HMI Connection Manual

Version: 2024/09/13

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1. HMI Model Serial Information

DB-9 pin + Terminal block 7 pin

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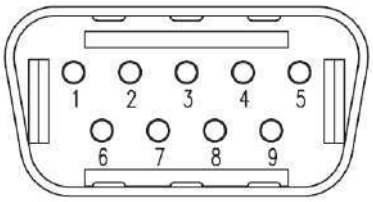
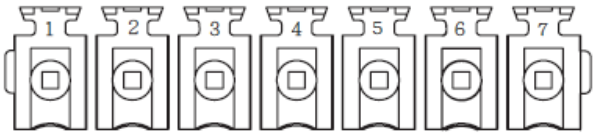
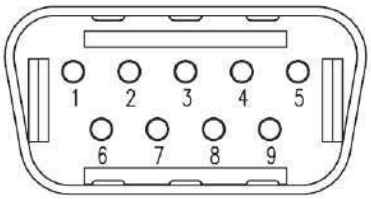
<tr><td rowspan="20">Serial Layout</td><td colspan="4"> 
</td></tr>
<tr><td>PIN#</td><td colspan="3">COM1</td></tr>
<tr><td>1</td><td colspan="3"></td></tr>
<tr><td>2</td><td colspan="3">RX</td></tr>
<tr><td>3</td><td colspan="3">TX</td></tr>
<tr><td>4</td><td colspan="3"></td></tr>
<tr><td>5</td><td colspan="3">GND</td></tr>
<tr><td>6</td><td colspan="3"></td></tr>
<tr><td>7</td><td colspan="3"></td></tr>
<tr><td>8</td><td colspan="3"></td></tr>
<tr><td>9</td><td colspan="3"></td></tr>
<tr><td colspan="4"> 
</td></tr>
<tr><td>PIN#</td><td>COM3 (RS-422)</td><td>COM3 (RS-485)</td><td>COM4 (RS-485)</td></tr>
<tr><td>1</td><td></td><td></td><td>DATA+</td></tr>
<tr><td>2</td><td></td><td></td><td>DATA-</td></tr>
<tr><td>3</td><td>ISO_GND</td><td>ISO_GND</td><td>ISO_GND</td></tr>
<tr><td>4</td><td>RX+</td><td></td><td></td></tr>
<tr><td>5</td><td>RX-</td><td></td><td></td></tr>
<tr><td>6</td><td>TX+</td><td>DATA+</td><td></td></tr>
<tr><td>7</td><td>TX-</td><td>DATA-</td><td></td></tr>
</table>

Only DB-9 pin

Serial Interface	**COM1(RS-232[TXD,RXD])** **COM2(RS-422/485)** **COM3(RS-485)**				
Serial Layout					
	PIN#	COM1 (RS-232)	COM2 (RS-422)	COM2 (RS-485)	COM3 (RS-485)
	1		TX+	DATA+	
	2	RX			
	3	TX			
	4		RX+		
	5	GND	GND	GND	GND
	6		TX-	DATA-	
	7				DATA+
	8				DATA-
	9		RX-		

2. PLC Connection

2.1 FATEK

2.1.1 FBs/B1/B1z/HB1

2.1.1.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232	
Baud Rate	9600	
Data Length	7	
Stop Bit	1	
Parity	Even	
PLC Station No.	1	Must match PLC port setting
Communication Method	FATEK Communication Protocol	

2.1.1.2 Memory Resource Review

Device	Data Bits	Address Format	Min.	Max.	Description
X	1	DDDD	0	255	Input Discrete
Y	1	DDDD	0	255	Output Relay
M	1	DDDD	0	2001	Internal Relay
S	1	DDDD	0	999	Step Relay
T	1	DDDD	0	255	Timer Discrete
C	1	DDDD	0	255	Counter Discrete
WX	16	DDDD	0	255	Input Discrete
WY	16	DDDD	0	255	Output Relay
WM	16	DDDD	0	2001	Input Relay
WS	16	DDDD	0	999	Step Relay
RT	16	DDDD	0	255	Timer Register

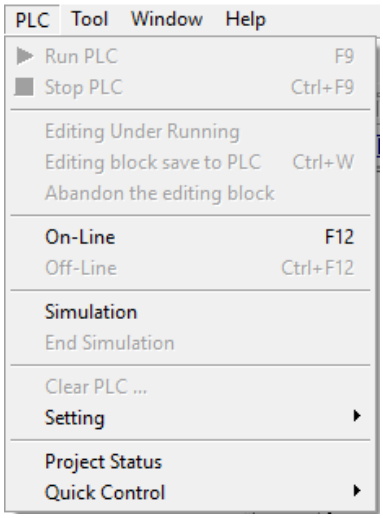
RC	16	DDDD	0	199	Counter Register
DRC	32	DDDD	200	255	Counter Register
R	16	DDDD	0	8071	Data Register
D	16	DDDD	0	4095	Data Register
F	16	DDDD	0	8191	File Register

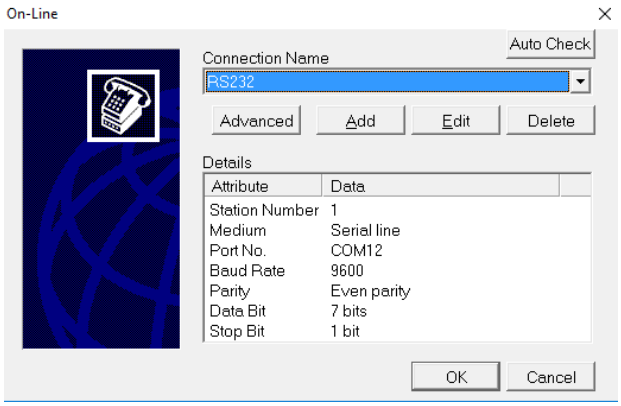
2.1.1.3 Connecting to PLC

Configuring of PLC

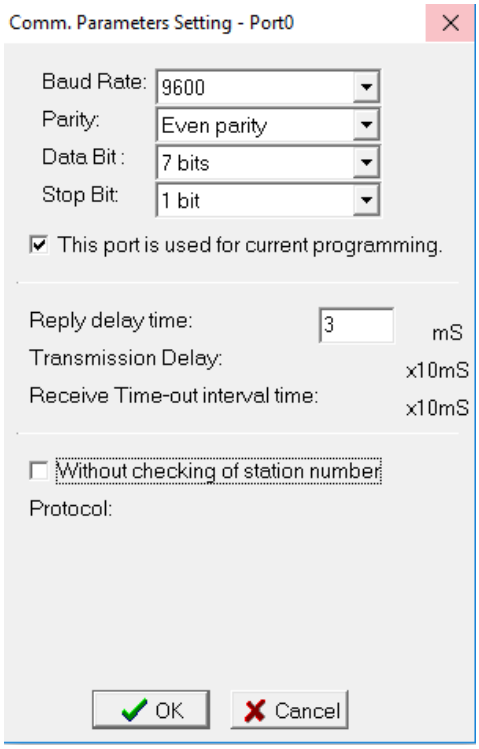
Use the application **WinProLadder** (ver. 3.25) to configure the serial port of the PLC.

Connect the PLC to a computer. In the application, under the **PLC** tab, select the **On-Line** option. In the dialog, select **RS232** for the Connection Name and press ‘Edit’. Within the edit dialog, select the port number the PLC is connected to. Press OK to confirm the settings.



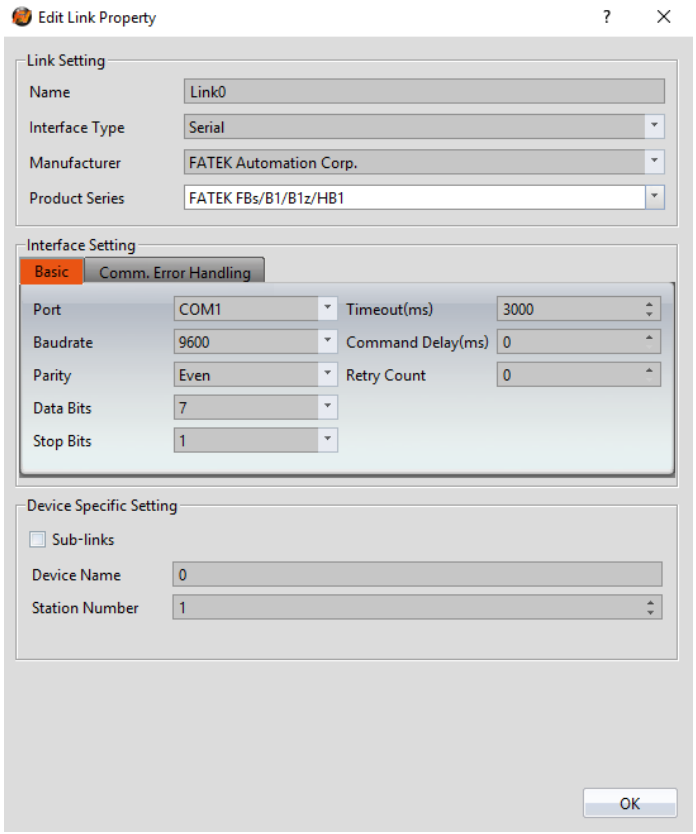


Under the **PLC** tab, select the **Setting** option and choose Port 0. Here, the Baud rate and other parameters of the serial port can be configured.



Note: For more detailed information please refer to the PLC manual.

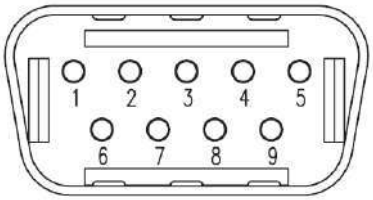
Configuring of HMI



Within the **Link** configuration window in FvDesigner:

Under **Interface Type** select Serial
Under **Manufacturer** select FATEK Automation Corp
Under **Product Series** select FATEK FBs/B1/B1z/HB1
Under **Port** select COM1
Verify the other parameters are consistent with the settings on the PLC.

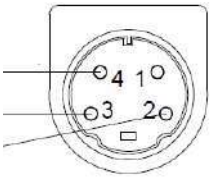
2.1.1.4 Wiring Diagrams(COM1)



HMI COM1

*Looking into COM1 Port

Mini-DIN
(PLC Site)



PLC RS232

PIN#	COM1 (RS232)	PIN#	Signal
1		1	
2	RX	2	GND
3	TX	3	RX
4		4	TX
5	GND		
6			
7			
8			
9			

HMI COM1	PLC RS232 Port
2 RX	4 TX
3 TX	3 RX
5 GND	2 GND

2.1.2 FBs/B1/B1z/HB1 (TCP)

2.1.2.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	192.168.1.3	
Port	500	
PLC Station No.	0	
Communication Method	TCP	

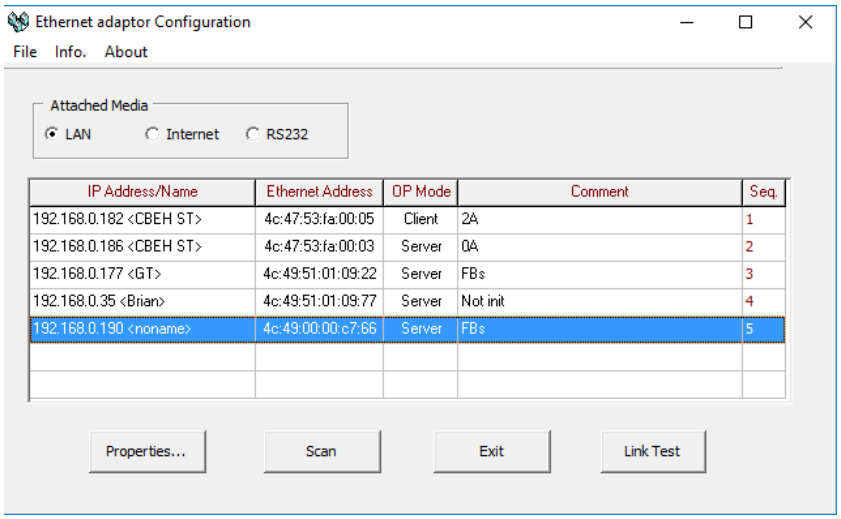
2.1.2.2 Memory Resource Review

Device	Data Bits	Address Format	Min.	Max.	Description
X	1	DDDD	0	255	Input Discrete
Y	1	DDDD	0	255	Output Relay
M	1	DDDD	0	2001	Internal Relay
S	1	DDDD	0	999	Step Relay
T	1	DDDD	0	255	Timer Discrete
C	1	DDDD	0	255	Counter Discrete
WX	16	DDDD	0	255	Input Discrete
WY	16	DDDD	0	255	Output Relay
WM	16	DDDD	0	2001	Input Relay
WS	16	DDDD	0	999	Step Relay
RT	16	DDDD	0	255	Timer Register
RC	16	DDDD	0	199	Counter Register
DRC	32	DDDD	200	255	Counter Register
R	16	DDDD	0	8071	Data Register
D	16	DDDD	0	4095	Data Register
F	16	DDDD	0	8191	File Register

2.1.2.3 Connected Setting

Configuring IP Address on PLC

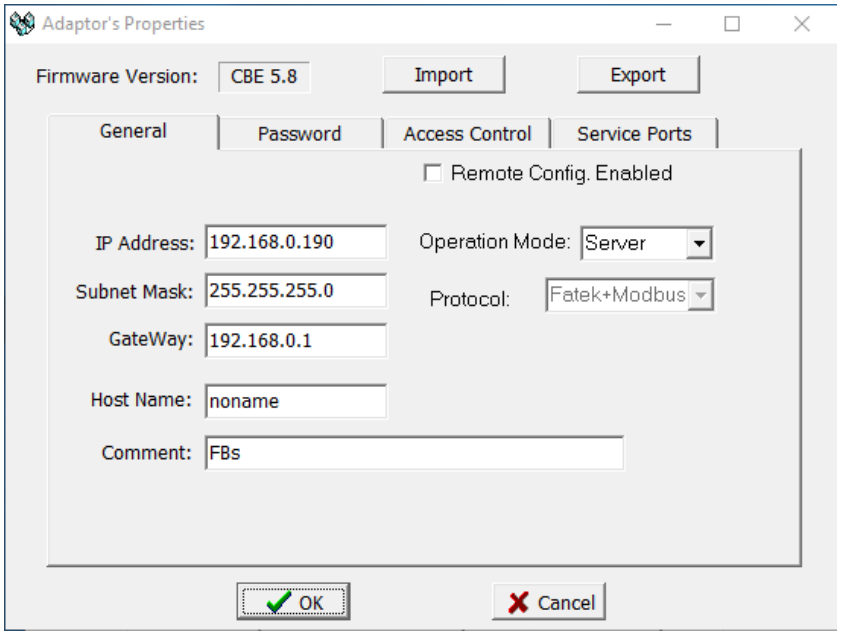
Use the application **FATEK Ethernet Module Configuration Tool** to configure the IP address of the PLC. Connect an Ethernet cable to the PLC. Under **Attached Media**, select LAN and press scan.



Select the PLC to connect to and right click or press Properties to change the IP.

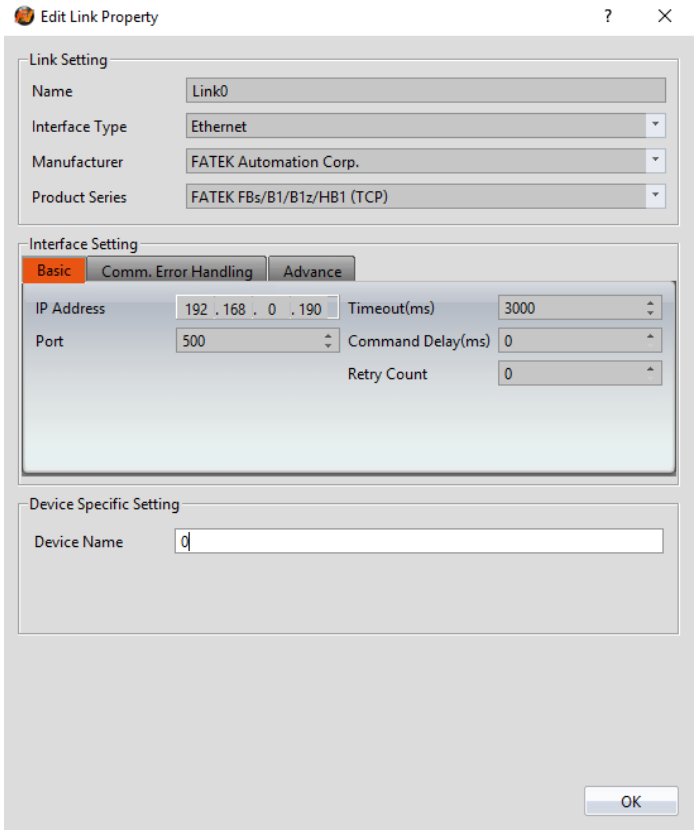
Note: The default IP address for the PLC has 1 for its third octet. If the IP address of the computer has a different number at that position, the PLC will not show up in the scan. Configure network settings on the computer to be able to see the PLC in the local network.

In the dialog window, the IP address and other parameters of the PLC can be configured. In the **Service Ports** tab, the port number of the PLC can be changed.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select FATEK Automation Corp
Under **Product Series** select FATEK FBs/B1/B1z/HB1 (TCP)
Use the IP address and port number assigned on the PLC

2.1.3 FBs/B1/B1z/HB1 (UDP)

2.1.3.1 Communication Setting

Item	Default Settings	Remark
Signal Level	Ethernet	
Internet Protocol	192.168.1.100	
Port	500	
PLC Station No.	0	
Communication Method	UDP	

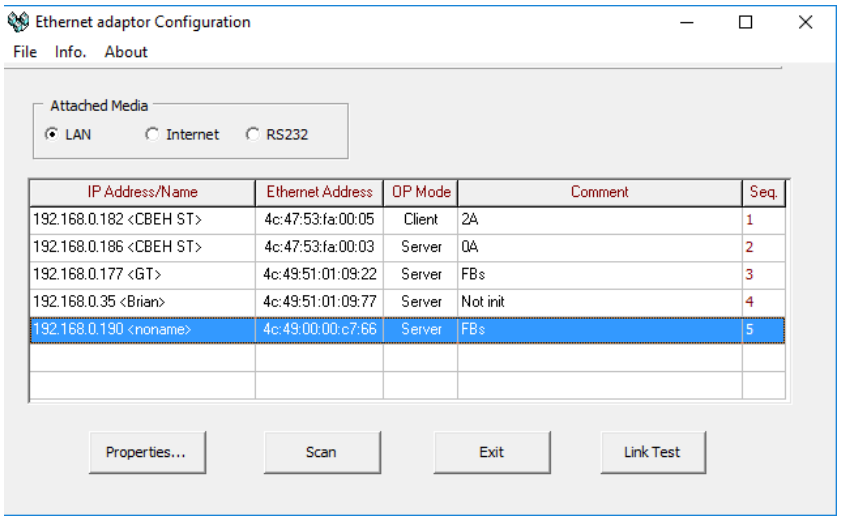
2.1.3.2 Memory Resource Review

Device	Data Bits	Address Format	Min.	Max.	Description
X	1	DDDD	0	255	Input Discrete
Y	1	DDDD	0	255	Output Relay
M	1	DDDD	0	2001	Internal Relay
S	1	DDDD	0	999	Step Relay
T	1	DDDD	0	255	Timer Discrete
C	1	DDDD	0	255	Counter Discrete
WX	16	DDDD	0	255	Input Discrete
WY	16	DDDD	0	255	Output Relay
WM	16	DDDD	0	2001	Input Relay
WS	16	DDDD	0	999	Step Relay
RT	16	DDDD	0	255	Timer Register
RC	16	DDDD	0	199	Counter Register
DRC	32	DDDD	200	255	Counter Register
R	16	DDDD	0	8071	Data Register
D	16	DDDD	0	4095	Data Register
F	16	DDDD	0	8191	File Register

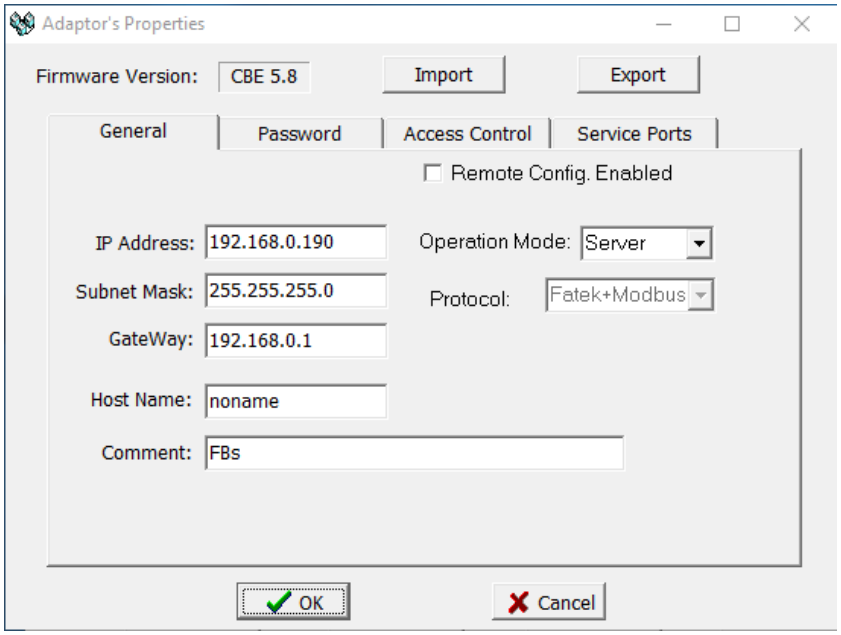
2.1.3.3 Connected Setting

Configuring IP Address on PLC

Use the application **FATEK Ethernet Module Configuration Tool** to configure the IP address of the PLC. Connect an Ethernet cable to the PLC. Under **Attached Media**, select LAN and press scan.

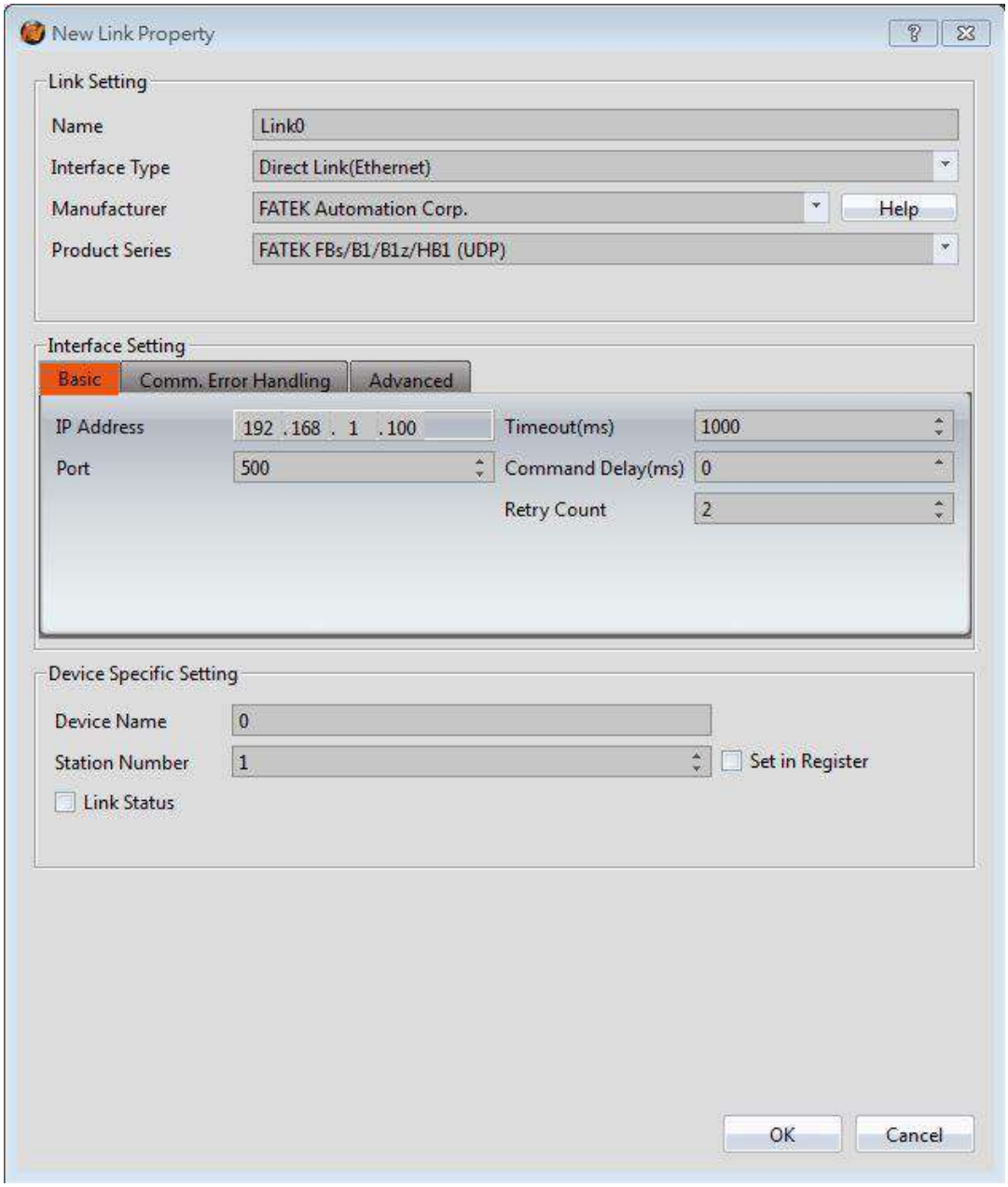


In the dialog window, the IP address and other parameters of the PLC can be configured.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select FATEK Automation Corp
Under **Product Series** select FATEK FBe (UDP)
Use the IP address assigned on the PLC

Leave the Port at the default value

2.1.4 FBe

2.1.4.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232 / RS485	
Baud Rate	9600	
Data Length	7	
Stop Bit	1	
Parity	Even	
PLC Station No.	1	Must match PLC port setting
Communication Method	FATEK Communication Protocol	

2.1.4.2 Memory Resource Review

Device	Data Bits	Address Format	Min.	Max.	Description
X	1	DDDD	0	255	Input Discrete
Y	1	DDDD	0	255	Output Relay
M	1	DDDD	0	2001	Internal Relay
S	1	DDDD	0	999	Step Relay
T	1	DDDD	0	255	Timer Discrete
C	1	DDDD	0	255	Counter Discrete
WX	16	DDDD	0	255	Input Discrete
WY	16	DDDD	0	255	Output Relay
WM	16	DDDD	0	2001	Input Relay
WS	16	DDDD	0	999	Step Relay
RT	16	DDDD	0	255	Timer Register
RC	16	DDDD	0	199	Counter Register
DRC	32	DDDD	200	255	Counter Register
R	16	DDDD	0	8071	Data Register

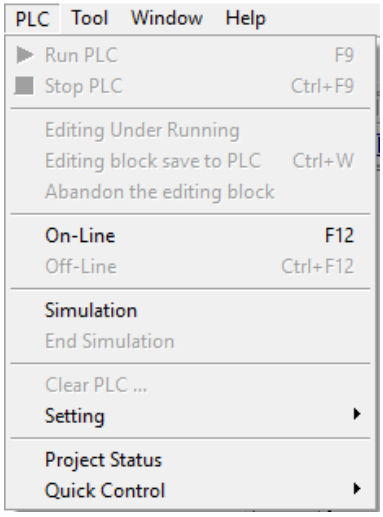
D	16	DDDD	0	4095	Data Register

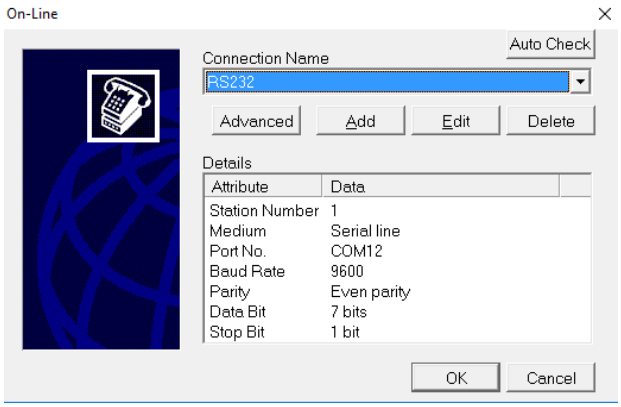
2.1.4.3 Connecting to PLC

Configuring of PLC

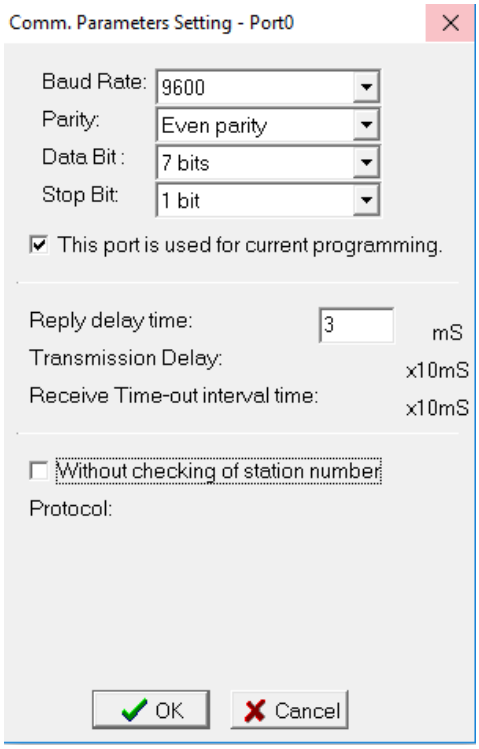
Use the application **WinProLadder** (ver. 3.25) to configure the serial port of the PLC.

Connect the PLC to a computer. In the application, under the **PLC** tab, select the **On-Line** option. In the dialog, select **RS232** for the Connection Name and press ‘Edit’. Within the edit dialog, select the port number the PLC is connected to. Press OK to confirm the settings.



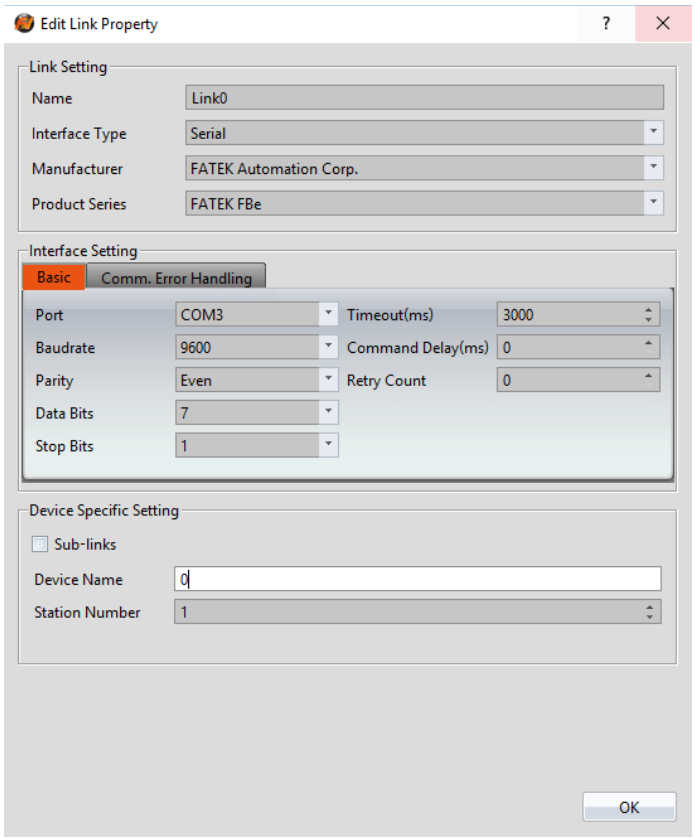


Under the **PLC** tab, select the **Setting** option and choose Port 0. Here, the Baud rate and other parameters of the serial port can be configured.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI

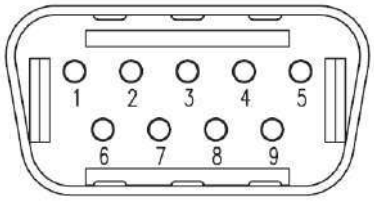


Within the **Link** configuration window in FvDesigner:

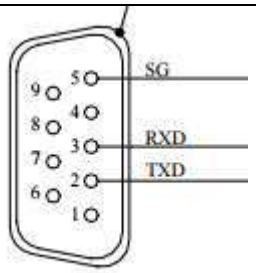
Under **Interface Type** select Serial
Under **Manufacturer** select FATEK Automation Corp.
Under **Product Series** select FATEK FBe
Under **Port** select the port corresponding to the connection to the PLC
Verify the other parameters are consistent with the settings on the PLC

2.1.4.4 Wiring Diagrams(COM1)

The connections were made between the HMI and the FB-DTBR-E module. The module provides ports for each connection type.



*Looking into COM1 Port

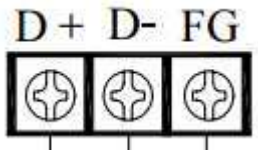


PLC RS232
*Looking into port0

PIN#	COM1 (RS232)	PIN#	Port 0 (RS-232)
1		1	
2	RX	2	TXD
3	TX	3	RXD
4		4	
5	GND	5	GND
6		6	
7		7	
8		8	
9		9	

HMI COM1	PLC RS232 Port
2 RX	2 TXD
3 TX	3 RXD
5 GND	5 GND

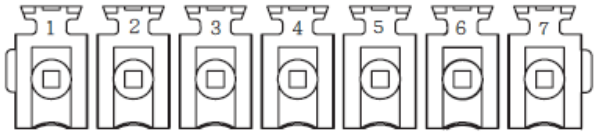
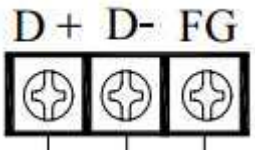
2.1.4.5 Wiring Diagrams(COM2/3)

			PLC RS485 
PIN#	COM2	COM3	Port 2 (RS-485)
1	DATA+		DATA+
2			DATA-
3			FG
4			
5	GND	GND	
6	DATA-		
7		DATA+	
8		DATA-	
9			

HMI COM2	PLC RS485 Port
1 DATA+	DATA+
6 DATA-	DATA-

HMI COM3	PLC RS485 Port
7 DATA+	DATA+
8 DATA-	DATA-

2.1.4.6 Wiring Diagrams(COM3/4)

 *Looking into HMI Device			PLC RS485 
PIN#	COM3	COM4	Port 2 (RS-485)
1		DATA+	DATA+
2		DATA-	DATA-
3	ISO_GND	ISO_GND	FG
4			
5			
6	DATA+		
7	DATA-		

HMI COM3	PLC RS485 Port
6 DATA+	DATA+
7 DATA-	DATA-

HMI COM4	PLC RS485 Port
1 DATA+	DATA+
2 DATA-	DATA-

2.1.5 FBe (TCP)

2.1.5.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	192.168.1.3	
Port	500	
PLC Station No.	0	
Communication Method	TCP	

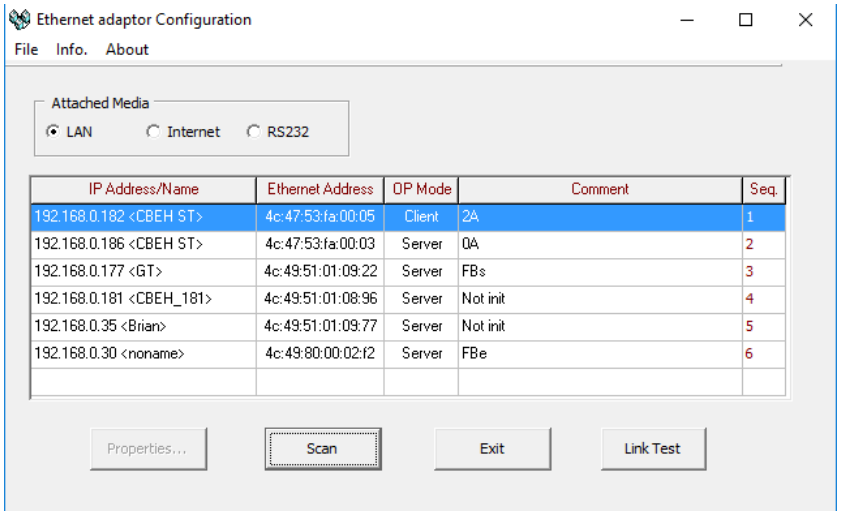
2.1.5.2 Memory Resource Review

Device	Data Bits	Address Format	Min.	Max.	Description
X	1	DDDD	0	255	Input Discrete
Y	1	DDDD	0	255	Output Relay
M	1	DDDD	0	2001	Internal Relay
S	1	DDDD	0	999	Step Relay
T	1	DDDD	0	255	Timer Discrete
C	1	DDDD	0	255	Counter Discrete
WX	16	DDDD	0	255	Input Discrete
WY	16	DDDD	0	255	Output Relay
WM	16	DDDD	0	2001	Input Relay
WS	16	DDDD	0	999	Step Relay
RT	16	DDDD	0	255	Timer Register
RC	16	DDDD	0	199	Counter Register
DRC	32	DDDD	200	255	Counter Register
R	16	DDDD	0	8071	Data Register
D	16	DDDD	0	4095	Data Register

2.1.5.3 Connected Setting

Configuring IP Address on PLC

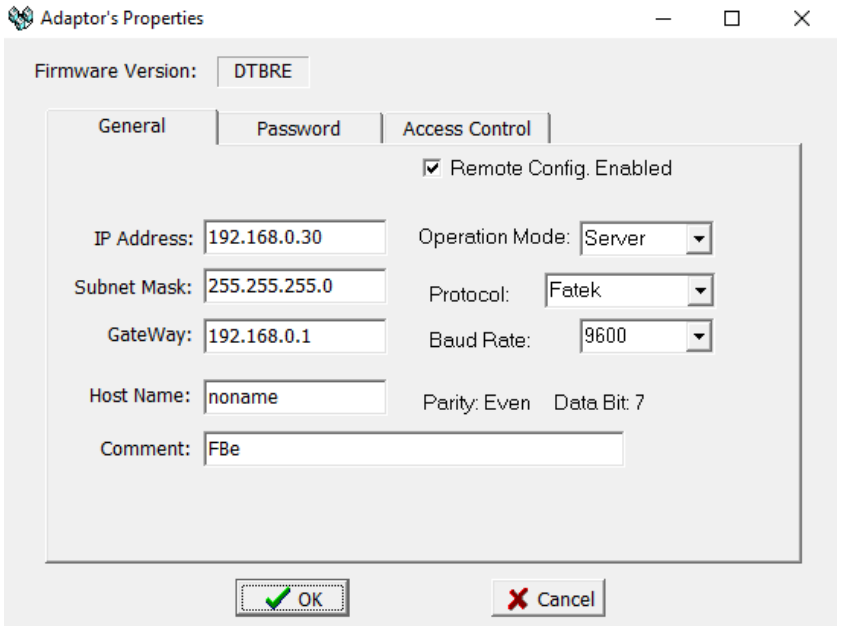
Use the application **FATEK Ethernet Module Configuration Tool** to configure the IP address of the PLC. Connect an Ethernet cable to the PLC. Under **Attached Media**, select LAN and press scan.



Select the PLC to connect to and right click or press Properties to change the IP.

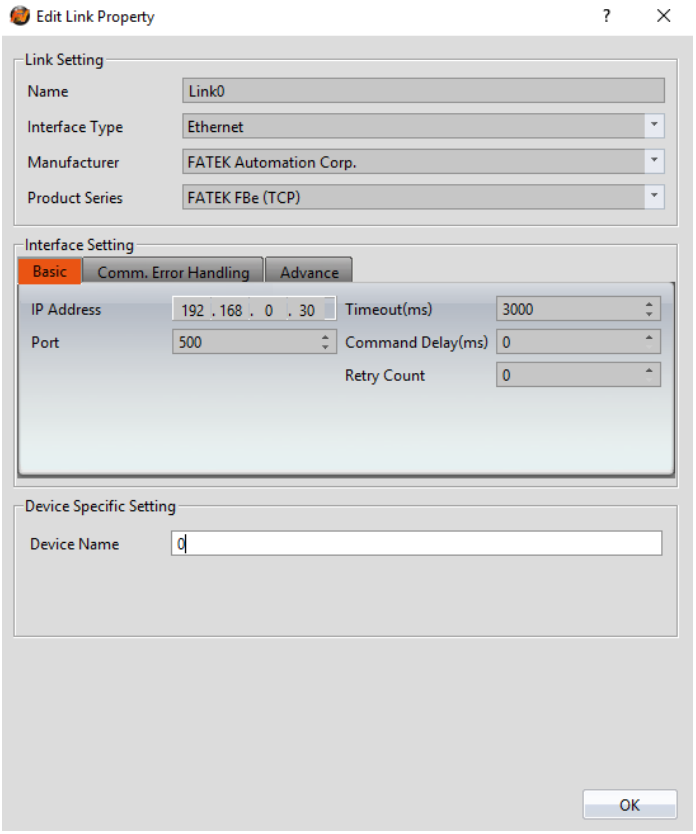
Note: The default IP address for the PLC has 1 for its third octet. If the IP address of the computer has a different number at that position, the PLC will not show up in the scan. Configure network settings on the computer to be able to see the PLC in the local network.

In the dialog window, the IP address and other parameters of the PLC can be configured.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select FATEK Automation Corp
Under **Product Series** select FATEK FBe (TCP)
Use the IP address assigned on the PLC
Leave the Port at the default value

2.1.6 SD3 Servo

2.1.6.1 Communication Setting

ITEMS	SPEC
Electrical specifications	Asynchronous serial communication half duplex
Baud rate	2400,4800,9600,19200,38400,57600bps
Data bit	8 bit
Parity bit	None even odd
Stop bit	1bit 2bit
Check sum	CRC16-CCITT
Data transfer	8 bit (binary)
Communication data length	32 bytes

2.1.6.2 Memory Resource Review

Bit/ Word	Device Name	Register symbol	Input format	Start	End	Read /Write
B	Alarm Status	A	D	0	0	R
W	Parameter	P	DDDD	0	1029	R/W
	State	S	DDDD	0	1029	R

	Multi-Turn Data	MTD	D	0	0	R
	Alarm Status	A	D	0	0	R
DW	Parameter	DP	DDDD	0	1029	R/W
	State	DS	DDDD	0	1029	R
	Single-Turn Data	STD	D	0	0	R

2.1.6.3 Connected Setting

Sankyo Servo Parameter configuration

With the upper control device specifications, set the drive communication address and communication parameters.The following are the parameters that must be set for RS-485.

Parameter No.	parameter	Setting value
4.0	RS-485 communication address	1-32 Initial value 1。
6.0	RS-485 communication Baud rate	0： 2,400bps 1： 4,800bps 2： 9,600bps 3：19,200bps 4：38,400bps 5：57,600bps （Initial value）
6.1	RS-485 communication STOP bit	0：1 bit（Initial value） 1：2 bit
6.2	RS-485communication parity	0：none（Initial value） 1：EVEN 2：ODD
8.0	RS-485 communication ON/OFF	0：no use（Initial value） 1：use
11.0	RS-485 Communication Minimum response time	0-255 Initial value 3 [ms]。

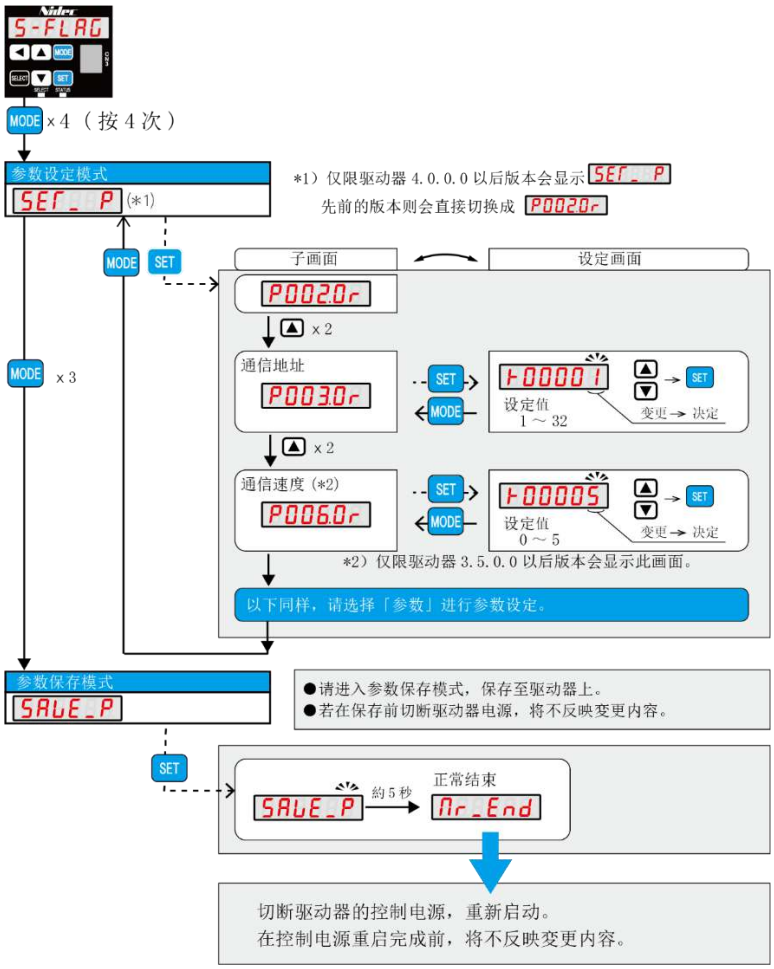
2.1.6.4 Wiring Diagrams

Parameter setting method (alternatively set the following parameters):

Setting

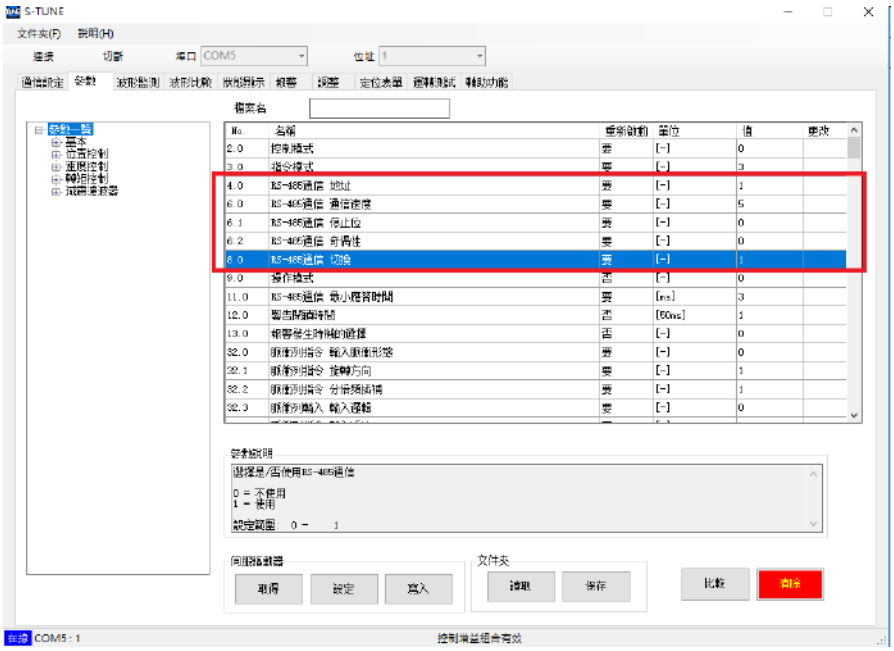
	Use the drive front panel settings.
	S-TUNE has been set for adjustment. Software needs to be installed on the computer.

Method1:

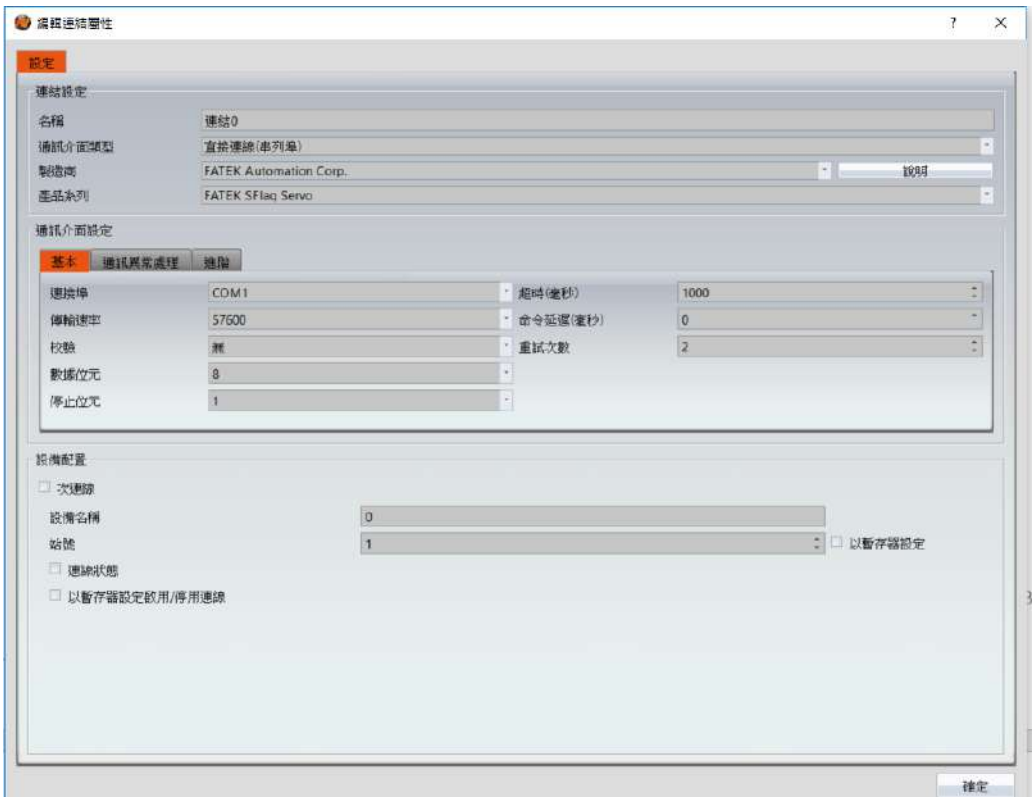


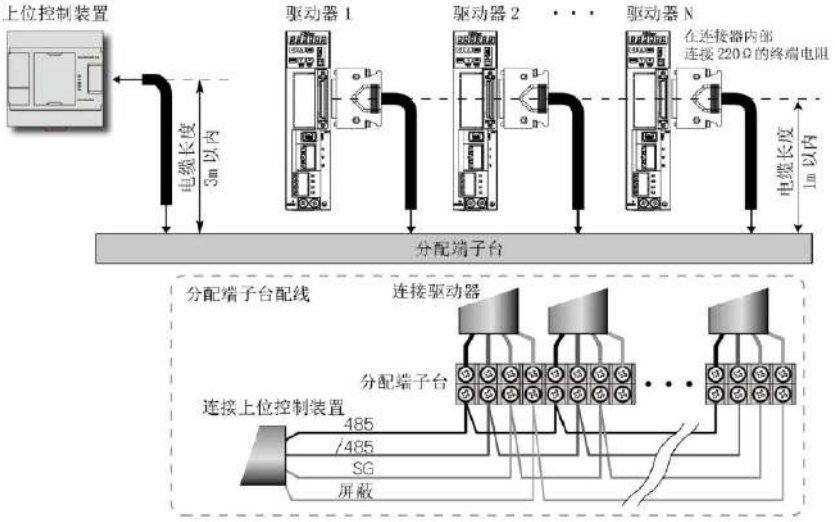
Method2:

Open Sankyo S-TUNE and use the mini USB cable to connect to the computer USB port, it will automatically connect

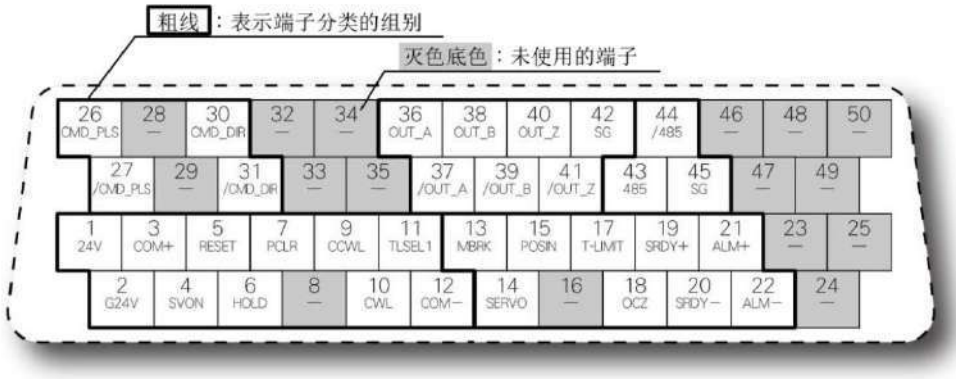


Configuring of HMI



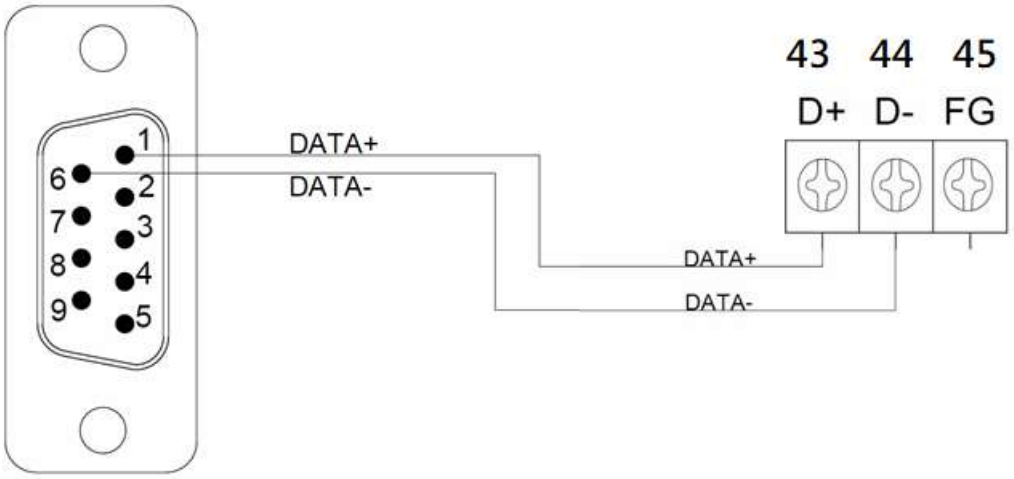


连接器配线复杂时，请以端子台进行信号分配。



Sankyo Servo CN1 PIN腳位

HMI COM2



2.1.7 M series

2.1.7.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS485	
Baud Rate	9600	
Data Length	8	
Stop Bit	1	
Parity	Even	
PLC Station No.	1	
Communication Method	FATEK Communication Protocol	

2.1.7.2 Memory Resource Review

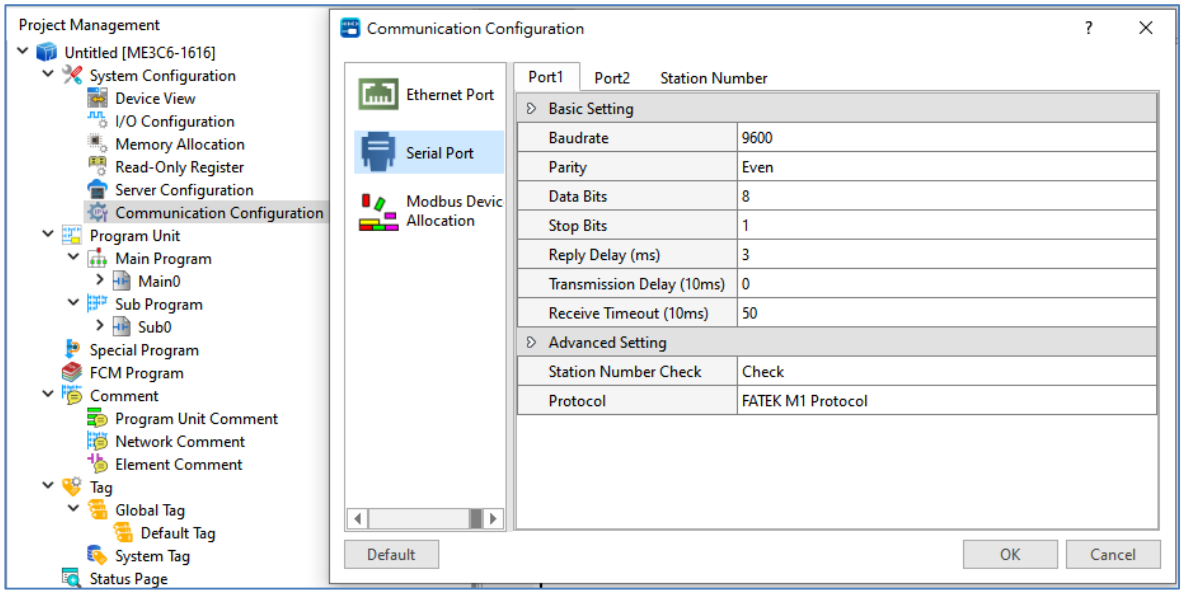
Device	Data Bits	Address Format	Min.	Max.	Description
X	1	DDDD	0	1023	Input Discrete
Y	1	DDDD	0	1023	Output Relay
M	1	DDDDD	0	29599	Internal Relay
S	1	DDDD	0	3103	Step Relay
T	1	DDDD	0	1023	Timer Discrete
C	1	DDDD	0	1279	Counter Discrete
WX	16	DDDD	0	1023	Input Discrete
WY	16	DDDD	0	1023	Output Relay
WM	16	DDDDD	0	19599	Internal Relay
WS	16	DDDD	0	3103	Step Relay
RT	16	DDDD	0	1023	Timer Register
RC	16	DDDD	0	1023	16-bit Counter Register
LC	32	DDDD	1024	1279	32-bit Counter Register
R	16	DDDD	0	47319	Data Register
D	16	DDDD	0	11999	Data Register

F	16	DDDD	0	32767	File Register

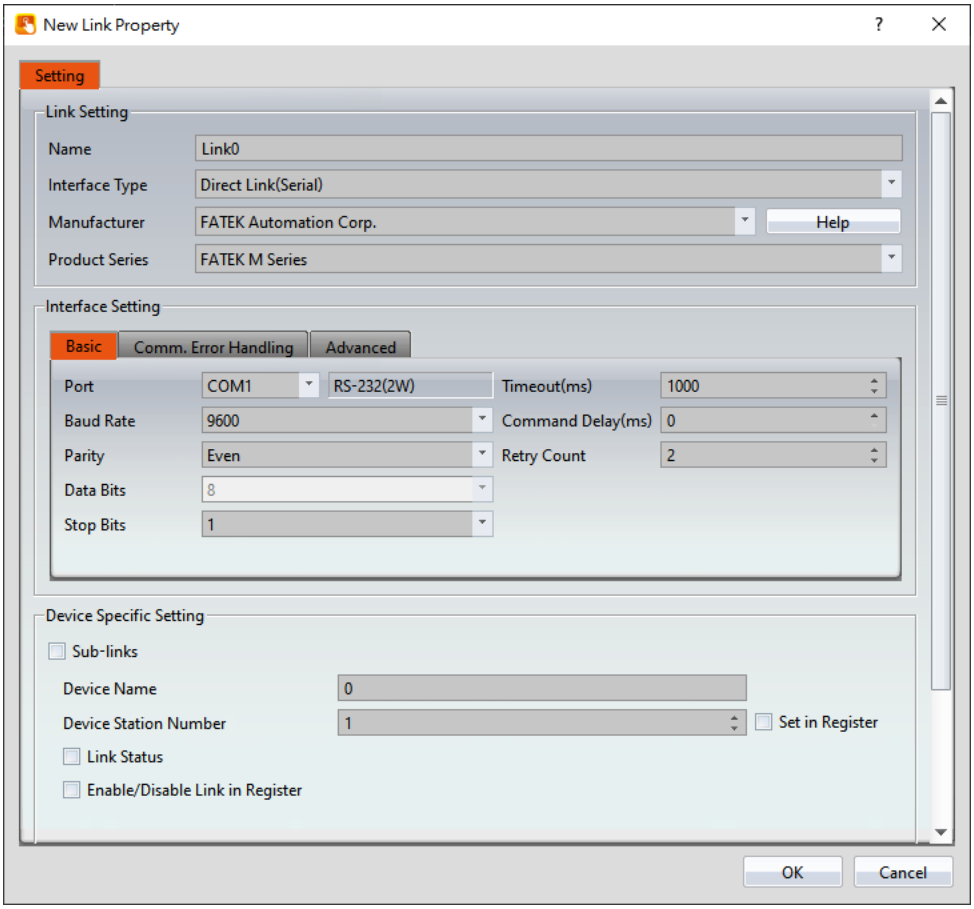
2.1.7.3 Connecting to PLC

Configuring of PLC

Use the PLC software **"UperLogic"** to configure the serial port communication parameters of the PLC. After connecting to the device via "USB" or "Ethernet," select the "Communication Settings" option to set the corresponding communication parameters.



