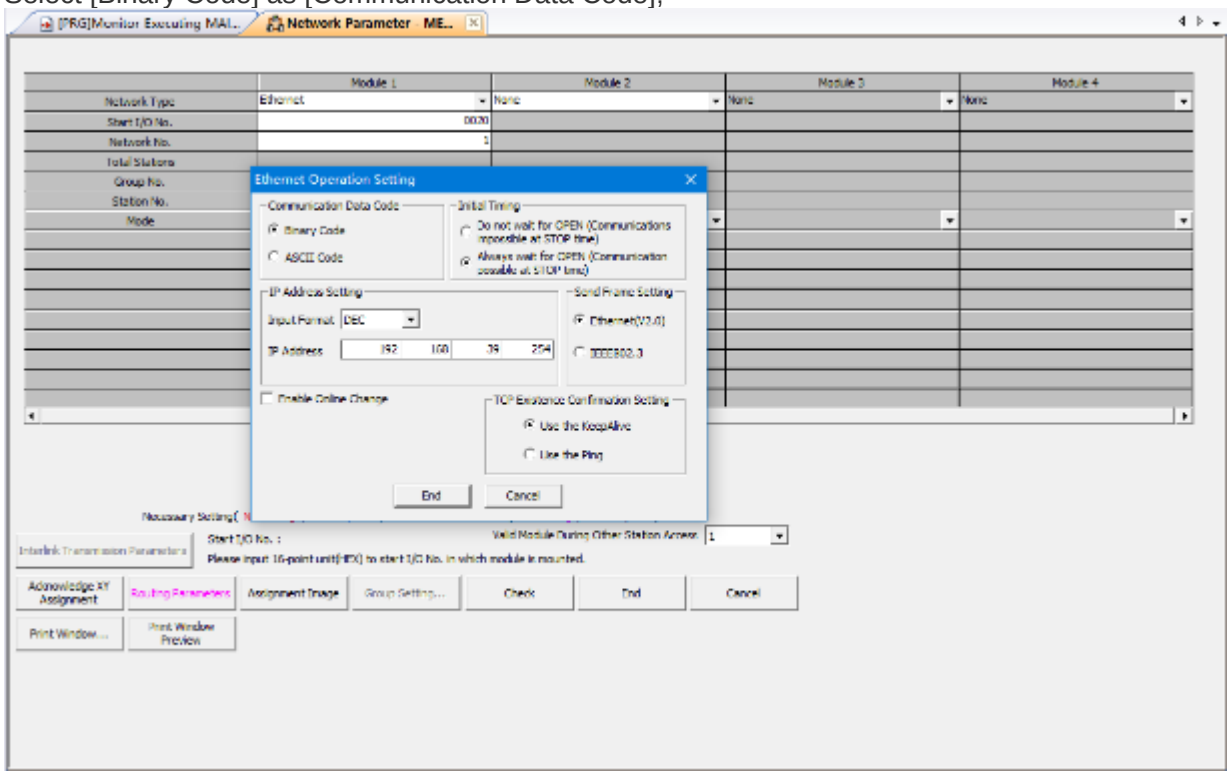


PLC Settings(GX Works2)

- Click [Ethernet/CC IE/MELSECNET];
- Please select [Ethernet] as network type;
- Set station I/O number according to situation (For example, 0020 means that the module is connected to PLC CPU in first order);
- Select [Online] as Mode;

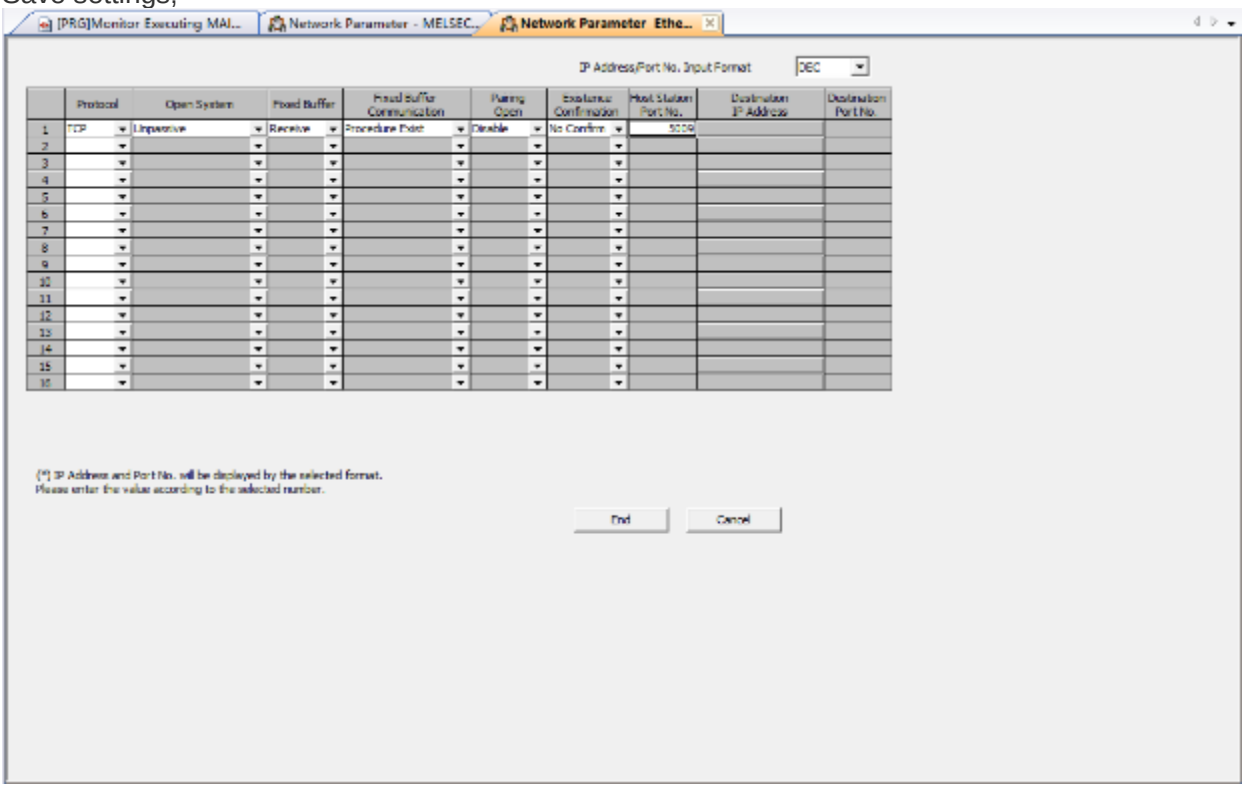


- Click [Operation setting] to set IP;
- Select [Binary Code] as [Communication Data Code];



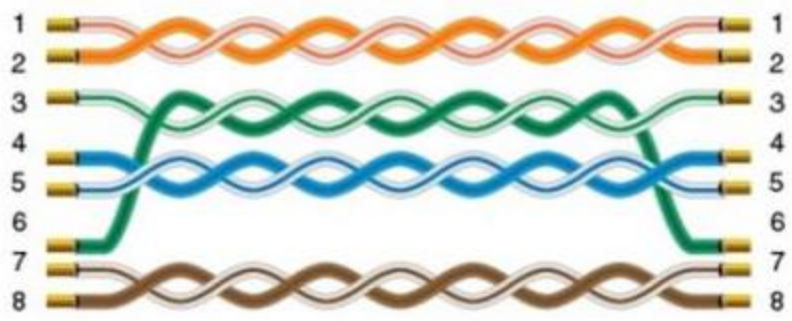
- Click [Open setting]
- Set protocol: TCP;
- Set [unpassive] in [Open system];
- Set [receive] in [Fixed buffer];
- Set [procedure Exist] in [Fixed buffer communication];

- Disable [Pairing open];
- Set [No confirm] in [Existence confirmation];
- Host station port number: 5009;
- Save settings;



- Download project into PLC and restart it

Cable Wiring



Create communication with Delta PLC

DVP serial protocol

Supported Series: Delta DVP EH/ES/SS/EX/EH2/SV/SA/SC/SX Controller

HMI Settings

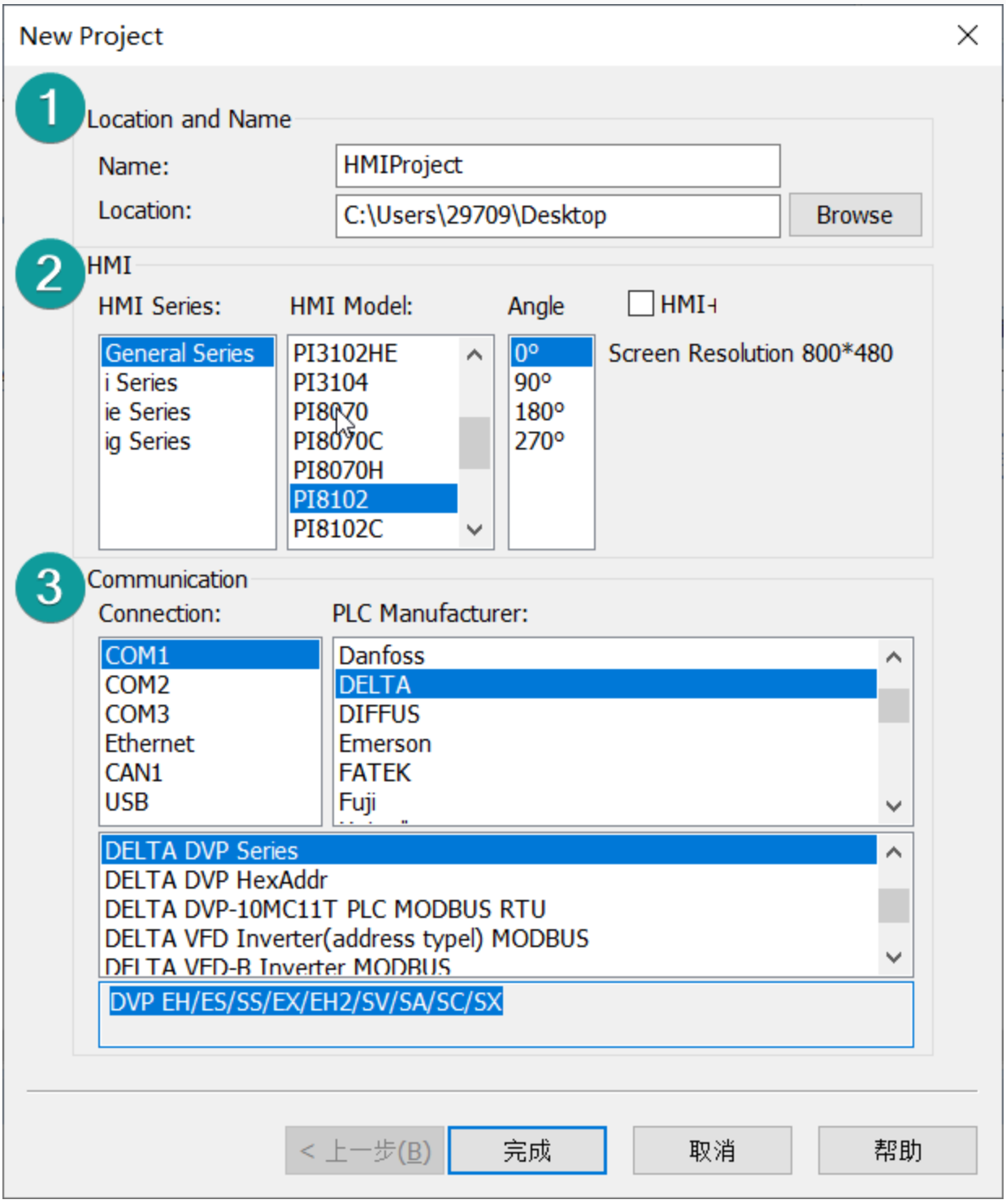
Item	Settings	Note
Protocol	DELTA DVP Series	
Connection	RS485	
Baud rate	9600	
Data bit	7	
Parity	Even	
Stop bit	1	
PLC station No.	1~255	Need to be the same as PLC settings

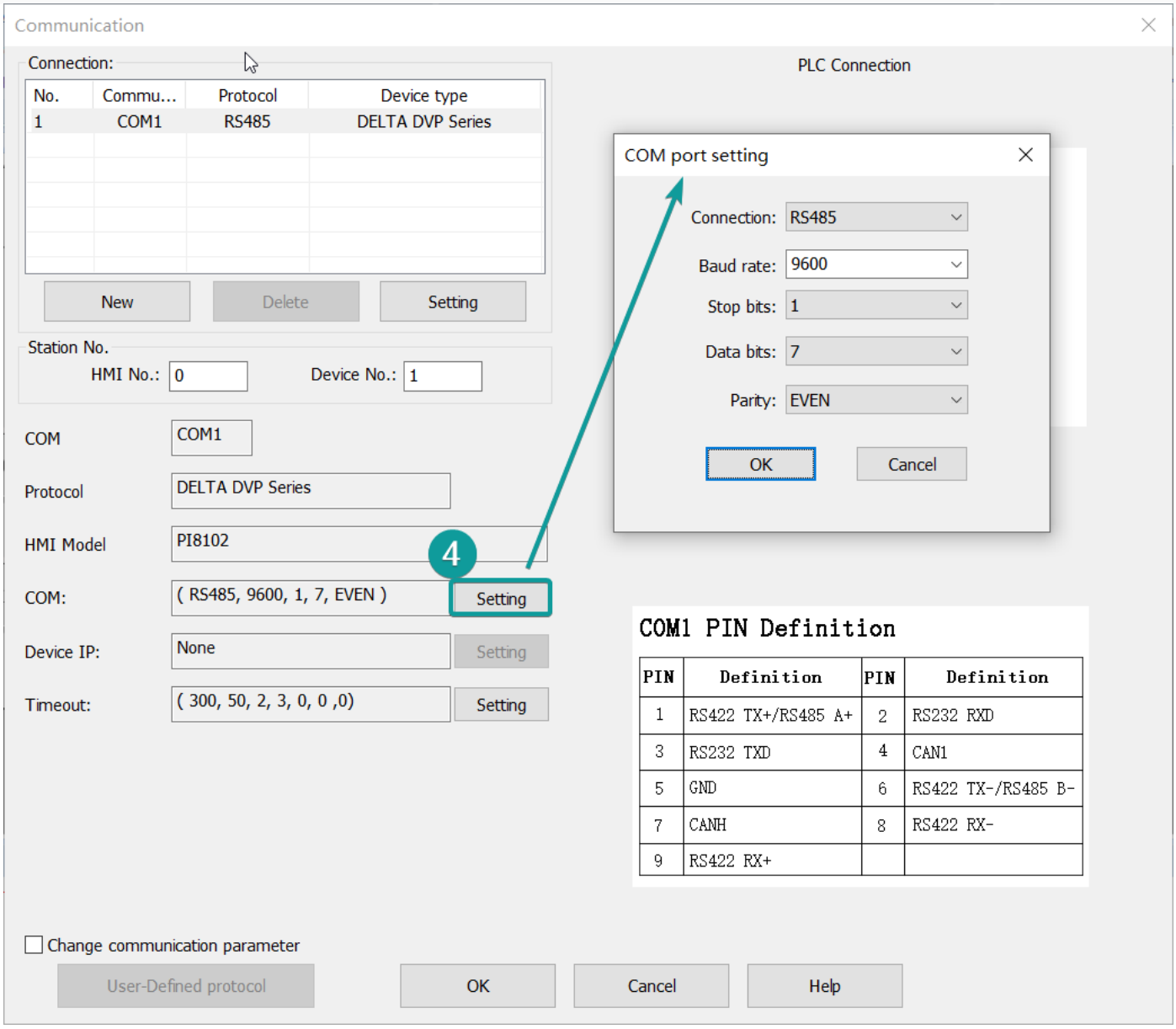
Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	X d	0~303237	
Bit	Y	Y	Y d	0~303237	
Bit	M	M	M d	0~99999	
Bit	T	T	T d	0~99999	
Bit	C	C	T d	0~99999	
Bit	S	S	T d	0~99999	

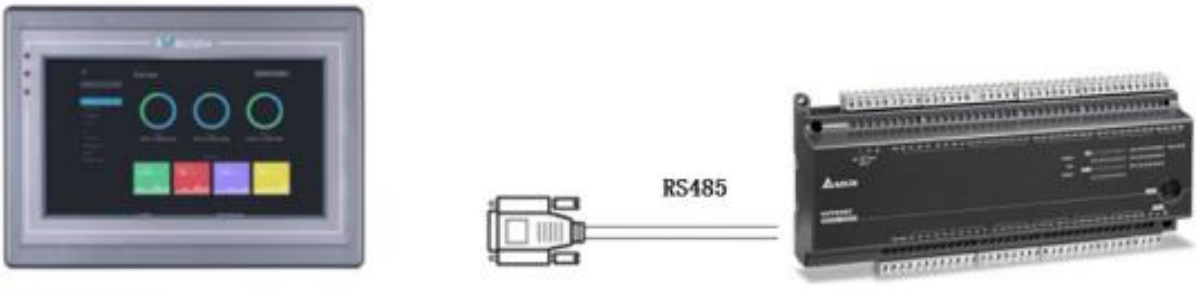
Word	D	D	D d	0~99999	
Word	T	T	T d	0~99999	
Word	C	C	C d	0~99999	

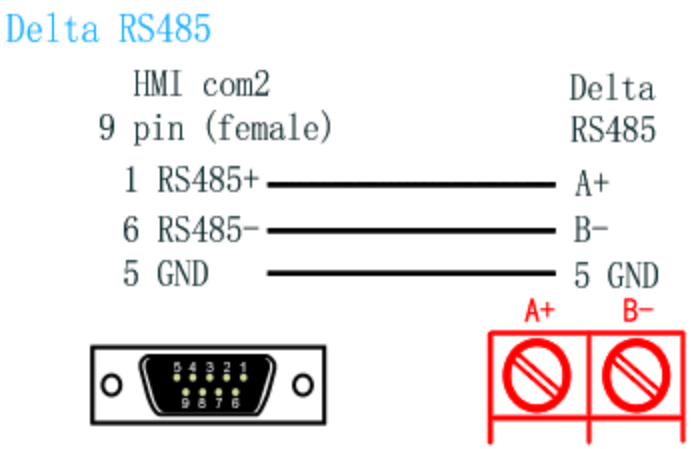
Configure the communication protocol


New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI-H
General Series
i Series
ie Series
ig Series
PI3102HE
PI3104
PI8070
PI8070C
PI8070H
PI8102
PI8102C
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
COM3
Ethernet
CAN1
USB
Danfoss
DELTA
DIFFUS
Emerson
FATEK
Fuji
DELTA DVP Series
DELTA DVP HexAddr
DELTA DVP-10MC11T PLC MODBUS RTU
DELTA VFD Inverter(address typel) MODBUS
DELTA VFD-B Inverter MODBUS
DVP EH/ES/SS/EX/EH2/SV/SA/SC/SX
< 上一步(B)
完成
取消
帮助



Cable Wiring





DVP Ethernet Protocol

Supported Series: Delta DVP ES2/EX2/SS2/SA2/SX2/SE Controller

HMI Settings

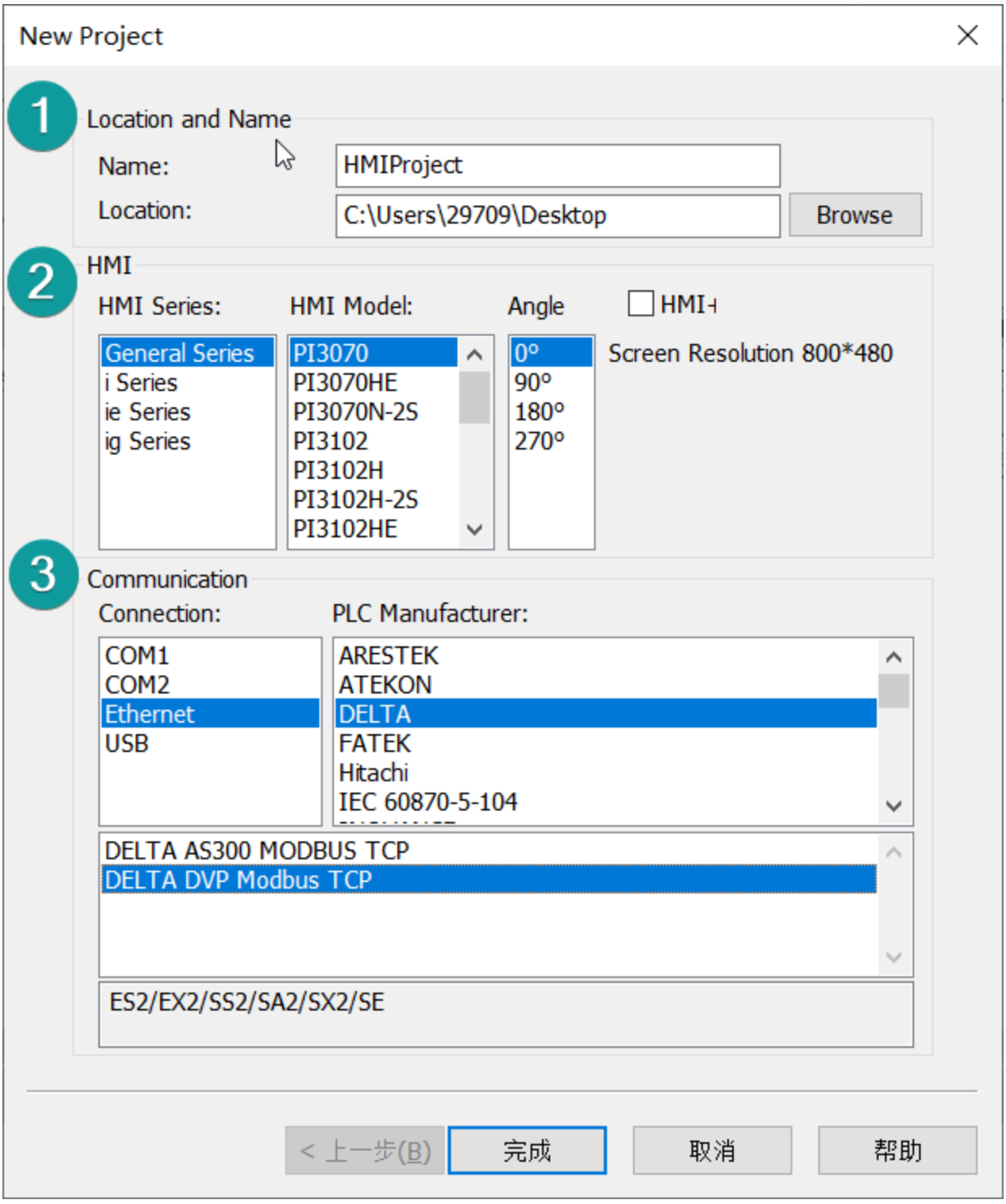
Items	Settings	Note
Protocol	DELTA DVP Modbus TCP	
Connection	Ethernet	
Port No.	201	Must be the same as the PLC setting
PLC station No.	0	Must be the same as the PLC setting

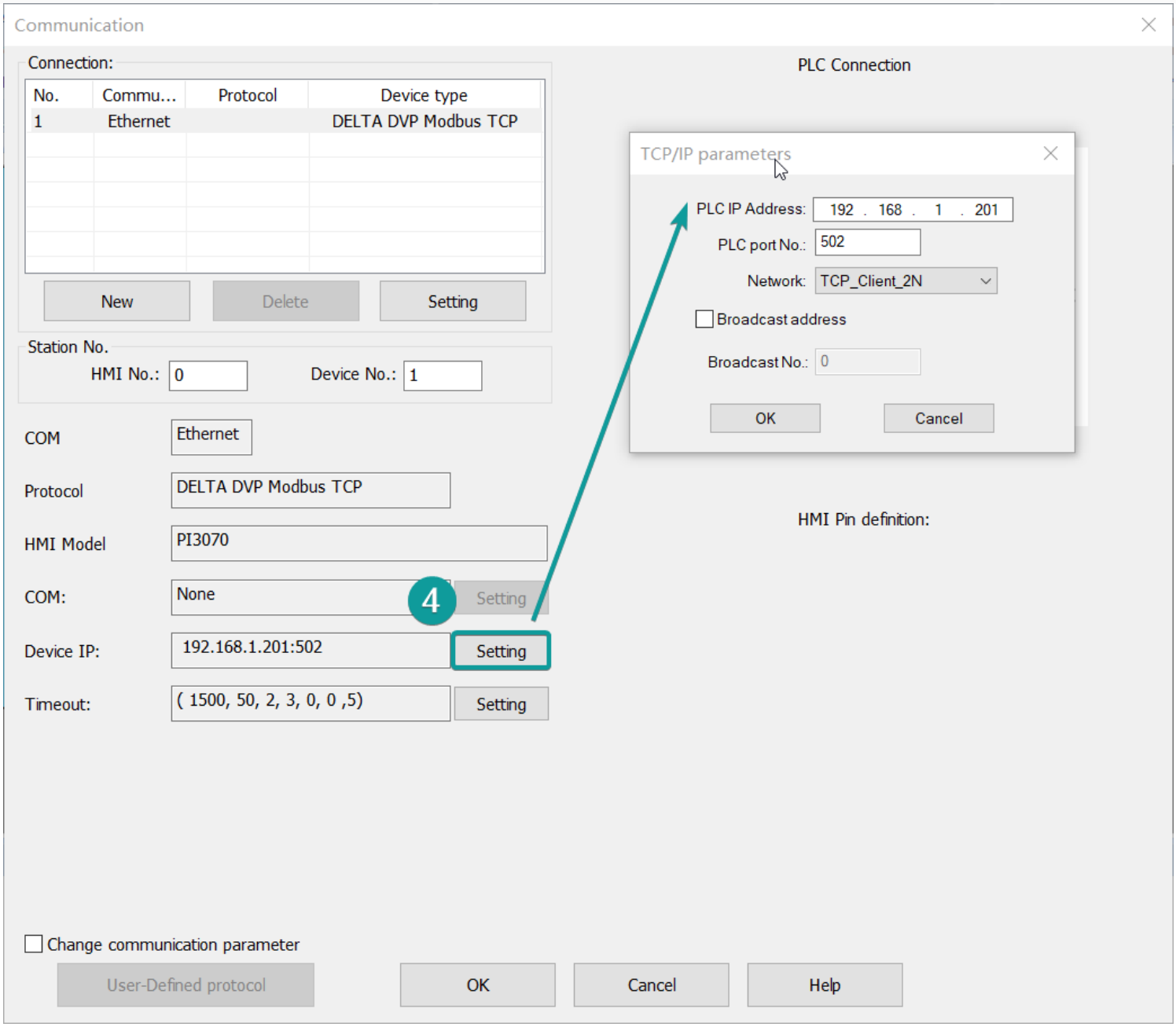
Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	X o	0~377	
Bit	Y	Y	Y o	0~377	

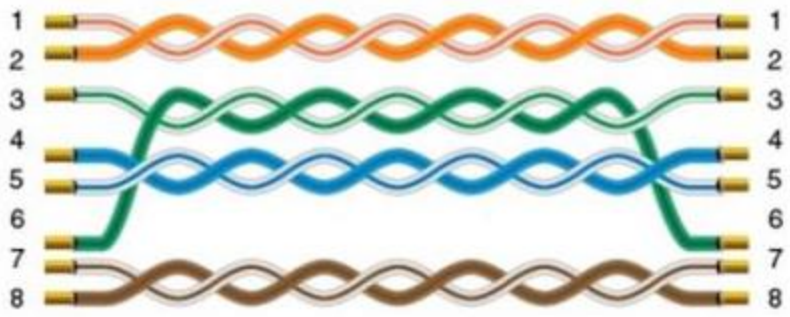
Bit	M0	M0	M0 d	0~1535	
Bit	M1	M1	M1 d	1536~4095	
Bit	T	T	T d	0~255	
Bit	C	C	C d	0~255	
Bit	S	S	S d	0~1023	
Word	D0	D0	D0 d	0~4095	
Word	D1	D1	D1 d	4096~11999	
Word	T	T	T d	0~255	
Word	C	C	C d	0~199	

Configure the communication protocol


New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI-H
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
ARESTEK
ATEKON
DELTA
FATEK
Hitachi
IEC 60870-5-104
DELTA AS300 MODBUS TCP
DELTA DVP Modbus TCP
ES2/EX2/SS2/SA2/SX2/SE
< 上一步(B)
完成
取消
帮助



Cable Wiring



AS serial protocol

Supported Series: Delta AS200/AS300

HMI Settings

Item	Settings	Note
Protocol	DELTA AS300 MODBUS RTU	
Connection	RS485	
Baud rate	9600	
Data bit	8	
Parity	NONE	
Stop bit	1	
PLC station No.	1	

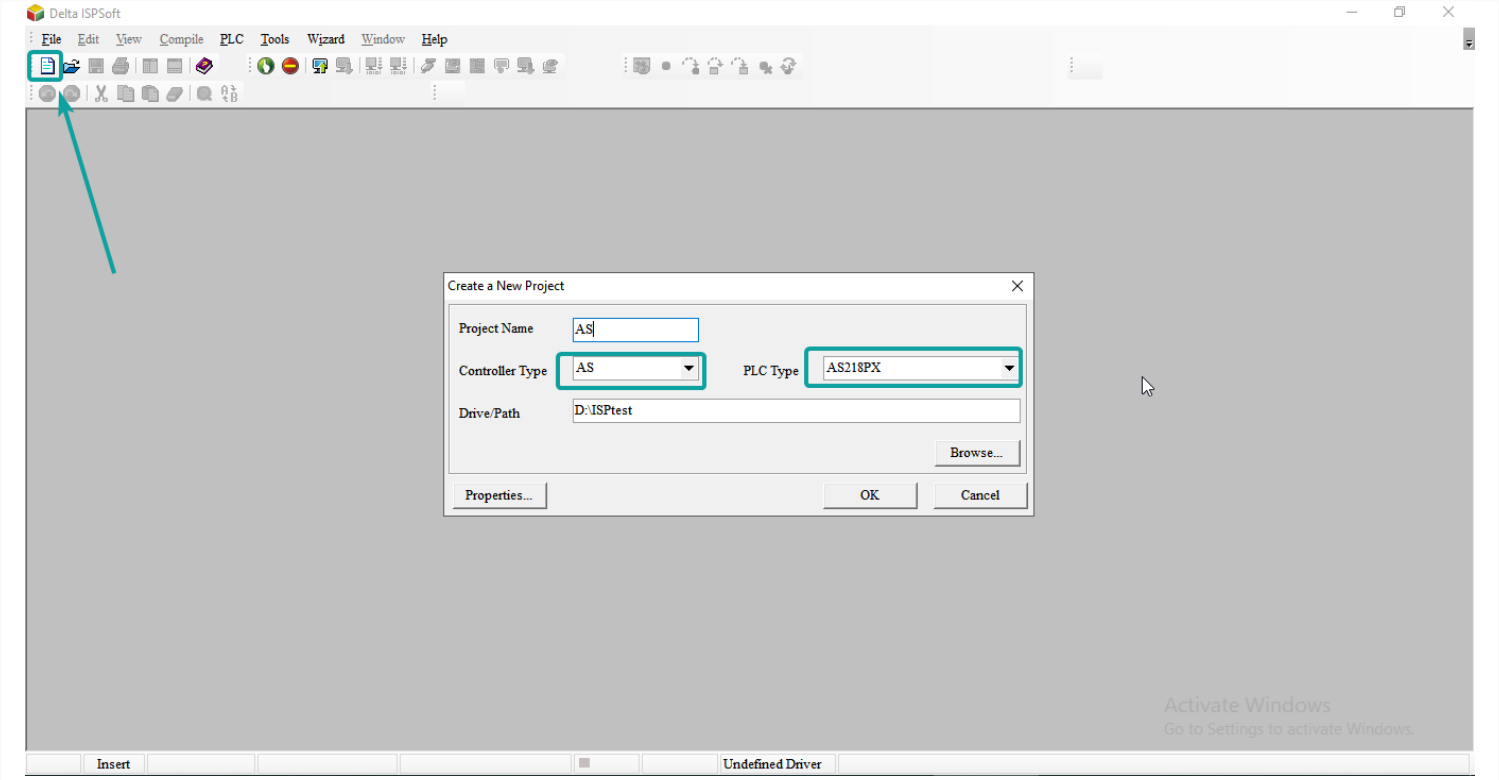
Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	Xdd.dd	0~63.15	Read only
Bit	Y	Y	Ydd.dd	0~63.15	
Bit	D	D	Dddddd	0~29999	
Bit	M	M	Mdddd	0~8191	

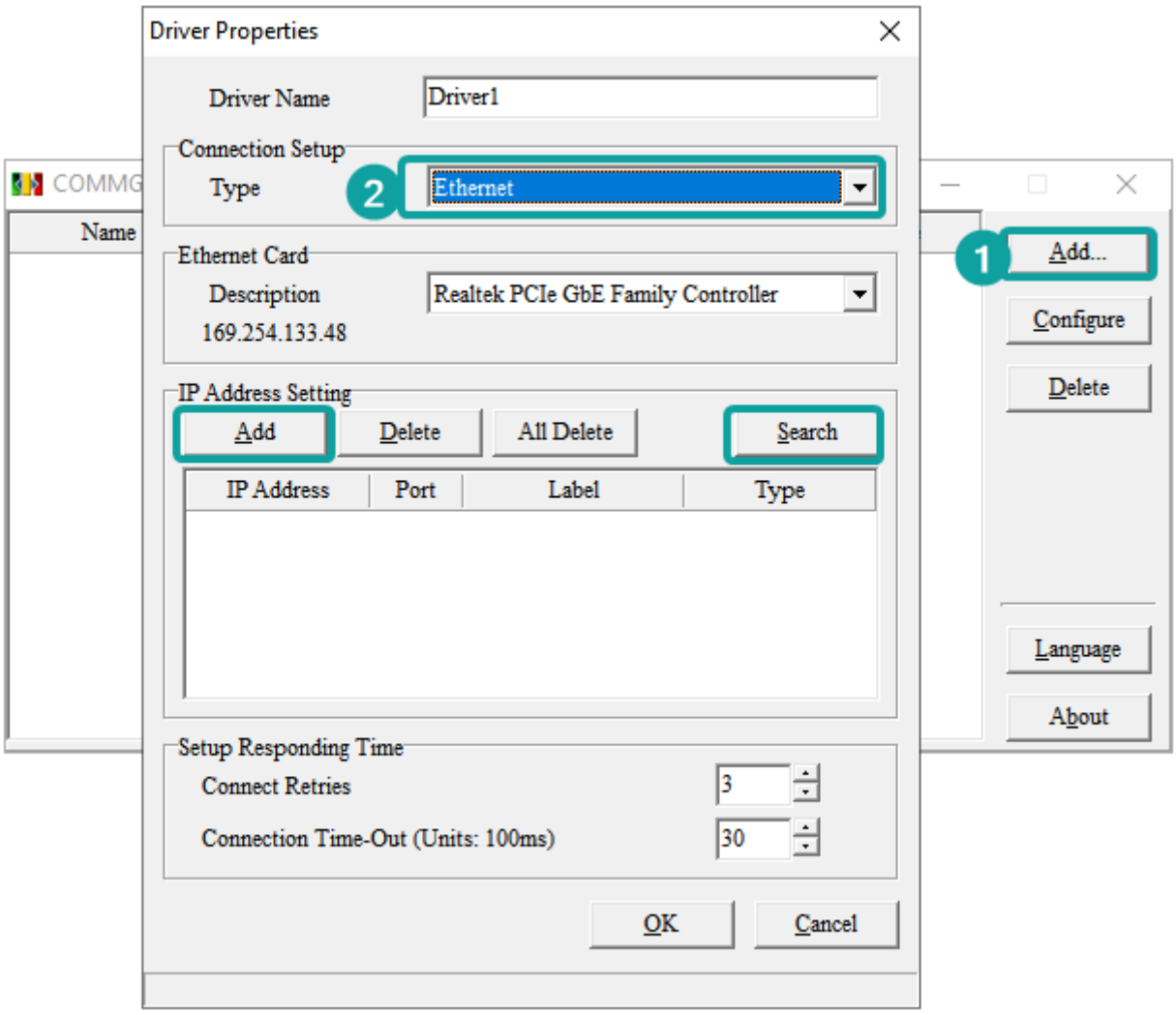
Bit	SM	SM	SMdddd	0~4095	
Bit	S	S	Sdddd	0~2047	
Bit	T	T	Tddd	0~511	
Bit	C	C	Cddd	0~511	
Bit	HC	HC	HCddd	0~255	Double Word
Word	X	X	Xdd	0~63	
Word	Y	Y	Ydd	0~63	
Word	SR	SR	SRdddd	0~2047	Special register
Word	D	D	Dddddd	0~29999	
Word	T	T	Tddd	0~511	
Word	C	C	Cddd	0~511	
Word	E	E	Ed	0~9	

Configure the communication protocol

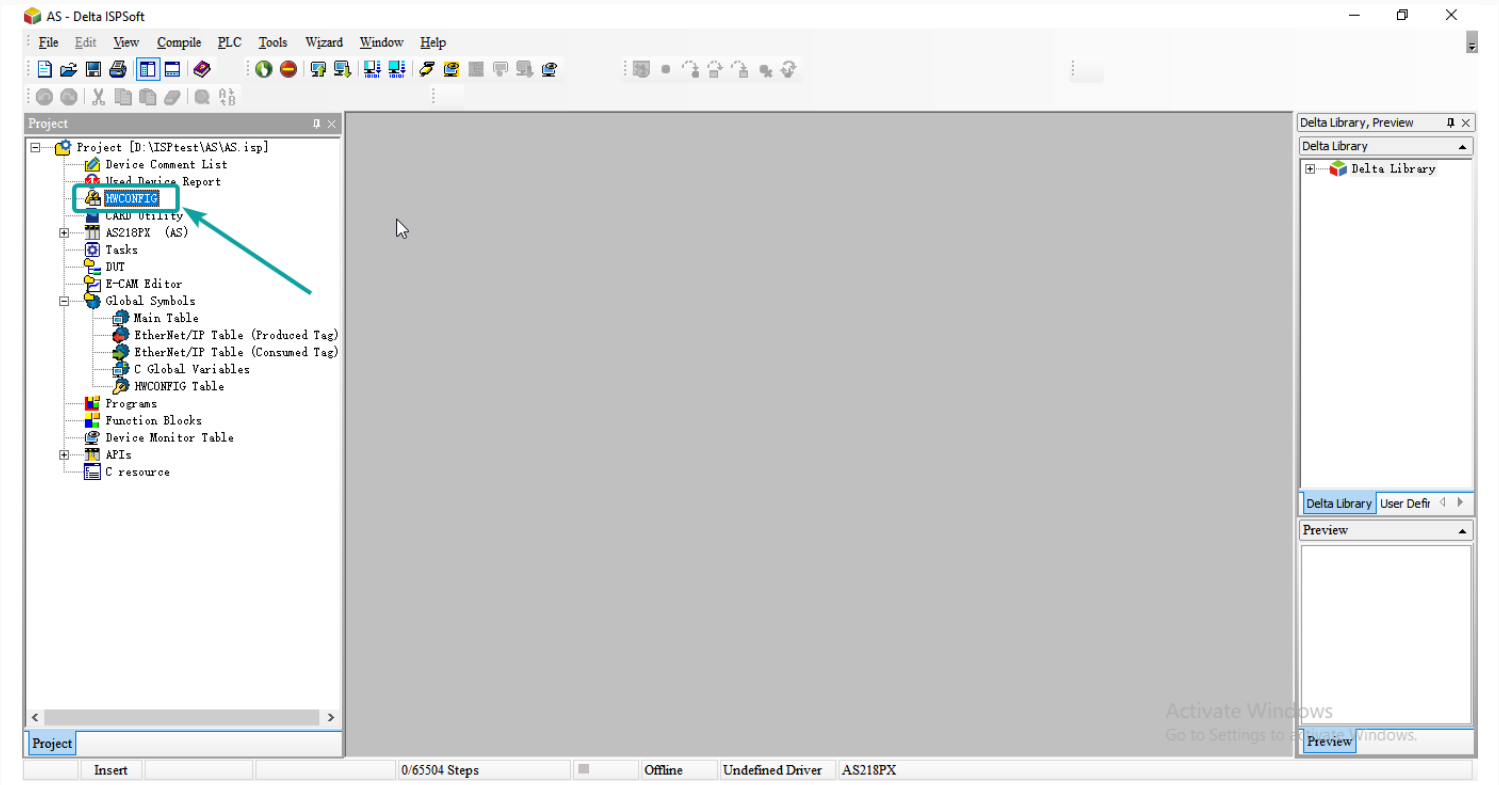
Create project



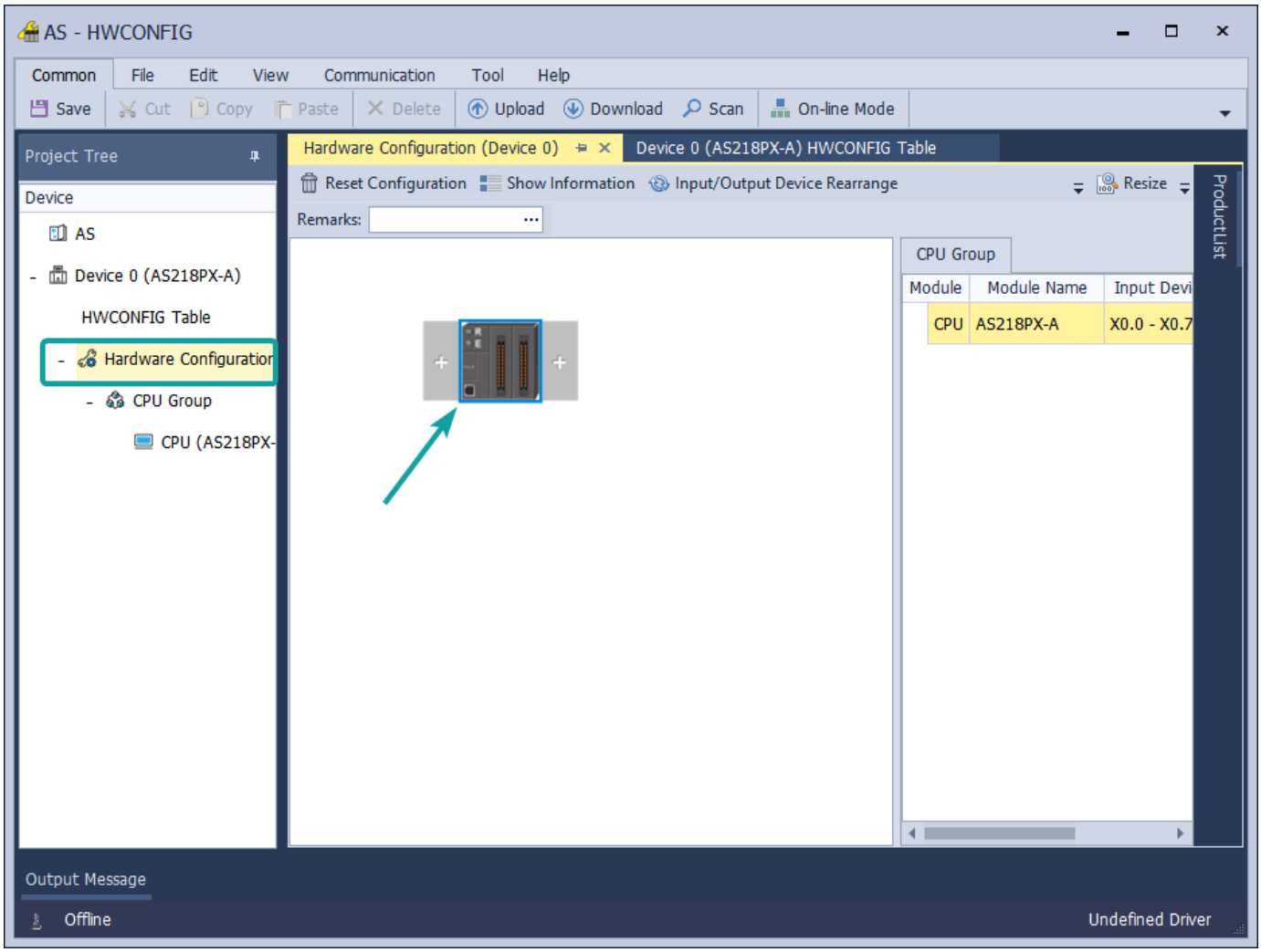
Open the tool COMMGR, to communicate with PLC, if know the IP, we can directly click Add to input PLC IP. Or search the PLC IP from LAN.



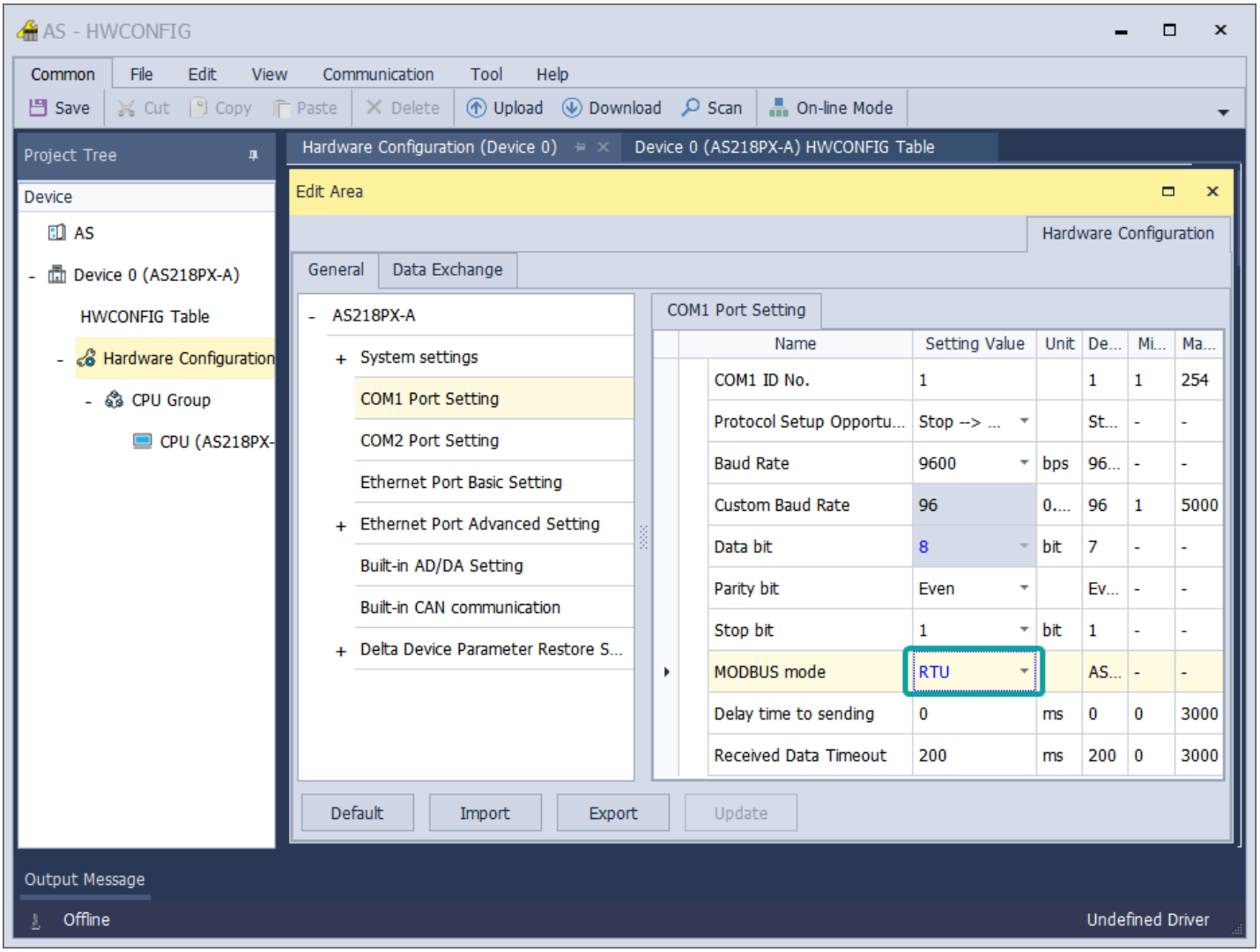
Double click the HWCONFIG to open the communication settings window.



