

FATEK®

P5Series

Connection Manual



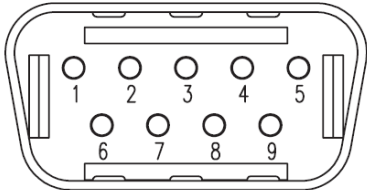
| Version | Date | Modification |
|---------|--------------|--|
| V1.0.0 | July 15,2015 | First Draft |
| V1.0.1 | July 16,2015 | Update HMI Model Information (43 & C series) |
| V1.0.2 | July 16,2015 | Update Hitachi and Schneider |
| V1.0.3 | July 17,2015 | Add Siemens S7-1200 and fix maximum value of bitsInBytedeivce |
| V1.0.4 | July 20,2015 | Fix P5043 series - Both Male Diagram |
| V1.0.5 | Aug 10, 2015 | Add Hitachi EHV Series(Ethernet) |
| V1.0.6 | Sep 16, 2015 | Add Allen-Bradley CompactLogix Series |
| V1.0.7 | Dec 9, 2015 | Add TAIE FY Series |
| V1.0.8 | Dec 17, 2015 | Add Delta DVP Series and AH500 series |
| V1.0.9 | Jan 21, 2016 | Add Panasonic FP Series |
| V1.0.10 | Mar 7, 2016 | Add Panasonic FP Series (Ethernet) |
| V1.0.11 | Mar 7, 2016 | Add DB access function for SIEMENS S7 1200 |
| V1.0.12 | Apr 14, 2016 | Add Mitsubishi FX5U Series |
| V1.0.13 | Apr 28, 2016 | Update Mitsubishi FX3U/FX2N driver for new type WX/WY/WM/WS |
| V1.0.14 | May 24, 2016 | Add YASKAWA Extended MEMOBUS |
| V1.0.15 | Jun 20, 2016 | Add Keyence KV-3000/5000/5500/7500 (ethernet) and KV-L21V/3000/5000/5500 |
| V1.0.16 | Jul 6, 2016 | Add Allen-Bradley SLC and MicroLogix Series |
| V1.0.16 | Jul 15, 2016 | Update KV-Nano (host link) |
| V1.0.17 | Nov 25 2016 | Add QSeries-Serial Communication, Q/L Series-ENET and Update FBe(PLC setting) |
| V1.0.17 | Nov 29 2016 | Add Omron SYSMAC CP Series Ethernet and Update Omron SYSMAC CP Series(PLC setting),Omron SYSMAC CS/CJ Series(PLC setting), Omron SYSMAC CS/CJ Series Ethernet(PLC setting) |
| V1.0.17 | Dec 2 2016 | Update Siemens S7-200 SMART(PLC setting), Schneider MODBUS RTU/TCP (PLC setting), Allen-Bradley SLC Series(PLC setting) |
| V1.0.17 | Dec 7 2016 | Update Taiwan Instrument & Control Co., Ltd FY Series(PLC setting) Delta DVP Series(PLC setting), YASKAWA Extended MEMOBUS(PLC setting) |

| | | |
|-------|---|-----|
| 1. | HMI Model Serial Information | 5 |
| 2. | PLC Connection | 7 |
| 2.1 | FATEK Automation Corp. | 7 |
| 2.1.1 | FBs/B1/B1z/HB1..... | 7 |
| 2.1.2 | FBe..... | 11 |
| 2.1.3 | FBs/B1/B1z/HB1 (TCP)..... | 16 |
| 2.1.4 | FBe (TCP)..... | 19 |
| 2.2 | Mitsubishi..... | 22 |
| 2.2.1 | FX2N CPU | 22 |
| 2.2.2 | FX2N-485BD | 25 |
| 2.2.3 | FX3U CPU | 31 |
| 2.2.4 | FX3U-485BD | 34 |
| 2.2.5 | FX3U Ethernet | 39 |
| 2.2.6 | FX5U-Serial..... | 46 |
| 2.2.7 | FX5U Ethernet | 54 |
| 2.2.8 | QSeries-Serial Communication | 61 |
| 2.2.9 | Q/L Series-ENET | 67 |
| 2.3 | Omron | 71 |
| 2.3.1 | Omron SYSMAC CP Series..... | 71 |
| 2.3.2 | Omron SYSMAC CP Series Ethernet | 76 |
| 2.3.3 | Omron SYSMAC CS/CJ Series | 79 |
| 2.3.4 | Omron SYSMAC CS/CJ Series Ethernet..... | 83 |
| 2.4 | Siemens | 87 |
| 2.4.1 | Siemens S7-200 SMART | 87 |
| 2.4.2 | Siemens S7-200 SMART Ethernet | 91 |
| 2.4.3 | Siemens S7-1200 Ethernet | 97 |
| 2.5 | Hitachi | 101 |
| 2.5.1 | EHV Series..... | 101 |
| 2.5.2 | EHV Series (Ethernet) | 104 |
| 2.6 | Schneider | 105 |
| 2.6.1 | MODBUS RTU..... | 105 |
| 2.6.2 | MODBUS TCP | 108 |
| 2.7 | Allen-Bradley | 111 |
| 2.7.1 | CompactLogix/ControlLogix/FlexLogix Tag Series..... | 111 |
| 2.7.2 | SLC series (EtherNet/IP) | 116 |
| 2.7.3 | SLC Series | 120 |
| 2.7.4 | MicroLogix Series (EtherNet/IP) | 124 |
| 2.7.5 | MicroLogix Series | 128 |