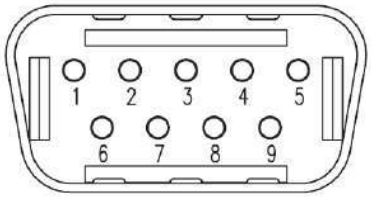
Configuring of HMI

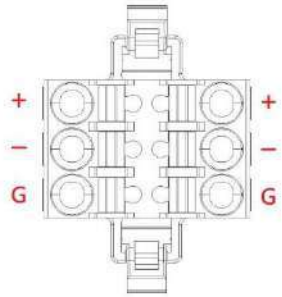


Within the Link configuration window in FvDesigner:
Under Interface Type select **Serial**.
Under Manufacturer select **FATEK Automation Corp.**
Under Product Series select **FATEK M Series.**

Verify the other parameters are consistent with the settings on the PLC.

2.1.7.4 Wiring Diagrams(COM2)

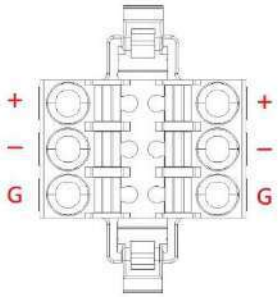
HMI485	PLC RS485
	

	 PO1/PO2 (RS-485)

PIN#	Port **2** (RS-485)	Port1/2 (RS-485)
1	**D+**	**D+**
6	**D-**	**D-**
5	**G**	**G**

PIN#	Port **3** (RS-485)	Port1/2 (RS-485)
7	**D+**	**D+**
8	**D-**	**D-**
5	**G**	**G**

2.1.7.5 Wiring Diagrams(COM3/4)

HMI485	PLC RS485
	 PO1/PO2 (RS-485)

PIN#	Port **3** (RS-485)	Port1/2 (RS-485)
6	**D+**	**D+**
7	**D-**	**D-**
3	**G**	**G**

PIN#	Port **4** (RS-485)	Port1/2 (RS-485)
1	**D+**	**D+**
2	**D-**	**D-**
3	**G**	**G**

2.1.8 M series (TCP)

2.1.8.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	192.168.2.4	
Port	501	
PLC Station No.	0	
Communication Method	TCP	

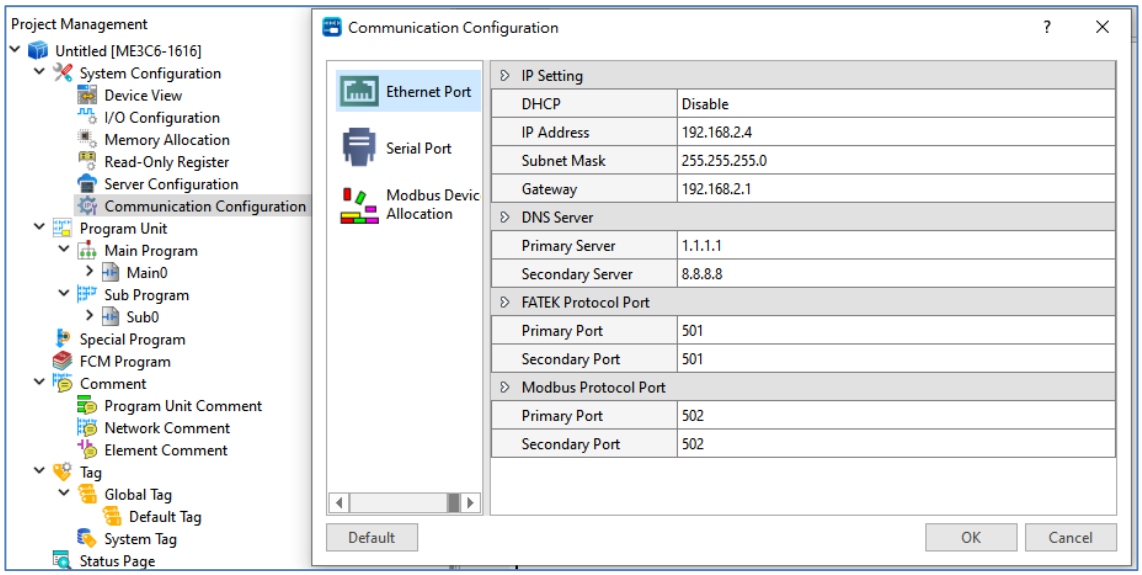
2.1.8.2 Memory Resource Review

Device	Data Bits	Address Format	Min.	Max.	Description
X	1	DDDD	0	1023	Input Discrete
Y	1	DDDD	0	1023	Output Relay
M	1	DDDDD	0	29599	Internal Relay
S	1	DDDD	0	3103	Step Relay
T	1	DDDD	0	1023	Timer Discrete
C	1	DDDD	0	1279	Counter Discrete
WX	16	DDDD	0	1023	Input Discrete
WY	16	DDDD	0	1023	Output Relay
WM	16	DDDDD	0	19599	Internal Relay
WS	16	DDDD	0	3103	Step Relay
RT	16	DDDD	0	1023	Timer Register
RC	16	DDDD	0	1023	16-bit Counter Register
LC	32	DDDD	1024	1279	32-bit Counter Register
R	16	DDDD	0	47319	Data Register
D	16	DDDD	0	11999	Data Register
F	16	DDDD	0	32767	File Register

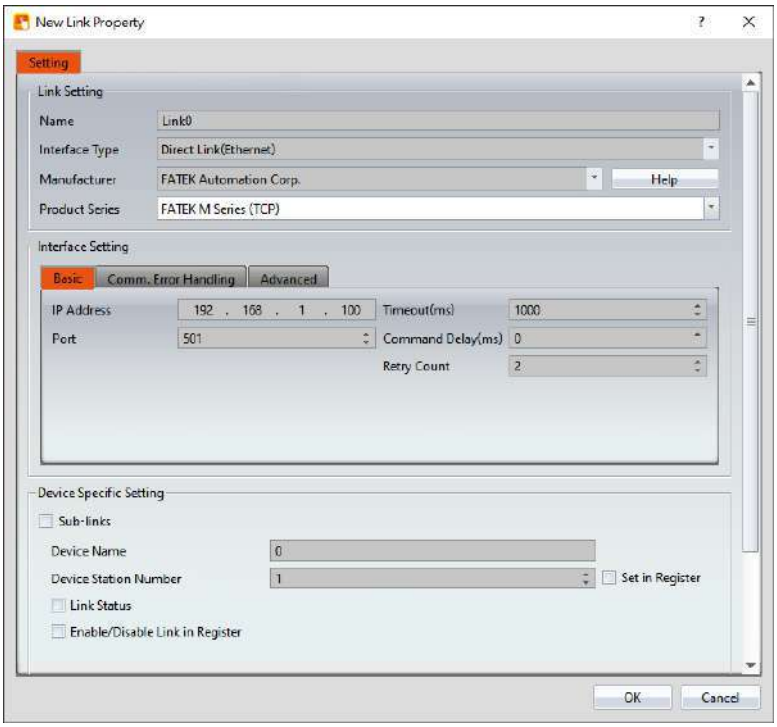
2.1.8.3 Connecting to PLC

Configuring of PLC

Use the PLC software **"UperLogic"** to configure the serial port communication parameters of the PLC. After connecting to the device via "USB" or "Ethernet," select the "Communication Settings" option to set the corresponding communication parameters.



Configuring of HMI



Within the Link configuration window in FvDesigner:
Under Interface Type select **Direct Link (Ethernrt)**.

Under Manufacturer select **FATEK Automation Corp**.
Under Product Series select **FATEK M Series (TCP)**.

Verify the other parameters are consistent with the settings on the PLC.

2.2 Mitsubishi

2.2.1 FX2N CPU

2.2.1.1 Communication Setting

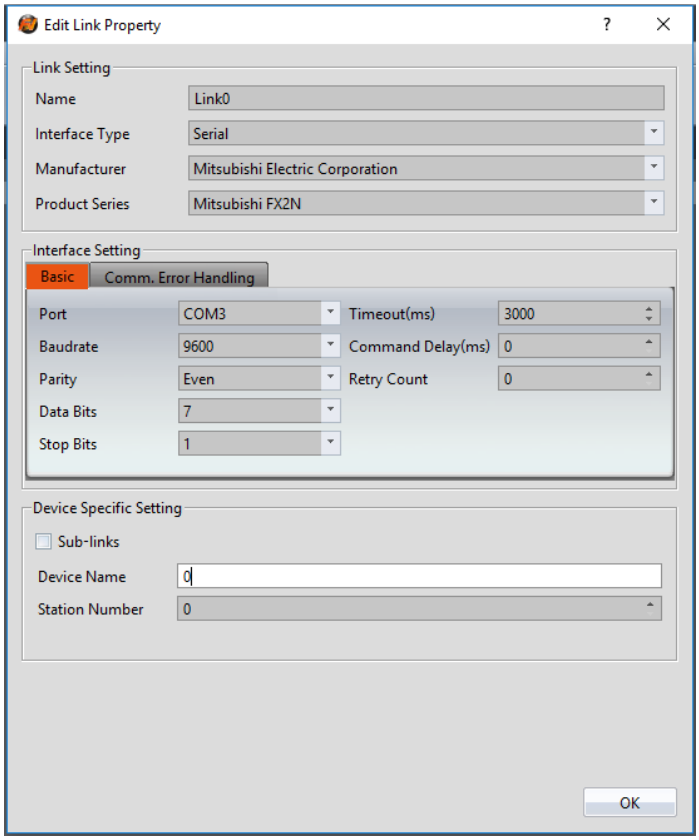
Item	Default Setting	Remark
Signal Level	RS485 4W	
Baud Rate	9600	
Data Length	7	
Stop Bit	1	
Parity	Even	
PLC Station No.	0	
Communication Method	Programming Protocol	

2.2.1.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
X	Input Discrete	1	0	377
Y	Output Relay	1	0	377
M	Internal Relay	1	0	7999
SM	Special Relay	1	8000	8255
S	Step Relay	1	0	4095
TS	Timer Discrete	1	0	255
CS	Counter Discrete	1	0	255
WX	Input Discrete	16	0	360
WY	Output Relay	16	0	360
WM	Internal Relay	16	0	7984
WS	Step Relay	16	0	4080
TN	Timer Memory	16	0	255
CN	Counter Memory	16	0	199
D	Data Register	16	0	7999
SD	Special Data Register	16	8000	8255
DCN	Counter Memory	32	200	255

2.2.1.3 Connected Setting

Configuring of HMI



Within the **Link** configuration window in FvDesigner:

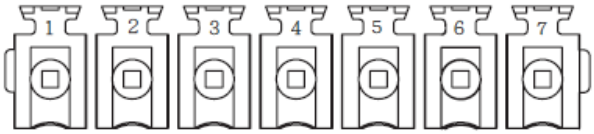
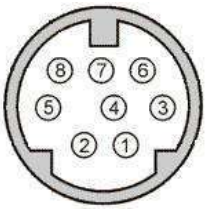
Under **Interface Type** select Serial

Under **Manufacturer** select Mitsubishi Electric Corporation

Under **Product Series** select Mitsubishi FX2N

Under **Port** select COM3

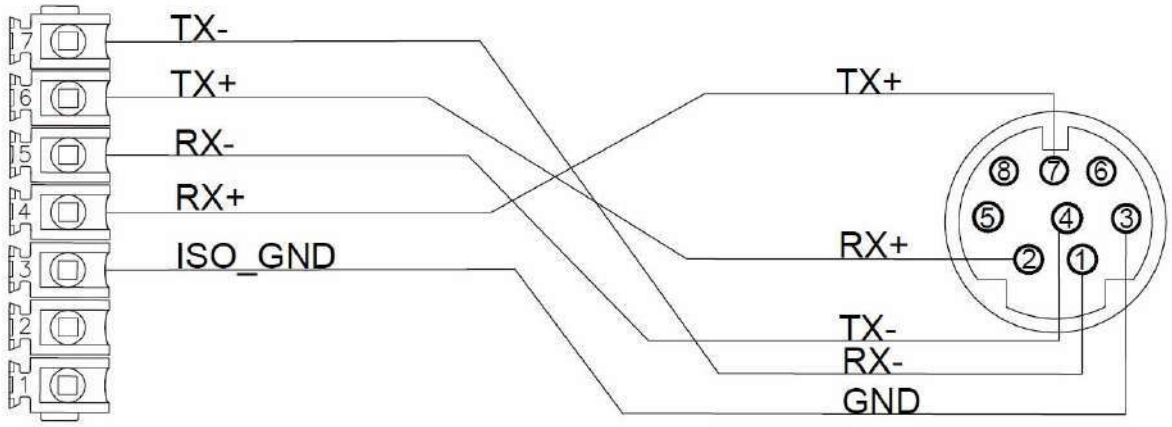
2.2.1.4 Wiring Diagrams

HMI COM3 Pinout		**PLC RS422 Pinout**	
 *Looking into HMI Device		 *View from soldering point of the cable	
PIN#	COM3 (RS-422/RS-485)	PIN#	Signal
1		1	RX-
2		2	RX+
3	ISO_GND	3	GND
4	RX+	4	TX-
5	RX-	5	
6	TX+	6	
7	TX-	7	TX+
		8	

HMI COM3	PLC RS422 Port
5 RX-	4 TX-
4 RX+	7 TX+
7 TX-	1 RX-
6 TX+	2 RX+
3 ISO_GND	3 GND

HMI COM3

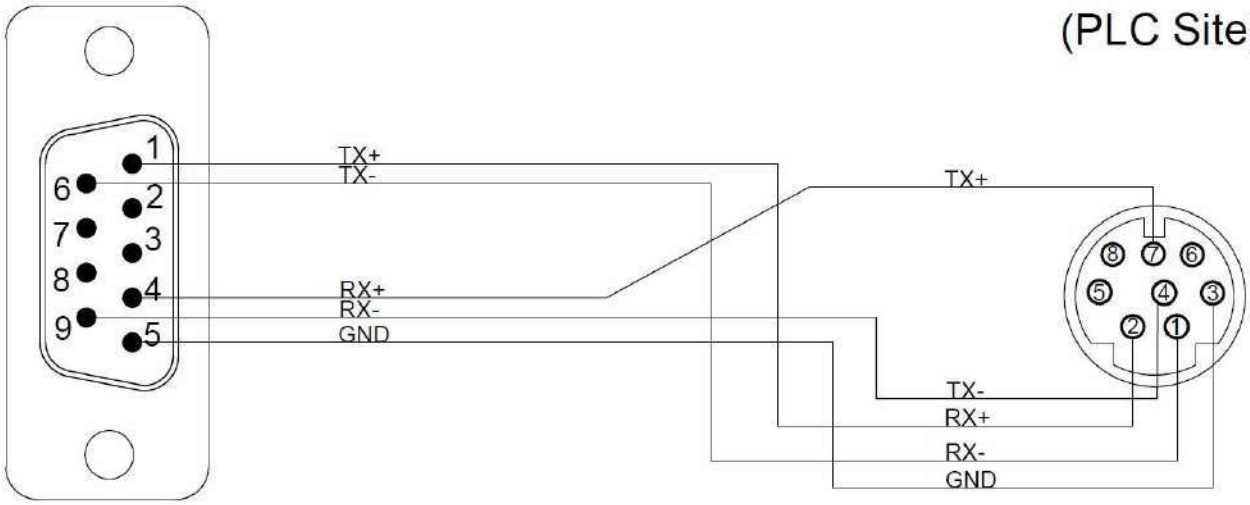
PLC RS422



HMI COM2	PLC RS422 Port
9 RX-	4 TX-
4 RX+	7 TX+
6 TX-	1 RX-
1 TX+	2 RX+
5 GND	3 GND

HMI COM2

Mini-DIN
(PLC Site)



2.2.2 FX2N-485BD

2.2.2.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS485	
Baud Rate	19200	
Data Length	7	
Stop Bit	1	
Parity	Even	
PLC Station No.	1	
TX Control	Form1	Without CR,LF
Checksum	Yes	
Communication Method	Computer Link	

2.2.2.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
X	Input Discrete	1	0	377
Y	Output Relay	1	0	377
M	Internal Relay	1	0	3071
SM	Special Relay	1	8000	8255
S	Step Relay	1	0	999
TS	Timer Discrete	1	0	255
CS	Counter Discrete	1	0	199
WX	Input Discrete	16	0	360
WY	Output Relay	16	0	360
WM	Internal Relay	16	0	3056
WS	Step Relay	16	0	976
TN	Timer Memory	16	0	255
CN	Counter Memory	16	0	199
D	Data Register	16	0	7999
SD	Special Data Register	16	8000	8255
DCN	Counter Memory	32	200	255

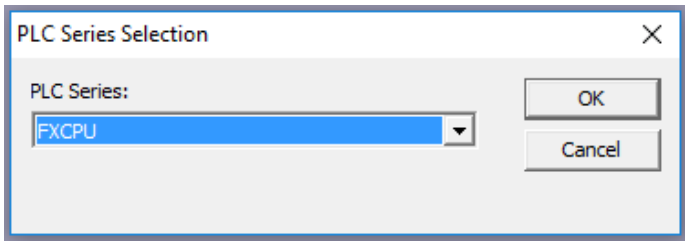
2.2.2.3 Connected Setting

Configuring of PLC

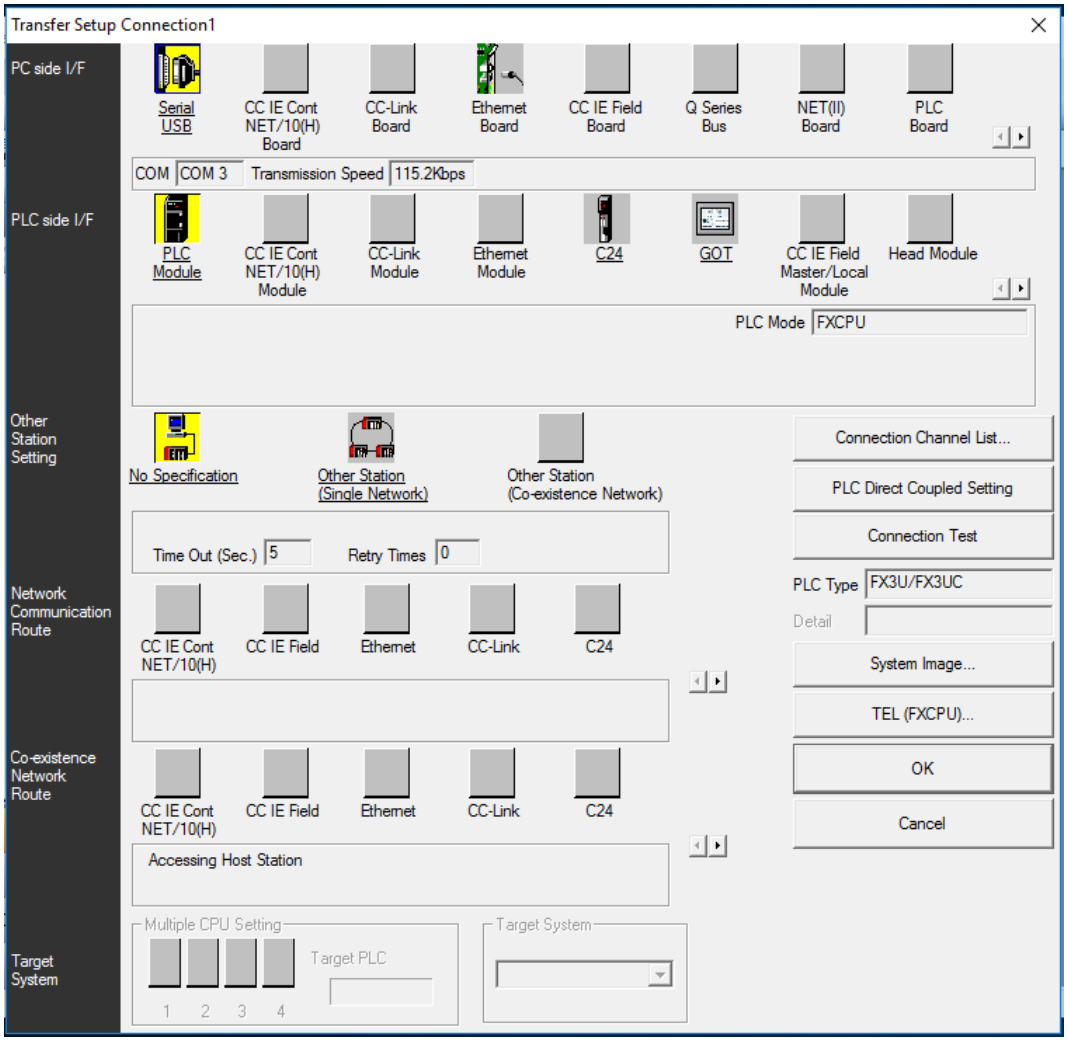
Use **MELSOFT GX Works2** to configure the port of the PLC.

Under the **Online** menu option, select **Read from PLC**

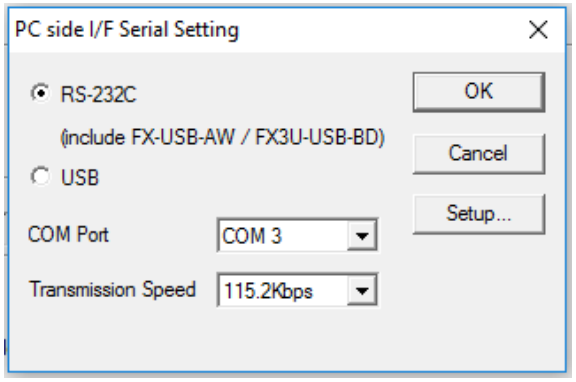
Select the **FXCPU** PLC series.



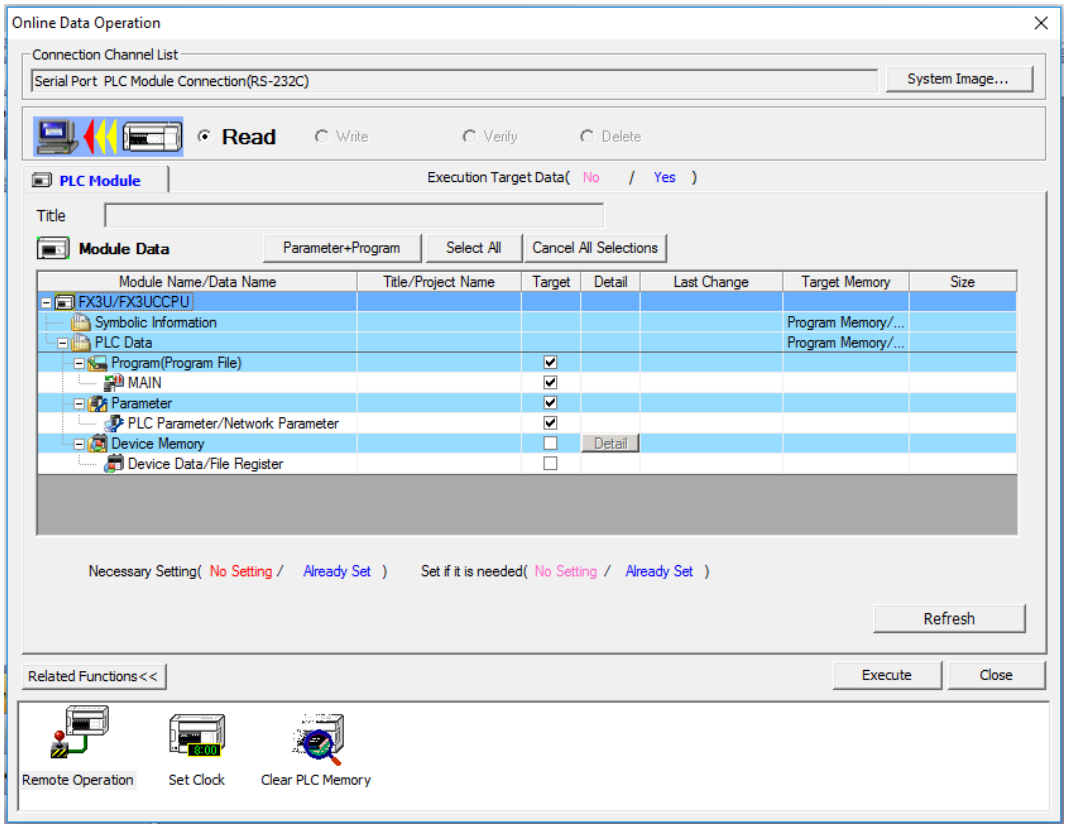
Select **Serial USB** in the Transfer Setup Communication window.



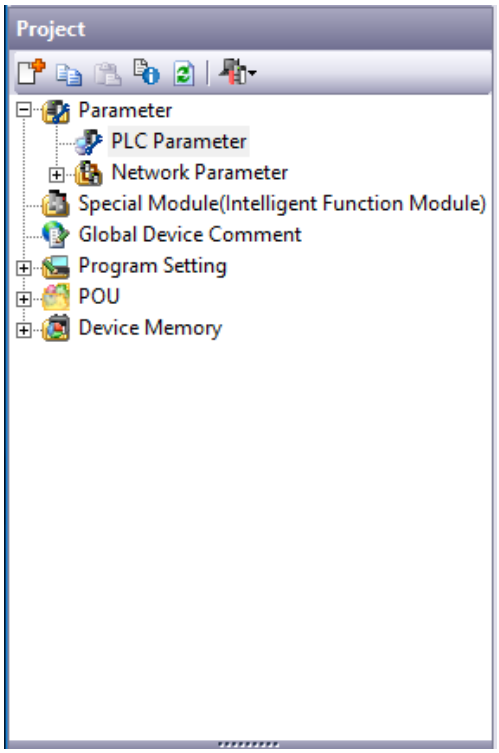
Select the **RS-232C** radio button and select the **COM Port** that the PLC is connected at. Click **Connection Test** to verify the connection and then press OK.



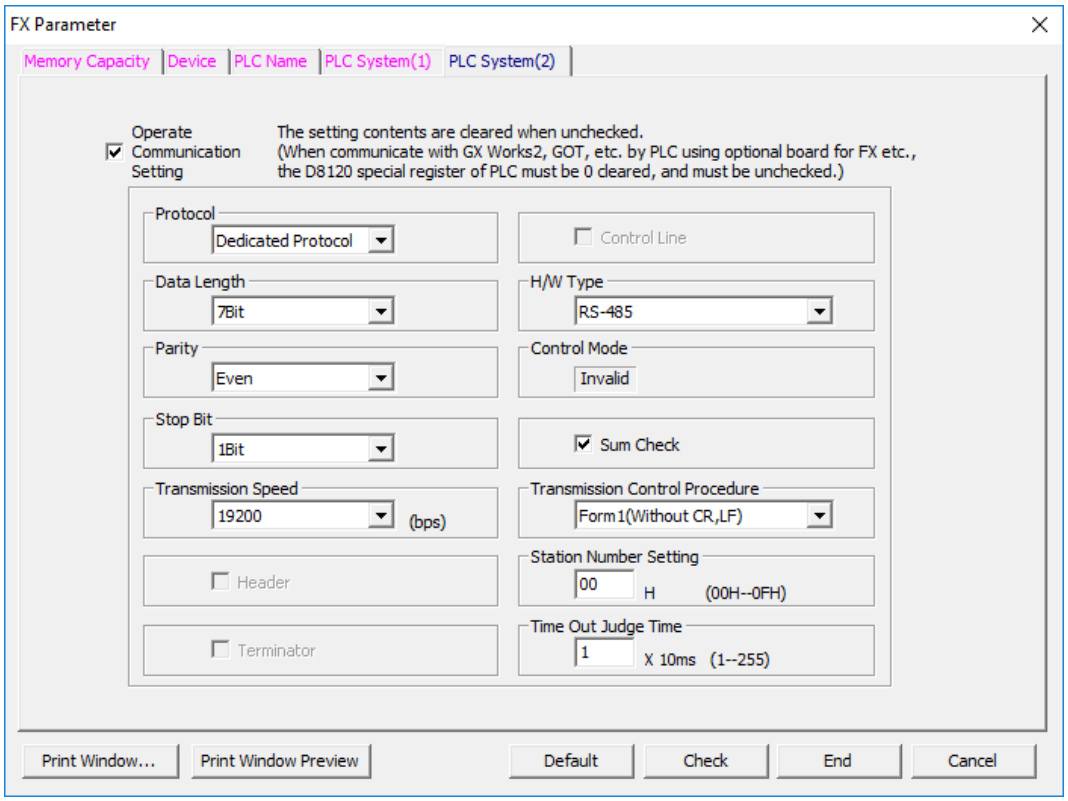
After confirming the **Parameter** option is checked, press **Execute** in the Online Data Operation window.



Under the Project Sidebar, expand **Parameter** and select **PLC Parameter**.



Navigate to the **PLC System(2)** tab and configure it to the settings detailed below.

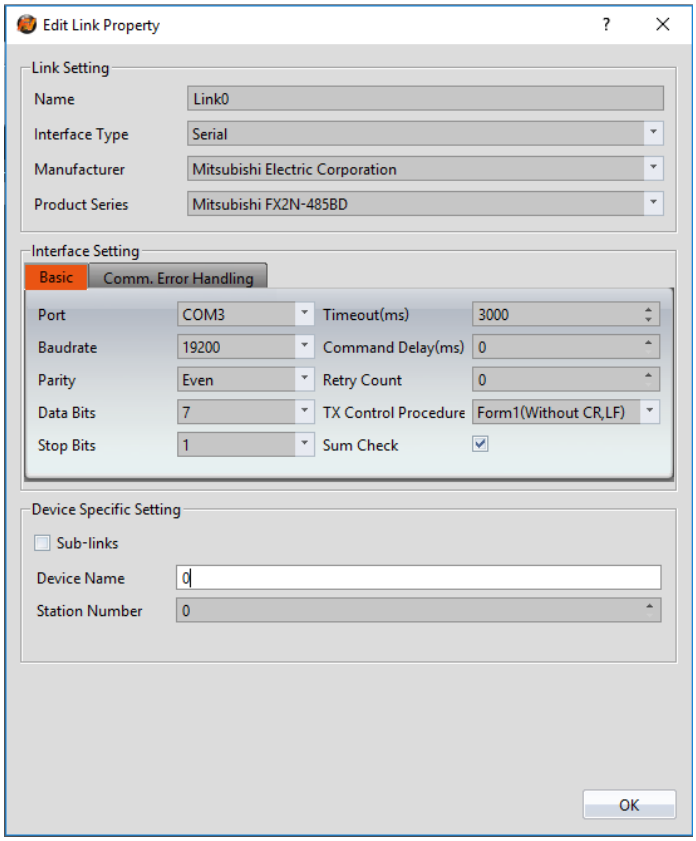


Check **Operate Communication Setting** to enable configuration

Set Protocol to **Dedicated Protocol**
Set Parity to **Even**
Set Transmission Speed to **19200**
Set H/W Type to **RS-485**
Check the **Sum Check** checkbox
Verify the Station Number is consistent with the one set in FvDesigner.

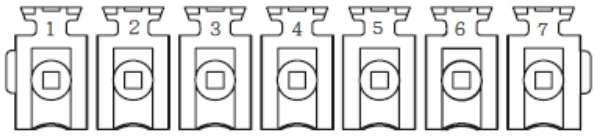
Note: For more detailed information please refer to the PLC manual.

Configuring of HMI

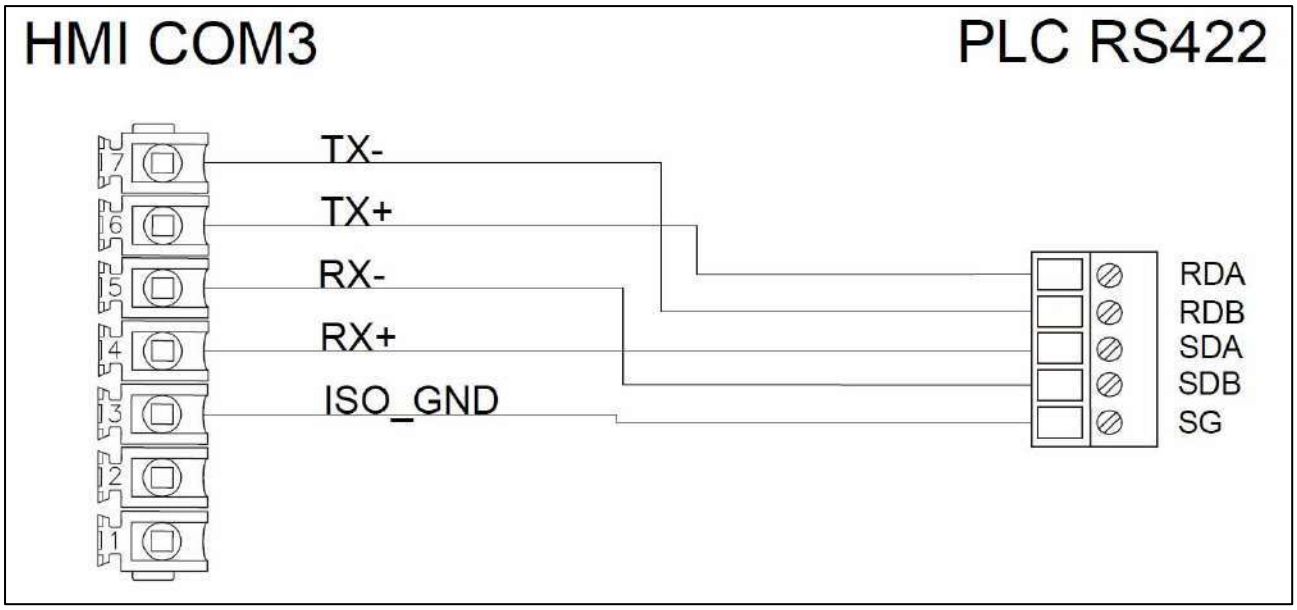


Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select Mitsubishi FX2N-485BD.
Under **Port** select COM3

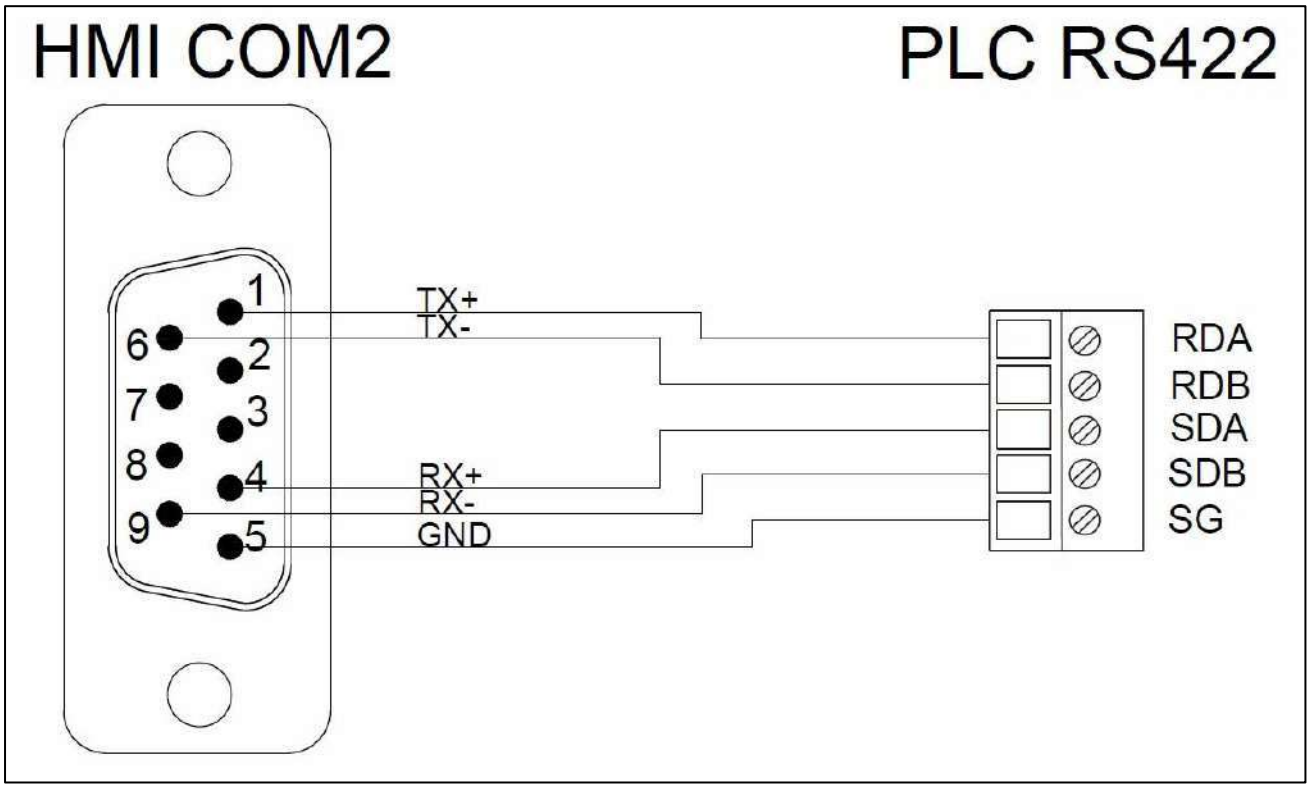
2.2.2.4 Wiring Diagrams

HMI COM3 Pinout		**PLC RS422 Pinout**
 *Looking into HMI Device		
PIN#	COM3 (RS-422/RS-485)	PLC RS422 Port
1		
2		
3	ISO_GND	SG
4	RX+	SDA
5	RX-	SDB
6	TX+	RDA
7	TX-	RDB

HMI COM3	PLC RS422 Port
3 GND	SG
4 RX+	RDA
5 RX-	RDB
6 TX+	RDA
7 TX-	RDB



HMI COM2	PLC RS422 Port
9 RX-	SDB
4 RX+	SDA
6 TX-	RDB
1 TX+	RDA
5 GND	SG



2.2.3 FX3U CPU

2.2.3.1 Communication Setting

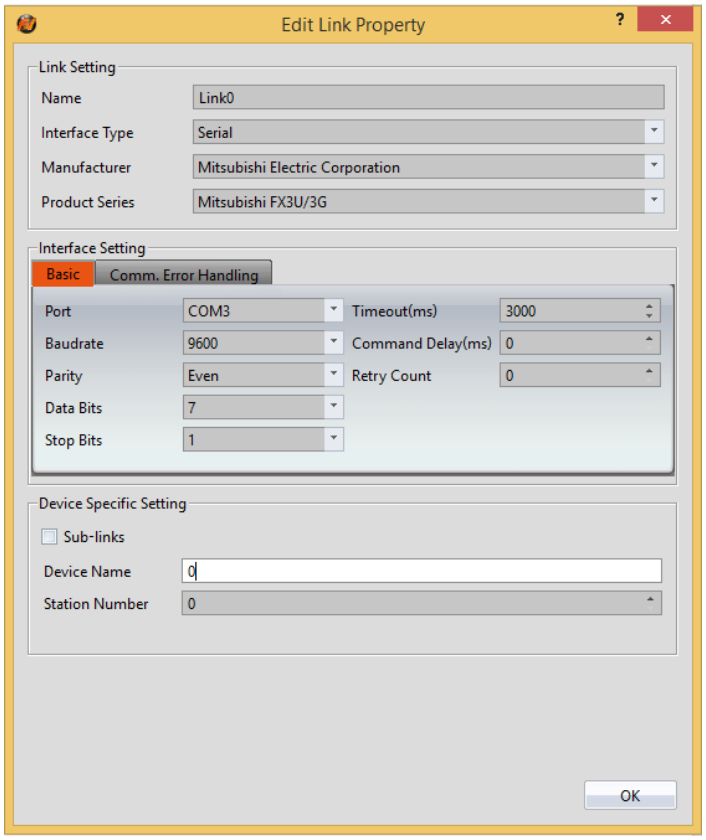
Item	Default Setting	Remark
Signal Level	RS485 4W	
Baud Rate	9600	
Data Length	7	
Stop Bit	1	
Parity	Even	
PLC Station No.	0	
Communication Method	Programming Protocol	

2.2.3.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
X	Input Discrete	1	0	377
Y	Output Relay	1	0	377
M	Internal Relay	1	0	7999
SM	Special Relay	1	8000	8511
S	Step Relay	1	0	4095
TS	Timer Discrete	1	0	511
CS	Counter Discrete	1	0	199
WX	Input Discrete	16	0	360
WY	Output Relay	16	0	360
WM	Internal Relay	16	0	7664
WS	Step Relay	16	0	4080
TN	Timer Memory	16	0	511
CN	Counter Memory	16	0	199
D	Data Register	16	0	7999
SD	Special Data Register	16	8000	8511
R	Extended Register	16	0	32767
DCN	Counter Memory	32	200	255

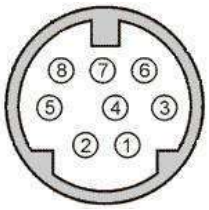
2.2.3.3 Connected Setting

Configuring of HMI

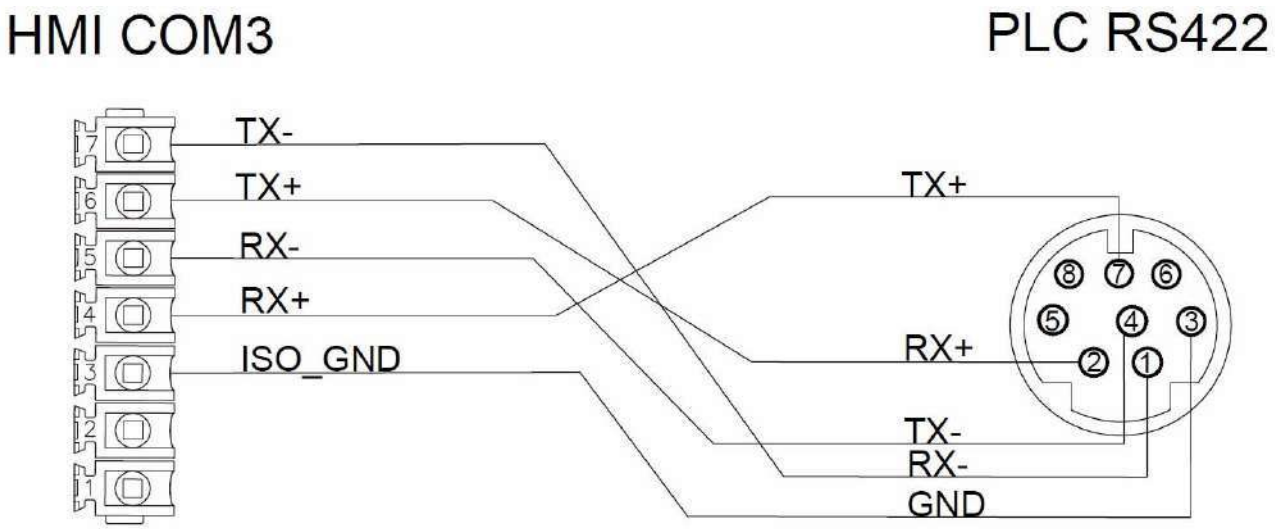


Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select Mitsubishi FX3U/3G
Under **Port** select COM3

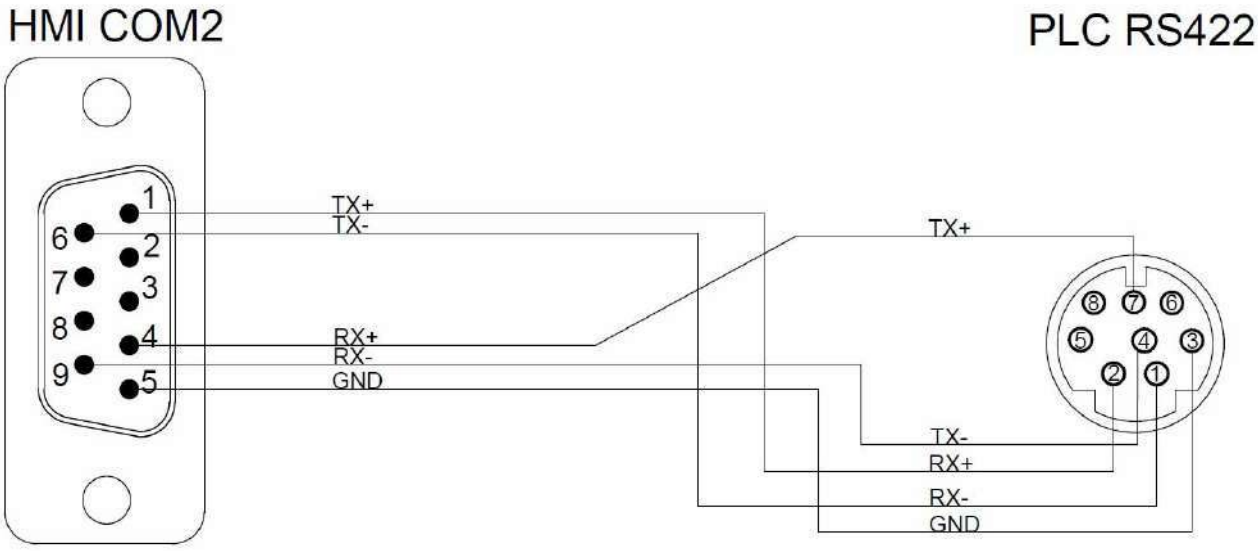
2.2.3.4 Wiring Diagrams

HMI COM3 Pinout		**PLC RS422 Pinout**	
 *Looking into HMI Device		 *View from soldering point of the cable	
PIN#	COM3 (RS-422/RS-485)	PIN#	Signal
1		1	RX-
2		2	RX+
3	ISO_GND	3	GND
4	RX+	4	TX-
5	RX-	5	
6	TX+	6	
7	TX-	7	TX+
		8	

HMI COM3	PLC RS422 Port
5 RX-	4 TX-
4 RX+	7 TX+
7 TX-	1 RX-
6 TX+	2 RX+
3 ISO_GND	3 GND



HMI COM2	PLC RS422 Port
9 RX-	4 TX-
4 RX+	7 TX+
6 TX-	1 RX-
1 TX+	2 RX+
5 GND	3 GND



2.2.4 FX3U-485BD

2.2.4.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS485	
Baud Rate	19200	
Data Length	7	
Stop Bit	1	
Parity	Even	
PLC Station No.	1	
TX Control	Form1	Without CR,LF
Checksum	Yes	
Communication Method	Computer Link	

2.2.4.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
X	Input Discrete	1	0	377
Y	Output Relay	1	0	377
M	Internal Relay	1	0	7679
SM	Special Relay	1	8000	8511
S	Step Relay	1	0	4095
TS	Timer Discrete	1	0	511
CS	Counter Discrete	1	0	199
WX	Input Discrete	16	0	360
WY	Output Relay	16	0	360
WM	Internal Relay	16	0	7664
WS	Step Relay	16	0	4080
TN	Timer Memory	16	0	511
CN	Counter Memory	16	0	199
D	Data Register	16	0	7999
SD	Special Data Register	16	8000	8511
R	Extended Register	16	0	32767
DCN	Counter Memory	32	200	255

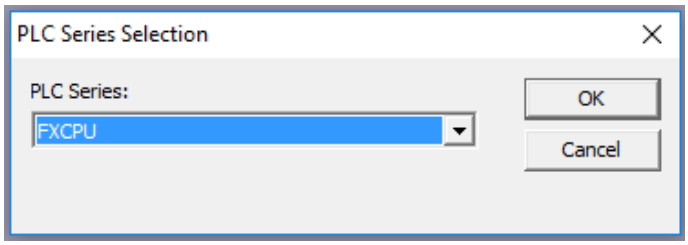
2.2.4.3 Connected Setting

Configuring of PLC

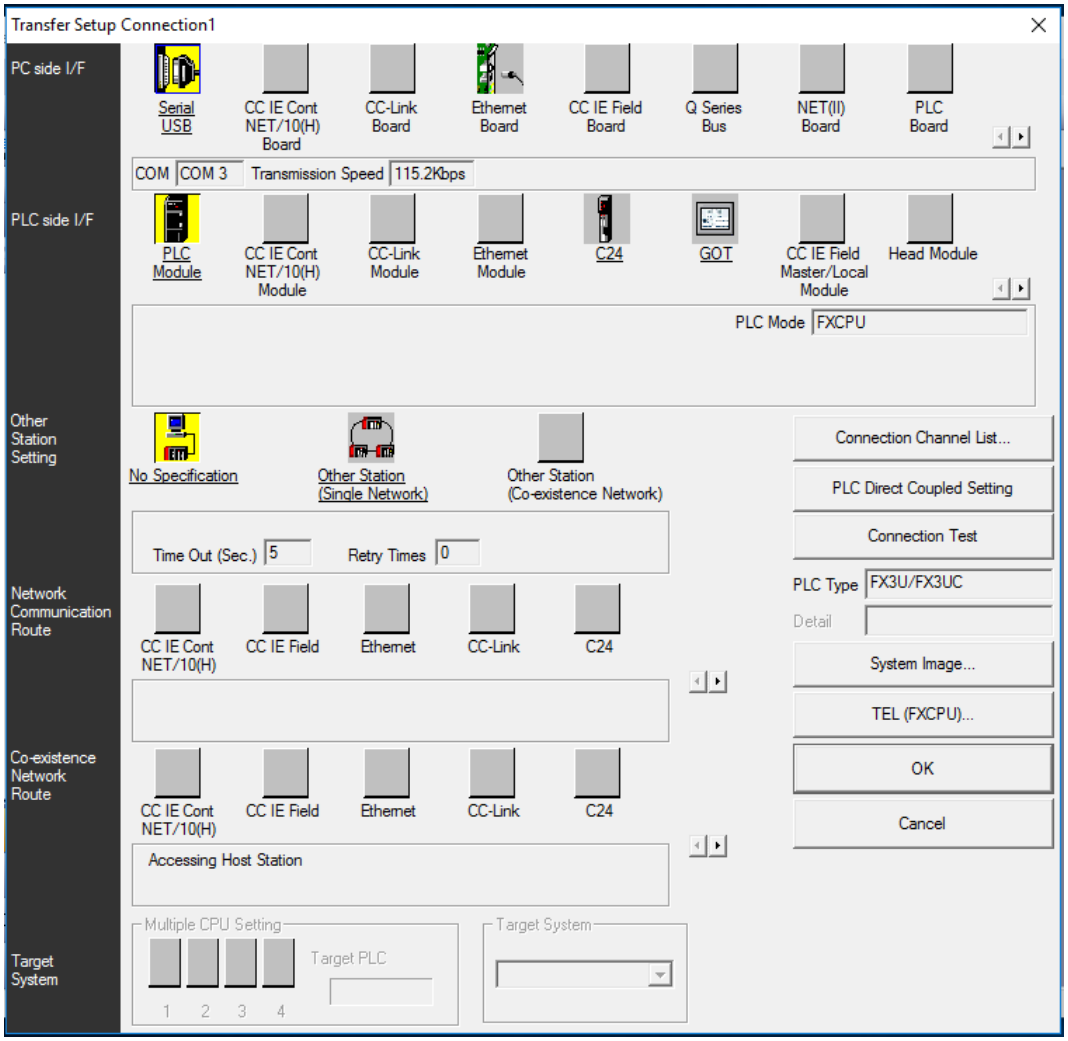
Use **MELSOFT GX Works2** to configure the port of the PLC.