Expand the Project Tree, open the hardware configuration, double click the PLC icon.



Click COM1 Port Setting, the default Modbus mode is ASCII, need to change to RTU.



Click Ethernet Port Basic Setting, set the PLC IP and Gateway. Make sure the IP and Gateway is same segment. Then download into PLC.

AS - HWCONFIG

Common | File | Edit | View | Communication | Tool | Help

Save | Cut | Copy | Paste | Delete | Upload | Download | Scan | On-line Mode

Project Tree

Device

- AS
- Device 0 (AS218PX-A)
  - HWCONFIG Table
  - Hardware Configuration
    - CPU Group
      - CPU (AS218PX-

Hardware Configuration (Device 0) | Device 0 (AS218PX-A) HWCONFIG Table

Edit Area

Hardware Configuration

General | Data Exchange

- AS218PX-A
  - + System settings
  - COM1 Port Setting
  - COM2 Port Setting
  - Ethernet Port Basic Setting
  - + Ethernet Port Advanced Setting
  - Built-in AD/DA Setting
  - Built-in CAN communication
  - + Delta Device Parameter Restore S...

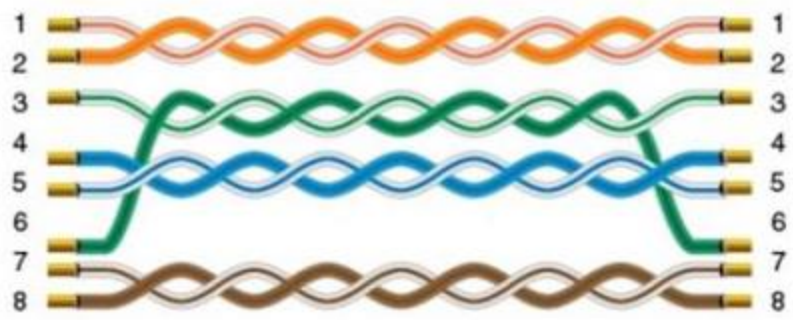
Ethernet Port Basic Setting

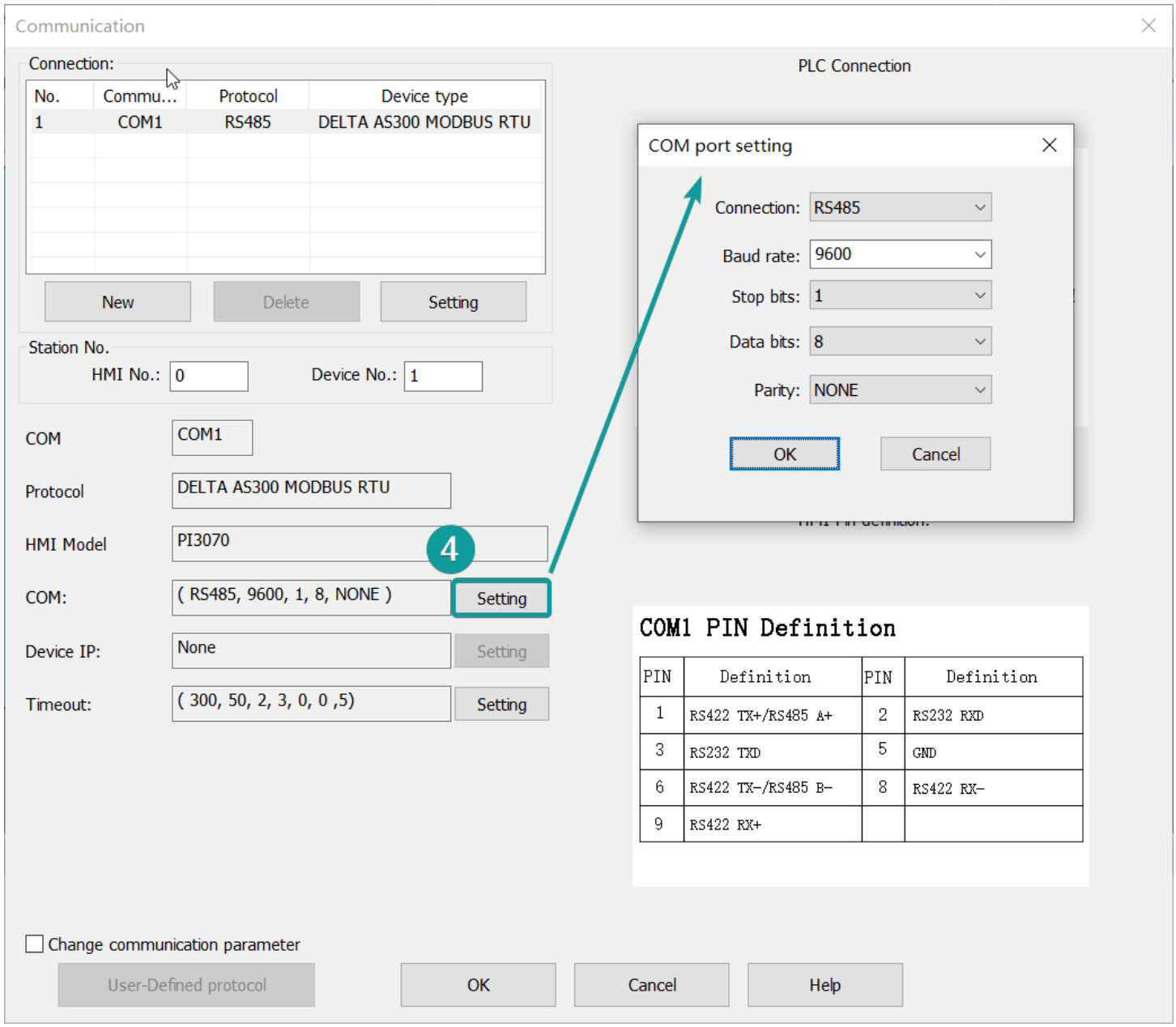
Name	Setting Value	Unit	De...	Mi...	Ma...
IP Address	192.168.1.5		19...	1....	22...
Subnet Mask	255.255.255.0		25...	0....	25...
Gateway	192.168.1.1		19...	1....	22...
TCP Keep Alive Timeout	30	sec	30	1	65...
Mode	Static		St...	-	-

Default | Import | Export | Update

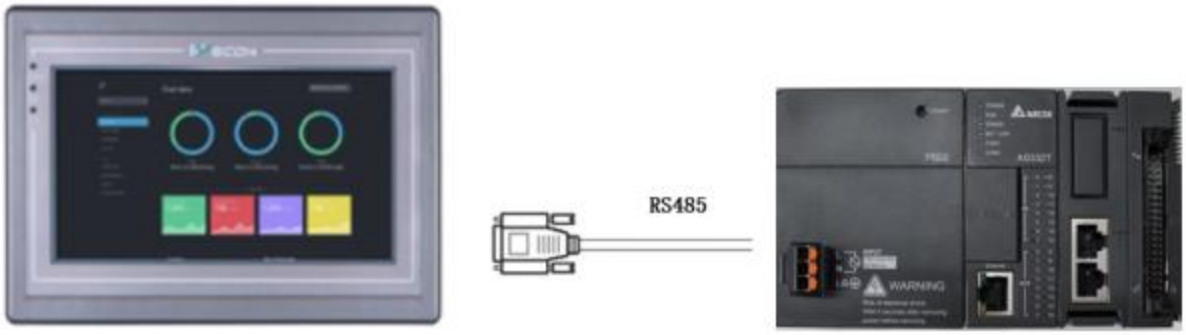
Output Message

Offline | Undefined Driver

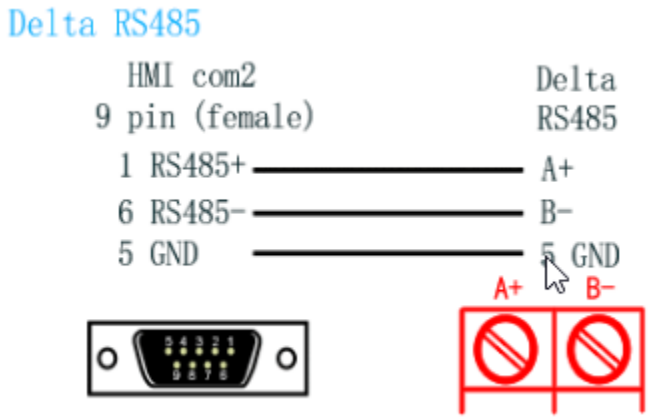




Cable Wiring



Pin Definition Diagram



AS Ethernet Protocol

HMI Settings

Items	Settings	Note
Protocol	DELTA AS300 MODBUS TCP	
Connection	Ethernet	
Port No.	502	
Device No.	1	

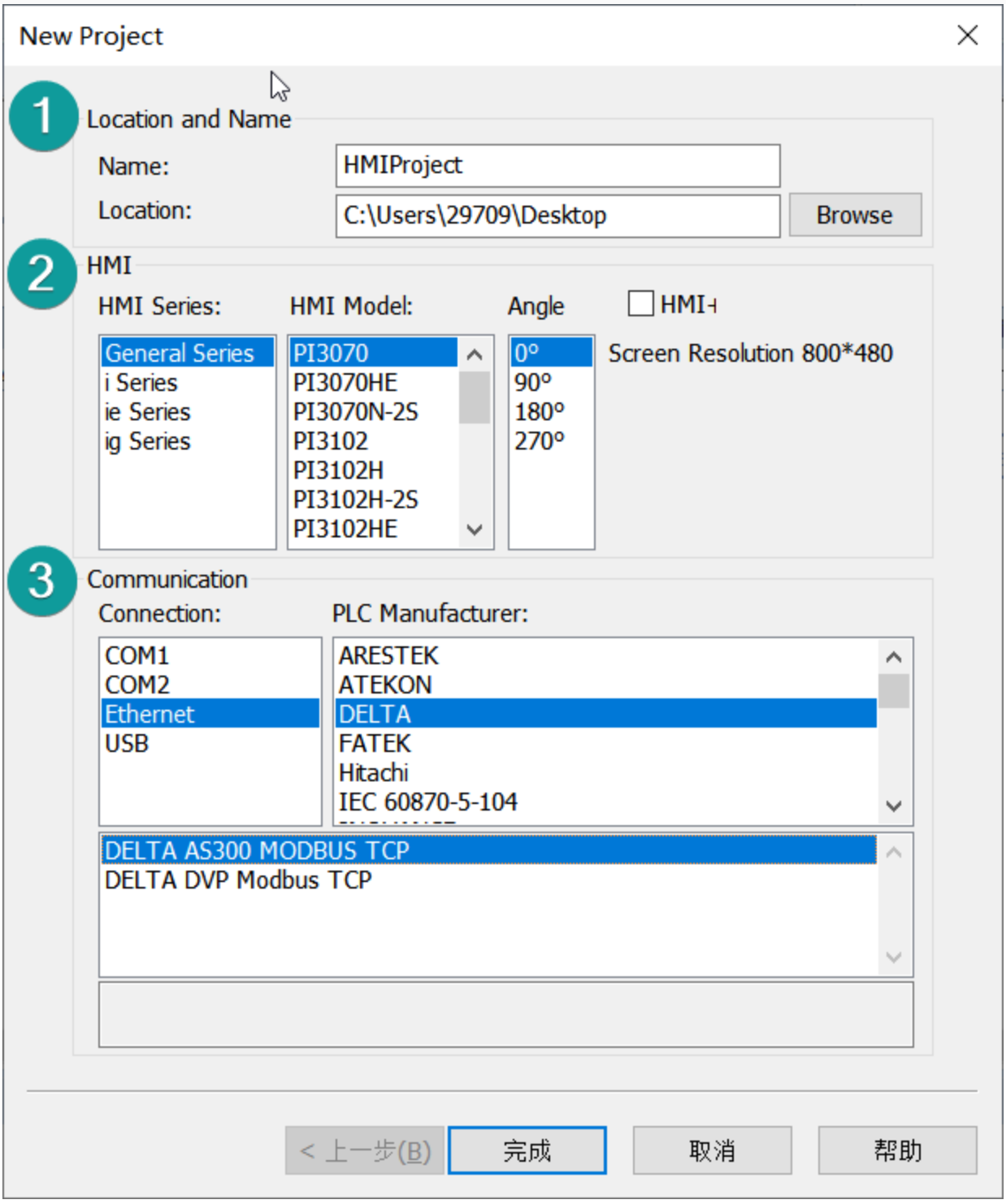
HMI No.	0	

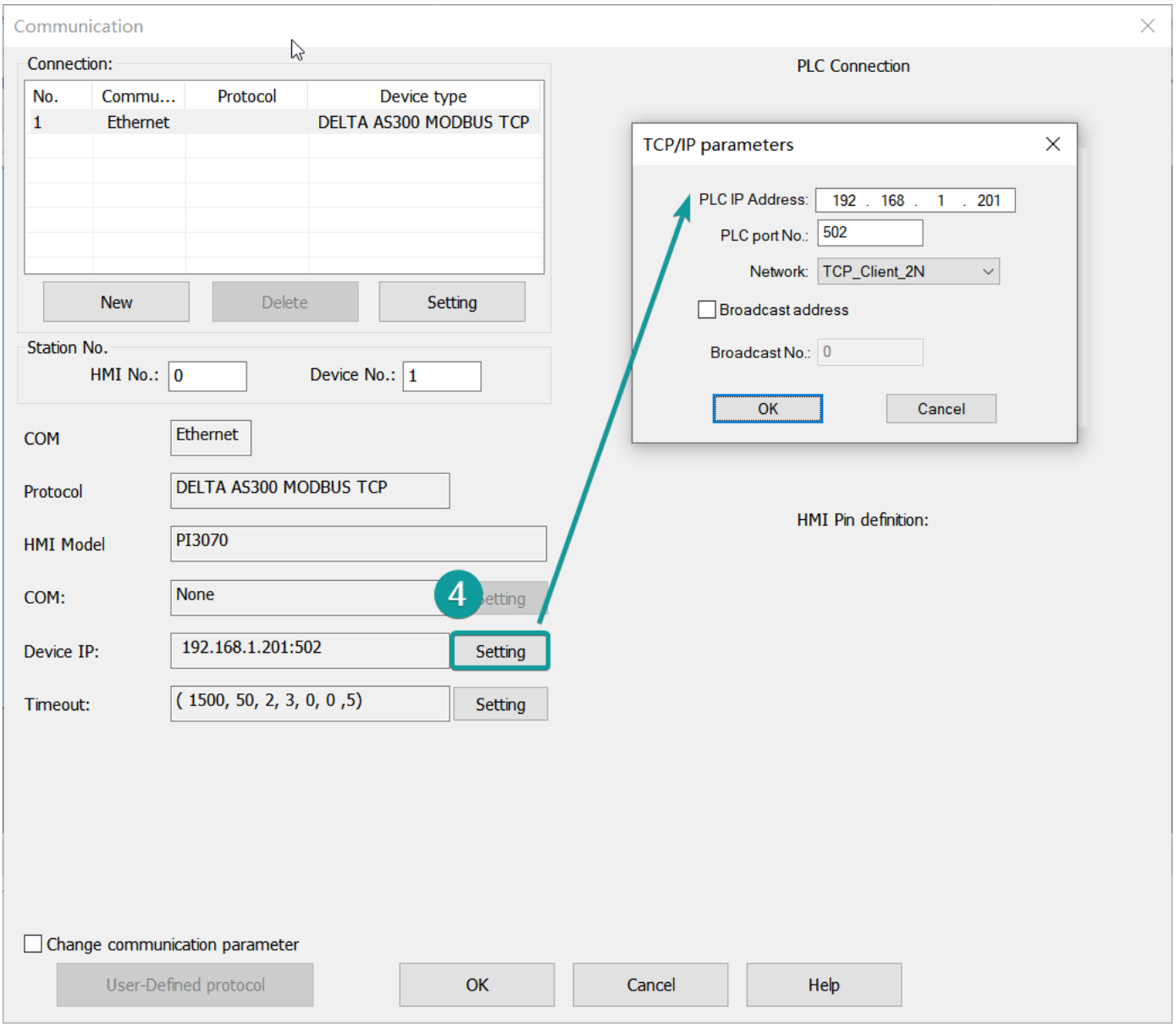
Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	X	X	X d	0~63	
Bit	Y	Y	Y d	0~63	
Bit	D	D	D d	0~29999	
Bit	M	M	M d	0~8191	
Bit	SM	SM	SM d	0~4095	
Bit	S	S	S h	0~2047	
Bit	T	T	T d	0~511	
Bit	C	C	C d	0~511	
Bit	HC	HC	HC d	0~255	
Word	X	X	X h	0~63	
Word	Y	Y	Y d	0~63	
Word	SR	SR	SR d	0~2047	
Word	D	D	D d	0~29999	

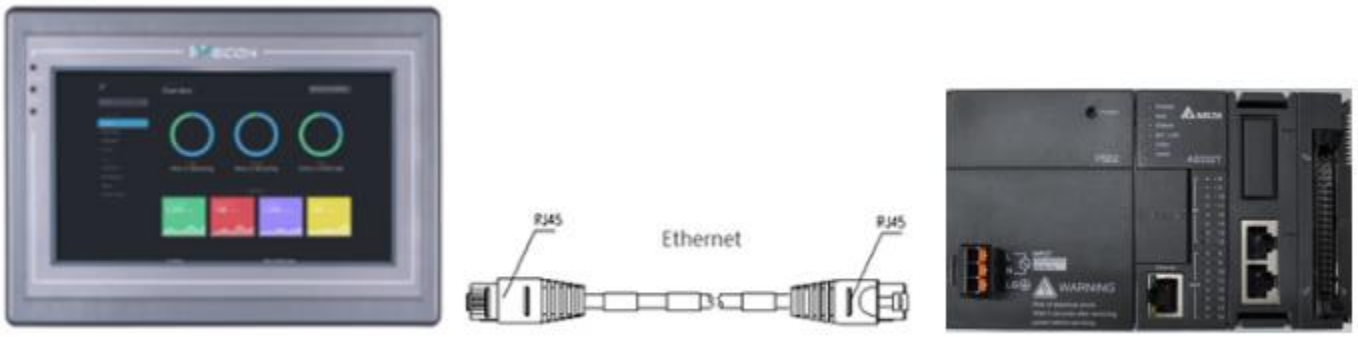
Word	T	T	T d	0~511	
Word	C	C	C h	0~511	
Word	E	E	E d	0~9	

Configure the communication protocol

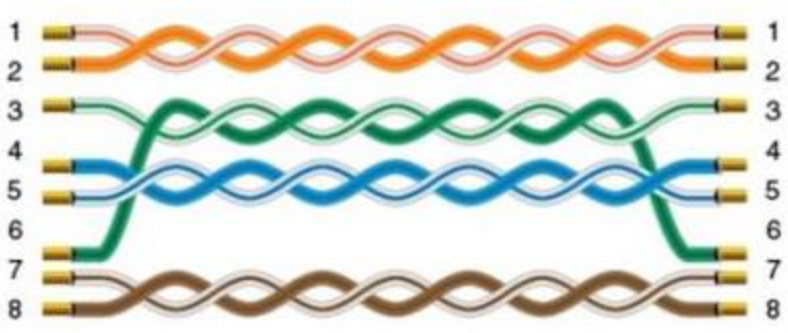

New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI-H
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
ARESTEK
ATEKON
DELTA
FATEK
Hitachi
IEC 60870-5-104
DELTA AS300 MODBUS TCP
DELTA DVP Modbus TCP
< 上一步(B)
完成
取消
帮助



Cable Wiring



Pin Definition Diagram



Create communication with Omron PLC

CJ TCP FINS Ethemet Protocol

Supported device:CJ series、CJ1W-EIP21

HMI Settings

Items	Settings	Note
Protocol	OMRON CJ TCP FINS Ethemet	
Connection	Ethernet	
Port No.	9600	
Device No.	0	
HMI No.	0	

Address List

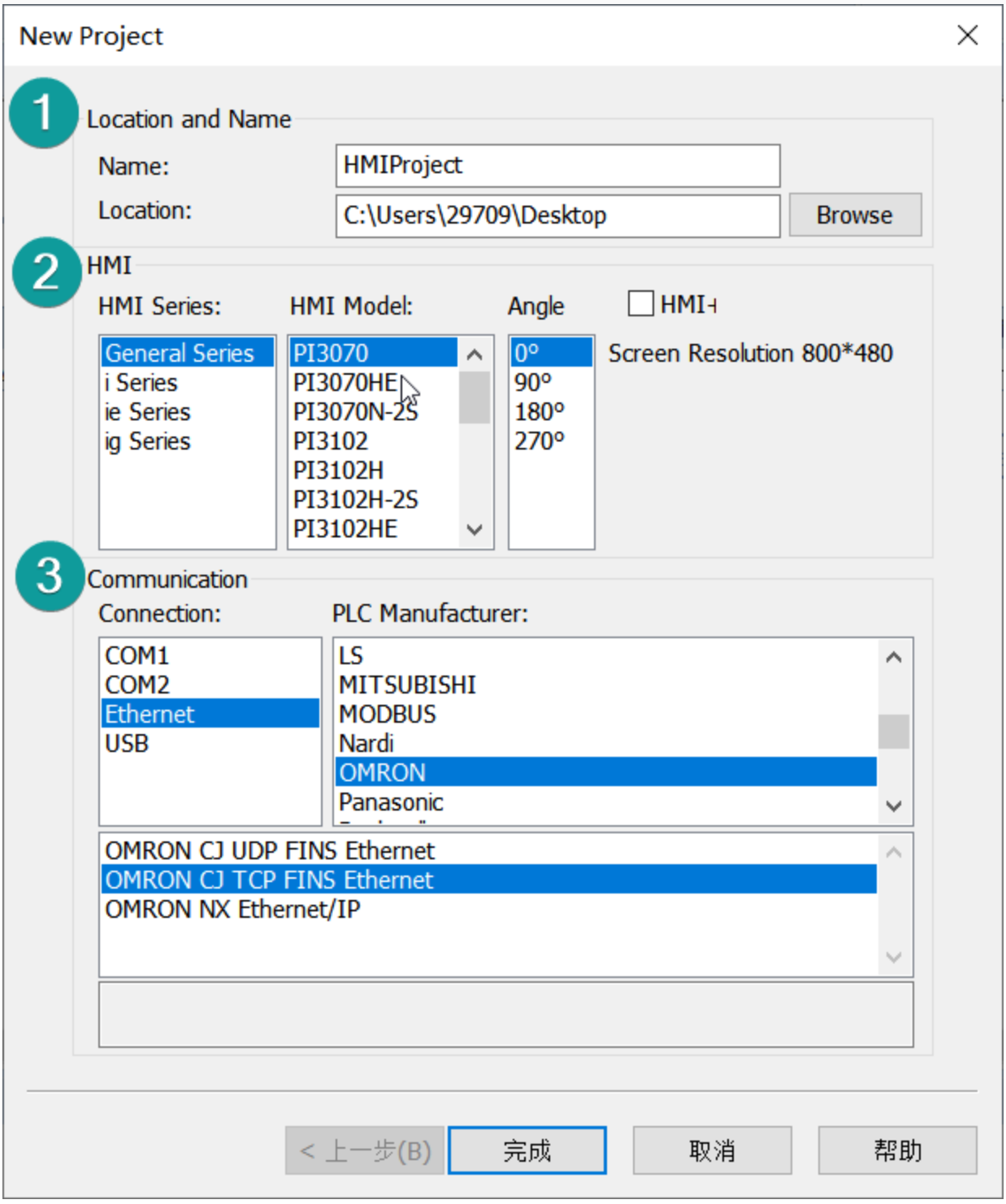
Type	Device registers	HMI registers	Format	Range	Note
Bit	CIO	CIO	CIO d	0~99999	

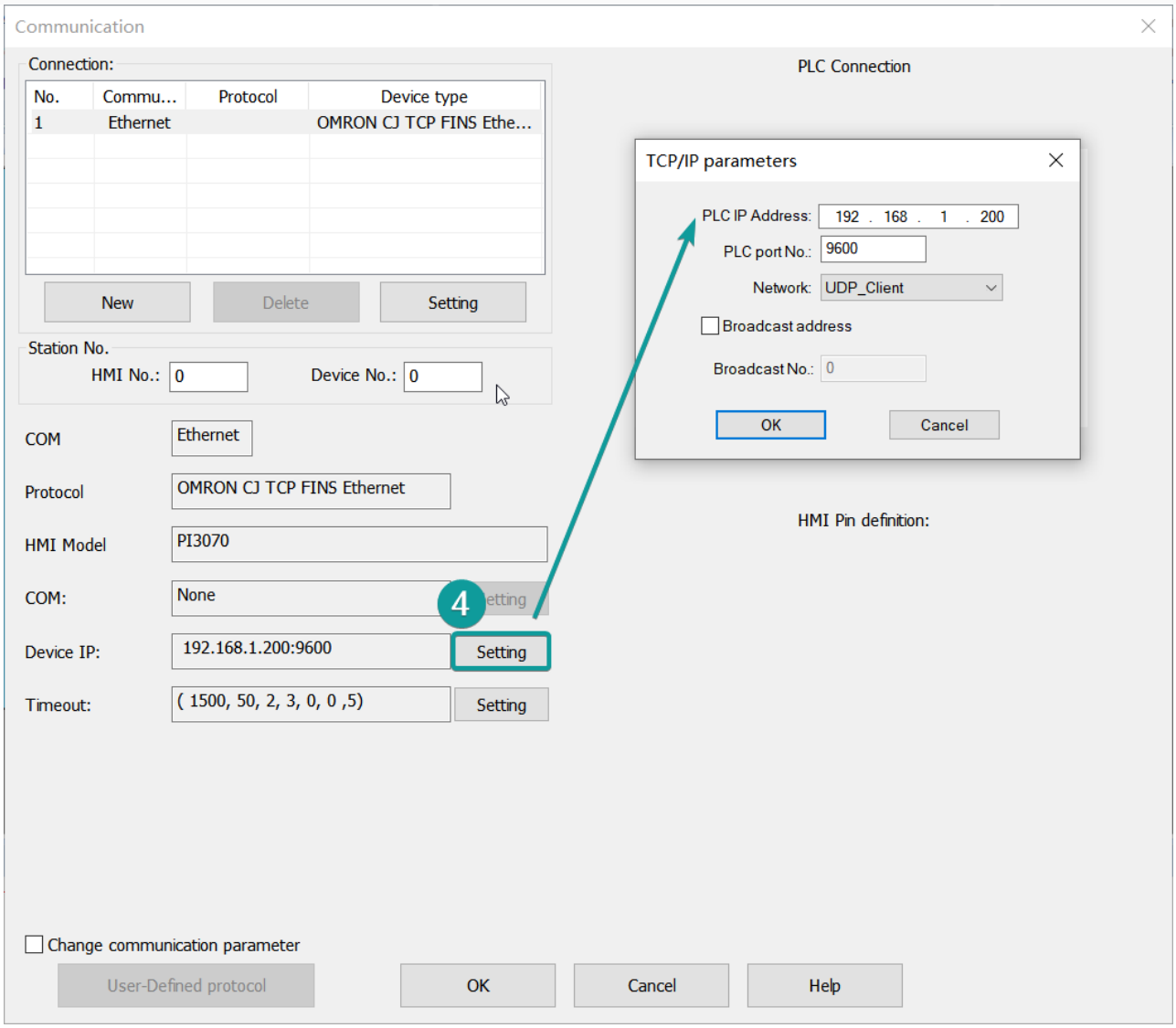
Bit	W	W	W d	0~99999	
Bit	D	D	D d	0~99999	
Bit	H	H	H d	0~99999	
Bit	A	A	A d	0~99999	
Bit	T	T	T h	0~99999	
Bit	CF	CF	CF d	0~99999	
Bit	FF	FF	FF d	0~99999	
Bit	C	C	C d	0~99999	
Bit	EM0	EM0	EM0 d	0~99999	
Bit	EM1	EM1	EM1 d	0~99999	
Bit	EM2	EM2	EM2 d	0~99999	
Bit	EM3	EM3	EM3 d	0~99999	
Bit	EM4	EM4	EM4 d	0~99999	
Bit	EM5	EM5	EM5 h	0~99999	
Bit	EM6	EM6	EM6 d	0~99999	
Bit	EM7	EM7	EM7 d	0~99999	

Bit	EM8	EM8	EM8 d	0~99999	
Bit	EM9	EM9	EM9 d	0~99999	
Bit	EMA	EMA	EMA d	0~99999	
Bit	EMB	EMB	EMB d	0~99999	
Bit	EMC	EMC	EMC d	0~99999	
Bit	Lamp	Lamp	Lamp d	0~0	
Word	CIO	CIO	CIO d	0~99999	
Word	W	W	W d	0~99999	
Word	D	D	D d	0~99999	
Word	H	H	H d	0~99999	
Word	A	A	A d	0~99999	
Word	T	T	T h	0~99999	
Word	CF	CF	CF d	0~99999	
Word	FF	FF	FF d	0~99999	
Word	C	C	C d	0~99999	
Word	EM0	EM0	EM0 d	0~99999	

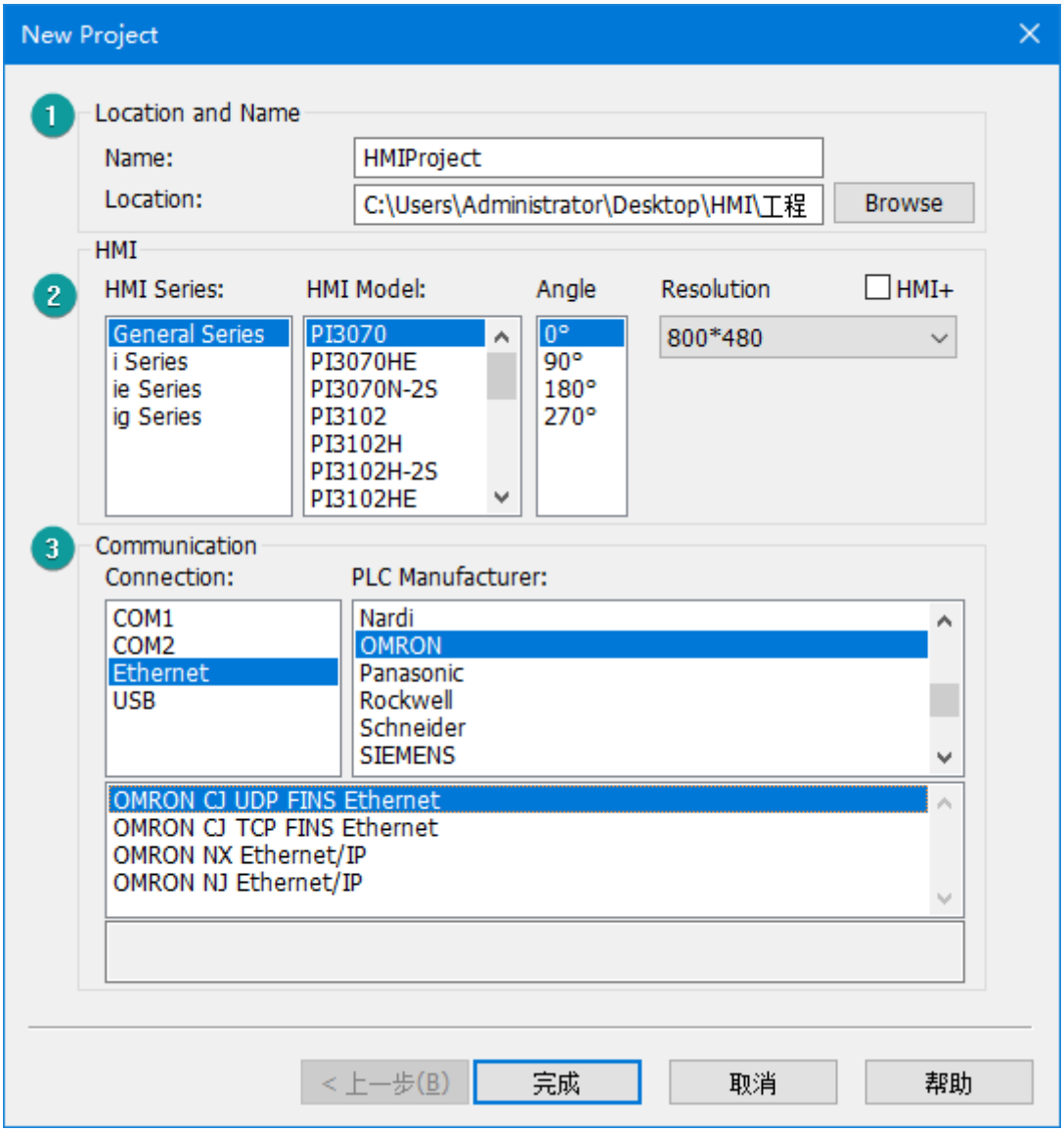
Word	EM1	EM1	EM1 d	0~99999	
Word	EM2	EM2	EM2 d	0~99999	
Word	EM3	EM3	EM3 d	0~99999	
Word	EM4	EM4	EM4 d	0~99999	
Word	EM5	EM5	EM5 h	0~99999	
Word	EM6	EM6	EM6 d	0~99999	
Word	EM7	EM7	EM7 d	0~99999	
Word	EM8	EM8	EM8 d	0~99999	
Word	EM9	EM9	EM9 d	0~99999	
Word	EMA	EMA	EMA d	0~99999	
Word	EMB	EMB	EMB d	0~99999	
Word	EMC	EMC	EMC d	0~99999	
Word	IR	IR	IR d	0~99999	
Word	DR	DR	DR d	0~99999	

Configure the communication protocol

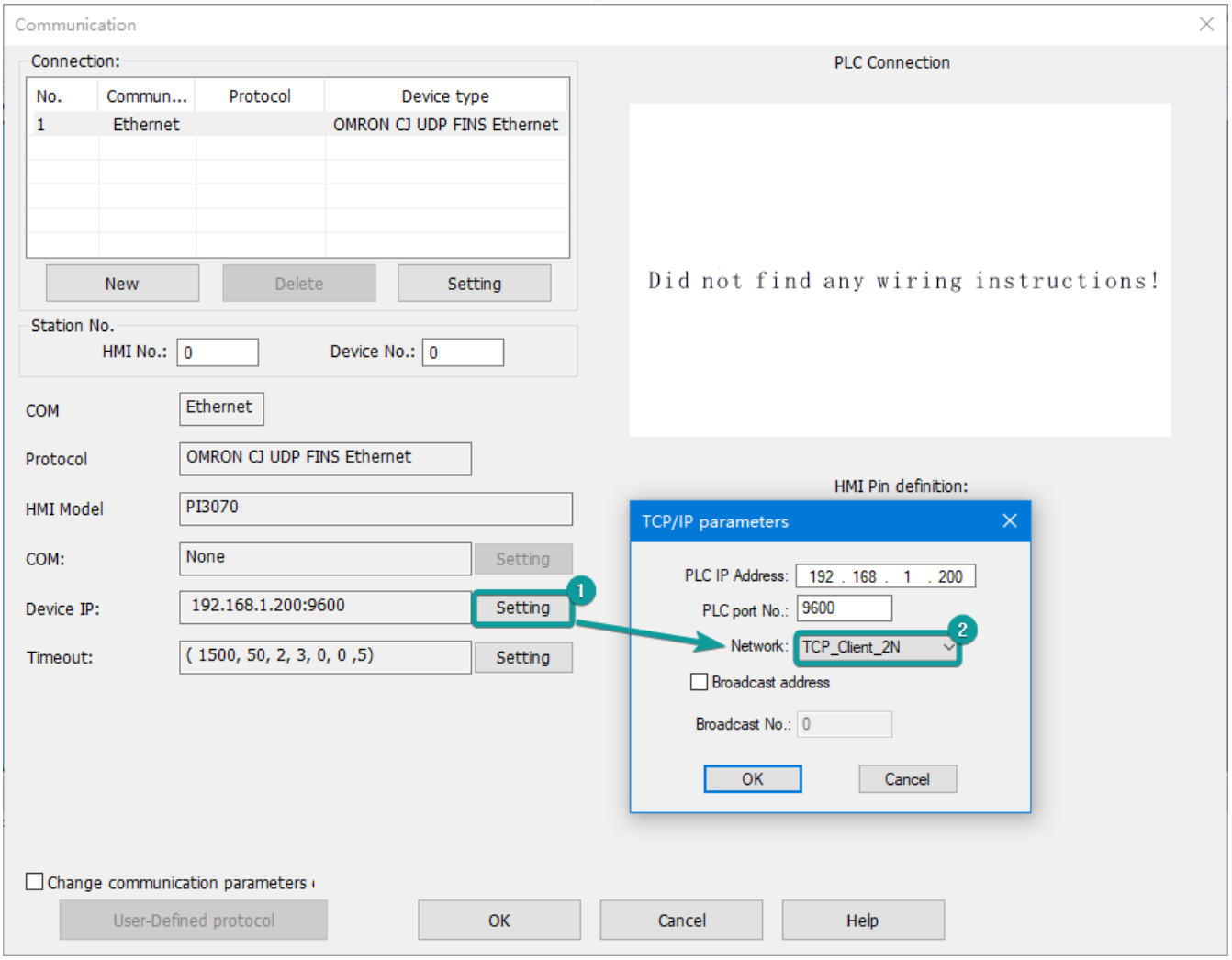

New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI-H
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
LS
MITSUBISHI
MODBUS
Nardi
OMRON
Panasonic
OMRON CJ UDP FINS Ethernet
OMRON CJ TCP FINS Ethernet
OMRON NX Ethernet/IP
< 上一步(B)
完成
取消
帮助



Configure CJ1W-EIP21 connect with HMI



Select TCP_Client_2N



Cable Wiring

Pin Definition Diagram

CP1E/CP1H serial protocol

Supported device: OMRON CS1(CP1E/CP1H)

HMI Settings

Items	Settings	Note
Protocol	OMRON CS1（CP1E/CP1H）	
Connection	RS232 (9600, 2, 7, EVEN)	
Port No.	None	
PLC station No.	0	

Address List

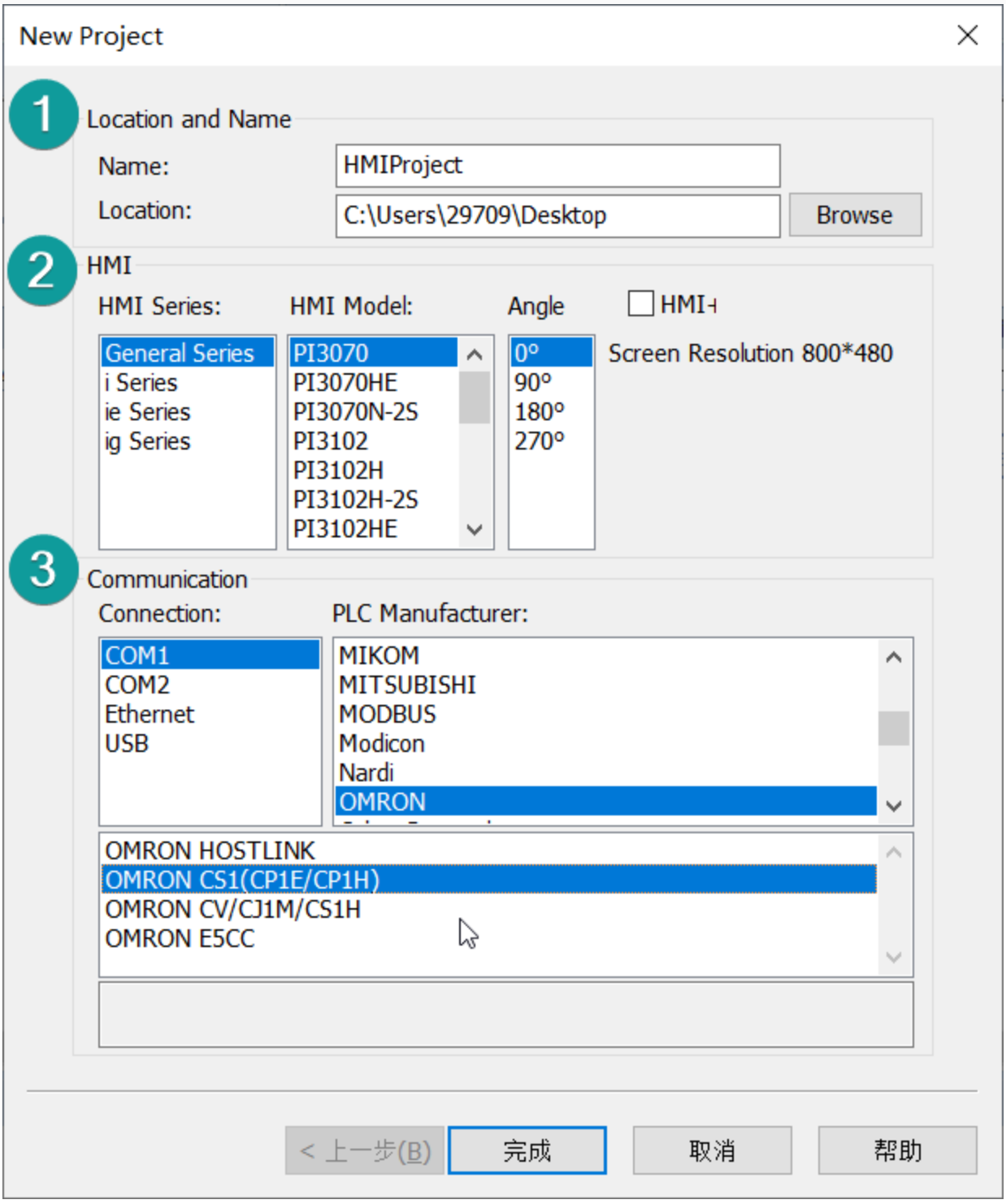
Type	Device registers	HMI registers	Format	Range	Note
Bit	CIO	CIO	CIO d	0~99999	
Bit	W	W	W d	0~99999	
Bit	D	D	D d	0~99999	
Bit	H	H	H d	0~99999	
Bit	A	A	A d	0~99999	
Bit	TF	T	T h	0~99999	
Bit	CF	CF	CF d	0~99999	
Bit	T	FF	FF d	0~99999	
Bit	C	C	C d	0~99999	

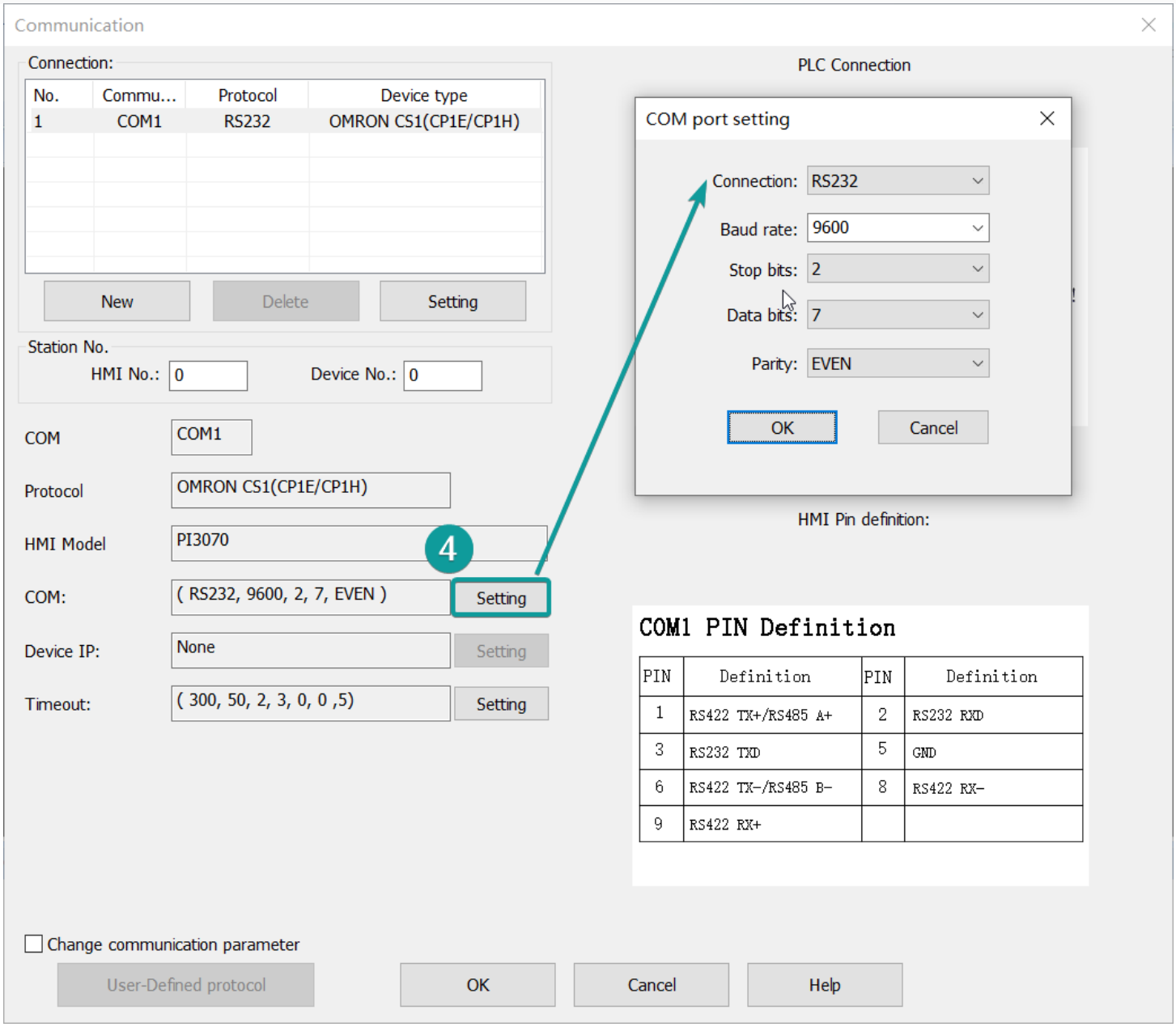
Bit	EM0	EM0	EM0 d	0~99999	
Bit	EM1	EM1	EM1 d	0~99999	
Bit	EM2	EM2	EM2 d	0~99999	
Bit	EM3	EM3	EM3 d	0~99999	
Bit	EM4	EM4	EM4 d	0~99999	
Bit	EM5	EM5	EM5 h	0~99999	
Bit	EM6	EM6	EM6 d	0~99999	
Bit	EM7	EM7	EM7 d	0~99999	
Bit	EM8	EM8	EM8 d	0~99999	
Bit	EM9	EM9	EM9 d	0~99999	
Bit	EMA	EMA	EMA d	0~99999	
Bit	EMB	EMB	EMB d	0~99999	
Bit	EMC	EMC	EMC d	0~99999	
Word	CIO	CIO	CIO d	0~99999	
Word	W	W	W d	0~99999	
Word	D	D	D d	0~99999	

Word	H	H	H d	0~99999	
Word	A	A	A d	0~99999	
Word	T	T	T h	0~99999	
Word	CIO	CF	CF d	0~99999	
Word	C	C	C d	0~99999	
Word	EM0	EM0	EM0 d	0~99999	
Word	EM1	EM1	EM1 d	0~99999	
Word	EM2	EM2	EM2 d	0~99999	
Word	EM3	EM3	EM3 d	0~99999	
Word	EM4	EM4	EM4 d	0~99999	
Word	EM5	EM5	EM5 h	0~99999	
Word	EM6	EM6	EM6 d	0~99999	
Word	EM7	EM7	EM7 d	0~99999	
Word	EM8	EM8	EM8 d	0~99999	
Word	EM9	EM9	EM9 d	0~99999	
Word	EMA	EMA	EMA d	0~99999	

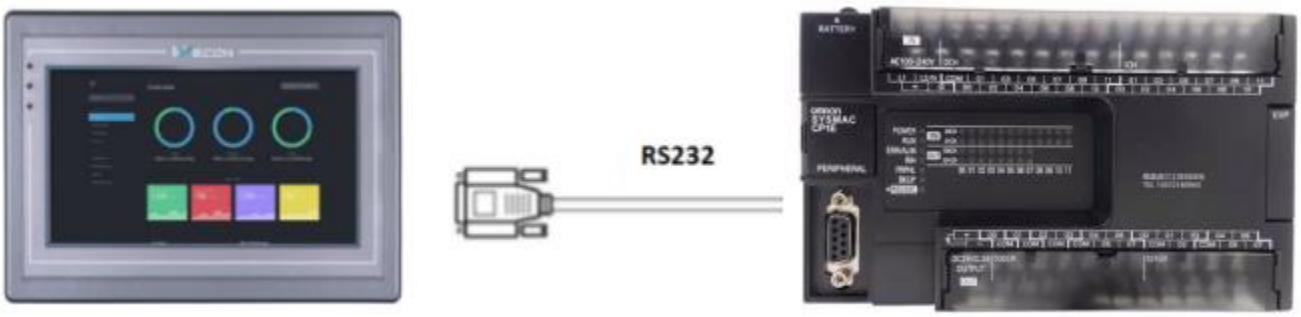
Word	EMB	EMB	EMB d	0~99999	
Word	EMC	EMC	EMC d	0~99999	
Word	IR	IR	IR d	0~99999	
Word	DR	DR	DR d	0~99999	

Configure the communication protocol

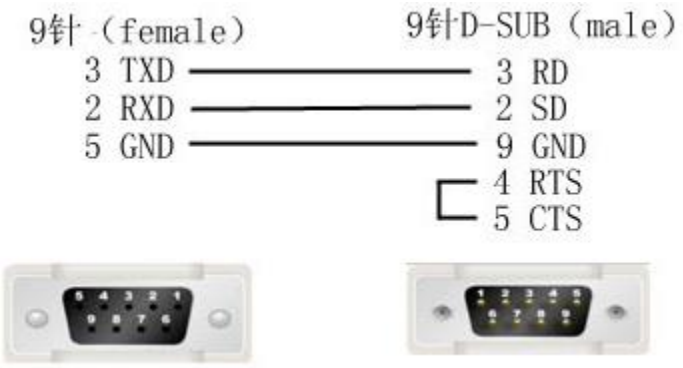

New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI-H
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
MIKOM
MITSUBISHI
MODBUS
Modicon
Nardi
OMRON
OMRON HOSTLINK
OMRON CS1(CP1E/CP1H)
OMRON CV/CJ1M/CS1H
OMRON E5CC
< 上一步(B)
完成
取消
帮助



Cable Wiring



Pin Definition Diagram



EC55 Protocol

Supported device: EC55 temperature instrument

1）HMI Settings

Items	Settings	Note
Protocol	Omron EC55	
Connection	RS485 (9600, 2, 7, EVEN)	
Port No.	None	
PLC station No.	0	

2）Address List

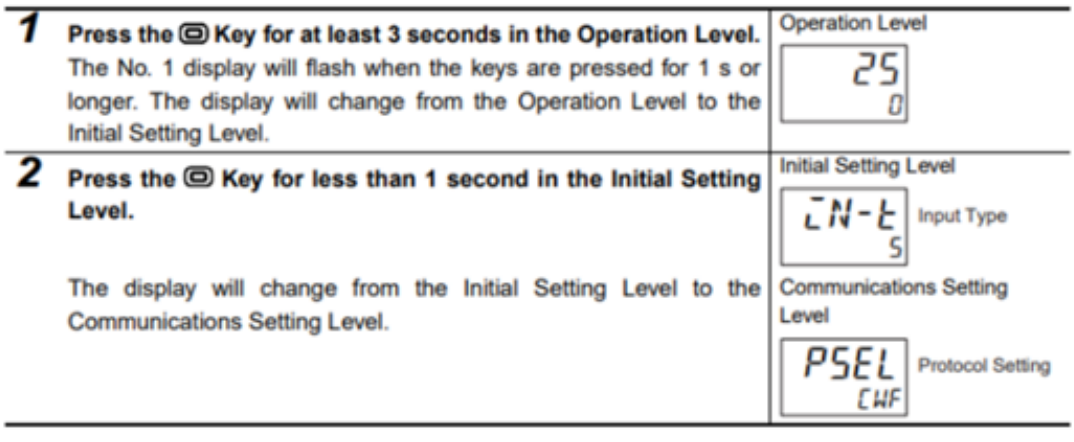
Type	Register	Device range	HMI range	Function
Double word	C0	0-13 (Hex)	0-19	Set read only parameter for area 0
	C1	0-4D(Hex)	0-77	Set Read/Write parameter for area 0
	C3	0-CD(Hex)	0-205	Set Read/Write parameter for area 1

Word	80	0-13(Hex)	0-19	Set read only parameter in area 0
	81	0-4D(Hex)	0-77	Set Read/Write parameter in area 0
	83	0-CD(Hex)	0-205	Set Read/Write parameter in area 1
	CP	-	0-6	Read controller intrinsic property
	CS	-	0-2	Read controller states
	CA	-	0-17	Action command

3）Device Settings

Omron E5CC PLC configuration

After entering the Communication Settings menu, please set the parameters to the default values for the following table. Press the cycle key of the instrument to enter the next setting.