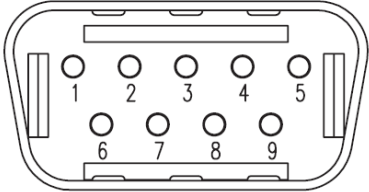
| | | |
|--------|--|-----|
| 2.8 | Taiwan Instrument & Control Co., Ltd. | 132 |
| 2.8.1 | FY Series..... | 132 |
| 2.9 | Delta..... | 142 |
| 2.9.1 | DVP Series..... | 142 |
| 2.9.2 | AH500 Series..... | 145 |
| 2.10 | Panasonic | 151 |
| 2.10.1 | FP Series..... | 151 |
| 2.10.2 | FP Series (Ethernet)..... | 155 |
| 2.11 | YASKAWA | 158 |
| 2.11.1 | Extended MEMOBUS..... | 158 |
| 2.12 | Keyence | 162 |
| 2.12.1 | KV-3000/5000/5500/7500(Ethernet)..... | 162 |
| 2.12.2 | KV-L21V/3000/5000/5500 (host link) | 168 |
| 2.12.3 | KV-Nano (host link) | 176 |

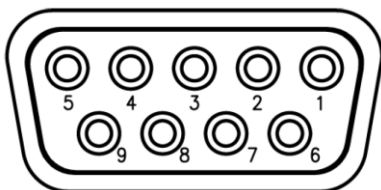

1. HMI Model Serial Information

P5043S/P5043N

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

P5070S/ P5070N/ P5070N1/ P5102S/ P5102N/ P5102N1

| | | |
|------------------|--|--|
| Serial Interface | COM1(RS-232[TXD,RXD,RTS,CTS]), COM3(RS-422/485), COM4(RS-485) | |
| Serial Layout | RS-232 |  |
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| | | 5 | GND | | |
| | | 6 | | | |
| | | 7 | RTS | | |
| | | 8 | CTS | | |
| | | 9 | | | |
| | RS-422/ 485 | Old Model | | | |
| | |  | | | |
| | | PIN# | COM3 (RS-422) | COM3 (RS-485) | COM4 |
| | | 1 | TX- | DATA- | |
| | | 2 | TX+ | DATA+ | |
| | | 3 | RX- | | |
| | | 4 | RX+ | | |
| | | 5 | | ISO_GND | |
| | | 6 | | | |
| | | 7 | | | DATA- |
| | | 8 | | | DATA+ |
| | | 9 | | | |
| | | New Model | | | |
| | |  | | | |
| | | PIN# | COM3 (RS-422) | COM3 (RS-485) | COM4 |
| | | 1 | | | DATA+ |
| | | 2 | | | DATA- |
| | | 3 | ISO_GND | ISO_GND | ISO_GND |
| | | 4 | RX+ | | |
| | | 5 | RX- | | |
| | | 6 | TX+ | DATA+ | |
| | | 7 | TX- | DATA- | |