Under the **Online** menu option, select **Read from PLC**

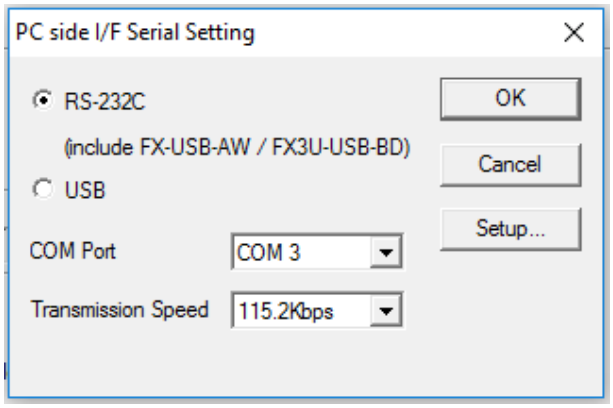
Select the **FXCPU** PLC series.



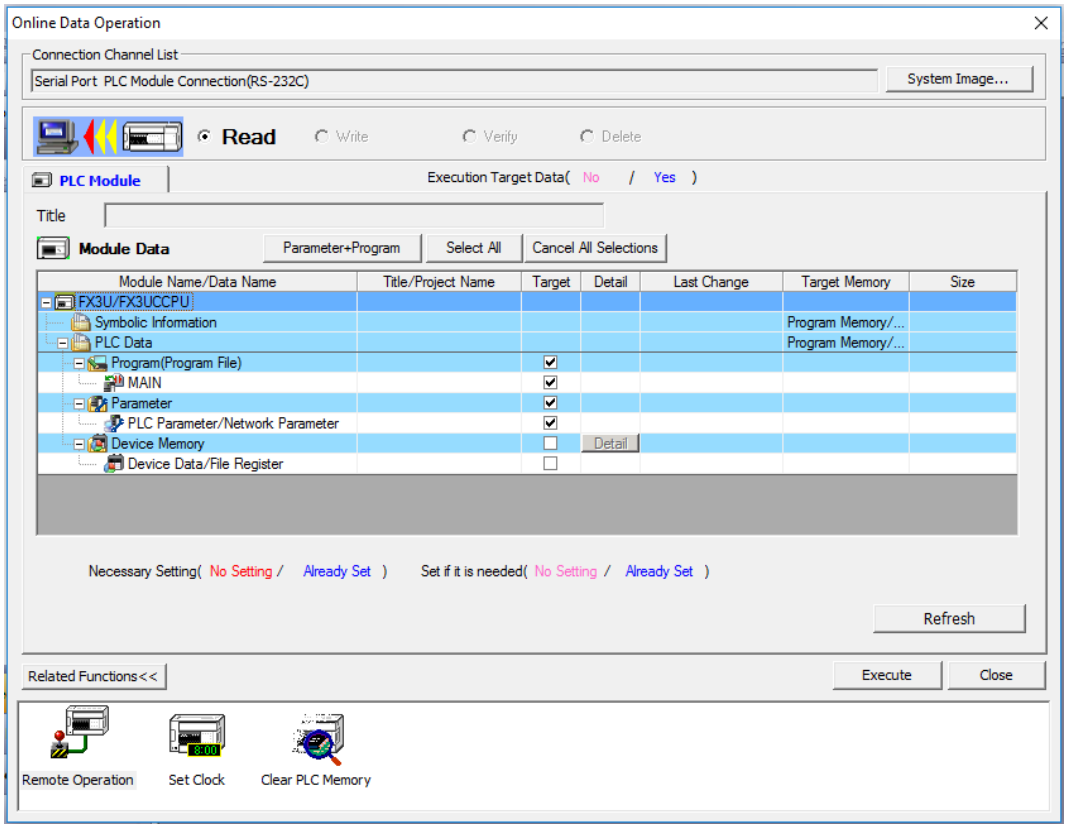
Select **Serial USB** in the Transfer Setup Communication window.



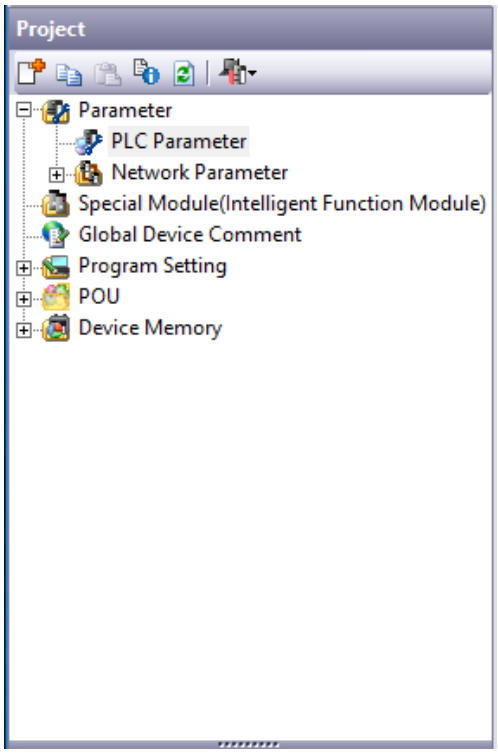
Select the **RS-232C** radio button and select the **COM Port** that the PLC is connected at. Click **Connection Test** to verify the connection and then press OK.



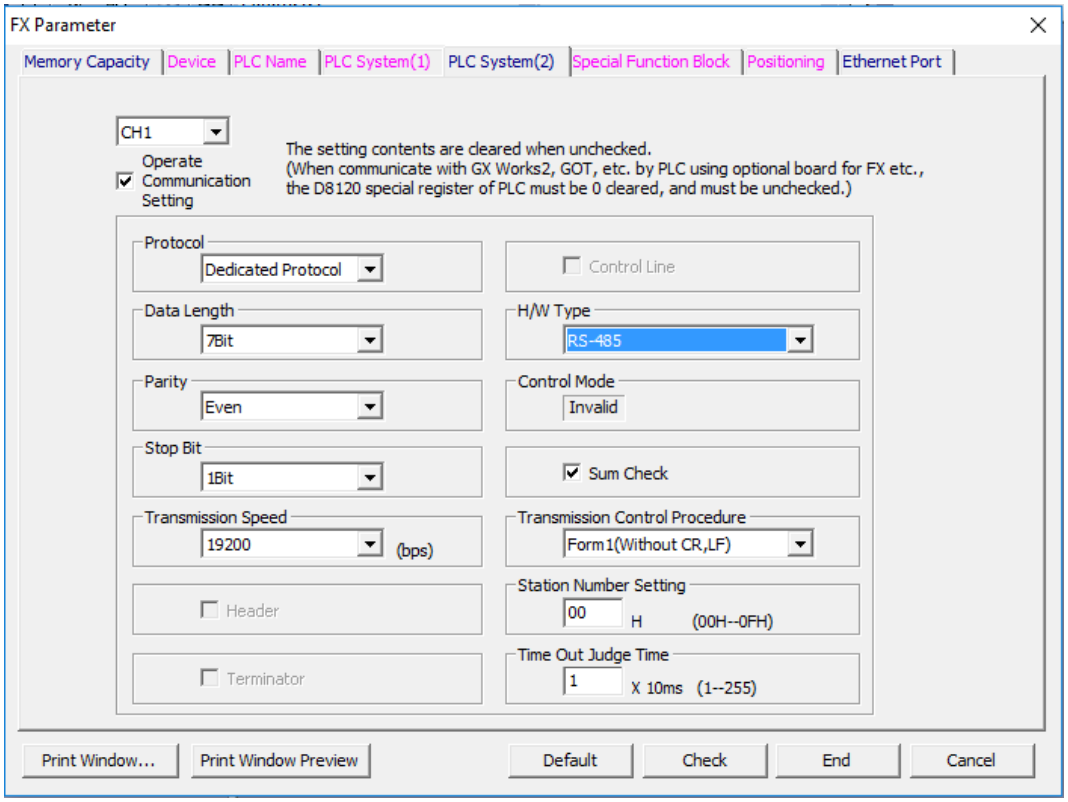
After confirming the **Parameter** option is checked, press **Execute** in the Online Data Operation window.



Under the Project Sidebar, expand **Parameter** and select **PLC Parameter**.



Navigate to the **PLC System(2)** tab and configure it to the settings detailed below.

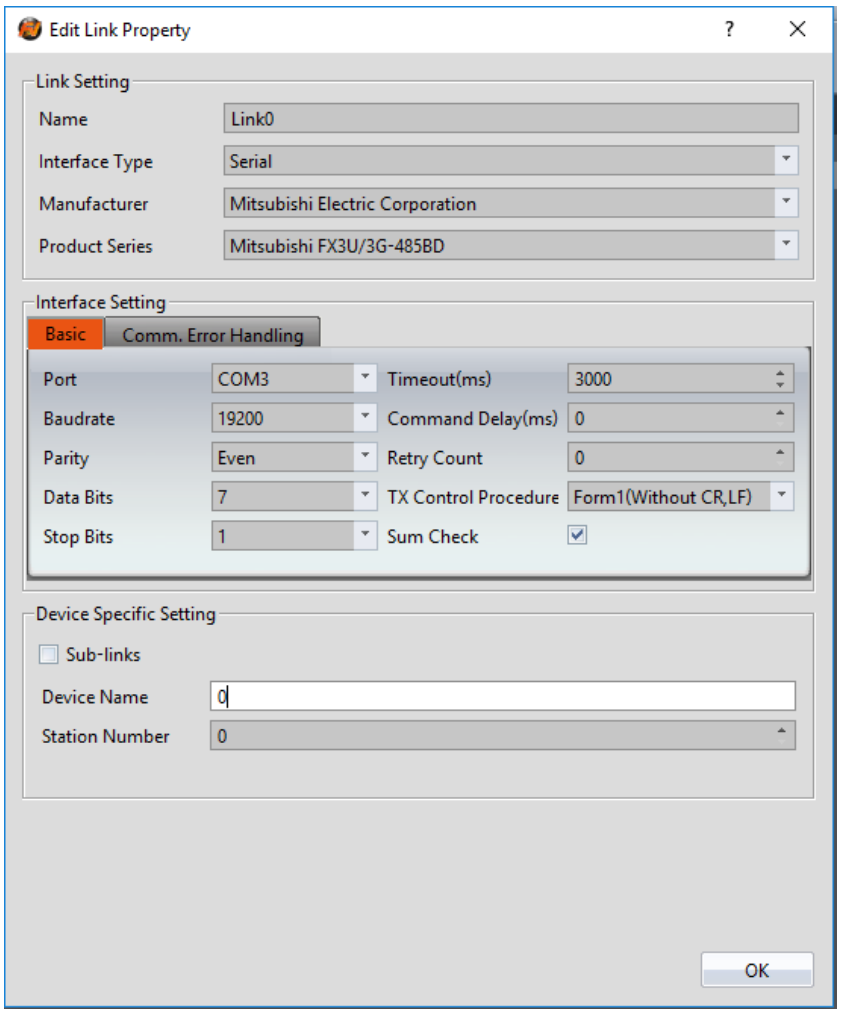


Check **Operate Communication Setting** to enable configuration

Set Protocol to **Dedicated Protocol**
Set Parity to **Even**
Set Transmission Speed to **19200**
Set H/W Type to **RS-485**
Check the **Sum Check** checkbox
Verify the Station Number is consistent with the one set in FvDesigner.

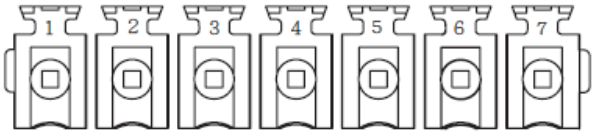
Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



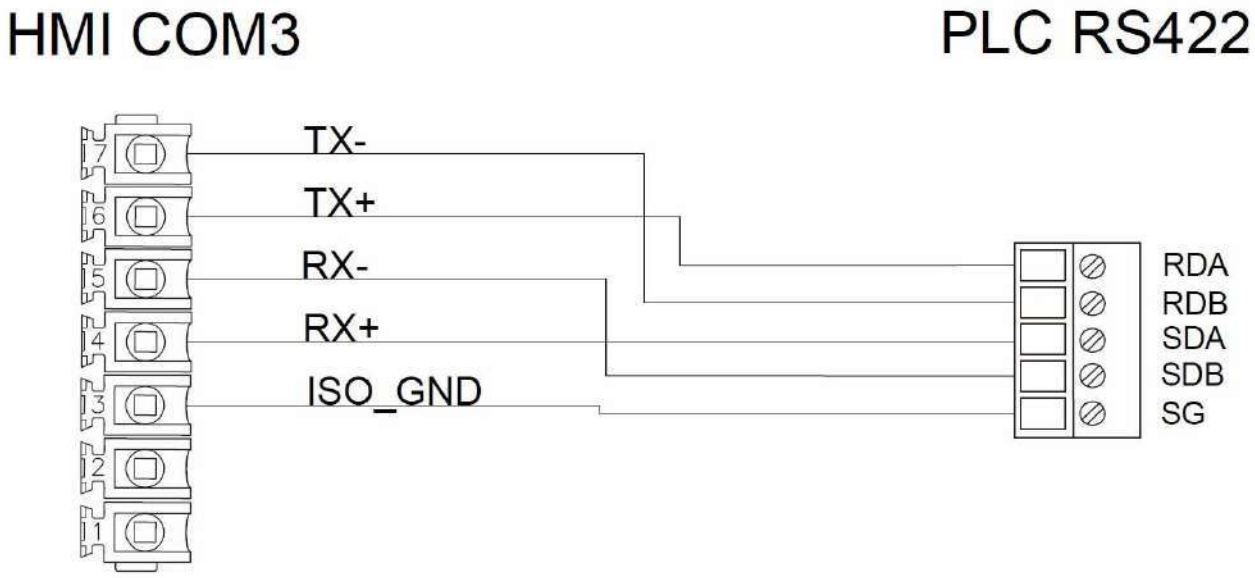
Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select Mitsubishi FX3U/3G-485BD.
Under **Port** select COM3

2.2.4.4 Wiring Diagrams

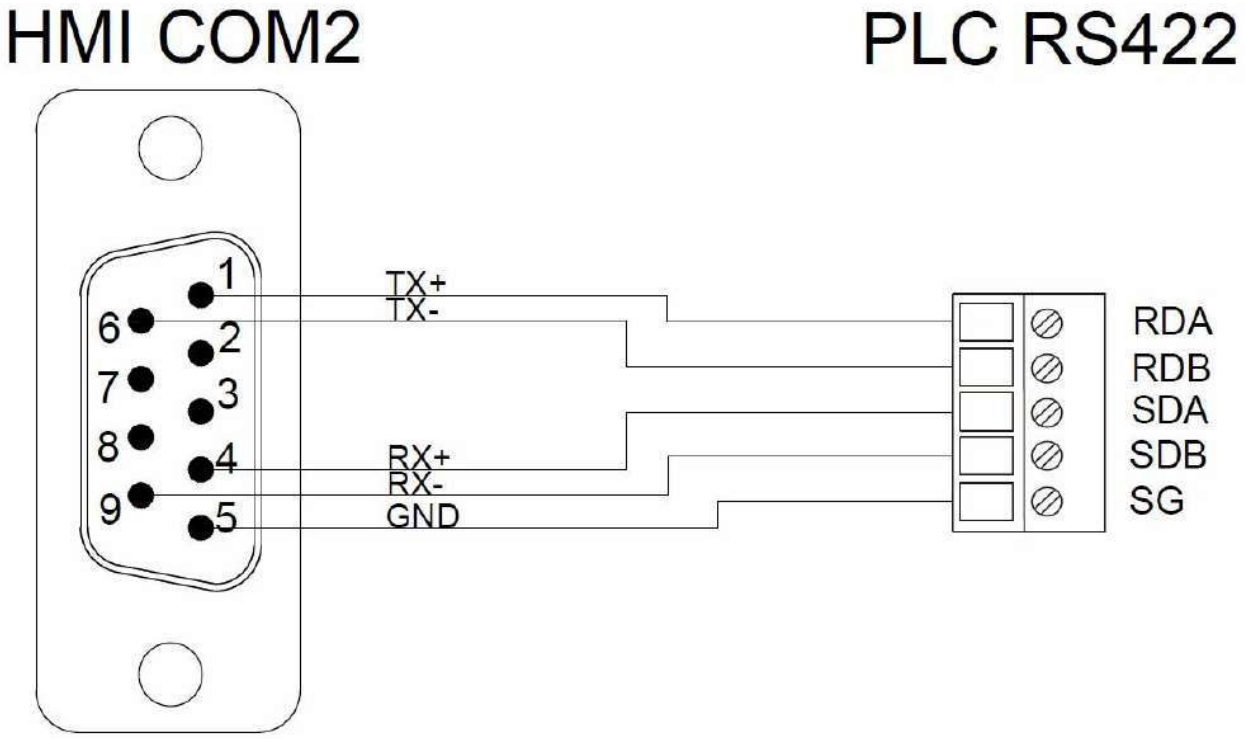
HMI COM3 Pinout	PLC RS422 Pinout
 *Looking into HMI Device	

PIN#	COM3 (RS-422/RS-485)	
1		
2		
3	ISO_GND	
4	RX+	
5	RX-	
6	TX+	
7	TX-	

HMI COM3	PLC RS422 Port
5 RX-	SDB
4 RX+	SDA
7 TX-	RDB
6 TX+	RDA
3 ISO_GND	SG



HMI COM2	PLC RS422 Port
9 RX-	SDB
4 RX+	SDA
6 TX-	RDB
1 TX+	RDA
5 GND	SG



2.2.5 FX3U Ethernet

2.2.5.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	
Port	5001	
PLC Station No.	0	
Communication Method	MC protocol	Binary/ASCII

2.2.5.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
X	Input Discrete	1	0	377
Y	Output Relay	1	0	377
M	Internal Relay	1	0	7679
SM	Special Relay	1	8000	8511
S	Step Relay	1	0	4095
TS	Timer Discrete	1	0	511
CS	Counter Discrete	1	0	199
WX	Input Discrete	16	0	360
WY	Output Relay	16	0	360
WM	Internal Relay	16	0	7664
WS	Step Relay	16	0	4080
TN	Timer Memory	16	0	511
CN	Counter Memory	16	0	199
D	Data Register	16	0	7999
SD	Special Data Register	16	8000	8511
R	Extended Register	16	0	32767
DCN	Counter Memory	32	200	255

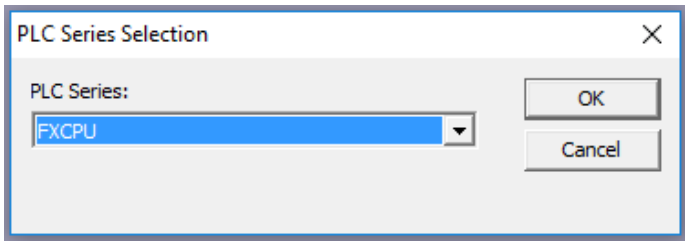
2.2.5.3 Connected Setting

Configuring IP Address on PLC

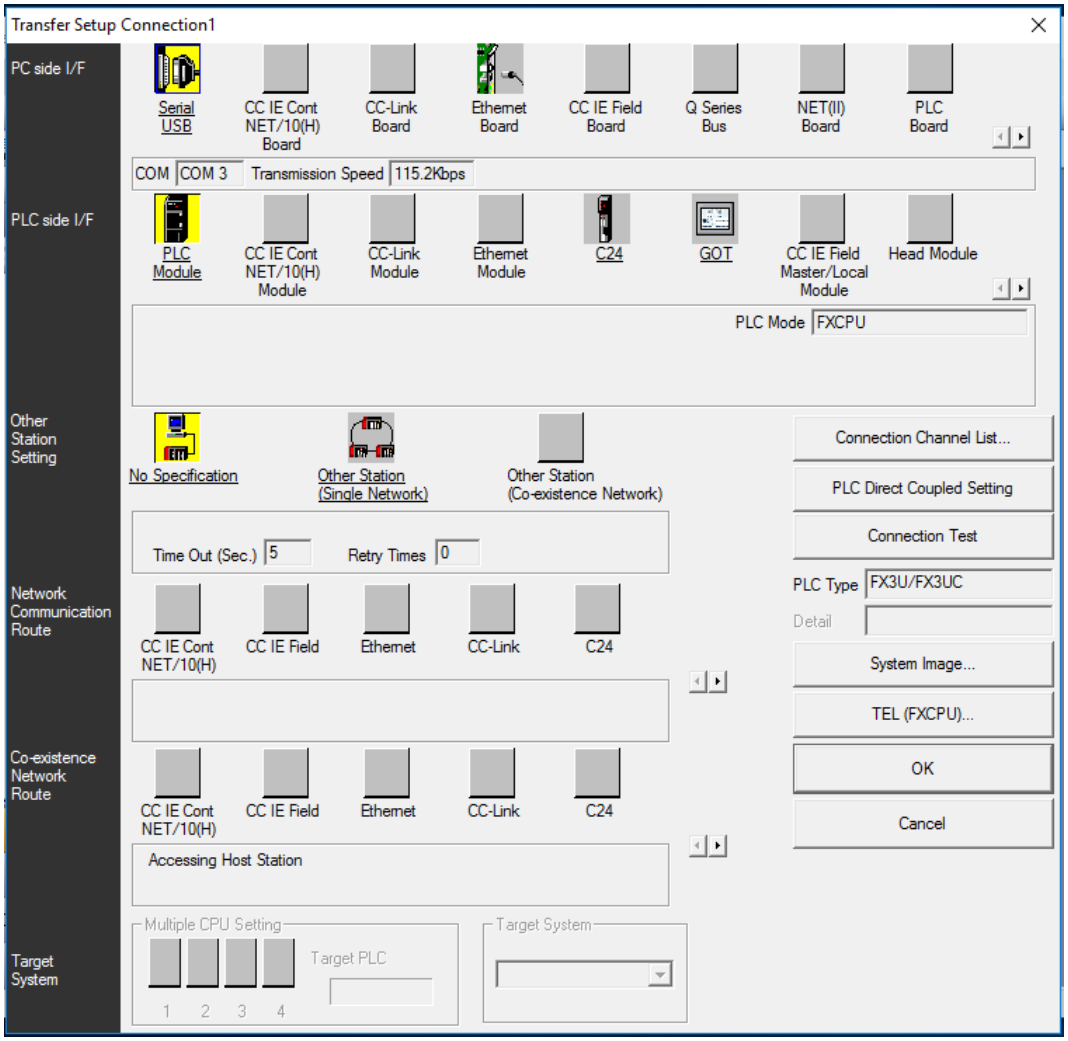
Use **MELSOFT GX Works2** to configure the IP address of the PLC.

Under the **Online** menu option, select **Read from PLC**

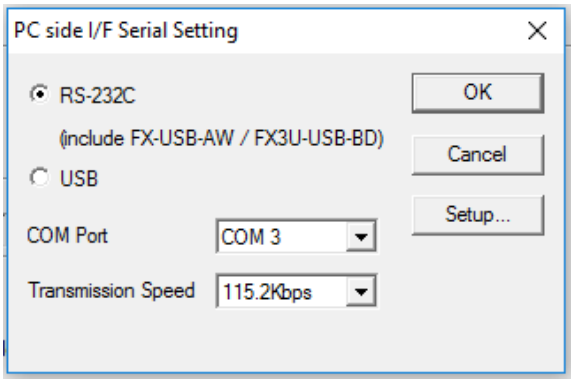
Select the **FXCPU** PLC series.



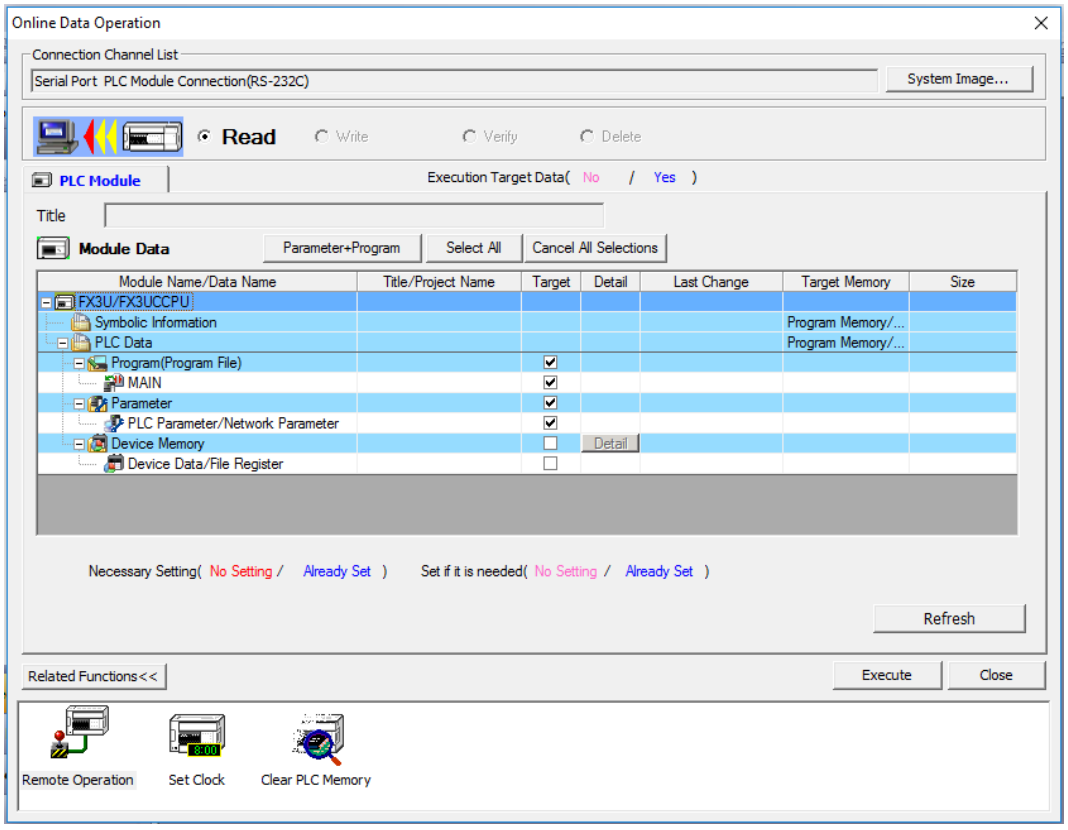
Select **Serial USB** in the Transfer Setup Communication window.



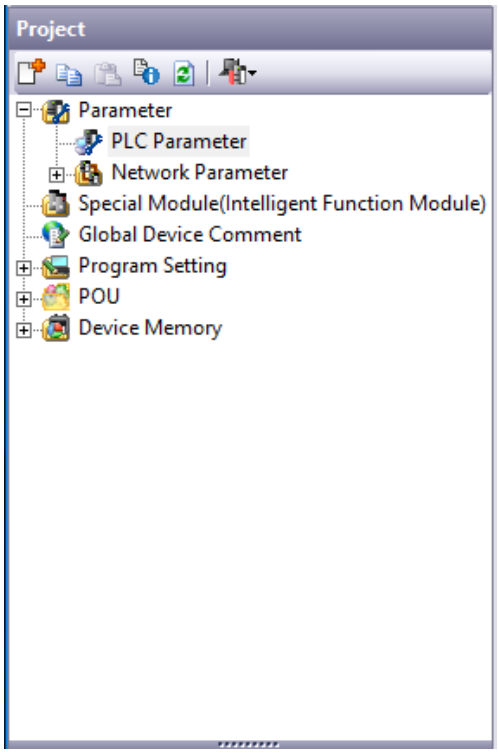
Select the **RS-232C** radio button and select the **COM Port** that the PLC is connected at. Click **Connection Test** to verify the connection and then press OK.



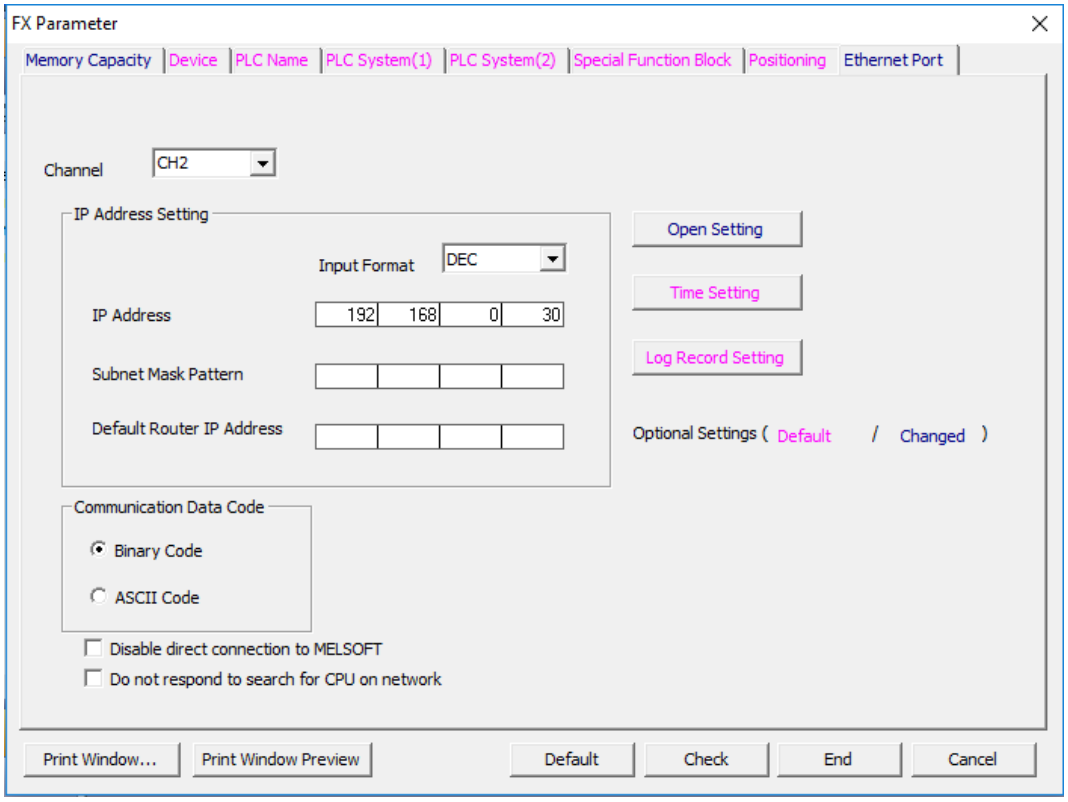
After confirming the **Parameter** option is checked, press **Execute** in the Online Data Operation window.



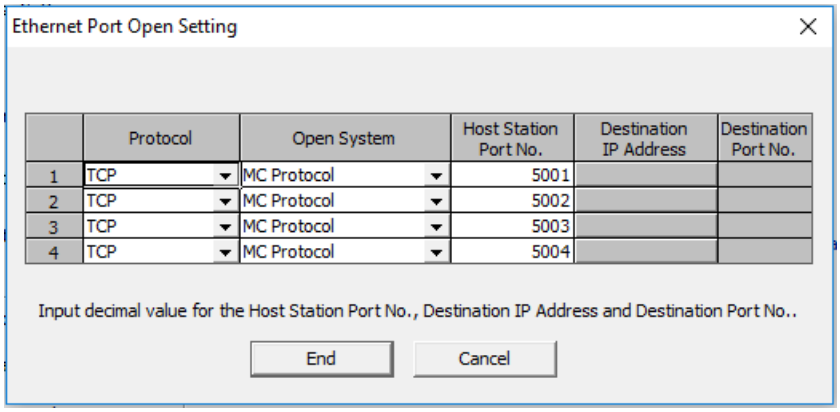
Under the Project Sidebar, expand **Parameter** and select **PLC Parameter**.



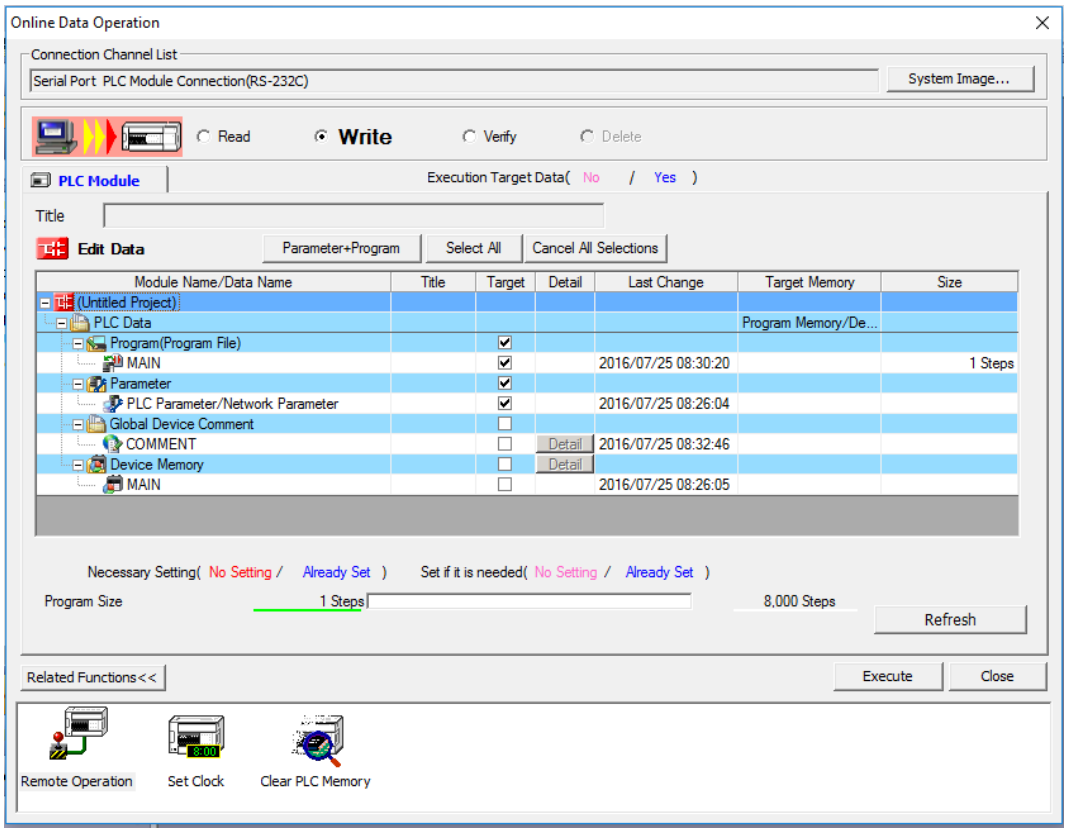
In the **Ethernet Port** tab, set an open IP address.



Click **Open Setting** and set the entire **Open System** column to **MC Protocol**. For the **Host Station Port No.**, set row 1 to 5001, row 2 to 5002 and so on.

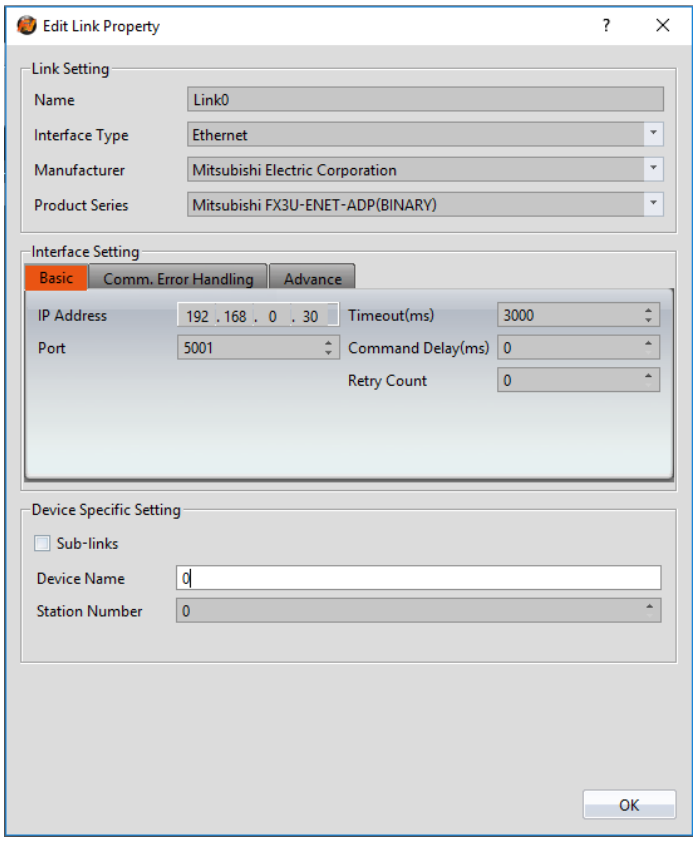


Under the **Online** menu option, select **Write to PLC** to save the settings to the PLC. Press **Execute** in the Online Data Operation window.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select one of the Mitsubishi FX3U-ENET-ADP options. The last part of the series name (BINARY or ASCII) should be consistent with the Connection Data Code set in the Ethernet Port for the PLC.
Enter the **IP Address** that was written into the PLC.
Enter 5001 for the Port.

2.2.6 FX5U-Serial

2.2.6.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS485	
Baud Rate	19200	
Data Length	8	
Stop Bit	1	
Parity	None	
PLC Station No.	0	
TX Control	Form1	Without CR,LF
Checksum	Yes	
Communication Method	MC Protocol 3C	

2.2.6.2 Memory Resource Review

Device	Description	Data bit	Input Format	Min.	Max.
X	Input Relay	1	OOOO	0	1777
Y	Output Relay	1	OOOO	0	1777
M	Internal Relay	1	DDDDD	0	32767
B	Link Relay	1	HHHH	0	7FFF
F	Annunciator	1	DDDDD	0	32767
SB	Link Special Relay	1	HHHH	0	7FFF
S	Step Relay	1	DDDD	0	4095
TS	Timer Contact	1	DDDD	0	1023
TC	Timer Coil	1	DDDD	0	1023
SS	Retentive Timer Contact	1	DDDD	0	1023
SC	Retentive Timer Coil	1	DDDD	0	1023
CS	Counter Contact	1	DDDD	0	1023
CC	Counter Coil	1	DDDD	0	1023
LCS*1	Long Counter	1	DDDD	0	1023

	Contact				
LCC*1	Long Counter Coil	1	DDDD	0	1023
SM	Special Relay	1	DDDD	0	9999
WX*2	Input Relay	16	OOOO	0	1760
WY*2	Output Relay	16	OOOO	0	1760
WM*3	Internal Relay	16	DDDDD	0	32752
B_Word*3	Link Relay	16	HHHH	0	7FF0
F_Word *3	Annunciator	16	DDDDD	0	32752
SB_Word *3	Link Special Relay	16	HHHH	0	7FF0
WS*3	Step Relay	16	DDDD	0	4080
TS_Word *3	Timer Contact	16	DDDD	0	1008
TC_Word *3	Timer Coil	16	DDDD	0	1008
SS_Word *3	Retentive Timer Contact	16	DDDD	0	1008
SC_Word *3	Retentive Timer Coil	16	DDDD	0	1008
CS_Word *3	Counter Contact	16	DDDD	0	1008
CC_Word *3	Counter Coil	16	DDDD	0	1008
SM_Word *3	Special Relay	16	DDDD	0	9984
TN	Timer Current Value	16	DDDD	0	1023
SN	Retentive Timer Current Value	16	DDDD	0	1023
CN	Counter Current Value	16	DDDD	0	1023
D	Data Register	16	DDDD	0	7999
W	Link Register	16	HHHH	0	7FFF
SW	Link special Register	16	HHHH	0	7FFF
SD	Special Register	16	DDDDD	0	11999

R	File Register	16	DDDDD	0	32767
Z	Index Register	16	DD	0	23
LCN[*1]	Long Counter Current Value	32	DDDD	0	1023
LZ	Long Index Register	32	DD	0	11

[*1] Binary mode support only

[*2] Address increased by 0, 20, 40, 60…

[*3] Address increased by 0, 20, 40, 60…

2.2.6.3 Connected Setting

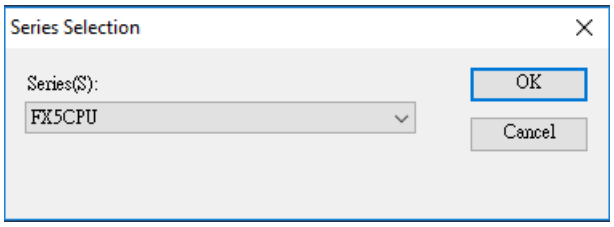
Configuring of PLC

Connect the PLC using an Ethernet cable. The following setup uses an Ethernet Port Direct Connection to configure the PLC.

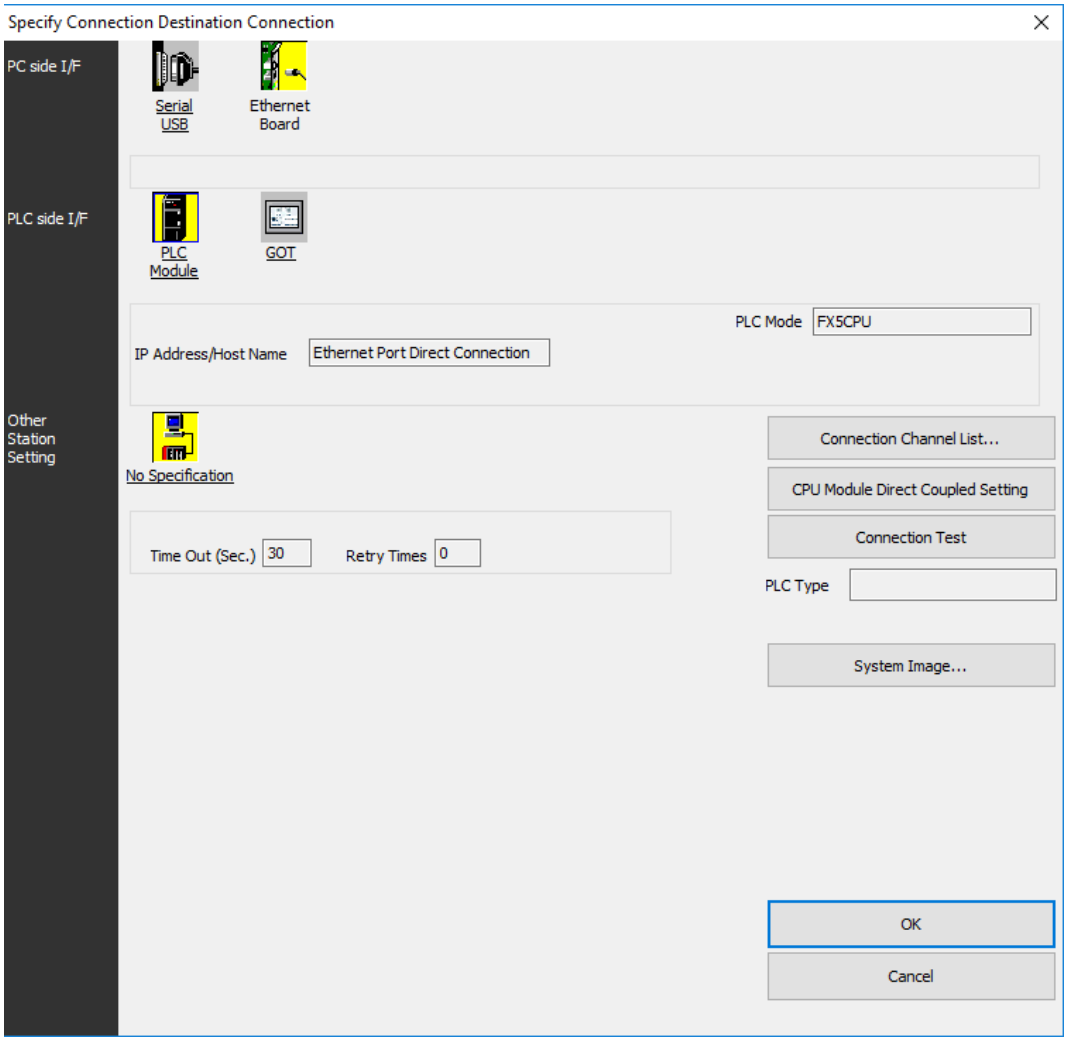
Use **MELSOFT GX Works3** to configure the port of the PLC.

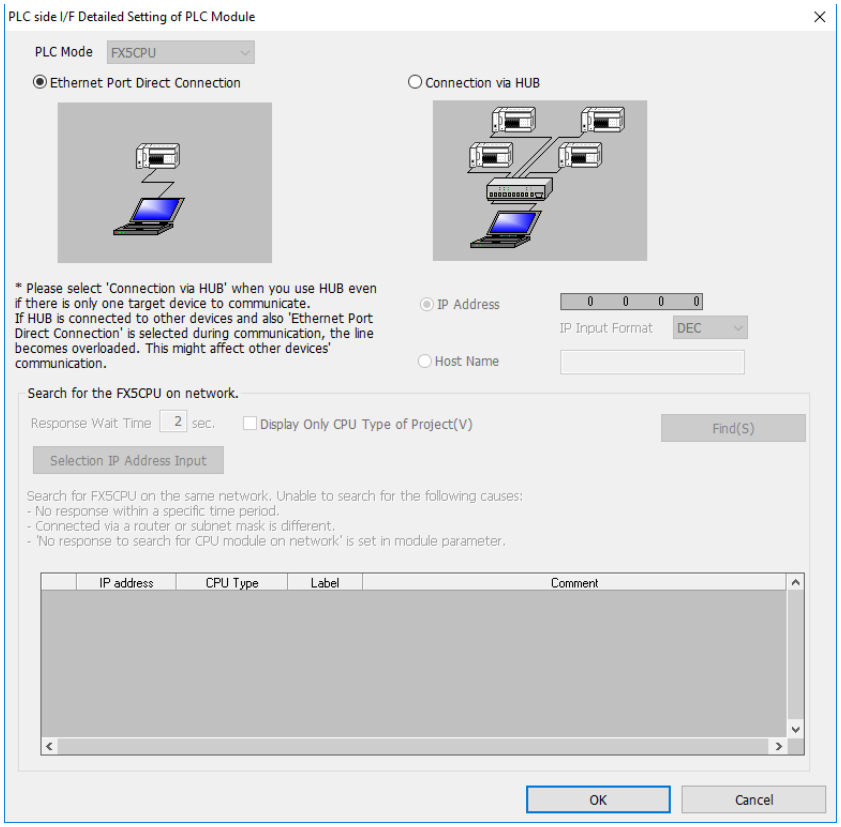
Under the **Online** menu option, select **Read from PLC**.

Select the **FX5CPU** option for the Series.

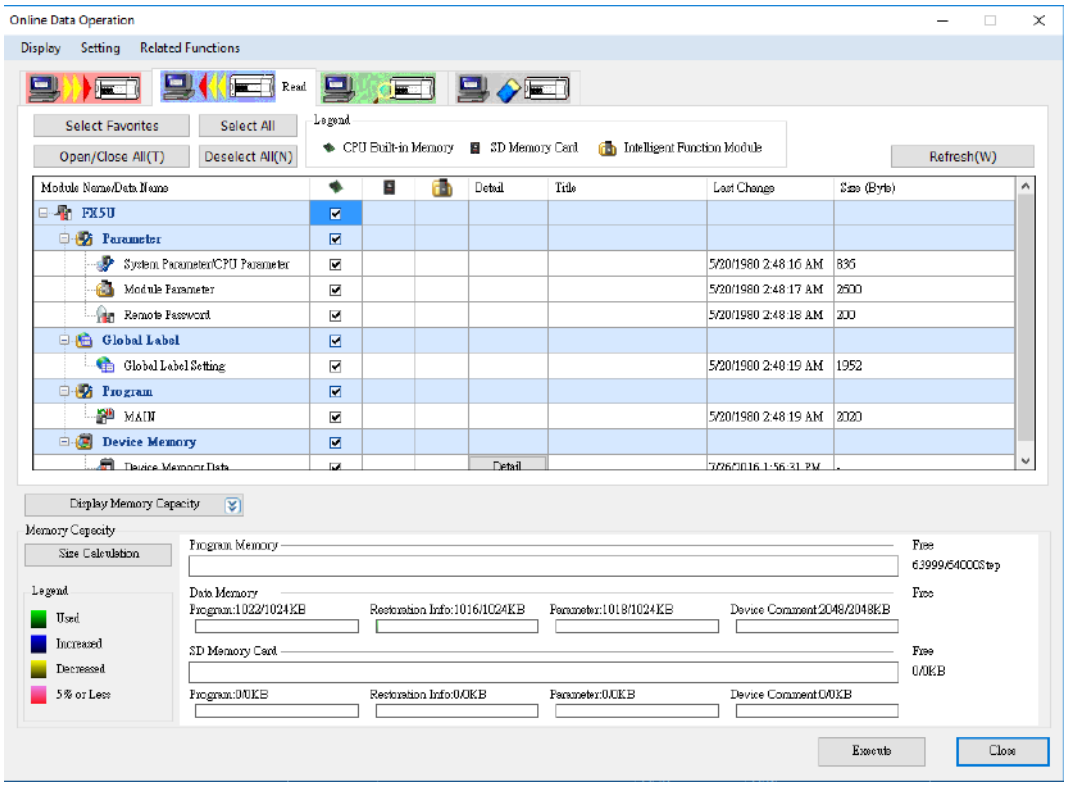


In the connection window, select **Ethernet Board**. Click **PLC Module** and in the dialog window, select the **Ethernet Port Direct Connection** radio button.

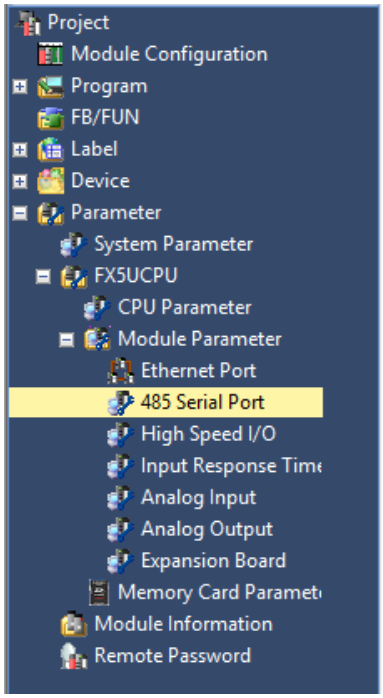




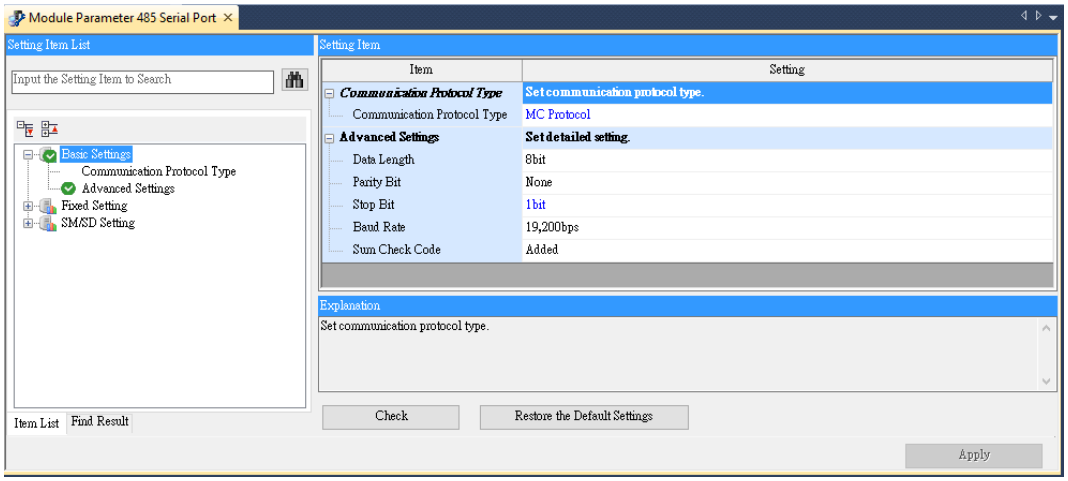
Click **Connection Test** to verify the connection and then press OK.
Click **Select All** in the Online Data Operation window and press **Execute**. Allow the read to finish.



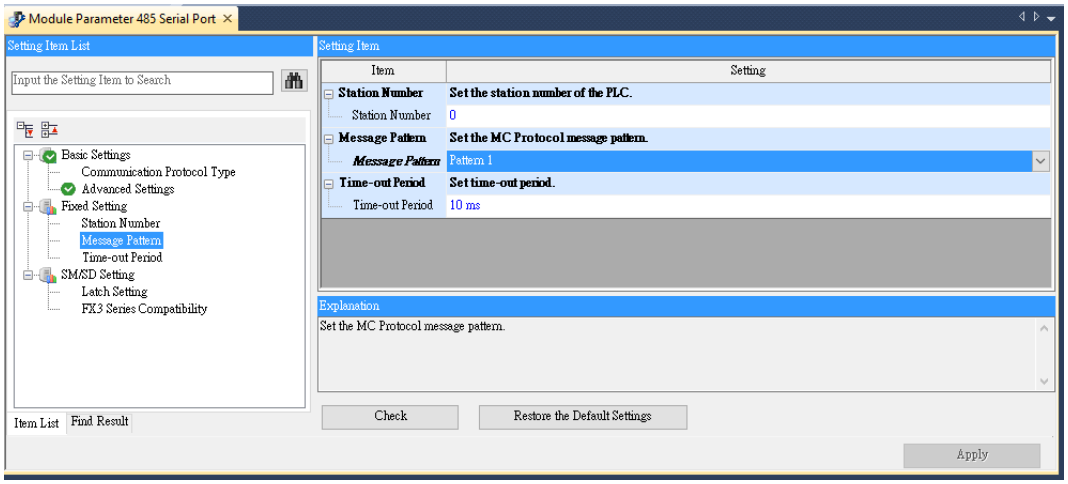
In the **Project** sidebar, expand **Parameter, FX5UCPU,** and **Module Parameter** and select **485 Serial Port**.



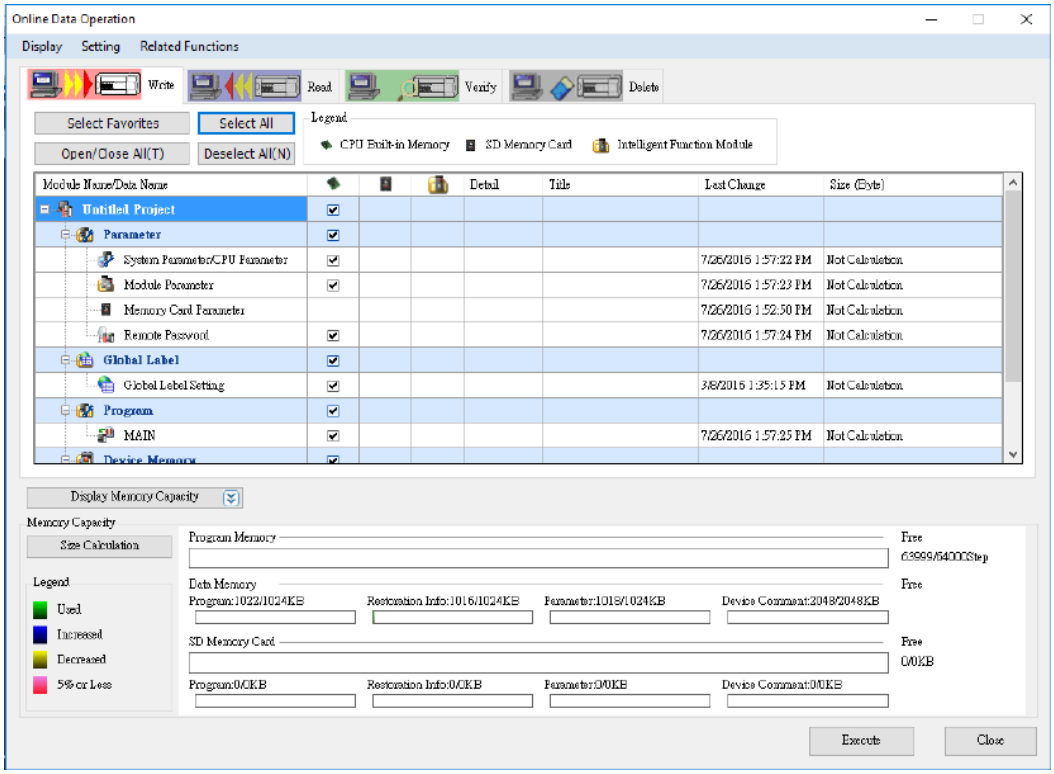
Under Basic Settings, change **Communication Protocol Type** to MC Protocol.