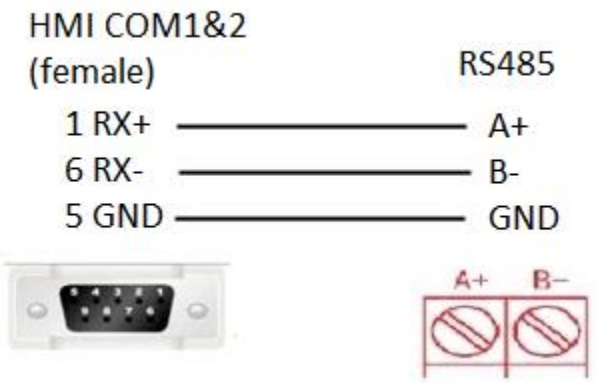


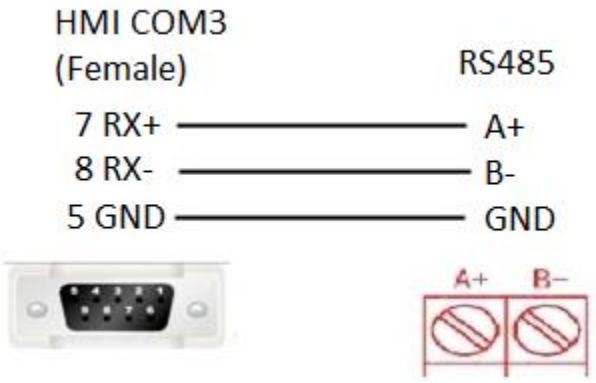
According to PLC configuration and communication port configuration information of the HMI, provide the corresponding steps and configuration screenshots. This configuration needs to communicate properly with the above PLC configuration. The project settings are as follows

Item	Display	Set values	Settings	Default
Protocol setting	PSEL	CWF Mod	CompoWay/F/Modbus	CWF
Communications Unit No.	U-No	0 to 99	0 to 99	1
Communications baud rate	bPS	9.6/19.2/38.4/57.6 (Kbps)	9.6/19.2/38. 4/57.6 (kbps)	9.6
Communications data length	LEN	7 or 8 bits	7 or 8 bits	7
Stop bits	Sbit	1 or 2 bits	1 or 2 bits	2
Communications parity	PRTY	NONE EVEN odd	None, Even, Odd	EVEN
Send data wait time	SdWt	0 to 99	0 to 99 (ms)	20

✎**Note:** The communication settings for HMI should be consistent with this setting.

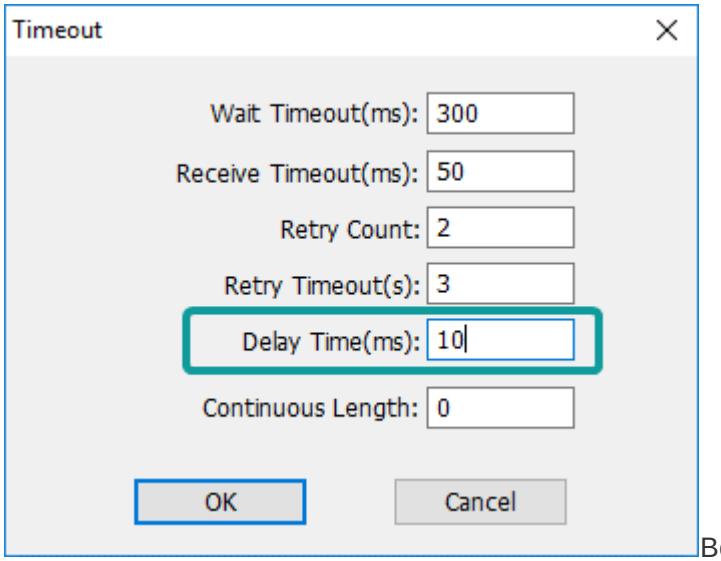
Cable Wiring





✎**Note:**

- COM3 only available in PI8000/PI9000 series.
- CA address could not support continuous writing function ;

- Because of CP address intrinsic property: read control intrinsic property, so please place the character input part in use. Set address with CP0 and character length 10, used to display controller type. And place a number input part, set address with CP5 (cache size). Do not place other CP type address without CP0 in screen, otherwise CP type address is invalid
- When set value into read & write address, it is necessary to switch the temperature instrument meter to the corresponding interface according to the menu of the instrument where the address locates, so that the value could be written, otherwise, the value could not be written; When the communication write setting of the instrument is turned off, the writing function is invalid. Writing function could be opened by using the 00 address of the CA register, which write 01 value.
- When continuous writing of a value to a read-write address, please make sure all continuous writing address could be written. Otherwise, if one of these addresses could not be written, then all continuous writing commands will fail.
- Because of the mechanism problem, this protocol could not support CompoWay/F function that is read-write function of variables in protocol document.
- When using double-word address, set the data format to 32 bits, otherwise the read/write function is unable.
- Please set the communication delay time of 10ms in setting, to avoid that the instrument may not be able to communicate in a short time due to too fast data access and too much connection requests.
- 

Because of the particularity of the instrument, it is necessary to write the value of the address in the menu interface corresponding to the address, and to enter the menu where the address locates, so that the value could be written.

EtherNet/IP NX series Protocol

Supported series: Omron NX/NJ series

HMI Setting

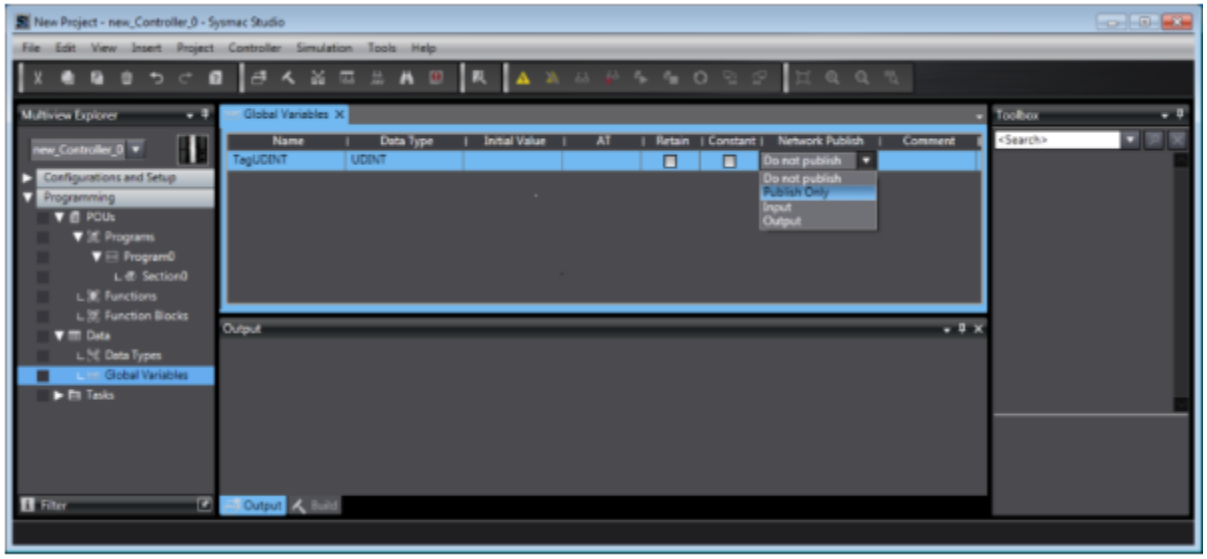
Items	Settings	Note
Protocol	Omron NX Ethernet/IP	
Connection	Ethernet	

Port No.	44818	
PLC station No.	1	

Instruction

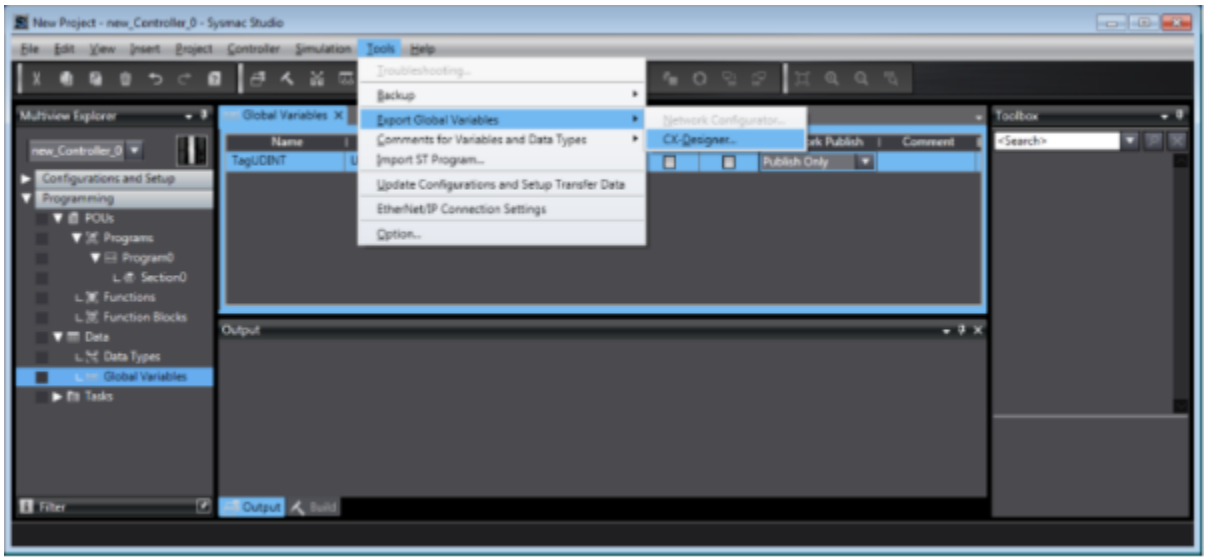
1) In Sysmac Studio, please select [Publish Only] for [Network Publish] when setting address tag.

2) When [Do not publish] is selected for a tag, different import methods may lead to different results. When import tags by [Get Tags from Device], the tag will be eliminated. If [Import tags] is selected, the tags will be imported, but the communication will not succeed.



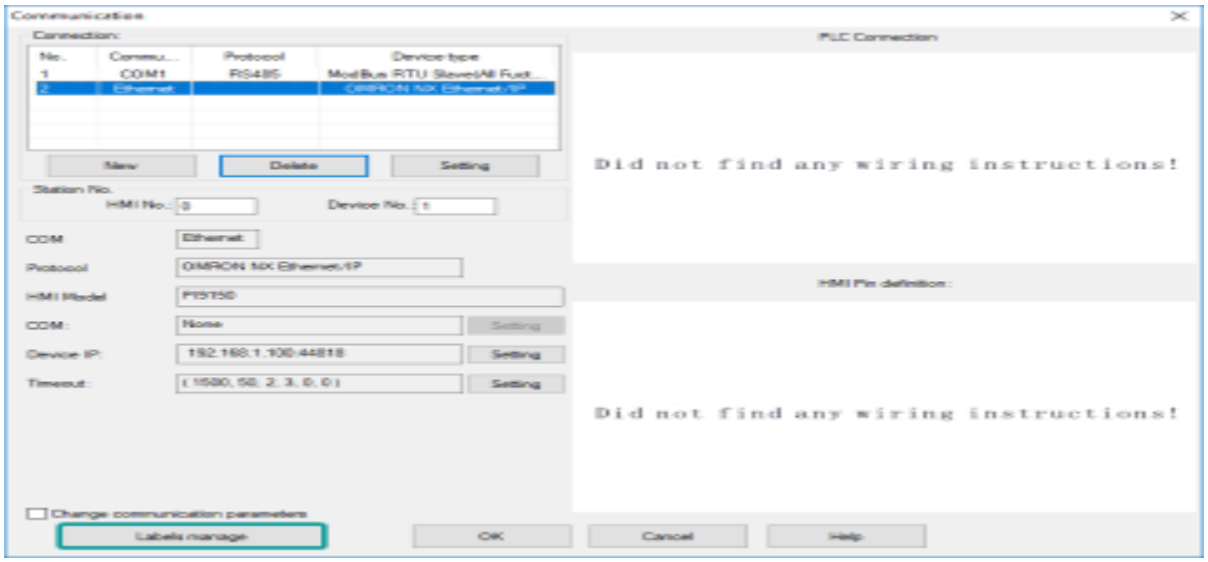
Export labels from Sysmac Studio

Launch Sysmac Studio, under Global Variables create the address labels, and thenselect [Tools] -> [Export Global Variables];

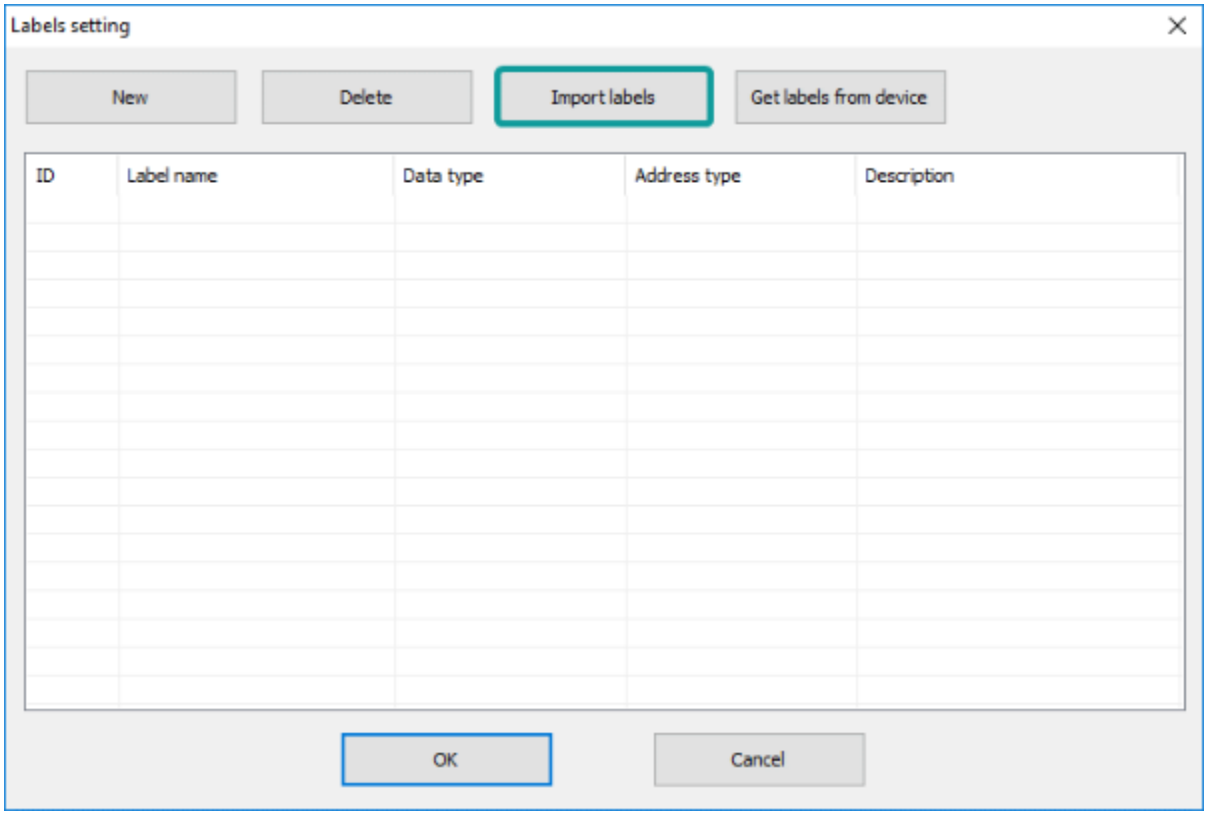


Launch PIStudio, in [Communication] Settings add Omron NX Ethernet/IP protocol;

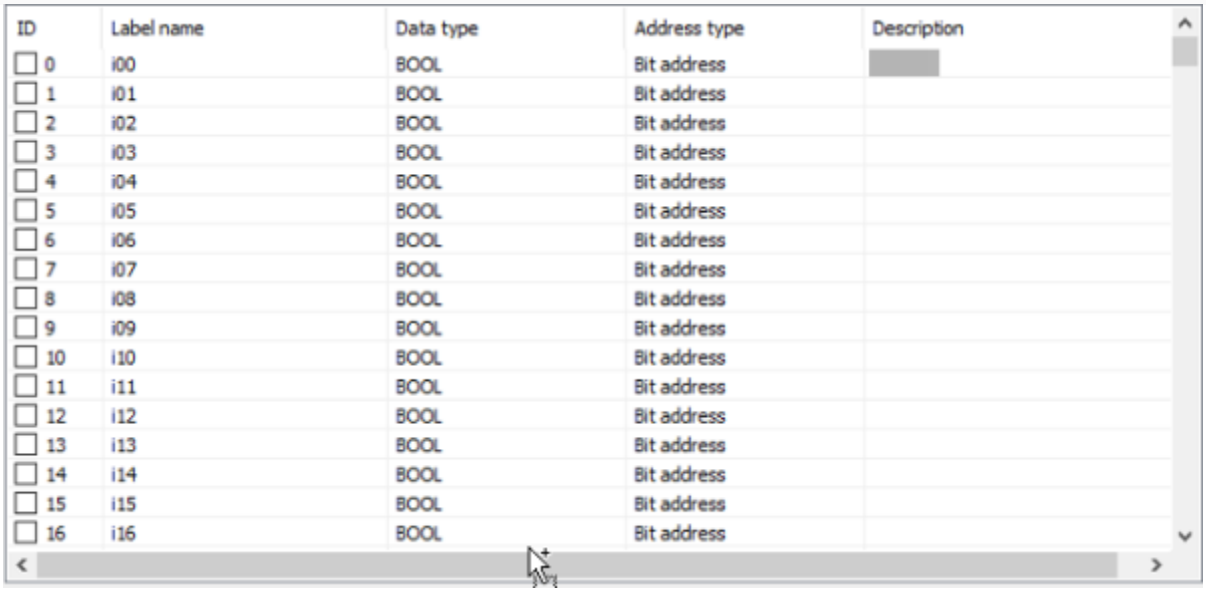
Click [Label manage];



Click [Import labels] and then select the file exported in step 1;



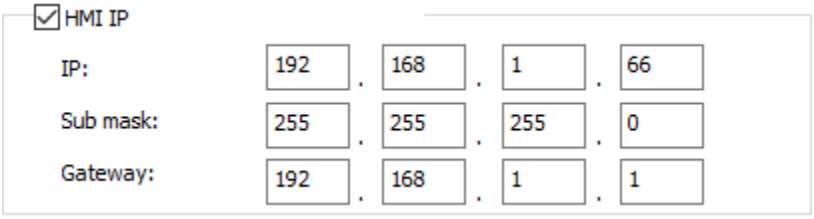
The Import Status field shows the result, click [OK] to finish importing address labels;



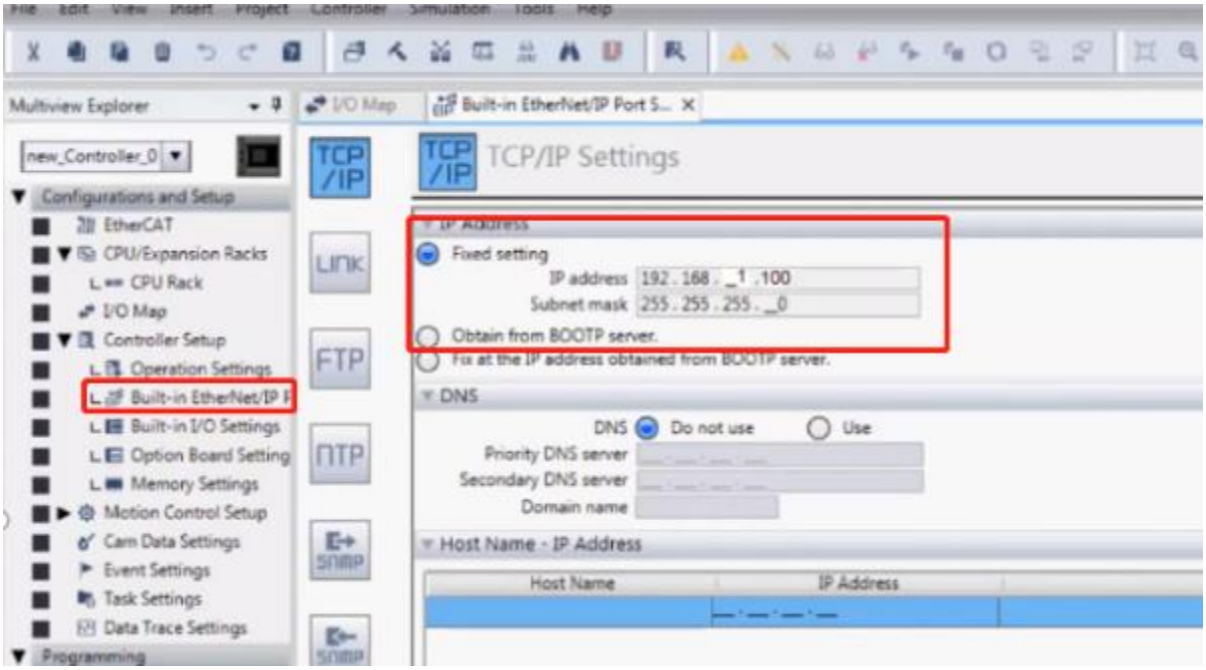
ID	Label name	Data type	Address type	Description
0	i00	BOOL	Bit address	
1	i01	BOOL	Bit address	
2	i02	BOOL	Bit address	
3	i03	BOOL	Bit address	
4	i04	BOOL	Bit address	
5	i05	BOOL	Bit address	
6	i06	BOOL	Bit address	
7	i07	BOOL	Bit address	
8	i08	BOOL	Bit address	
9	i09	BOOL	Bit address	
10	i10	BOOL	Bit address	
11	i11	BOOL	Bit address	
12	i12	BOOL	Bit address	
13	i13	BOOL	Bit address	
14	i14	BOOL	Bit address	
15	i15	BOOL	Bit address	
16	i16	BOOL	Bit address	

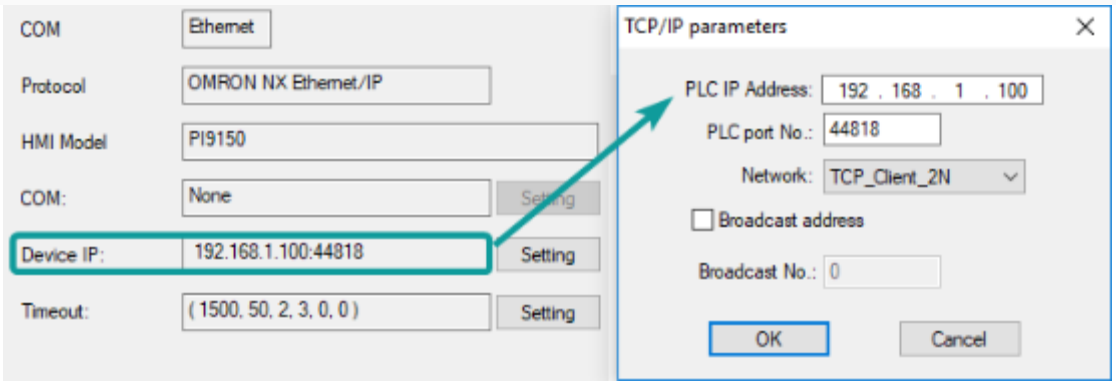
Communication Settings

Enable HMI Ethernet in [Project Settings];

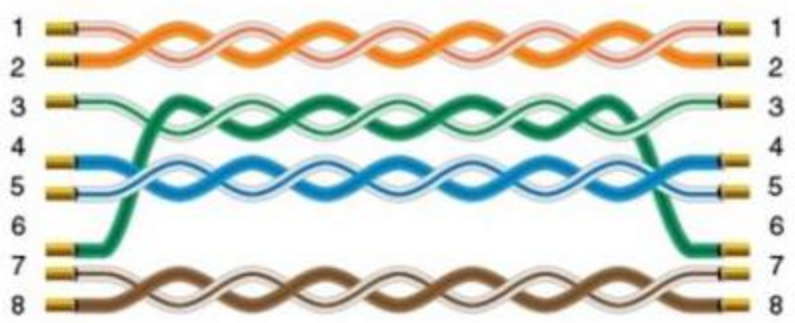


Set PLC IP in [Device IP] settings;





Cable Wiring



CV/CJ1M/CS1H

HMI Setting:

Parameters	Recommended
PLC type	OMRON CV/CJ1M/CS1H Series
PLC I/F	RS232
Baud rate	9600
Data bits	7
Parity	Even
Stop bits	2

PLC sta. no.	0

PLC Setting:

Communication mode	Host Link Protocol / PLC must be set to monitor mode

Device Address:

Bit/Word	Device type	Format	Range	Memo
B	CIO	DDDDdd	0 ~ 409515	I/O and Internal Relay
B	W	DDDDdd	0 ~ 409515	Hold Relay
B	D	DDDDdd	0 ~ 409515	Link Relay
B	H	DDDDdd	0 ~ 409515	
B	A	DDDDdd	0 ~ 409515	
B	TF	DDDDdd	0 ~ 409515	
B	CF	DDDDdd	0 ~ 409515	Auxiliary Relay
B	T	DDDD	0 ~ 4095	
B	C	DDDD	0 ~ 4095	

B	EM0	DDDDDdd	0 ~ 99999.15	
B	EM1	DDDDDdd	0 ~ 99999.15	
B	EM2	DDDDDdd	0 ~ 99999.15	
B	EM3	DDDDDdd	0 ~ 99999.15	
B	EM4	DDDDDdd	0 ~ 99999.15	
B	EM5	DDDDDdd	0 ~ 99999.15	
B	EM6	DDDDDdd	0 ~ 99999.15	
B	EM7	DDDDDdd	0 ~ 99999.15	
B	EM8	DDDDDdd	0 ~ 99999.15	
B	EM9	DDDDDdd	0 ~ 99999.15	
B	EMA	DDDDDdd	0 ~ 99999.15	
B	EMB	DDDDDdd	0 ~ 99999.15	

B	EMC	DDDDDdd	0 ~ 99999.15	
B	Lamp	D	0~0	

Bit/Word	Device type	Format	Range	Memo
W	LR_W	DDDD	0 ~ 4095	
W	TC	DDD	0 ~ 511	
W	DM	DDDD	0 ~ 9999	Data Register

Wiring Diagram:

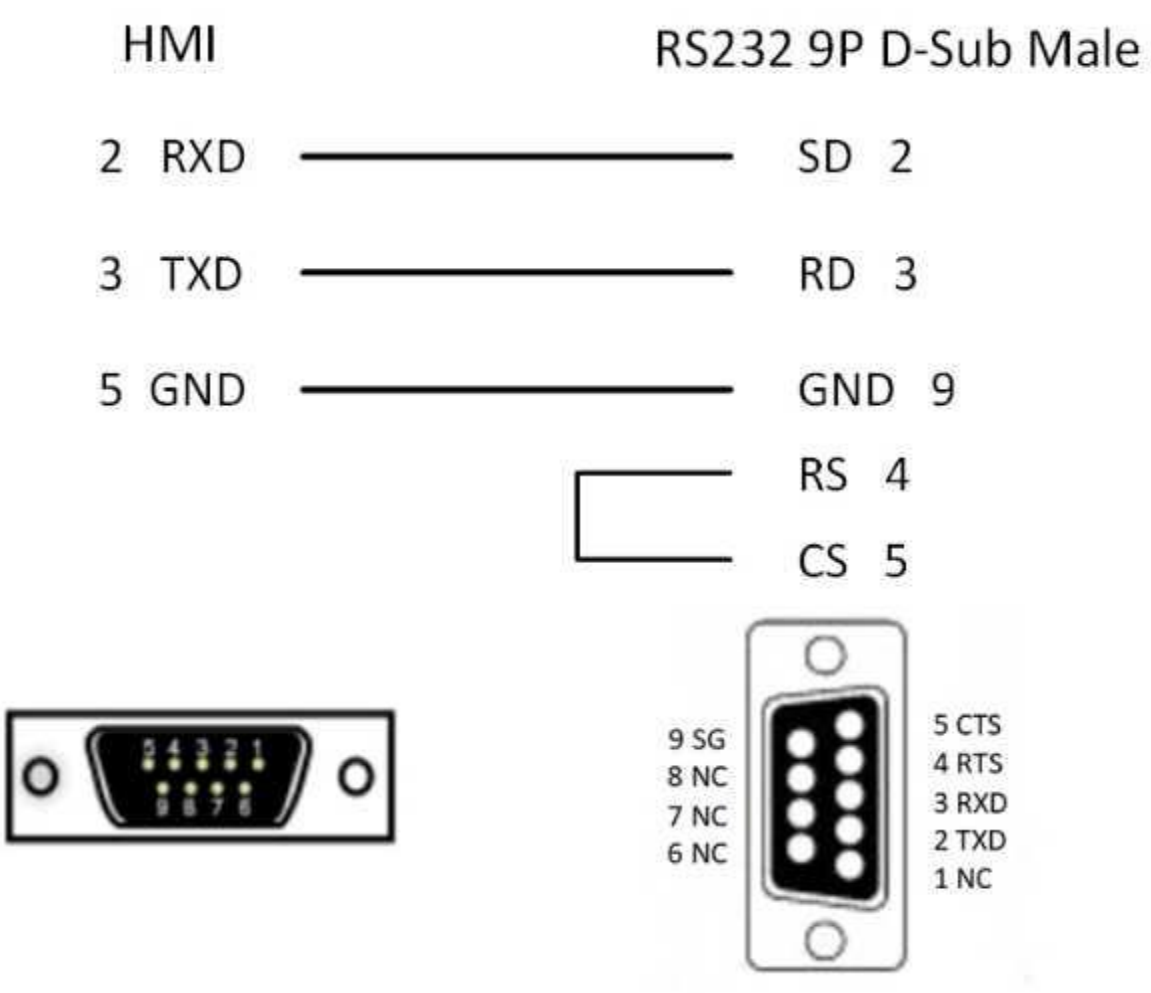
RS-232

CPU Port (CPM2A,CQM1/1H,C200H/HS/ALPHA series)

Communication Module:

CPM1-CIF01 adapter (for CPM1/CPM1A/CPM2A series, CQM1/CQM1H series) CPM1H-SCB41 communication module (for CQM1H-CPU51/61)

The serial port pin assignments may vary between HMI models, please click the following link for more information.



Create communication with Xinje PLC

XC serial protocol

HMI Settings

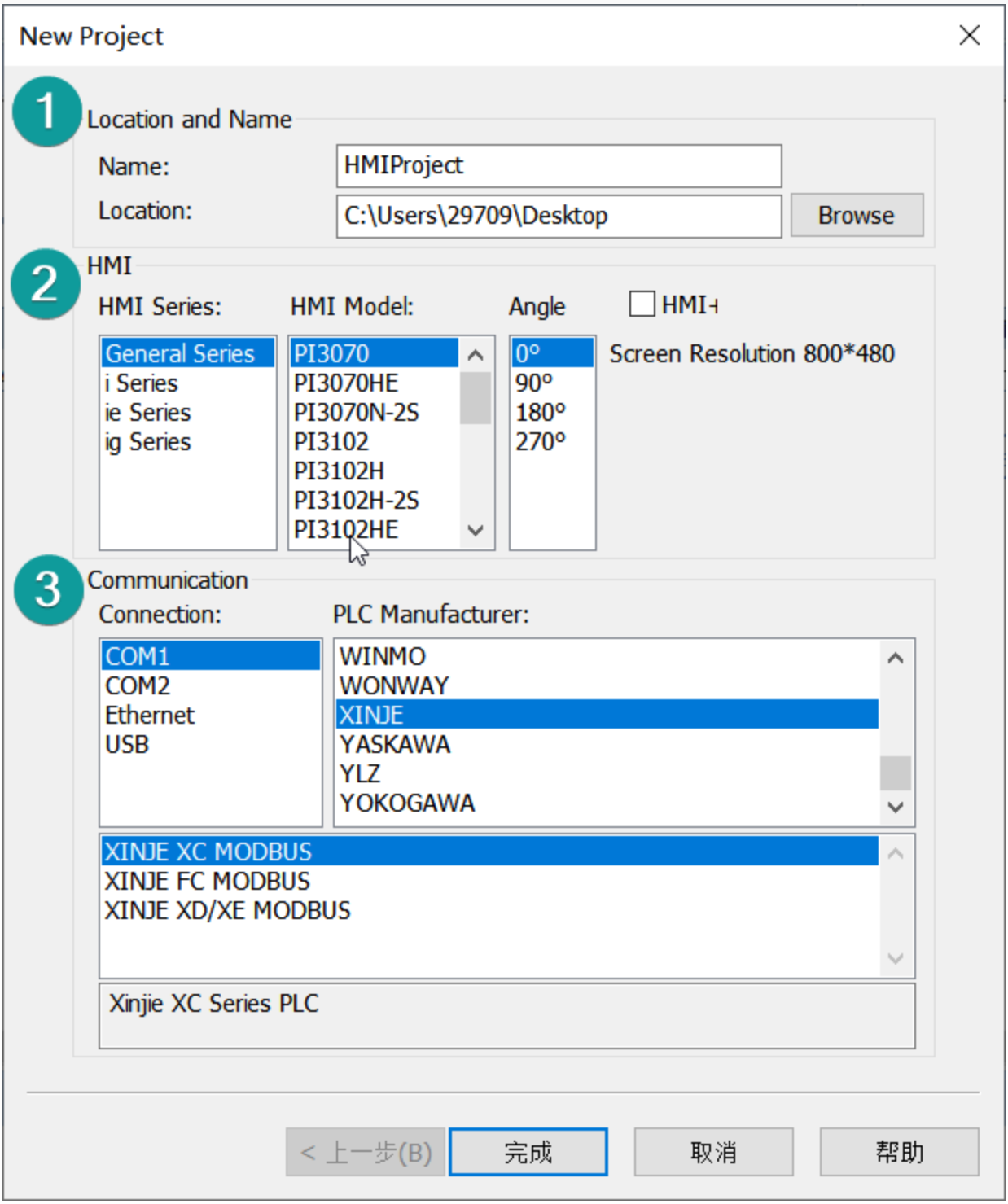
Item	Settings	Note
Protocol	XINJE XC MODBUS	
Connection	RS232	
Baud rate	19200	

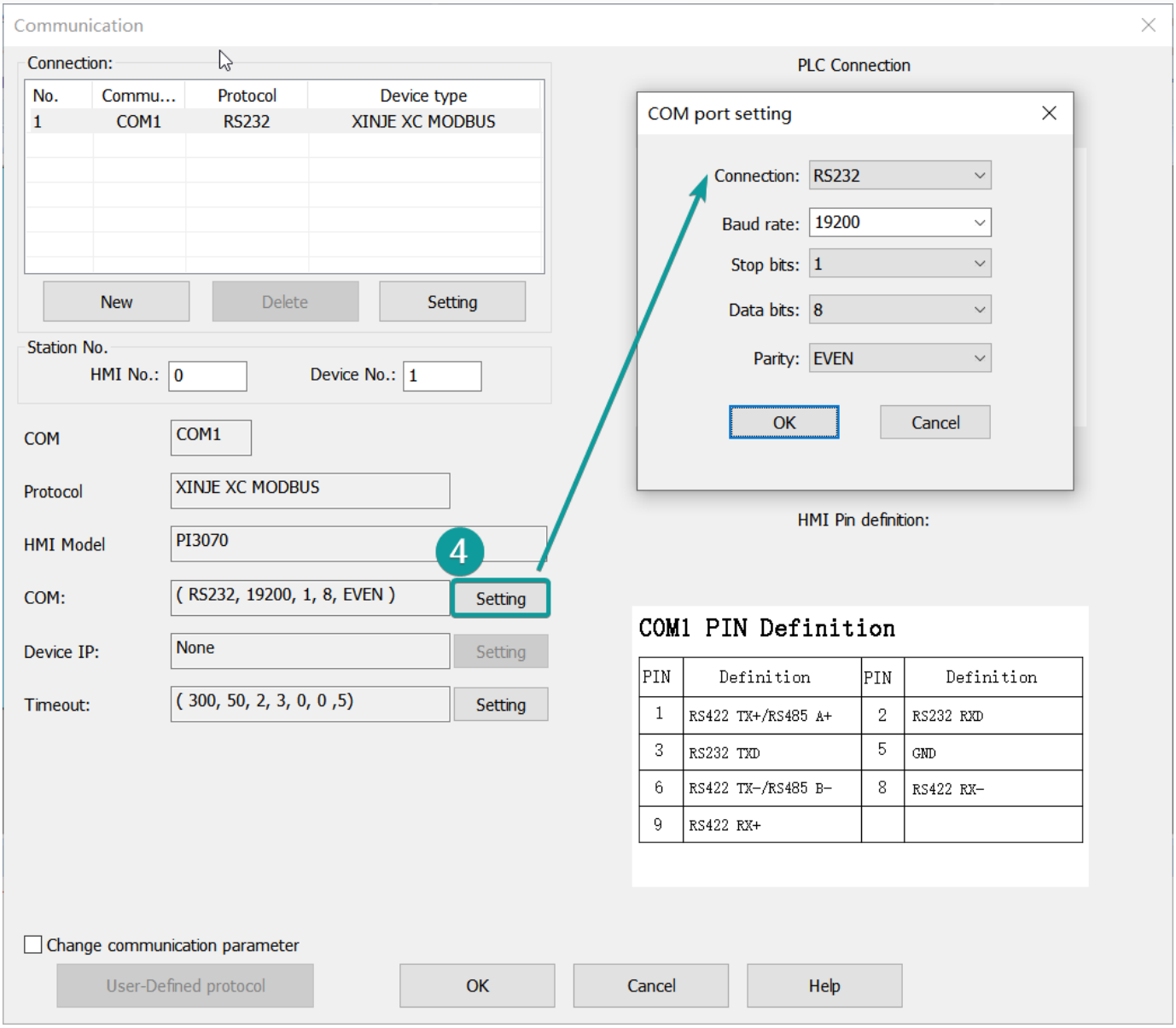
Data bit	8	
Parity	EVEN	
Stop bit	1	
PLC station No.	1	

Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	M	M	M d	0~8511	
Bit	X	X	X o	0~1747	
Bit	Y	Y	Y o	0~1747	
Bit	S	S	S d	0~1023	
Bit	T	T	T d	0~4095	
Bit	C	C	C d	0~634	
Word	D	D	D d	0~8511	
Word	TD	TD	TD d	0~618	
Word	CD	CD	CD d	0~634	
Word	FD	FD	FD d	0~8511	

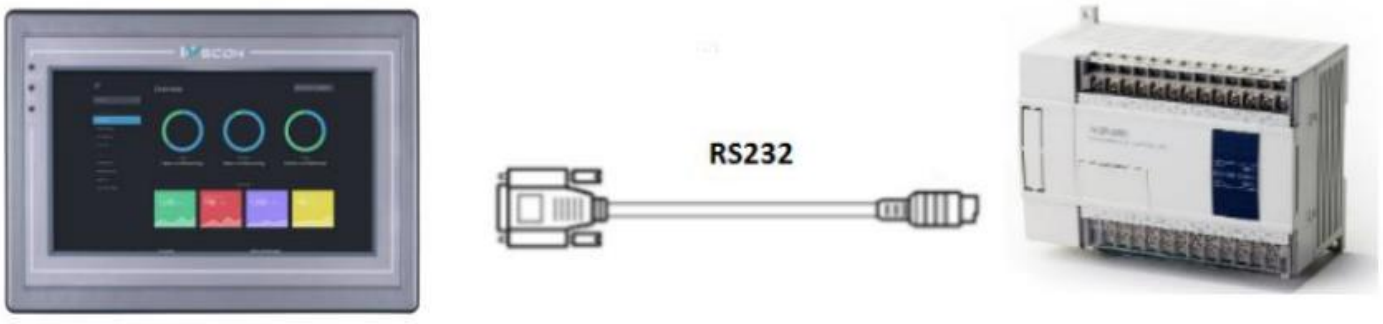
Configure the communication protocol


New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
WINMO
WONWAY
XINJE
YASKAWA
YLZ
YOKOGAWA
XINJE XC MODBUS
XINJE FC MODBUS
XINJE XD/XE MODBUS
Xinjie XC Series PLC
< 上一步(B)
完成
取消
帮助

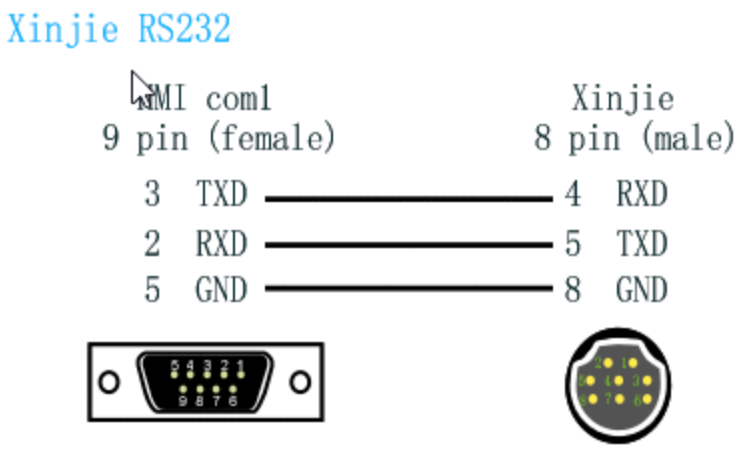


Cable Wiring

Figure



Pin Definition Diagram



XD serial protocol

HMI Settings

Supported Series: Xinjie XD/XE Series PLC

Item	Settings	Note
Protocol	XINJE XD/XC MODBUS	
Connection	RS232	
Baud rate	19200	
Data bit	8	
Parity	EVEN	
Stop bit	1	
PLC station No.	1	