2. PLC Connection

2.1 FATEK Automation Corp.

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 | |

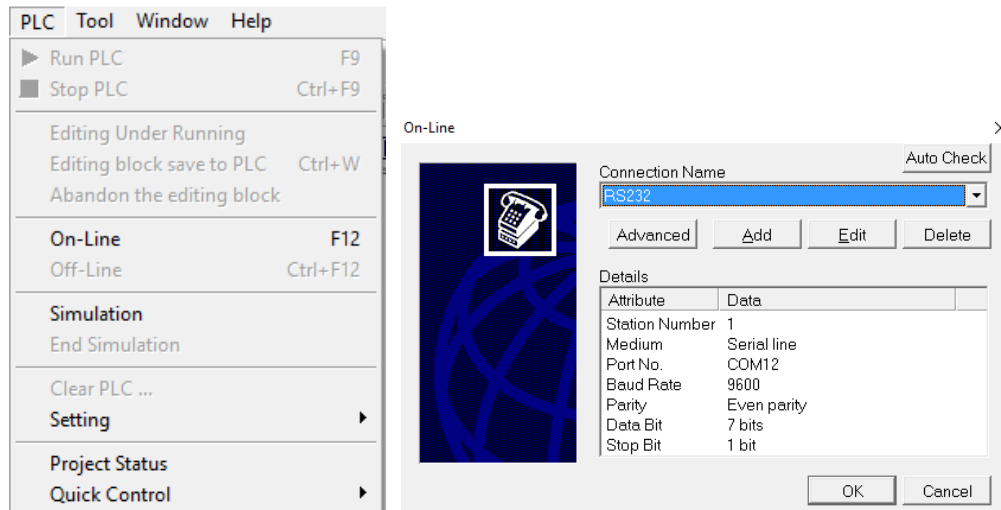
2.1.1.2 Memory Resource Review

| 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 |

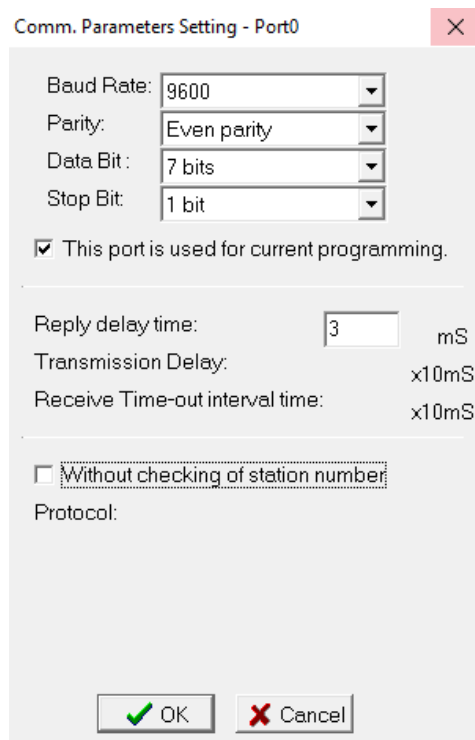
2.1.1.3 Connecting to PLC

Configuring the 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.

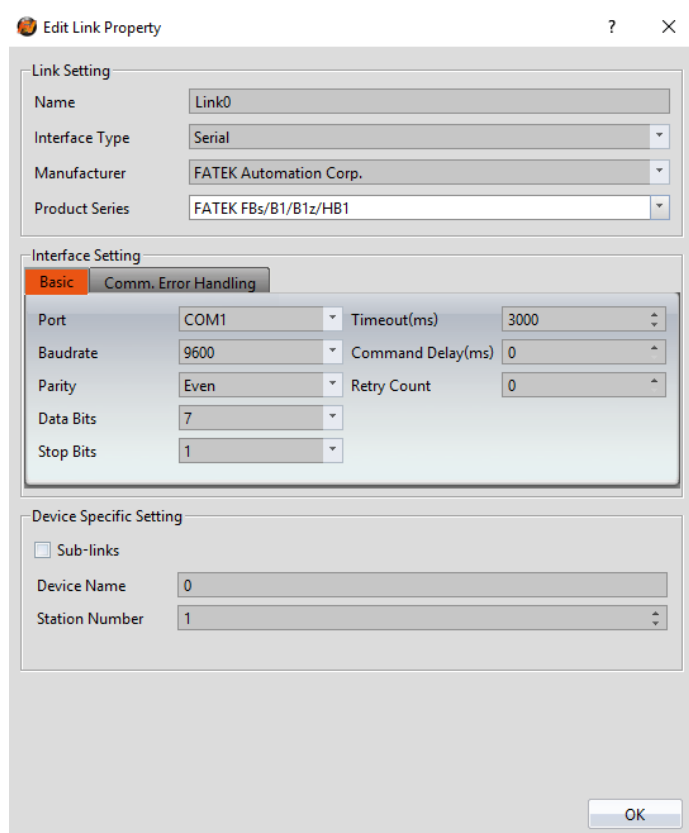


Under the **PLC** tab, select the **Setting** option and choose Port 0. Here, the Baud rate and other parameters of the serial port can be configured.



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

Connecting PLC to HMI



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

Under **Interface Type** select Serial

Under **Manufacturer** select FATEK Automation Corp

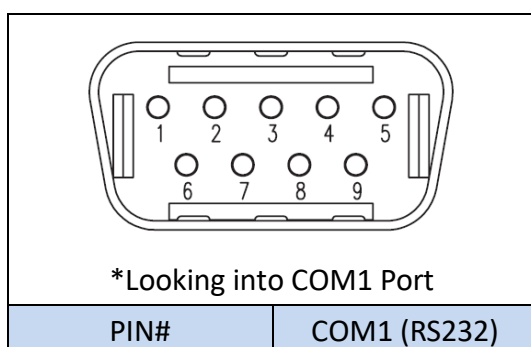
Under **Product Series** select FATEK FBs/B1/B1z/HB1