Under Fixed Setting, change **Message Pattern** to Pattern 1 and verify the station number is consistent with the one set in FvDesigner.



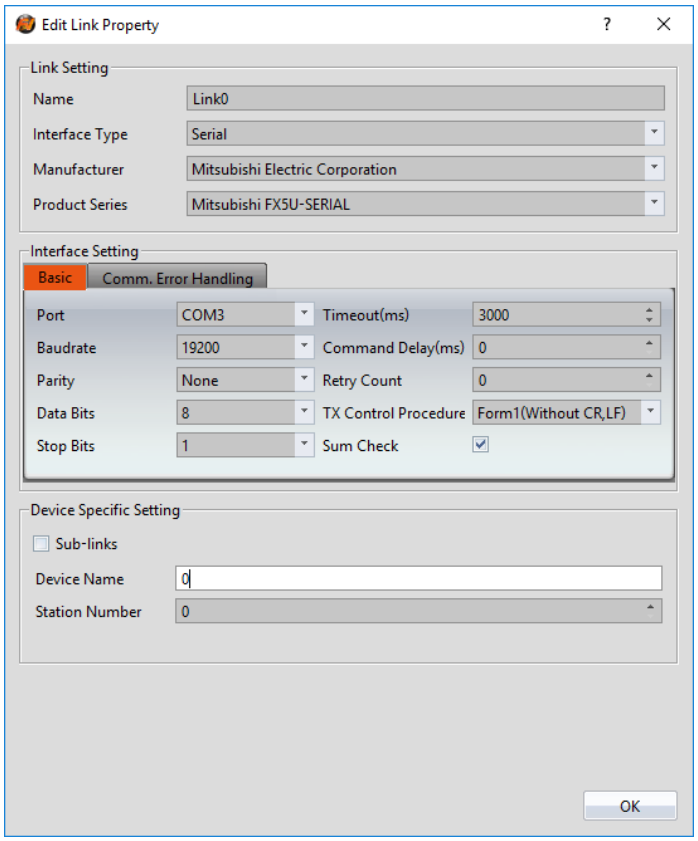
Under the **Online** menu option, select **Write to PLC** to save the settings to the PLC. Click **Select All** and press **Execute** in the Online Data Operation window.



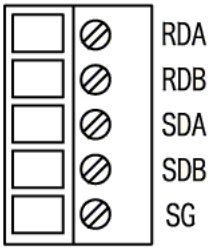
Note: For more detailed information please refer to the PLC manual.

Configuring of HMI

Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select Mitsubishi FX5U-SERIAL.
Verify the parameters match the window above.

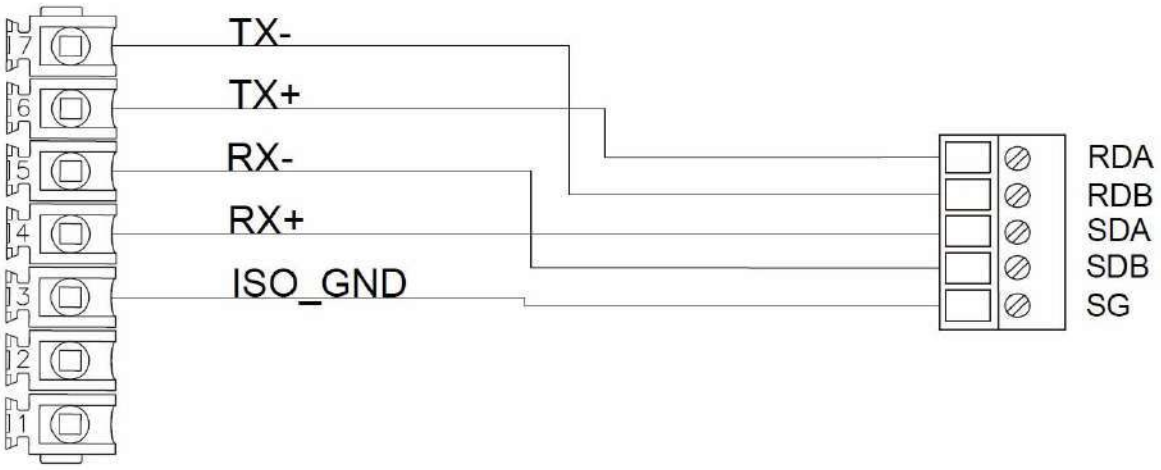


2.2.6.4 Wiring Diagrams

HMI COM3 Pinout		PLC RS422 Pinout
 *Looking into HMI Device		
PIN#	COM3 (RS-422/RS-485)	
1		
2		
3	ISO_GND	
4	RX+	
5	RX-	
6	TX+	
7	TX-	

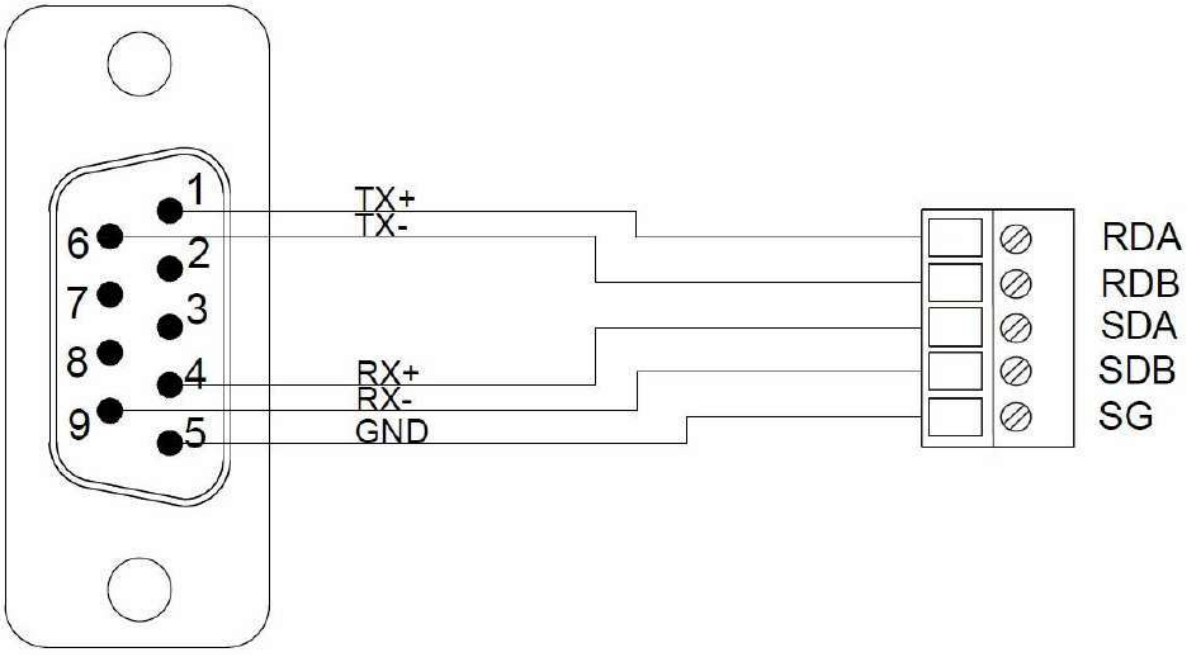
HMI COM3	PLC RS422 Port
5 RX-	SDB
4 RX+	SDA
7 TX-	RDB
6 TX+	RDA
3 ISO_GND	SG

HMI COM3 PLC RS422



HMI COM2	PLC RS422 Port
9 RX-	SDB
4 RX+	SDA
6 TX-	RDB
1 TX+	RDA
5 GND	SG

HMI COM2 PLC RS422



2.2.7 FX5U Ethernet

2.2.7.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	
Port	1025	
PLC Station No.	0	
Communication Method	MC protocol 3E	Binary/ASCII

2.2.7.2 Memory Resource Review

Device	Description	Data bit	Input Format	Min.	Max.
X	Input Relay	1	OOOO	0	1777
Y	Output Relay	1	OOOO	0	1777
M	Internal Relay	1	DDDDD	0	32767
B	Link Relay	1	HHHH	0	7FFF
F	Annunciator	1	DDDDD	0	32767
SB	Link Special Relay	1	HHHH	0	7FFF
S	Step Relay	1	DDDD	0	4095
TS	Timer Contact	1	DDDD	0	1023
TC	Timer Coil	1	DDDD	0	1023
SS	Retentive Timer Contact	1	DDDD	0	1023
SC	Retentive Timer Coil	1	DDDD	0	1023
CS	Counter Contact	1	DDDD	0	1023
CC	Counter Coil	1	DDDD	0	1023
LCS*1	Long Counter Contact	1	DDDD	0	1023
LCC*1	Long Counter Coil	1	DDDD	0	1023
SM	Special Relay	1	DDDD	0	9999

WX*2	Input Relay	16	OOOO	0	1760
WY*2	Output Relay	16	OOOO	0	1760
WM*3	Internal Relay	16	DDDDD	0	32752
B_Word *3	Link Relay	16	HHHH	0	7FF0
F_Word *3	Annunciator	16	DDDDD	0	32752
SB_Word *3	Link Special Relay	16	HHHH	0	7FF0
WS*3	Step Relay	16	DDDD	0	4080
TS_Word *3	Timer Contact	16	DDDD	0	1008
TC_Word *3	Timer Coil	16	DDDD	0	1008
SS_Word *3	Retentive Timer Contact	16	DDDD	0	1008
SC_Word *3	Retentive Timer Coil	16	DDDD	0	1008
CS_Word *3	Counter Contact	16	DDDD	0	1008
CC_Word *3	Counter Coil	16	DDDD	0	1008
SM_Word *3	Special Relay	16	DDDD	0	9984
TN	Timer Current Value	16	DDDD	0	1023
SN	Retentive Timer Current Value	16	DDDD	0	1023
CN	Counter Current Value	16	DDDD	0	1023
D	Data Register	16	DDDD	0	7999
W	Link Register	16	HHHH	0	7FFF
SW	Link special Register	16	HHHH	0	7FFF
SD	Special Register	16	DDDDD	0	11999
R	File Register	16	DDDDD	0	32767
Z	Index Register	16	DD	0	23
LCN*1	Long Counter Current Value	32	DDDD	0	1023

LZ	Long Index Register	32	DD	0	11

*1 Binary mode support only

*2 Address increased by 0, 20, 40, 60…

*3 Address increased by 0, 20, 40, 60…

2.2.7.3 Connected Setting

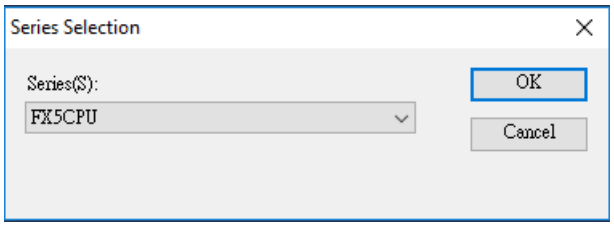
Configuring IP Address on PLC

Connect the PLC using an Ethernet cable. The following setup uses an Ethernet Port Direct Connection to configure the PLC.

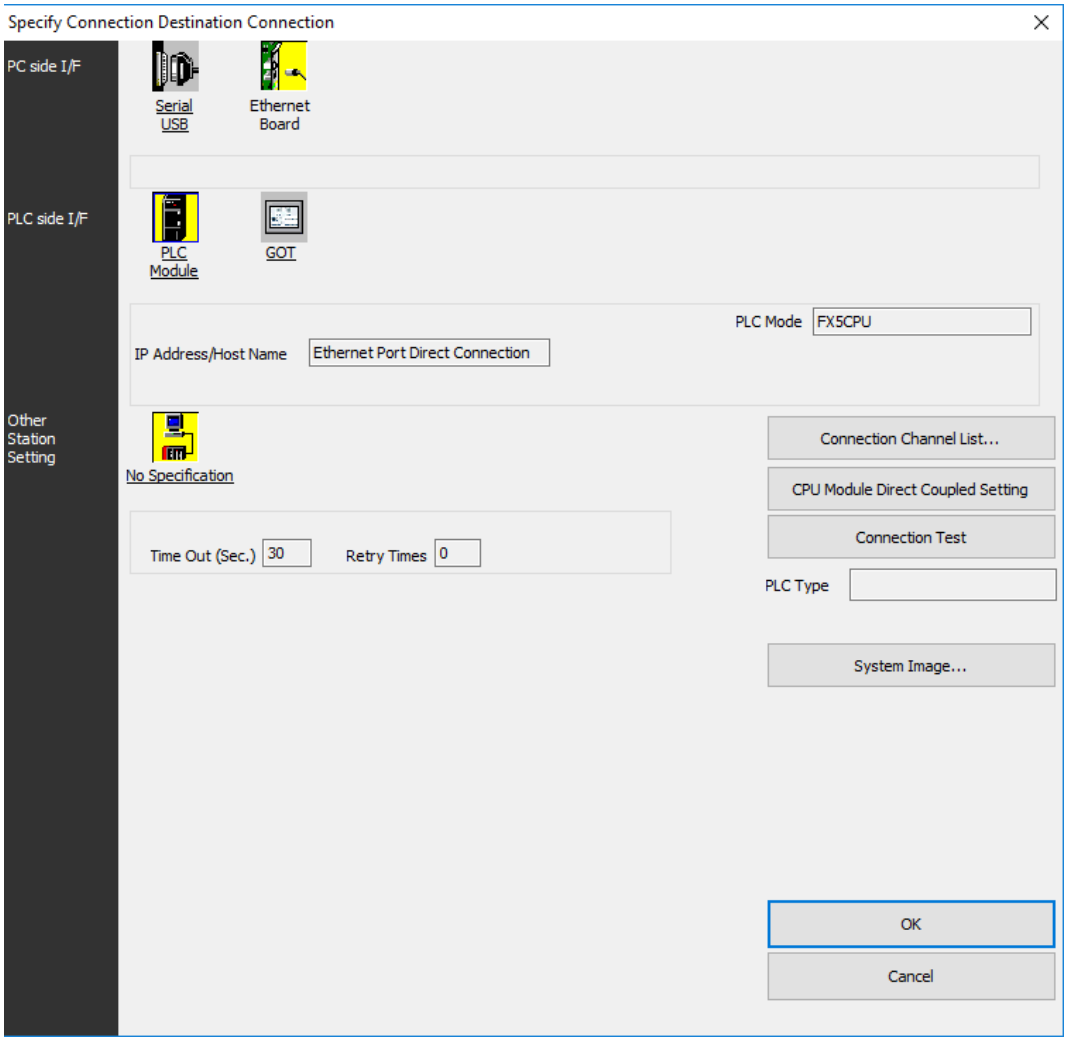
Use **MELSOFT GX Works3** to configure the port of the PLC.

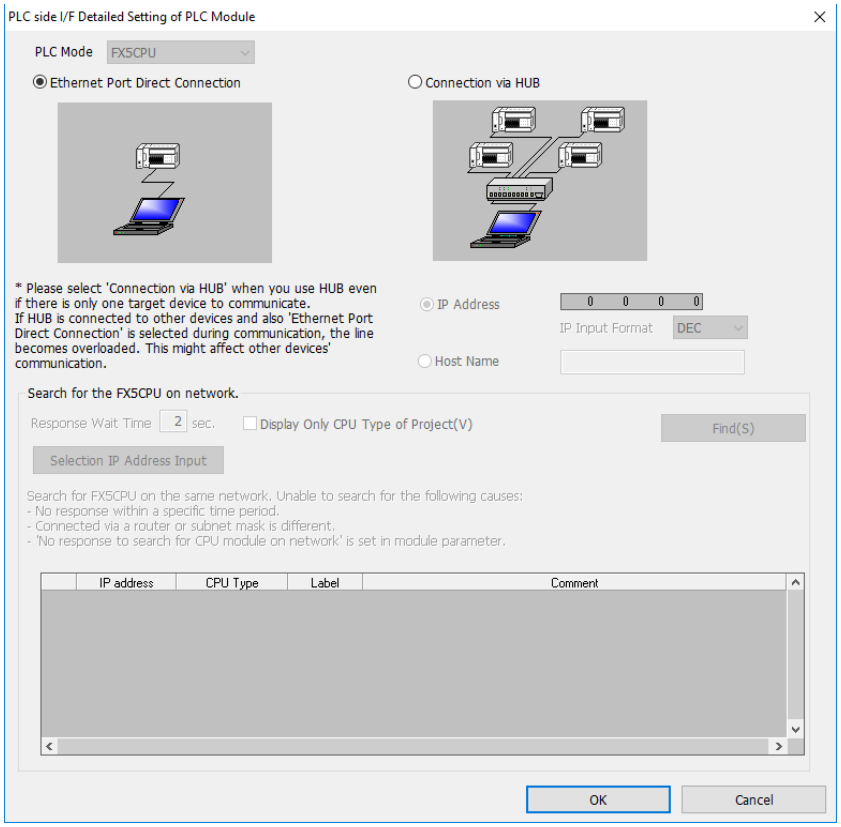
Under the **Online** menu option, select **Read from PLC**.

Select the **FX5CPU** option for the Series.

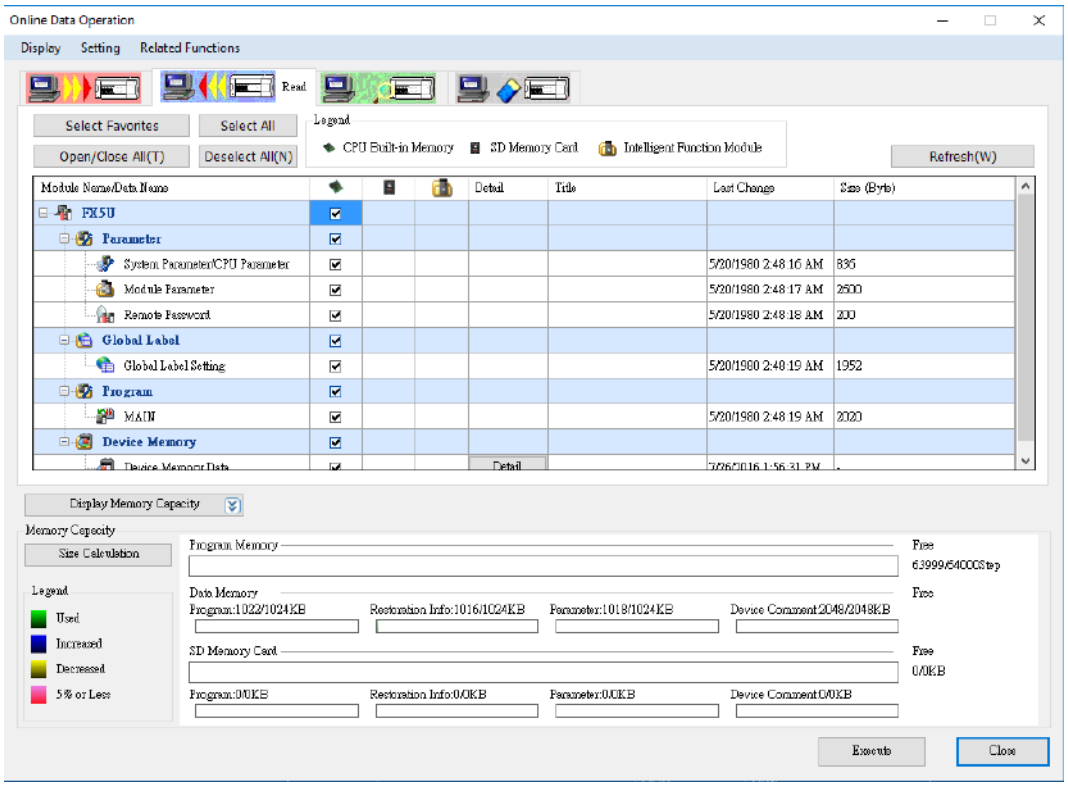


In the connection window, select **Ethernet Board**. Click **PLC Module** and in the dialog window, select the **Ethernet Port Direct Connection** radio button.

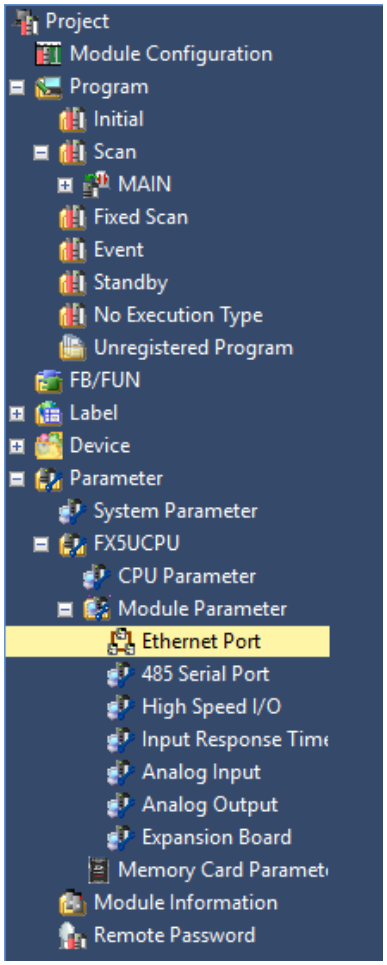




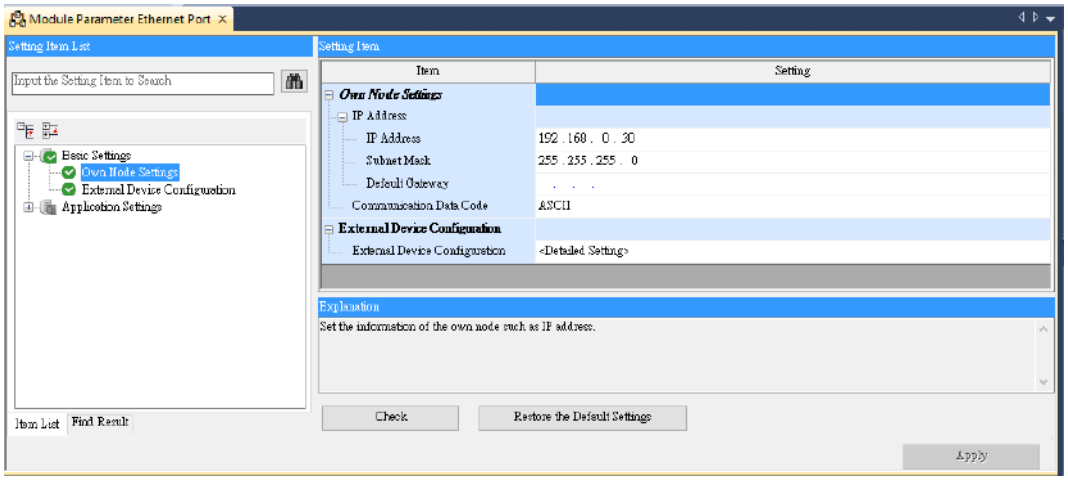
Click **Connection Test** to verify the connection and then press OK.
Click **Select All** in the Online Data Operation window and press **Execute**. Allow the read to finish.

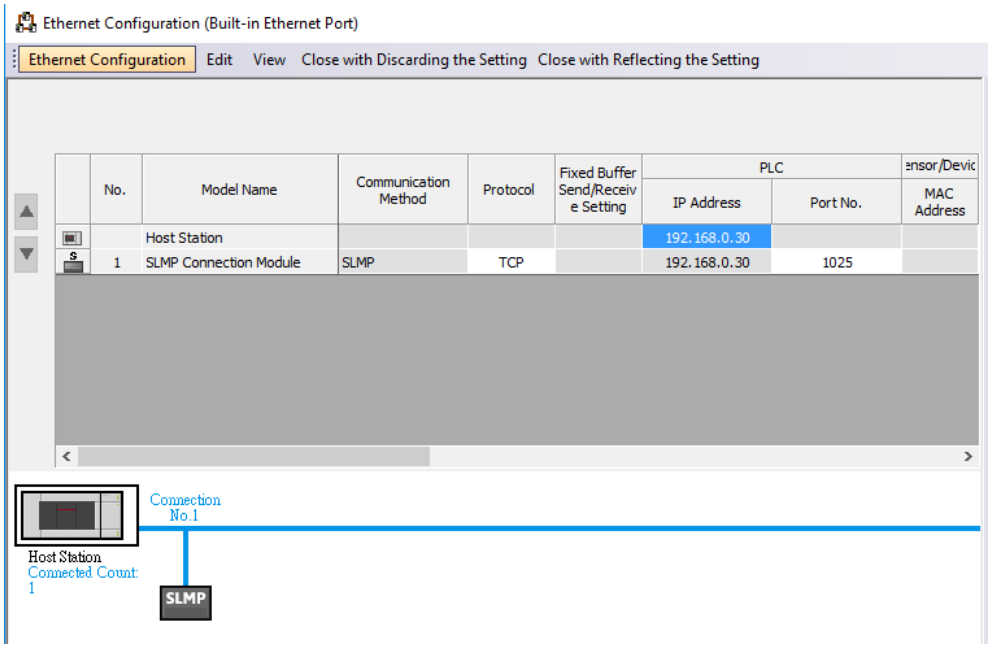


In the **Project** sidebar, expand **Parameter, FX5UCPU,** and **Module Parameter** and select **Ethernet Port**.



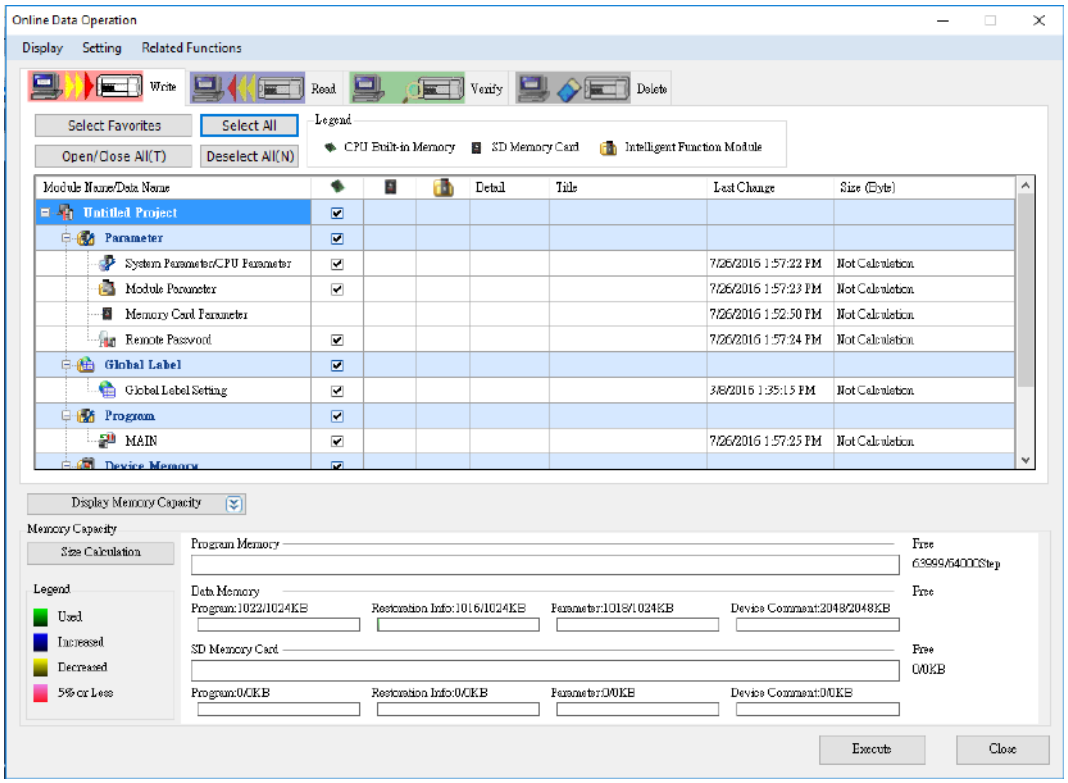
The **IP Address** of the PLC can be obtained here. Switch the **Communication Data Code** to the mode needed (Binary or ASCII). Double click “<Detailed Setting>” under **External Device Configuration** to get the port information. Verify the **Protocol** is TCP.





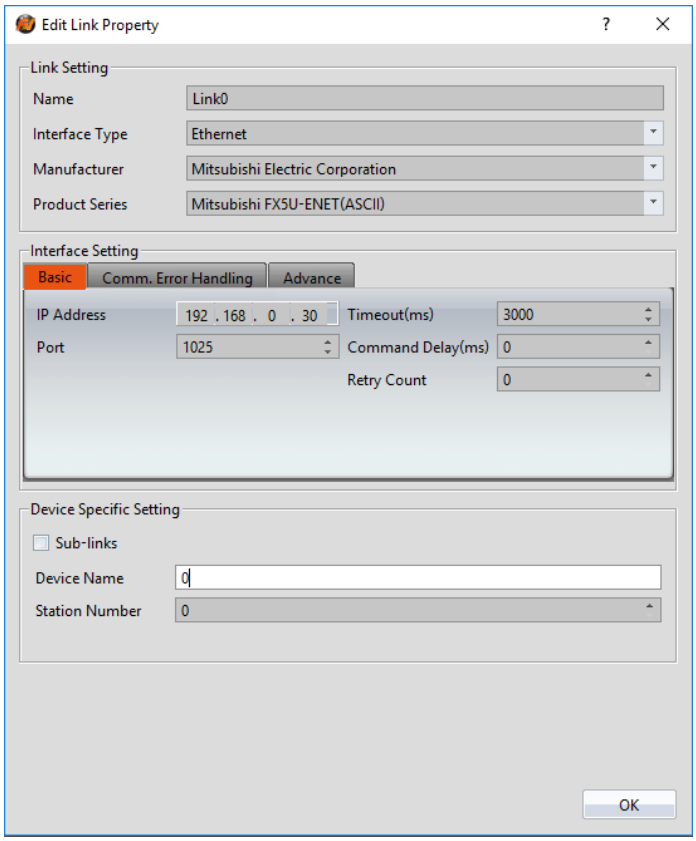
If the user needs to change the **IP Address**, edit the IP address under the **Own Node Settings**. Then enter the Detailed Settings and press **Close with Reflecting the Setting**.

Under the **Online** menu option, select **Write to PLC** to save the settings to the PLC. Click **Select All** and press **Execute** in the Online Data Operation window.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select one of the Mitsubishi FX5U-ENET options. The last part of the series name (BINARY or ASCII) should be consistent with the Connection Data Code set in the Ethernet Port for the PLC.
Enter the **IP Address** that was written into the PLC.
Enter 1025 for the Port.

2.2.8 QSeries-Serial Communication(Link Port)

2.2.8.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232/RS422/RS485	QJ71C24N Module
Baud Rate	115200	
Data Length	7	
Stop Bit	1	
Parity	Odd	
PLC Station No.	0	
TX Control Procedure	Form4	Without CR,LF
Sum Check	Yes	
Communication Method	MC Protocol 3C	

2.2.8.2 Memory Resource Review

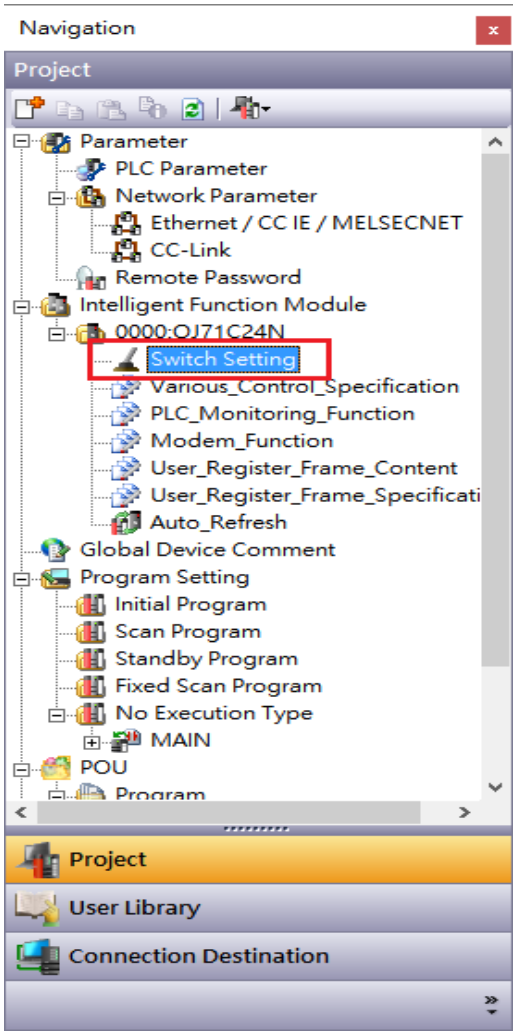
Device	Description	Data bit	Input fromat	Max.	Max.
X	Input Relay	1	HHHH	0	1fff
Y	Output Relay	1	HHHH	0	1fff
M	Internal Relay	1	DDDDD	0	61439
L	Latch Relay	1	DDDD	0	32767
B	Link Relay	1	HHHH	0	efff
F	Annunciator	1	DDDD	0	32767
V	Edge Relay	1	DDDD	0	32767
SB	Link Special Relay	1	HHH	0	7FFF
S	Step Relay	1	DDDD	0	16383
TS	Timer Contact	1	DDDD	0	32767
TC	Timer Coil	1	DDDD	0	32767
SS	Retentive Timer Contact	1	DDDD	0	32767
SC	Retentive Timer Coil	1	DDDD	0	32767

CS	Counter Contact	1	DDDD	0	32767
CC	Counter Coil	1	DDDD	0	32767
SM	Special Relay	1	DDDD	0	2047
DX	Direct Input	1	HHHH	0	1fff
DY	Direct Output	1	HHHH	0	1fff
WX	Input Relay	16	HHHH	0	1ff0
WY	Output Relay	16	HHHH	0	1ff0
WM	Internal Relay	16	DDDDD	0	61424
WL	Link Relay	16	DDDD		32752
B_Word	Link Relay	16	HHHH	0	eff0
F_Word	Annunciator	16	DDDDD	0	32752
WV	Edge relay	16	DDDDD	0	32752
SB_Word	Link Special Relay	16	HHH	0	7ff0
WS	Step Relay	16	DDDD	0	16368
TS_Word	Timer Contact	16	DDDD	0	32752
TC_Word	Timer Coil	16	DDDD	0	32752
SS_Word	Retentive Timer Contact	16	DDDD	0	32752
SC_Word	Retentive Timer Coil	16	DDDD	0	32752
CS_Word	Counter Contact	16	DDDD	0	32752
CC_Word	Counter Coil	16	DDDD	0	32752
SM_Word	Special Relay	16	DDDD	0	2032
TN	Timer Current Value	16	DDDD	0	32752
SN	Retentive Timer Current Value	16	DDDD	0	32752
CN	Counter Current Value	16	DDDD	0	32752
D	Data Register	16	DDDDD	0	39935
W	Link Register	16	HHHH	0	9bff
SW	Link special Register	16	HHH	0	7FFF
SD	Special Register	16	DDDD	0	2047
R	File Register	16	DDDDD	0	32767
Z	Index Register	16	DD	0	19
ZR	File Register	16	HHHHH	0	9fff

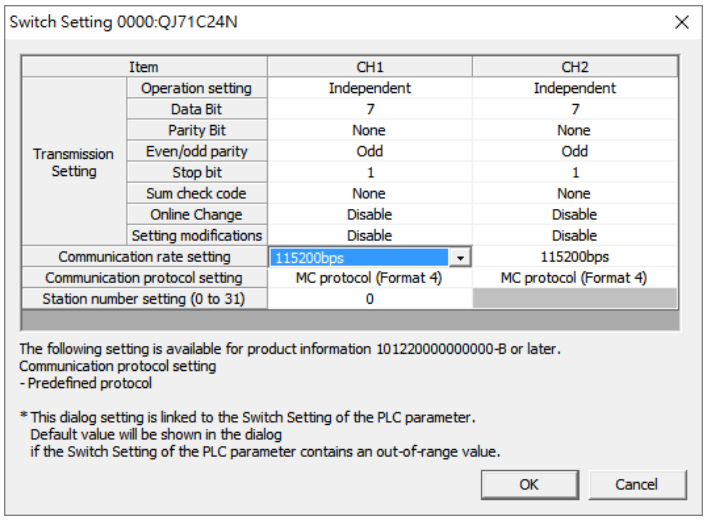
2.2.8.3 Connected Setting

Configuring of PLC

Use **MELSOFT GX Works2** to configure the port of the **QJ71C24N Module**. Under the Project Sidebar, expand **Intelligent Function Module** and select **Switch Setting**.

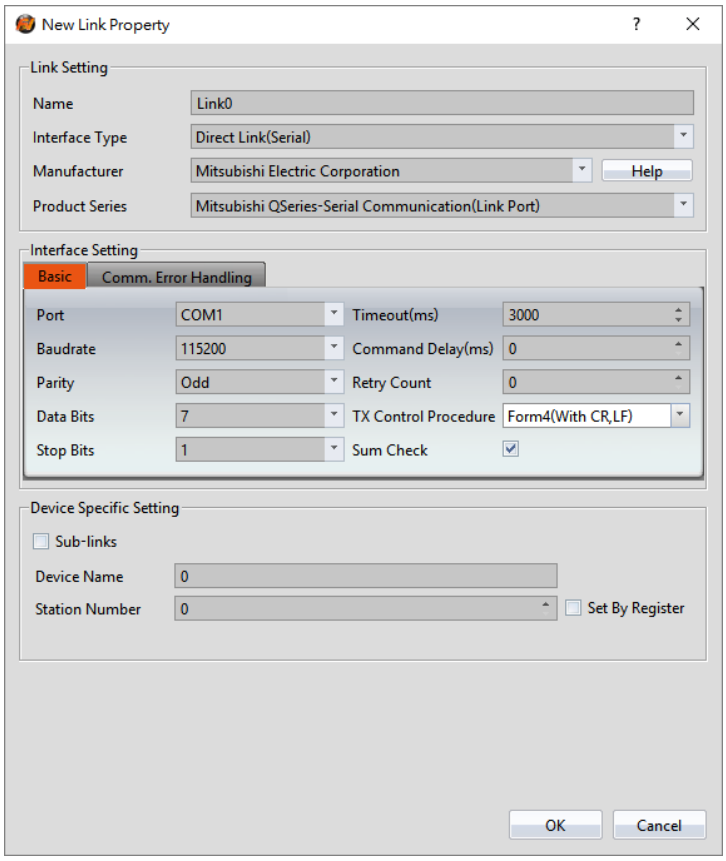


Configure it to the settings detailed below.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select Mitsubishi QSeries-Serial Communication(Link Port).
Verify the parameters match the window above.
The setting of Q series CPU setting if ‘’Use serial communication’’ is checked, please use QSeries-Serial Communication (Link Port), and the transfer control program is set to Form 5 (Binary mode).

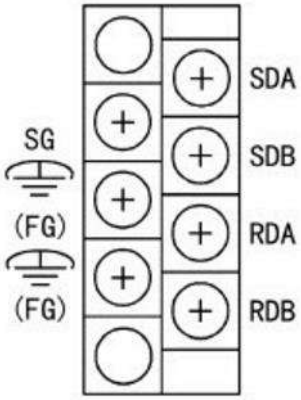
2.2.8.4 Wiring Diagrams

QJ71C24N RS232 Pinout

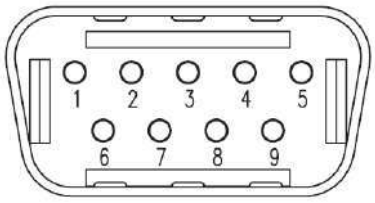
* Looking into PLC Device

PIN#	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS

QJ71C24N RS422/485 Pinout

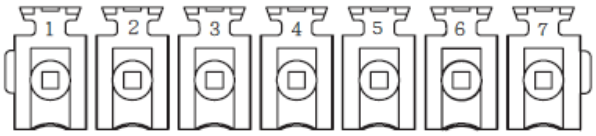


HMI COM1 pinout



*Looking into COM1 Port

HMI COM3 pinout



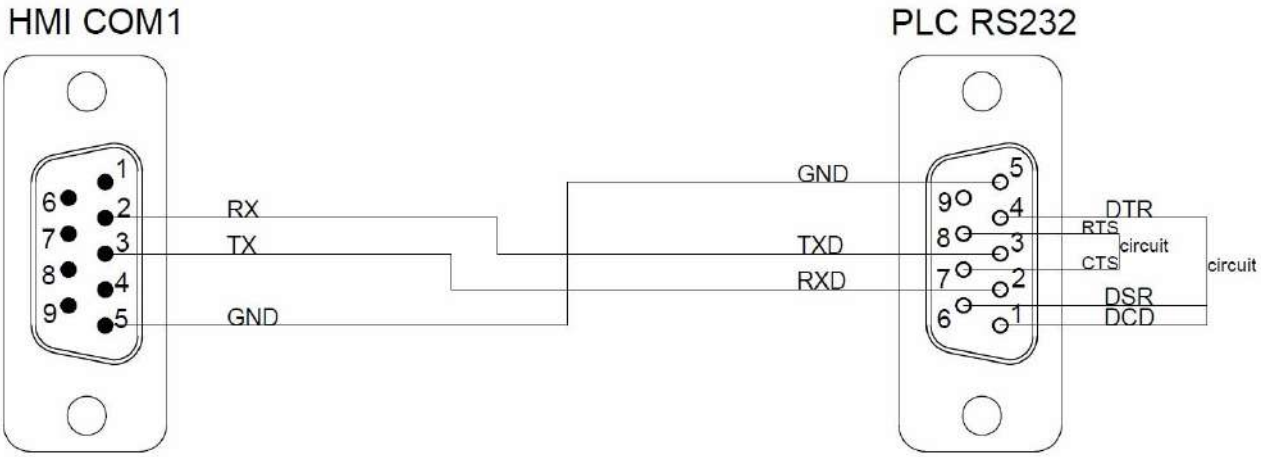
*Looking into HMI Device

PIN#	COM1 (RS232)	PIN#	COM3 (RS-422/RS-485)
1		1	
2	RX	2	
3	TX	3	ISO_GND
4		4	RX+
5	GND	5	RX-
6		6	TX+
7		7	TX-
8			
9			

With PLC RS232

HMI COM1	QJ71 RS232 Port	
2 RX	3 TXD	
3 TX	2 RXD	
5 GND	5 GND	
	1 DCD	circuit
	4 DTR	
	6 DSR	
	7 RTS	circuit
	8 CTS	

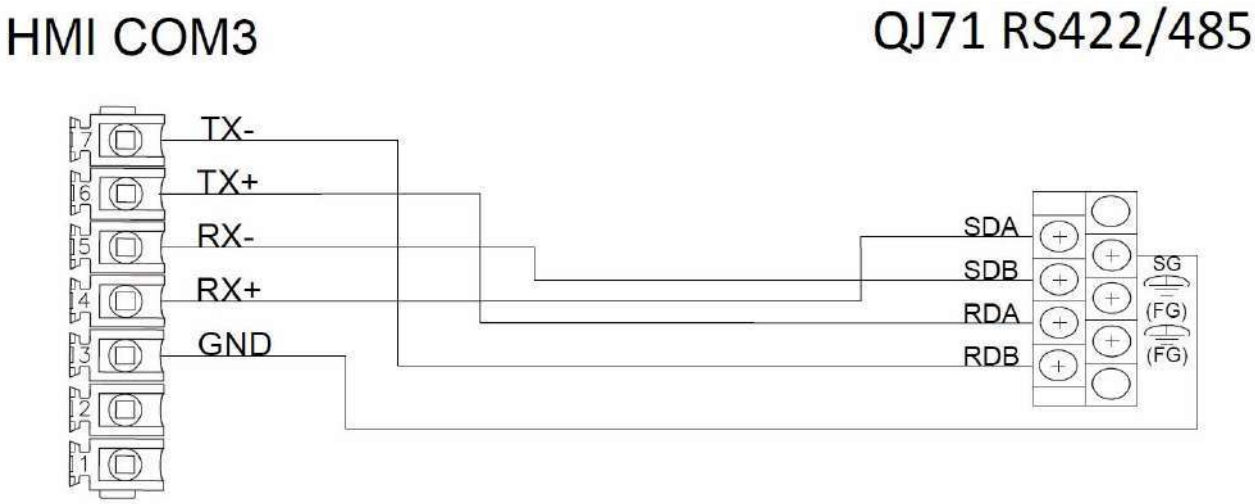
Wiring Diagrams:RS232



With PLC RS422

HMI COM3	QJ71 RS422/485 Port
4 RX+	SDA
5 RX-	SDB
6 TX+	RDA
7 TX-	RDB
3 GND	SG

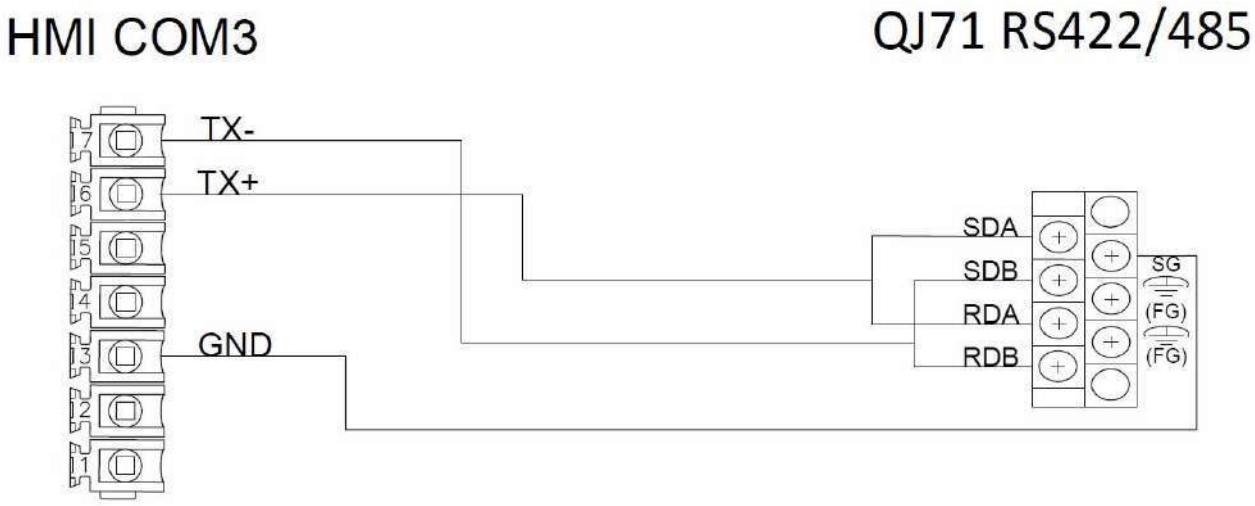
Wiring Diagrams:RS422



With PLC RS485

HMI COM3	QJ71 RS422/485 Port
6 TX+	SDA
	RDA
7 TX-	SDB
	RDB
3 GND	SG

Wiring Diagrams: RS485



2.2.9 QSeries-Serial Communication(CPU Port)

2.2.9.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232	
Baud Rate	19200	
Data Length	8	
Stop Bit	1	
Parity	Odd	
PLC Station No.	0	

2.2.9.2 Memory Resource Review

Device	Description	Data bit	Input format	Min.	Max.
X	Input Relay	1	HHHH	0	1fff
Y	Output Relay	1	HHHH	0	1fff
M	Internal Relay	1	DDDDD	0	61439
L	Latch Relay	1	DDDDD	0	32767
B	Link Relay	1	HHHH	0	Efff
F	Annunciator	1	DDDDD	0	32767
V	Edge Relay	1	DDDDD	0	32767
SB	Link Special Relay	1	HHHH	0	7fff
S	Step Relay	1	DDDDD	0	16383
TS	Timer Contact	1	DDDDD	0	32767
TC	Timer Coil	1	DDDDD	0	32767
SS	Retentive Timer Contact	1	DDDDD	0	32767
SC	Retentive Timer Coil	1	DDDDD	0	32767
CS	Counter Contact	1	DDDDD	0	32767
CC	Counter Coil	1	DDDDD	0	32767
SM	Special Relay	1	DDDD	0	2047
DX	Direct Input	1	HHHH	0	1fff
DY	Direct Output	1	HHHH	0	1fff
WX	Input Relay	16	HHHH	0	1ff0
WY	Output Relay	16	HHHH	0	1ff0

WM	Internal Relay	16	DDDDD	0	61424
WL	Latch Relay	16	DDDDD	0	32752
B_Word	Link Relay	16	HHHH	0	Eff0
F_Word	Annunciator	16	DDDDD	0	32752
WV	Edge Relay	16	DDDDD	0	32752
SB_Word	Link Special Relay	16	HHHH	0	7ff0
WS	Step Relay	16	DDDDD	0	16368
TS_Word	Timer Contact	16	DDDDD	0	32752
TC_Word	Timer Coil	16	DDDDD	0	32752
SS_Word	Retentive Timer Contact	16	DDDDD	0	32752
SC_Word	Retentive Timer Coil	16	DDDDD	0	32752
CS_Word	Counter Contact	16	DDDDD	0	32752
CC_Word	Counter Coil	16	DDDDD	0	32752
SM_Word	Special Relay	16	DDDD	0	2032
TN	Timer Current Value	16	DDDDD	0	32767
SN	Retentive Timer Current Value	16	DDDDD	0	32767
CN	Counter Current Value	16	DDDDD	0	32767
D	Data Register	16	DDDDD	0	39935
W	Link Register	16	HHHH	0	9bff
SW	Link Special Register	16	HHHH	0	7fff
SD	Special Register	16	DDDD	0	2047
R	File Register	16	DDDDD	0	32767
Z	Index Register	16	DD	0	19
ZR	File Register	16	HHHHH	0	9ffff

2.2.9.3 Connected Setting

Configuring IP Address on PLC

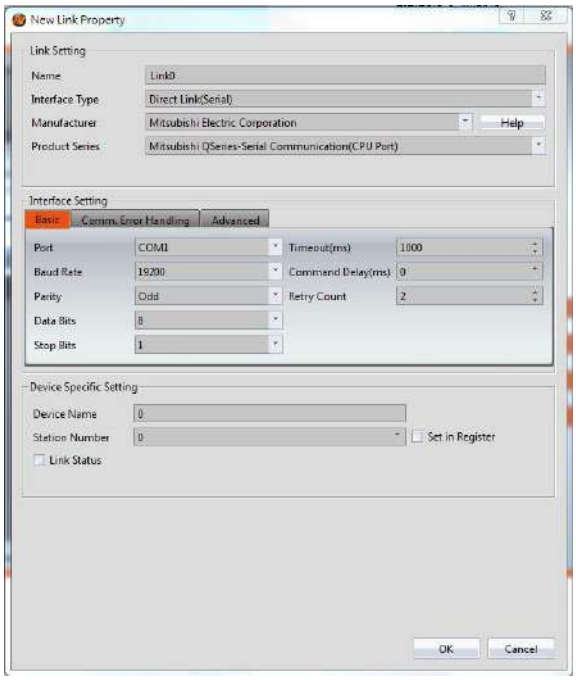
Use **MELSOFT GX Works2** to configure the port of the PLC.

In the **Project** sidebar, expand **Parameter** and expand **PLC Parameter**.

The setting of Q series CPU setting if ‘’Use serial communication’’ is checked, please use QSeries-Serial Communication (Link Port).

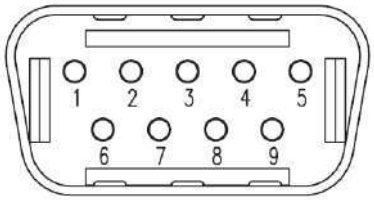
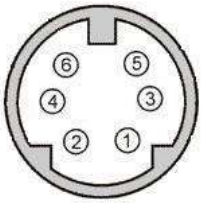
Note: For more detailed information please refer to the PLC manual.

Connect PLC to HMI

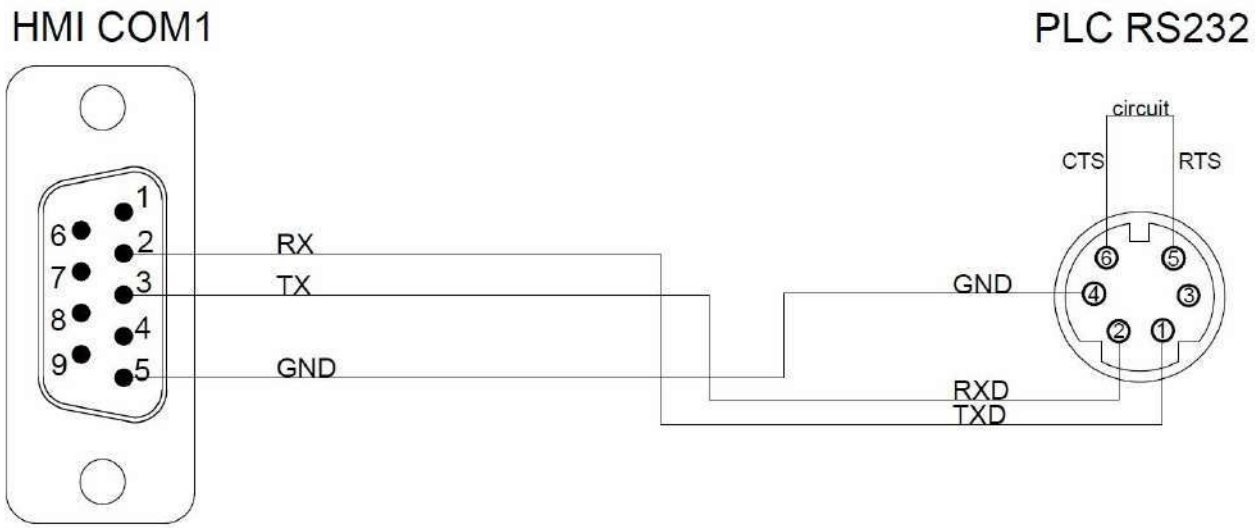


Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Direct Link(Serial)
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select one of the Mitsubishi QSeries-Series Communication(CPU Port).
Verify the parameters match the window above.