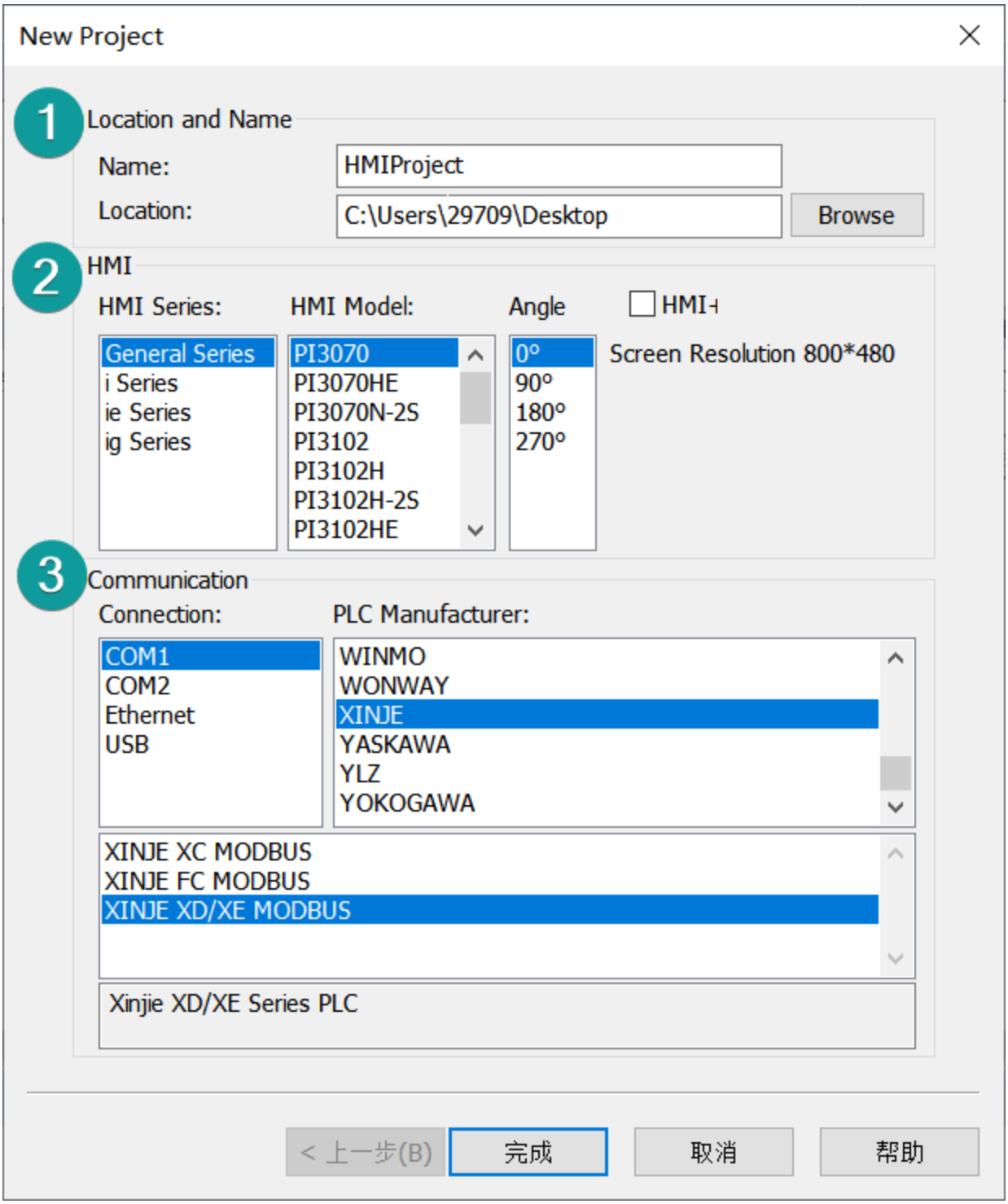
Address List

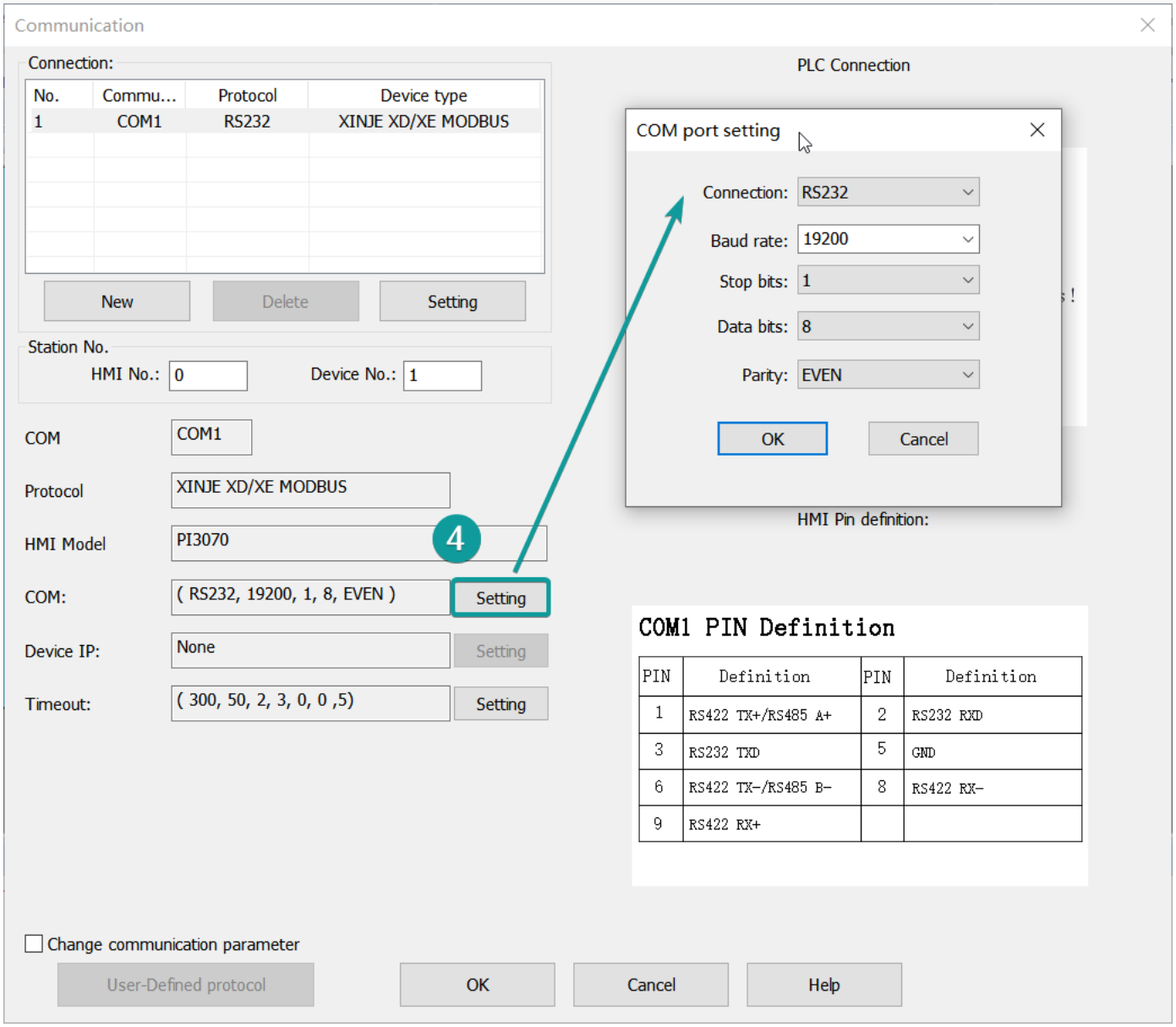
Type	Device registers	HMI registers	Format	Range	Note

Bit	M	M	M d	0~74999	
Bit	X1xx	X1xx	X1xx o	0~1177	
Bit	X2xx	X2xx	X2xx o	0~277	
Bit	X	X	X o	0~77	
Bit	Y1xx	Y1xx	Y1xx o	0~1177	
Bit	Y2xx	Y2xx	Y2xx o	0~277	
Bit	Y	Y	Y o	0~4095	
Bit	SM	SM	SM d	0~4999	
Bit	T	T	T d	0~4999	
Bit	C	C	C d	0~4999	
Bit	ET	ET	ET d	0~31	
Bit	SE	SE	SE d	0~31	
Bit	HM	HM	HM d	0~11999	
Bit	HSC	HSC	HSC d	0~39	
Bit	HS	HS	HS d	0~999	
Bit	HT	HT	HT d	0~1999	
Bit	HC	HC	HC d	0~1999	
Bit	S	S	S d	0~7999	
Word	D	D	D d	0~69999	
Word	ID	ID	ID d	0~99	
Word	ID1xx	ID1xx	ID1xx d	0~999	

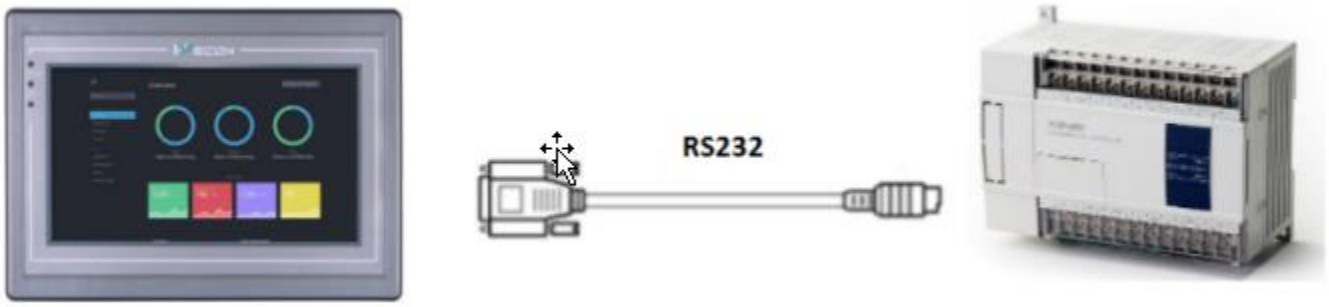
Word	ID2xx	ID2xx	ID2xx d	0~299	
Word	QD	QD	QD d	0~99	
Word	QD1xx	QD1xx	QD1xx d	0~999	
Word	QD2xx	QD2xx	QD2xx d	0~299	
Word	SD	SD	SD d	0~4999	
Word	TD	TD	TD d	0~575	
Word	CD	CD	CD d	0~575	
Word	ETD	ETD	ETD d	0~31	
Word	HD	HD	HD d	0~24999	
Word	HSD	HSD	HSD d	0~1023	
Word	HTD	HTD	HTD d	0~95	
Word	HCD	HCD	HCD d	0~95	
Word	HSCD	HSCD	HSCD d	0~31	
Word	FD	FD	FD d	0~8191	
Word	SFD	SFD	SFD d	0~5999	
Word	FS	FS	FS d	0~47	

Configure the communication protocol

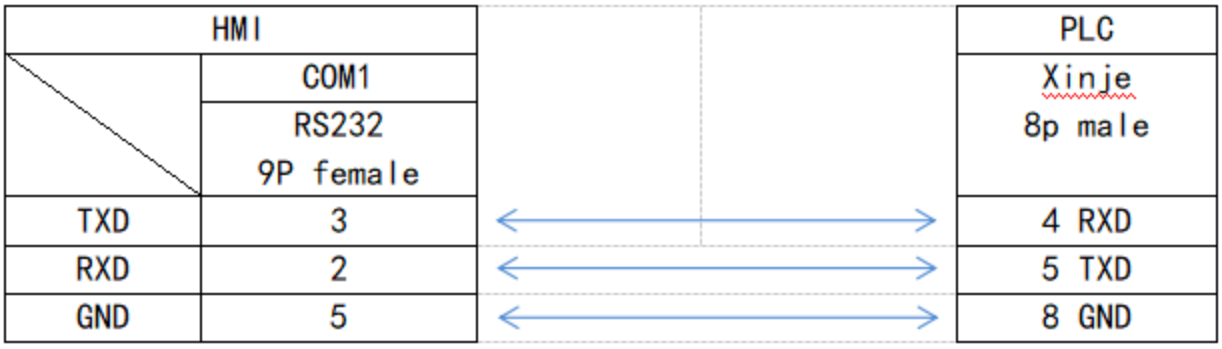

New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
WINMO
WONWAY
XINJE
YASKAWA
YLZ
YOKOGAWA
XINJE XC MODBUS
XINJE FC MODBUS
XINJE XD/XE MODBUS
Xinjie XD/XE Series PLC
< 上一步(B)
完成
取消
帮助



Cable Wiring



Pin Definition Diagram



Create communication with Inovance PLC

H3U serial protocol

HMI Settings

Item	Settings	Note
Protocol	INOVANCE H3U PLC	
Connection	RS422	
Baud rate	9600	
Data bit	7	
Parity	EVEN	
Stop bit	1	
PLC station No.	0	

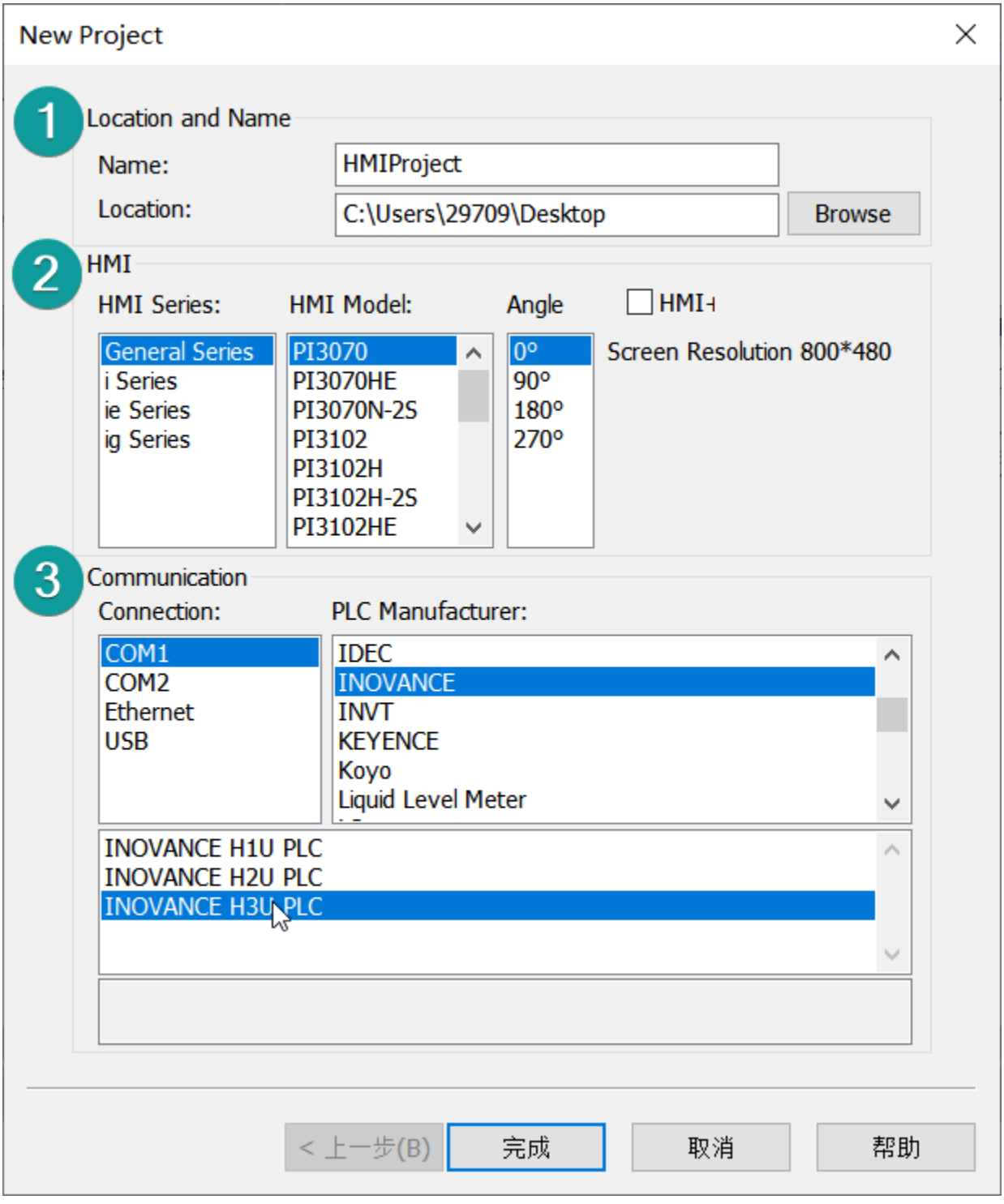
Address List

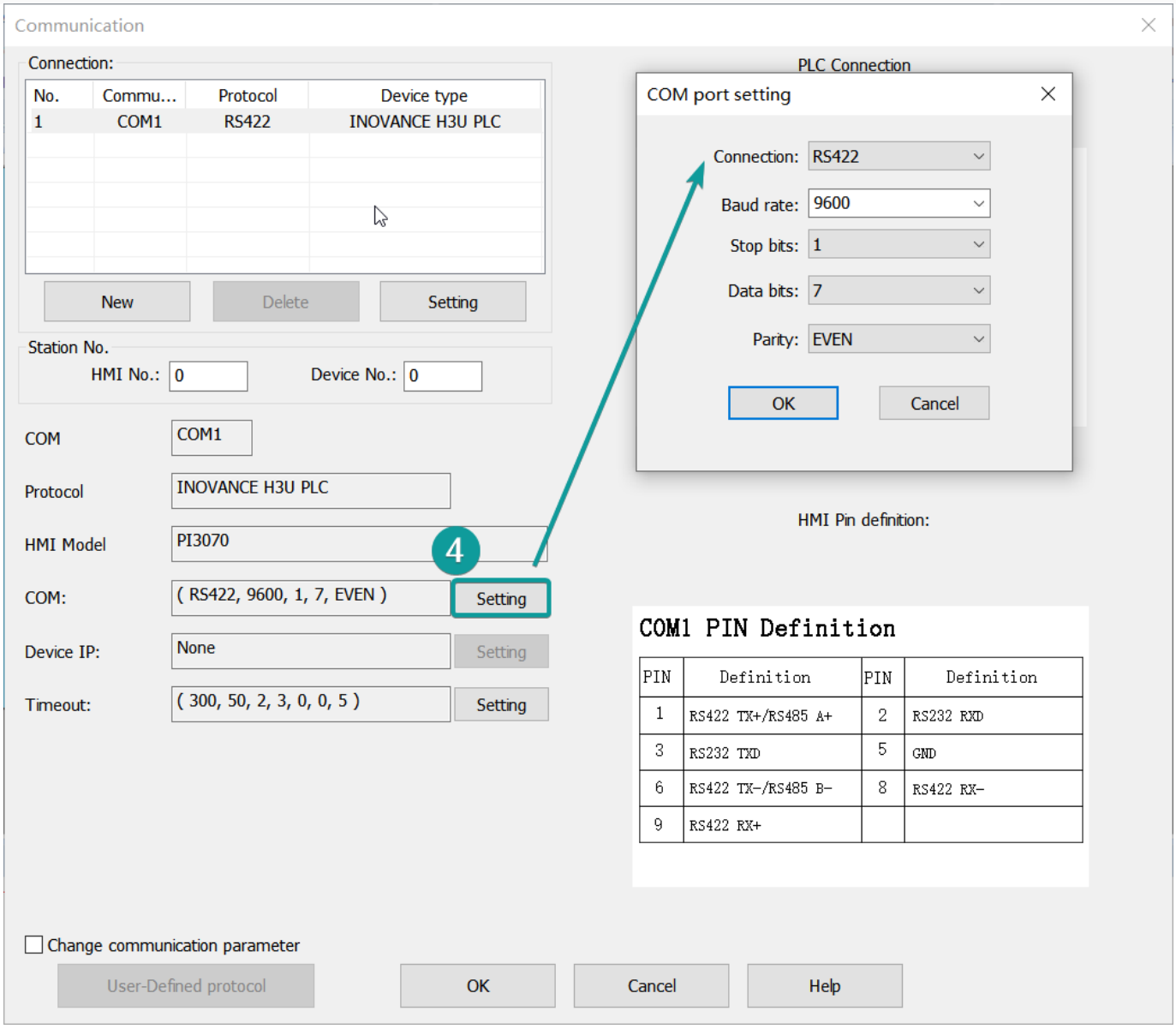
Type	Device registers	HMI registers	Format	Range	Note

Bit	X	X	X o	0~303237	
Bit	Y	Y	Y o	0~303237	
Bit	M	M	M d	0~99999	
Bit	T	T	T d	0~99999	
Bit	C	C	C d	0~99999	
Bit	SM	SM	SM d	8000~999	
Bit	S	T	S d	0~99999	
Bit	Lamp	Lamp	Lamp d	0~0	
Word	X	X	X o	0~303237	
Word	Y	Y	Y o	0~303237	
Word	M	M	M d	0~99999	
Word	T	T	T d	0~99999	
Word	C	C	C d	0~199	
Word	D	D	D d	0~7999	
Word	S	S	S d	0~99999	
Word	SD	SD	SD d	8000~9999	

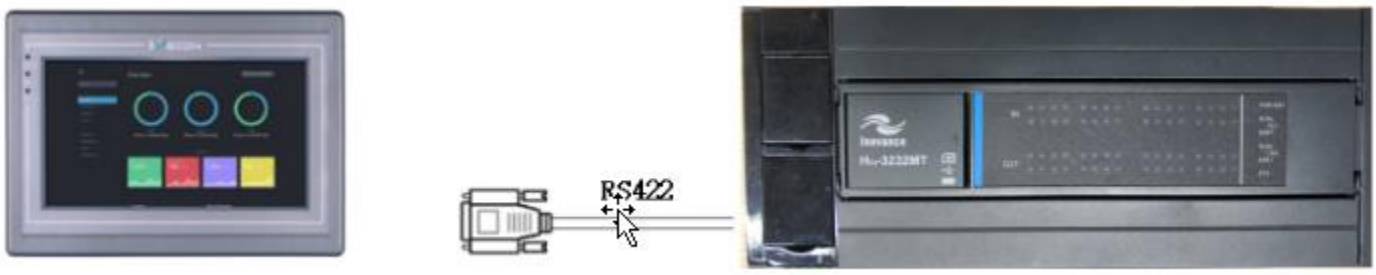
Word	R	R	R d	0~32767	

Configure the communication protocol

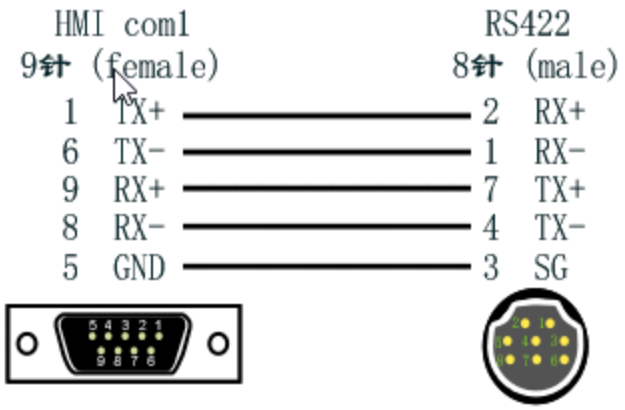




Cable Wiring



Pin Definition Diagram



Create communication with Panasonic PLC

FP serial protocol

1）HMI Settings

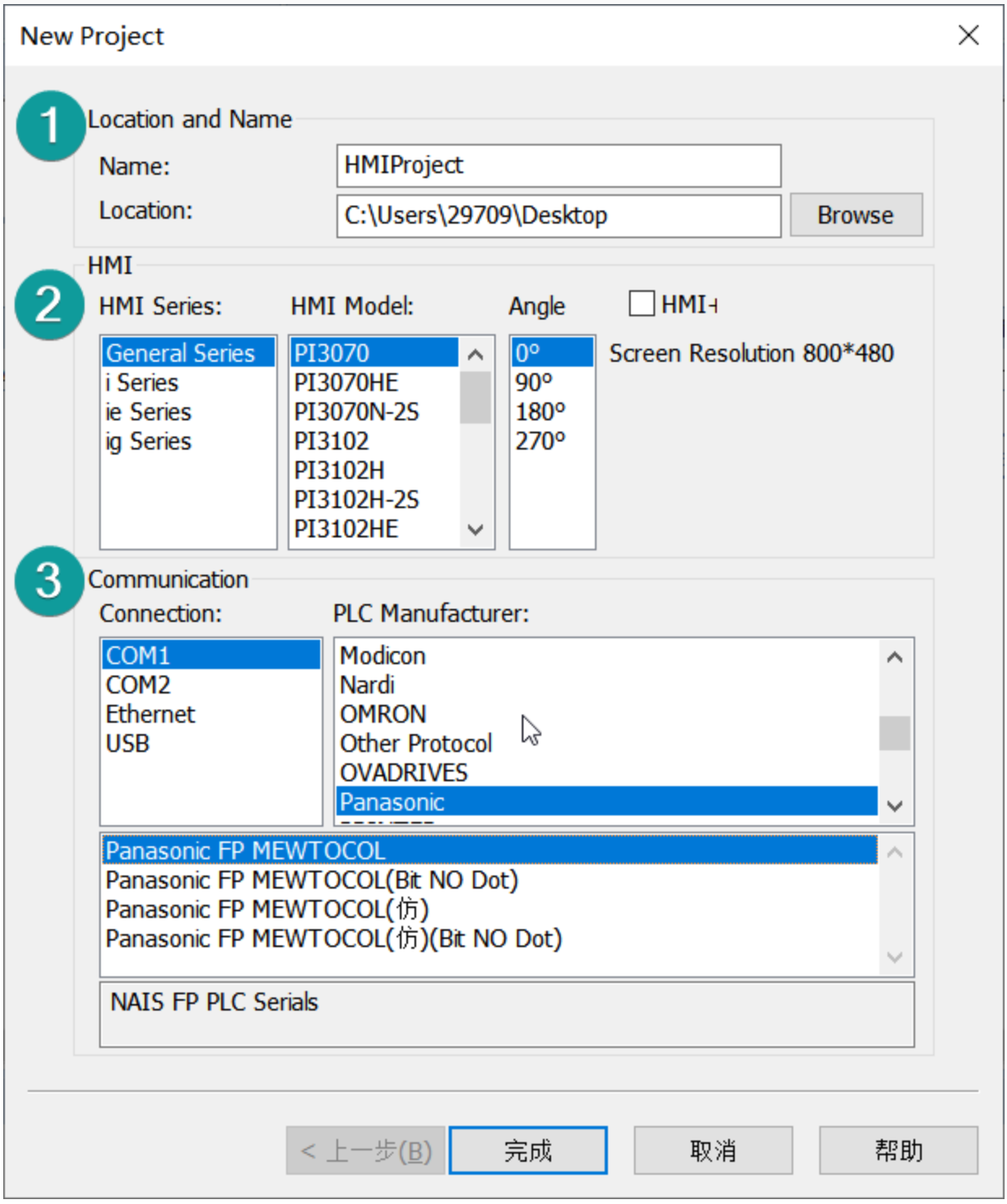
Item	Settings	Note
Protocol	Panasonic FP MFWTOCOL	
Connection	RS232	
Baud rate	9600	
Data bit	8	
Parity	ODD	
Stop bit	1	
PLC station No.	1	

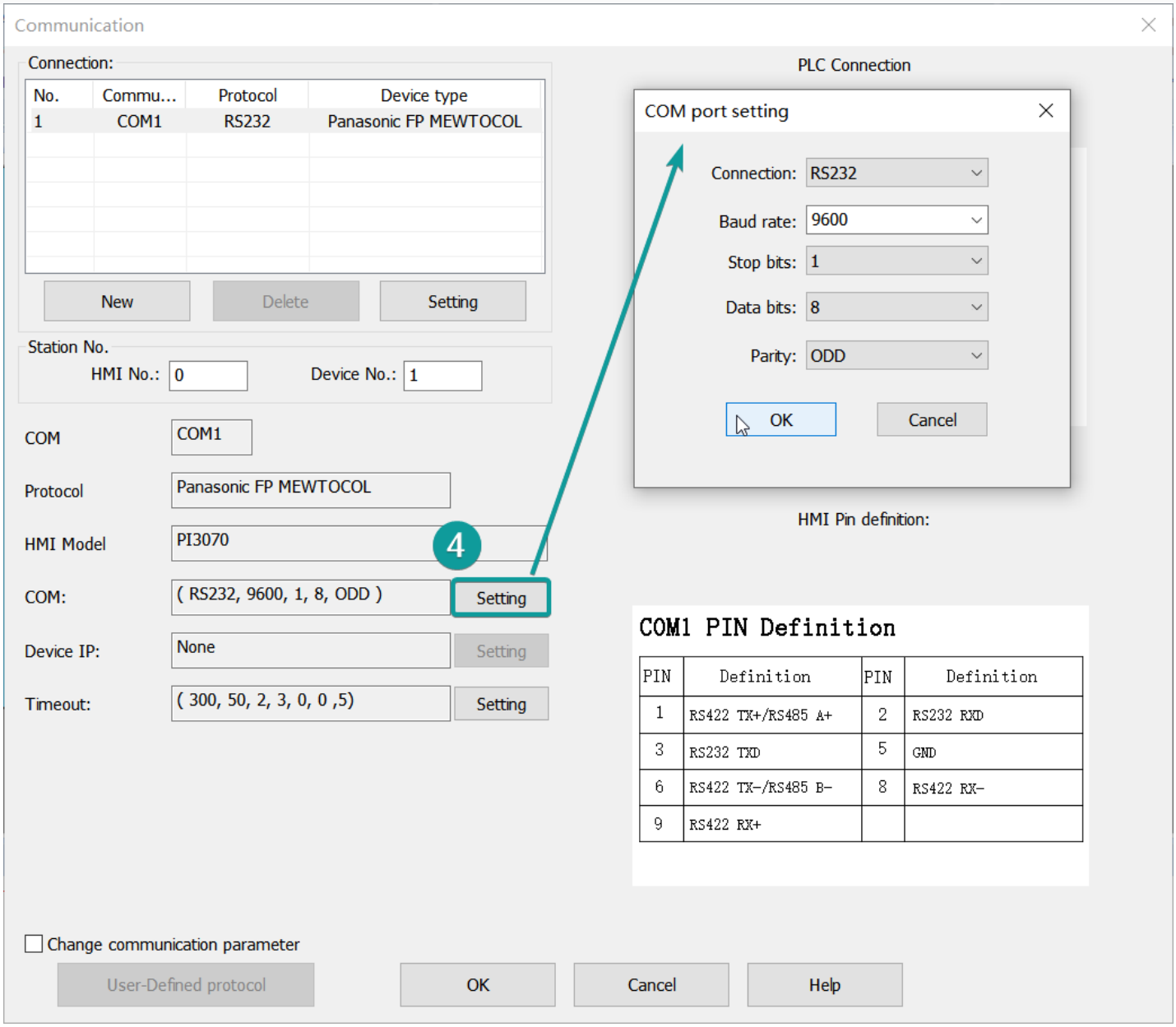
2）Address List

Type	Device registers	HMI registers	Format	Range	Note

Bit	X	X	X d	0~9999	
Bit	Y	Y	Y d	0~9999	
Bit	R	R	R d	0~9999	
Bit	T	T	T d	0~9999	
Bit	C	C	C d	0~9999	
Bit	L	L	L d	0~9999	
Word	WX	WX	WX d	0~9999	
Word	WY	WY	WY d	0~9999	
Word	WR	WR	WR d	0~9999	
Word	WL	WL	WL d	0~9999	
Word	LD	LD	LD d	0~9999	
Word	DT	DT	DT d	0~65535	
Word	FL	FL	FL d	0~9999	
Word	EV	EV	EV d	0~9999	
Word	SV	SV	SV d	0~9999	

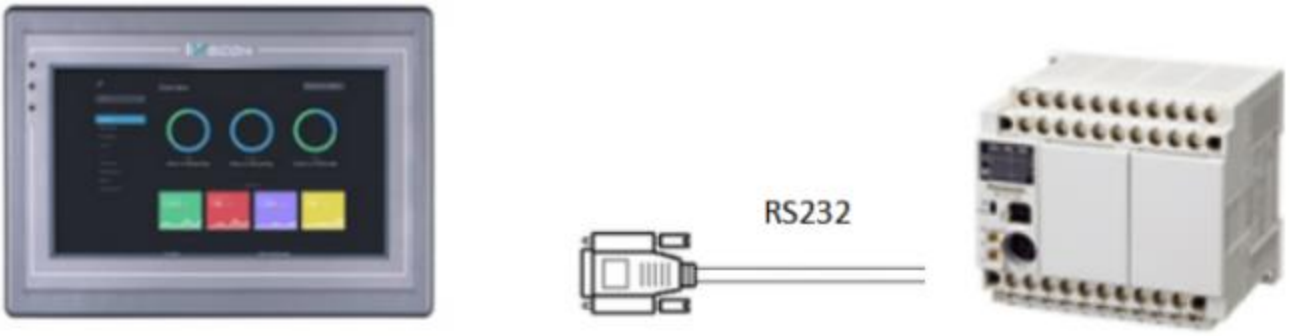
3）Configure the communication protocol


New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
HMI
2
HMI Series:
HMI Model:
Angle
HMI-i
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
Modicon
Nardi
OMRON
Other Protocol
OVADRIVES
Panasonic
Panasonic FP MEWTOCOL
Panasonic FP MEWTOCOL(Bit NO Dot)
Panasonic FP MEWTOCOL(仿)
Panasonic FP MEWTOCOL(仿)(Bit NO Dot)
NAIS FP PLC Serials
< 上一步(B)
完成
取消
帮助

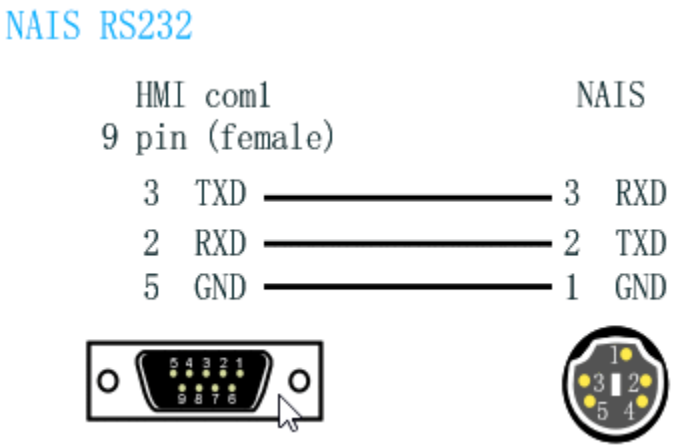


4）Cable Wiring

Figure



Pin Definition Diagram



Create communication with LS PLC

XGB serial protocol

HMI Settings

Item	Settings	Note
Protocol	LS XGB CPU DRIECT	
Connection	RS232	
Baud rate	115200	

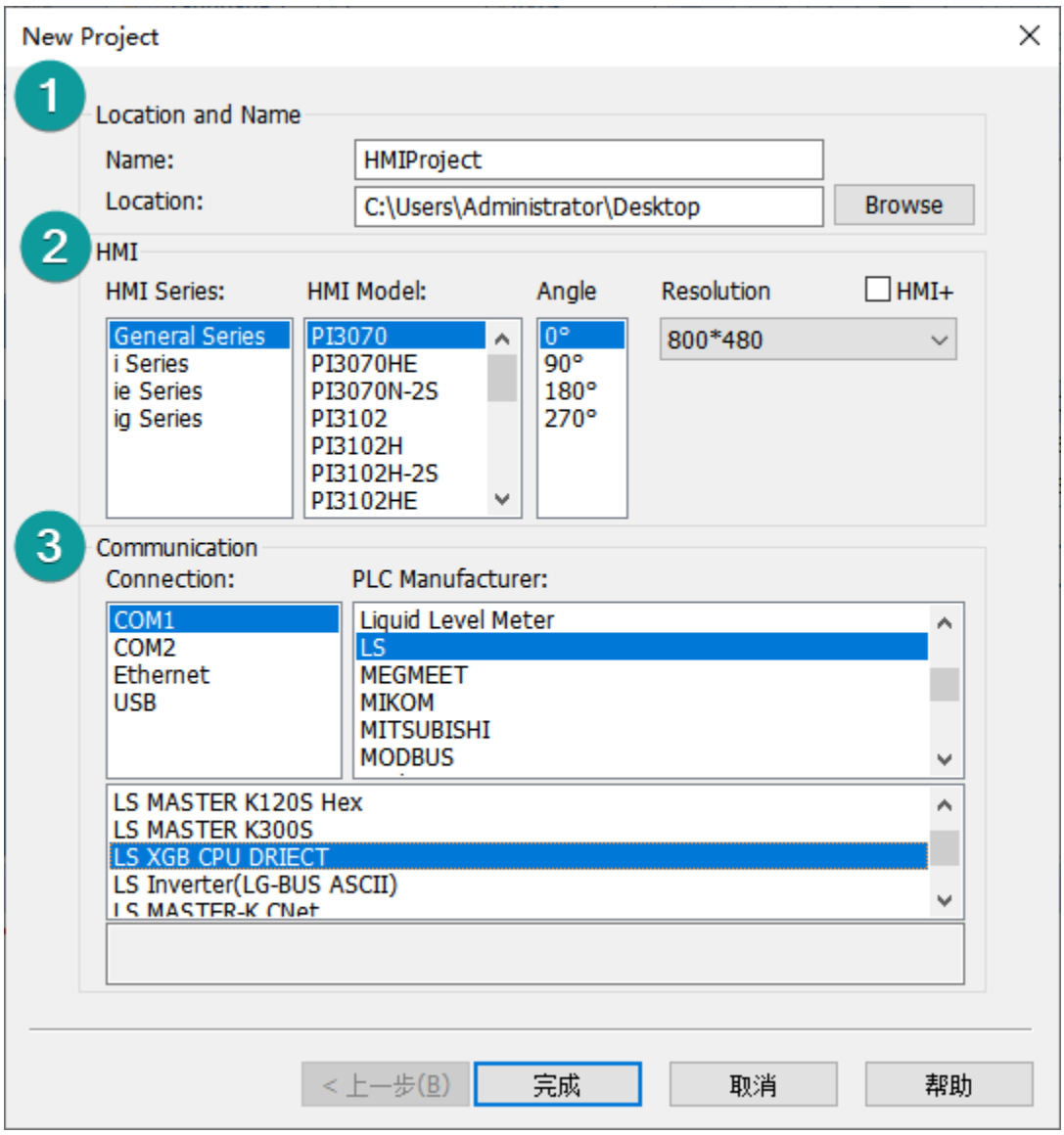
Data bit	8	
Parity	NONE	
Stop bit	1	
PLC station No.	1	

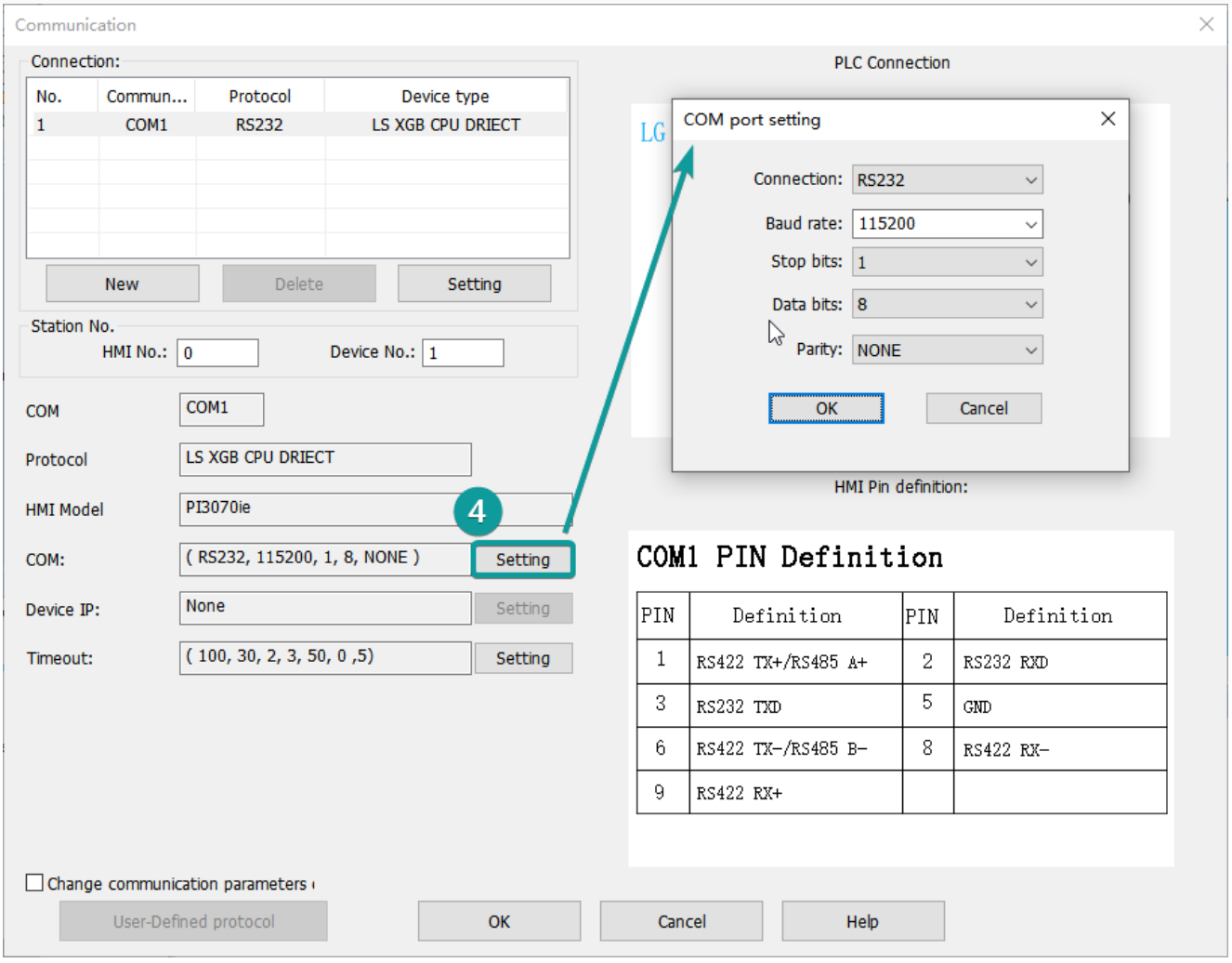
Address List

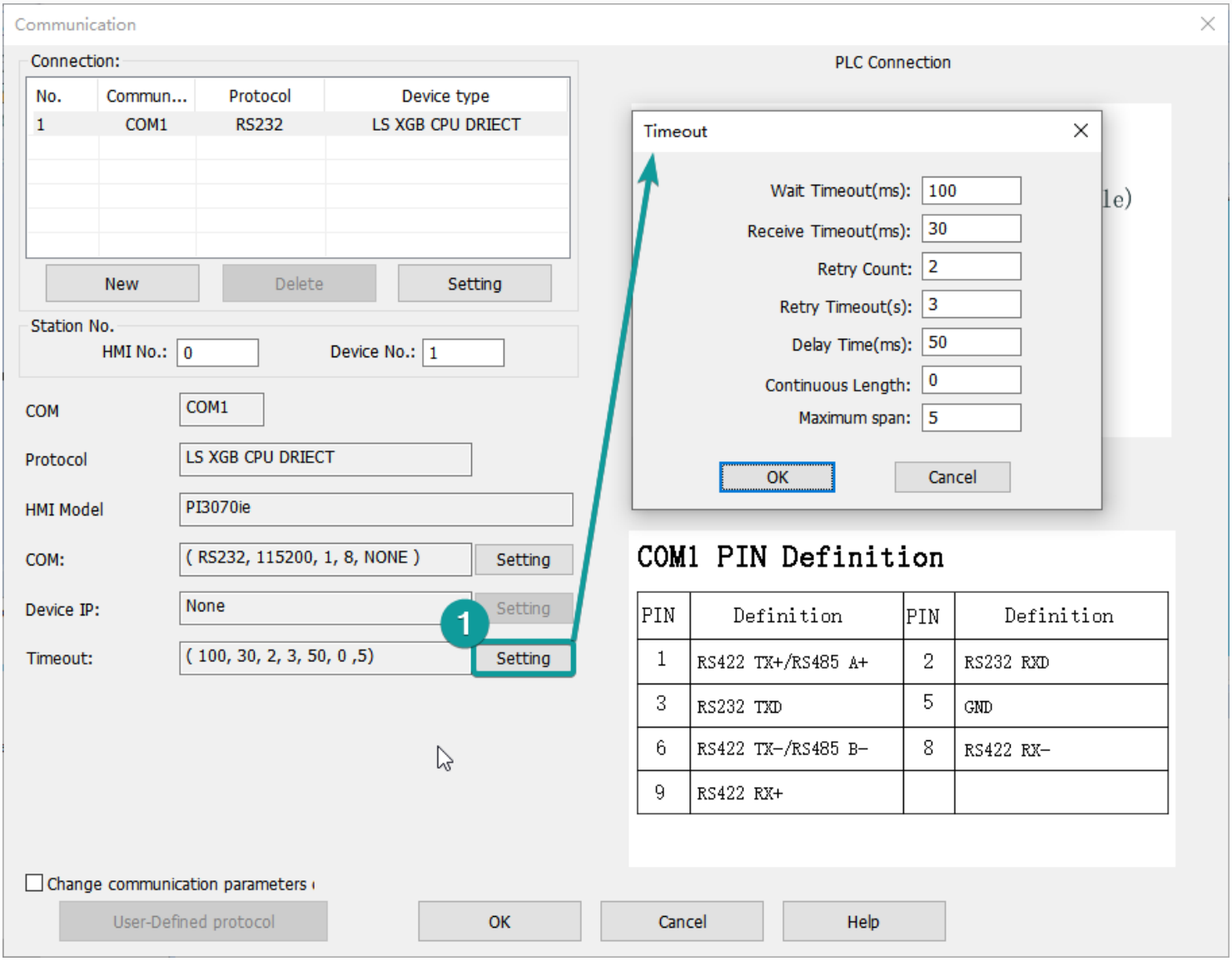
Type	Device registers	HMI registers	Format	Range	Note
Bit	P	P	P DDDD.f	0~2047	
Bit	M	M	M DDDD.f	0~2047	
Bit	L	L	L DDDDD.f	0~11263	
Bit	K	K	K DDDD.f	0~2559	
Bit	F	F	F DDDD.f	0~2047	
Bit	S	S	S DDDDD	0~12799	
Bit	D	D	D DDDDD.f	0~32767	
Bit	U	U	U FFFF.f	0~7f31	
Bit	T	T	T DDDD.f	0~2047	
Bit	C	C	C DDDD.f	0~2047	

Word	P	P	P DDDD	0~2047	
Word	M	M	M DDDD	0~2047	
Word	L	L	L DDDDD	0~11263	
Word	K	K	K DDDD	0~2559	
Word	F	F	F DDDD	0~2047	
Word	C	C	C DDDD	0~2047	
Word	T	T	T DDDD	0~2047	
Word	D	D	D DDDDD	0~32767	
Word	N	N	N DDDDD	0~21503	
Word	U	U	U FFFF	0~7f31	
Word	Z	Z	Z DDD	0~127	
Word	R	R	R DDDDD	0~32767	
Word	ZR	ZR	Z DDDDD	0~32767	
Word	TS	TS	TS DDDD	0~2047	
Word	CS	CS	CS DDDD	0~2047	
Word	S	S	S DDDDD	0~12799	

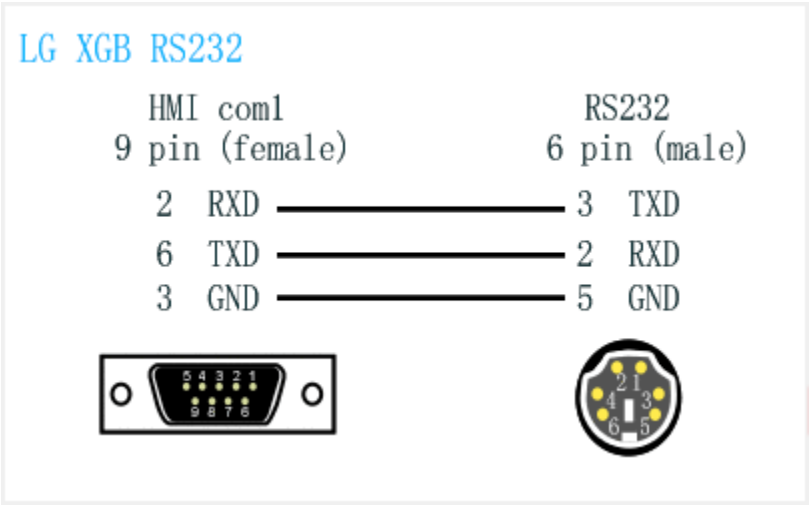
Configure the communication protocol




Communication
Connection:
No.
Commun...
Protocol
Device type
1
COM1
RS232
LS XGB CPU DRIECT
New
Delete
Setting
Station No.
HMI No.:
0
Device No.:
1
COM
COM1
Protocol
LS XGB CPU DRIECT
HMI Model
PI3070ie
COM:
(RS232, 115200, 1, 8, NONE)
Setting
Device IP:
None
Setting
Timeout:
(100, 30, 2, 3, 50, 0 ,5)
Setting
4
Change communication parameters
User-Defined protocol
OK
Cancel
Help
PLC Connection
COM port setting
Connection:
RS232
Baud rate:
115200
Stop bits:
1
Data bits:
8
Parity:
NONE
OK
Cancel
HMI Pin definition:
COM1 PIN Definition
PIN
Definition
PIN
Definition
1
RS422 TX+/RS485 A+
2
RS232 RXD
3
RS232 TXD
5
GND
6
RS422 TX-/RS485 B-
8
RS422 RX-
9
RS422 RX+