Under **Port** select COM1

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

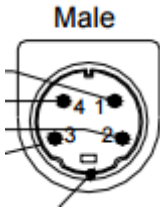
2.1.1.4 Wiring Diagrams

HMI COM1 Pinout



| | |
|---|-----|
| 1 | |
| 2 | RX |
| 3 | TX |
| 4 | |
| 5 | GND |
| 6 | |
| 7 | RTS |
| 8 | CTS |
| 9 | |

PLC RS232 Pinout

|  <p>*Looking into PLC</p> | |
|--|--------|
| PIN# | Signal |
| 1 | |
| 2 | GND |
| 3 | TX |
| 4 | RX |

All P5 Series

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

2.1.2 FBe

2.1.2.1 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 | |

2.1.2.2 Memory Resource Review

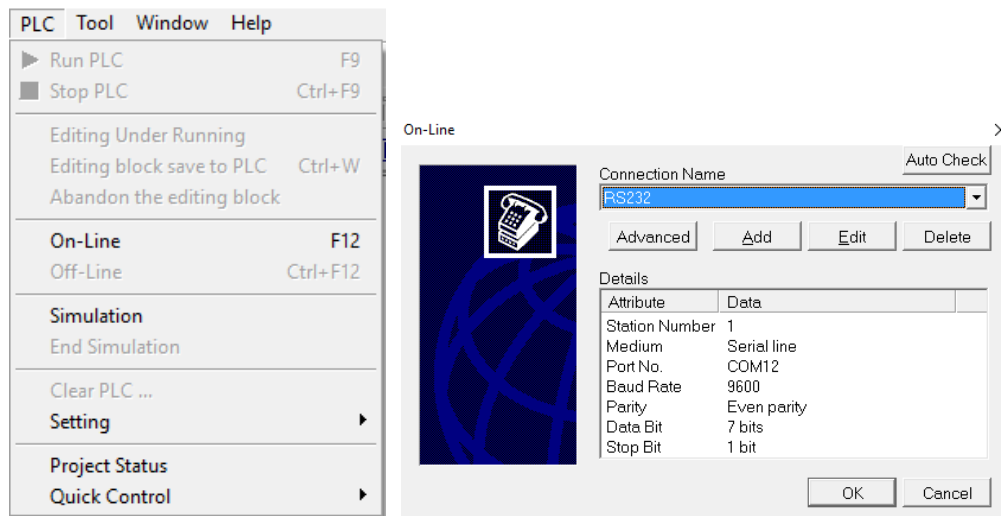
| Device | Data Bits | Address Format | Min. | Max. | Description |
|--------|-----------|----------------|------|------|------------------|
| X | 1 | DDDD | 0 | 255 | Input Discrete |
| Y | 1 | DDDD | 0 | 255 | Output Relay |
| M | 1 | DDDD | 0 | 2001 | Internal Relay |
| S | 1 | DDDD | 0 | 999 | Step 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 |

2.1.2.3 Connecting to PLC

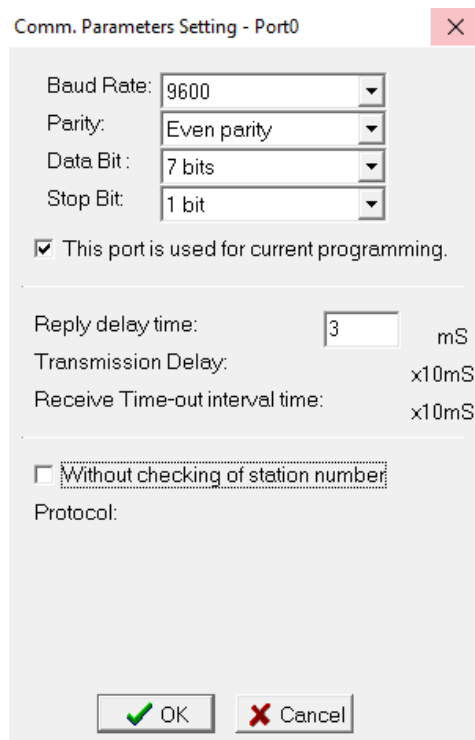
Configuring the PLC

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.