2.2.9.4 Wiring Diagrams

HMI RS232		**PLC RS232 Pinout**	
 *Looking into COM1 Port		 *View from soldering point of the cable	
PIN#	COM1 (RS232)	PIN#	Signal
1		1	TXD
2	RX	2	RXD
3	TX	3	
4		4	GND
5	GND	5	RTS
6		6	CTS
7			
8			
9			

HMI COM1	PLC RS232 Port	
2 RX	1 TXD	
3 TX	2 RXD	
5 GND	4 GND	
	5 RTS	circuit
	6 CTS	



2.2.10 Q/L Series-ENET

2.2.10.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	
Port	4999	
PLC Station No.	0	
Communication Method	MC protocol 3E	Binary/ASCII

2.2.10.2 Memory Resource Review

Device	Description	Data bit	Input Format	Min.	Max.
X	Input Relay	1	HHHH	0	1fff
Y	Output Relay	1	HHHH	0	1fff
M	Internal Relay	1	DDDDD	0	61439
L	Latch Relay	1	DDDD	0	32767
B	Link Relay	1	HHHH	0	efff
F	Annunciator	1	DDDD	0	32767
V	Edge Relay	1	DDDD	0	32767
SB	Link Special Relay	1	HHH	0	7FFF
S	Step Relay	1	DDDD	0	16383
TS	Timer Contact	1	DDDD	0	32767

TC	Timer Coil	1	DDDD	0	32767
SS	Retentive Timer Contact	1	DDDD	0	32767
SC	Retentive Timer Coil	1	DDDD	0	32767
CS	Counter Contact	1	DDDD	0	32767
CC	Counter Coil	1	DDDD	0	32767
SM	Special Relay	1	DDDD	0	2047
DX	Direct Input	1	HHHH	0	1fff
DY	Direct Output	1	HHHH	0	1fff
WX*1	Input Relay	16	HHHH	0	1ff0
WY*1	Output Relay	16	HHHH	0	1ff0
WM*1	Internal Relay	16	DDDDD	0	61424
WL	Link Relay	16	DDDD		32752
B_Word *1	Link Relay	16	HHHH	0	eff0
F_Word *1	Annunciator	16	DDDDD	0	32752
WV	Edge relay	16	DDDDD	0	32752
SB_Word *1	Link Special Relay	16	HHH	0	7ff0
WS*1	Step Relay	16	DDDD	0	16368
TS_Word *1	Timer Contact	16	DDDD	0	32752
TC_Word *1	Timer Coil	16	DDDD	0	32752
SS_Word *1	Retentive Timer Contact	16	DDDD	0	32752
SC_Word *1	Retentive Timer Coil	16	DDDD	0	32752
CS_Word *1	Counter Contact	16	DDDD	0	32752
CC_Word *1	Counter Coil	16	DDDD	0	32752
SM_Word *1	Special Relay	16	DDDD	0	2032
TN	Timer Current Value	16	DDDD	0	32752
SN	Retentive Timer Current Value	16	DDDD	0	32752
CN	Counter Current Value	16	DDDD	0	32752

D	Data Register	16	DDDDD	0	39935
W	Link Register	16	HHHH	0	9bff
SW	Link special Register	16	HHH	0	7FFF
SD	Special Register	16	DDDD	0	2047
R	File Register	16	DDDDD	0	32767
Z	Index Register	16	DD	0	19
ZR	File Register	16	HHHHH	0	9fff

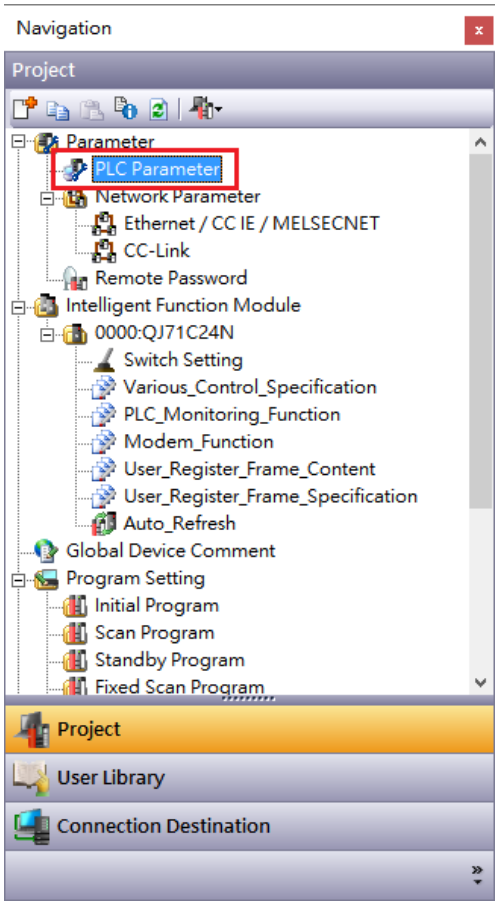
*1 Address increased by 0, 20, 40, 60…

2.2.10.3 Connected Setting

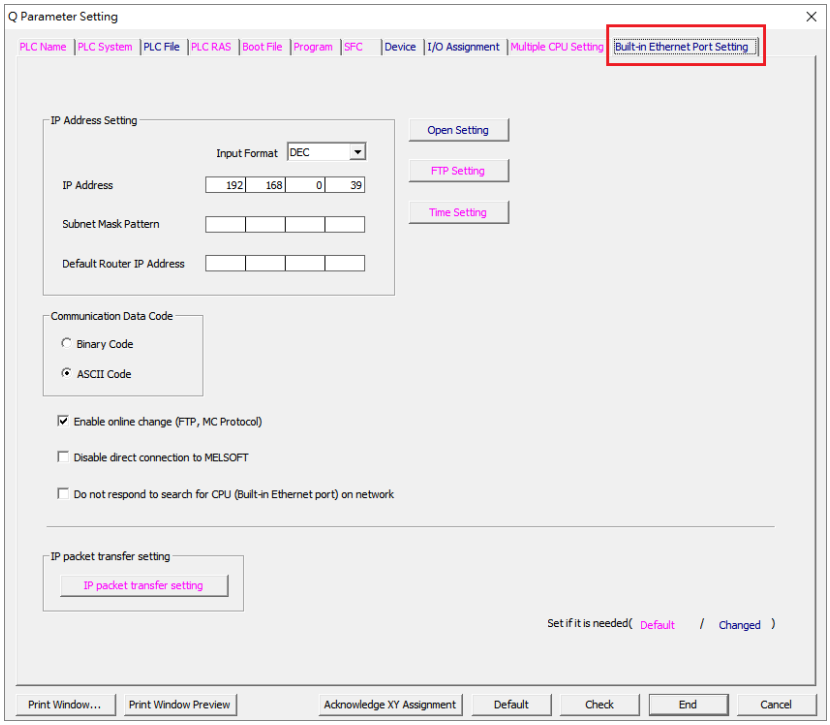
Configuring IP Address on PLC

Use **MELSOFT GX Works2** to configure the port of the PLC.

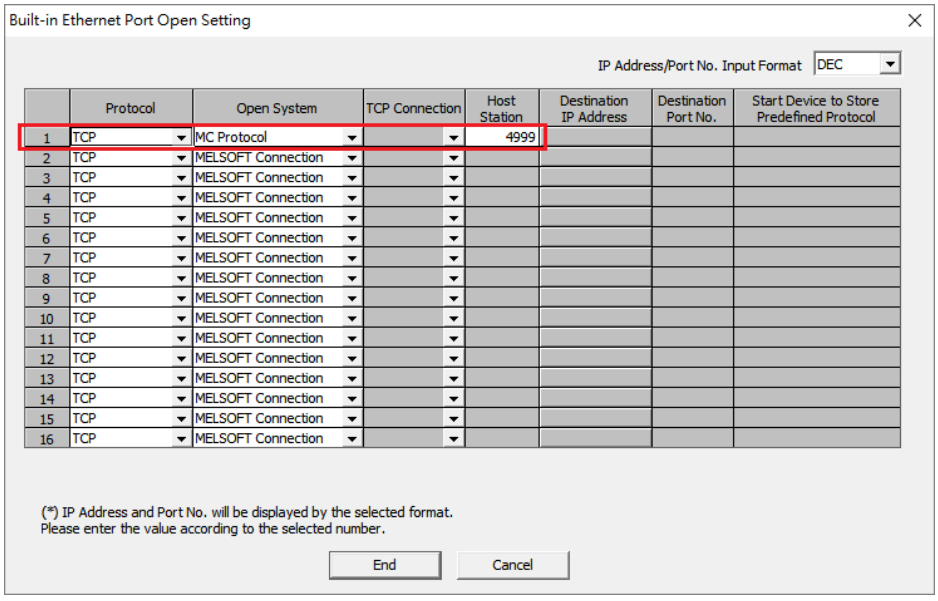
In the **Project** sidebar, expand **Parameter** and expand **PLC Parameter**.



Navigate to **Built-in Ethernet Port Setting** tab**,** the IP address and other parameters can be set.

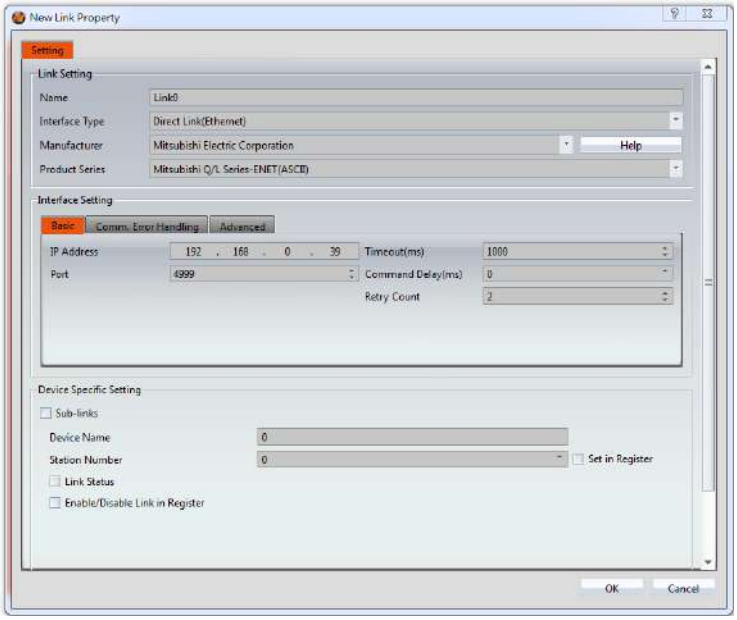


Click Open Setting and set the entire Open System column to MC Protocol. For the Host Station Port No 4999.



Note: For more detailed information please refer to the PLC manual.

Connect PLC to HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select one of the Mitsubishi Q/L Series-ENET(BINARY 或 ASCII).

The last part of the series name (BINARY or ASCII) should be consistent with the Connection Data Code set in the Ethernet Port for the PLC.
Enter the **IP Address** that was written into the PLC.
Verify the parameters match the window above.

2.2.11iQ-R Series-ENET

2.2.11.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	
Port	4999	
PLC Station No.	0	
Communication Method	MC protocol 3E	Binary/ASCII

2.2.11.2 Memory Resource Review

Device	Data bit	Description	Input Format	Min.	Max.
X	1	Input	HHHH	0	2fff
Y	1	Output	HHHH	0	2fff
M	1	Internal Relay	DDDDD	0	638975
SM	1	Special Relay	DDDD	0	4095
B	1	Link Relay	HHHHH	0	9bfff
SB	1	Link Special Relay	HHHHH	0	9bfff
F	1	Annunciator	DDDDD	0	32767
V	1	Edge Relay	DDDDD	0	32767
TS	1	Timer Contact	DDDDD	0	35487
TC	1	Timer Coil	DDDDD	0	35487
LTS	1	Long Timer Contact	DDDDD	0	35487
LTC	1	Long Timer Coil	DDDDD	0	35487
STS	1	Retentive Timer Contact	DDDDD	0	35487
STC	1	Retentive Timer Coil	DDDDD	0	35487
LSTS	1	Long Retentive Timer Contact	DDDDD	0	35487
LSTC	1	Long Retentive Timer Coil	DDDDD	0	35487
CS	1	Counter Contact	DDDDD	0	35487
CC	1	Counter Coil	DDDDD	0	35487
LCS	1	Long Counter	DDDDD	0	35487

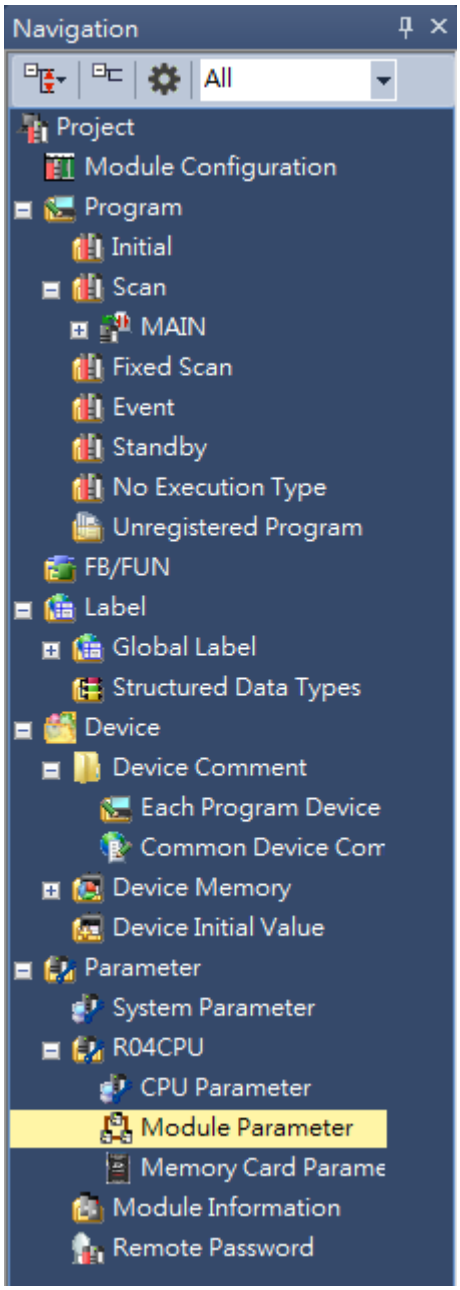
		Contact			
LCC	1	Long Counter Coil	DDDDD	0	35487
L	1	Latch Relay	DDDDD	0	32767
D	16	Data Register	DDDDD	0	39935
SD	16	Special Register	DDDD	0	4095
W	16	Link Register	HHHH	0	9bff
SW	16	Link Special Register	HHHH	0	9bff
TN	16	Timer Current Value	DDDDD	0	35487
STN	16	Retentive Timer Current Value	DDDDD	0	35487
CN	16	Counter Current Value	DDDDD	0	35487
Z	16	Index Register	DD	0	23
LTN	16	Long Timer Current Value	DDDDD	0	35487
LSTN	16	Long Retentive Timer Current Value	DDDDD	0	35487
LCN	16	Long Counter Current Value	DDDDD	0	35487
LZ	16	Long Index Register	DD	0	11

2.2.11.3 Connected Setting

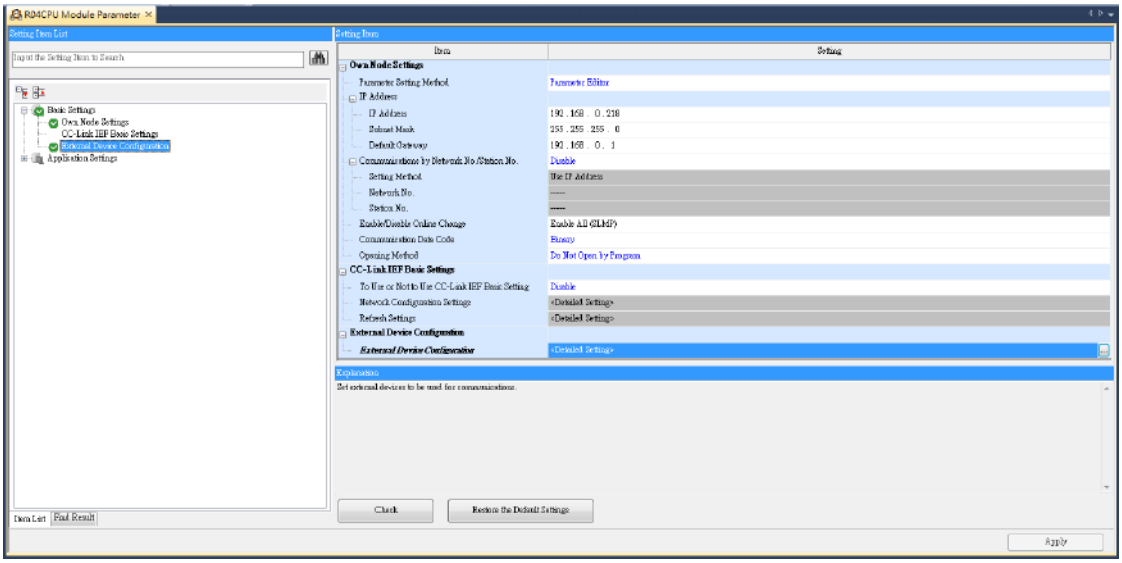
Configuring IP Address on PLC

Use **MELSOFT GX Works2** to configure the port of the PLC.

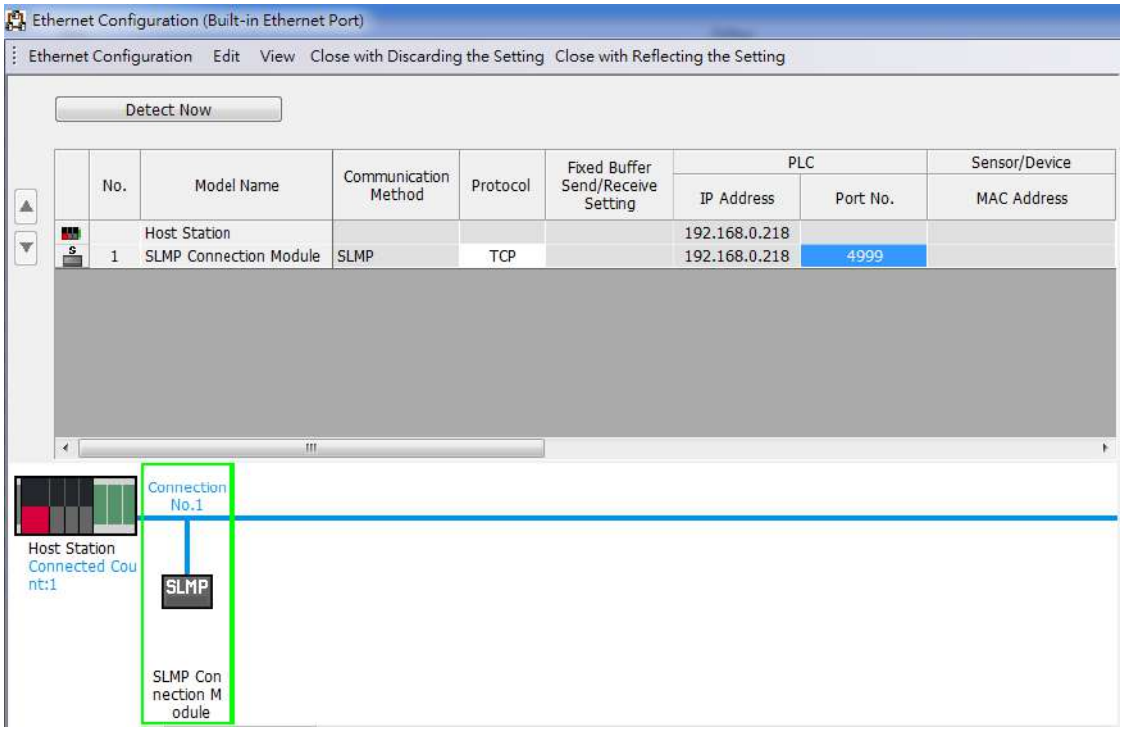
In the **Project** sidebar, expand **Parameter** and expand **Module Parameter**.



Navigate to **External Device Configuration** tab**,** the IP address and other parameters can be set.

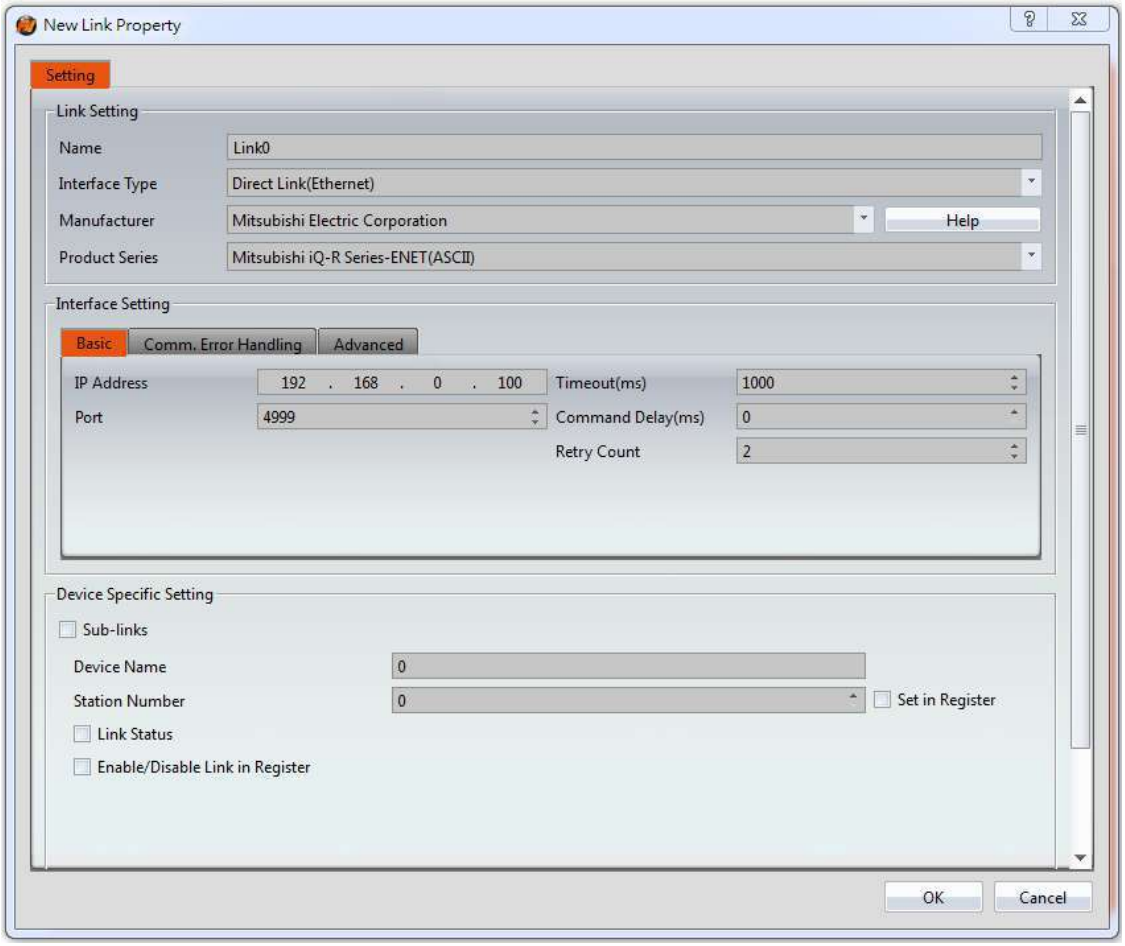


Click PLC Port No and set the Port No to 4999.



Note: For more detailed information please refer to the PLC manual.

Connect PLC to HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select one of the Mitsubishi iQ-R Series-ENET(BINARY 或 ASCII).
The last part of the series name (BINARY or ASCII) should be consistent with the Connection Data Code set in the Ethernet Port for the PLC.
Enter the **IP Address** that was written into the PLC.
Verify the parameters match the window above.

2.2.12AnA/AnU(Link Port)

2.2.12.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232	
Baud Rate	9200	
Data Length	8	
Stop Bit	1	
Parity	Odd	
TX Control	Form1(Without CR,LF)	

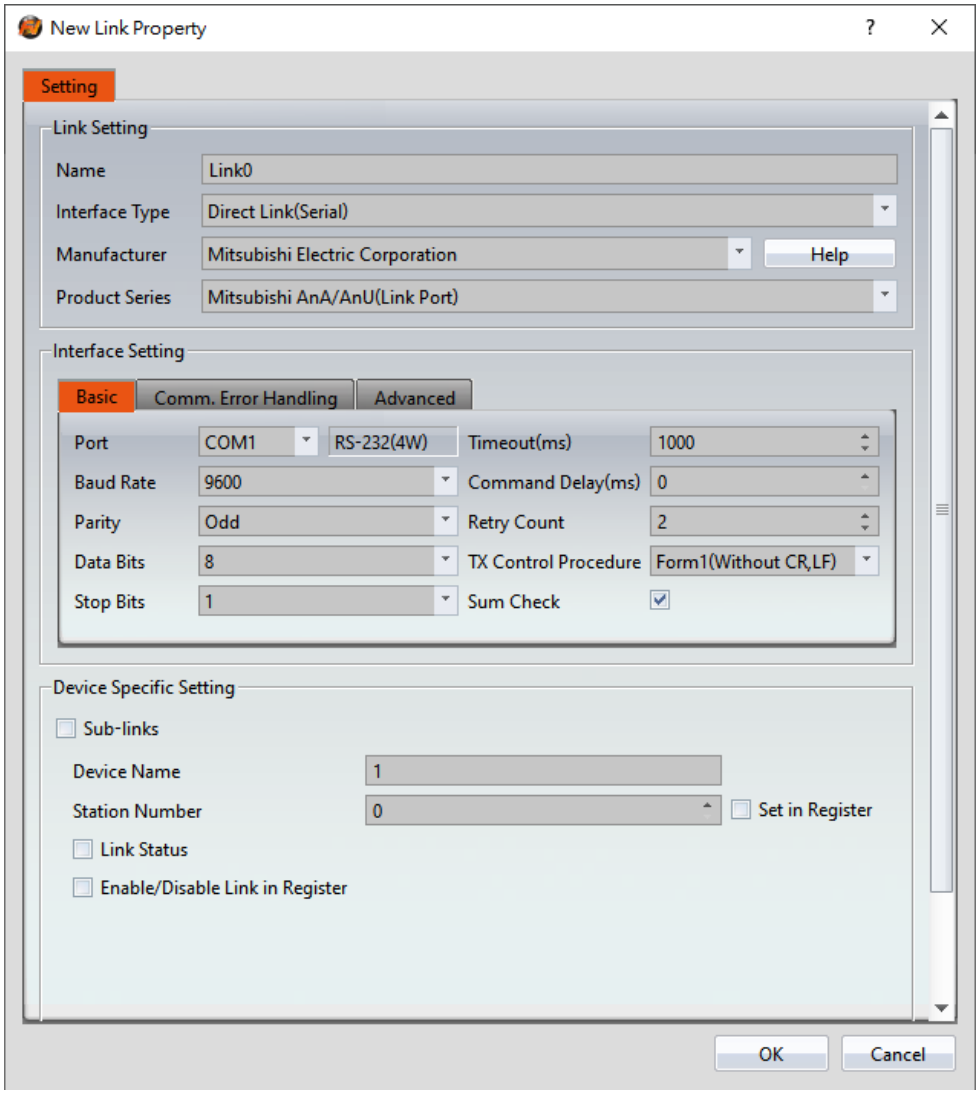
2.2.12.2 Memory Resource Review

Device	Data bit	Description	Input Format	Min.	Max.
X	1	Input	HHHH	0	1fff
Y	1	Output	HHHH	0	1fff
B	1	Link Relay	HHHH	0	1fff
F	1	Annunciator	DDDD	0	2047
M	1	Internal Relay	DDDD	0	8191
L	1	Latch Relay	DDDD	0	8191
SM	1	Special Relay	DDDD	9000	9255
TS	1	Timer Contact	DDDD	0	2047
TC	1	Timer Coil	DDDD	0	2047
CS	1	Counter Contact	DDDD	0	1023
CC	1	Counter Coil	DDDD	0	1023
WX	16	Input	HHHH	0	1ff0
WY	16	Output	HHHH	0	1ff0
B_Word	16	Link Relay	HHHH	0	1ff0
F_Word	16	Annunciator	DDDD	0	2032
WM	16	Internal Relay	DDDD	0	8176
WL	16	Latch Relay	DDDD	0	8176
W	16	Link Register	HHHH	0	1fff
TN	16	Timer Present Value	DDDD	0	2047
CN	16	Counter Present	DDDD	0	1023

		Value			
D	16	Data Register	DDDD	0	8191
SD	16	Special Register	DDDD	9000	9255

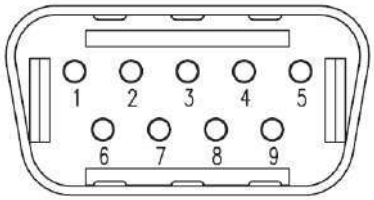
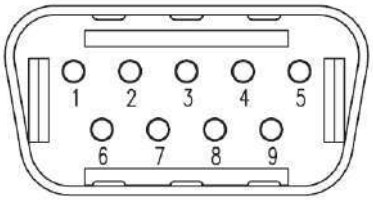
2.2.12.3 Connected Setting

Connect PLC to HMI

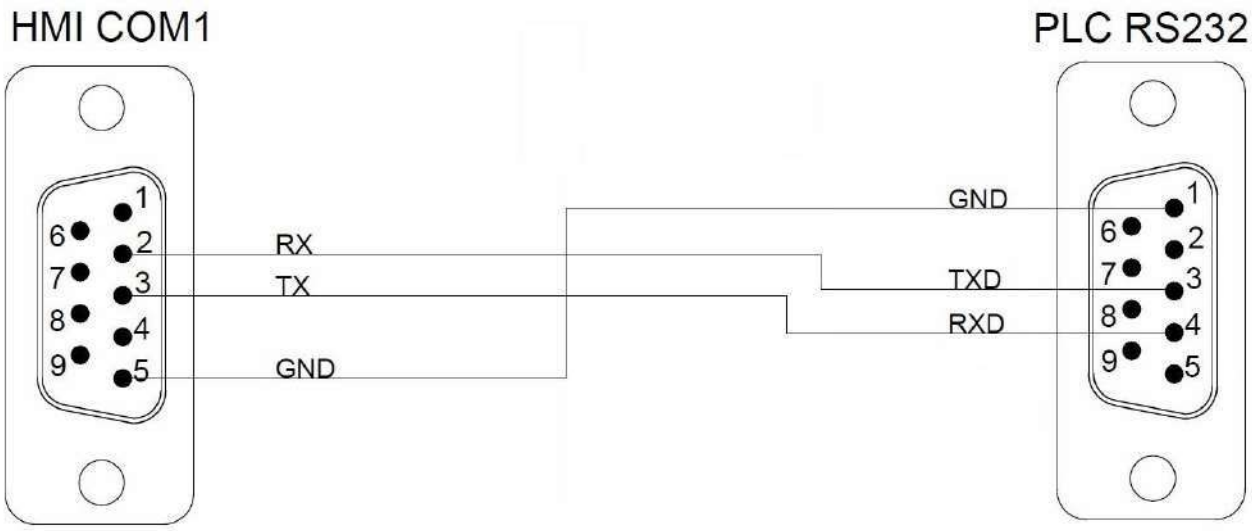


Within the Link configuration window in FvDesigner:
Under Interface Type select Direct Link(Serial)
Under Manufacturer select Mitsubishi Electric Corporation.
Under Product Series select one of the Mitsubishi AnA/AnU(Link Port).
Verify the parameters match the window above.

2.2.12.4 Wiring Diagrams

HMI COM1 Pinout		**PLC RS232 Pinout**	
 *Looking into COM1 Port		 *View from soldering point of the cable	
PIN#	COM1 (RS232)	PIN#	Signal
1		1	GND
2	RX	2	
3	TX	3	RXD
4		4	TXD
5	GND	5	
6		6	
7		7	
8		8	
9		9	

HMI COM1	PLC RS232 Port
2 RX	3 TXD
3 TX	4 RXD
5 GND	1 GND



2.2.13 Q/L Series-ENET(Binary)

(Support connect with QJ71E71-100)

2.2.13.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	
Port	4999	
PLC Station No.	0	
Communication Method	MC protocol 3E	Binary

2.2.13.2 Memory Resource Review

Device	Description	Data bit	Input Format	Min.	Max.
X	Input Relay	1	HHHH	0	1fff
Y	Output Relay	1	HHHH	0	1fff
M	Internal Relay	1	DDDDD	0	61439
L	Latch Relay	1	DDDD	0	32767
B	Link Relay	1	HHHH	0	efff
F	Annunciator	1	DDDD	0	32767
V	Edge Relay	1	DDDD	0	32767

SB	Link Special Relay	1	HHH	0	7FFF
S	Step Relay	1	DDDD	0	16383
TS	Timer Contact	1	DDDD	0	32767
TC	Timer Coil	1	DDDD	0	32767
SS	Retentive Timer Contact	1	DDDD	0	32767
SC	Retentive Timer Coil	1	DDDD	0	32767
CS	Counter Contact	1	DDDD	0	32767
CC	Counter Coil	1	DDDD	0	32767
SM	Special Relay	1	DDDD	0	2047
DX	Direct Input	1	HHHH	0	1fff
DY	Direct Output	1	HHHH	0	1fff
WX*1	Input Relay	16	HHHH	0	1ff0
WY*1	Output Relay	16	HHHH	0	1ff0
WM*1	Internal Relay	16	DDDDD	0	61424
WL	Link Relay	16	DDDD		32752
B_Word *1	Link Relay	16	HHHH	0	eff0
F_Word *1	Annunciator	16	DDDDD	0	32752
WV	Edge relay	16	DDDDD	0	32752
SB_Word *1	Link Special Relay	16	HHH	0	7ff0
WS*1	Step Relay	16	DDDD	0	16368
TS_Word *1	Timer Contact	16	DDDD	0	32752
TC_Word *1	Timer Coil	16	DDDD	0	32752
SS_Word *1	Retentive Timer Contact	16	DDDD	0	32752
SC_Word *1	Retentive Timer Coil	16	DDDD	0	32752
CS_Word *1	Counter Contact	16	DDDD	0	32752
CC_Word *1	Counter Coil	16	DDDD	0	32752
SM_Word	Special Relay	16	DDDD	0	2032

*1					
TN	Timer Current Value	16	DDDD	0	32752
SN	Retentive Timer Current Value	16	DDDD	0	32752
CN	Counter Current Value	16	DDDD	0	32752
D	Data Register	16	DDDDD	0	39935
W	Link Register	16	HHHH	0	9bff
SW	Link special Register	16	HHH	0	7FFF
SD	Special Register	16	DDDD	0	2047
R	File Register	16	DDDDD	0	32767
Z	Index Register	16	DD	0	19
ZR	File Register	16	HHHHH	0	9fff

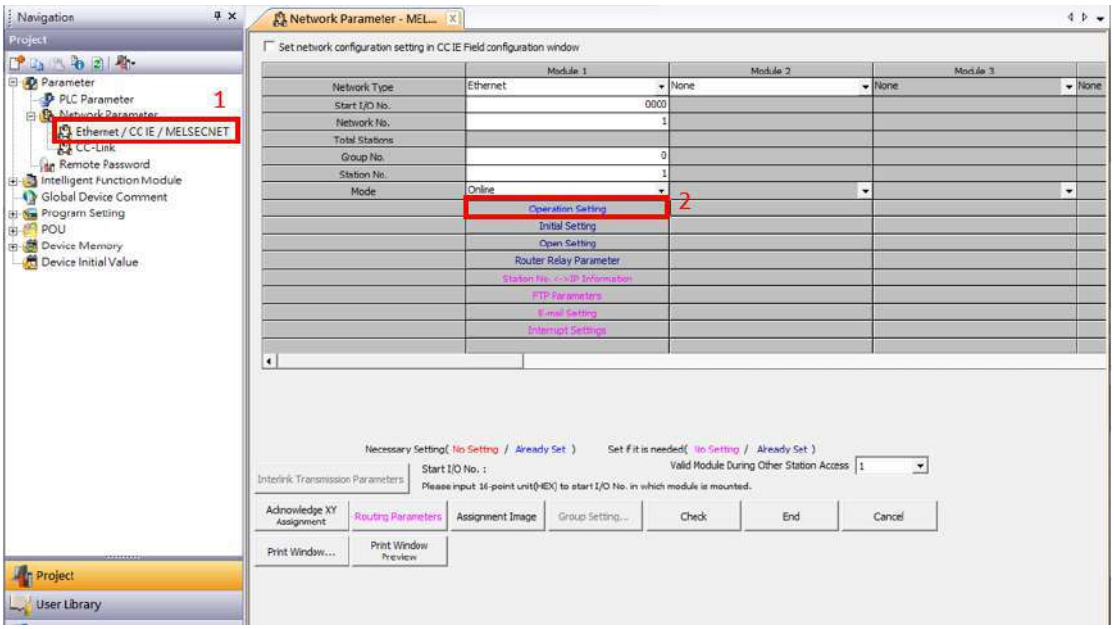
*1 Address increased by 0, 20, 40, 60…

2.2.13.3 Connected Setting

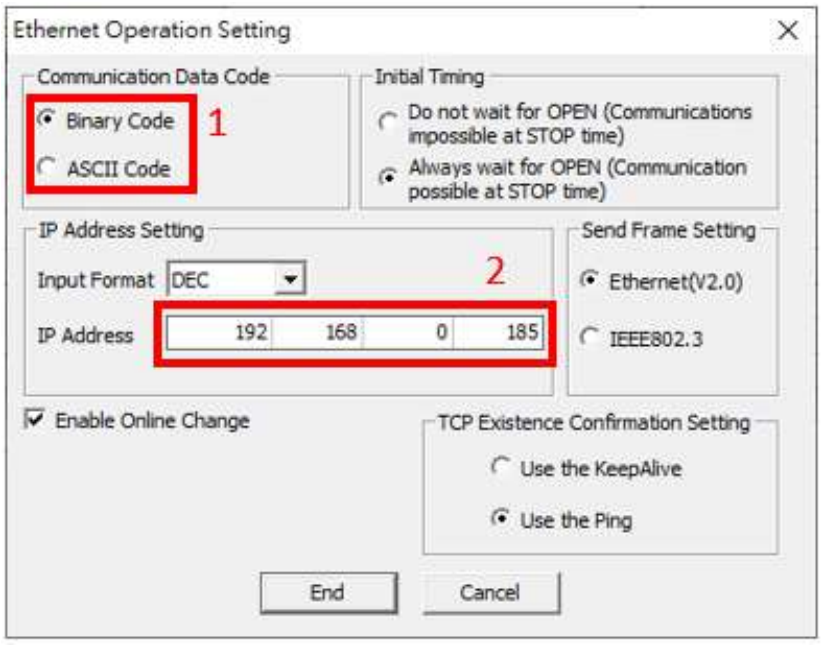
Configuring IP Address on PLC

Use **MELSOFT GX Works2** to configure the port of the PLC.

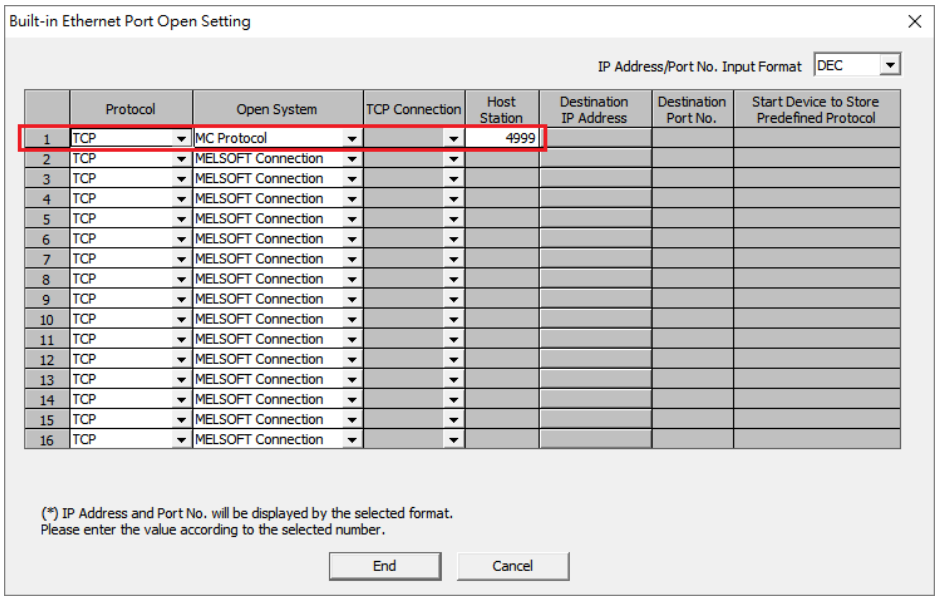
In the **Project** sidebar, expand **Network Parameter -> Ethernet/CC IE/MELSECNET -> Operation Setting**.



Setting the **Communication Data Code** to **Binary Code**, and setting the IP address.

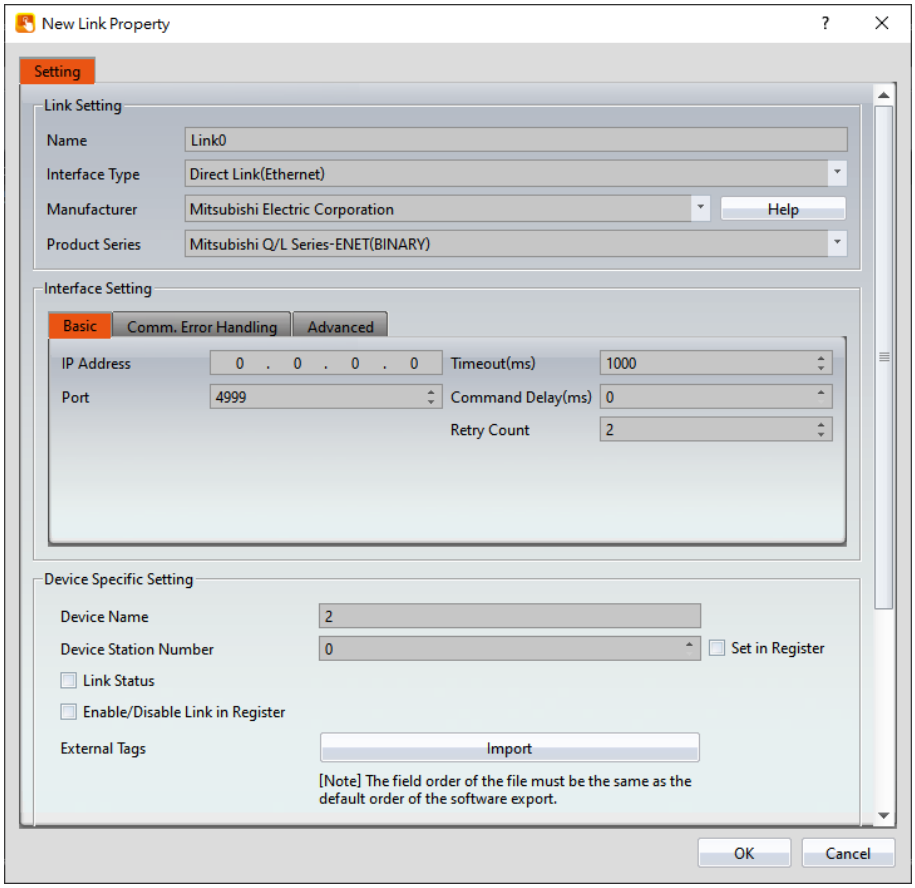


Click Open Setting and set the entire Open System column to TCP. And setting to MELSOFT Connection.



Note: For more detailed information please refer to the PLC manual.

Connect PLC to HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select one of the Mitsubishi Q/L Series-ENET(BINARY).
Connection Data Code set in the Ethernet Port 4999 for the PLC.
Enter the **IP Address** that was written into the PLC.
Verify the parameters match the window above.

2.2.14 Q/L Series-ENET(ASCII)

(Support connect with QJ71E71-100)

2.2.14.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	
Port	4999	
PLC Station No.	0	

Communication Method	MC protocol 3E	ASCII

2.2.14.2 Memory Resource Review

Device	Description	Data bit	Input Format	Min.	Max.
X	Input Relay	1	HHHH	0	1fff
Y	Output Relay	1	HHHH	0	1fff
M	Internal Relay	1	DDDDD	0	61439
L	Latch Relay	1	DDDD	0	32767
B	Link Relay	1	HHHH	0	efff
F	Annunciator	1	DDDD	0	32767
V	Edge Relay	1	DDDD	0	32767
SB	Link Special Relay	1	HHH	0	7FFF
S	Step Relay	1	DDDD	0	16383
TS	Timer Contact	1	DDDD	0	32767
TC	Timer Coil	1	DDDD	0	32767
SS	Retentive Timer Contact	1	DDDD	0	32767
SC	Retentive Timer Coil	1	DDDD	0	32767
CS	Counter Contact	1	DDDD	0	32767
CC	Counter Coil	1	DDDD	0	32767
SM	Special Relay	1	DDDD	0	2047
DX	Direct Input	1	HHHH	0	1fff
DY	Direct Output	1	HHHH	0	1fff
WX*1	Input Relay	16	HHHH	0	1ff0
WY*1	Output Relay	16	HHHH	0	1ff0
WM*1	Internal Relay	16	DDDDD	0	61424
WL	Link Relay	16	DDDD		32752
B_Word *1	Link Relay	16	HHHH	0	eff0
F_Word *1	Annunciator	16	DDDDD	0	32752
WV	Edge relay	16	DDDDD	0	32752
SB_Word *1	Link Special Relay	16	HHH	0	7ff0

WS*1	Step Relay	16	DDDD	0	16368
TS_Word *1	Timer Contact	16	DDDD	0	32752
TC_Word *1	Timer Coil	16	DDDD	0	32752
SS_Word *1	Retentive Timer Contact	16	DDDD	0	32752
SC_Word *1	Retentive Timer Coil	16	DDDD	0	32752
CS_Word *1	Counter Contact	16	DDDD	0	32752
CC_Word *1	Counter Coil	16	DDDD	0	32752
SM_Word *1	Special Relay	16	DDDD	0	2032
TN	Timer Current Value	16	DDDD	0	32752
SN	Retentive Timer Current Value	16	DDDD	0	32752
CN	Counter Current Value	16	DDDD	0	32752
D	Data Register	16	DDDDD	0	39935
W	Link Register	16	HHHH	0	9bff
SW	Link special Register	16	HHH	0	7FFF
SD	Special Register	16	DDDD	0	2047
R	File Register	16	DDDDD	0	32767
Z	Index Register	16	DD	0	19
ZR	File Register	16	HHHHH	0	9fff

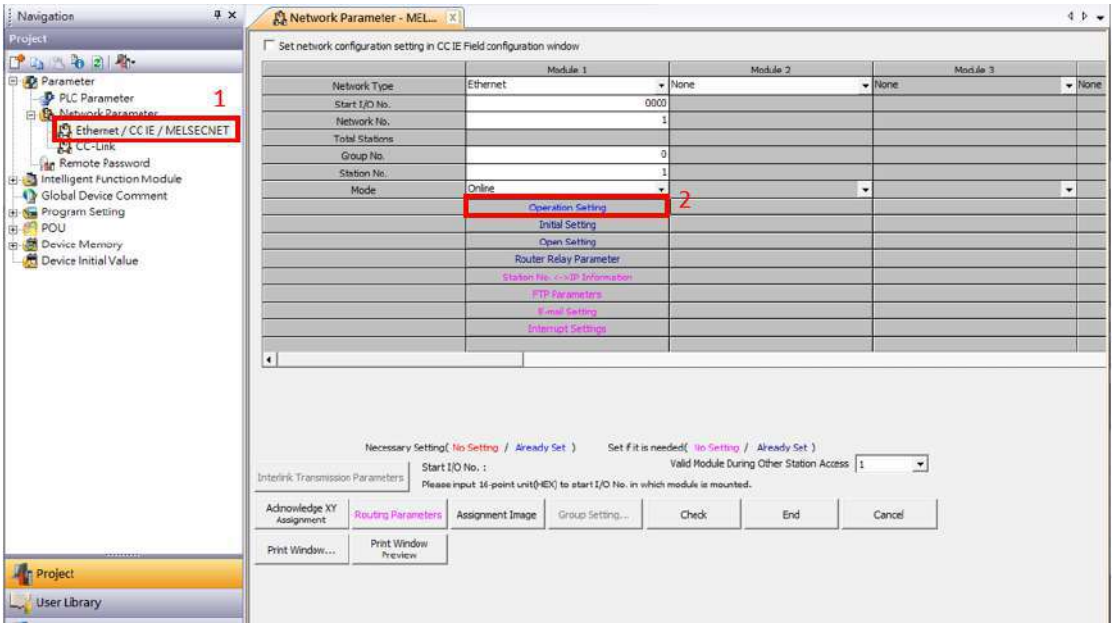
*1 Address increased by 0, 20, 40, 60…

2.2.14.3 Connected Setting

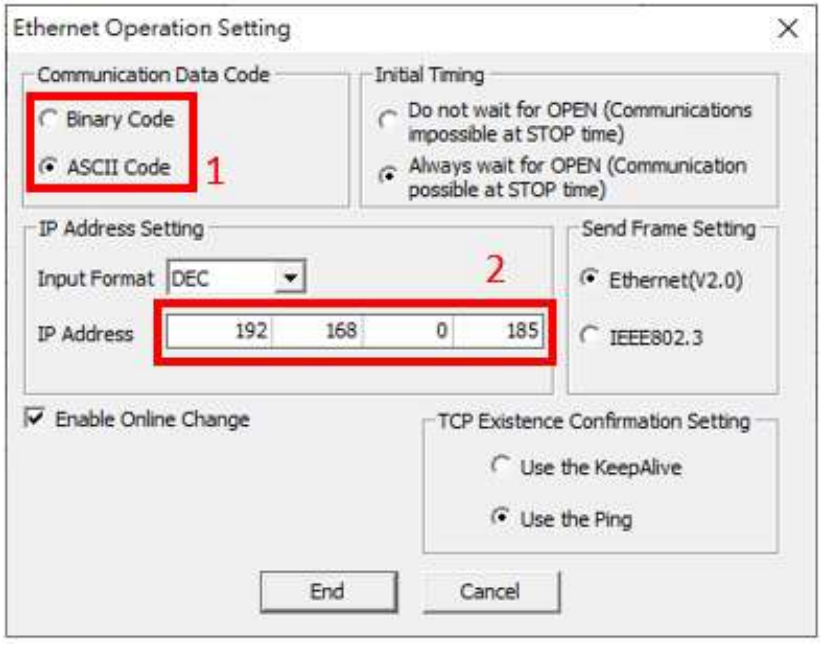
Configuring IP Address on PLC

Use **MELSOFT GX Works2** to configure the port of the PLC.

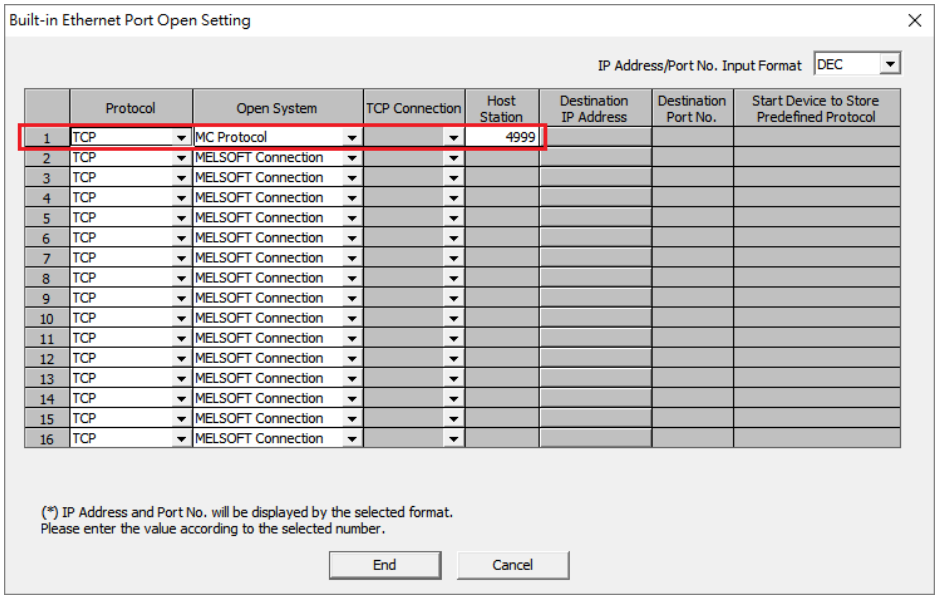
In the **Project** sidebar, expand **Network Parameter -> Ethernet/CC IE/MELSECNET -> Operation Setting**.



Setting the **Communication Data Code** to **Binary Code**, and setting the IP address.

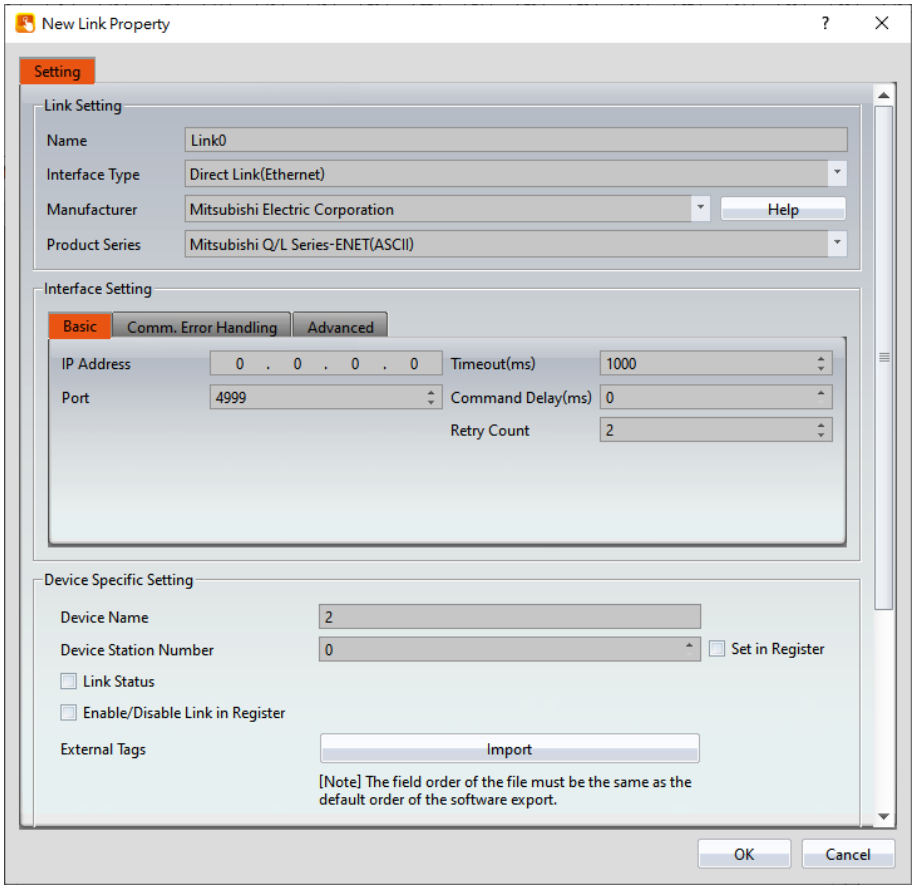


Click Open Setting and set the entire Open System column to TCP. And setting to MELSOFT Connection.



Note: For more detailed information please refer to the PLC manual.

Connect PLC to HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Mitsubishi Electric Corporation
Under **Product Series** select one of the Mitsubishi Q/L Series-ENET(ASCII).
Connection Data Code set in the Ethernet Port 4999 for the PLC.

Enter the **IP Address** that was written into the PLC.
Verify the parameters match the window above.