Pin Definition Diagram



Create communication with LS PLC

XBC serial protocol

HMI Settings

Item	Settings	Note
Protocol	LS XBC CNet	
Connection	RS232	
Baud rate	115200	
Data bit	8	
Parity	NONE	
Stop bit	1	
PLC station No.	1	

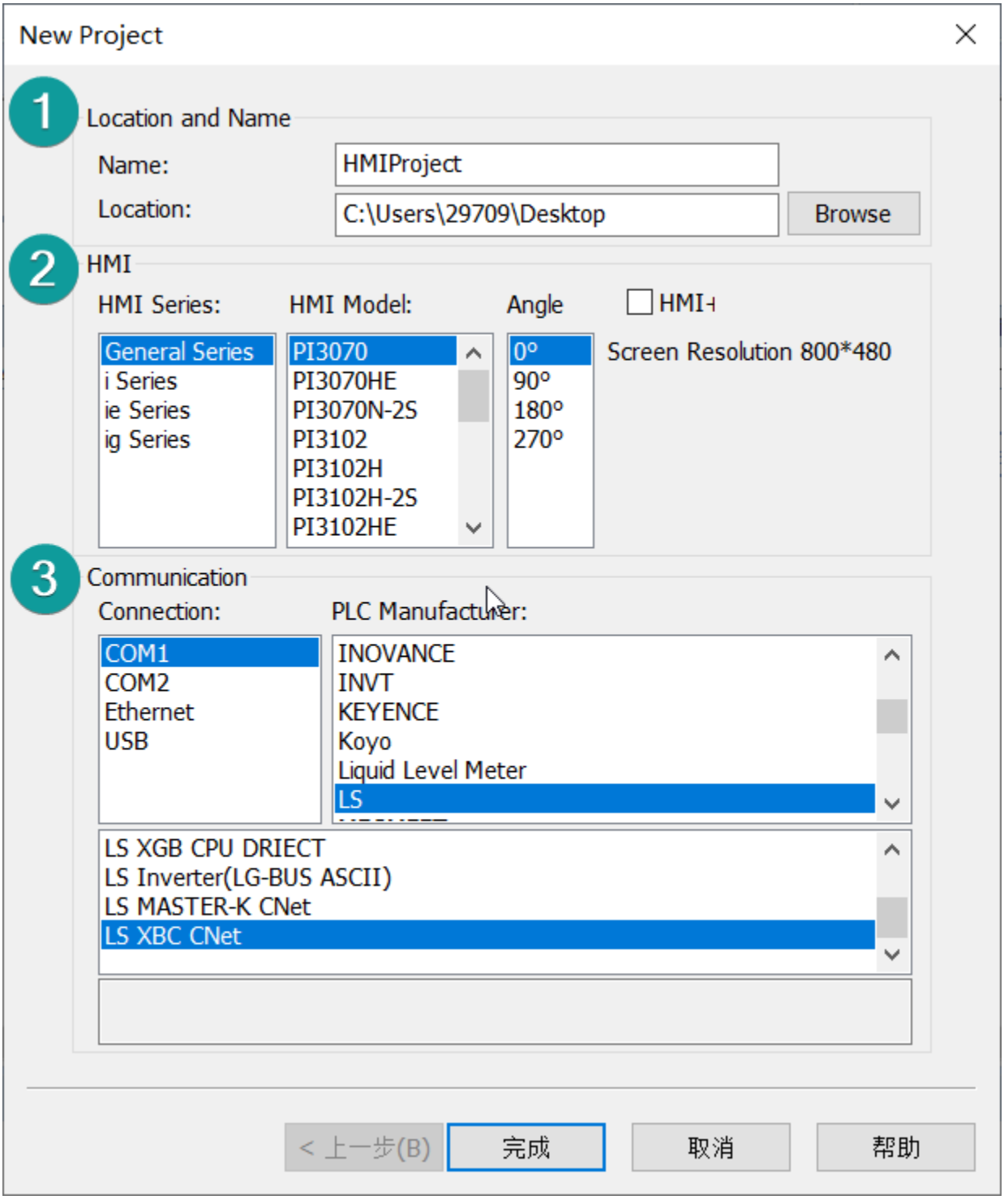
Address List

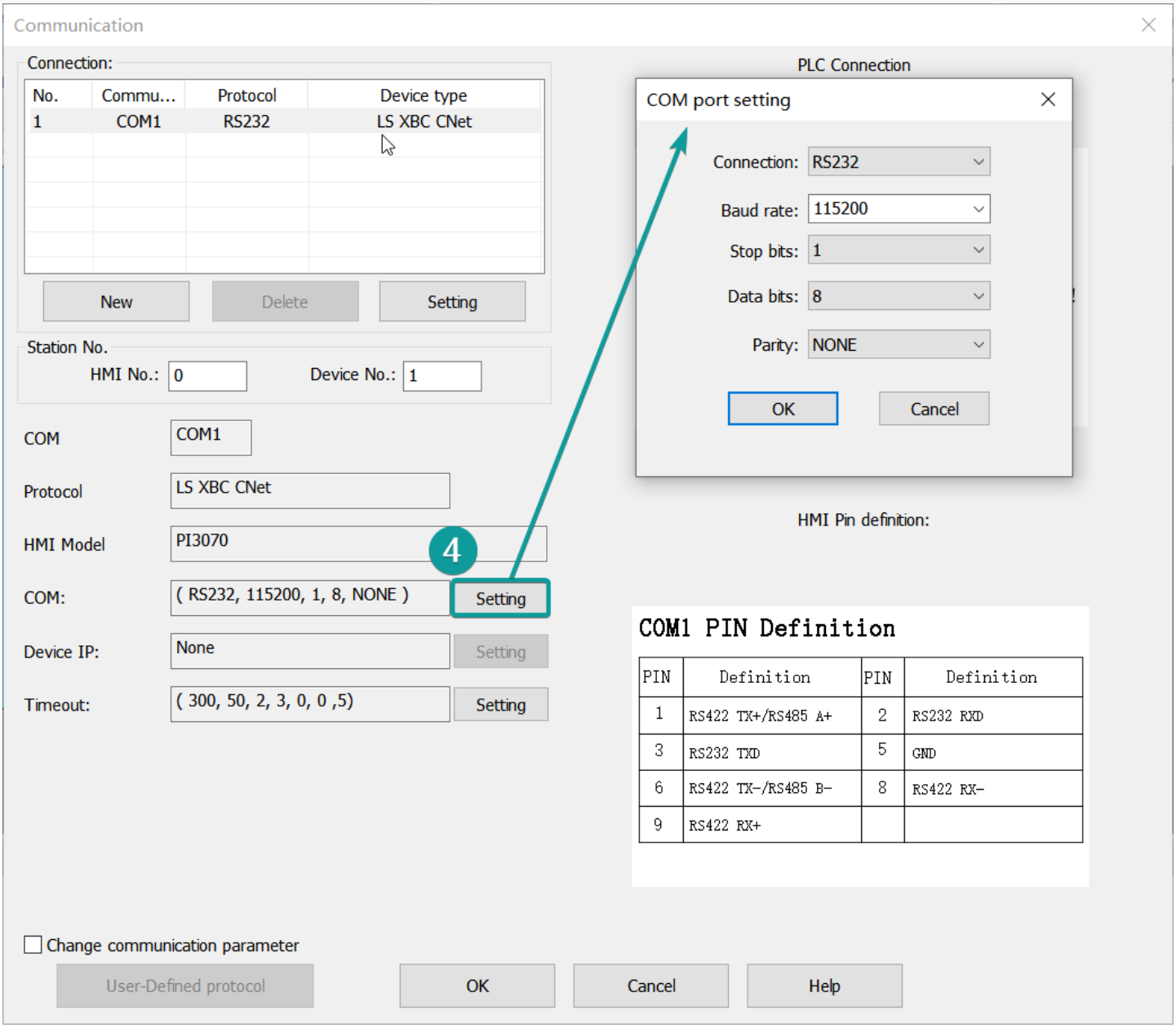
Type	Device registers	HMI registers	Format	Range	Note
Bit	P	P	P d	0~2047	
Bit	M	M	M d	0~2047	
Bit	L	L	L d	0~11263	
Bit	K	K	K d	0~16183	

Bit	F	F	F d	0~2047	
Bit	D	D	D d	0~32767	
Bit	R	R	R d	0~32767	
Bit	U	U	U d	0~4095	
Word	P	P	P d	0~2047	
Word	M	M	M d	0~2047	
Word	L	L	L d	0~11263	
Word	K	K	K d	0~16183	
Word	F	F	F d	0~2047	
Word	C	C	C d	0~2047	
Word	T	T	T d	0~2047	
Word	D	D	D d	0~32767	
Word	N	N	N d	0~21503	
Word	R	R	R d	0~32767	
Word	U	U	U d	0~4095	
Word	Z	Z	Z d	0~127	

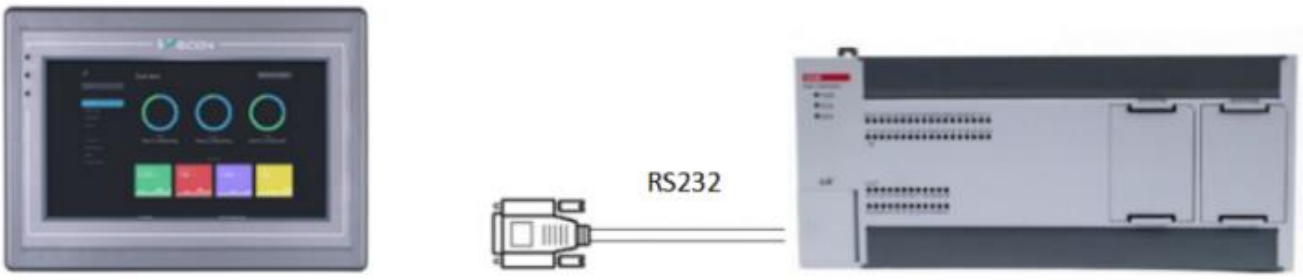
Word	S	S	S d	0~127	

Configure the communication protocol

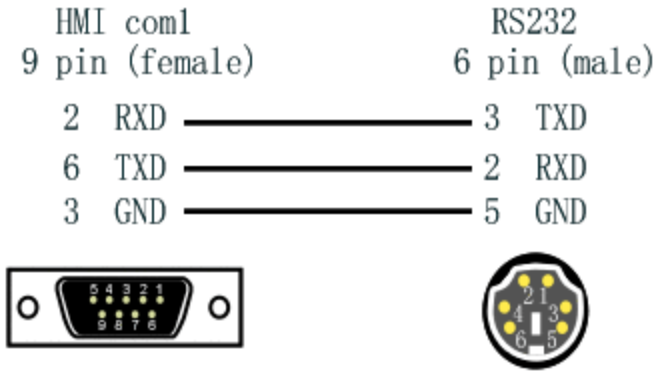




Cable Wiring



Pin Definition Diagram



XGK FEnet Ethernet protocol

Supported Series: LS XGT series XGK CPU with XGL-EFMT Ethernet module

HMI Settings

Items	Settings	Note
Protocol	LG XGK FEnet(Ethernet)	
Connection	Ethernet	
Port No.	2004	

Address List

Type	Register	Range	Format	Note
Word	P	0~2047	P d	
	M	0~2047	M d	
	K	0~2047	K d	
	F	0~2047	F d	
	T	0~2047	T d	

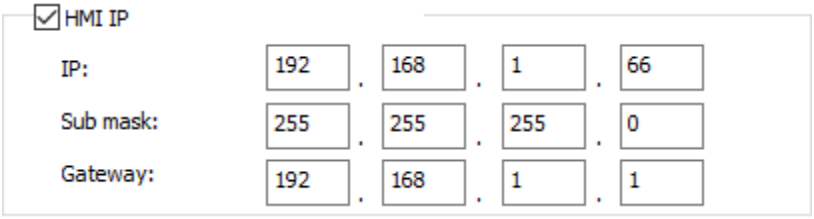
	C	0~2047	C d	
	Z	0~127	Z d	
	S	0~127	S d	
	L	0~11263	L d	
	N	0~21503	N d	
	D	0~32767	D d	
	R	0~32767	R d	
	ZR	0~65535	ZR d	
	UxDD	0~6331	UxDD nndd	nn: 0~63, dd: 0~31

✎**Note:**

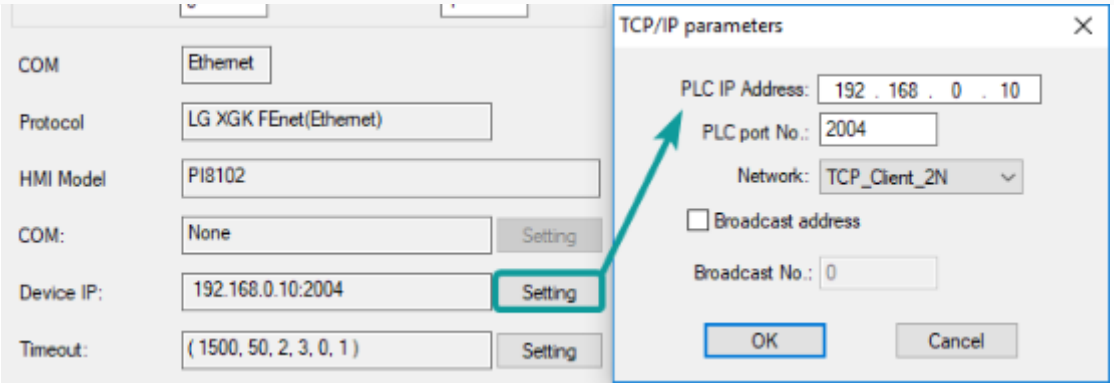
- In addition to the "UxDD" register, the others correspond to the PLC register one by one. UxDD corresponds to U in the PLC;
- The [UxDD] register, defined in the PLC is Ux.dd, x represents the block, and dd represents 0-31 of each block. There are 64 blocks in the PLC;
- All bit registers are in the form of bits in word, and the range is the same as the word register;

Communication settings in HMI

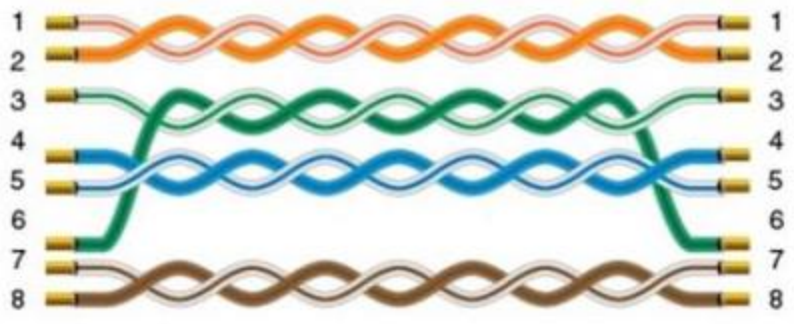
Enable HMI Ethernet in [Project Settings];



Set PLC IP in [Device IP] settings;



Cable Wiring



Create communication with LS PLC

XBC serial protocol

HMI Settings

Item	Settings	Note
Protocol	LS XBC CNet	
Connection	RS232	
Baud rate	115200	
Data bit	8	
Parity	NONE	

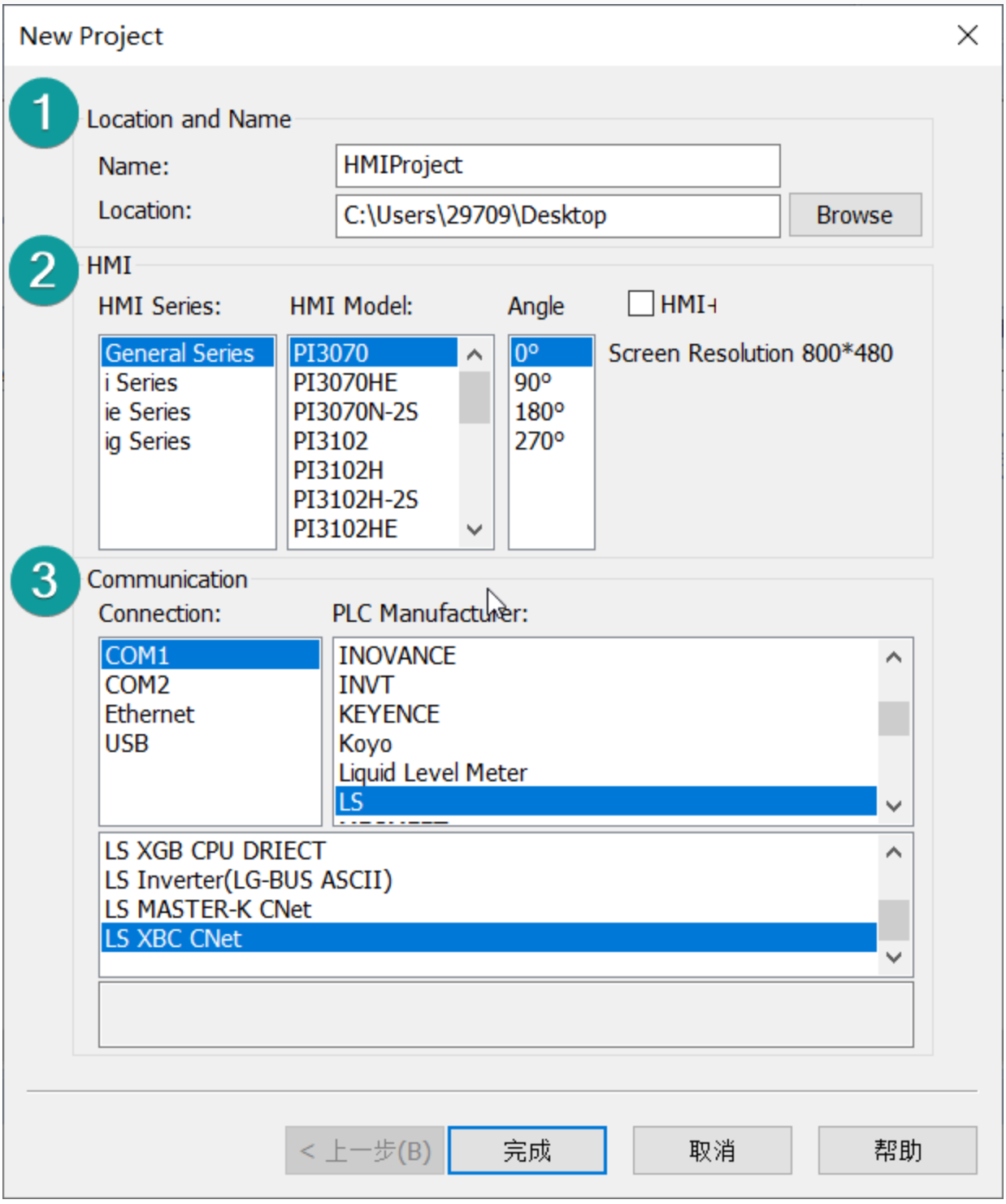
Stop bit	1	
PLC station No.	1	

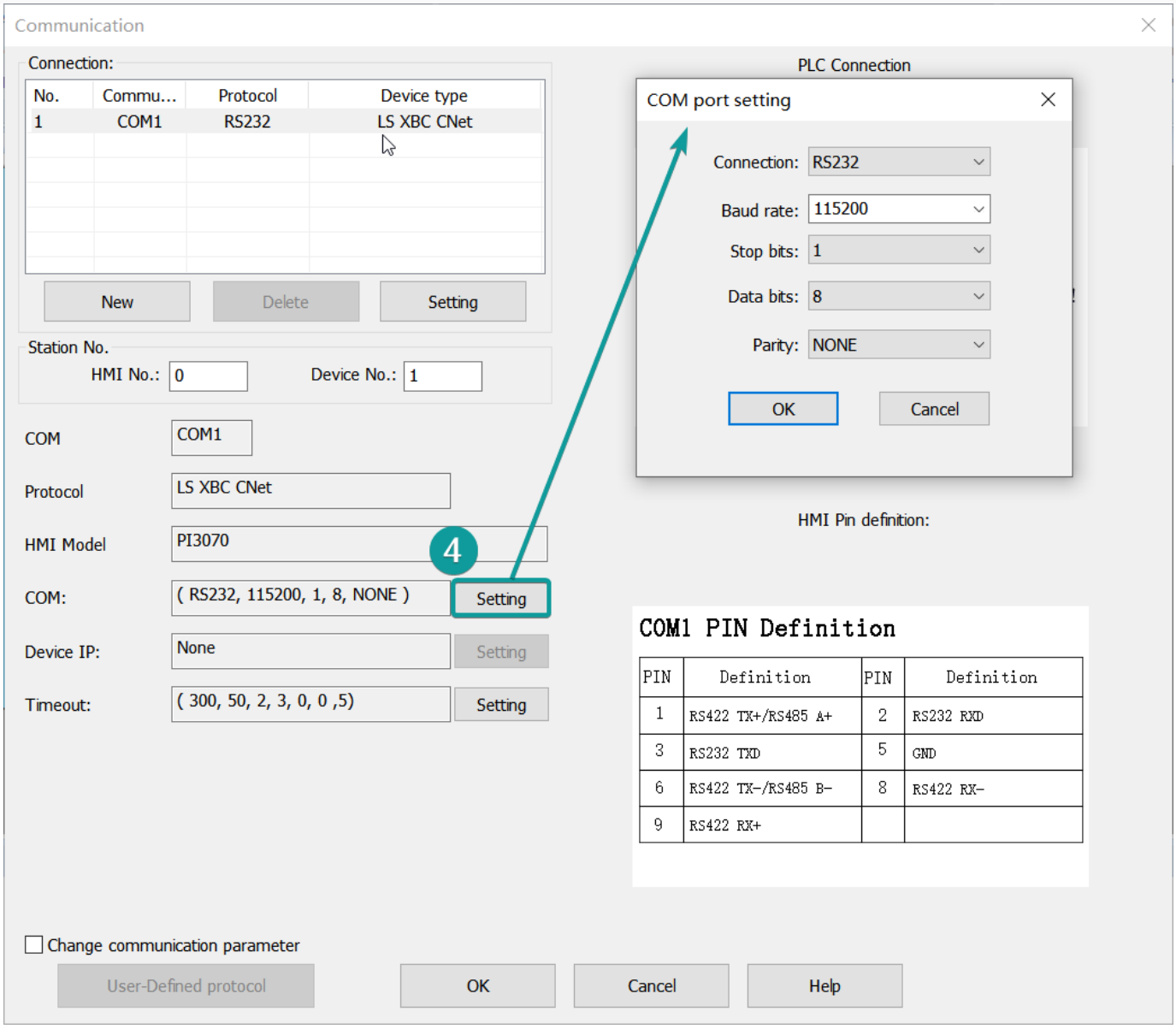
Address List

Type	Device registers	HMI registers	Format	Range	Note
Bit	P	P	P d	0~2047	
Bit	M	M	M d	0~2047	
Bit	L	L	L d	0~11263	
Bit	K	K	K d	0~16183	
Bit	F	F	F d	0~2047	
Bit	D	D	D d	0~32767	
Bit	R	R	R d	0~32767	
Bit	U	U	U d	0~4095	
Word	P	P	P d	0~2047	
Word	M	M	M d	0~2047	
Word	L	L	L d	0~11263	
Word	K	K	K d	0~16183	

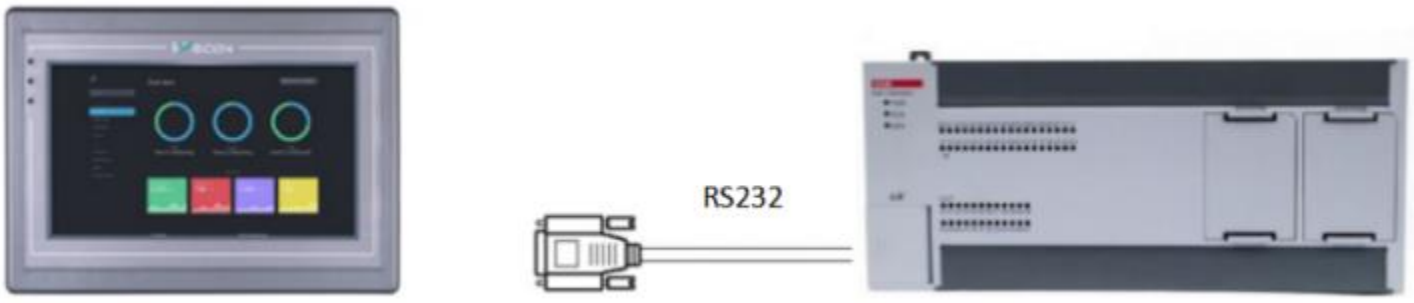
Word	F	F	F d	0~2047	
Word	C	C	C d	0~2047	
Word	T	T	T d	0~2047	
Word	D	D	D d	0~32767	
Word	N	N	N d	0~21503	
Word	R	R	R d	0~32767	
Word	U	U	U d	0~4095	
Word	Z	Z	Z d	0~127	
Word	S	S	S d	0~127	

Configure the communication protocol

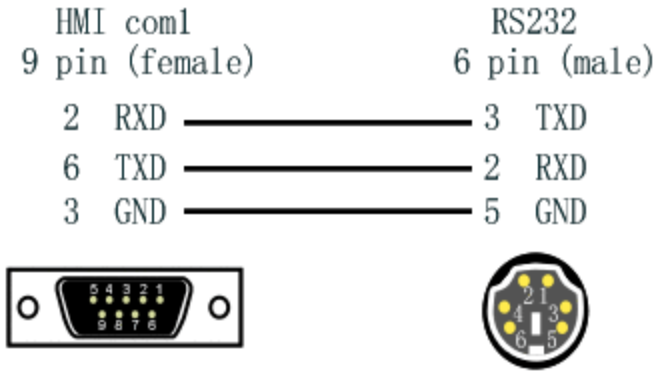

New Project
1
Location and Name
Name:
HMIProject
Location:
C:\Users\29709\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI-H
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Manufacturer:
COM1
COM2
Ethernet
USB
INOVANCE
INVT
KEYENCE
Koyo
Liquid Level Meter
LS
LS XGB CPU DRIECT
LS Inverter(LG-BUS ASCII)
LS MASTER-K CNet
LS XBC CNet
< 上一步(B)
完成
取消
帮助



Cable Wiring



Pin Definition Diagram



XGK FEnet Ethernet protocol

Supported Series: LS XGT series XGK CPU with XGL-EFMT Ethernet module

HMI Settings

Items	Settings	Note
Protocol	LG XGK FEnet(Ethernet)	
Connection	Ethernet	
Port No.	2004	

Address List

Type	Register	Range	Format	Note
Word	P	0~2047	P d	
	M	0~2047	M d	
	K	0~2047	K d	
	F	0~2047	F d	
	T	0~2047	T d	

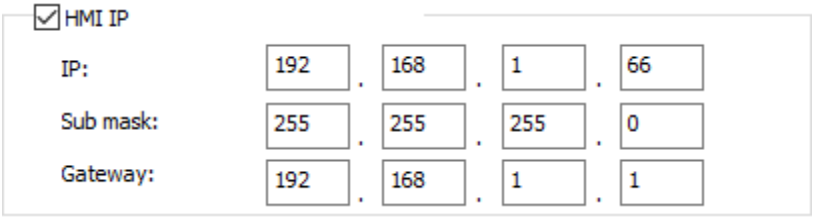
	C	0~2047	C d	
	Z	0~127	Z d	
	S	0~127	S d	
	L	0~11263	L d	
	N	0~21503	N d	
	D	0~32767	D d	
	R	0~32767	R d	
	ZR	0~65535	ZR d	
	UxDD	0~6331	UxDD nndd	nn: 0~63, dd: 0~31

✎**Note:**

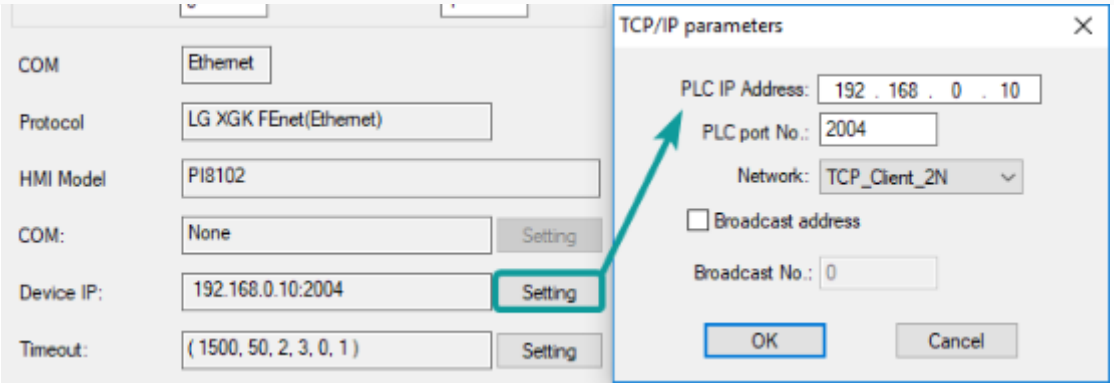
- In addition to the "UxDD" register, the others correspond to the PLC register one by one. UxDD corresponds to U in the PLC;
- The [UxDD] register, defined in the PLC is Ux.dd, x represents the block, and dd represents 0-31 of each block. There are 64 blocks in the PLC;
- All bit registers are in the form of bits in word, and the range is the same as the word register;

Communication settings in HMI

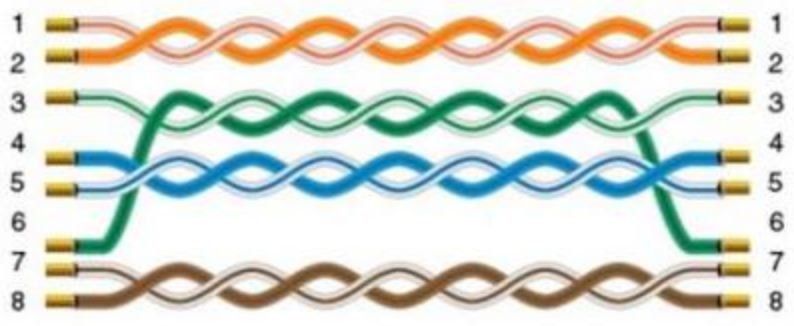
Enable HMI Ethernet in [Project Settings];



Set PLC IP in [Device IP] settings;



Cable Wiring



Create communication with SHIMADEN PLC

FP23 series protocol

Supported series: SHIMADEN FP23 series

HMI Setting

Items	Settings	Note
Protocol	SHIMADEN FP23 series	
Connection	RS485 (9600, 1, 7, EVEN)	
Port No.	None	
PLC station No.	0	

Address List

Device address	HMI register	Address range	Type
0040-0043(HEX)	FP040	100064-200067	Read only
0100-010B(HEX)	FP100	100256-200267	Read only
0110-0142(HEX)	FP110	100272-200322	Read only
0182-0252(HEX)	FP182	100386-200594	Write only
0280-0281(HEX)	FP280	100640-200641	Read only
0300-030B(HEX)	FP300	100768-200779	Read and write
0380-039F(HEX)	FP380	100896-200927	Read and write
0400-04D7(HEX)	FP400	101024-201239	Read and write
0500-05B0(HEX)	FP500	101280-201456	Read and write
0600-0670(HEX)	FP600	101536-201814	Read and write
0720-0738(HEX)	FP720	101824-201848	Read and write
0800-083F(HEX)	FP800	102048-202111	Read and write
0900-0952(HEX)	FP900	102304-202386	Read and write
	Ctrl	0-2	

✎**Note:**

- The upper 2 bits of the address of the HMI register are taken as the sub address, and the real address is the last four bits (for example, if the address is 100256, then 10 is the sub address as 1, and 0256 is the real address);
- The address range in the table is only divided by the start and end addresses, and some of the addresses in the range have no corresponding address in FP23;
- The Ctrl register is used to store the control group number and BCC check mode.

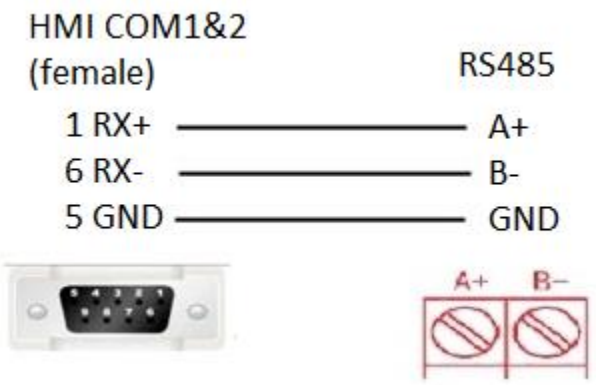
Ctrl Register Description

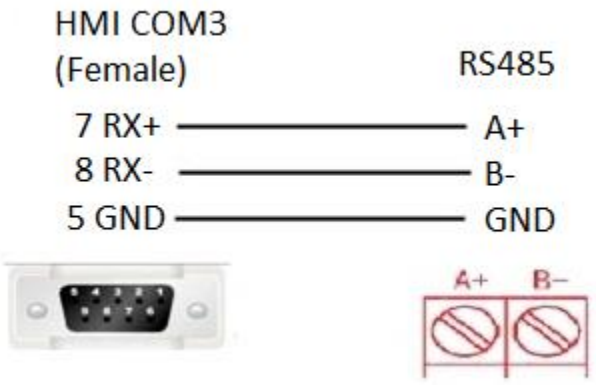
- The Ctrl register is a special register that does not communicate with the temperature controller. User needs to assign value in the screen according to the settings as in the temperature controller.
- Ctrl0 indicates the setting of the control character, the valid values are 1, 2, 3 respectively, and the corresponding control group is: STX_ETX_CR , STX_ETX_CR LF and @_:_CR .
- Ctrl1 indicates the BCC block check mode. The valid value range is 1-4. The corresponding check mode is: 1.ADD, 2.ADD_two's cmp, 3.XOR, 4.None;
- Ctrl3 reserved

✎**Note:**

After reloading the HMI project or restarting the HMI, HMI will reset the value of ctrl0 and ctrl1 as 1, so user need to set these two values to make it the same as it in the temperature controller, then communication will be normal.

Cable Wiring





✎**Note:** COM3 only available in PI8000/PI9000 series.

SR90 protocol

Supported series: SHIMADEN SR90 series

HMI Setting

Items	Settings	Note
Protocol	SHIMADEN SR90 protocol	
Connection	RS485 (1200, 1, 7, EVEN)	
Port No.	None	
PLC station No.	0	

Address List

Device address	HMI register	Address range	Type
0040-0043 (HEX)	SR040	100064-100067	Read only
0100-010A(HEX)	SR0100	100256-100266	Read only
0182-018C(HEX)	SR0182	100386-100396	Write only
0300-04FE(HEX)	SR0300	100768-101278	Write/read
0500-050B(HEX)	SR0500	101280-101291	Write/read
0590-0611(HEX)	SR0590	101424-101553	Write/read
0701-0709(HEX)	SR0701	101793-101801	Write/read

	Ctrl	0-2	--

✎Note:

- The upper 2 bits of the address of HMIs are taken as the sub address, and the real address is the last four bits (for example, if the address is 100256, then 10 is the sub address as 1, and 0256 is the real address);
- The address range in the table is only divided by the start and end addresses, and some of the addresses in the range have no corresponding address in SR90;
- The Ctrl register is used to store the control group number and BCC check mode. See how to use it below;

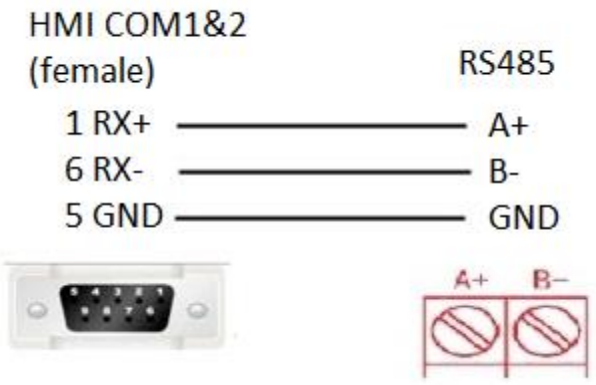
Ctrl Register Description

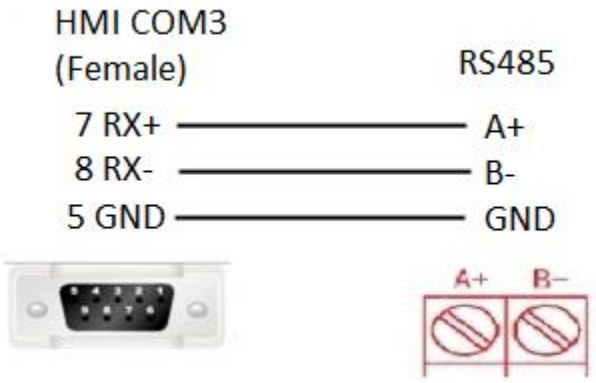
- The Ctrl register is a special register that does not communicate with the temperature controller. User needs to assign value in the screen according to the settings as in the temperature controller.
- Ctrl0 indicates the setting of the control character, the valid values are 1, 2, 3 respectively, and the corresponding control group is: STX_ETX_CR , STX_ETX_CR LF and @_:_CR .
- Ctrl1 indicates the BCC block check mode. The valid value range is 1-4. The corresponding check mode is: 1.ADD, 2.ADD_two's cmp, 3.XOR, 4.None;
- Ctrl3 reserved

✎Note:

After reloading the HMI project or restarting the HMI, HMI will reset the value of ctrl0 and ctrl1 as 1, so user need to set these two values to make it the same as it in the temperature controller, then communication will be normal.

Cable Wiring





✎**Note:** COM3 only available in PI8000/PI9000 series.

MR13 series(standard protocol)

Supported series: SHIMADEN MR13 series

HMI Setting

Items	Settings	Note
Protocol	SHIMADEN standard protocol	
Connection	RS485 (1200, 1, 7, EVEN)	
Port No.	None	
PLC station No.	0	

Address List

Device address	HMI register	Address range	Type
0100-010B(HEX)	MR100	100256-300267	Read only
0111-0126(HEX)	MR111	100273-300294	Read only

0184-0192(HEX)	MR184	100388-300402	Write only
0280-0282(HEX)	MR280	100640-300642	Read only
0300-030B(HEX)	MR300	100768-300779	Read/write
0314-0317(HEX)	MR314	100788-300791	Read/write
031A(HEX)	MR31A	100794-300794	Read/write
0320-0321(HEX)	MR320	100800-300801	Read/write
0400-0504(HEX)	MR400	101024-301284	Read/write
0506(HEX)	MR506	101286-301286	Read/write
0510-0514(HEX)	MR510	101296-301300	Read/write
0516-0524(HEX)	MR516	101302-301316	Read/write
0526(HEX)	MR526	101318-301318	Read/write
0580-08C3(HEX)	MR580	101408-302243	Read/write
--	Ctrl	0-2	--

✎Note:

- The upper 2 bits of the address of the HMI register are taken as the sub address, and the real address is the last four bits (for example, if the address is 100256, then 10 is the sub address as 1, and 0256 is the real address);
- The address range in the table is only divided by the start and end addresses, and some of the addresses in the range have no corresponding address in MR13;
- The Ctrl register is used to store the control group number and BCC check mode.

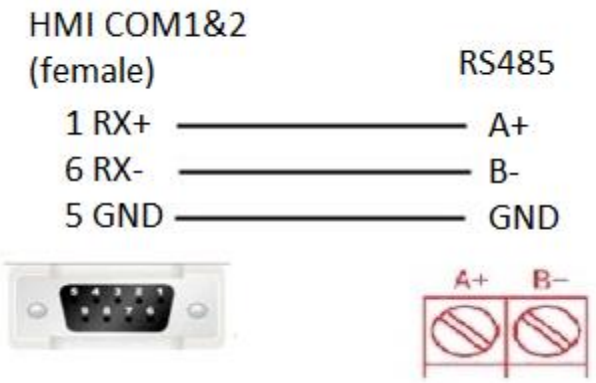
Ctrl Register Description

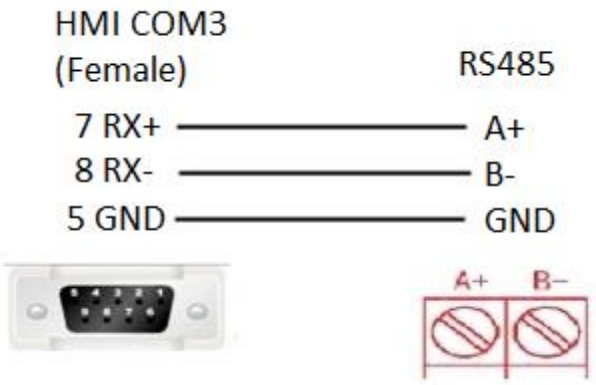
- The Ctrl register is a special register that does not communicate with the temperature controller. User needs to assign value in the screen according to the settings as in the temperature controller.
- Ctrl0 indicates the setting of the control character, the valid values are 1, 2, 3 respectively, and the corresponding control group is: STX_ETX_CR, STX_ETX_CR LF and @_:_CR .
- Ctrl1 indicates the BCC block check mode. The valid value range is 1-4. The corresponding check mode is: 1.ADD, 2.ADD_two's cmp, 3.XOR, 4.None;
- Ctrl3 reserved

✎**Note:**

After reloading project or restarting the HMI, HMI will reset the value of ctrl0 and ctrl1 as 1, so user need to set these two values to make it the same as it in the temperature controller, then communication will be normal.

Cable Wiring





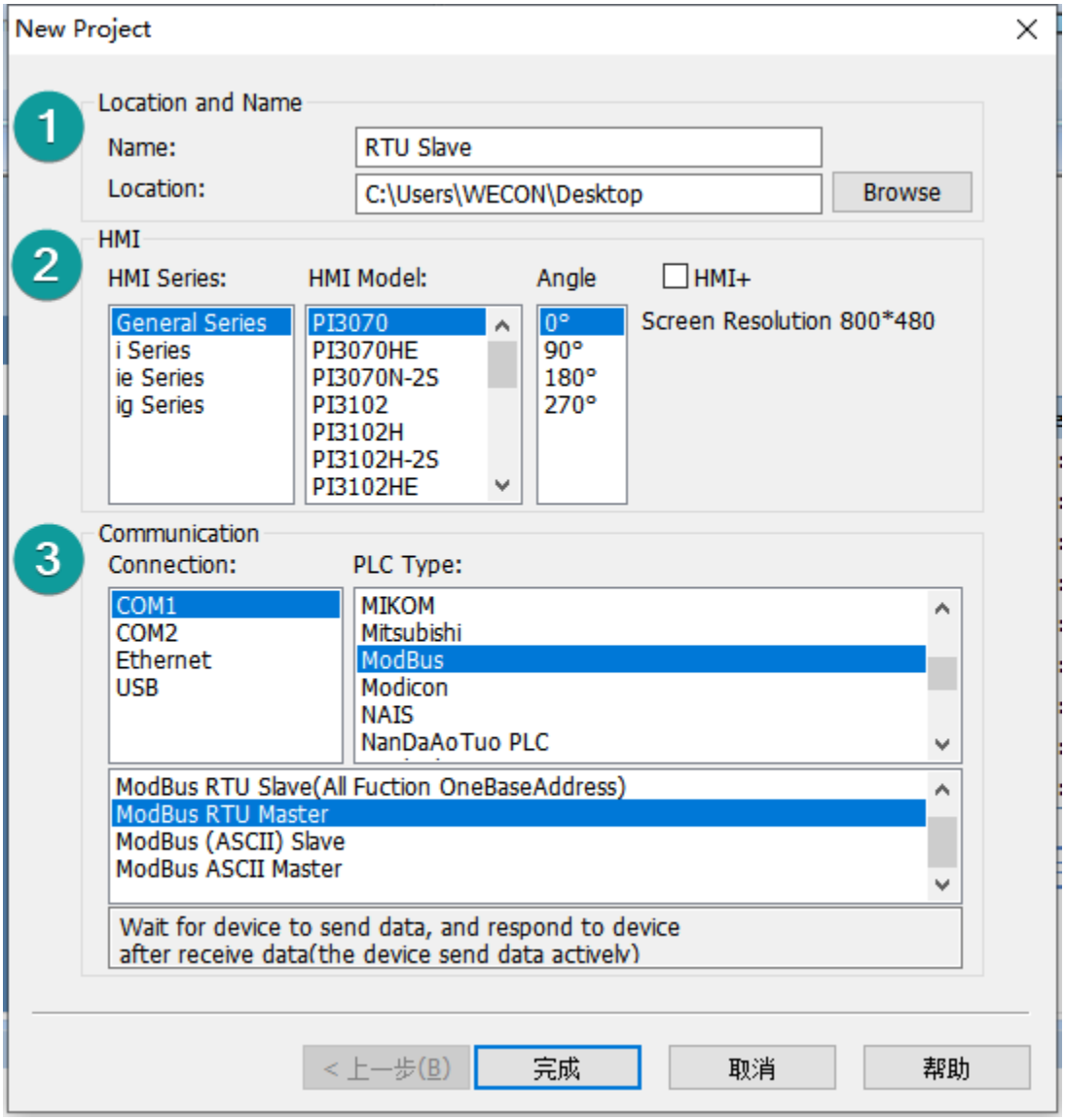
✎**Note:** COM3 only available in PI8000/PI9000 series.