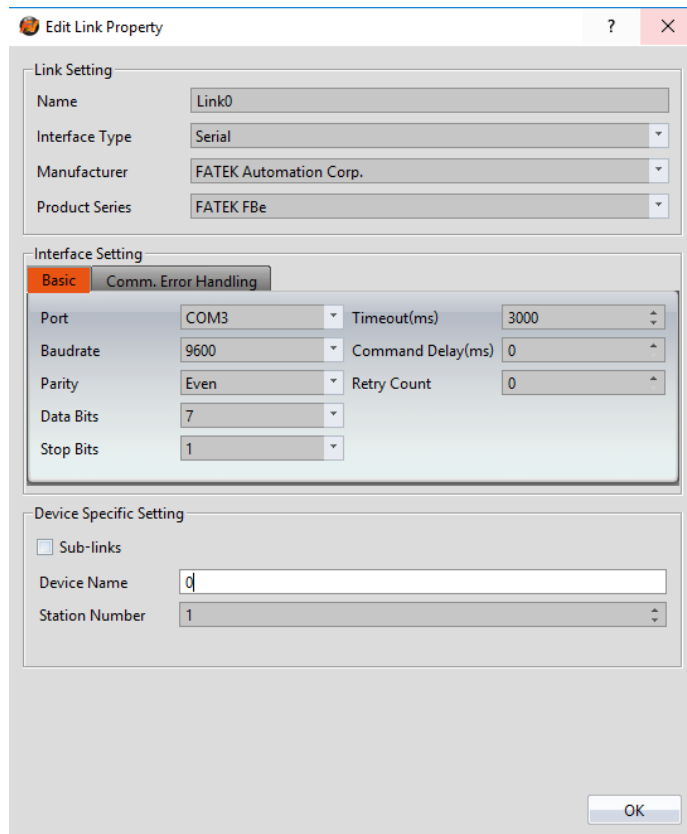


Under the **PLC** tab, select the **Setting** option and choose Port 0. Here, the Baud rate and other parameters of the serial port can be configured.



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

Connecting PLC to HMI



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

Under **Interface Type** select Serial

Under **Manufacturer** select FATEK Automation Corp.

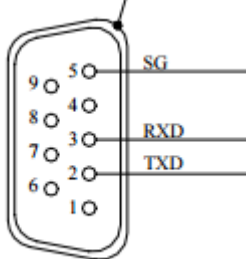
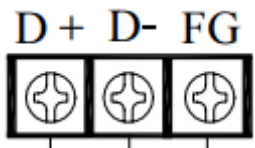
Under **Product Series** select FATEK FBe

Under **Port** select the port corresponding to the connection to the PLC

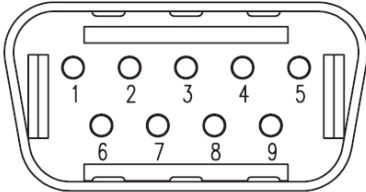
Verify the other parameters are consistent with the settings on the PLC

2.1.2.4 Wiring Diagrams


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

| <p>PLC RS232 Pinout</p>  <p>*Looking into port0</p> | | <p>PLC RS485 Pinout</p>  |
|--|-----------------|--|
| PIN# | Port 0 (RS-232) | Port 2 (RS-485) |
| 1 | | DATA+ |
| 2 | TXD | DATA- |
| 3 | RXD | FG |
| 4 | | |
| 5 | GND | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |

HMI COM1 Pinout

|  <p>*Looking into COM1 Port</p> | |
|--|--------------|
| PIN# | COM1 (RS232) |
| 1 | |
| 2 | RX |
| 3 | TX |
| 4 | |
| 5 | GND |
| 6 | |
| 7 | RTS |
| 8 | CTS |
| 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- |