2.3 Omron

2.3.1 Sysmac CP Series (FINS)

2.3.1.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232	
Baud Rate	9600	
Data Length	7	
Stop Bit	2	
Parity	Even	
PLC Station No.	0	
Communication Method	FINS	

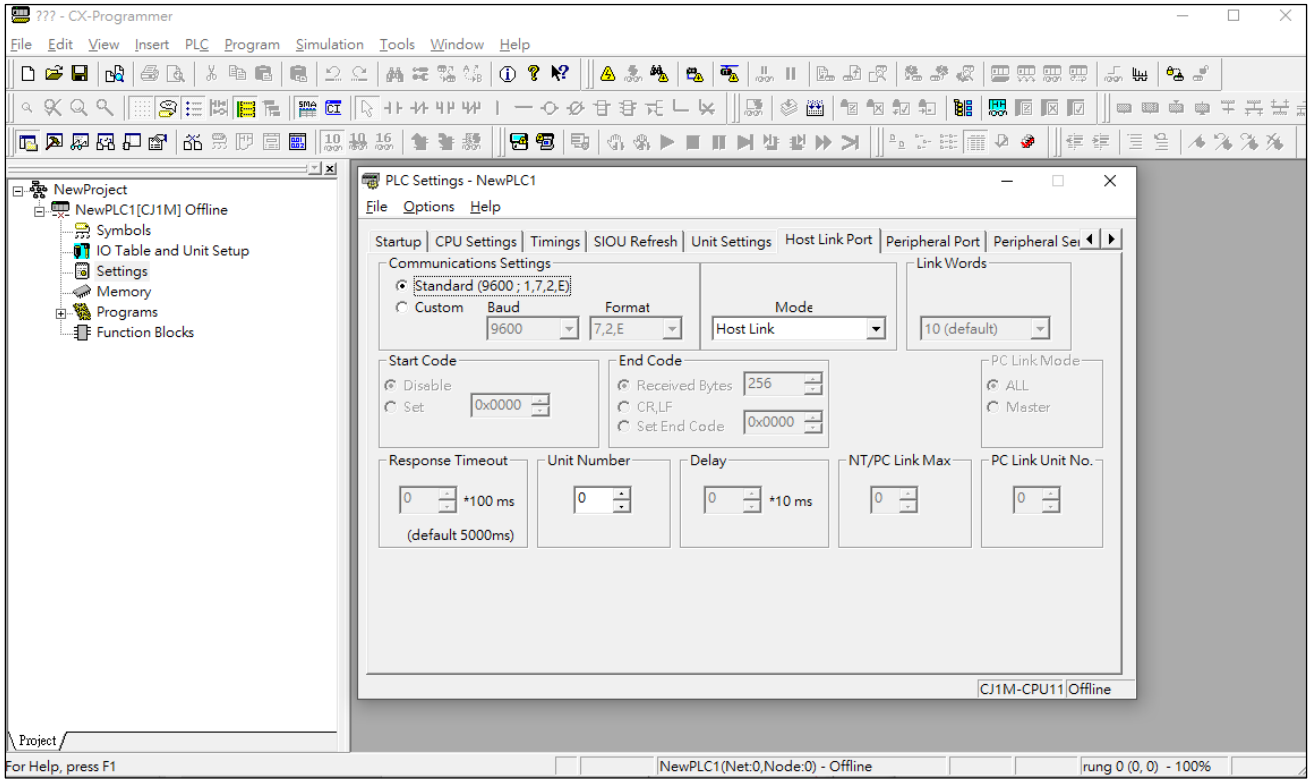
2.3.1.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
TIM	Timer Area	1	0	4095
CNT	Counter Area	1	0	4095
CIO	CIO Area	16	0	6143
W	Work Area	16	0	511
H	Holding Bit Area	16	0	511
A	Auxiliary Bit Area	16	0	959
T	Timer Area	16	0	4095
C	Counter Area	16	0	4095
D	DM Area	16	0	32767

2.3.1.3 Connected Setting

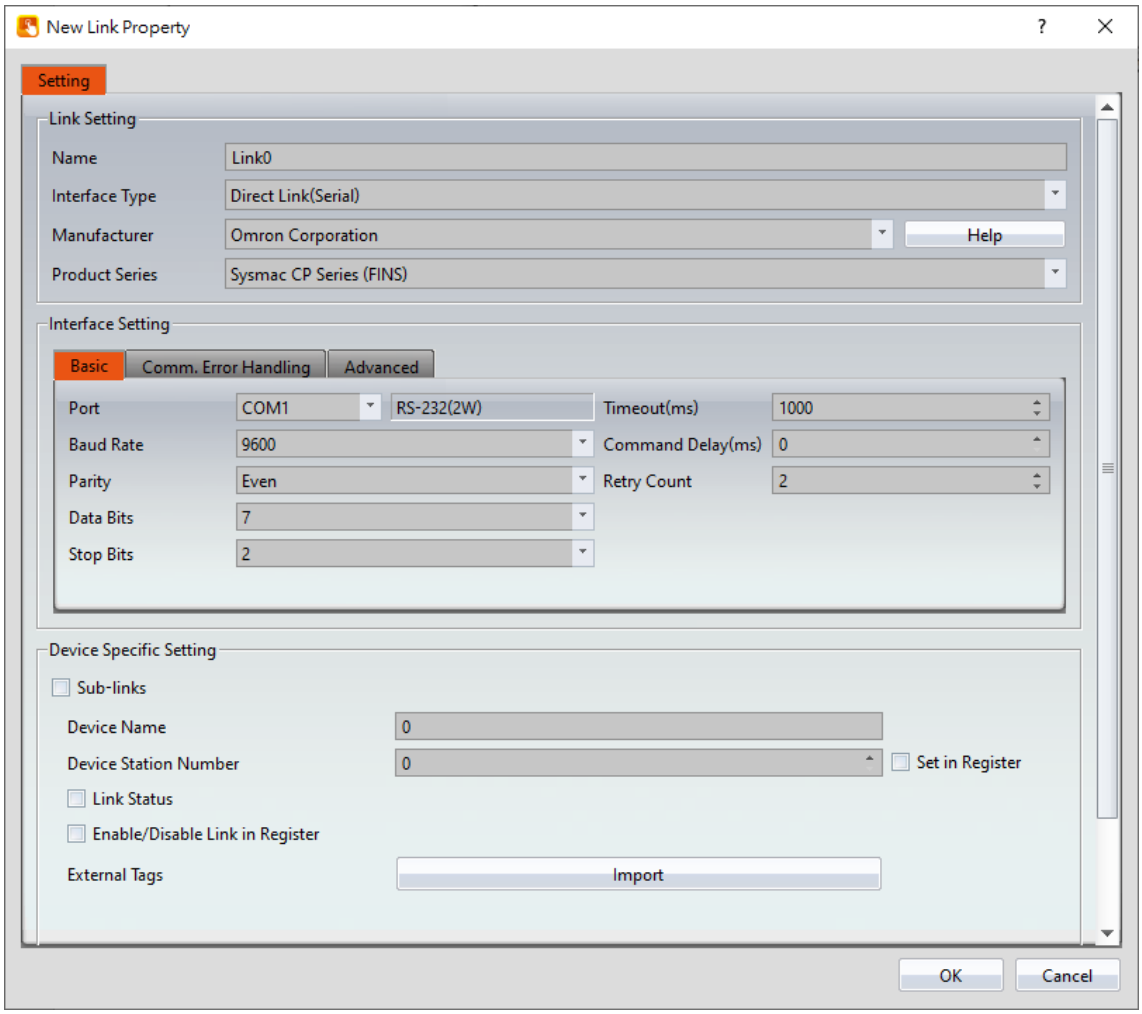
Configuring of PLC

To modify the communication parameters of the PLC using「CX-Programmer」, click on "Settings" → "Port" for modification.



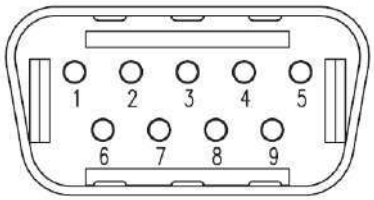
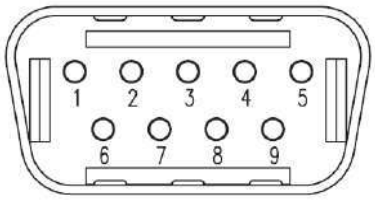
Note: For more detailed information please refer to the PLC manual.

Configuring of HMI

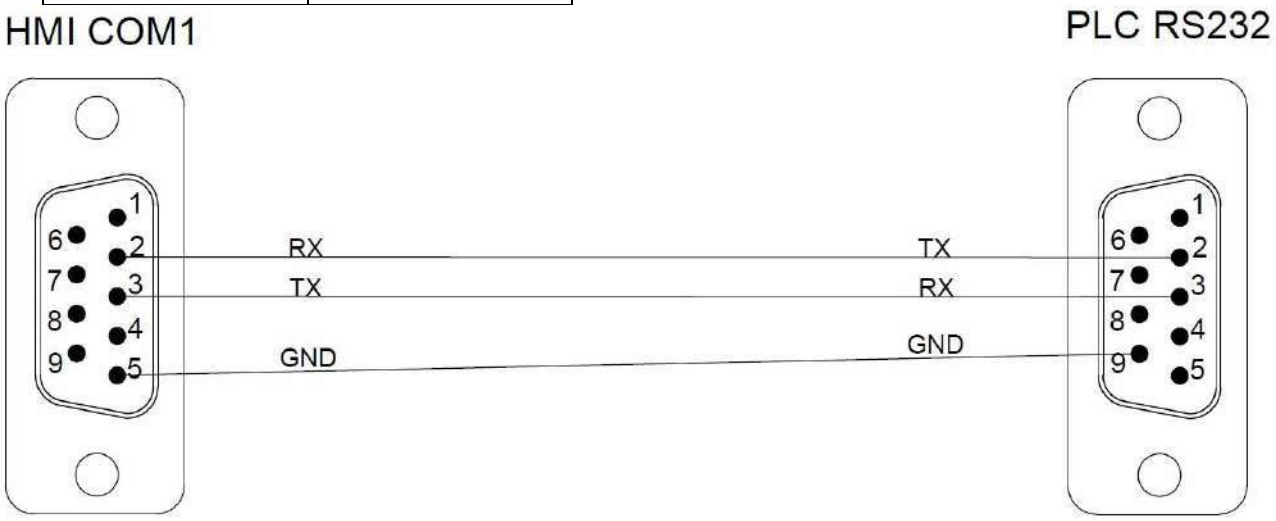


Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Omron Corporation
Under **Product Series** select Sysmac CP Series (FINS)
Under **Port** select COM1

2.3.1.4 Wiring Diagrams

HMI COM1 Pinout		PLC RS232 Pinout	
 *Looking into COM1 Port		 *Looking into male RS232 Cable	
PIN#	COM1 (RS232)	PIN#	Signal
1		1	
2	RX	2	TX
3	TX	3	RX
4		4	
5	GND	5	
6		6	
7		7	
8		8	
9		9	GND

HMI COM1	PLC RS232 Port
2 RX	2 TX
3 TX	3 RX
5 GND	9 GND



2.3.2 Sysmac CP Series (FINS/TCP)

2.3.2.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	To be configured
Port	9600	
PLC Station No.	0	
Communication Method	FINS/TCP	

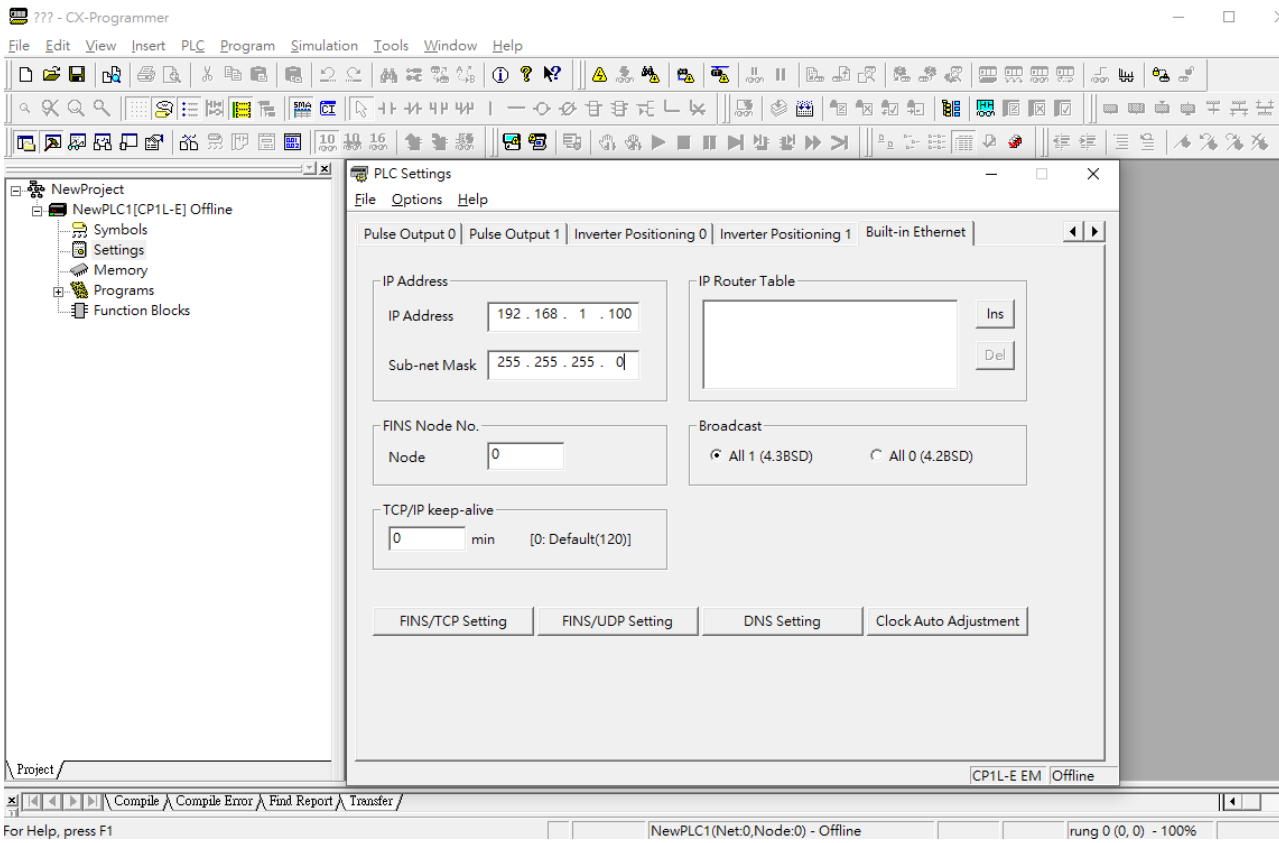
2.3.2.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
TK	Task Flag	1	0	31
TIM	Timer Area	1	0	4095
CNT	Counter Area	1	0	4095
CIO	CIO Area	16	0	6143
W	Work Area	16	0	511
H	Holding Area	16	0	511
A	Auxiliary Area	16	0	959
T	Timer Area	16	0	4095
C	Counter Area	16	0	4095
D	Data Memory Area	16	0	32767
IR	Index Register	32	0	15
DR	Data Register	16	0	15

2.3.2.3 Connected Setting

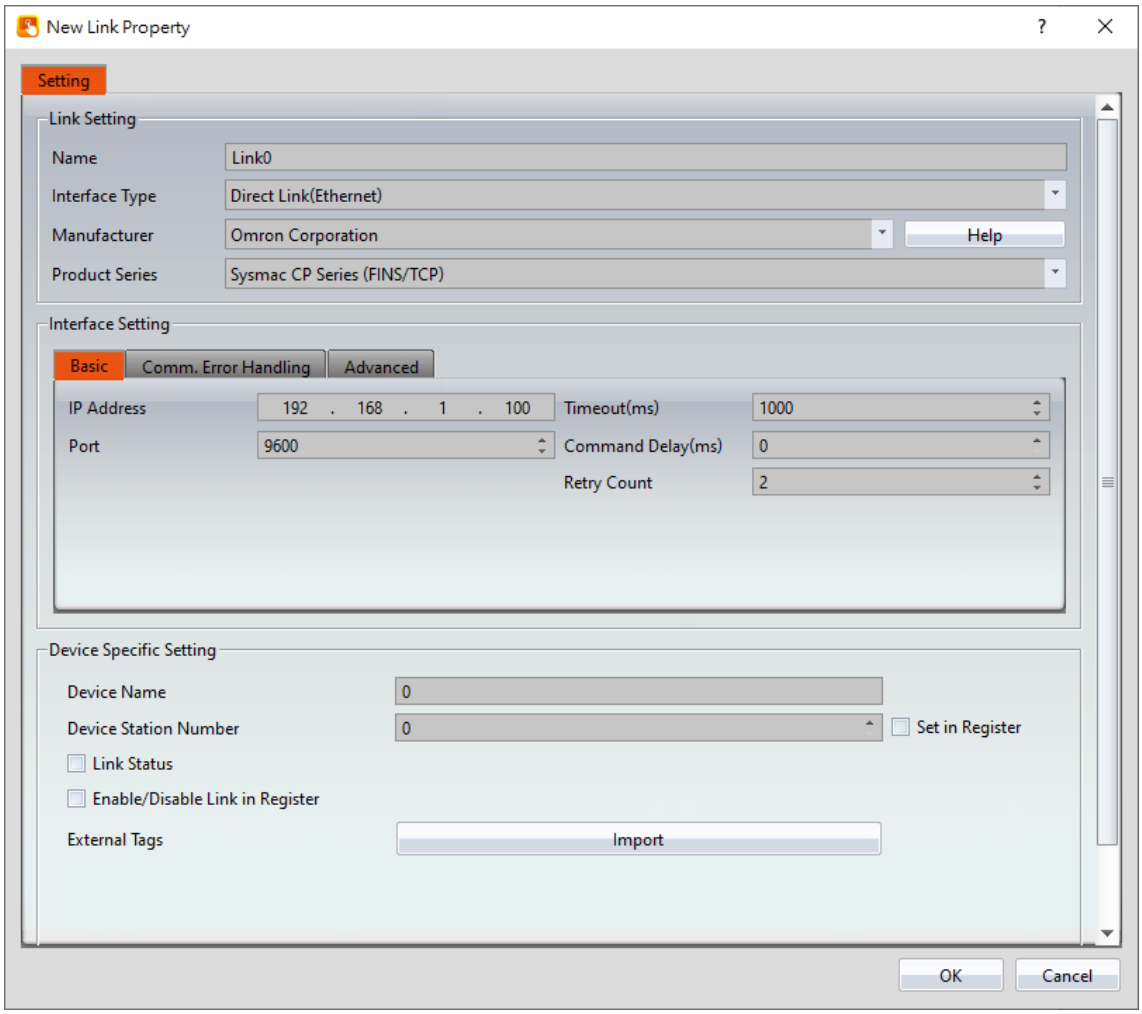
Configuring of PLC

To modify the communication parameters of the PLC using「CX-Programmer」, click on "Settings" → "Built-in Ethernet" for modification.



Note: For more detailed information please refer to the PLC manual.

Configuring the HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Omron Corporation
Under **Product Series** select Sysmac CP Series (FINS/TCP)
Enter the **IP Address** that was written into the PLC
Enter 9600 for the Port

2.3.3 Sysmac CPM Series (HOSTLINK)

2.3.3.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232	
Baud Rate	9600	
Data Length	7	
Stop Bit	2	
Parity	Even	
PLC Station No.	0	
Communication Method	HOSTLINK	

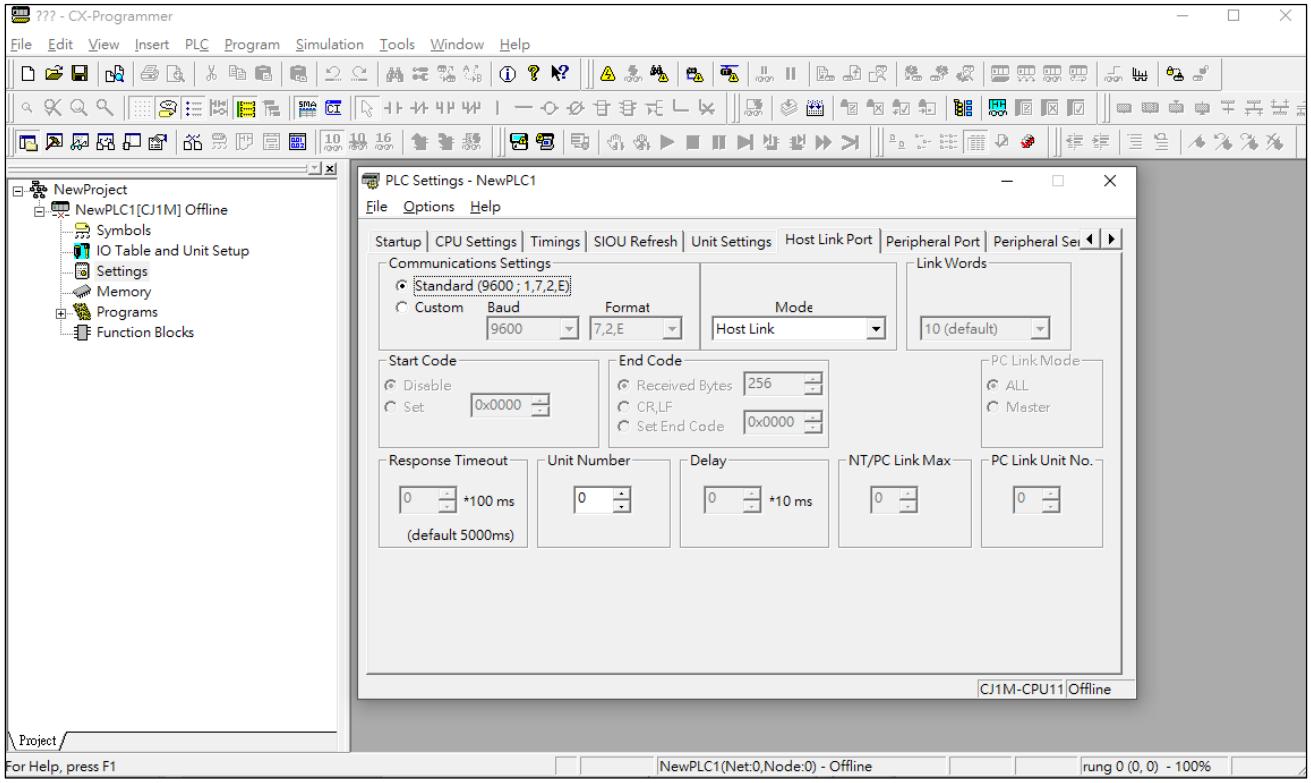
2.3.3.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
TNB	Timer Area	1	0	255
CNB	Counter Area	1	0	255
IR	IR area	16	0	227
HR	HR area	16	0	19
AR	AR area	16	0	23
LR	LR area	16	0	15
TN	Timer area	16	0	255
CN	Counter area	16	0	255
DM	DM area	16	0	6655

2.3.3.3 Connected Setting

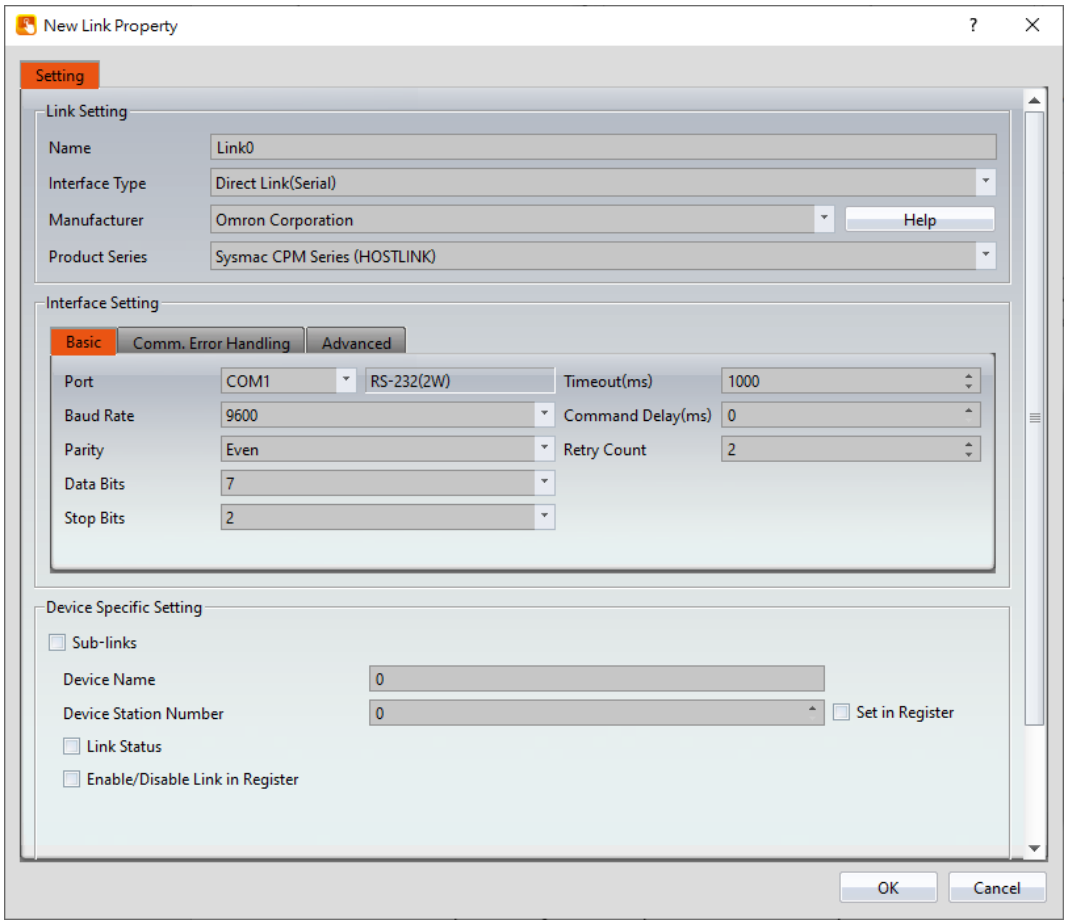
Configuring of PLC

To modify the communication parameters of the PLC using「CX-Programmer」, click on "Settings" → "Port" for modification.



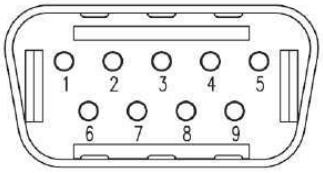
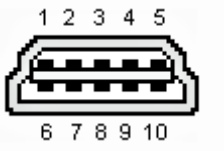
Note: For more detailed information please refer to the PLC manual.

Configuring of HMI

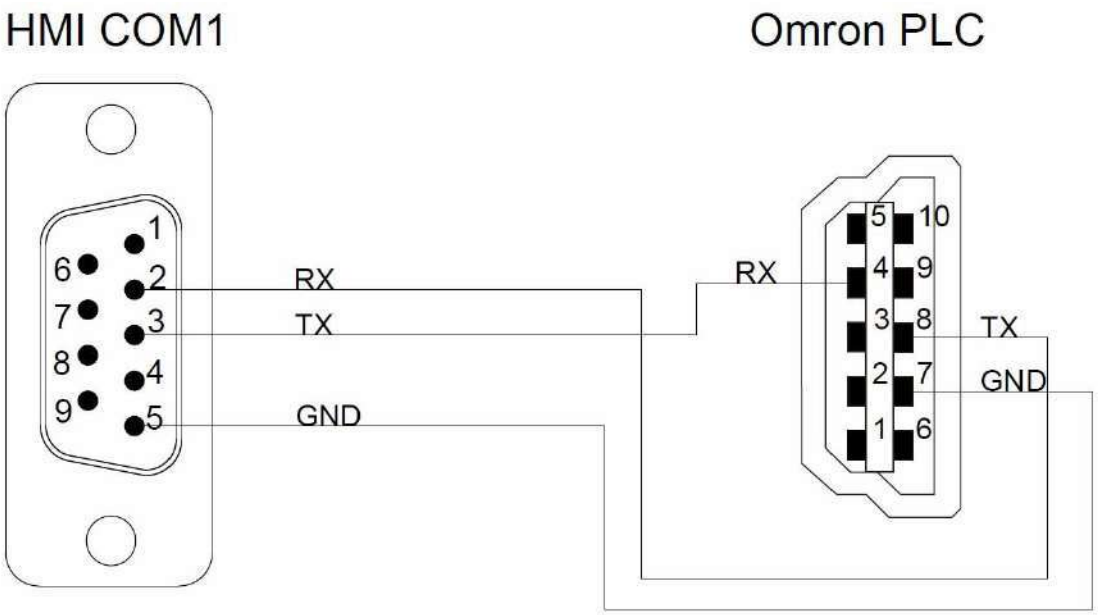


Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Omron Corporation
Under **Product Series** select Sysmac CPM Series (HOSTLINK)
Under **Port** select COM1

2.3.3.4 Wiring Diagrams

HMI COM1 Pinout		**Omron PLC Pinout**	
			
*Looking into COM1 Port		*Looking into Omron PLC Cable	
PIN#	COM1 (RS232)	PIN#	Signal
1		1	
2	RX	2	
3	TX	3	
4		4	RX
5	GND	5	
6		6	
7		7	GND
8		8	TX
9		9	RTS
		10	CTS

HMI COM1	Omron PLC Port
2 RX	8 TX
3 TX	4 RX
5 GND	7 GND


HMI COM1
Omron PLC
1
6
2
7
3
8
4
9
5
RX
TX
GND
RX
TX
GND
5
10
4
9
3
8
2
7
1
6

2.3.4 Sysmac CQM Series (HOSTLINK)

2.3.4.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232	
Baud Rate	9600	
Data Length	7	
Stop Bit	2	
Parity	Even	
PLC Station No.	0	
Communication Method	HOSTLINK	

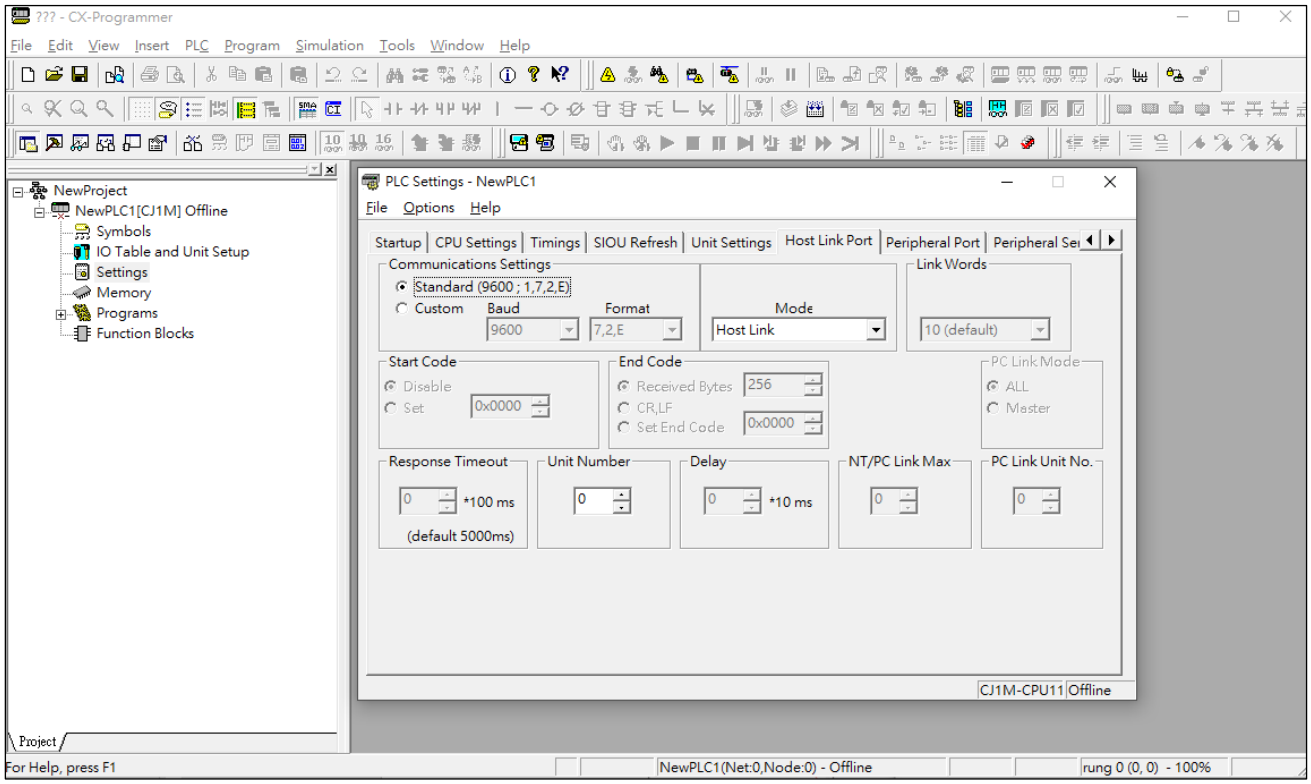
2.3.4.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
TNB	Timer Area	1	0	255
CNB	Counter Area	1	0	255
IR	IR area	16	0	227
HR	HR area	16	0	19
AR	AR area	16	0	23
LR	LR area	16	0	15
TN	Timer area	16	0	255
CN	Counter area	16	0	255
DM	DM area	16	0	6655

2.3.4.3 Connected Setting

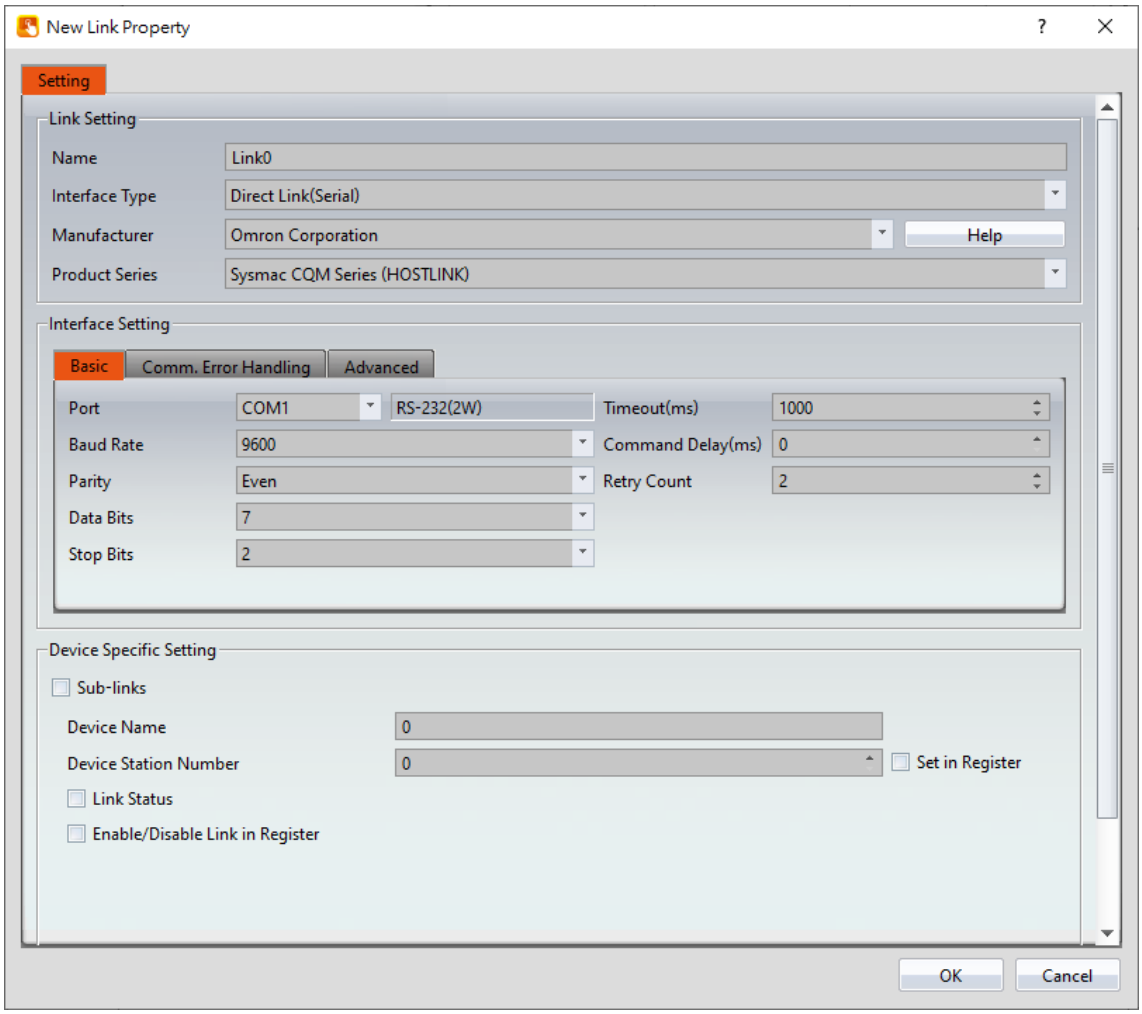
Configuring of PLC

To modify the communication parameters of the PLC using「CX-Programmer」, click on "Settings" → "Port" for modification.



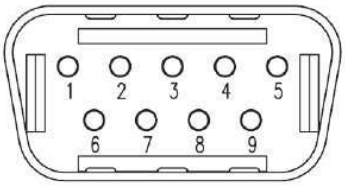
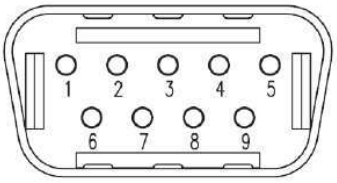
Note: For more detailed information please refer to the PLC manual.

Configuring of HMI

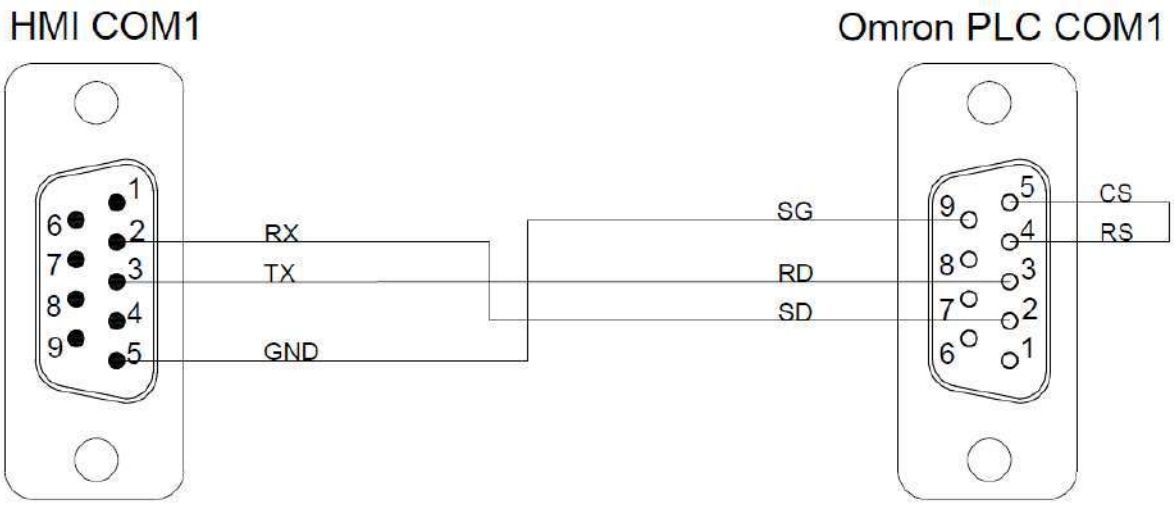


Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Omron Corporation
Under **Product Series** select Sysmac CQM Series (HOSTLINK)
Under **Port** select COM1

2.3.4.4 Wiring Diagrams

HMI COM1 Pinout		**Omron PLC Pinout**	
 *Looking into COM1 Port		 *Looking into PLC Port	
PIN#	COM1 (RS232)	PIN#	Signal
1		1	
2	RX	2	SD
3	TX	3	RD
4		4	RS
5	GND	5	CS
6		6	
7		7	
8		8	
9		9	SG

HMI COM1	Omron PLC Port	
2 RX	2 SD	
3 TX	3 RD	
5 GND	9 SG	
	4 RS	circuit
	5 CS	


HMI COM1
Omron PLC COM1
1
2
3
4
5
6
7
8
9
RX
TX
GND
SG
RD
SD
CS
RS

2.3.5 Sysmac CS/CJ Series (FINS)

2.3.5.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232/RS422	
Baud Rate	9600	
Data Length	7	
Stop Bit	2	
Parity	Even	
PLC Station No.	0	
Communication Method	FINS	

2.3.5.2 Memory Resource Review

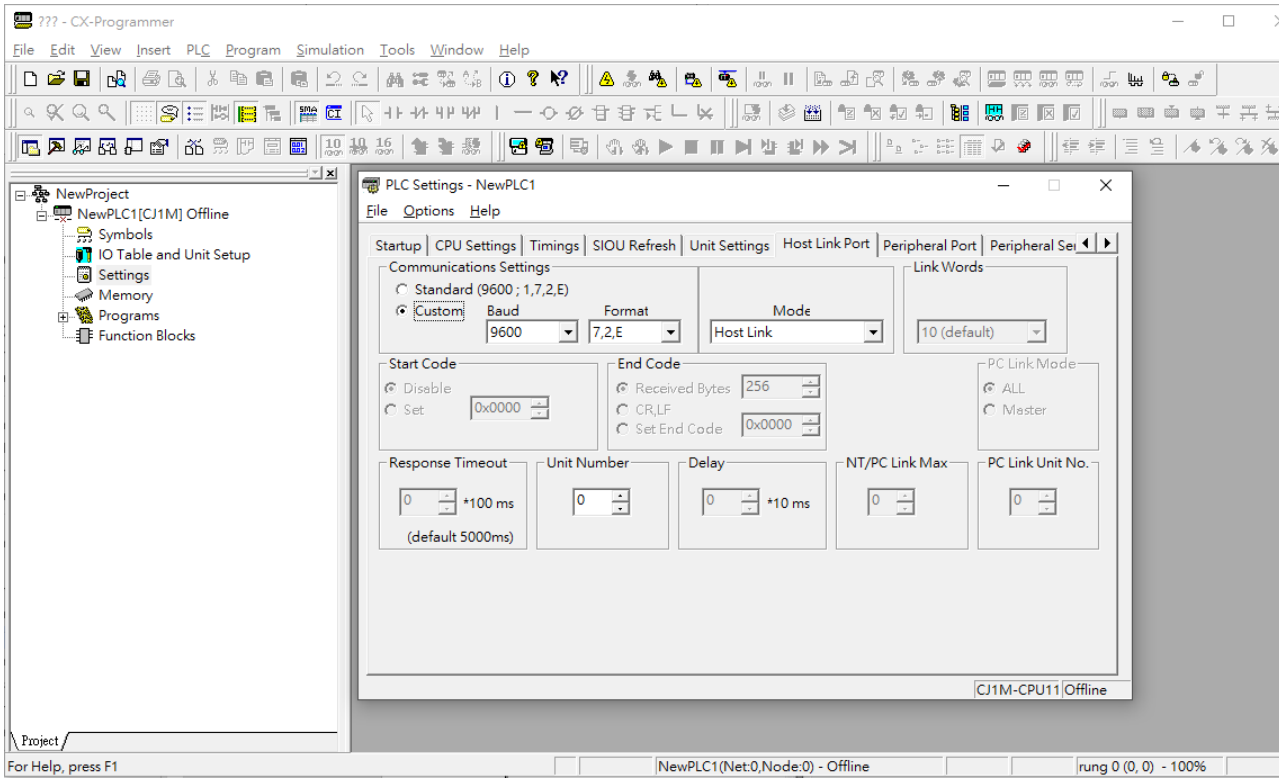
Device	Description	Data bit	Min.	Max.
TK	Task Flag	1	0	127
TIM	Timer Area	1	0	4095
CNT	Counter Area	1	0	4095
CIO	CIO Area	16	0	6143
W	Work Area	16	0	511
H	Holding Bit Area	16	0	1535
A	Auxiliary Bit Area	16	0	11535
T	Timer Area	16	0	4095
C	Counter Area	16	0	4095
D	DM Area	16	0	32767
E0	EM Bank 0	16	0	32767
E1	EM Bank 1	16	0	32767
E2	EM Bank 2	16	0	32767
E3	EM Bank 3	16	0	32767
E4	EM Bank 4	16	0	32767
E5	EM Bank 5	16	0	32767
E6	EM Bank 6	16	0	32767
E7	EM Bank 7	16	0	32767
E8	EM Bank 8	16	0	32767
E9	EM Bank 9	16	0	32767

EA	EM Bank 10	16	0	32767
EB	EM Bank 11	16	0	32767
EC	EM Bank 12	16	0	32767
EM	Current EM Bank	16	0	32767
DR	Data Register	16	0	15
IR	Index Register	32	0	15

2.3.5.3 Connected Setting

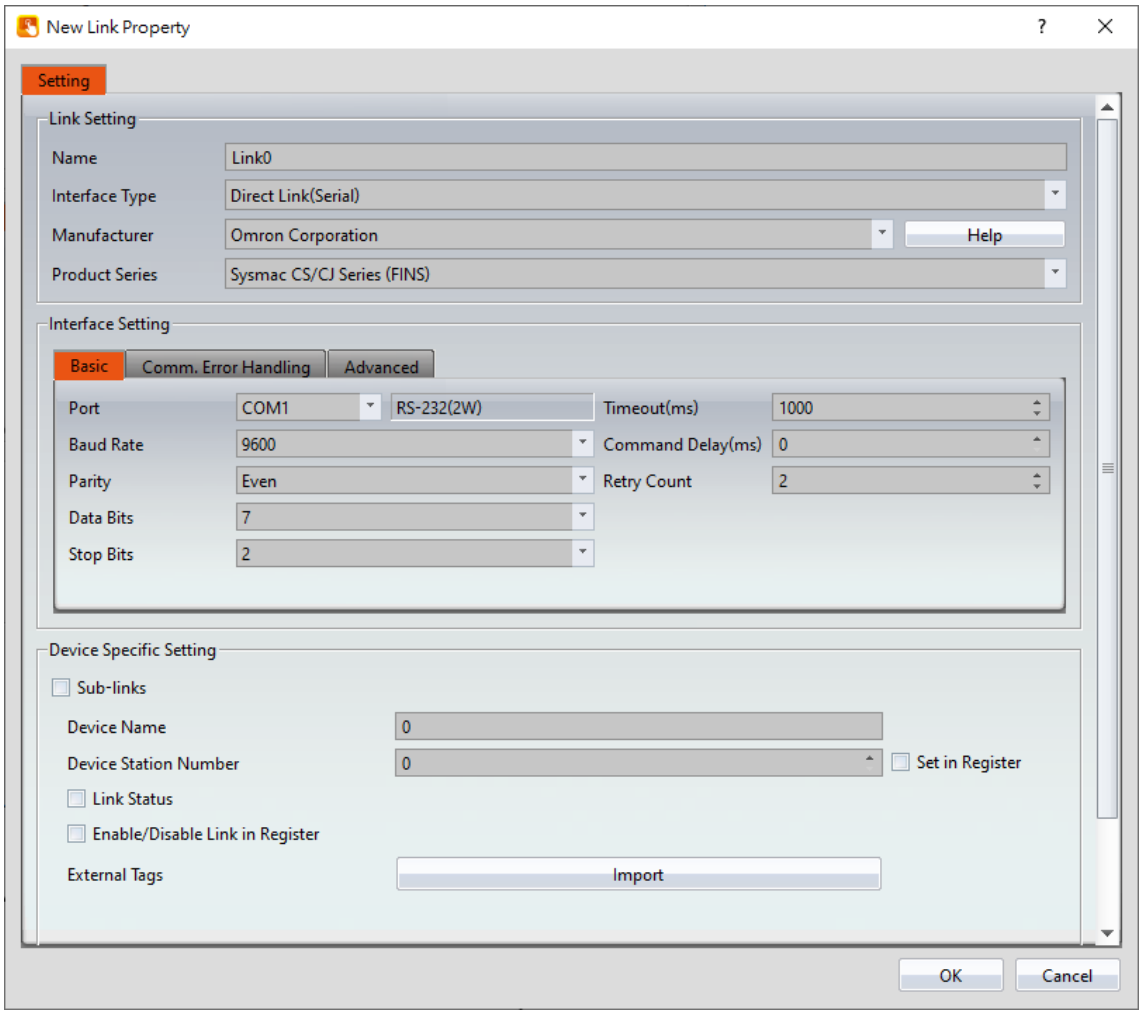
Configuring of PLC

To modify the communication parameters of the PLC using「CX-Programmer」, click on "Settings" → "Port" for modification.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



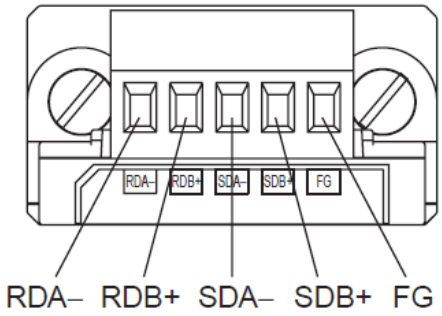
Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Omron Corporation
Under **Product Series** select Sysmac CS/CJ Series (FINS)
Under **Port** select COM3

2.3.5.4 PLC Message

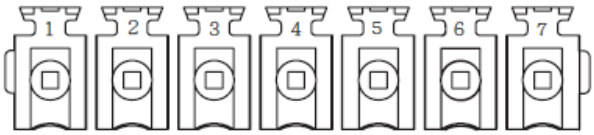
When the first 4 error codes are 200A, it means that the last 4 error codes are created by PLC.
Please refer to PLC manual https://www.automationdirect.com/microsites/c-more/software-help/Content/476.htm

2.3.5.5 Wiring Diagrams

CJ1W-CIF11 (RS422/485)



HMI COM3 Pinout



*Looking into HMI Device

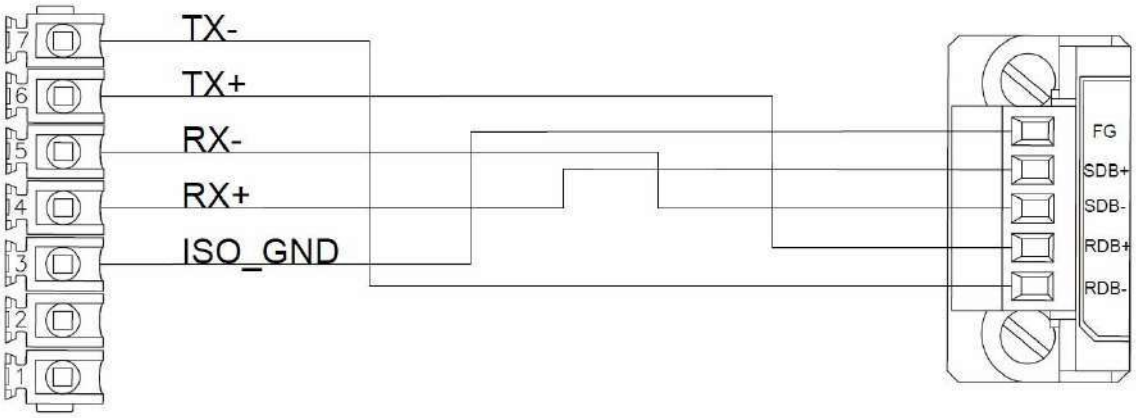
PIN#	COM3 (RS-422/RS-485)
1	
2	
3	ISO_GND
4	RX+
5	RX-
6	TX+
7	TX-

HMI COM3	PLC RS422 Port
5 RX-	SDA-
4 RX+	SDB+
7 TX-	RDA-
6 TX+	RDB+
3 ISO_GND	FG

Wiring Diagrams

HMI COM3

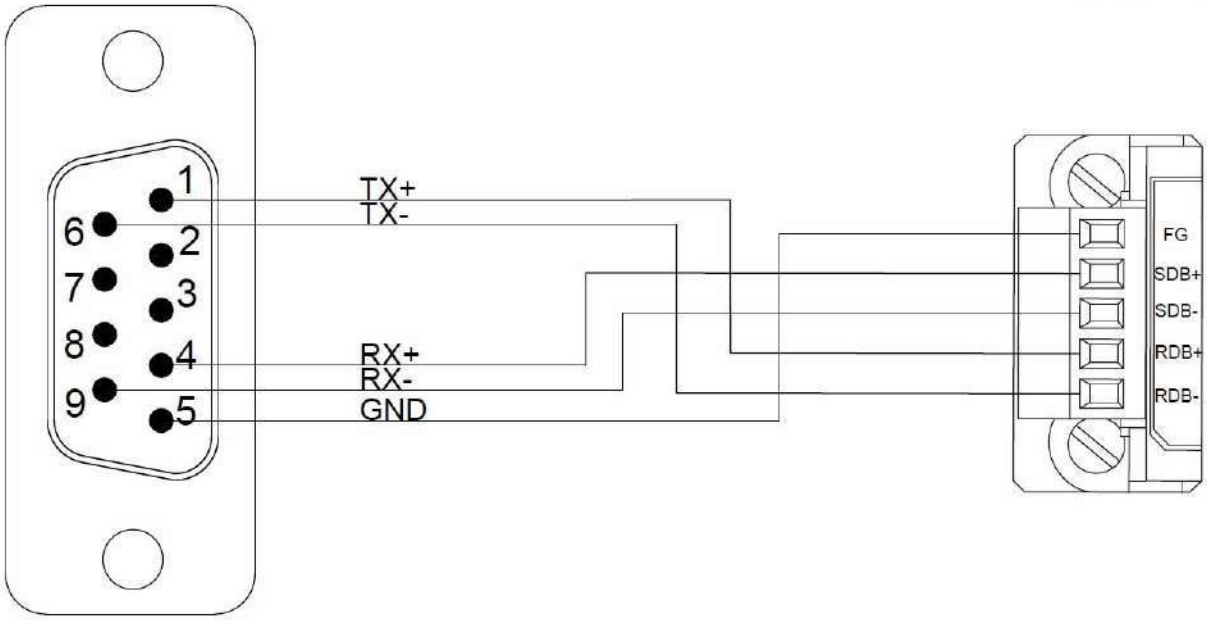
PLC RS485



HMI COM2	PLC RS422 Port
9 RX-	SDA-
4 RX+	SDB+
6 TX-	RDA-
1 TX+	RDB+
5 GND	FG

HMI COM2

PLC RS485



2.3.6 Sysmac CS/CJ Series (FINS/TCP)

2.3.6.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	To be configured
Port	9600	
PLC Station No.	0	
Communication Method	FINS/TCP	

2.3.6.2 Memory Resource Review

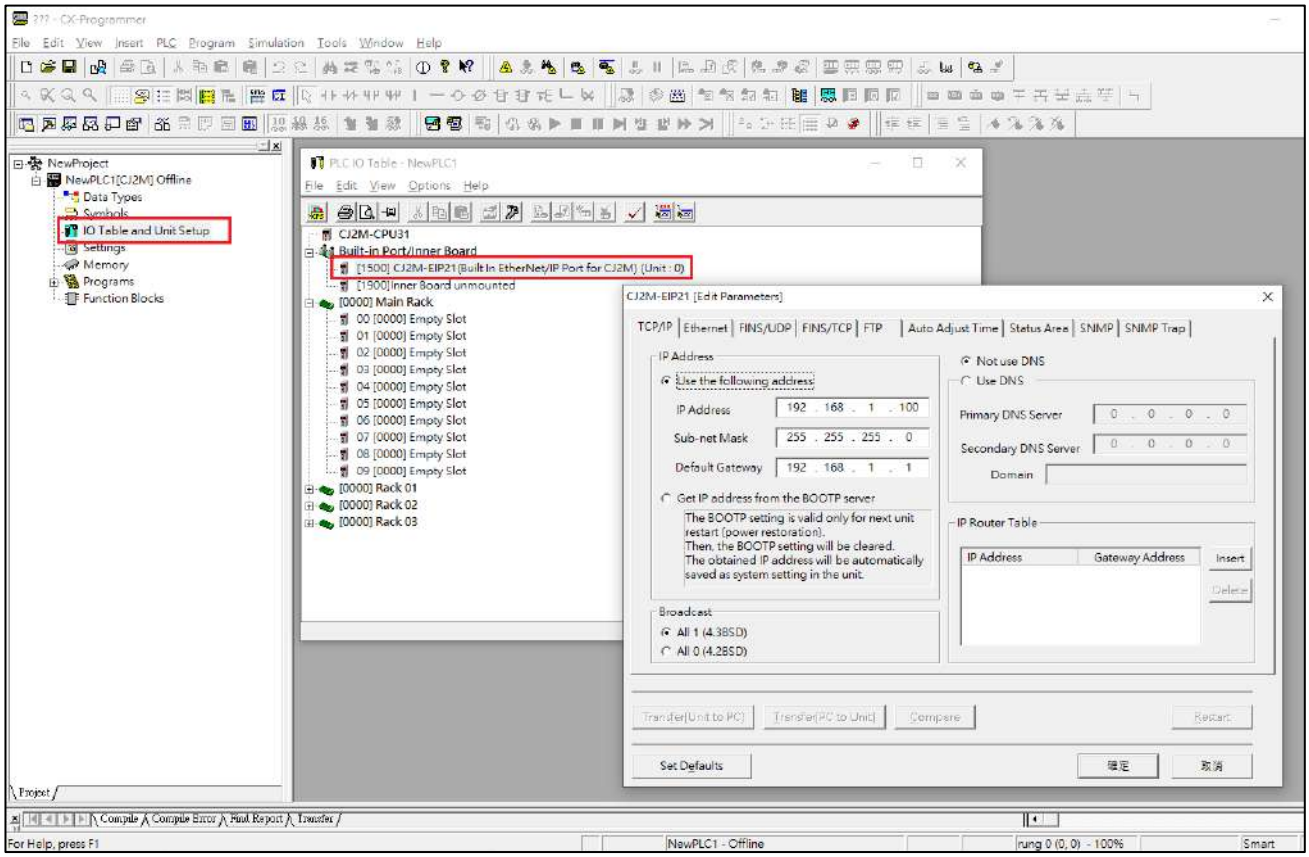
Device	Description	Data bit	Min.	Max.
TK	Task Flag	1	0	127
TIM	Timer Area	1	0	4095
CNT	Counter Area	1	0	4095
CIO	CIO Area	16	0	6143
W	Work Area	16	0	511
H	Holding Bit Area	16	0	1535
A	Auxiliary Bit Area	16	0	11535
T	Timer Area	16	0	4095
C	Counter Area	16	0	4095
D	DM Area	16	0	32767
E0	EM Bank 0	16	0	32767
E1	EM Bank 1	16	0	32767
E2	EM Bank 2	16	0	32767
E3	EM Bank 3	16	0	32767
E4	EM Bank 4	16	0	32767
E5	EM Bank 5	16	0	32767
E6	EM Bank 6	16	0	32767
E7	EM Bank 7	16	0	32767
E8	EM Bank 8	16	0	32767
E9	EM Bank 9	16	0	32767
EA	EM Bank 10	16	0	32767

EB	EM Bank 11	16	0	32767
EC	EM Bank 12	16	0	32767
EM	Current EM Bank	16	0	32767
DR	Data Register	16	0	15
IR	Index Register	32	0	15

2.3.6.3 Connected Setting

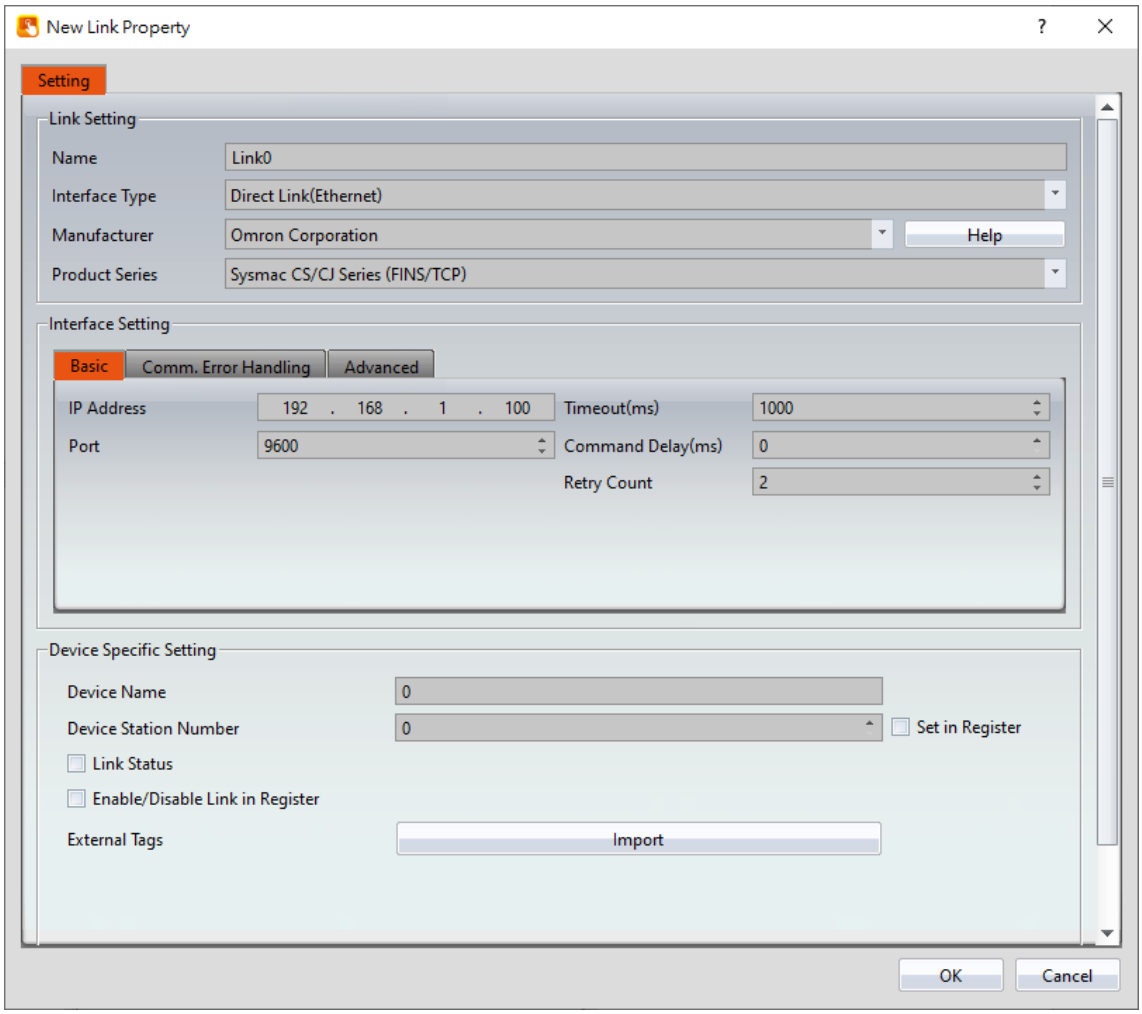
Configuring of PLC

Use **CX-Programmer** to configure the IP of the PLC.