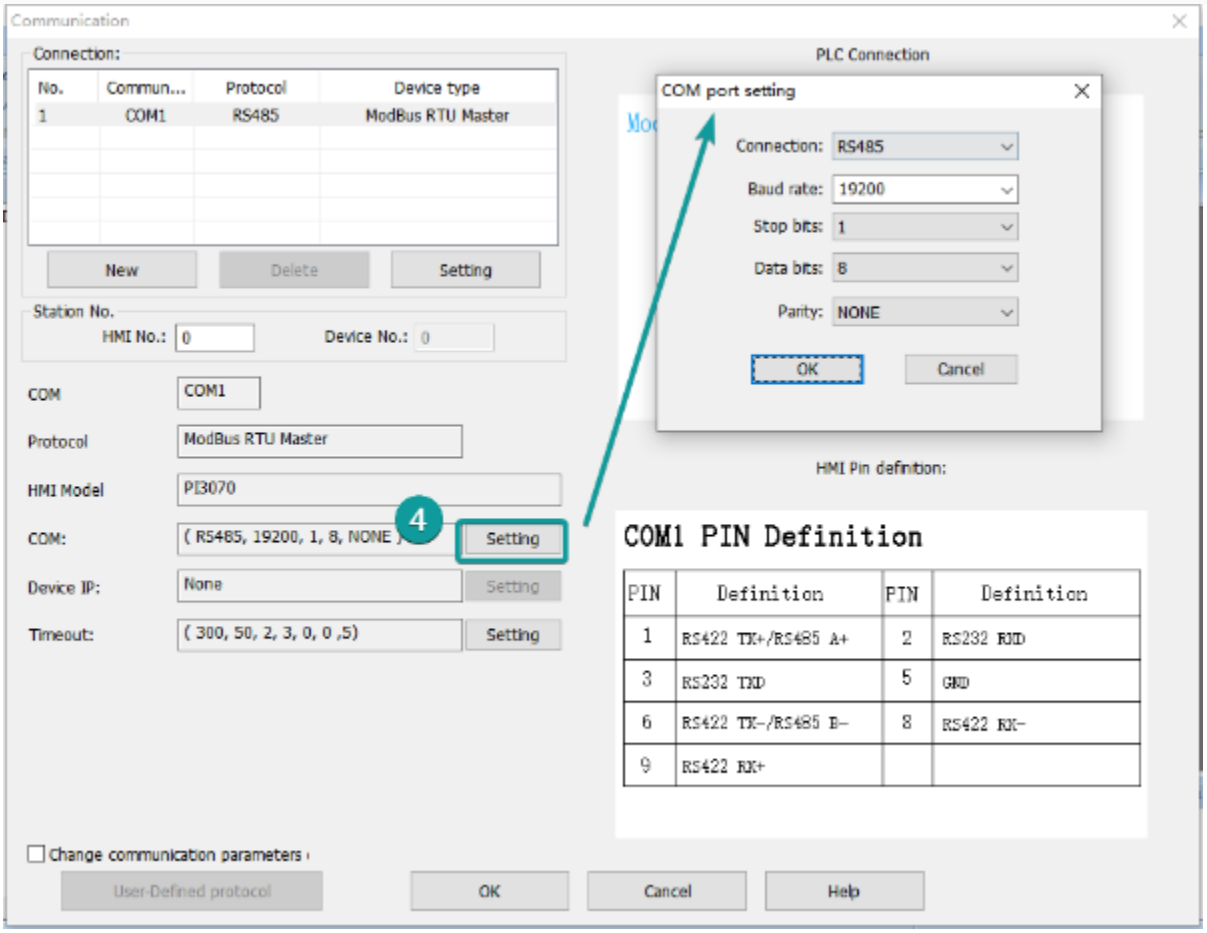
Create communication with MODBUS

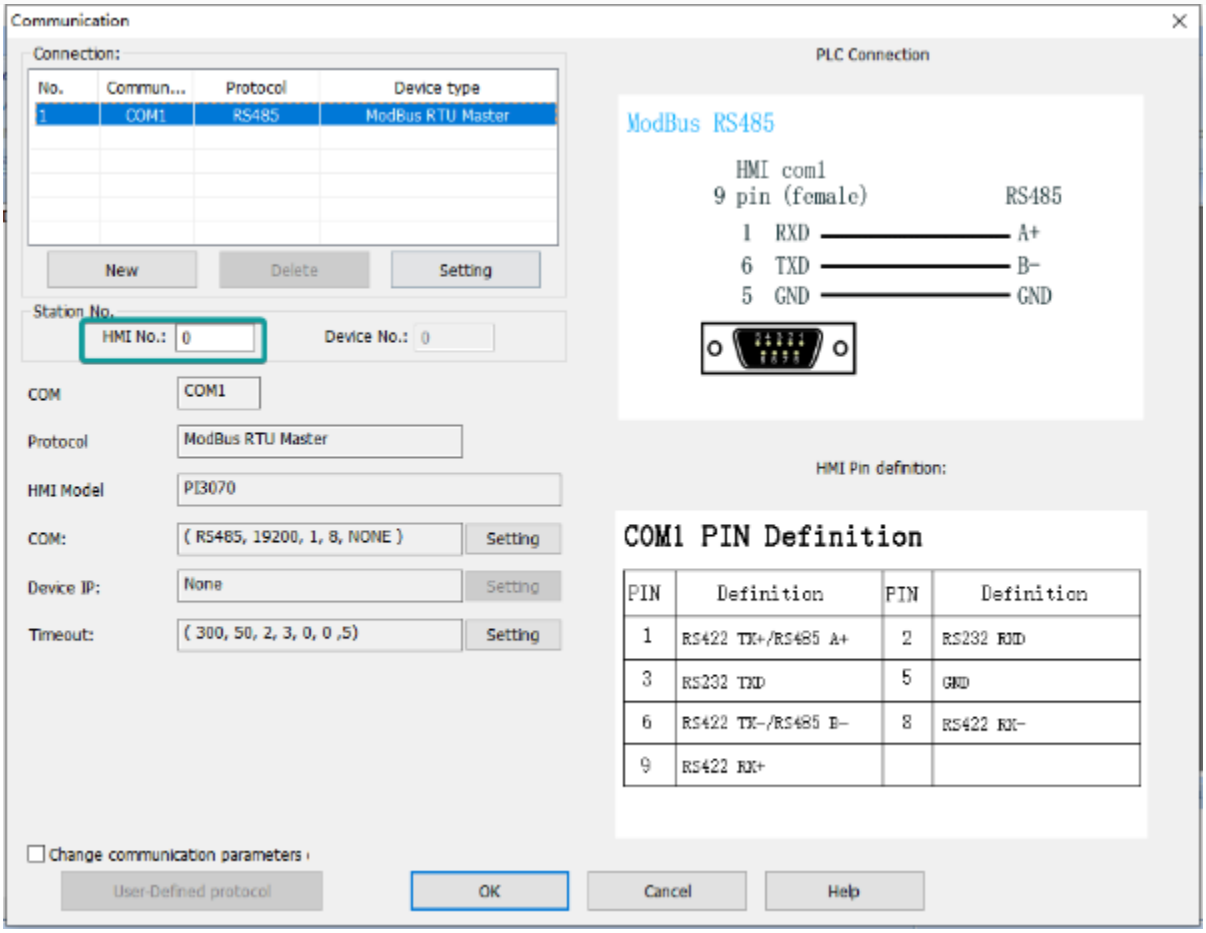
MODBUS RTU Master

Supported Series: MODBUS RTU CONTROLLER

HMI works as MODBUS SLAVE connecting with MASTER




Communication
Connection:
No.
Commun...
Protocol
Device type
1
COM1
RS485
ModBus RTU Master
New
Delete
Setting
Station No.
HMI No.:
0
Device No.:
0
COM
COM1
Protocol
ModBus RTU Master
HMI Model
PI3070
COM:
(RS485, 19200, 1, 8, NONE)
Setting
Device IP:
None
Setting
Timeout:
(300, 50, 2, 3, 0, 0 ,5)
Setting
4
Change communication parameters
User-Defined protocol
OK
Cancel
Help
PLC Connection
COM port setting
Connection:
RS485
Baud rate:
19200
Stop bits:
1
Data bits:
8
Parity:
NONE
OK
Cancel
HMI Pin definition:
COM1 PIN Definition
PIN
Definition
PIN
Definition
1
RS422 TX+/RS485 A+
2
RS232 RXD
3
RS232 TXD
5
GND
6
RS422 TX-/RS485 B-
8
RS422 RX-
9
RS422 RX+



HMI Settings

Items	Settings	Note
Protocol	MODBUS RTU Master	
Connection	RS485/RS232	
Baud rate	2400~187500	
Data bit	8	
Parity	Even/ Odd/ None	

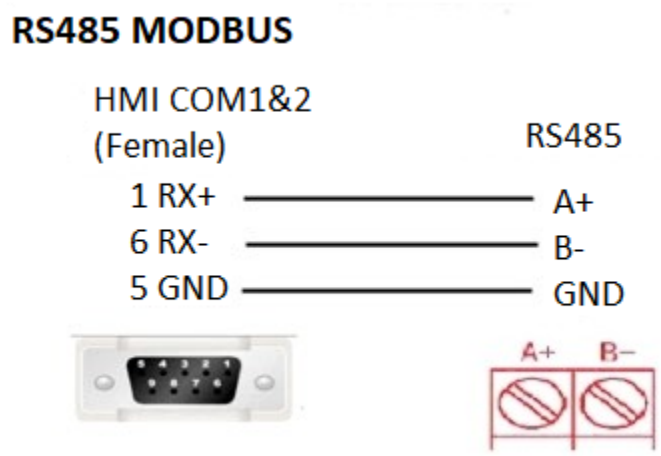
Stop bit	1/2	
Station No.	0~255	

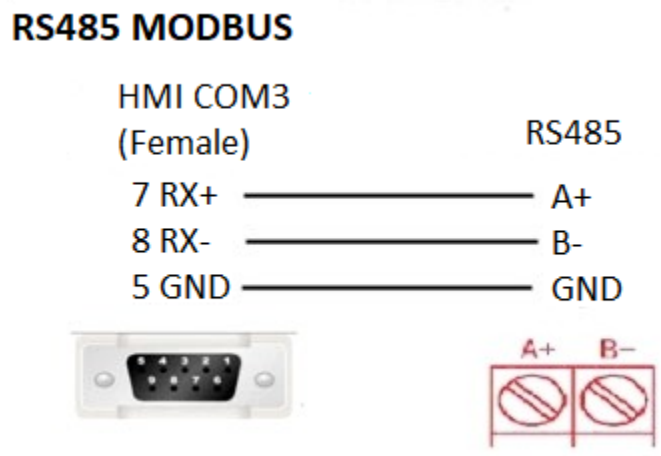
Address List

Type	HMI address	MODBUS code	Range
Bit	HDX3000.0~HDX3499.15	0	0~7999
Word	HDW3500~HDW7999	4	0~4499

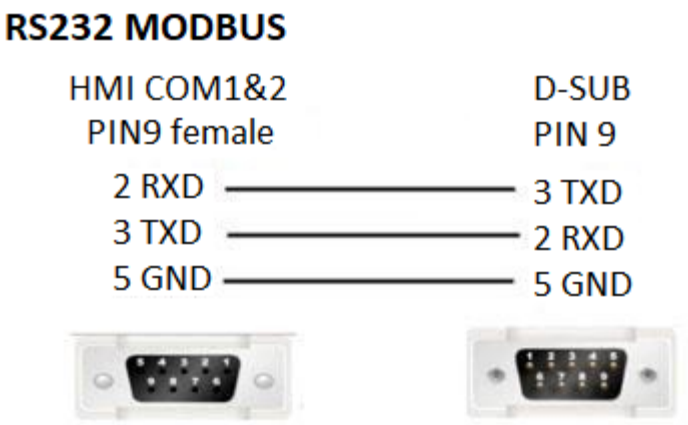
Cable Wiring

- **RS485**





- **RS232**



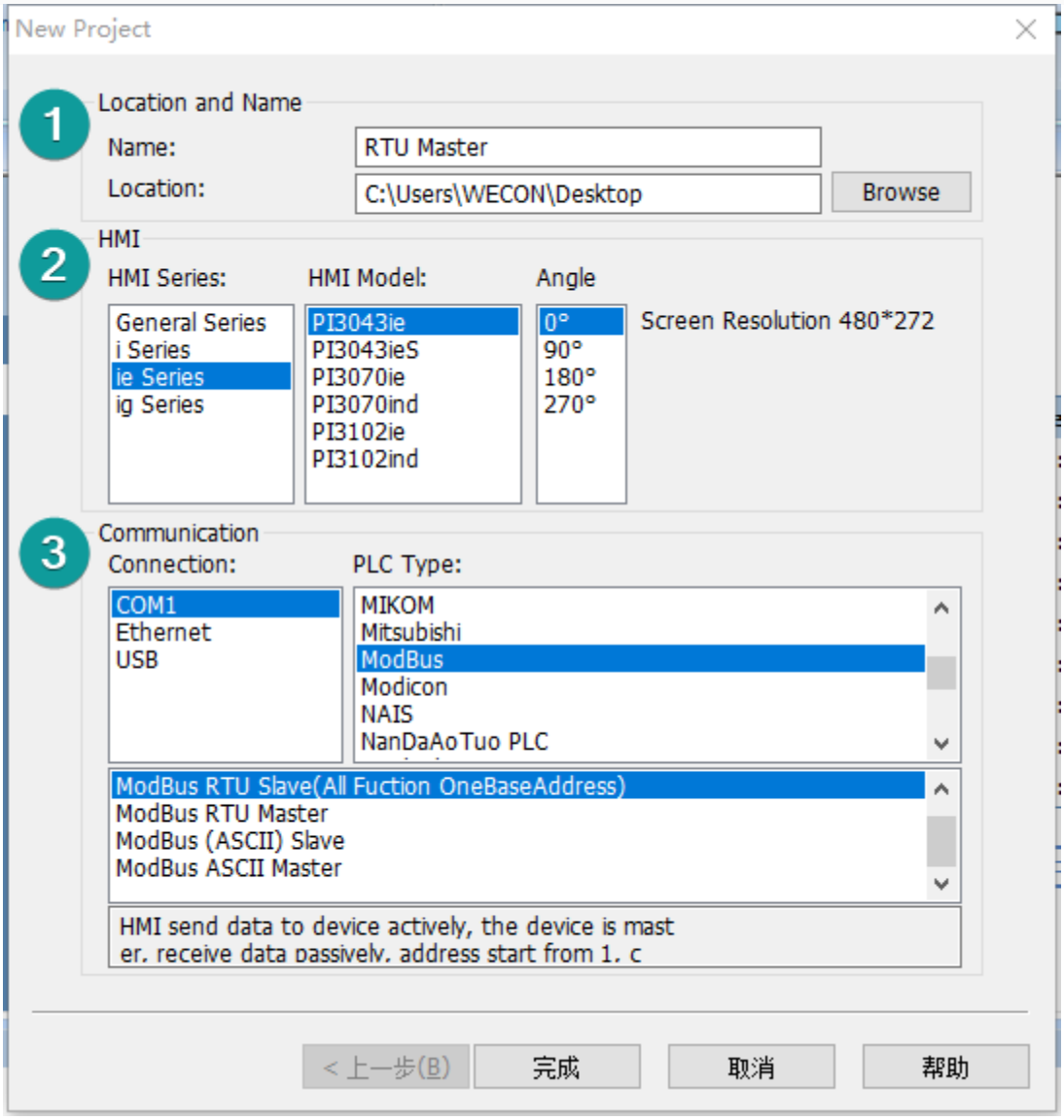
✎**Note:** COM3 only available in PI8000/PI9000 series.

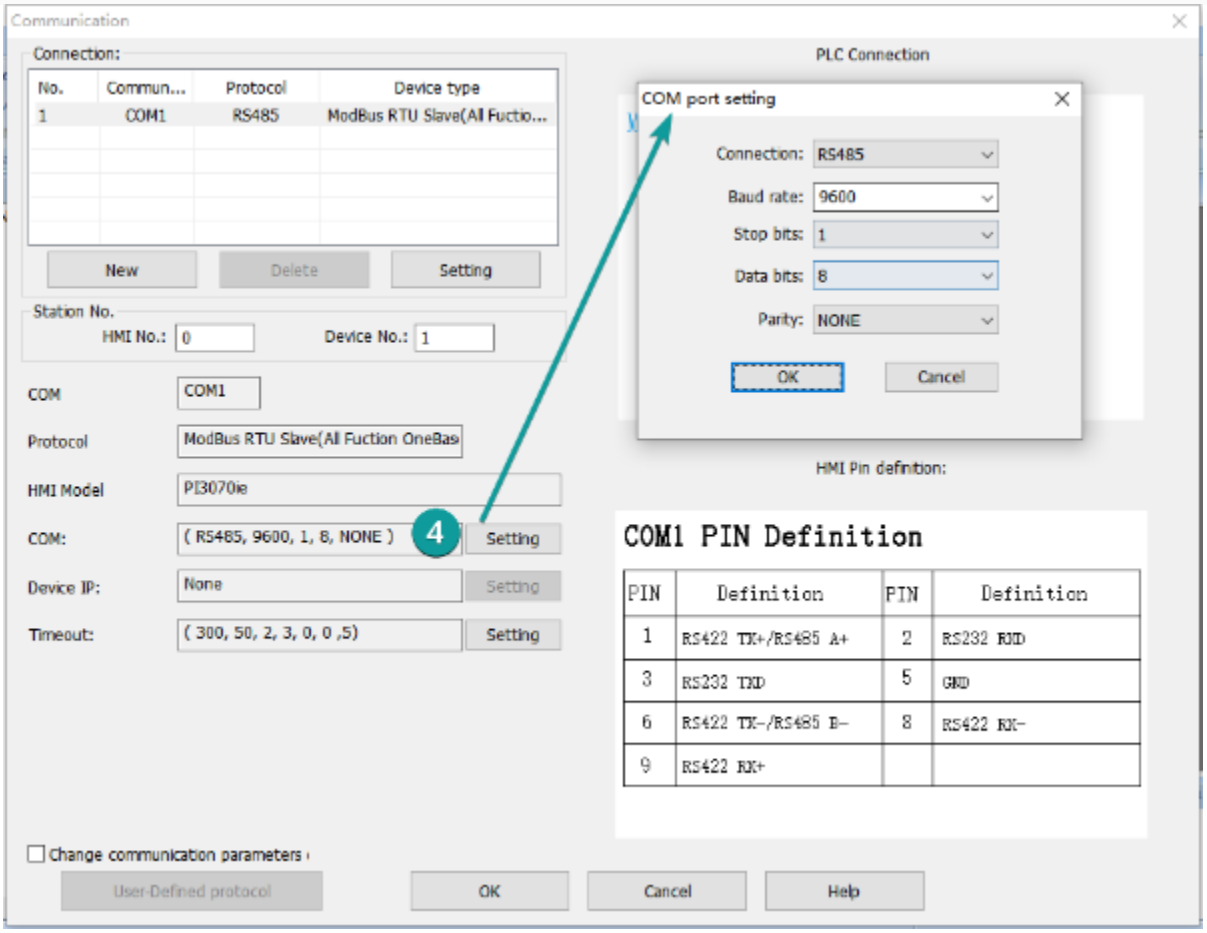
MODBUS RTU Slave (All function)/(All function OneBaseAddress)

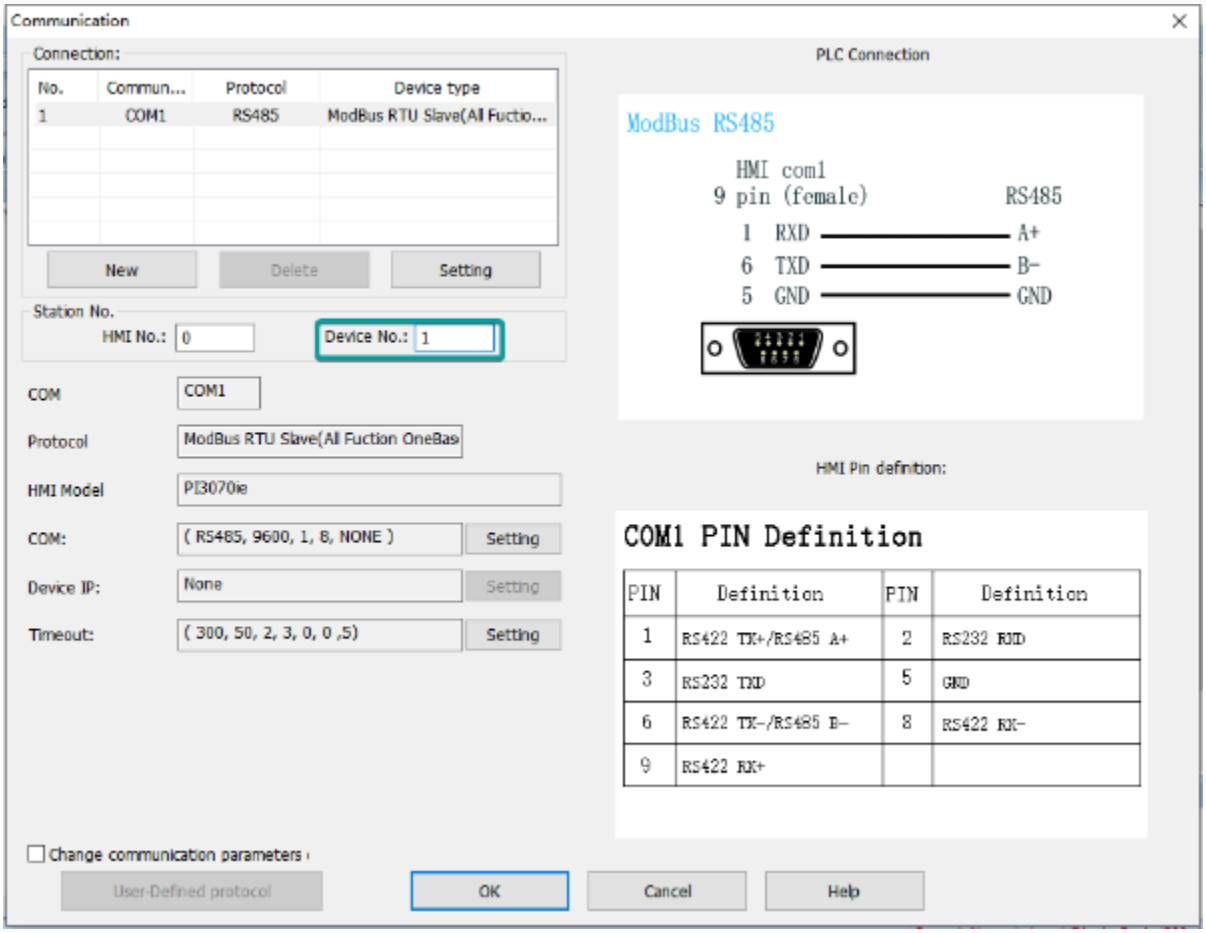
Supported Series: MODBUS RTU CONTROLLER

HMI works as MODBUS MASTER connecting with SLAVE.

The addresses in [All function] start from 0, while the addresses in [All function OneBaseAddress] start from 1 (offset 1).


New Project
1
Location and Name
Name:
RTU Master
Location:
C:\Users\WECON\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
General Series
i Series
ie Series
ig Series
PI3043ie
PI3043ieS
PI3070ie
PI3070ind
PI3102ie
PI3102ind
0°
90°
180°
270°
Screen Resolution 480*272
3
Communication
Connection:
PLC Type:
COM1
Ethernet
USB
MIKOM
Mitsubishi
ModBus
Modicon
NAIS
NanDaAoTuo PLC
ModBus RTU Slave(All Fuction OneBaseAddress)
ModBus RTU Master
ModBus (ASCII) Slave
ModBus ASCII Master
HMI send data to device actively, the device is mast
er, receive data passively, address start from 1, c
< 上一步(B)
完成
取消
帮助


Communication
Connection:
No.
Commun...
Protocol
Device type
1
COM1
RS485
ModBus RTU Slave(All Fuctio...
New
Delete
Setting
Station No.
HMI No.:
0
Device No.:
1
COM
COM1
Protocol
ModBus RTU Slave(All Fuction OneBas
HMI Model
PI3070ie
COM:
(RS485, 9600, 1, 8, NONE)
4
Setting
Device IP:
None
Setting
Timeout:
(300, 50, 2, 3, 0, 0 ,5)
Setting
Change communication parameters
User-Defined protocol
OK
Cancel
Help
PLC Connection
COM port setting
Connection:
RS485
Baud rate:
9600
Stop bits:
1
Data bits:
8
Parity:
NONE
OK
Cancel
HMI Pin definition:
COM1 PIN Definition
PIN
Definition
PIN
Definition
1
RS422 TX+/RS485 A+
2
RS232 RXD
3
RS232 TXD
5
GND
6
RS422 TX-/RS485 B-
8
RS422 RX-
9
RS422 RX+



HMI Settings

Items	Settings	Note
Protocol	MODBUS RTU Slave (All function)/(All function OneBaseAddress)	
Connection	RS485/RS232	
Baud rate	2400~187500	
Data bit	8	
Parity	Even/ Odd/ None	

Stop bit	1/2	
PLC station No.	0~255	

Address List

Type	Address Type	Function code & Description
Word	3	04 (read input register: read current binary value in one or more input registers)
		06 (write single register: write a binary value to a holding register)
		10 (write values to multiple addresses)
	4	03 (read holding register: read current binary value in one or more holding registers)
		06 (write single register: write a binary value to a holding register)
		10 (write values to multiple addresses)
	W6	03 (read holding register: read current binary value in one or more holding registers)
		06 (write single register: write a binary value to a holding register)
		10 (write values to multiple addresses)
	W16	03 (read holding register: read current binary value in one or more holding registers)
		10 (write values to multiple addresses)

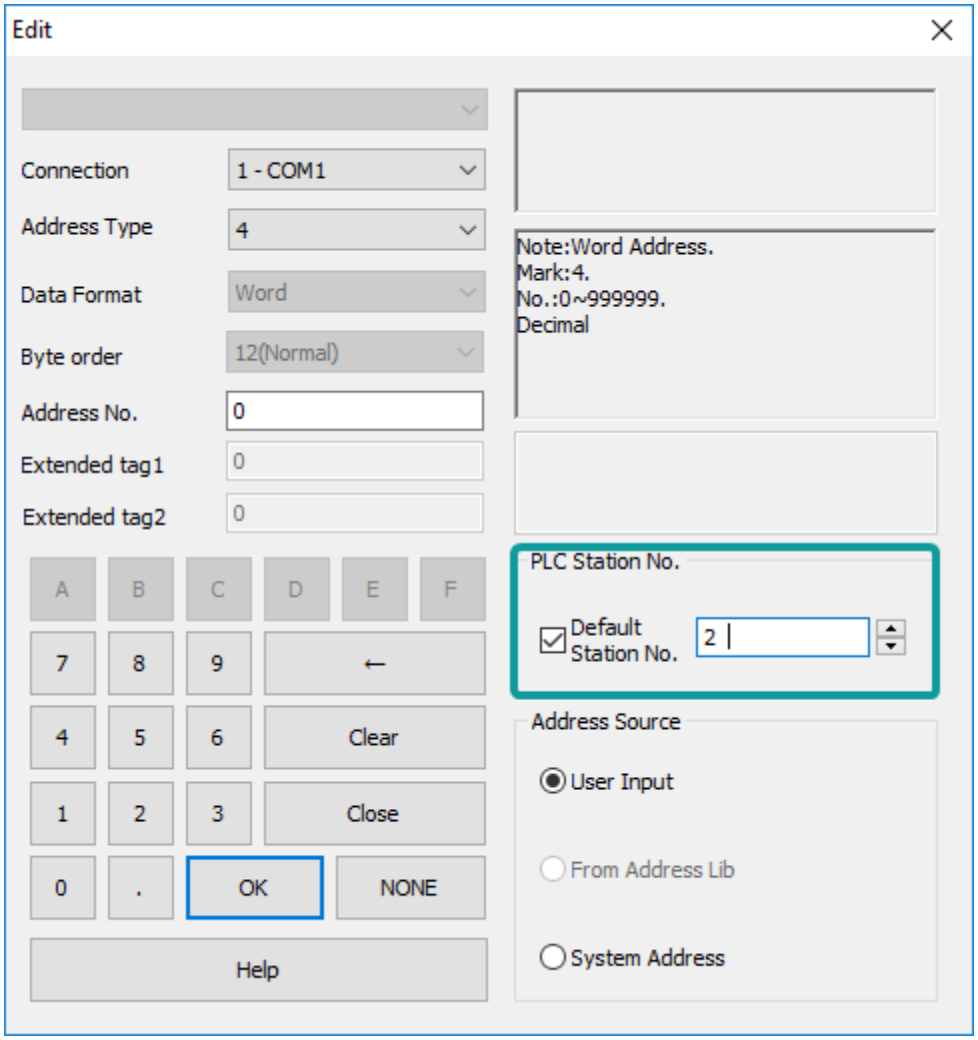
Bit	0	01 (Read coil state)
		05 (Force a single coil to force the on/off state of a logic coil)
		0F (Write multiple bits, ie write continuously)
	1	02 (Read the input state)
		05 (Force a single coil to force the on/off state of a logic coil)
		0F (Write multiple bits)
	W5	01 (Read coil state to obtain the current state of a set of logic coils)
		05 (Force a single coil to force the on/off state of a logic coil)
		0F (Write multiple bits)
	W15	01 (Read coil state to obtain the current state of a set of logic coils)
		0F (Write multiple bits)

✎**Note:**

- Modbus can also support getting bit from the word, which could access the address such as 100.1 and other formats.
- The function codes sent out are the same as those that read and write words.

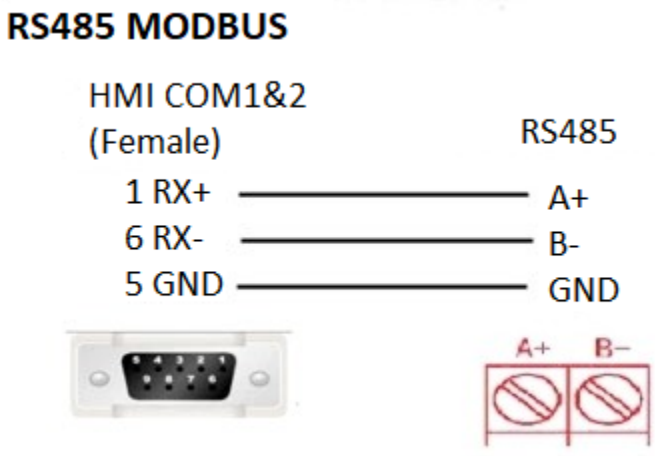
Station number for more than one slaves

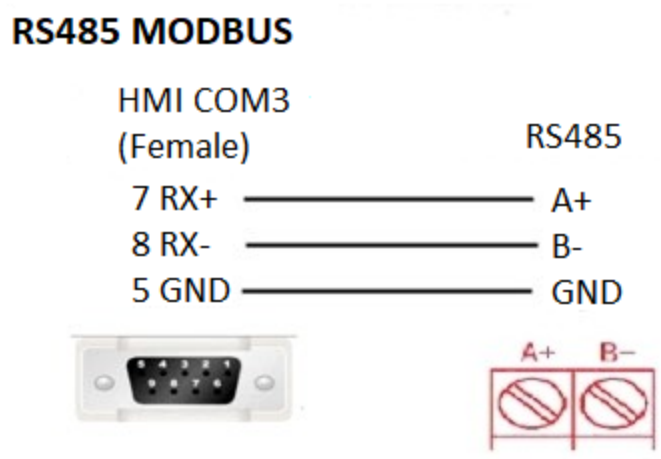
If there are more than one slaves connected to HMI, please set slave station number during editing address, as below shows.



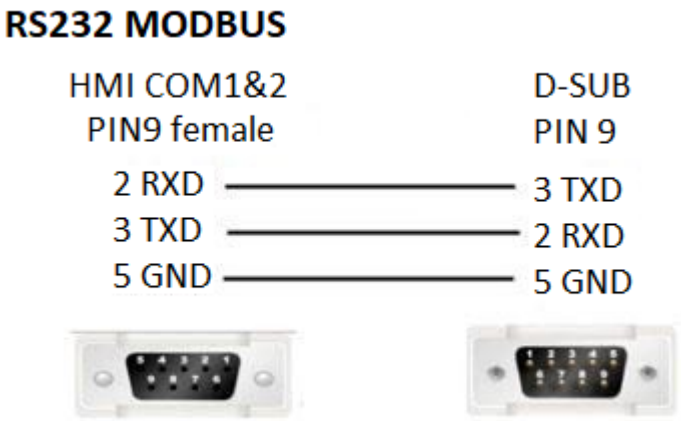
Cable Wiring

- **RS485**





- **RS232**

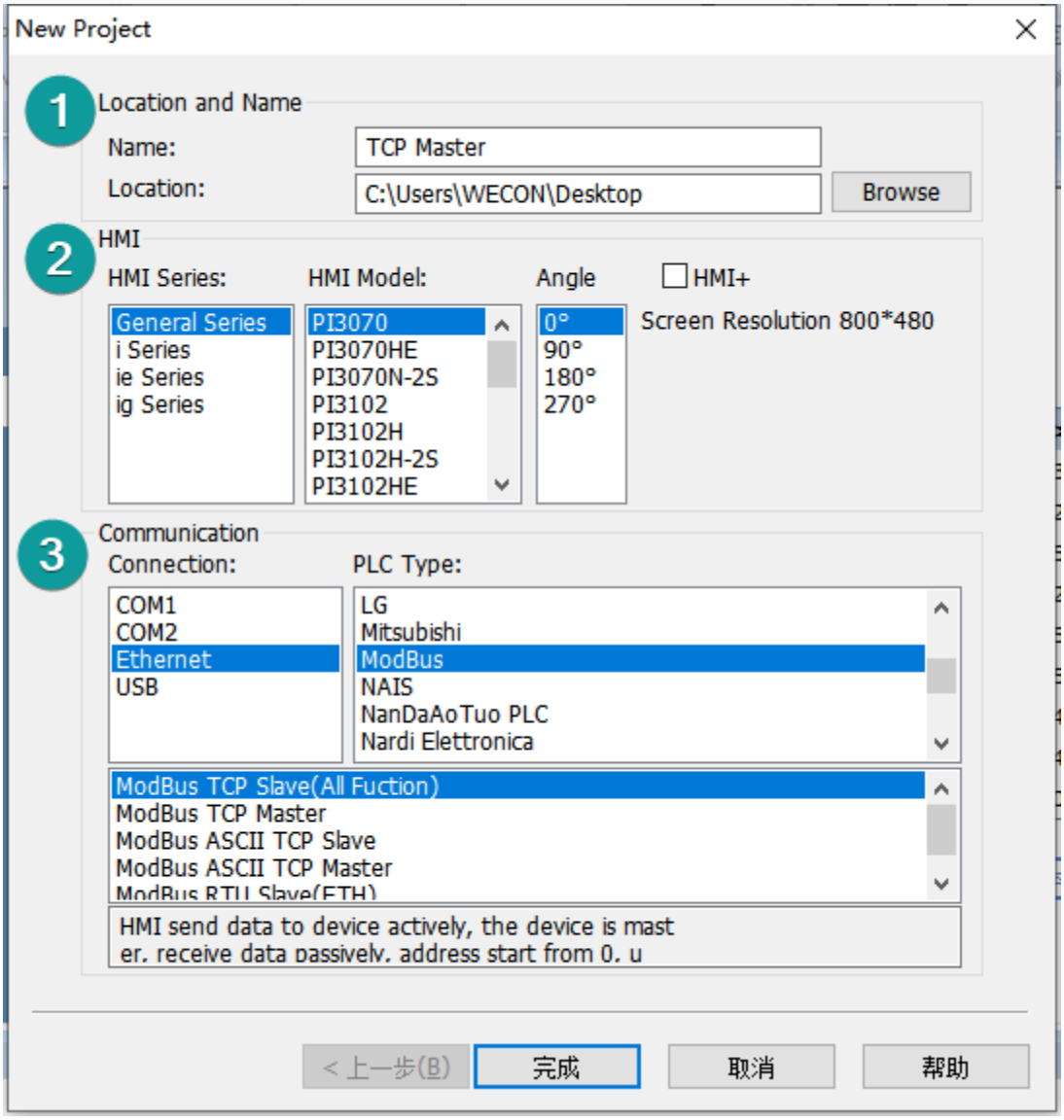


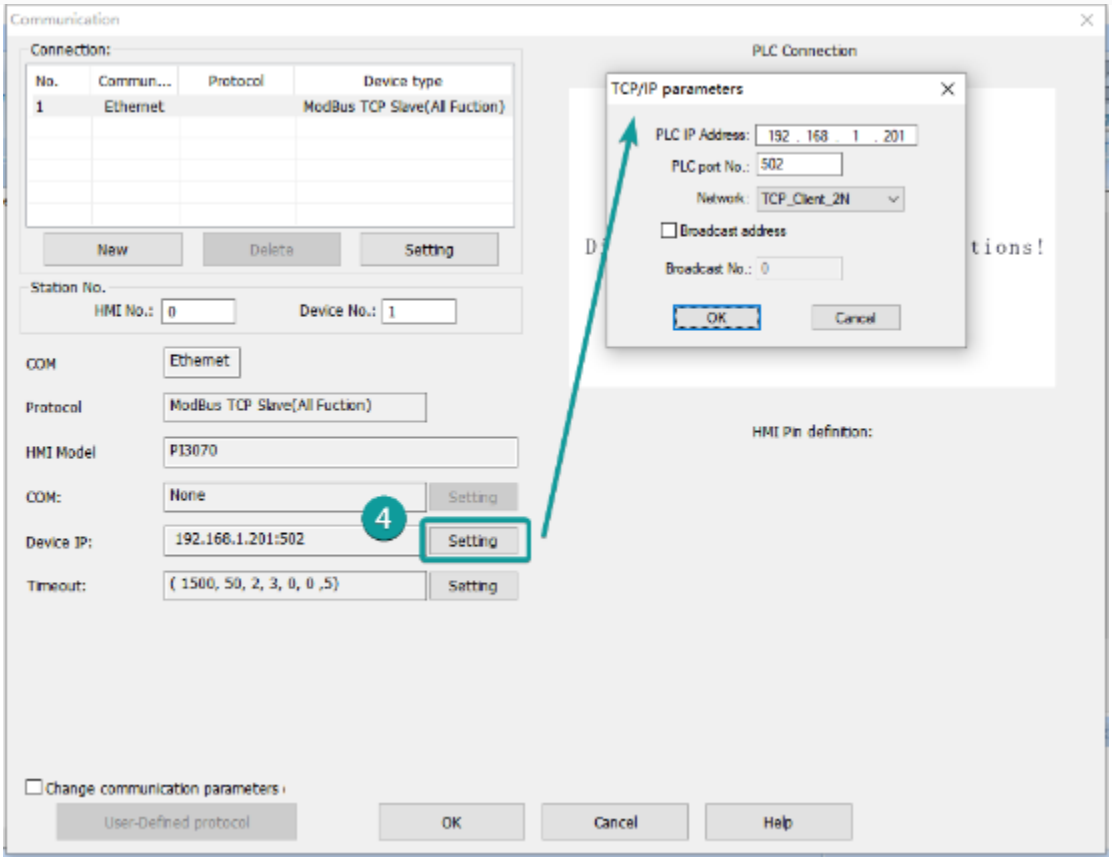
✎**Note:** COM3 only available in PI8000/PI9000 series.

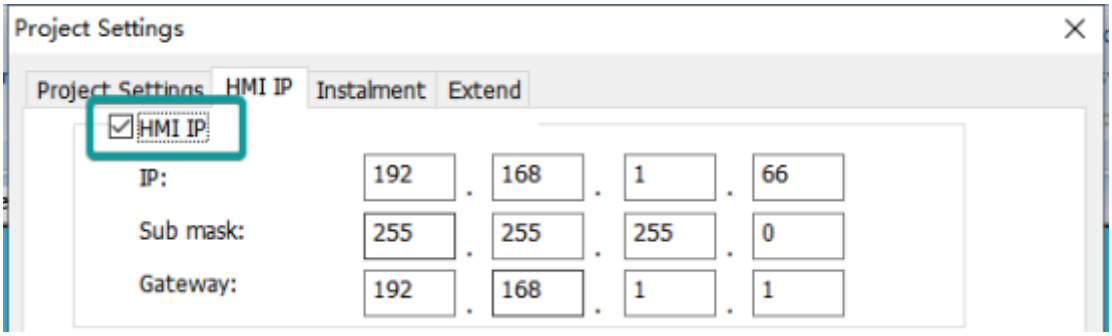
MODBUS TCP Slave (All function)

Supported series: MODBUS TCP controller

Note: Although the protocol selected for the HMI is MODBUS TCP Slave, the HMI is working as a MODBUS TCP Master connected to TCP SLAVE.


New Project
1
Location and Name
Name:
TCP Master
Location:
C:\Users\WECON\Desktop
Browse
2
HMI
HMI Series:
HMI Model:
Angle
HMI+
General Series
i Series
ie Series
ig Series
PI3070
PI3070HE
PI3070N-2S
PI3102
PI3102H
PI3102H-2S
PI3102HE
0°
90°
180°
270°
Screen Resolution 800*480
3
Communication
Connection:
PLC Type:
COM1
COM2
Ethernet
USB
LG
Mitsubishi
ModBus
NAIS
NanDaAoTuo PLC
Nardi Elettronica
ModBus TCP Slave(All Fuction)
ModBus TCP Master
ModBus ASCII TCP Slave
ModBus ASCII TCP Master
HMI send data to device actively, the device is mast
er, receive data passively, address start from 0, u
< 上一步(B)
完成
取消
帮助





HMI Setting

Items	Settings	Note
Protocol	MODBUS TCP Slave (All function)	
Connection	Ethernet	
Port No.	502	

PLC station No.	1	

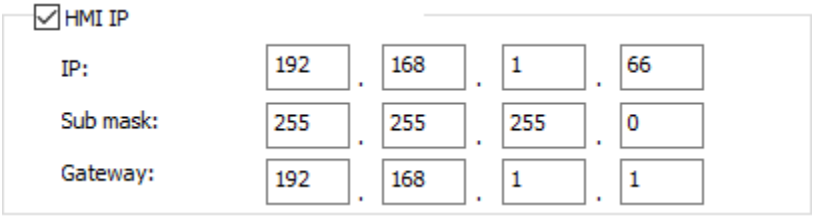
Address List

Type	Register	Function code & Description
Word	3	04 (read input register: read current binary value in one or more input registers)
		06 (write single register: write a binary value to a holding register)
		10 (write values to multiple addresses)
	4	03 (read holding register: read current binary value in one or more holding registers)
		06 (write single register: write a binary value to a holding register)
		10 (write values to multiple addresses)
	W6	03 (read holding register: read current binary value in one or more holding registers)
		06 (write single register: write a binary value to a holding register)
		10 (write values to multiple addresses)
	W16	03 (read holding register: read current binary value in one or more holding registers)
		10 (write values to multiple addresses)
Bit	0	01 (Read coil state)

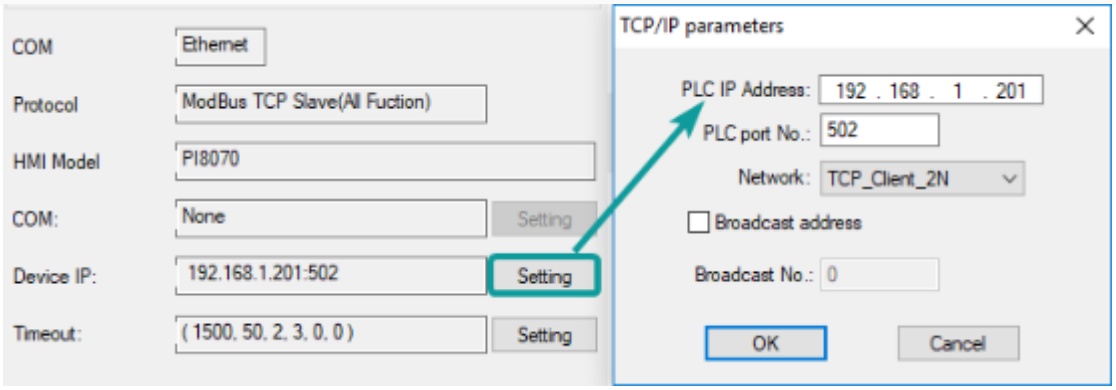
		05 (Force a single coil to force the on/off state of a logic coil)
		0F (Write multiple bits, ie write continuously)
	1	02 (Read the input state)
		05 (Force a single coil to force the on/off state of a logic coil)
		0F (Write multiple bits)
	W5	01 (Read coil state to obtain the current state of a set of logic coils)
		05 (Force a single coil to force the on/off state of a logic coil)
		0F (Write multiple bits)
	W15	01 (Read coil state to obtain the current state of a set of logic coils)
		0F (Write multiple bits)

Communication Settings

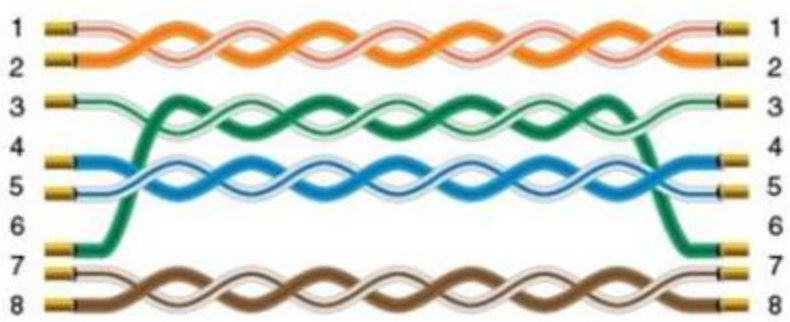
Enable HMI Ethernet in [Project Settings];



Set PLC IP in [Device IP] settings;



Cable Wiring



Printer

TSPL label printer

Introduction

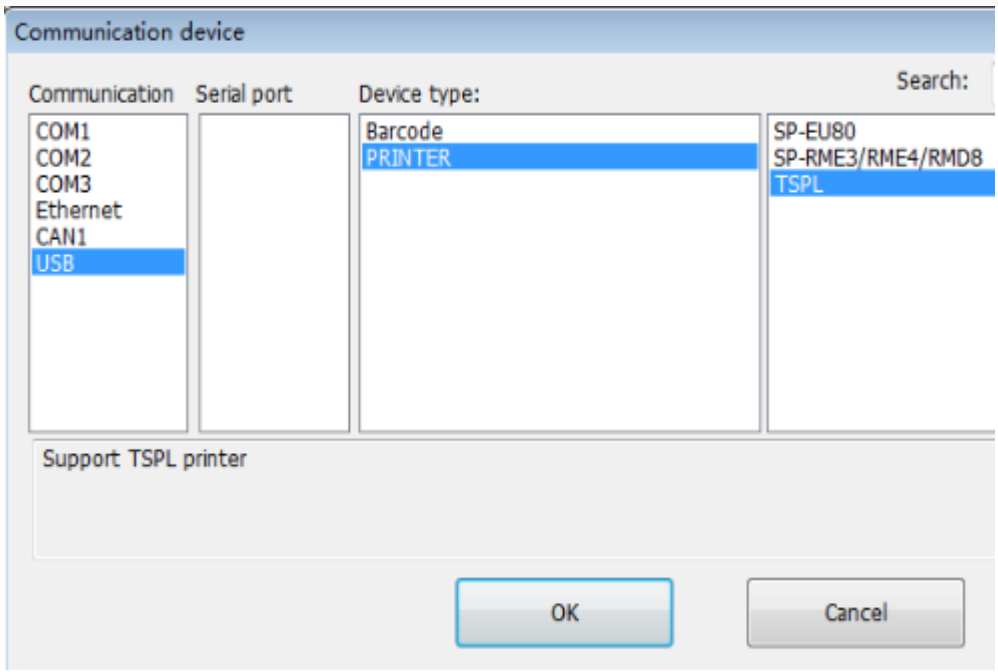
TSPL label printer protocol supports following models.

- SPRT TL21: https://www.sprinter.com.cn/show-60-62-1.html
- DL-888D: https://www.deliworld.com/product/detail/7624

Setting Step

Select the protocol

- Create a new project, select the TSPL label printer protocol as shown below.



Set parameters

- The connection between the TSPL label printer and the HMI is via the USB-A interface, no need to configure serial port parameters.

Printer register

Register	System	Range	Function
TSPL_SP	decimal	0 - 1	Set the paper size
TSPL_PT	decimal	0 - 1999	Print text
TSPL_PQ	decimal	0 - 999	Print QR code
TSPL_PB	decimal	0 - 999	Print barcode
TSPL_PR	decimal	0 - 1	Print offset
TSPL_PN	decimal	0 - 0	Trigger printing

TSPL_PS	decimal	0 - 0	Print status

- Set paper size:
  - TSPL_SP0: width of paper, unit: mm.
  - TSPL_SP1: height of paper, unit: mm.
- Print text:
  - TSPL_PT can print up to 20 texts. TSPL_PT0-TSPL_PT99 is the first text; TSPL_PT100-TSPL_PT199 is the second text; … TSPL_PT1000-TSPL_PT1999 is the 20th text.
  - Detailed parameter settings of each text is shown as below table. For example, first text,TSPL_PT0-TSPL_PT99.