P5070S/ P5070N/ P5070N1/ P5102S/ P5102N/ P5102N1

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

2.1.3 FBs/B1/B1z/HB1 (TCP)

2.1.3.1 Communication Setting

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

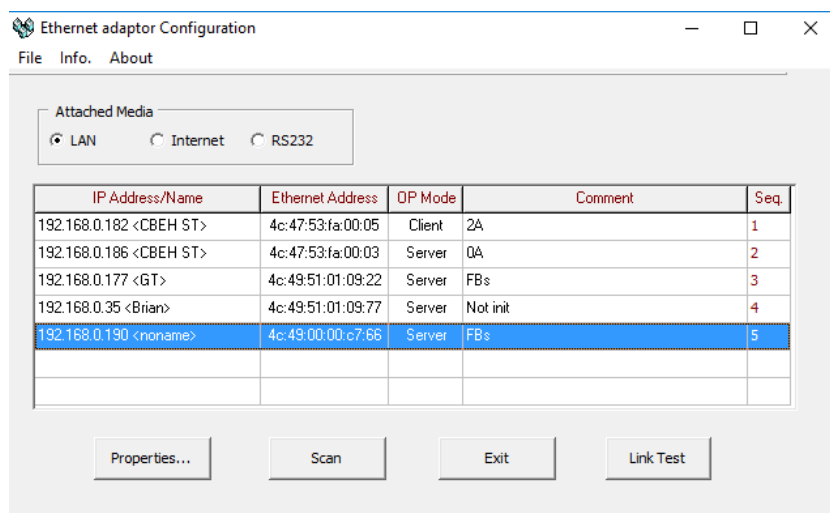
2.1.3.2 Memory Resource Review

| 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 Connecting to HMI

Configuring IP Address on PLC

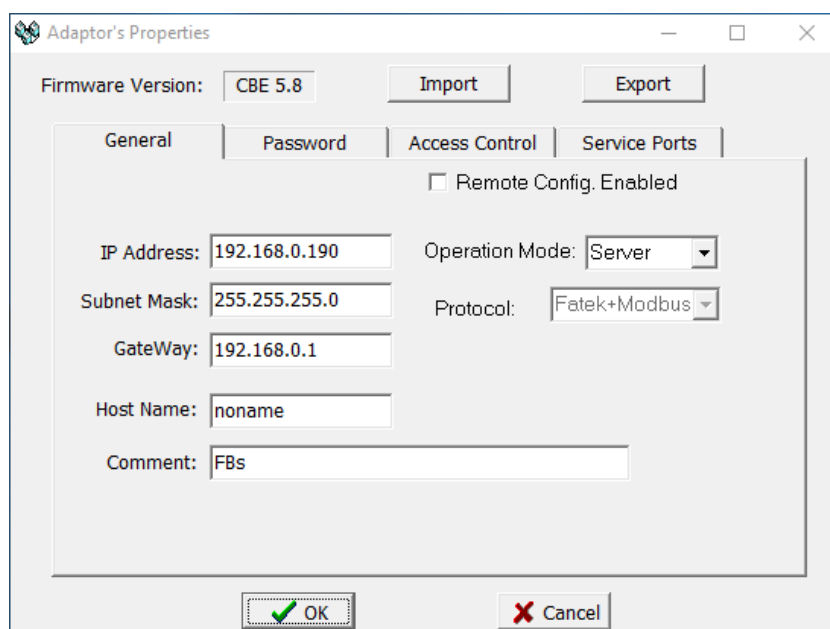
Use the application **FATEK Ethernet Module Configuration Tool** to configure the IP address of the PLC. Connect an Ethernet cable to the PLC. Under **Attached Media**, select LAN and press scan.



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

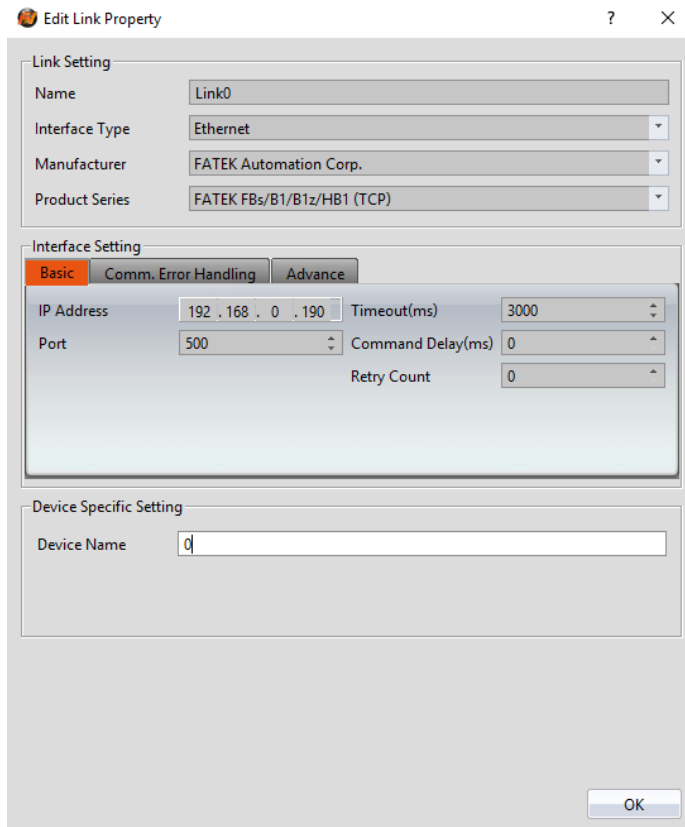
Note: The default IP address for the PLC has 1 for its third octet. If the IP address of the computer has a different number at that position, the PLC will not show up in the scan. Configure network settings on the computer to be able to see the PLC in the local network.

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.