Note: For more detailed information please refer to the PLC manual.

Connect PLC to HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Omron Corporation
Under **Product Series** select Sysmac CS/CJ Series (FINS/TCP)
Enter the **IP Address** that was written into the PLC
Enter 9600 for the Port

2.3.7 Omron Ethernet

2.3.7.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	192.168.250.1	
Port	9600	
PLC Station No.	0	
Communication Method	FINS/UDP	

2.3.7.2 Memory Resource Review

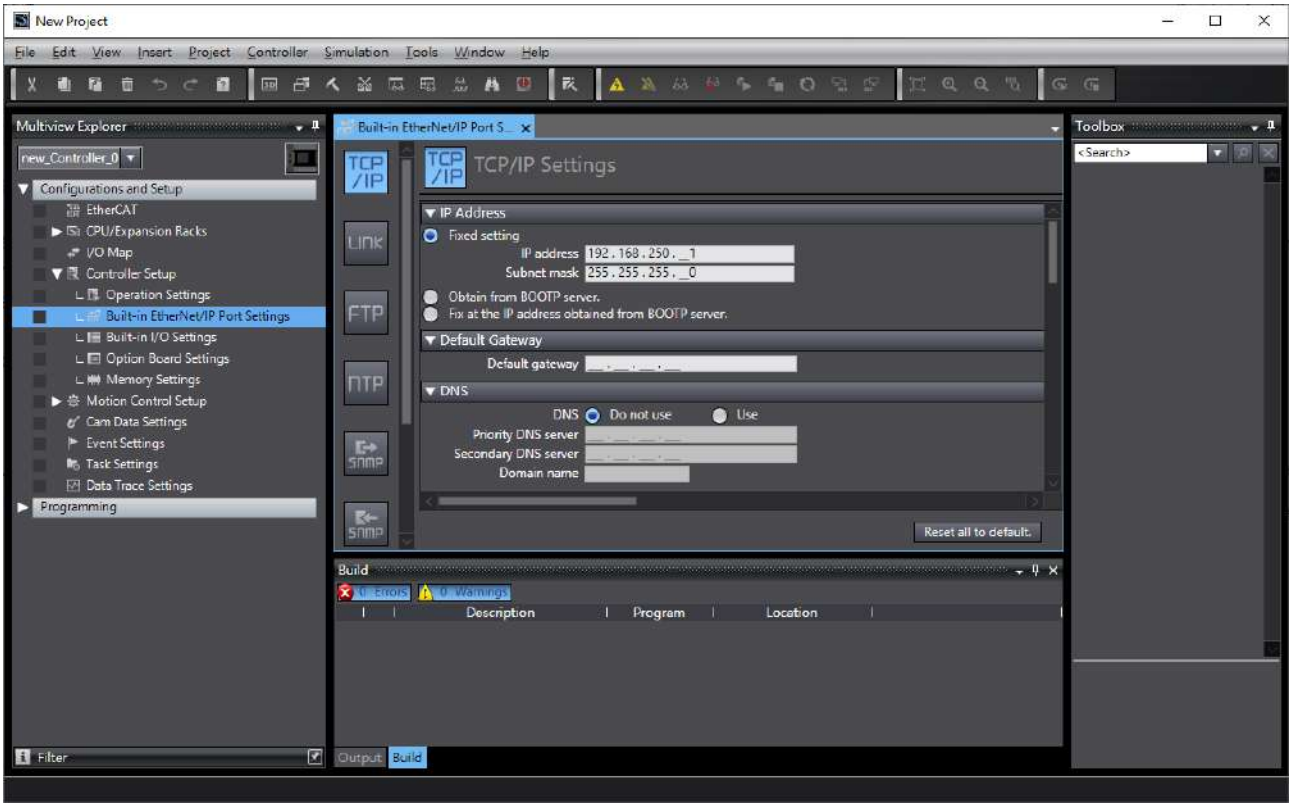
Device	Description	Data bit	Min	Max
TK	Task Flag	1	0	127
TIM	Timer Area	1	0	4095
CNT	Counter Area	1	0	4095
CIO	CIO Area	16	0	6143
W	Work Area	16	0	511
H	Holding Bit Area	16	0	1535
A	Auxiliary Bit Area	16	0	11535
T	Timer Area	16	0	4095
C	Counter Area	16	0	4095
D	DM Area	16	0	32767
E0_	EM Bank 0	16	0	32767
E1_	EM Bank 1	16	0	32767
E2_	EM Bank 2	16	0	32767
E3_	EM Bank 3	16	0	32767
E4_	EM Bank 4	16	0	32767
E5_	EM Bank 5	16	0	32767
E6_	EM Bank 6	16	0	32767
E7_	EM Bank 7	16	0	32767
E8_	EM Bank 8	16	0	32767
E9_	EM Bank 9	16	0	32767
EA_	EM Bank 10	16	0	32767
EB_	EM Bank 11	16	0	32767
EC_	EM Bank 12	16	0	32767

EM_	Current EM Bank	16	0	32767
DR	Data Register	16	0	15
IR	Index Register	32	0	15

2.3.7.3 Connected Setting

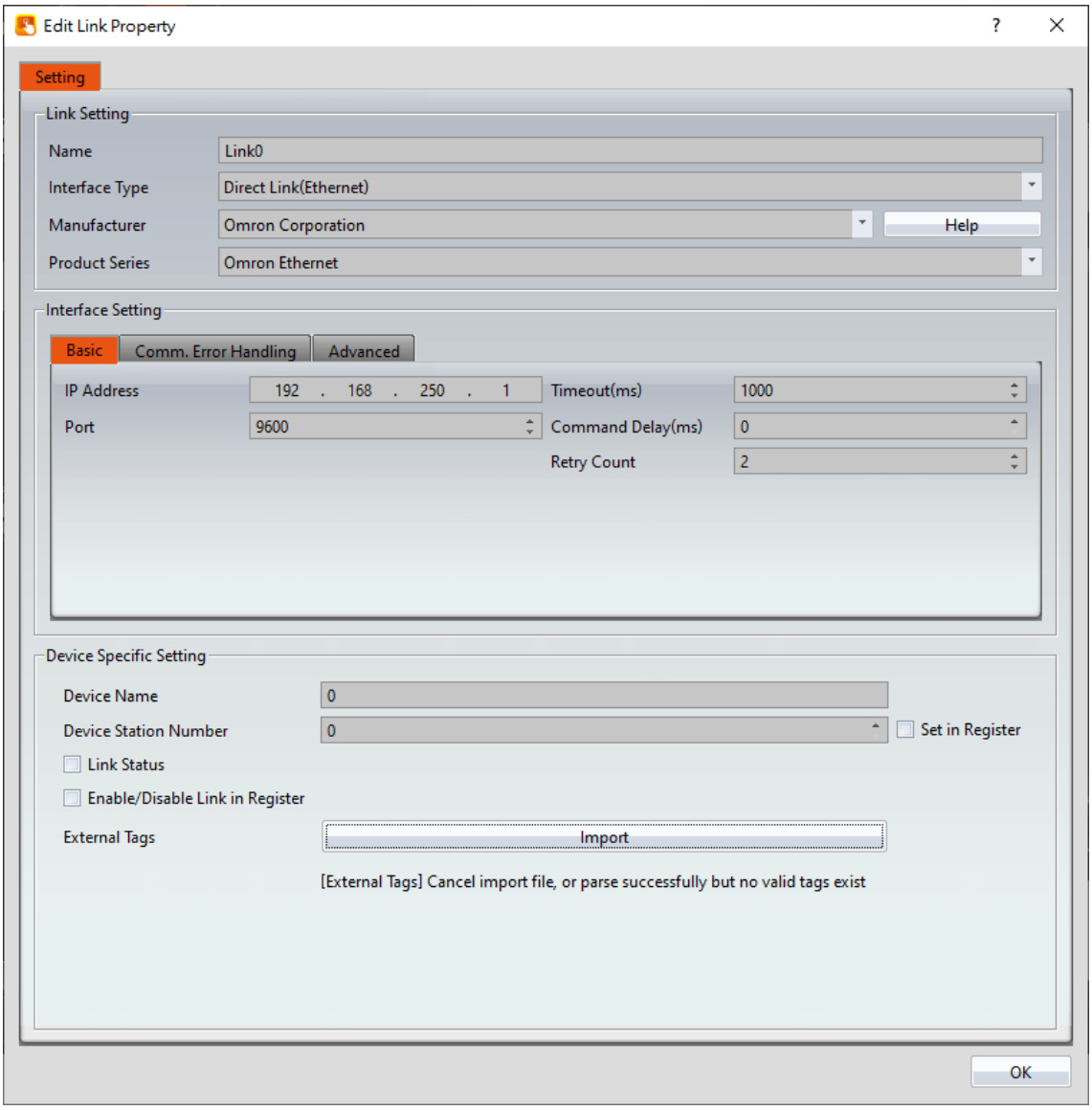
Configuring of PLC

Using "**Sysmac Studio**" and set the IP address in the "**Build-in Ethernet/IP Port Settings**" section.



Note: For more detailed information please refer to the PLC manual.

Configuring the HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Omron Corporation
Under **Product Series** select Sysmac Omron Ethernet
Enter the **IP Address** that was written into the PLC
Enter 9600 for the Port

2.3.8 Sysmac NJ/NX Series (EtherNet/IP)

2.3.8.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	192.168.250.1	
Port	44818	
PLC Station No.	1	
Communication Method	EtherNet/IP	

2.3.8.2 Memory Resource Review

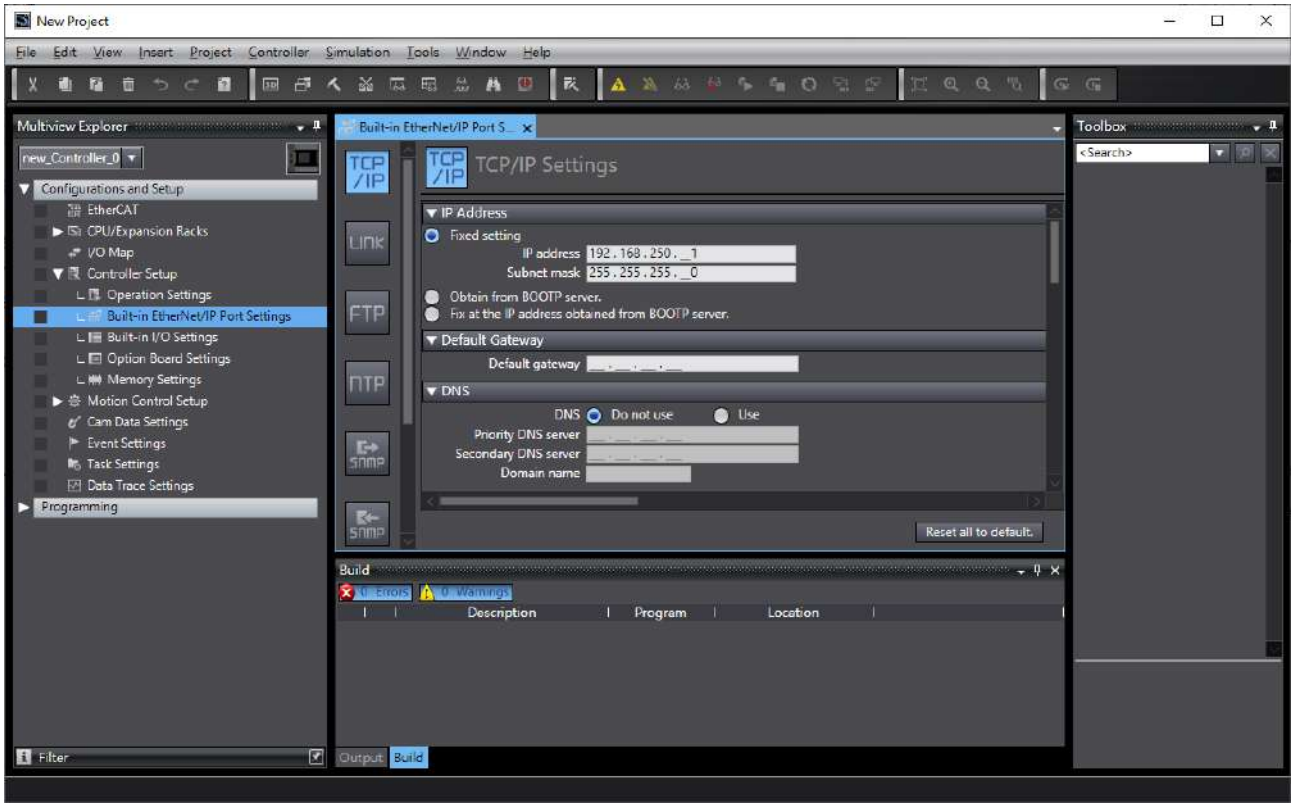
Device		Data bit	Description
BOOL	---	1	boolean value
BYTE	---	8	byte value
SINT	---	8	short integer value
USINT	---	8	unsigned short integer value
INT	---	16	integer value
UINT	---	16	unsigned integer value
WORD	---	16	word value
DINT	---	32	double integer value
DWORD	---	32	double word value
REAL	---	32	float value
UDINT	---	32	unsigned double integer value
BOOL[]	BOOL	1*n	array of Boolean value
BYTE[]	BYTE	8*n	array of byte value
SINT[]	SINT	8*n	array of short integer value
USINT[]	USINT	8*n	array of unsigned short integer value
INT[]	INT	16*n	array of integer value
UINT[]	UINT	16*n	array of unsigned integer value
WORD[]	WORD	16*n	array of word value
DINT[]	DINT	32*n	array of Double integer value
DWORD	DWOR	32*n	array of double word value

[]	D		
REAL[]	REAL	32*n	array of float value
UDINT[]	UDINT	32*n	array of unsigned double integer value

2.3.8.3 Connected Setting

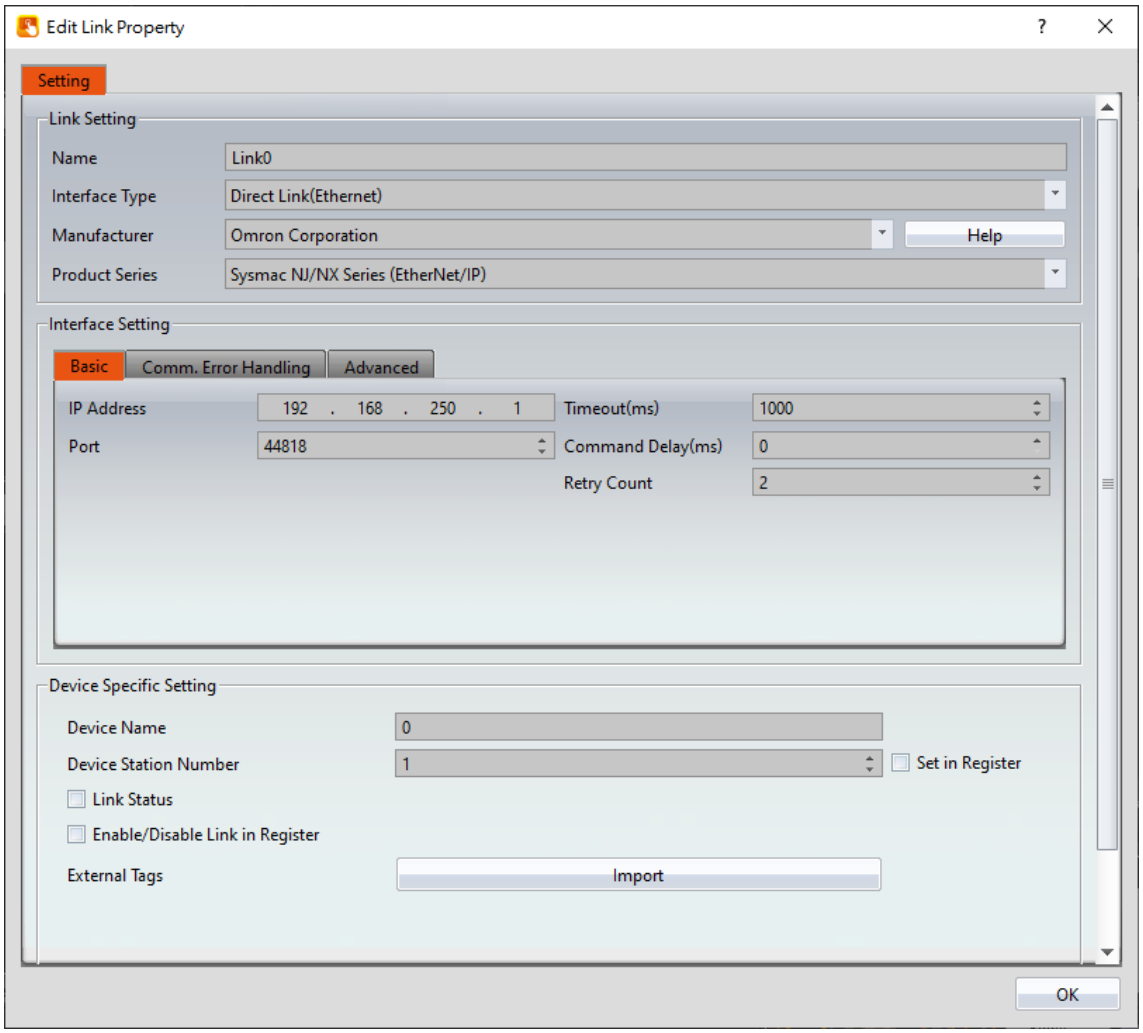
Configuring of PLC

Using "**Sysmac Studio**" and set the IP address in the "**Build-in Ethernet/IP Port Settings**" section.



Note: For more detailed information please refer to the PLC manual.

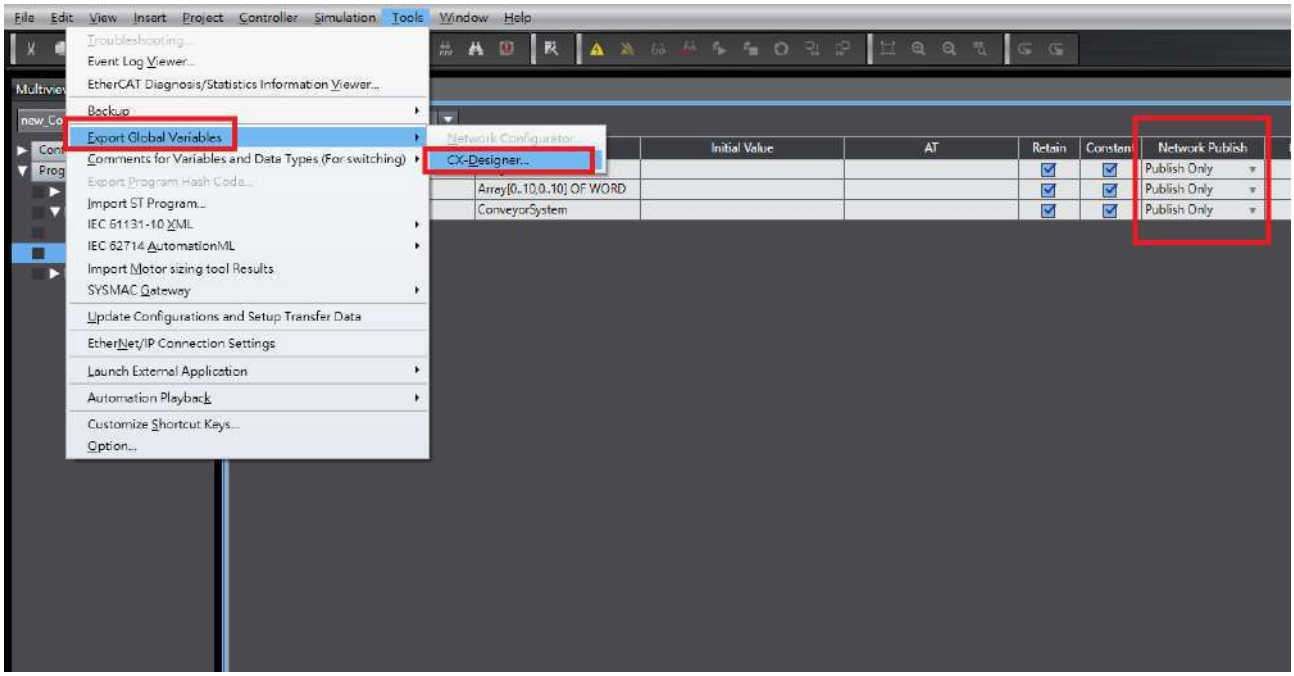
Configuring of HMI

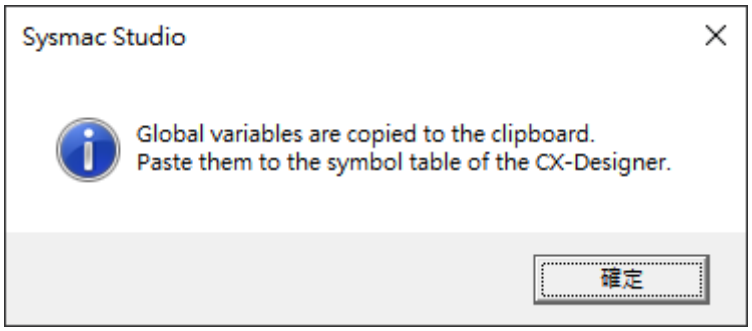


Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Omron Corporation
Under **Product Series** select SYSMAC NJ/NX Series(EtherNet/IP)
Enter the IP Address that was written into the PLC
Enter **44818** for the Port

Export the tags from the Sysmac Studio project.

Set the Tags to "Publish Only" and choose Tools -> Export Global Variables -> CX-Designer...

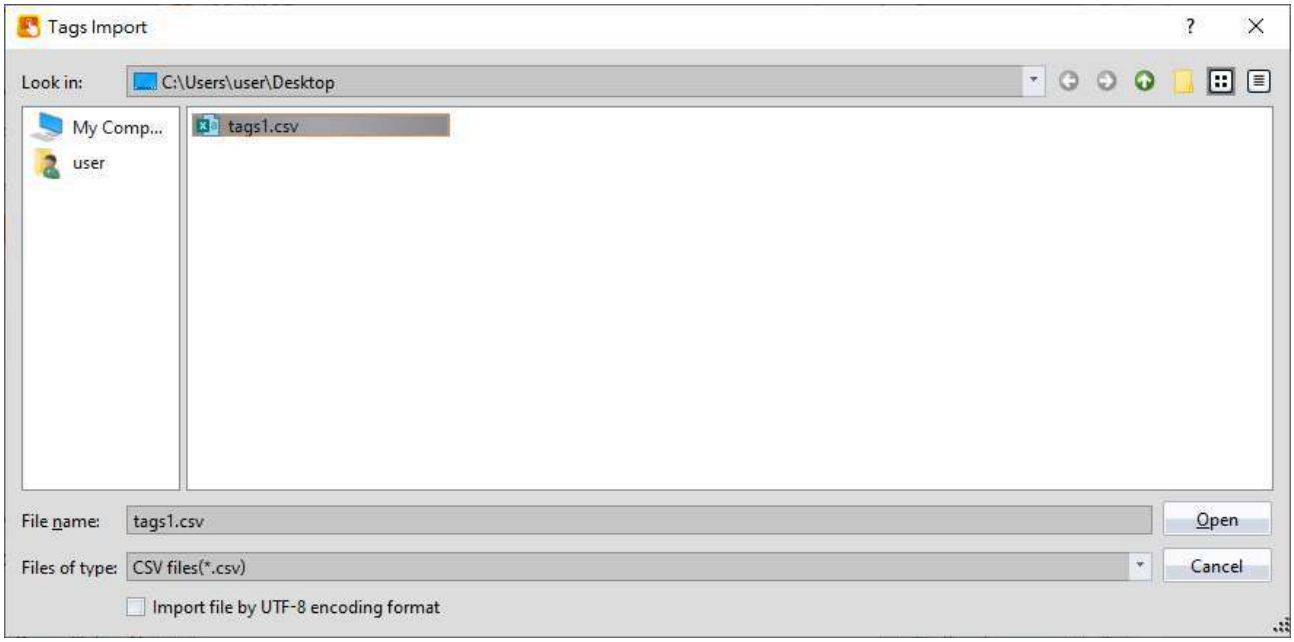


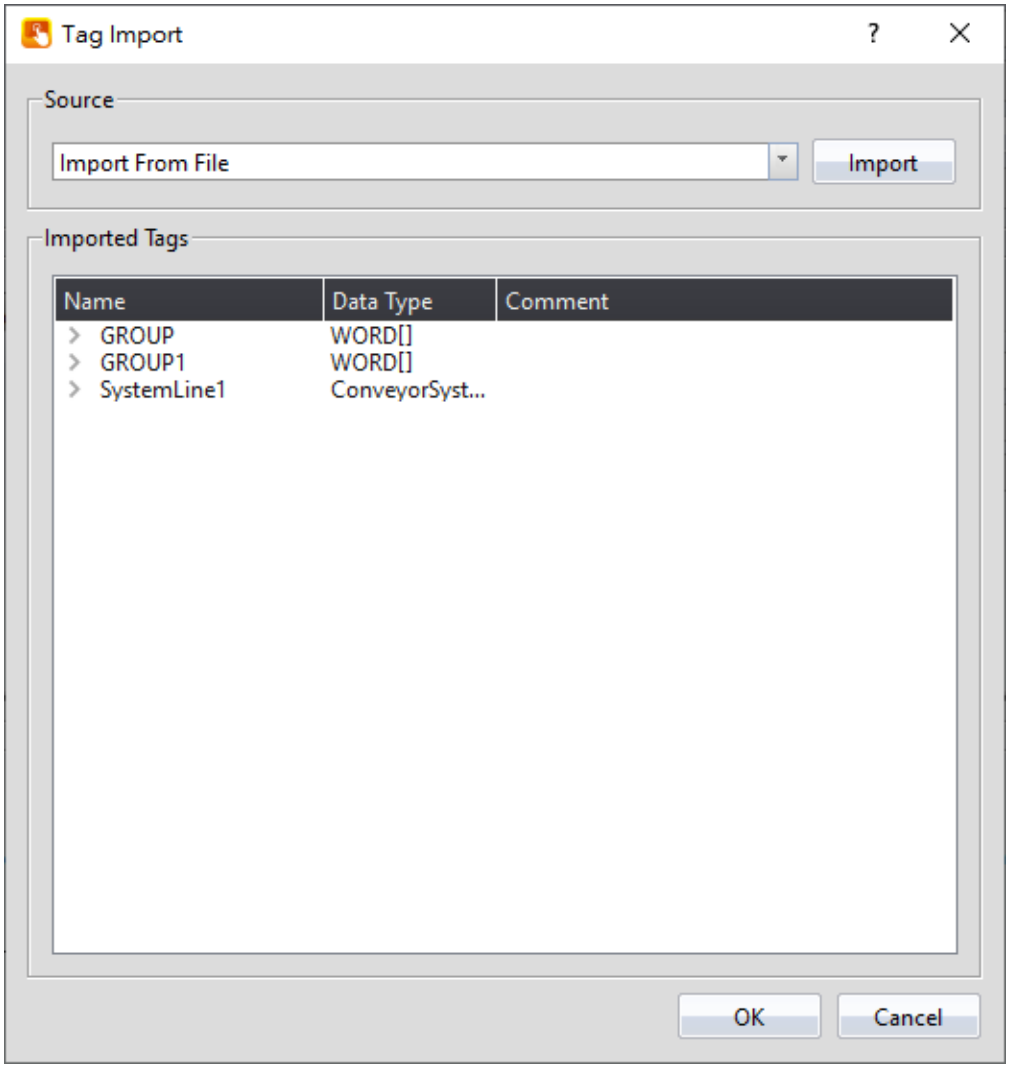


Paste the copied information into Excel, and choose "CSV (Comma delimited) (*.csv)" as the file type for saving.

	A	B	C	D	E	F	G	H
1	HOST	NAME	DATATYP	ADDRESS	COMMEN	TAGLINK	RW	POU
2		GROUP	WORD[0..10]			TRUE	RW	
3		GROUP1	WORD[0..10,0..10]			TRUE	RW	
4		SystemLine	BOOL			TRUE	RW	
5		SystemLine	BOOL			TRUE	RW	
6		SystemLine	BOOL			TRUE	RW	
7		SystemLine	BOOL			TRUE	RW	
8		SystemLine	BOOL			TRUE	RW	
9		SystemLine	BOOL			TRUE	RW	
10		SystemLine	BOOL			TRUE	RW	
11		SystemLine	BOOL			TRUE	RW	
12								

Then you can choose to import the External Tags.





2.3.9 Sysmac NJ Series (FINS/TCP)

2.3.9.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	192.168.250.1	
Port	9600	
PLC Station No.	0	
Communication Method	FINS/TCP	

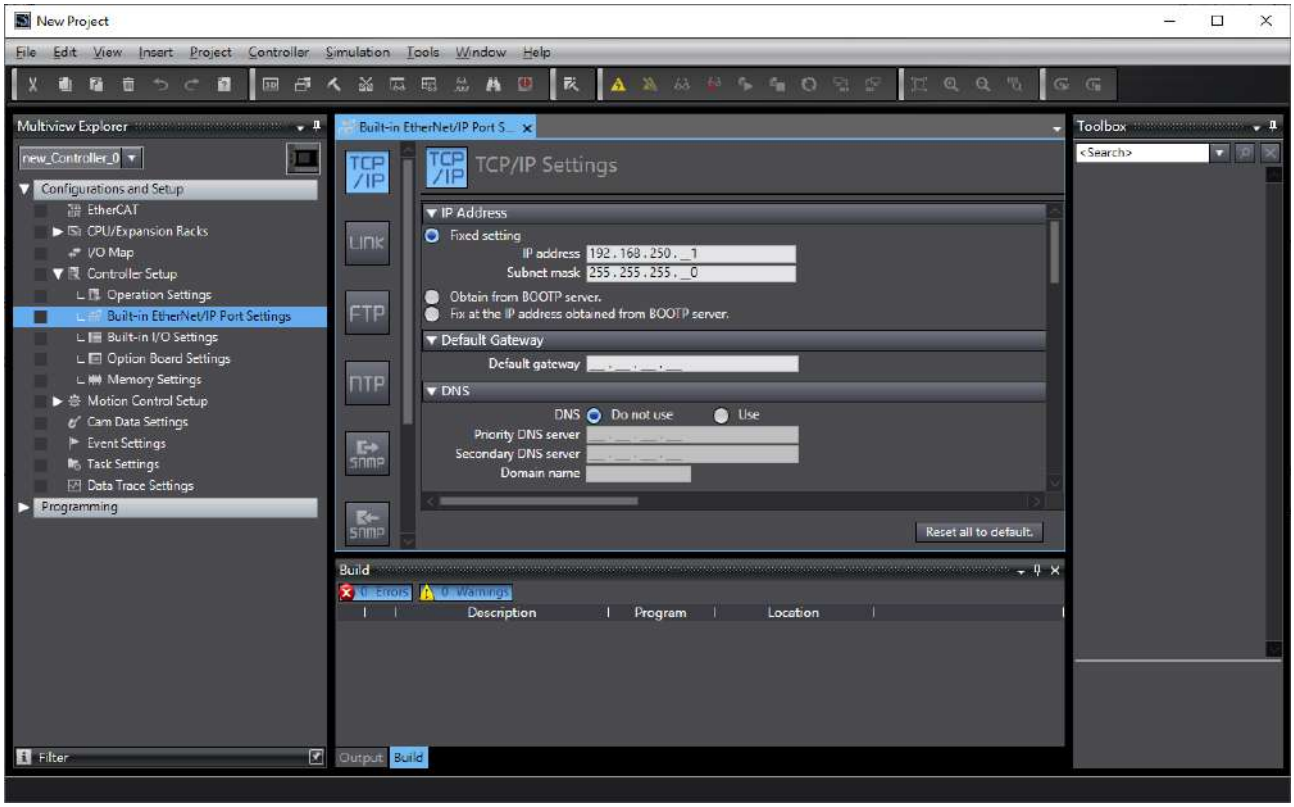
2.3.9.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
%	CIO Area	16	0	6143
%W	Work Area	16	0	511
%H	Holding Bit Area	16	0	1535
%D	DM Area	16	0	32767
%E0_	EM Bank 0	16	0	32767
%E1_	EM Bank 1	16	0	32767
%E2_	EM Bank 2	16	0	32767
%E3_	EM Bank 3	16	0	32767
%E4_	EM Bank 4	16	0	32767
%E5_	EM Bank 5	16	0	32767
%E6_	EM Bank 6	16	0	32767
%E7_	EM Bank 7	16	0	32767
%E8_	EM Bank 8	16	0	32767
%E9_	EM Bank 9	16	0	32767
%EA_	EM Bank 10	16	0	32767
%EB_	EM Bank 11	16	0	32767
%EC_	EM Bank 12	16	0	32767

2.3.9.3 Connected Setting

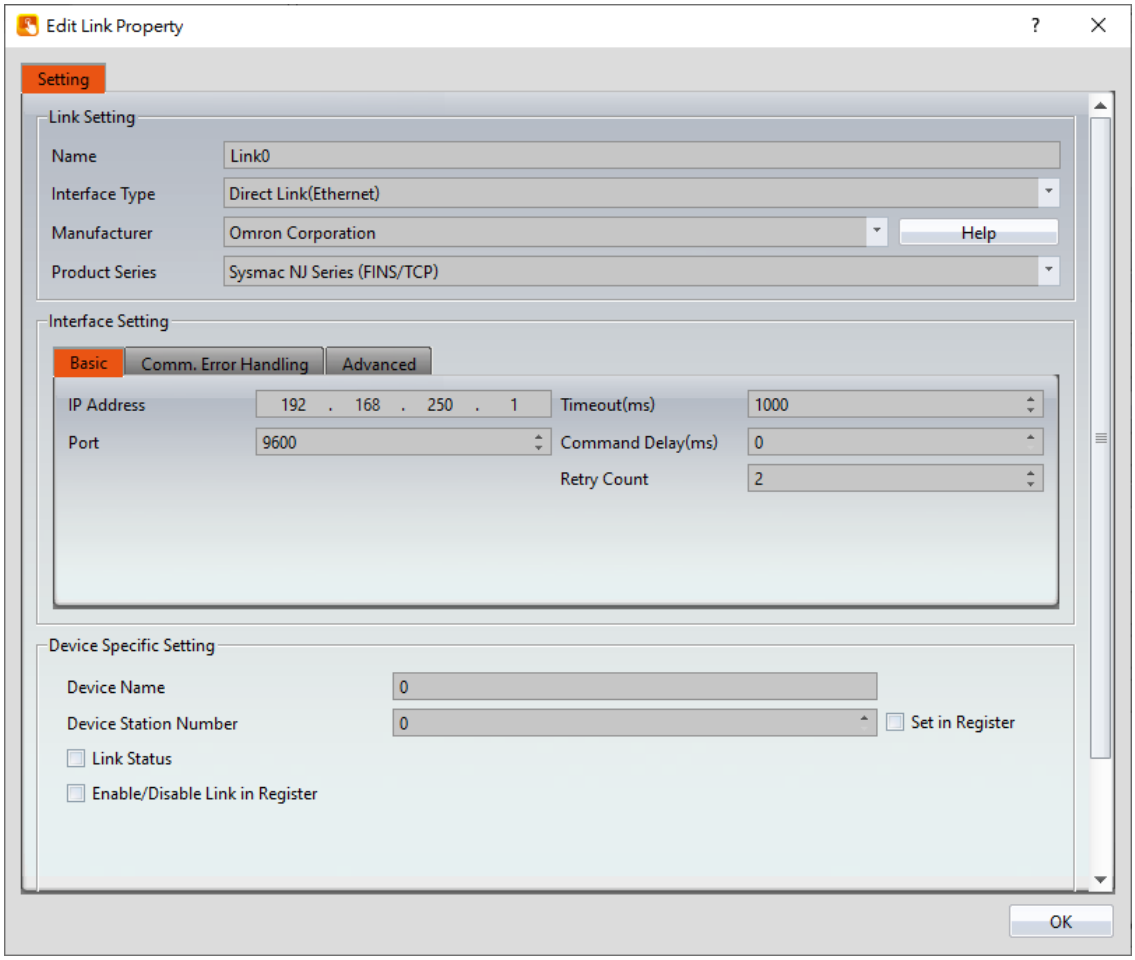
Configuring of PLC

Using "**Sysmac Studio**" and set the IP address in the "**Build-in Ethernet/IP Port Settings**" section.



Note: For more detailed information please refer to the PLC manual.

Configuring the HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Omron Corporation
Under **Product Series** select Sysmac NJ Series (FINS/TCP)
Enter the IP Address that was written into the PLC
Enter 9600 for the Port

2.3.10 Sysmac NX/NJ Series (FINS/UDP)

2.3.10.1 Communication Setting

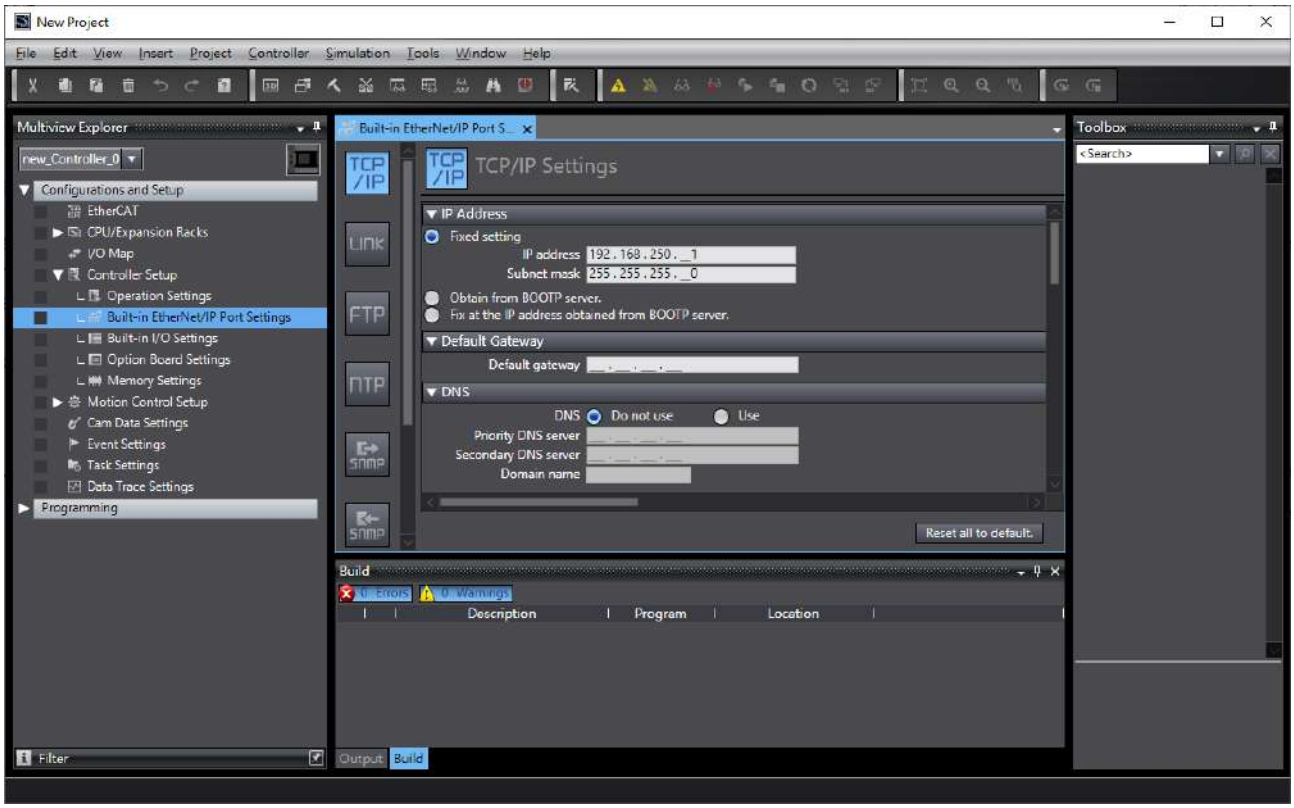
Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	192.168.250.1	
Port	9600	
PLC Station No.	0	
Communication Method	FINS/UDP	

2.3.10.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
%	CIO Area	16	0	6143
%W	Work Area	16	0	511
%H	Holding Bit Area	16	0	1535
%D	DM Area	16	0	32767
%E0_	EM Bank 0	16	0	32767
%E1_	EM Bank 1	16	0	32767
%E2_	EM Bank 2	16	0	32767
%E3_	EM Bank 3	16	0	32767
%E4_	EM Bank 4	16	0	32767
%E5_	EM Bank 5	16	0	32767
%E6_	EM Bank 6	16	0	32767
%E7_	EM Bank 7	16	0	32767
%E8_	EM Bank 8	16	0	32767
%E9_	EM Bank 9	16	0	32767
%EA_	EM Bank 10	16	0	32767
%EB_	EM Bank 11	16	0	32767
%EC_	EM Bank 12	16	0	32767

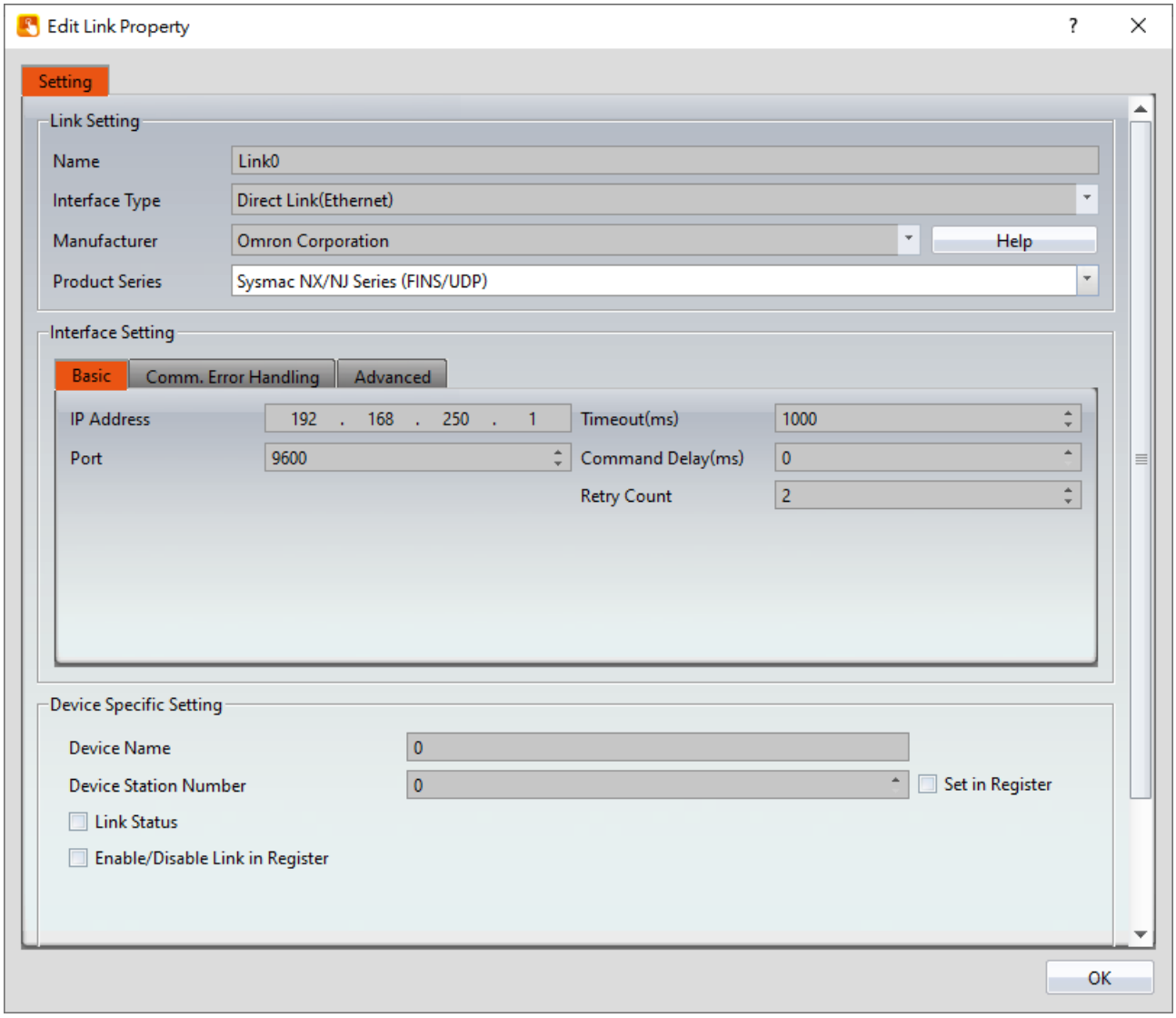
2.3.10.3 Connected Setting

Using "**Sysmac Studio**" and set the IP address in the "**Build-in Ethernet/IP Port Settings**" section.



Note: For more detailed information please refer to the PLC manual.

Configuring the HMI



Within the **Link** configuration window in FvDesigner:

Under **Interface Type** select Ethernet

Under **Manufacturer** select Omron Corporation

Under **Product Series** select Sysmac NJ Series (FINS/TCP)

Enter the IP Address that was written into the PLC

Enter 9600 for the Port

2.4 Siemens

2.4.1 Siemens S7-200 SMART

2.4.1.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS485 2W	
Baud Rate	9600	
Data Length	8	
Stop Bit	1	
Parity	Even	
PLC Station No.	2	
Communication Method	PPI	

2.4.1.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
I	Input	1	0	31
Q	Output	1	0	31
M	Bit Memory	1	0	31
V	Variable Memory	1	0	20479
C	Counter	1	0	255
T	Timer	1	0	255
S	Sequential Control Relays	1	0	31
SM	Special Memory Bit	1	0	1535
IW	Input	16	0	31
QW	Output	16	0	31
TW	Timer	16	0	255
CW	Counter	16	0	255
MW	Word Memory	16	0	31
SW	SCR	16	0	31
VW	V Memory	16	0	20479

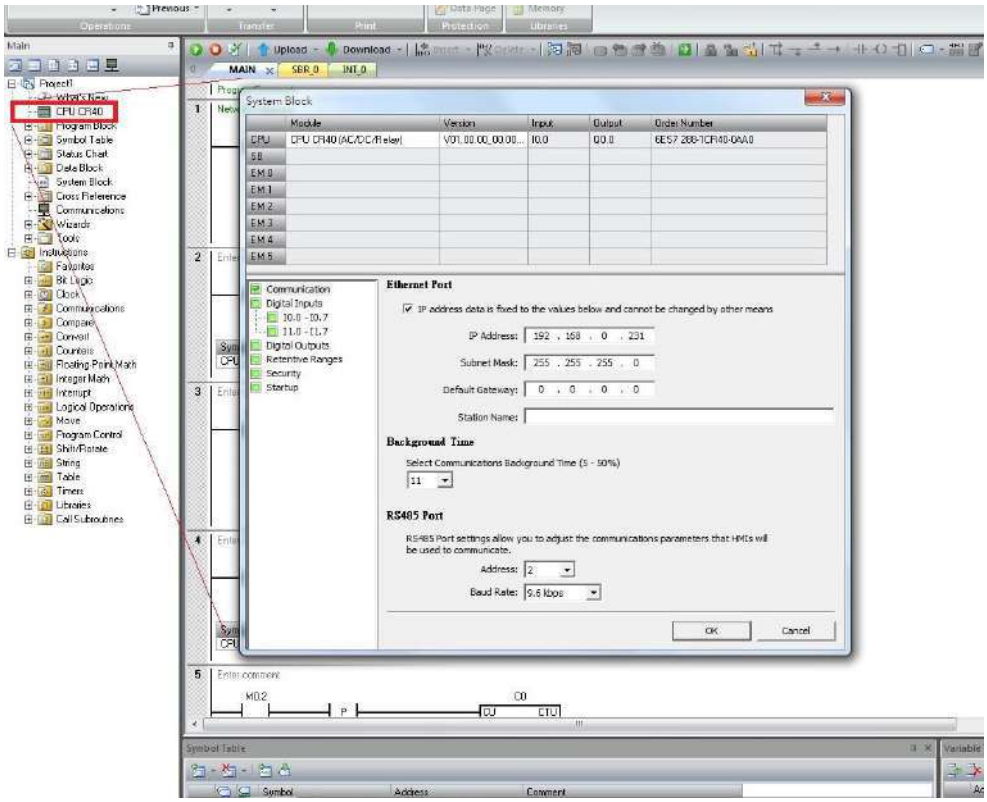
SMW	Special Memory	16	0	1535
AIW	Analog Input	16	0	111
AQW	Analog Output	16	0	111

2.4.1.3 Connected Setting

Configuring of PLC

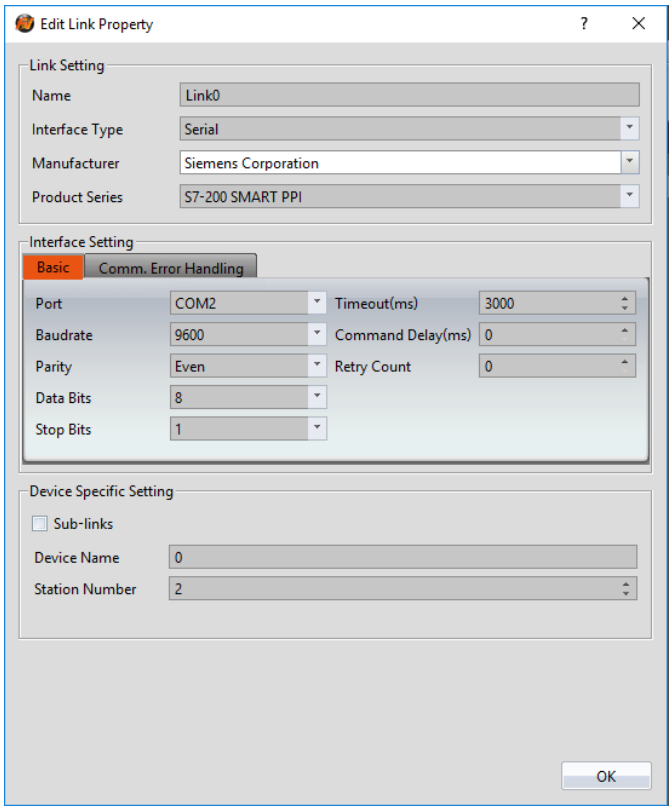
Use **Step7 microWIN smart** to configure the port of the PLC.

Under the Project Sidebar, expand **CPU model** and configure it to the settings detailed below.



Note: For more detailed information please refer to the PLC manual.

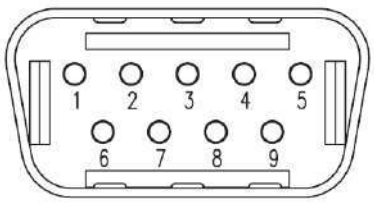
Configuring of HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Siemens Corporation
Under **Product Series** select S7-200 SMART PPI
Under **Port** select the port number that corresponds to the RS485 connection on the HMI.