Register	**Function**	**Description**
TSPL_PT0	X coordinate	Unit: dot
TSPL_PT1	Ycoordinate	Unit: dot
TSPL_PT2	Rotation angle	0: 0 degrees 1: 90 degrees 2: 180 degrees 3: 270 degrees
TSPL_PT3	Size	Range: 0-3
TSPL_PT4 - TSPL_PT99	QR code content(text content)	Use character input device to configure

By analogy, we can know the text information configuration of the 2nd to 20th QR codes

Print QR code:

- TSPL_PQ can print up to 10 QR codes. TSPL_PQ0-TSPL_PQ99 is the first QR code; TSPL_PQ100-TSPL_PQ199 is the second QR code; ...., TSPL_PQ900-TSPL_PQ999 is the tenth QR code.
- Specific parameter description of each item: for example, the first QR code, TSPL_PQ0-TSPL_PQ99:

Register	**Function**	**Description**
TSPL_PQ0	X coordinate	Unit: dot

TSPL_PQ1	Ycoordinate	Unit: dot
TSPL_PQ2	Rotation angle	0: 0 degrees 1: 90 degrees 2: 180 degrees 3: 270 degrees
TSPL_PQ3	Size	Range: 0-5
TSPL_PQ4 - TSPL_PQ99	QR code content	Use character input device to configure

- By analogy, we can know the text information configuration of the 2nd to 20th QR codes.

Print bar code:

- TSPL_PB can print up to 10 barcodes. TSPL_PB0-TSPL_PB99 is the first bar code; TSPL_PB100-TSPL_PB199 is the second bar code; ..., TSPL_PB900-TSPL_PB999 is the tenth bar code.
- Specific parameter description of each item: for example, the first barcode, TSPL_PB0-TSPL_PB99:

Register	**Function**	**Description**
TSPL_PB0	X coordinate	Unit: dot
TSPL_PB1	Ycoordinate	Unit: dot
TSPL_PB2	Rotation angle	0: 0 degrees 1: 90 degrees 2: 180 degrees 3: 270 degrees
TSPL_PB3	height	Unit: dot
TSPL_PB4	width	Range:0-2
TSPL_PB5- TSPL_PB99	Bar code content	Use character input device to configure

By analogy, we can know the text information configuration of the 2nd to 20th bar codes.

Print offset:

- TSPL_PR0: X coordinate offset, unit: mm;

- TSPL_PR1: Y coordinate offset, unit: mm.

Trigger printing:

- TSPL_PN0 = 1: trigger the printer to start printing.

Printing status:

- TSPL_PS0 = 1: The printing is normal.
- TSPL_PS0 = 1: The printing is abnormal.

Print picture

- For the function of printing pictures, please refer to the configuration of [Printer object].

Conversion between dot and mm

- Dot is the meaning of pixels. For the conversion between dot and mm, please refer to the printer manual or consult the customer service of the corresponding printer manufacturer. For example, SPRT TL21: 8 dots / mm, that is, 1mm = 8 dot.

EpsonTM series

HMI Settings

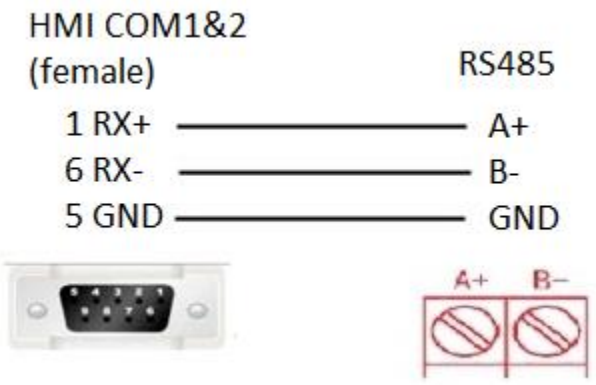
Item	Settings	Note
Protocol	EPSON-TM-T82II/TM-XXX	
Connection	RS232	
Baud rate	9600~115200	
Data bit	8	
Parity	None	
Stop bit	1	
PLC station No.	1	

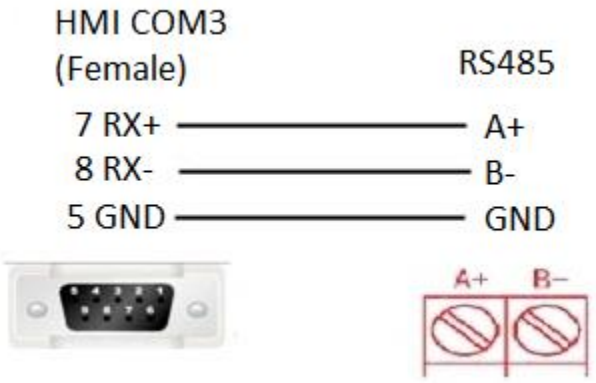
Each printer protocol has default parameter. These parameters could be configured by addresses. Error parameters may cause print failure.

Printer Settings

Address	Description	Value
HSW10603	Print direction (only valid for print function)	1
HSW10604	Dot Matrix Type	1
HSW10605	Print width (depending on printer and paper)	384
HSW10606	Printer instruction type	1
HSW10607	Paper cut	2
HSW10608	Alignment (only valid for print function)	1

Cable Wiring





✎**Note:** COM3 only available in PI8000/PI9000 series.

Create communication with Schneider PLC

Schneider MODBUS RTU

HMI Setting

Parameters	Recommended	Notes
Protocol	Schneider MODBUS RTU	
Connection	RS485	
Baud rate	19200	
Data bit	8	
Parity	Even	
Stop bit	1	
PLC station No.	1	

PLC Setting

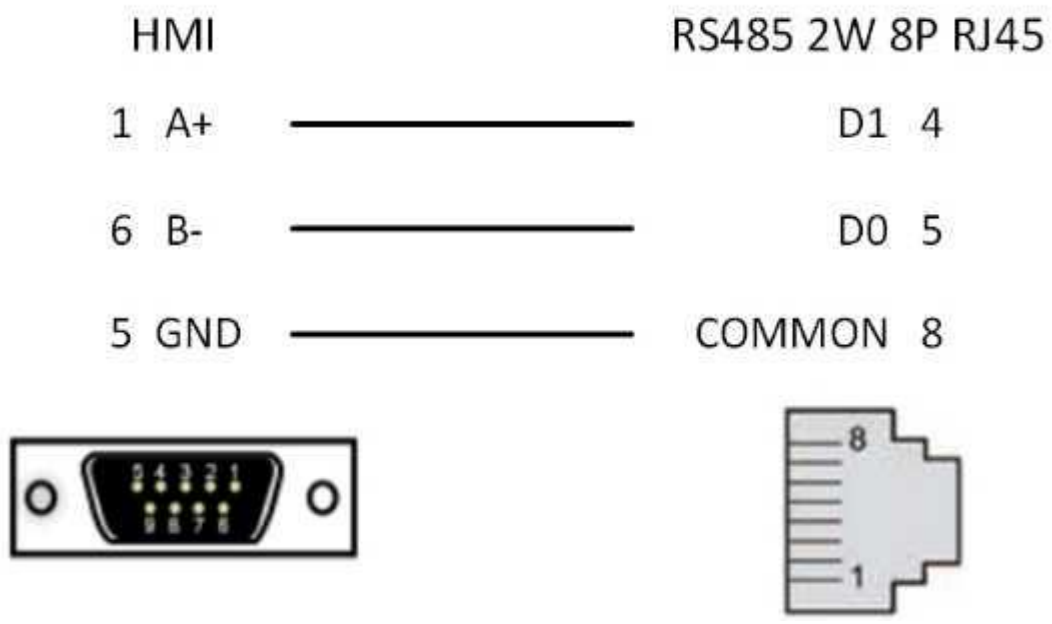
Communication mode	Modbus RTU protocol

Device Address

Bit/Word	Device type	Format	Range	Memo
B	IX	DDDDDo	0 ~ 655357	Input bit (read only)
B	QX	DDDDDo	0 ~ 655357	Write multiple coils
B	MX	DDDDDDo	0 ~ 9999997	Output register bit (octal)
W	MW	DDDDDD	0 ~ 999999	Output register
DW	MD	DDDDDD	0 ~ 999999	Output register

Wiring Diagram

RS-485 2W (RJ45 Connector): The following is the view from the soldering point of a connector.



Barcode Scanner

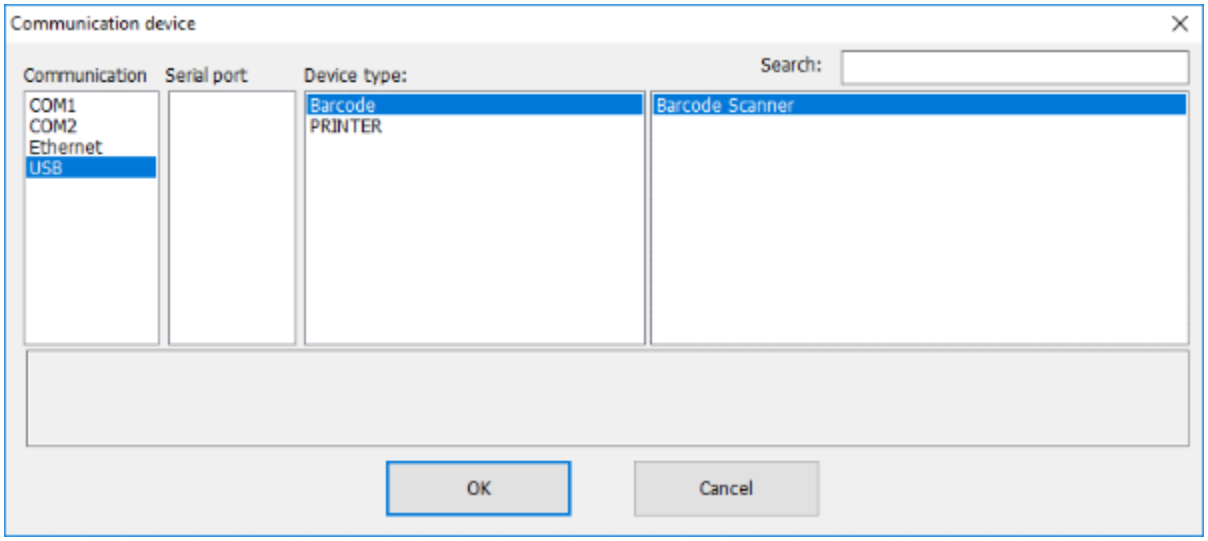
Supported: DELI 14880 barcode scanner

HMI Setting

Items	Settings	Note
Protocol	Barcode Scanner	
Connection	USB	

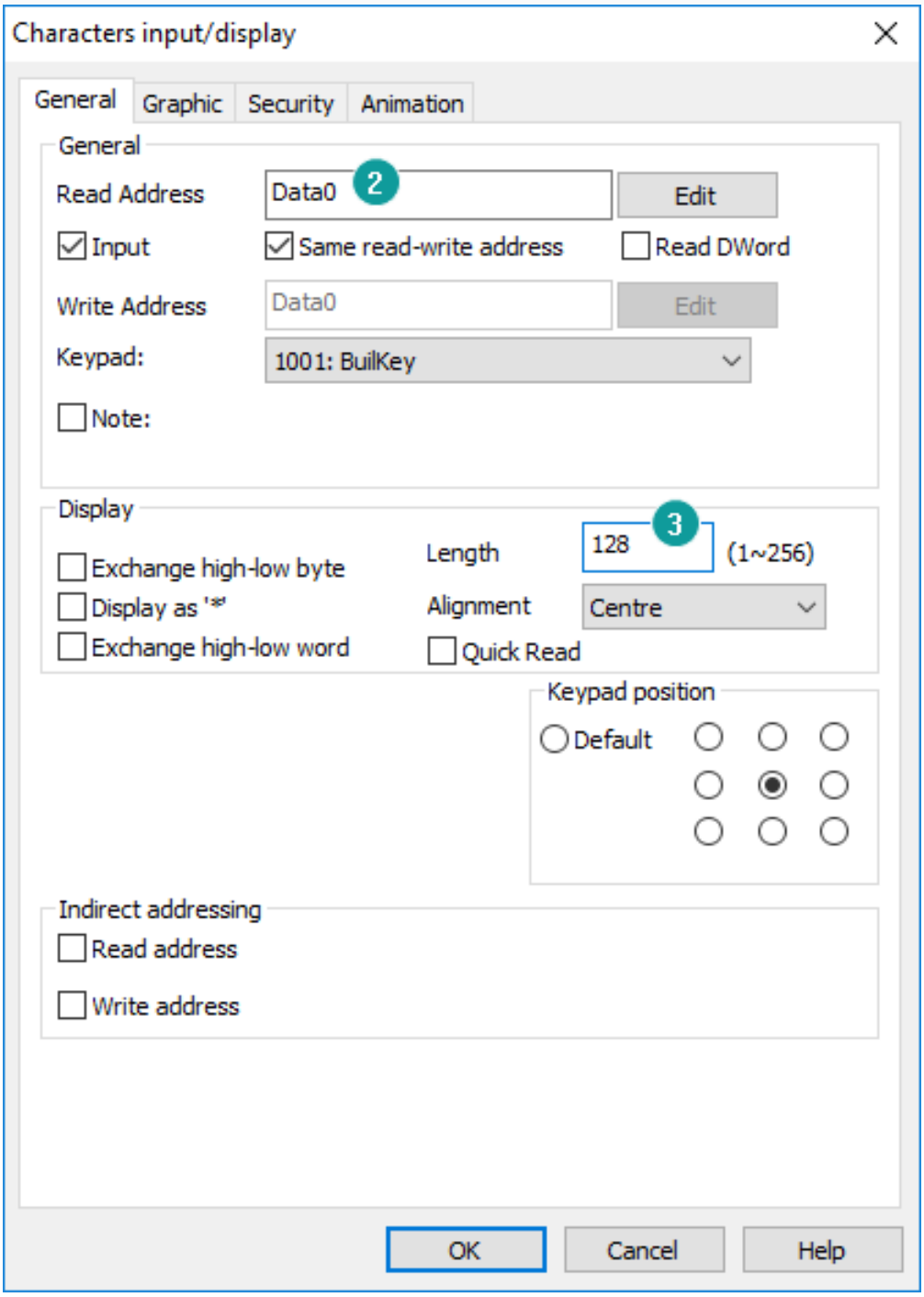
Operating Procedures

Select [Barcode Scanner];



Set address for receiving;

Set correct length;



✎**Note:**

- The protocol uploads the information acquired by the USB scanner to the HMI;
- The acquired information is displayed in string mode, so it is necessary to use [characters input/display] object;
- Recommended model: DELI 14880 barcode scanner;

Hitachi EHV Series (Ethernet)

Supported series: Hitachi EHV series

HMI Settings

Items	Settings	Note
Protocol	Hitachi EHV series	
Connection	Ethernet	
Port No.	3004~3007	

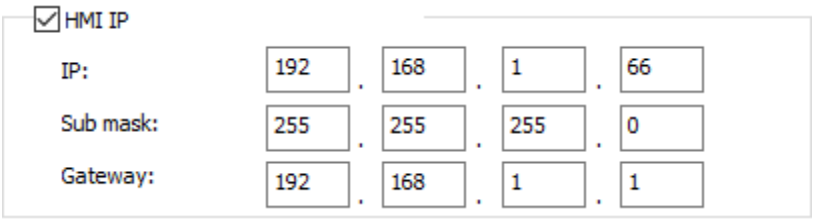
Address List

Type	Register	Range	Format	Note
Bit	T	0 - 2545	T DDDD	
	M	0 - 7FFF.f (Hex)	M HHHH.h	
	X	0 – FFFF.f (Hex)	X H1H2H3H4.h	H1H2H3H4 Module main number H1: Remote number H2: Unit number H3: Slot number H4: Word number of Module H Sub number of Module For example:X21.3 Slot number 2 Word number of module is 1 Bit number of module is 3 Remote number and unit number are 0
	Y	0 – FFFF.f (Hex)	Y H1H2H3H4.h	
	R	0 – FF.f (Hex)	R HH.h	
	L	0 - 73FF.f (Hex)	L HHHH.h	
Word	WM	0 - 7FFF (Hex)	WM HHHH	

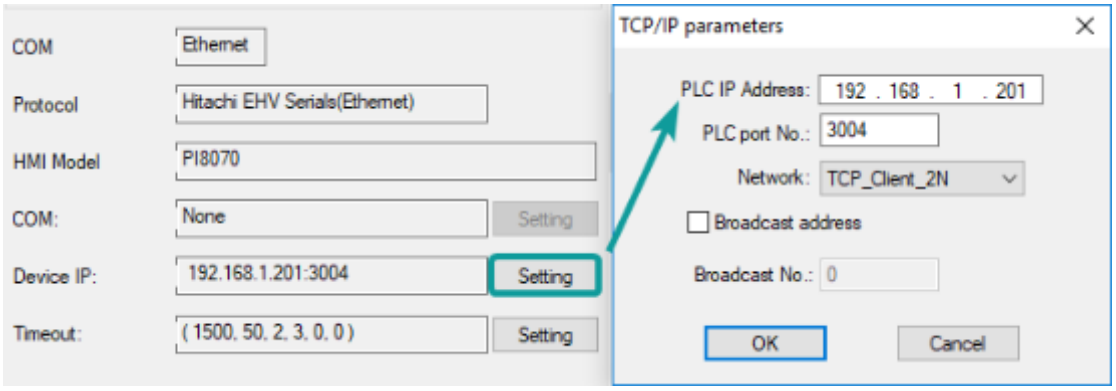
	WX	0 – FFFF (Hex)	WX H1H2H3H4	H1H2H3H4 Module main number H1: Remote number H2: Unit number H3: Slot number H4: Word number of module For example:WX21 Word number of module is 1 Slot number is 2 Remote number and unit number are 0
	WY	0 – FFFF (Hex)	WY H1H2H3H4	
	WR	0 – FFFF (Hex)	WR HHHH	
	WL	0 - 73FF (Hex)	WL HHHH	
	TC	0 - 2559	TC DDDD	

Communication settings in HMI

Enable HMI Ethernet in [Project Settings];

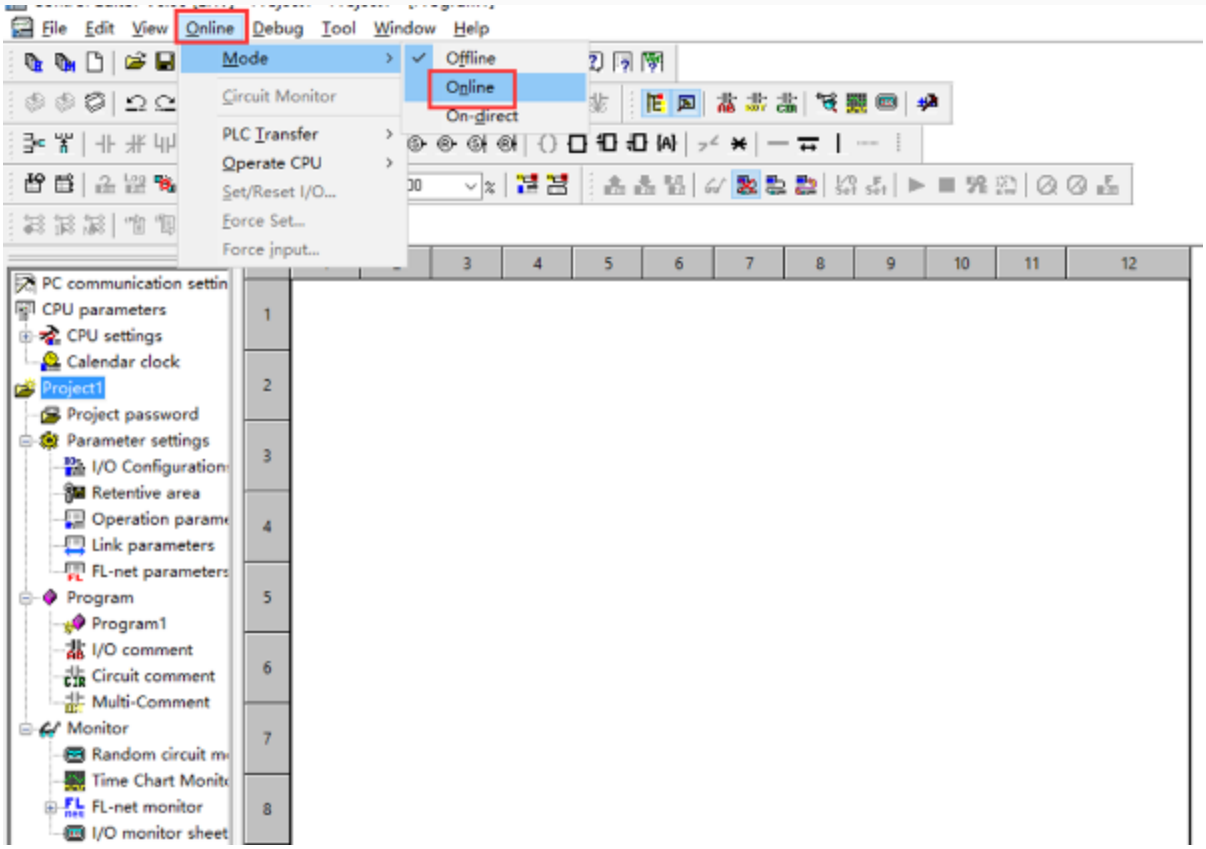


Set PLC IP in [Device IP] settings;

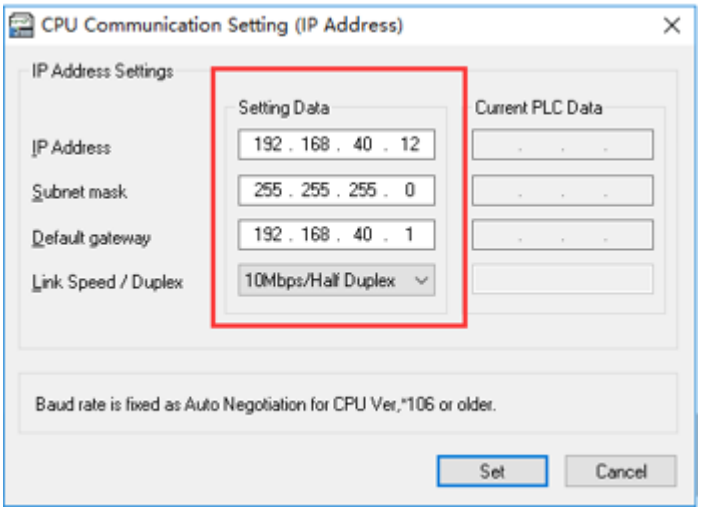


PLC Configuration

Connect with PLC, select[Online mode];



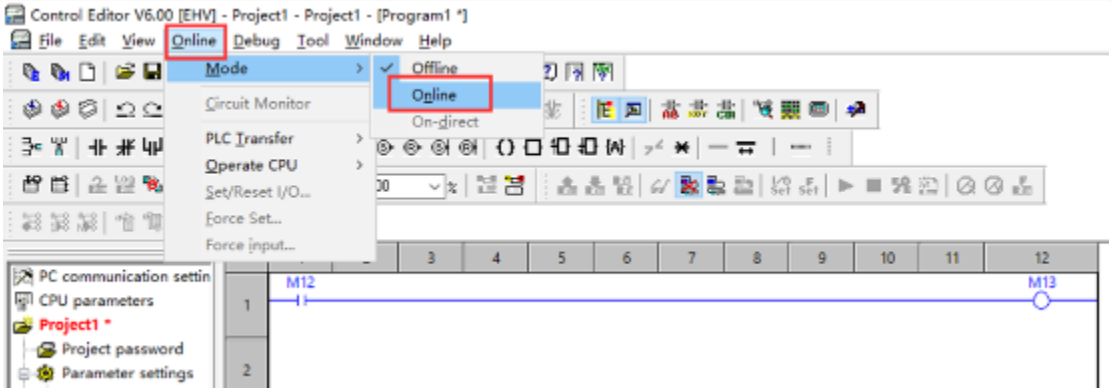
Set IP address, it is the same LAN parameters with HMI;



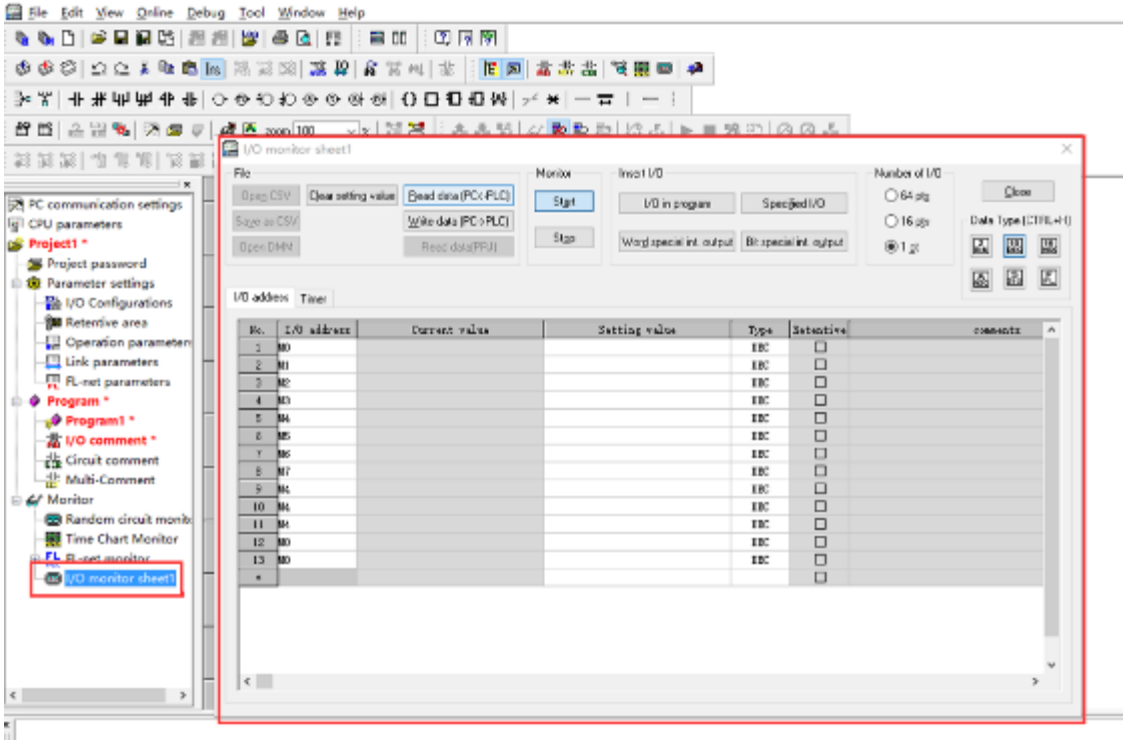
3) Save PLC communication parameter, and restart PLC

PLC Monitor Mode

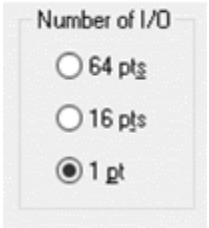
Connect with PLC and choose to “online” mode



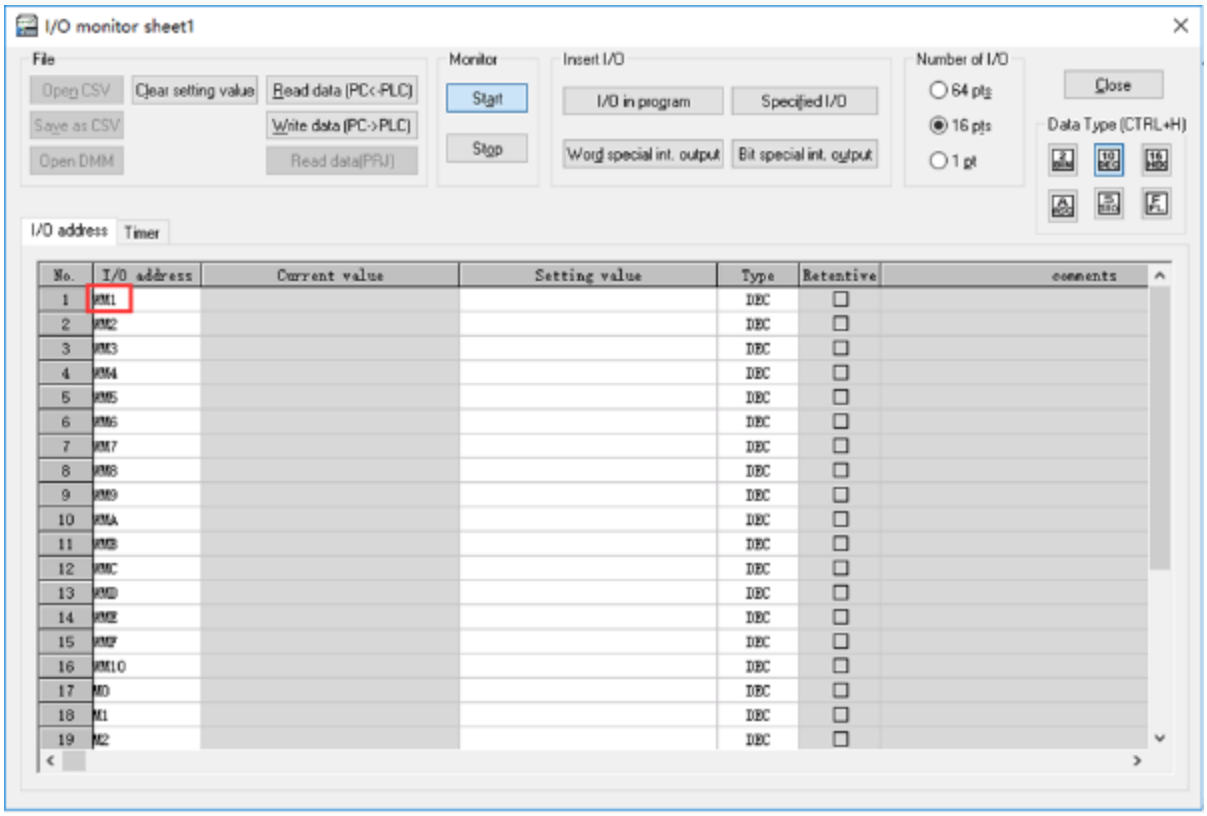
Open I/O monitor sheet1

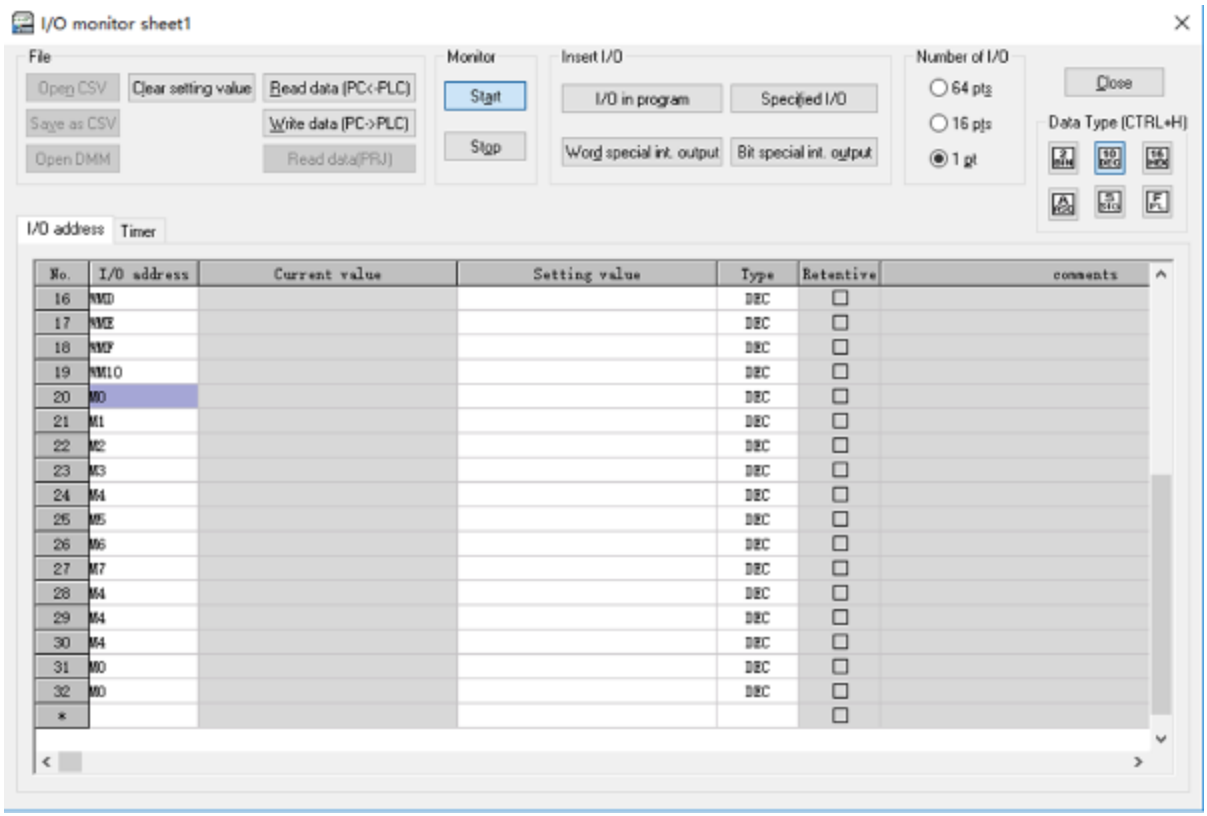


During monitoring bit address,1 pts should be selected; during monitoring word address, 16 pts should be selected



Enter the register address, click OK to view the value of the register.

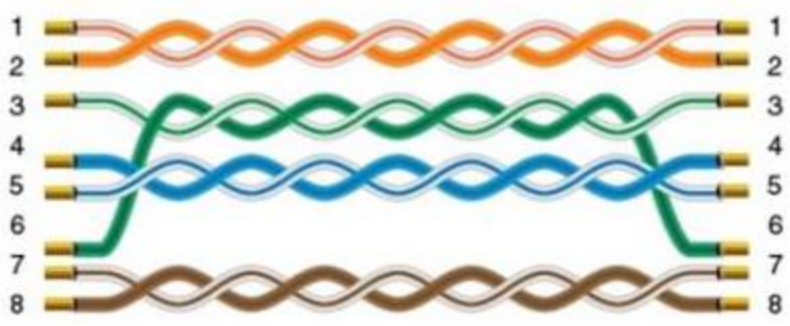

I/O monitor sheet1
File
Open CSV
Clear setting value
Read data (PC<-PLC)
Save as CSV
Write data (PC->PLC)
Open DMM
Read data(PRJ)
Monitor
Start
Stop
Insert I/O
I/O in program
Specified I/O
Word special int. output
Bit special int. output
Number of I/O
64 pts
16 pts
1 pt
Close
Data Type (CTRL+H)
I/O address
Timer
No.
I/O address
Current value
Setting value
Type
Retentive
comments
1 XM1
2 XM2
3 XM3
4 XM4
5 XM5
6 XM6
7 XM7
8 XM8
9 XM9
10 XMA
11 XMB
12 XMC
13 XMD
14 XME
15 XMF
16 XM10
17 M0
18 M1
19 M2
DEC


I/O monitor sheet1
File
Open CSV
Clear setting value
Read data (PC<-PLC)
Save as CSV
Write data (PC->PLC)
Open DMM
Read data(PRJ)
Monitor
Start
Stop
Insert I/O
I/O in program
Specified I/O
Word special int. output
Bit special int. output
Number of I/O
64 pts
16 pts
1 pt
Close
Data Type (CTRL+H)
I/O address
Timer
No.
I/O address
Current value
Setting value
Type
Retentive
comments
16 XMD
17 XME
18 XMF
19 XM10
20 M0
21 M1
22 M2
23 M3
24 M4
25 M5
26 M6
27 M7
28 M4
29 M4
30 M4
31 M0
32 M0
DEC

✎Note:

- Both word registers and bit registers support even continuous read/write functions;
- The range of registers is based on the specific PLC type;

Cable Wiring



IEC60870-5 104 Client

HMI Setting

Items	Settings	Note
Protocol	IEC60870-5 104 Client	
Connection	Ethernet	
Port No.	2404	

Address List

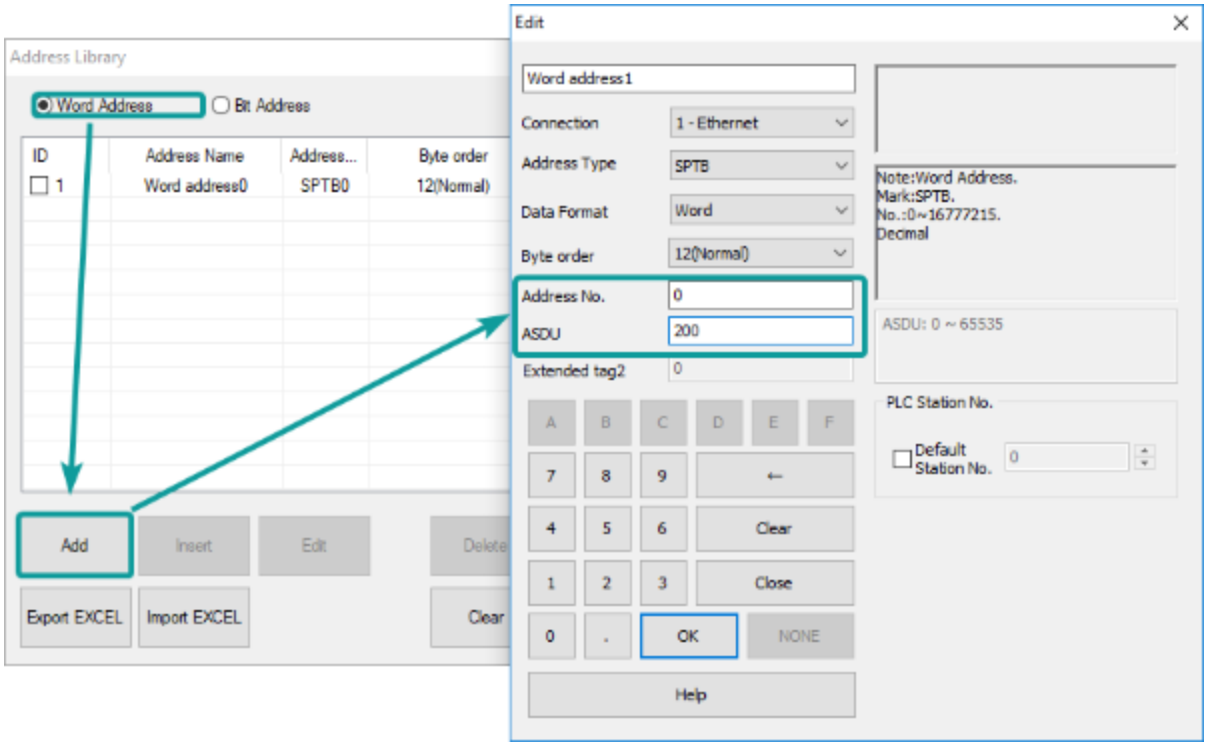
Type	Register	Range
Bit	SPTB	0~16777215.7
	SCNA	0~16777215.7
	DPTB	0~16777215.7
	DCNA	0~16777215.7

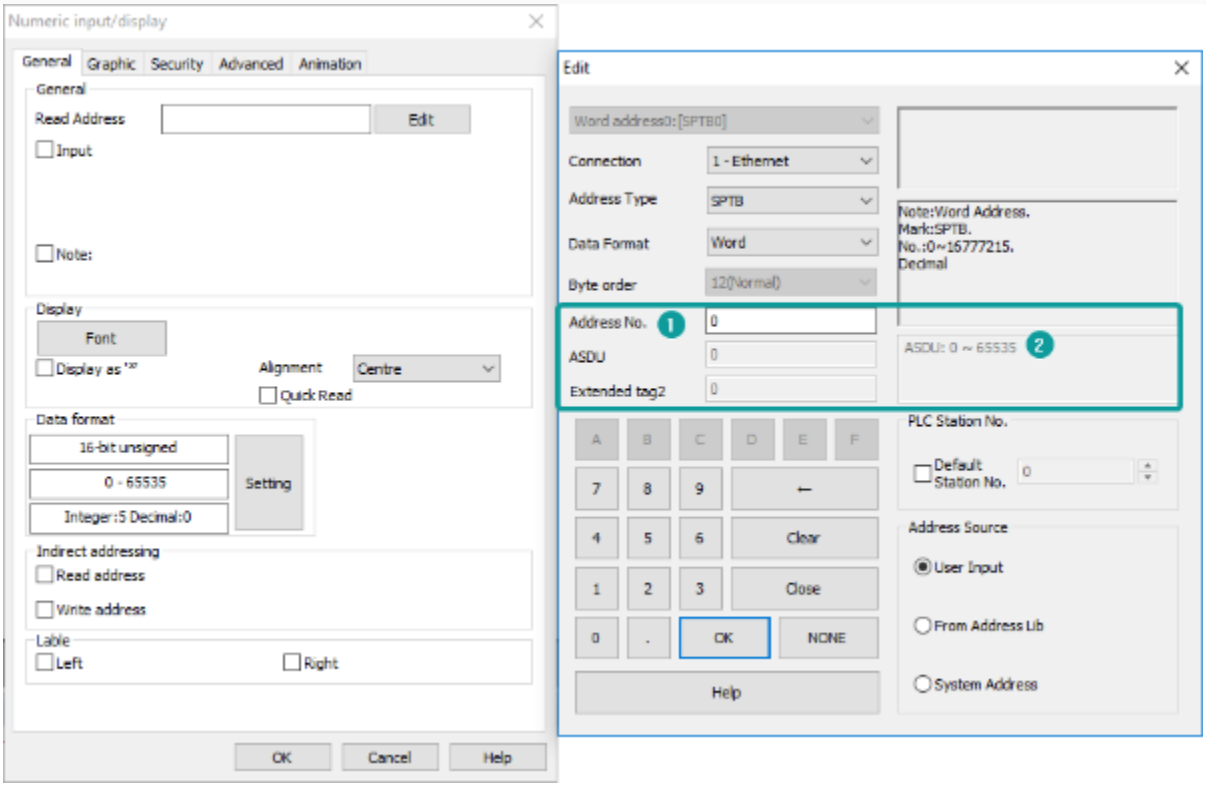
	METF	0~16777215.7
	SENC	0~16777215.7
	SENA	0~16777215.7
	MENA	0~16777215.7
	METD	0~16777215.7
Word	SPTB	0~16777215
	SCNA	0~16777215
	DPTB	0~16777215
	DCNA	0~16777215
	SENA	0~16777215
	MENA	0~16777215
	METD	0~16777215
	INRO	0~16777215
	TIMESYN	0~16777215
	TIMEZ	0~16777215
	NTP	0~16777215

Double word	METF	0~16777215
	SENC	0~16777215

Address Configuration

The address registers of the IEC60870-5-104 protocol are SPTB, SCNA, DPTB, DCNA, METF, and SENC. The protocol needs to be added with an extension tag "ASDU", which could only be added in the [Address Identification Library], other places are not editable, that is, the read address in the object or script is not editable.



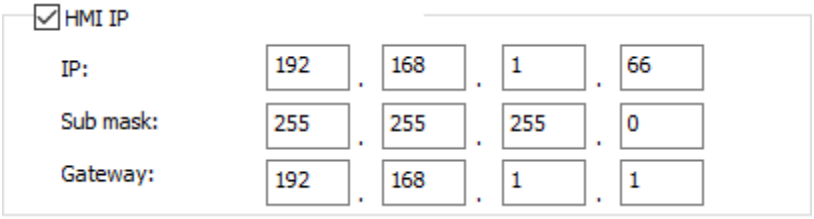


Extended tag name

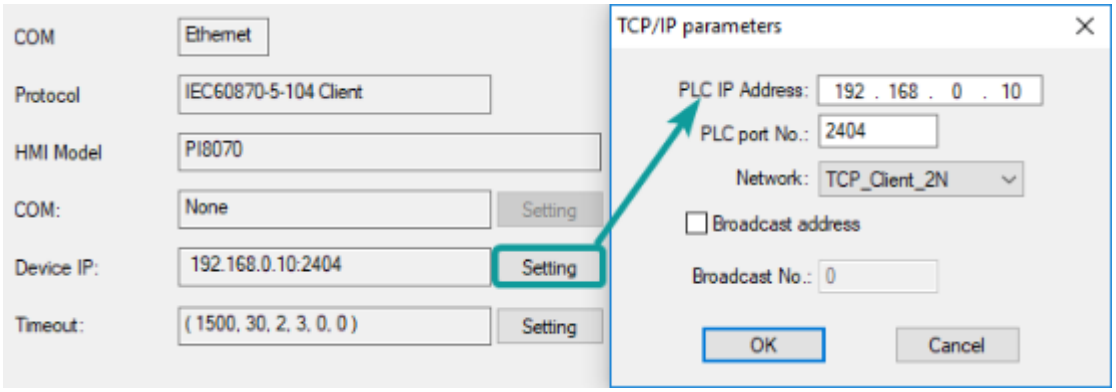
Address range for the extended tag.

Communication Settings

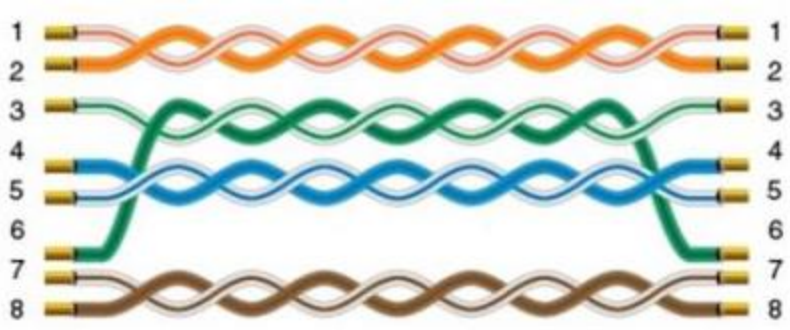
Enable HMI Ethernet in [Project Settings];



Set PLC IP in [Device IP] settings;



Cable Wiring



OpenCAN

OpenCan is based on CAN2.0 standard; OpenCAN protocols that could be configured autonomously to accept and send frames.

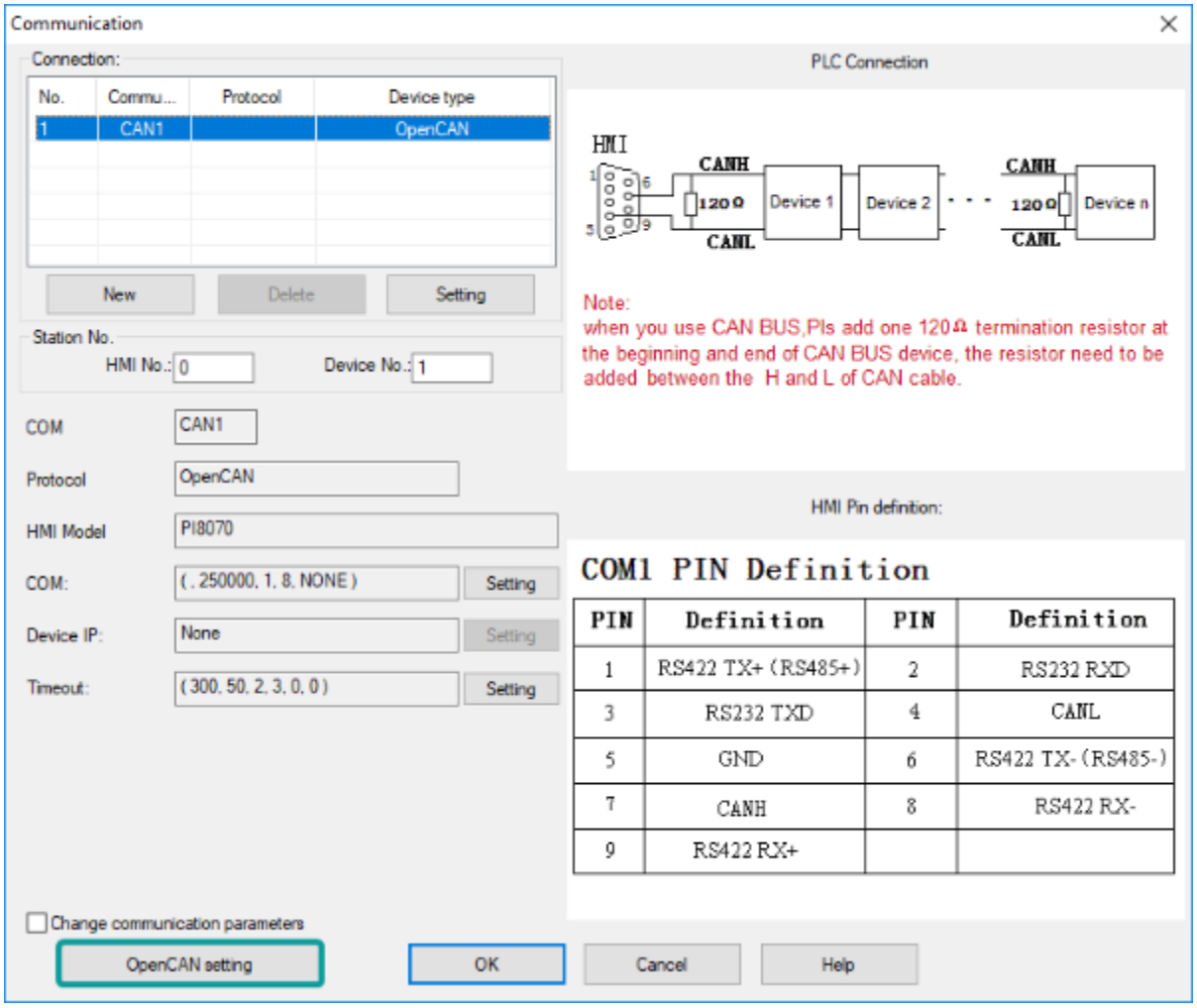
This protocol is only available in PI8000 series HMI.