Connecting PLC to 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

2.1.4 FBe (TCP)

2.1.4.1 Communication Setting

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

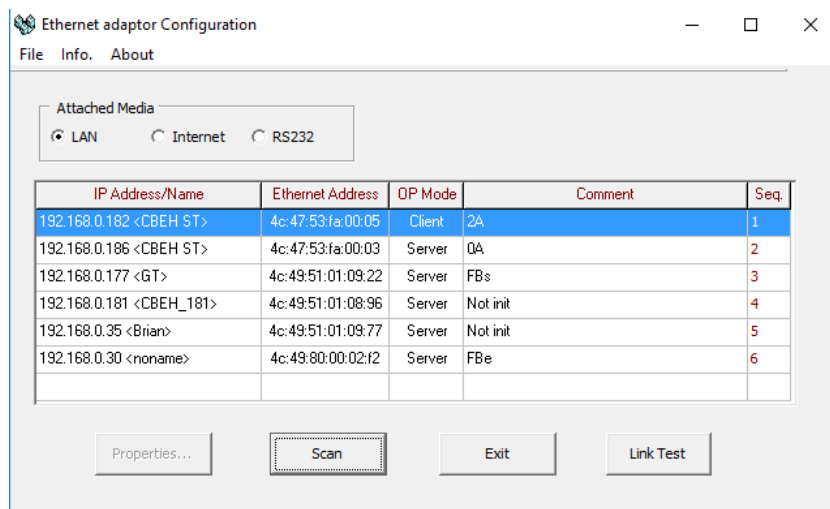
2.1.4.2 Memory Resource Review

| 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 HMI

Configuring IP Address on PLC

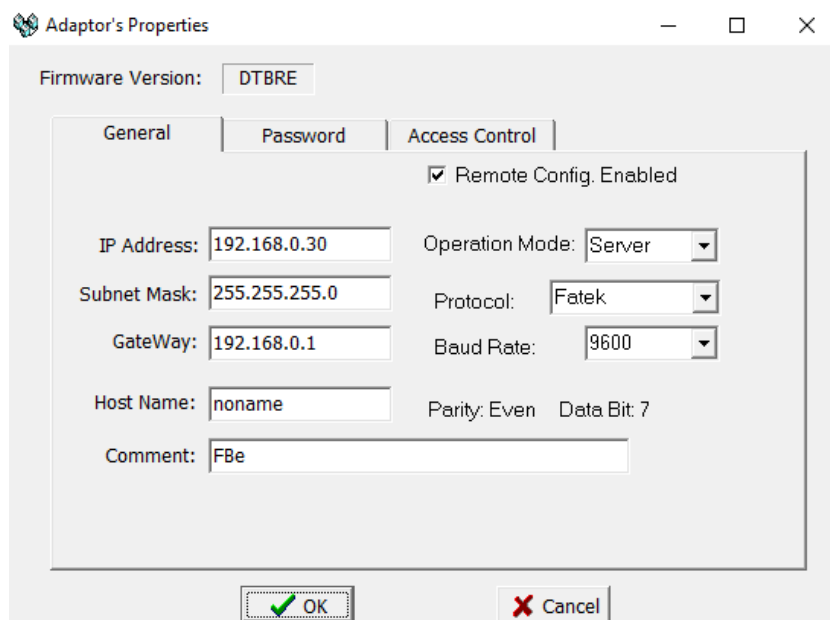
Use the application **FATEK Ethernet Module Configuration Tool** to configure the IP address of the PLC. Connect an Ethernet cable to the PLC. Under **Attached Media**, select LAN and press scan.



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

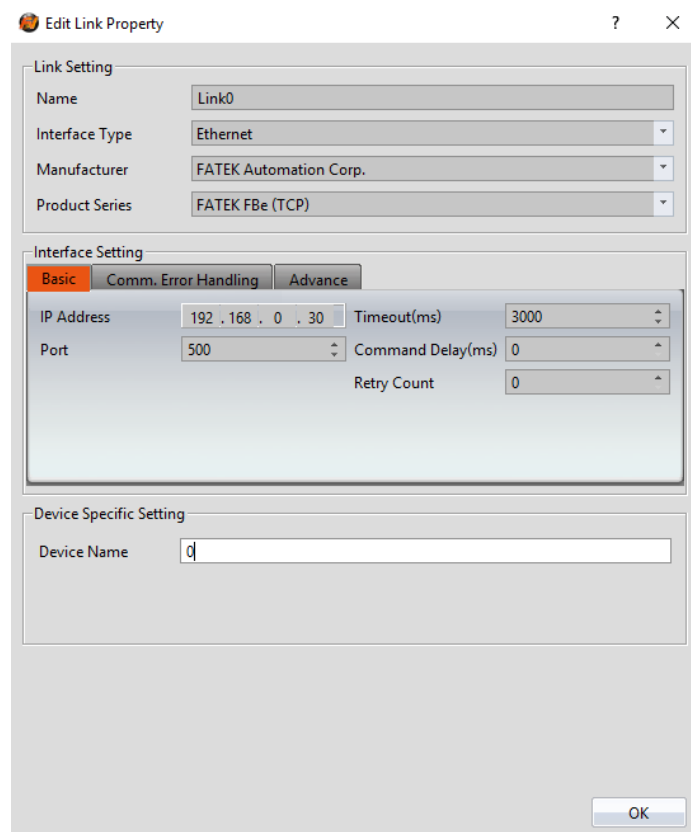
Note: The default IP address for the PLC has 1 for its third octet. If the IP address of the computer has a different number at that position, the PLC will not show up in the scan. Configure network settings on the computer to be able to see the PLC in the local network.

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.