2.4.1.4 Wiring Diagrams

PLC RS485 Port

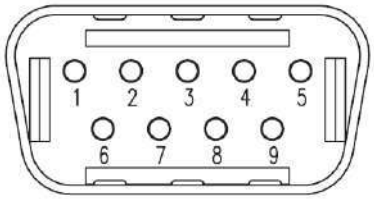


*Looking into male RS485 Cable

PIN#	Signal
1	
2	

3	DATA+
4	
5	GND
6	
7	
8	DATA-
9	

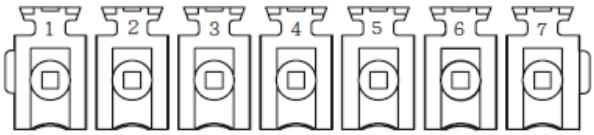
HMI COM2



*Looking into HMI

PIN#	COM2 (RS485)
1	DATA+
2	
3	
4	
5	GND
6	DATA-
7	
8	
9	

HMI COM3 Pinout



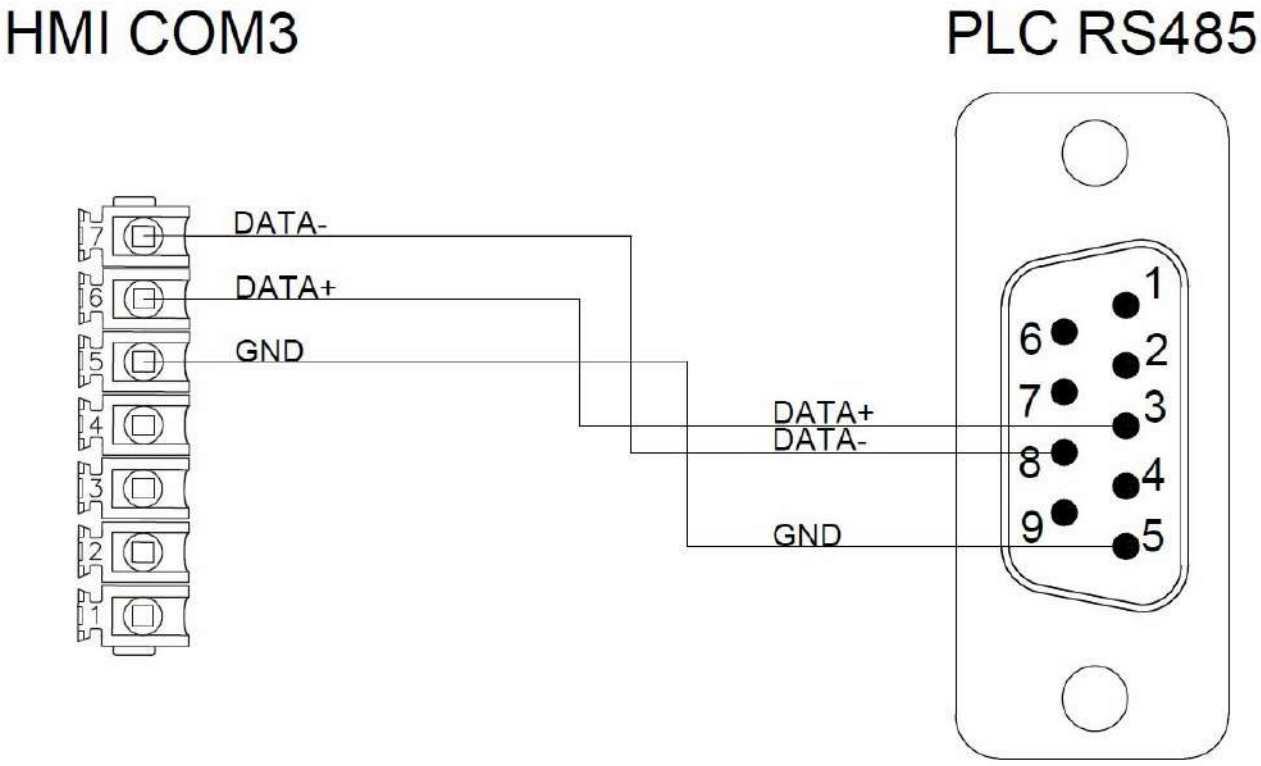
*Looking into HMI Device

PIN#	COM3 (RS-422/RS-485)
1	
2	
3	ISO_GND

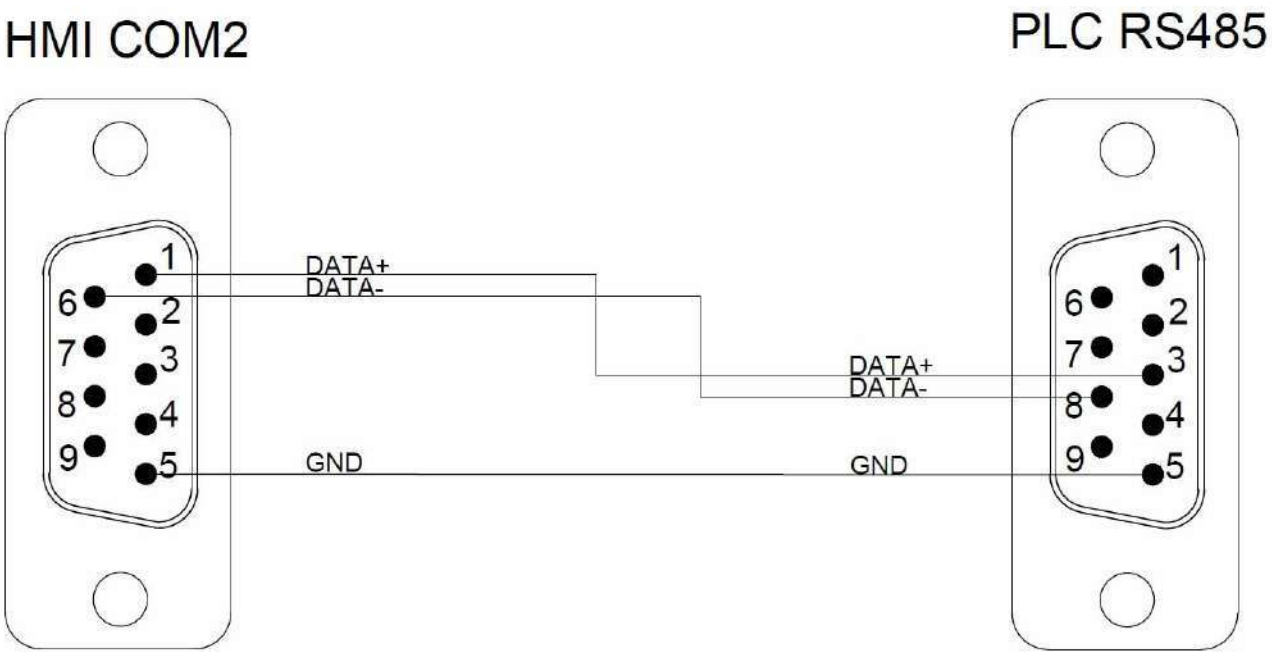
4	
5	
6	DATA+
7	DATA-

HMI COM3 Port	PLC RS485 Port
6 DATA+	3 DATA+
7 DATA-	8 DATA-
5 GND	5 GND

Wiring Diagrams



HMI COM3 Port	PLC RS485 Port
1 DATA+	3 DATA+
6 DATA-	8 DATA-
5 GND	5 GND


HMI COM2
PLC RS485
1
6
2
7
3
8
4
9
5
DATA+
DATA-
GND
DATA+
DATA-
GND

2.4.2 Siemens S7-200 SMART Ethernet

2.4.2.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	To be configured
Port	102	
PLC Station No.	0	
Communication Method	ISO TCP	

2.4.2.2 Memory Resource Review

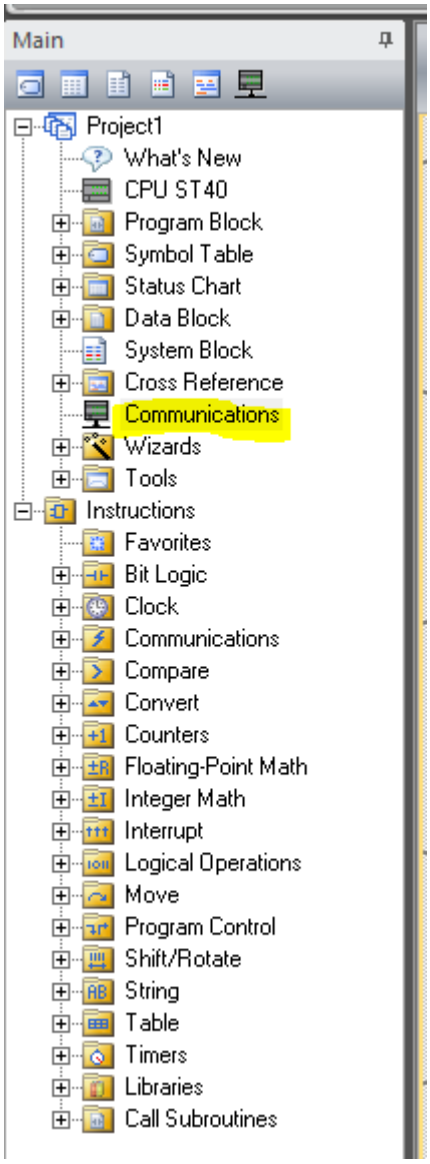
Device	Description	Data bit	Min.	Max.
I	Input	1	0	31.7
Q	Output	1	0	31.7
M	Bit Memory	1	0	31.7
V	Variable Memory	1	0	20479.7
C	Counter	1	0	255
T	Timer	1	0	255
S	Sequential Control Relays	1	0	31.7
SM	Special Memory Bit	1	0	1535.7
IW	Input	16	0	31
QW	Output	16	0	31
TW	Timer	16	0	255
CW	Counter	16	0	255
MW	Word Memory	16	0	31
SW	SCR	16	0	31
VW	V Memory	16	0	20479
SMW	Special Memory	16	0	1535
AIW	Analog Input	16	0	111
AQW	Analog Output	16	0	111

2.4.2.3 Connected Setting

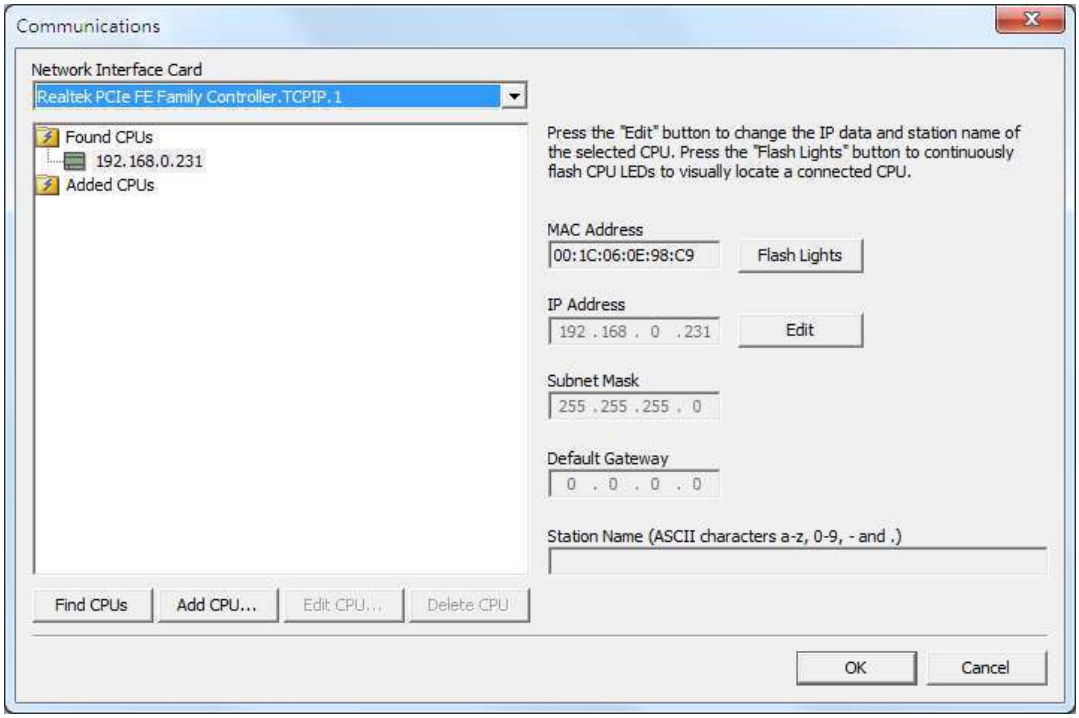
Configuring IP Address on PLC

Use the application **STEP 7-MicroWIN SMART** to configure the IP address of the PLC.

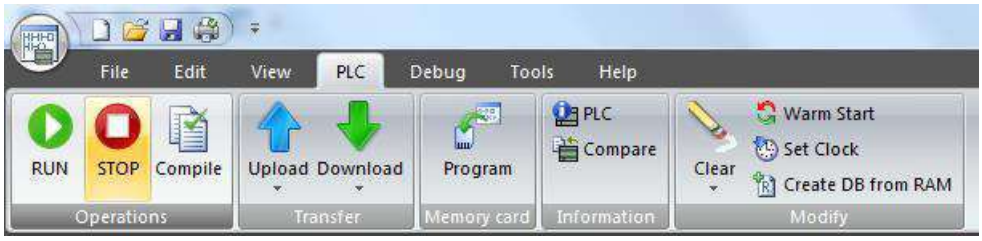
Under the **Project**, press the **Communications** option to connect to the PLC over the local network.



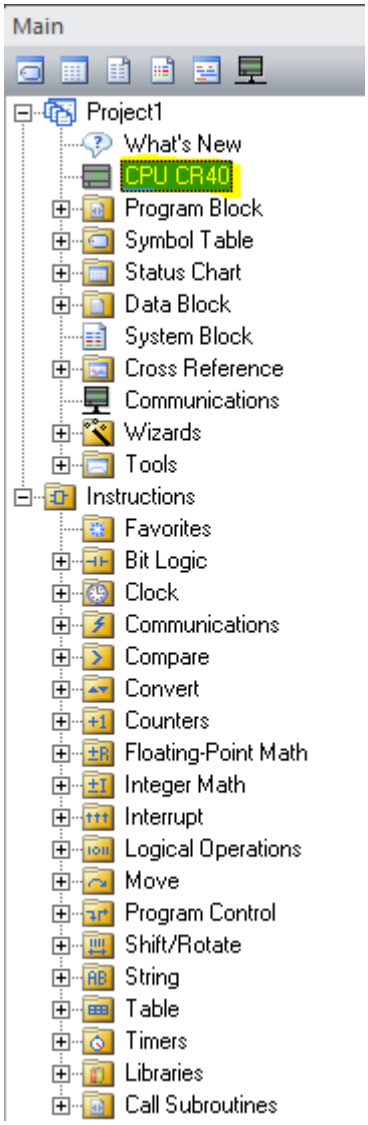
Under Network interface, select one of the options to scan the local network. The IP address of the PLC will show up. The MAC address can be verified with the one on the PLC.



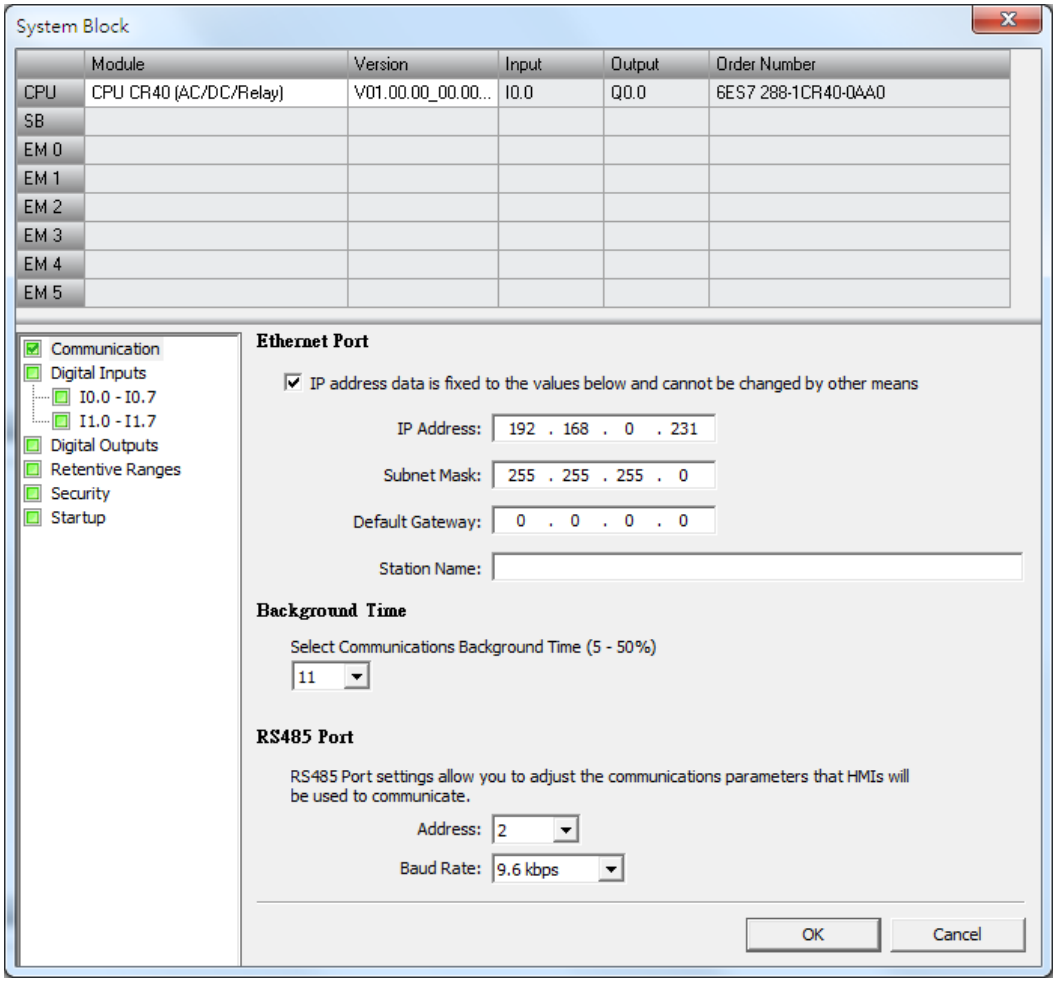
Navigate to the PLC tab and select to upload the PLC program onto the computer.



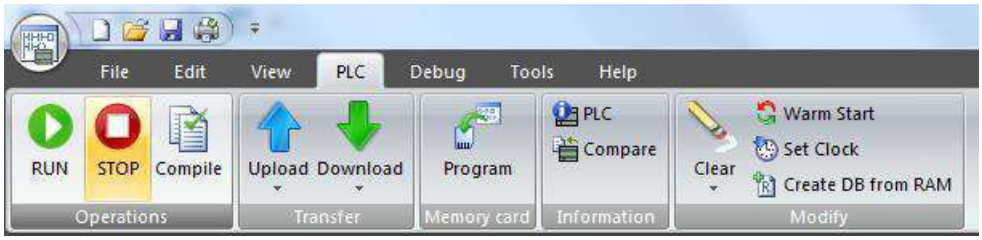
On the sidebar, right click CPU CR40 and select the first option. A dialog window will open up.



In the dialog window, the IP address can be changed. Press OK to confirm the setting.



In the PLC tab, select to download the settings onto the PLC.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI

Within the **Link** configuration window in FvDesigner:

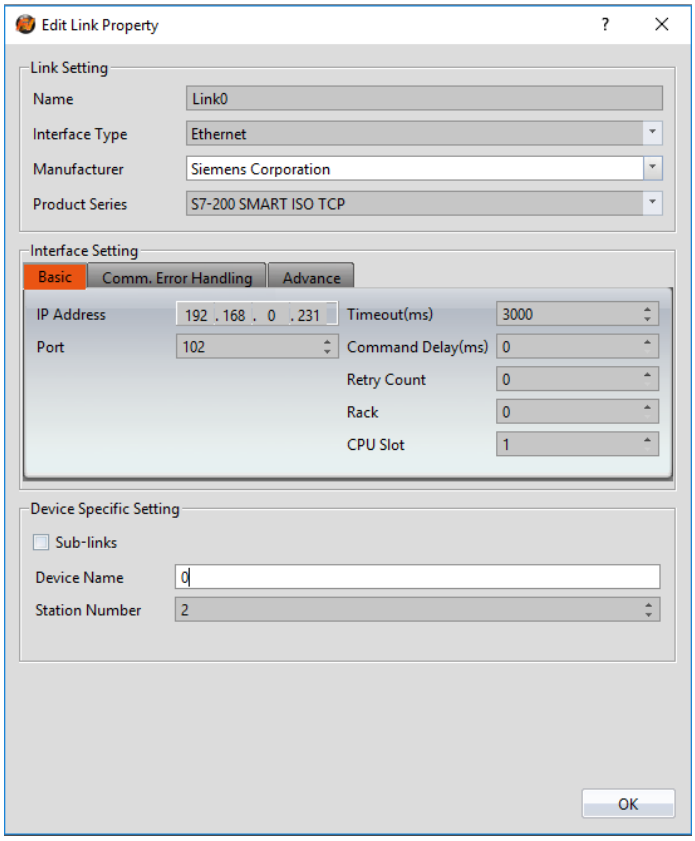
Under **Interface Type** select Ethernet

Under **Manufacturer** select Siemens Corporation

Under **Product Series** select S7-200 SMART ISO TCP

Enter the **IP Address** that was written into the PLC.

Enter the **Port** number that was set on the PLC. The default is 102.


Edit Link Property
Link Setting
Name
Link0
Interface Type
Ethernet
Manufacturer
Siemens Corporation
Product Series
S7-200 SMART ISO TCP
Interface Setting
Basic
Comm. Error Handling
Advance
IP Address
192 . 168 . 0 . 231
Port
102
Timeout(ms)
3000
Command Delay(ms)
0
Retry Count
0
Rack
0
CPU Slot
1
Device Specific Setting
Sub-links
Device Name
0
Station Number
2
OK

2.4.3 Siemens S7-1200 Ethernet

2.4.3.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	To be configured
Port	102	
PLC Station No.	0	
Communication Method	ISO TCP	

2.4.3.2 Memory Resource Review

Device	Description	Data bit	Min.	Max.
I	Input	1	0	1022.7
Q	Output	1	0	1022.7
M	Bit Memory	1	0	1022.7
IW	Input	16	0	1022
QW	Output	16	0	1022
MW	Word Memory	16	0	1022

2.4.3.3 Support Data block type

Data block type	Size
Bool	Bit
Byte	8-bit
SInt	8-bit
USInt	8-bit
Word	16-bit
Int	16-bit
UInt	16-bit
DWord	32-bit
DInt	32-bit
UDInt	32-bit

Real	32-bit
String	Length = 254 byte

Please make sure that proper setting is in TIA:

(1) [DB Properties]→[Attributes]→[Optimized block access] is unchecked

(2) [PLC program Properties]→[Protection]→[Permit access with PUT/GET communication from remote partner (PLC,HMI,OPC,…] is checked.

2.4.3.4 Connected Setting

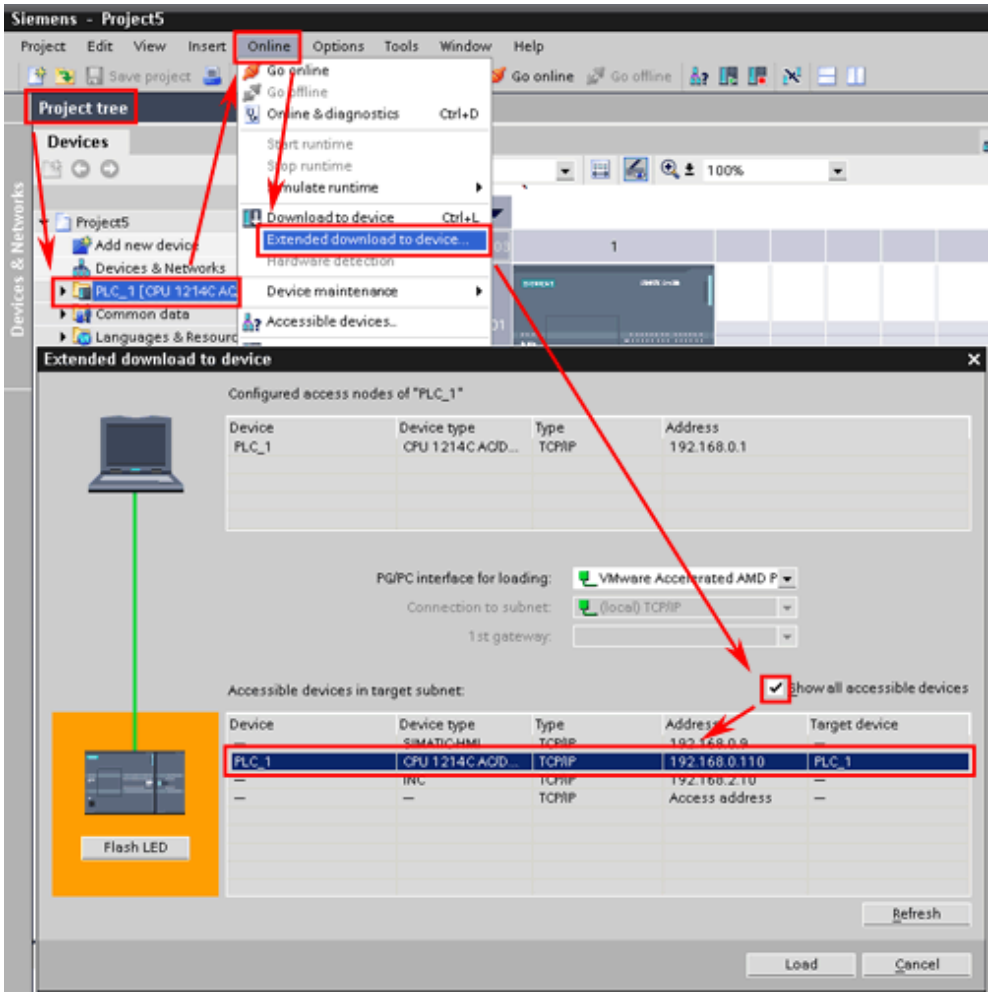
Configuring IP Address on PLC

Use the application **TIA V13 Step Basic** to configure the IP address on the PLC.

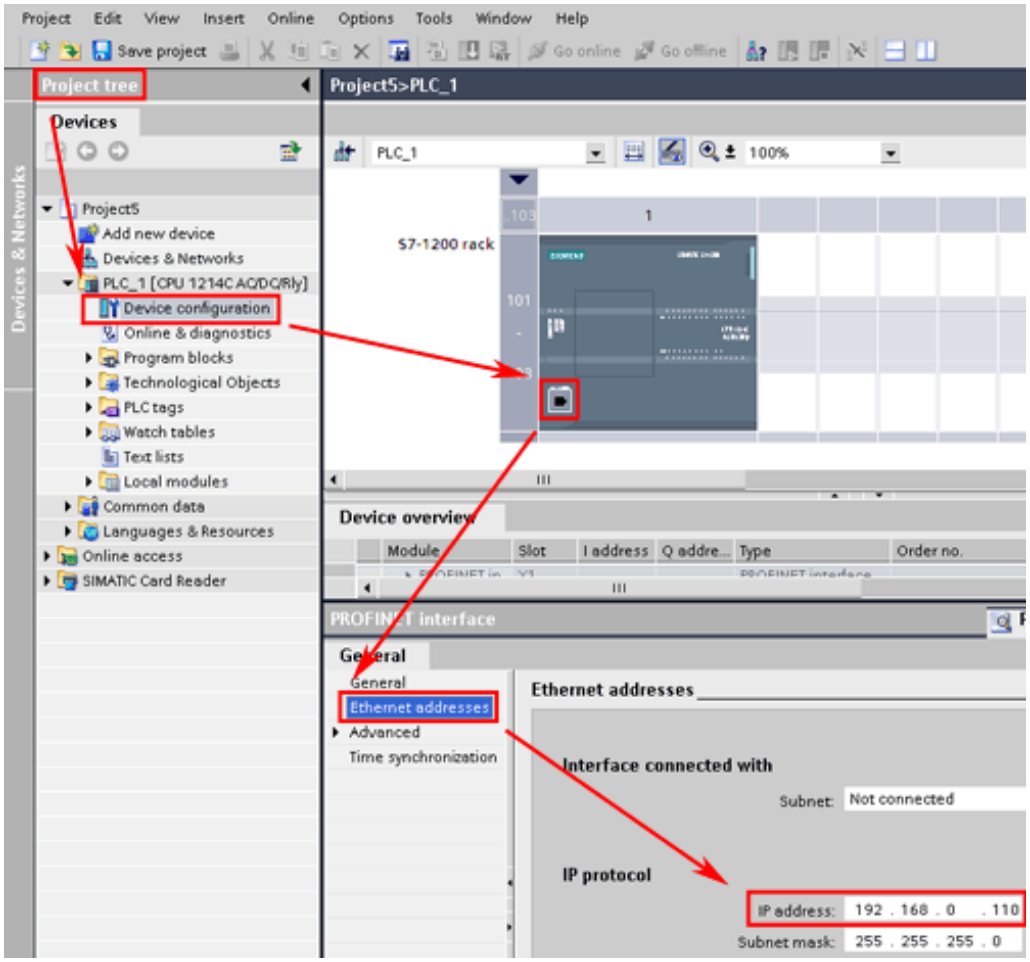
Open a new project and add the device to be configured.

In the Project tree sidebar, select the device and navigate to the **Online** menu option. Under the Online menu option, select **Extend Download to Device**.

Select the appropriate network interfaces and check **Show all accessible devices**. The application will scan the network for the device. When the device shows up, select it.

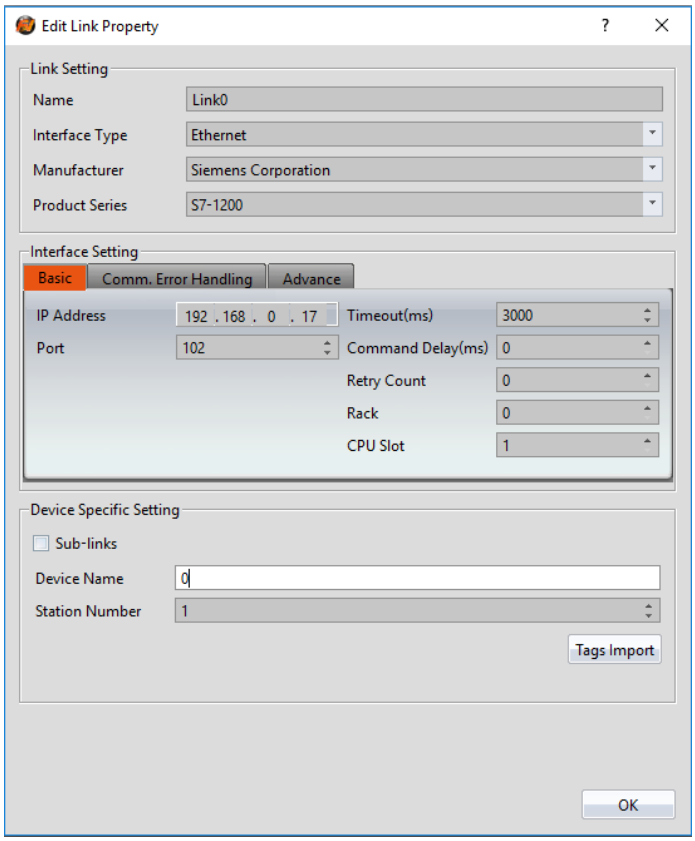


Under the device in the project tree, select **Device configuration** and click the Ethernet port on the device image. Under the **Ethernet addresses** menu option, the IP address can be configured.



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Ethernet
Under **Manufacturer** select Siemens Corporation
Under **Product Series** select S7-1200
Enter the **IP Address** that was written into the PLC.
Enter the **Port** number that was set on the PLC. The default is 102.

2.4.4 Siemens S7-200

2.4.4.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS485 2W	
Baud Rate	9600	
Data Length	8	
Stop Bit	1	
Parity	Even	
PLC Station No.	2	
Communication Method	PPI	

2.4.4.2 Memory Resource Review

Device	Description	Data Bit	Min.	Max.
I	Input	1	0	15
Q	Output	1	0	15
M	Bit Memory	1	0	31
V	Variable Memory	1	0	10239
C	Counter	1	0	255
T	Timer	1	0	255
S	Sequential Control Relays	1	0	31
SM	Special Memory Bit	1	0	549
IW	Input	16	0	14
QW	Output	16	0	14
TW	Timer	16	0	255
CW	Counter	16	0	255
MW	Word Memory	16	0	30
SW	SCR	16	0	30
VW	V Memory	16	0	10238
SMW	Special Memory	16	0	548

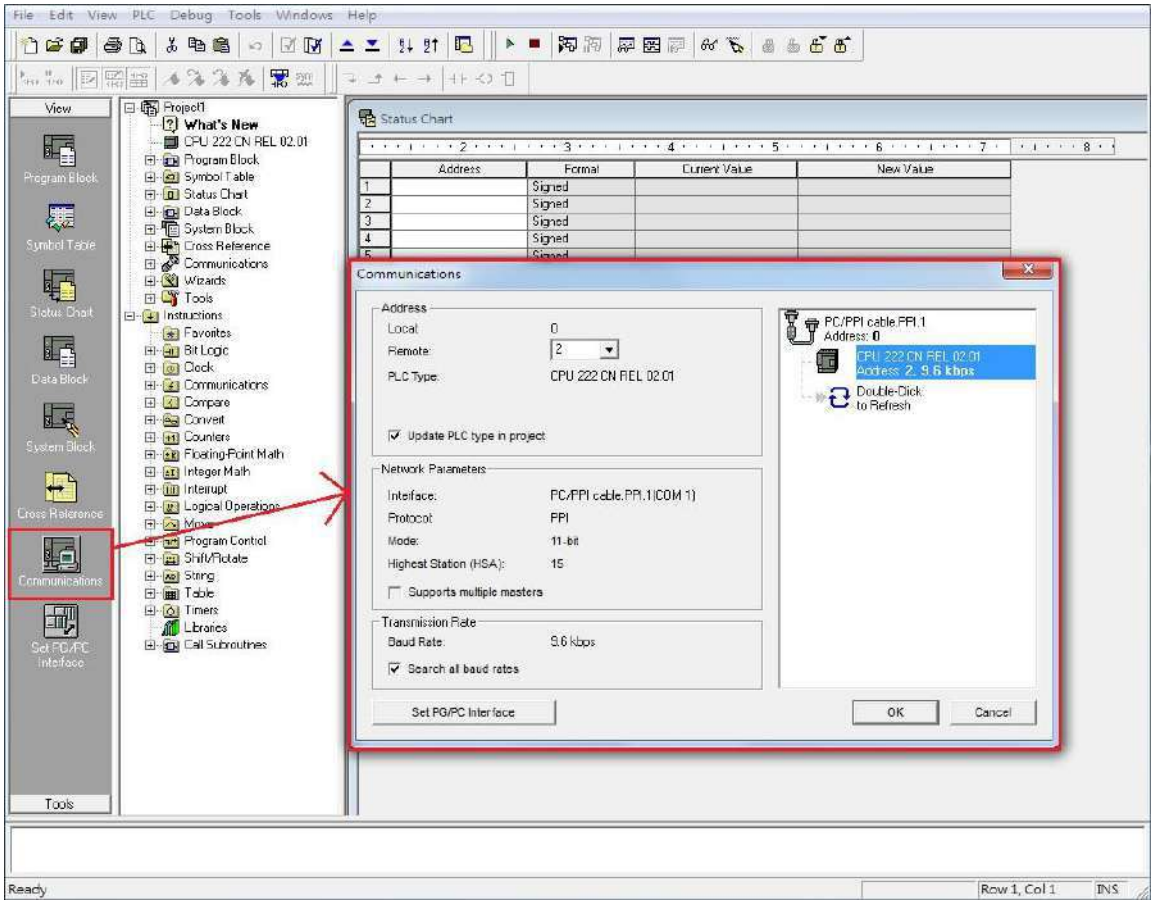
AIW	Analog Input	16	0	62
AQW	Analog Output	16	0	62
ID	Input	32	0	12
QD	Output	32	0	12
MD	Word Memory	32	0	28
SD	SCR	32	0	28
VD	V Memory	32	0	10236
SMD	Special Memory	32	0	546

2.4.4.3 Connected Setting

Configuring of PLC

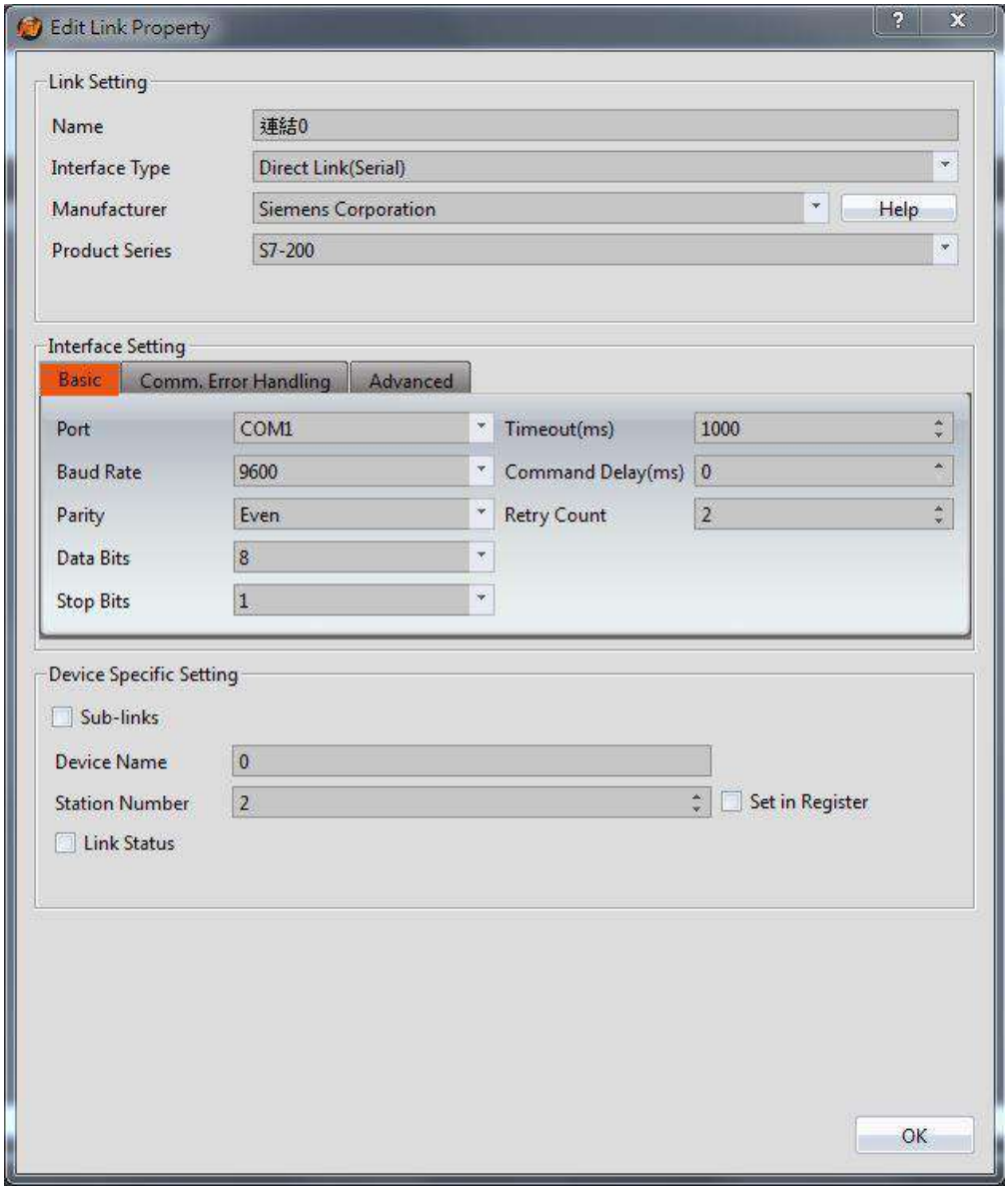
Use Step7 MicroWIN SP9 to configure the port of the PLC.

After choose the PLC type, click communication in the view field, then double click the ‘’double click to refresh’’ to connect.



Note: For more detailed information please refer to the PLC manual.

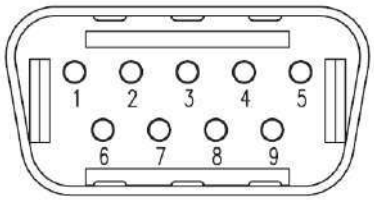
Configuring of HMI



Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Siemens Corporation
Under **Product Series** select S7-200
Under **Port** select the port number that corresponds to the RS485 connection on the HMI.

2.4.4.4 Wiring Diagrams

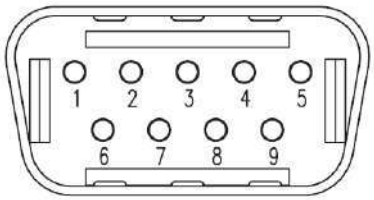
PLC RS485 Port



*Looking into male RS485 Cable

PIN#	Signal
1	
2	
3	DATA+
4	
5	GND
6	
7	
8	DATA-
9	

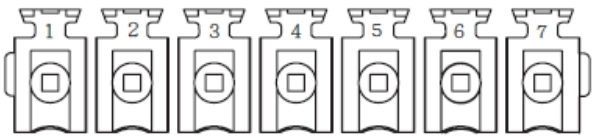
HMI COM2



*Looking into HMI

PIN#	COM2 (RS485)
1	DATA+
2	
3	
4	
5	GND
6	DATA-
7	
8	
9	

HMI COM3 Pinout

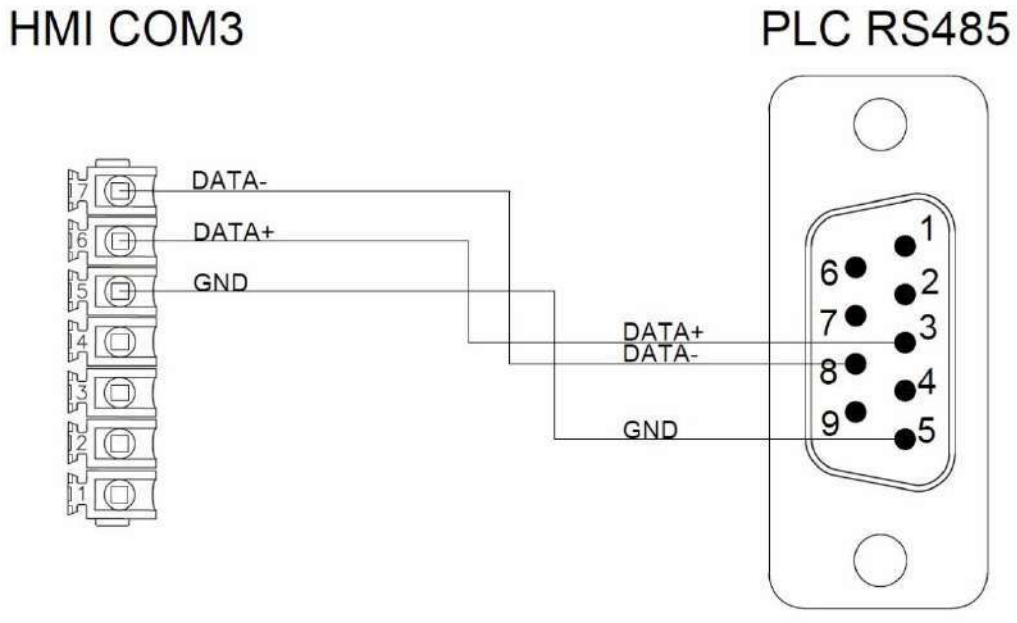


*Looking into HMI Device

PIN#	COM3 (RS-422/RS-485)
1	
2	
3	ISO_GND
4	
5	
6	DATA+
7	DATA-

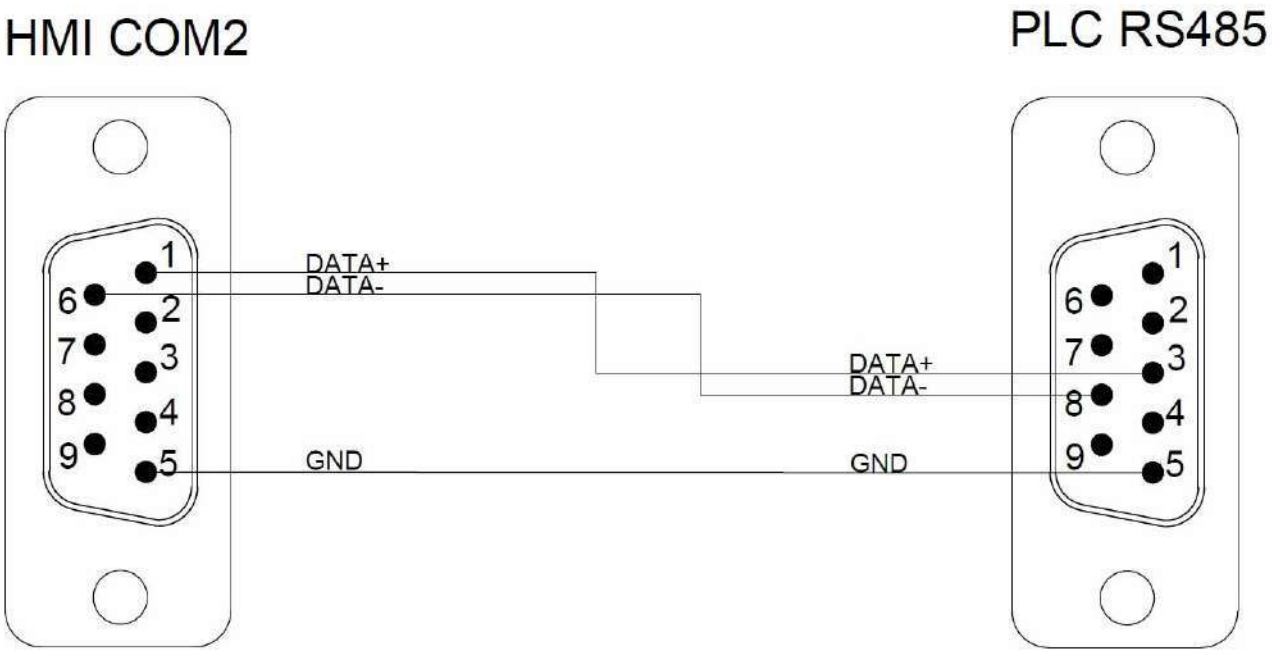
HMI COM3 Port	PLC RS485 Port
6 DATA+	3 DATA+
7 DATA-	8 DATA-
5 GND	5 GND

Wiring Diagrams



HMI COM3 Port	PLC RS485 Port
1 DATA+	3 DATA+
6 DATA-	8 DATA-
5 GND	5 GND

Wiring Diagrams



2.4.5 Siemens LOGO

2.4.5.1 Communication Setting

Item	Default Setting	Remark
Signal Level	Ethernet	
Internet Protocol	0.0.0.0	To be configured
Port	102	
PLC Station No.	0	
Communication Method	ISO TCP	
Model	0BA8	0BA7/0BA8
Local TSAP	1000	HEX
Remote TSAP	2100	HEX

2.4.5.2 Memory Resource Review

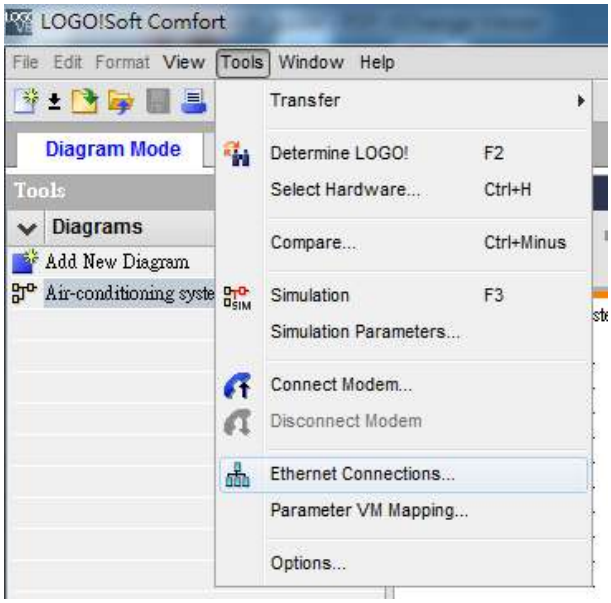
Device	Description	Data bit	Min.	Max.
I	Input	1	1	64
Q	Output	1	1	64
M	Bit Memory	1	1	112
V	Variable Memory	1	0.0	1469.7
AI	Analog Input	16	1	16
AQ	Analog Ouput	16	1	16
AM	Analog Memory	16	1	64
VW		16	0	1468
VD		32	0	1466

2.4.5.3 Connected Setting

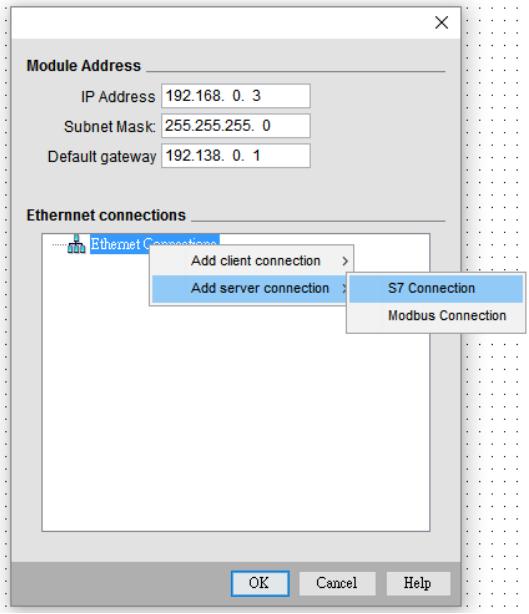
Configuring IP Address on PLC

Use the application **LOGO!Soft Comfort V8.1** to configure the IP address of the PLC.

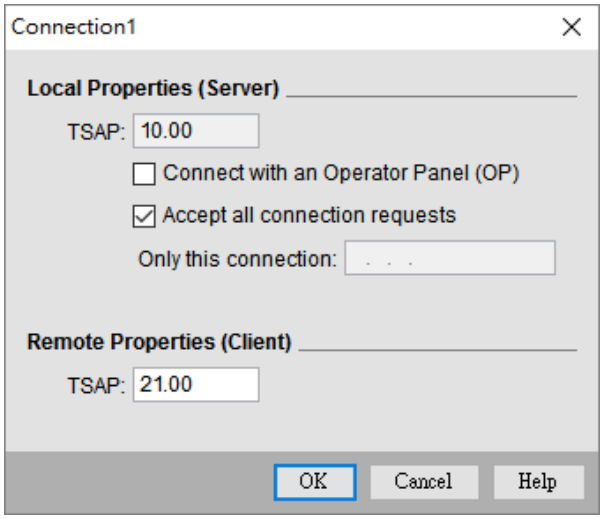
Under the **Online** menu option, select **Ethernet Connections.**



Right chick **Ethernet Connections** and **Add server connections**.

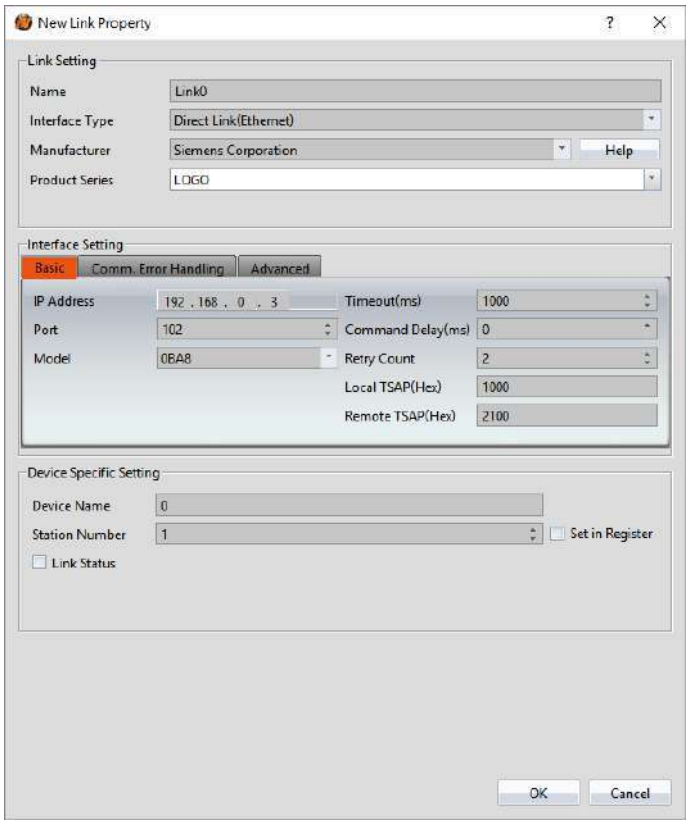


Enable **Accept all connection requests**, And setting TSAP for **Remote Properties(Client)**



Note: For more detailed information please refer to the PLC manual.

Configuring of HMI



Within the **Link** configuration window in FvDesigner:

Under **Interface Type** select Ethernet

Under **Manufacturer** select Siemens Corporation

Under **Product Series** select LOGO

Enter the **IP Address** that was written into the PLC.

Enter the **Port** number that was set on the PLC. The default is 102.

2.5 Hitachi

2.5.1 EHV Series

2.5.1.1 Communication Setting

Item	Default Setting	Remark
Signal Level	RS232C	
Baud Rate	19200	
Data Length	7	
Stop Bit	1	
Parity	Even	
PLC Station No.	0	
Communication Method	h protocol	

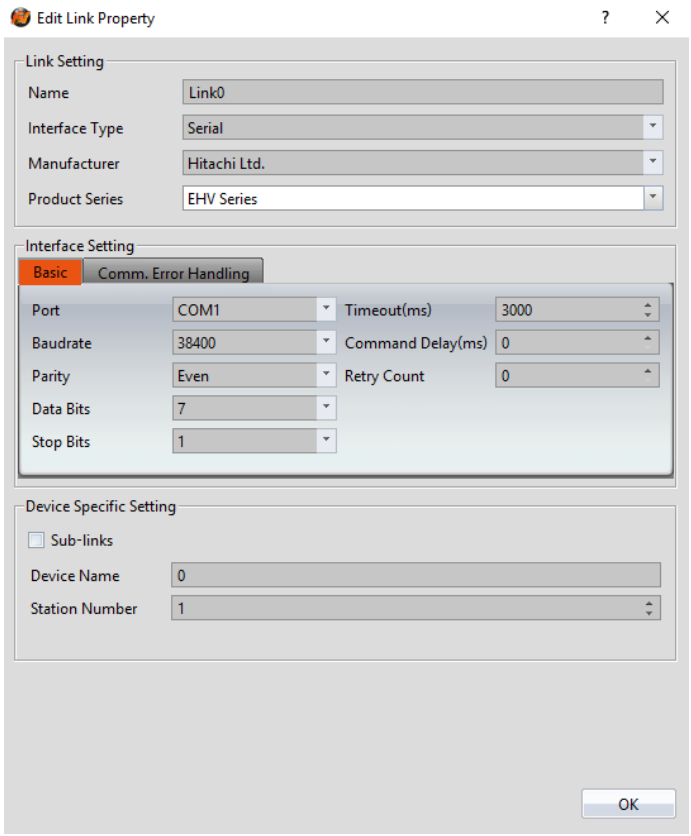
2.5.1.2 Memory Resource Review

Device	Description	Data bit	Input format	Min.	Max.
X	Input bit	1	DDDDD	0	65535
Y	Output bit	1	DDDDD	0	65535
M	Memory bit	1	HHHH	0	FFFF
R	Internaloutput bit	1	HHH	0	FFF
L	Link bit	1	HHHH	0	3FFF
TD	Timer	1	DDDD	0	2559
CU	Counter	1	DDD	0	511
WX	Input word	16	DDDD	0	9999
WY	Output word	16	DDDD	0	9999
WM	Memory word	16	HHH	0	FFF
WR	Internaloutput word	16	HHHH	0	FFFF
WL	Link word	16	HHH	0	3FF
TC	Timer / Counter	16	DDDD	0	2559

2.5.1.3 Connected Setting

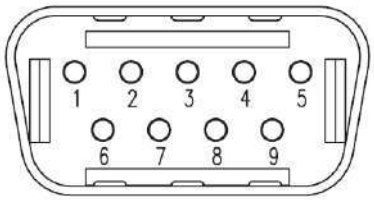
Configuring of HMI

Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial
Under **Manufacturer** select Hitachi Ltd.
Under **Product Series** select EHV Series
Under **Port** select the port number that corresponds to the RS232 connection on the HMI.



2.5.1.4 Wiring Diagrams

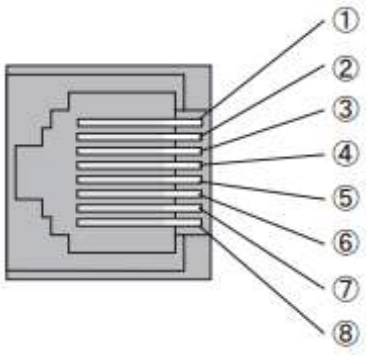
HMI COM1 Pinout



*Looking into COM1 Port

PIN#	COM1 (RS232)
1	
2	RX
3	TX
4	
5	GND
6	
7	
8	
9	

PLC RS232 Pinout



*Looking into PLC

PIN#	Signal
1	SG
2	VCC
3	ER
4	
5	TxD
6	RxD