HMI Settings

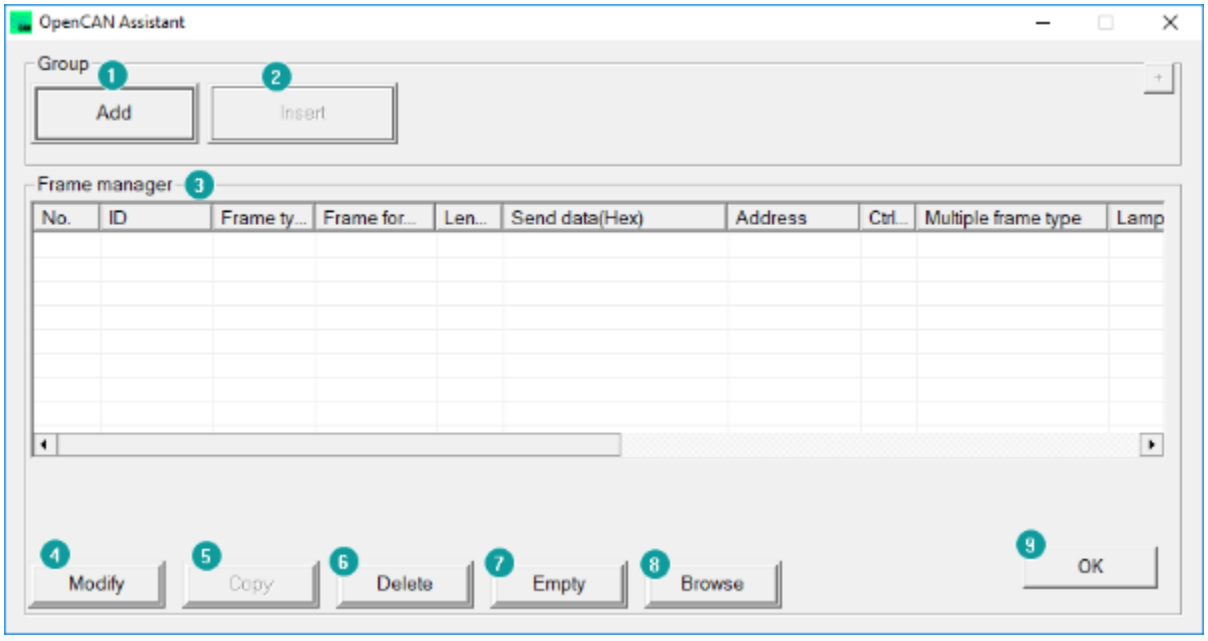
Items	Settings	Note
Protocol	OPENCAN	
Connection	CAN port	
Baud rate	250000	

CAN frame setting in HMI

Click [OpenCAN setting] button in communication setting window;

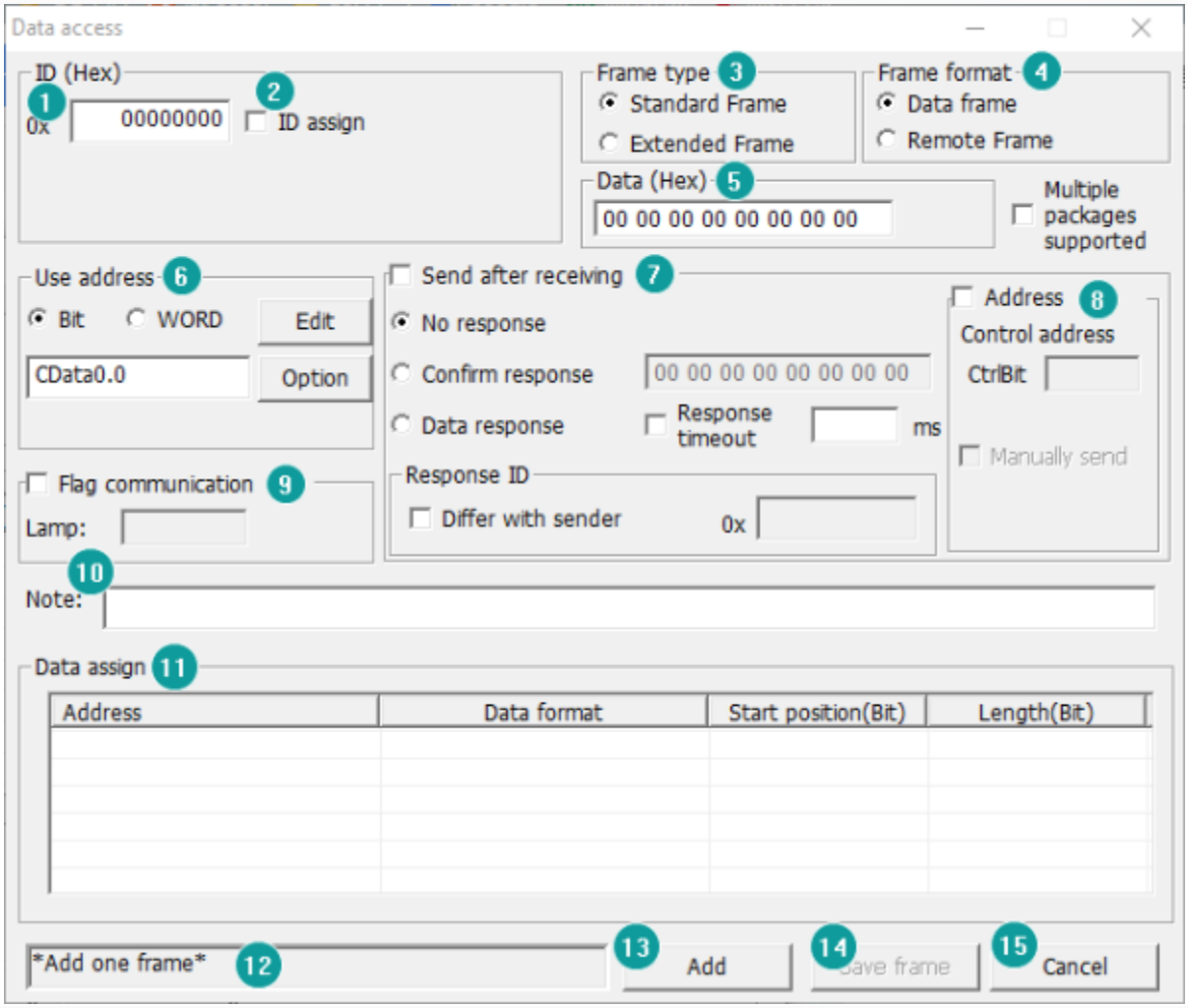


Click [Add] to create a new frame;



No	Items	Description
1	Add	add a frame related to register address
2	Insert	Select the position where you want to insert a frame, and click [Insert frame] to add a new frame in front of the current frame position
3	Frame manager	This list shows some of the main parameters for each frame that the user adds
4	Modify	Modify the frames in frame management
5	Copy	Copy one frame to another
6	Delete	Remove the selected frames from the list by modifying the frames in frame management. If no frames are selected in the list, the first frame is deleted.
7	Empty	All frames in the list are cleared
8	Browse	Displays configuration files in XML format in IE
9	OK	Complete the configuration of the frame and exit

Set CANBUS frame in setting windows

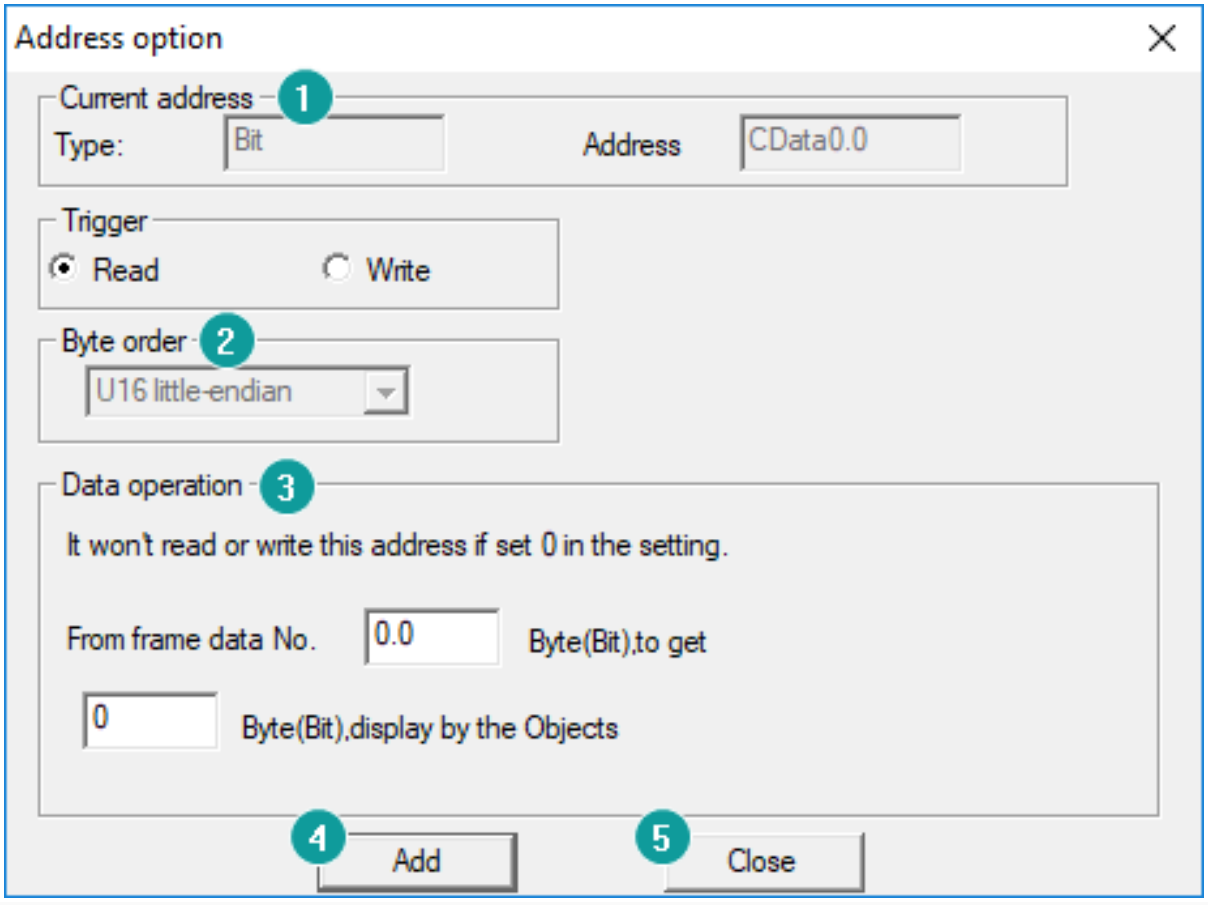


No	Items	Description
1	ID	Set the ID of a can frame in hexadecimal format;
2	ID assign	split the ID by PF, PS, and SA;
3	Frame type	Select Standard frame or Extended Frame;
4	Frame format	Select between data frame and remote Frame;

5	Data	Set the data part of CAN frame, with two Numbers representing a hexadecimal number and Spaces spaced; Maximum support of 8 bytes is defined according to CAN message;
6	Use address	Set the register address related to the CAN frame, which corresponds to the register address set on the main state one by one. The data obtained from the address is assigned continuously; **Edit:** Set a bit or word address by its format; **Option:** Set address options related to frame, enter “register address option” interface, specifically browse the following “register address option” interface;
7	Data interactive configuration	There are two interactive modes of the touch screen. One is that the touch screen actively sends frames, and the device receives and processes and feeds back. The other, on the contrary, passively receives frames from the device for processing and feedback;
		Send after receiving: if this item is selected, the interaction of the touch screen will act as a passive party, and the touch screen will receive the CAN frame first and send feedback. Unchecked items interact in the opposite way;
		Feedback mode: feedback mode includes no response, confirm response and data response;
		No response: the device or touch screen will not receive feedback;
		Confirm response: the device or the touch screen will receive feedback with confirmation, which could be used to compare the data parts. If this function is used, the 20 addresses before and after this address should not be used. All addresses of cata10-cata30 could not be used with the reply confirmation function of cata20;
		Data response: the device or touch screen will receive feedback with data, and the data to be separated from the feedback frame should be set to store in the register address;
		response ID: if the address wants to receive data on a frame with a different ID, set this, check "different from sender", and enter a different ID in the following input box. Without this setting, the screen will receive and process a frame with the same ID as the sender;
		Response timeout: sets whether the response frame timeout;
8	Control address	If ticked, enable sending when the value of the corresponding control bit number (address) is non-0.

		Control bit: CtrlBit register range 0~255, if the control bit is ON, can instruction will run normally. Otherwise, it doesn't run;
		Manually send: a manually send tick indicates only one send;
9	Flag configuration	Communication control for each frame. Display OFF when communication is normal, and ON when communication is abnormal;
10	Note	Fill the text to explain the meaning of the frame;
11	Data assign	Preview the display in this table based on the address and the corresponding number of digits;
12	Current operation display	Display the description of current operation;
13	Add	Add a new frame;
14	Save frame	Save the configured frame format;
15	Cancel	Cancel the frame configuration;

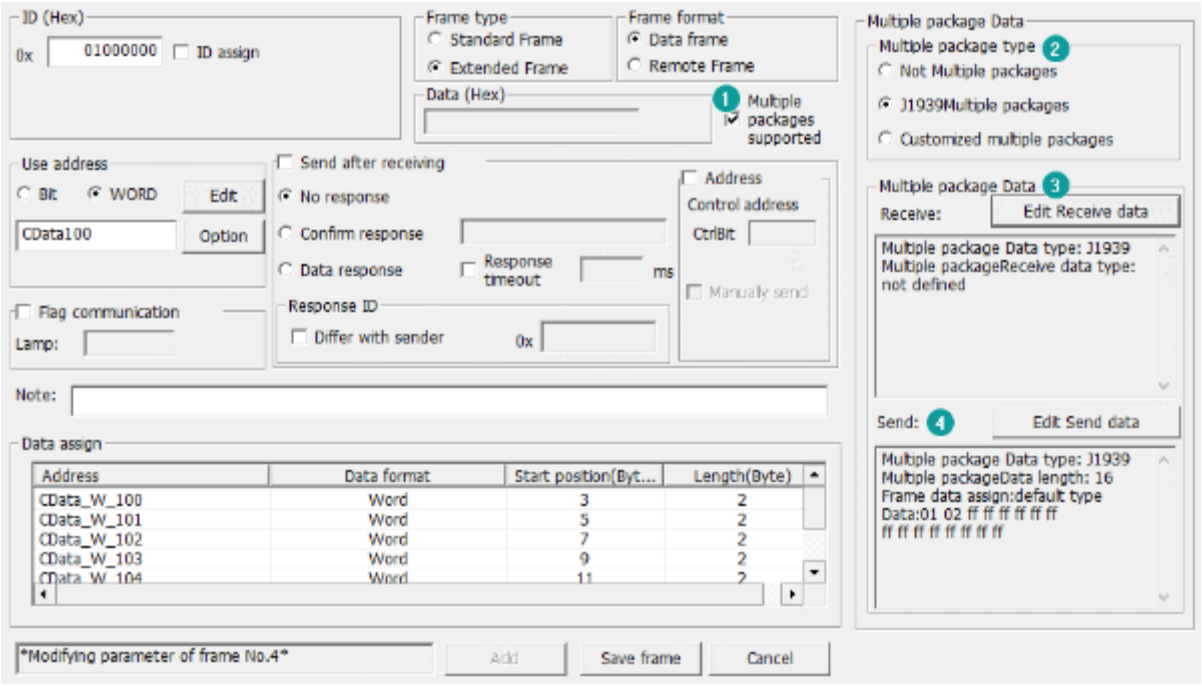
Set CAN address (Read or write operation);



No.	Item	Description
1	Current address	Displays the register type and register address set by the user in the data access interface
2	Trigger	Two operations, "read" and "write," are based on on-screen registers
		If "read" is selected, the register address is reading device data in a manner of sending frames set by the user in a loop.
		If "write" is selected, the screen data of the register address will be written into the device. The writing mode is that the user makes a write operation on the screen, which will trigger the sending of a frame set by the user.
3	Data operation	The read and write operations in the trigger conditions are set accordingly.
		If the trigger condition is a read operation, this section needs to set the position and length of the data to be obtained at the current address in the frame.
		If the trigger condition is a writing operation, there are two situations: • If the "add writing data to the frame" option is not selected, the frame set by the user will be sent directly when the user writes on the screen. • Select the "add the written data to the frame" option, and when the user writes on the screen, the program will insert the data in the frame set by the user and send the written data to the frame set by the user according to the data insertion position and length set by the user.
	Position and length input format	If the register type is a bit address, the decimal point is required to represent the bits in the byte. For example, 1.1 represents the first bit of the first byte of 8 bytes in the data frame, and the length is in bits, and so on.
		If the register type is word address, the integer only needs to represent the byte, such as 1, which represents the first byte of 8-byte data in the data frame, and the unit of length is byte, and so on.
4	Add	Add current configuration

5	Close	Close the configuration window to exit

Multiple Packages Settings



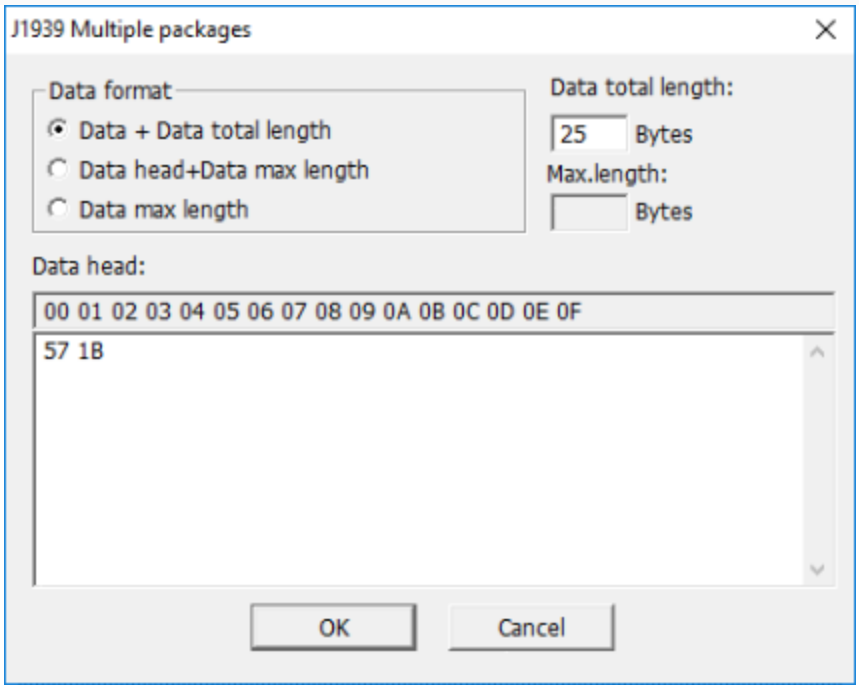
Check [Multiple packages supported] to open [Multiple package data] window, as below show.

Select Multiple package type

- Not Multiple packages
- J1939 Multiple packages
- Customized Multiple packages

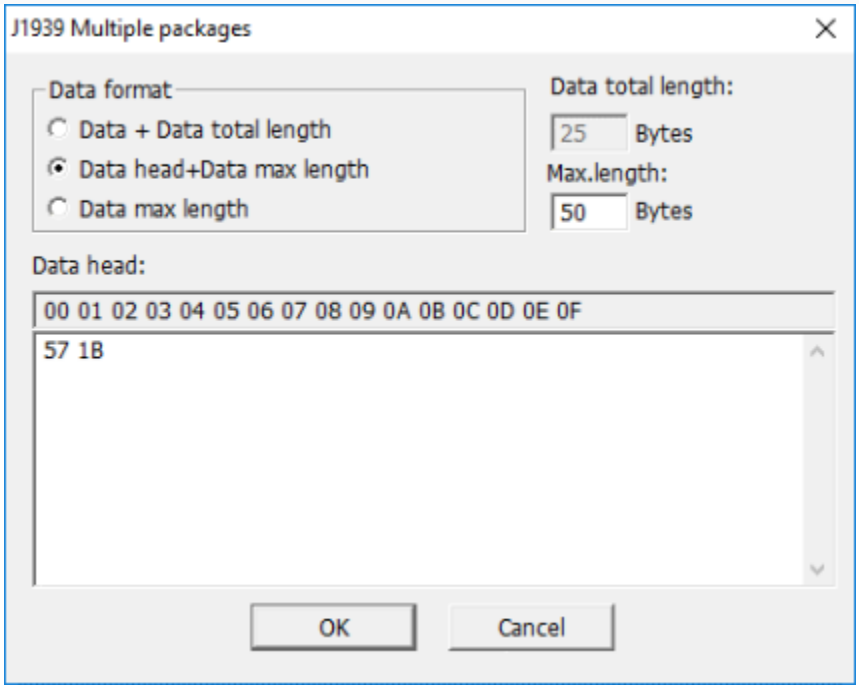
Click [Edit Receive data] for [Receive] settings

- Start code+ Total length (J1939)



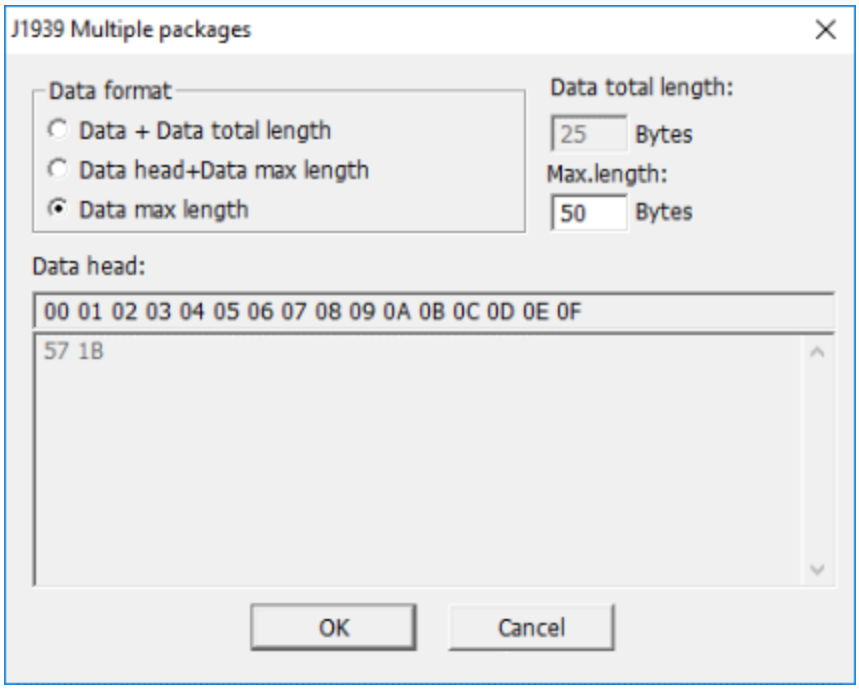
As set above set, J1939 command is received by the HMI, only when its length is 25 bytes, and the start code is 0x57, 0x1B;

- Start code + Data max length (J1939)



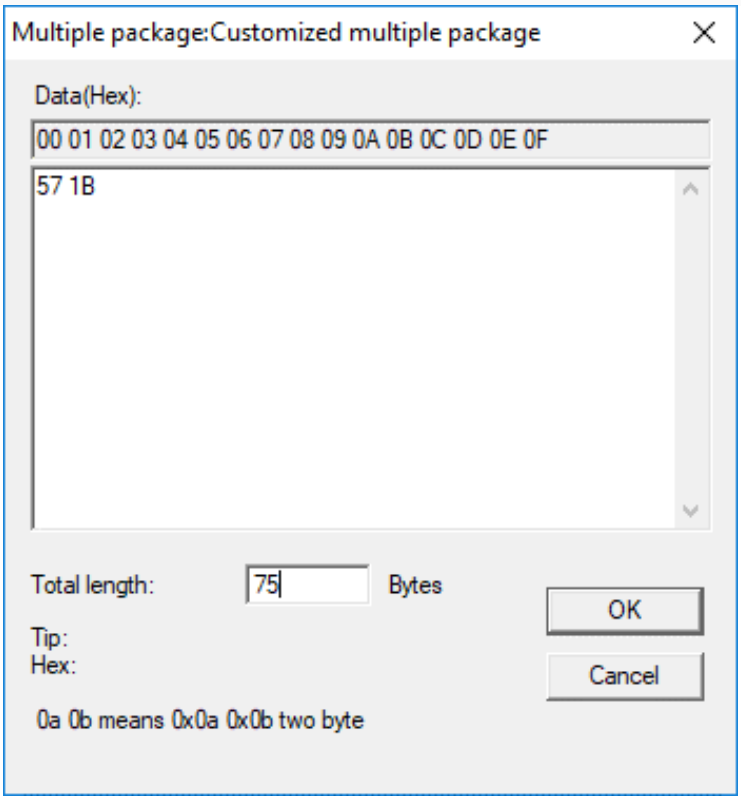
As set above set, J1939 command is received by the HMI, only when its length less than 50 bytes, and the start code is 0x57, 0x1B;

- Data max length (J1939)



As set above set, J1939 command is received by the HMI, only when its length less than 50 bytes.

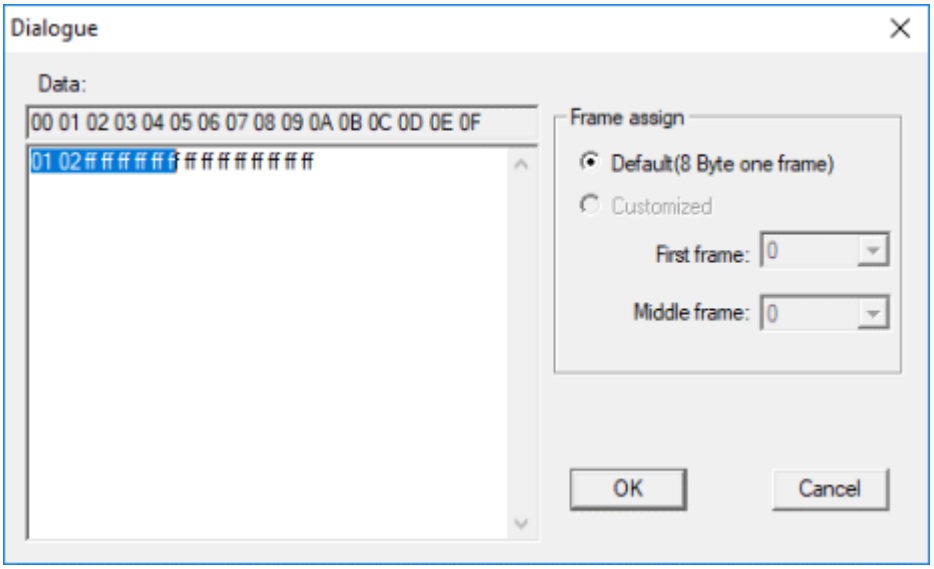
- Customized multiple package



As set above, It is received by the HMI, when the first frame starts with 0X57 0X1B, and the sum of the data lengths of multiple frames is equal to 79 bytes.

Click [Edit Send data] for [Send] setting

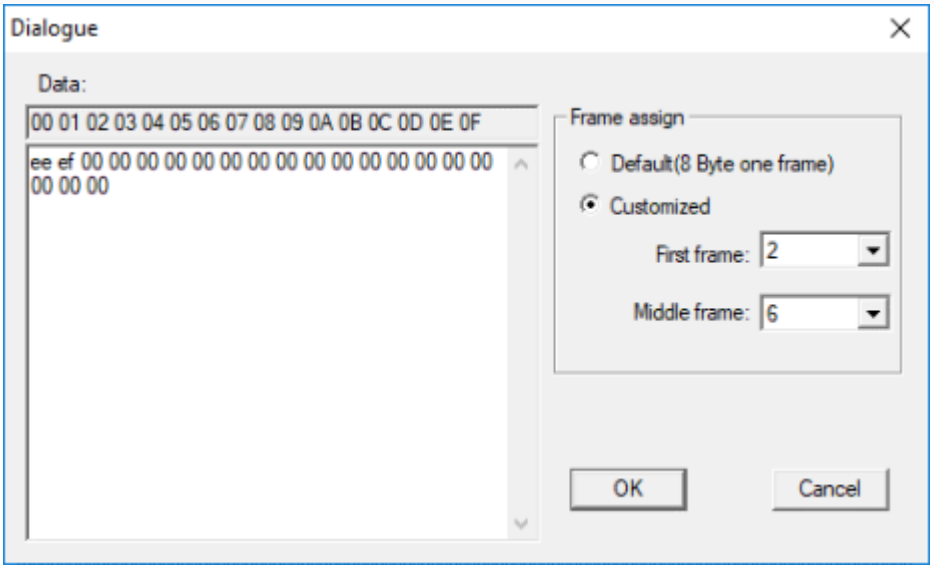
- J1939



[Data] is all data to be sent.

Since the frame of the J1939 frame contains the number of the data packet, so the data sent is: the first byte (number) + 7 bytes of data. If it is less than 7 bytes, it is sent in the actual number of bytes.

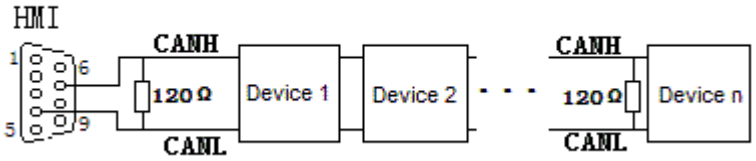
- Customized multiple package



[Data] is all data to be sent.

As set above, fist frame length is 2 bytes, and others are sent with 6 bytes for every frame, if the last frame is less than 6 bytes, send according to the actual length.

Cable Wiring



✎**Note:** The address interval between each frame need to be more than a word address;

User Defined Protocol

If the device does not support MODBUS standard, and the protocol is not list in PIStudio, then user can define the protocol by following instruction to realize simply communication functions like sending and receiving commands.

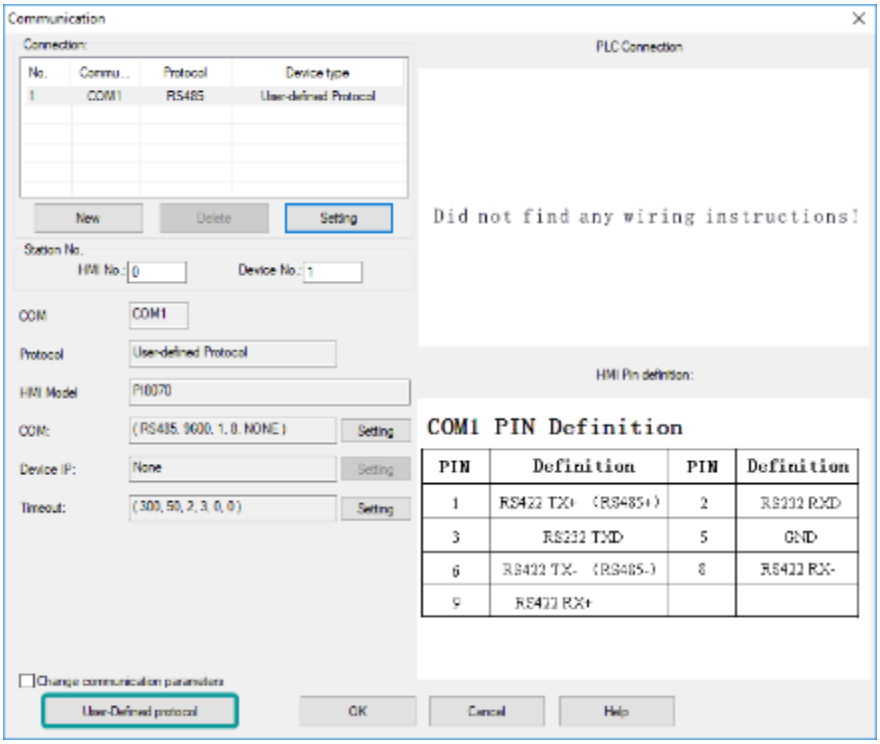
HMI Settings

Items	Settings	Note
Protocol	User defined protocol	
Connection	RS485/RS232	
Baud rate	2400~187500	
Stop bits	1/ 2	
Data bits	7/ 8	
Parity	None/ Even/ ODD	

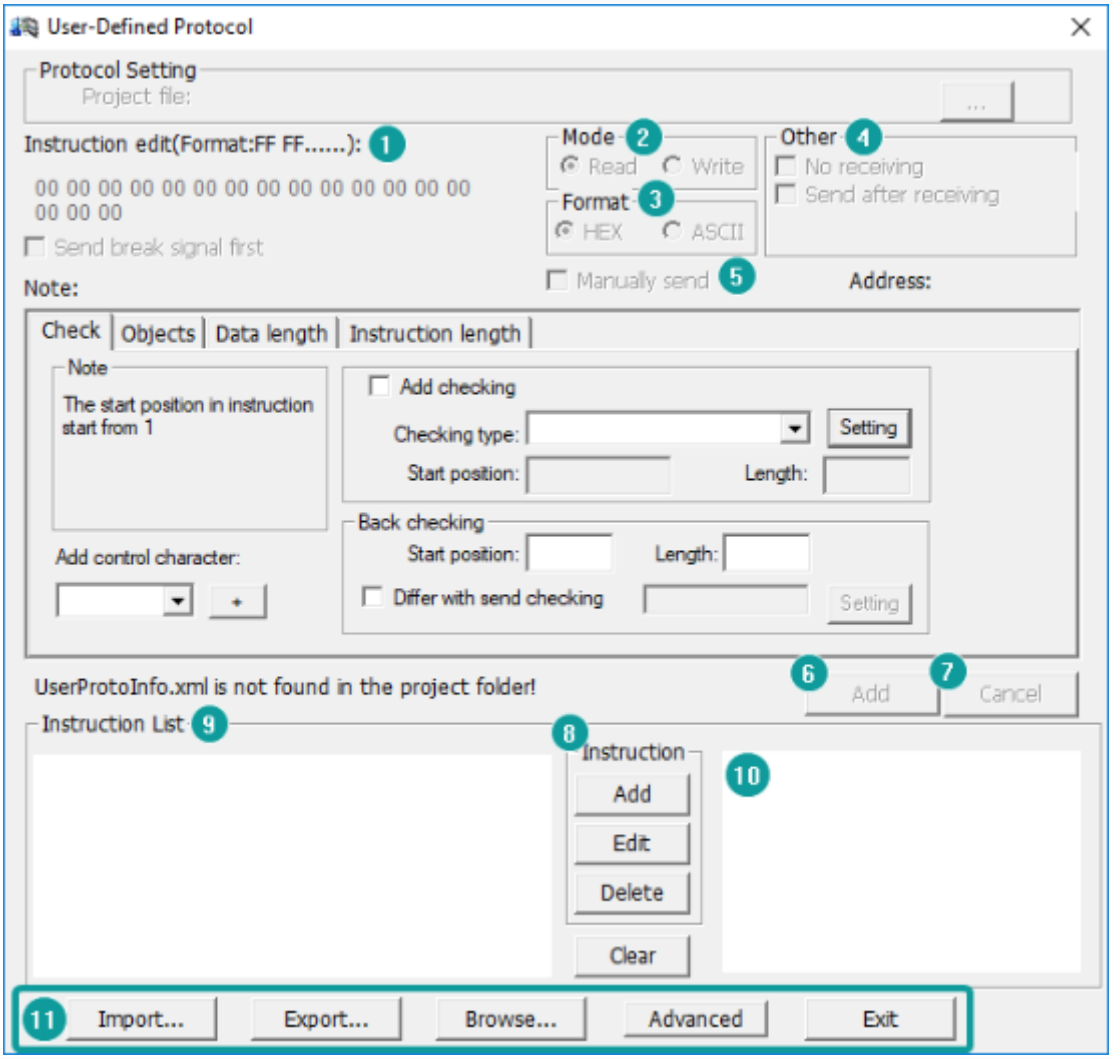
Operating Procedures

Select [User defined protocol];

Click [User defined protocol] button to open setting window as below;



Configure user defined command;



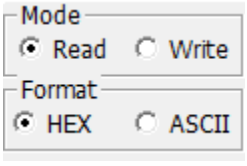
No	Item	Description
1	Instruction edit	The required command.
2	Mode	Write to address or read from the address.
3	Format	Encode format: HEX or ASCII.
4	Other	**No receiving:** HMI does not respond to the receiving command. **Send after receiving:** HMI responds to the receiving command.
5	Manually send	Respond once after trigger the address.

		Address: set the trigger address.
6	Add	Save this setting.
7	Cancel	Cancel current settings.
8	Add	Add a new command.
	Edit	Edit the selected command.
	Delete	Delete the selected command.
	Clear	Clear all the commands.
9	Instruction list	Display all current commands.
10	Address List	Display all the addresses added.
11	Import	Import the command files to the instruction list.
	Export	Export current command settings to local storage.
	Browse	Browse local command files.
	Advanced	Combine two commands.
	Exit	Complete editing and exit setting.

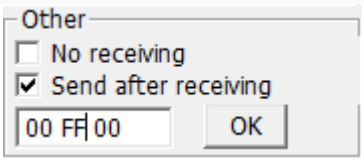
Operating Procedures

Click [Add] to create a new command, as below shows;

Select mode, [Read] or [Write], and then select Format, there are two options [Hex] and [ASCII]. As below shows;



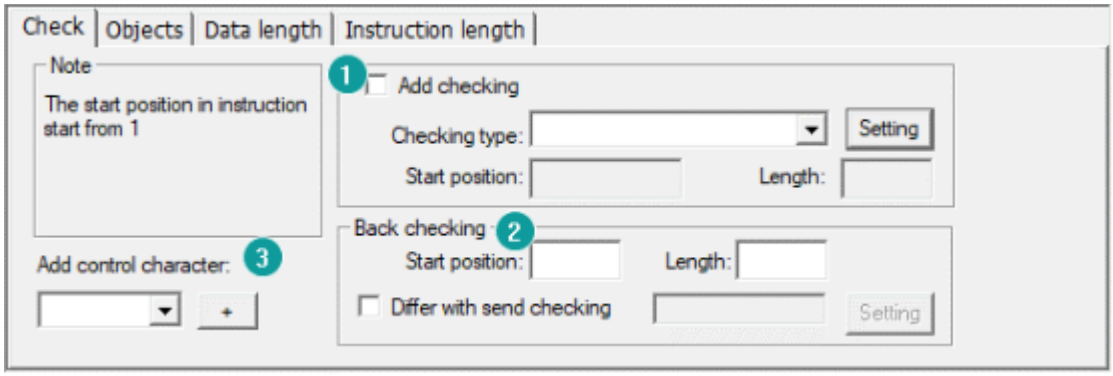
Other settings: [No receiving] means HMI only sends command, and it would not process the reply command which from device. [Send after receiving] means HMI will be receiving the command which from device firstly, and then sending the command to device. From example, when HMI receiving [00 FF 00] firstly and then send command, as below shows



Check [Manually send], and then please set the address for trigging, the setting range is 1~10, and please put Bit switch in project screen for it, and [OneCtrlBit] register is for [Manually send].

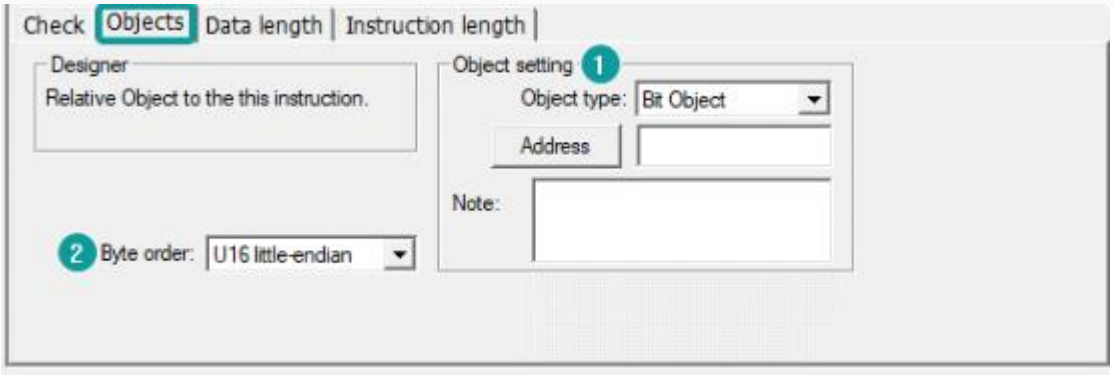
Instruction edit, when the data format is HEX, please use two numbers to represent one 16-bit number. ASCII format using characters to input;

Check settings;



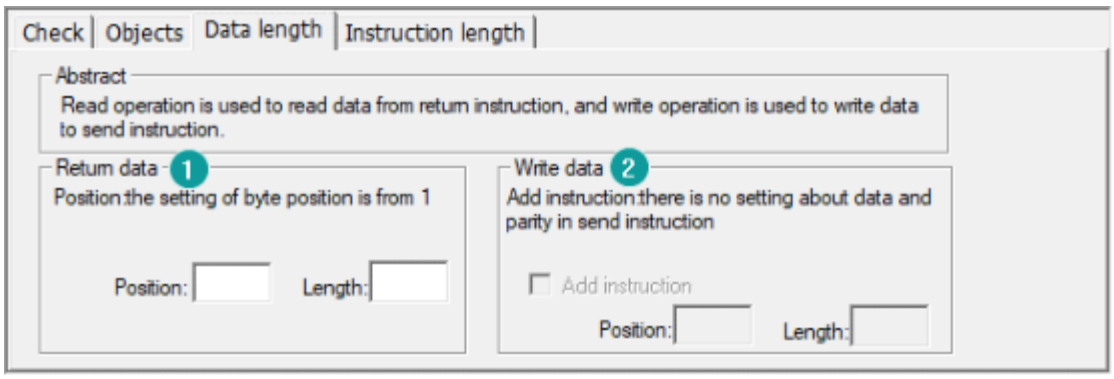
No	Items	Description
1	Add checking	Add checking command when receiving the data.
2	Back checking	Add control character in ASCII format.
	Differ with send check	Set return checking.
3	Add control character	Start position: select the start position of the data which need to check.
		Length: The data length need to be checked.

Object settings;



No	Items	Description
1	Object settings	Object type: bit or word address;
		Address: the triggering address;
		Note: description to object;
2	Byte order	The numerical display order;

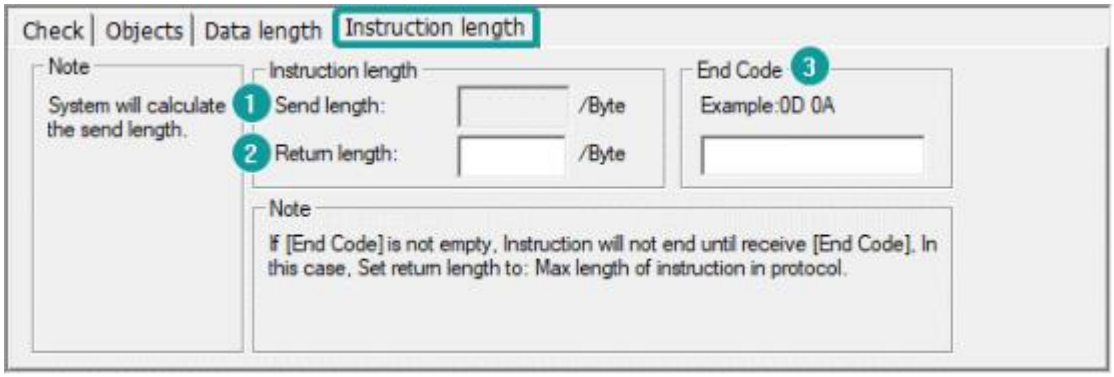
Data length settings;



No	Item	Description
1	Return data	Position: the start position of the return data.
		Length: the return data length.

2	Write data	Position: the start position of the write data.
		Length: the write data length.

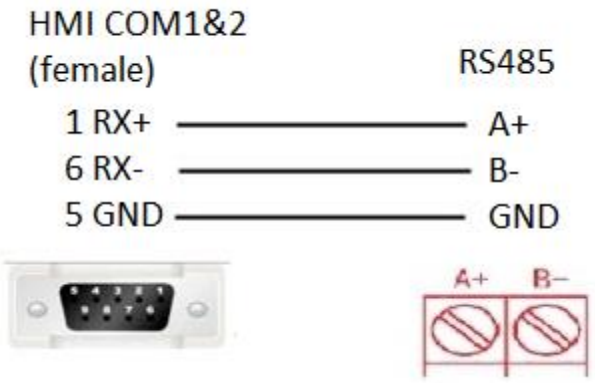
Instruction length settings

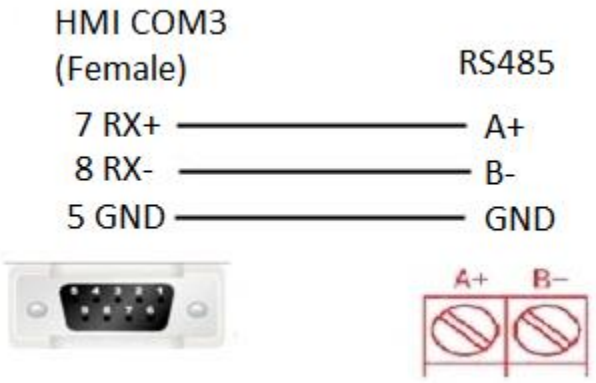


No	Item	Description
1	Send length	The instruction data will only send designated data length.
2	Return length	The responds data length.
3	End code	Instruction will not be terminated until receiving [End code];

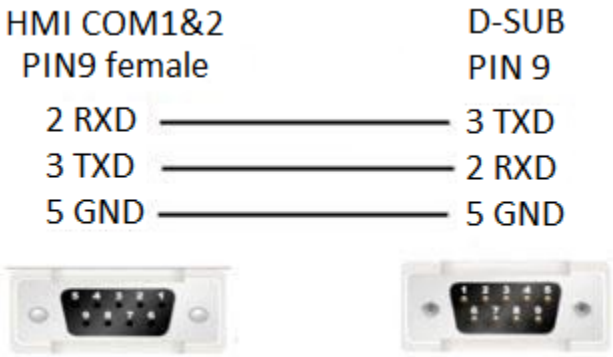
Cable Wiring

- **RS485**





- **RS232**



✎**Note:** COM3 only available in PI8000/PI9000 series.