Connecting PLC to 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

2.2 Mitsubishi

2.2.1 FX2N CPU

2.2.1.1 Communication Setting

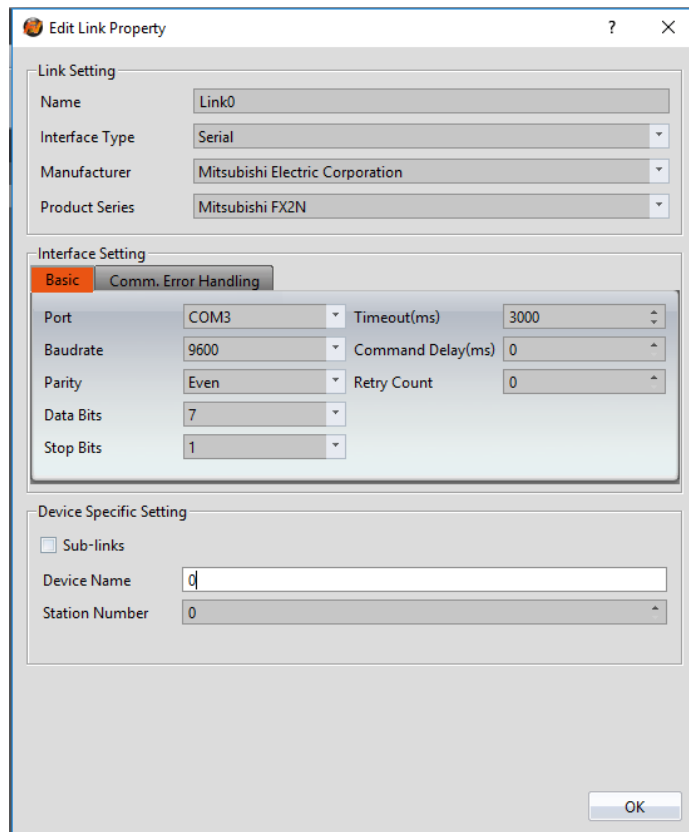
| Item | Default Setting | Remark |
|----------------------|----------------------|--------|
| Signal Level | RS485 4W | |
| Baud Rate | 9600 | |
| Data Length | 7 | |
| Stop Bit | 1 | |
| Parity | Even | |
| PLC Station No. | 0 | |
| Communication Method | Programming Protocol | |

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 Connecting to HMI

Connecting PLC to HMI



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

Under **Interface Type** select Serial

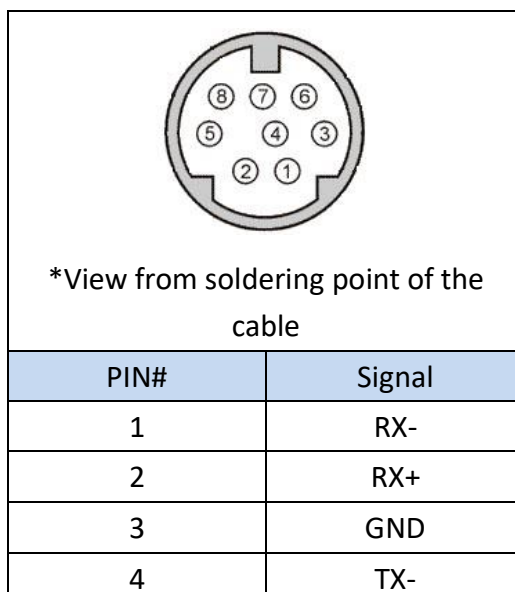
Under **Manufacturer** select Mitsubishi Electric Corporation

Under **Product Series** select Mitsubishi FX2N

Under **Port** select COM3


2.2.1.4 Wiring Diagrams

PLC RS422 Pinout



| | |
|---|-----|
| 5 | |
| 6 | |
| 7 | TX+ |
| 8 | |

HMI COM3 Pinout

|  <p>*Looking into HMI Device</p> | |
|---|-------------------------|
| PIN# | COM3 (RS-422/RS-485) |
| 1 | |
| 2 | |
| 3 | ISO_GND |
| 4 | RX+ |
| 5 | RX- |
| 6 | TX+ |
| 7 | TX- |

P5070S/P5070N/P5070N1/P5102N/P5102N1

| 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 |

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 |

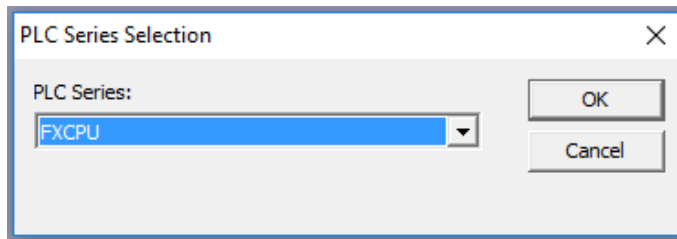
2.2.2.3 Connecting to HMI

Configuring the PLC

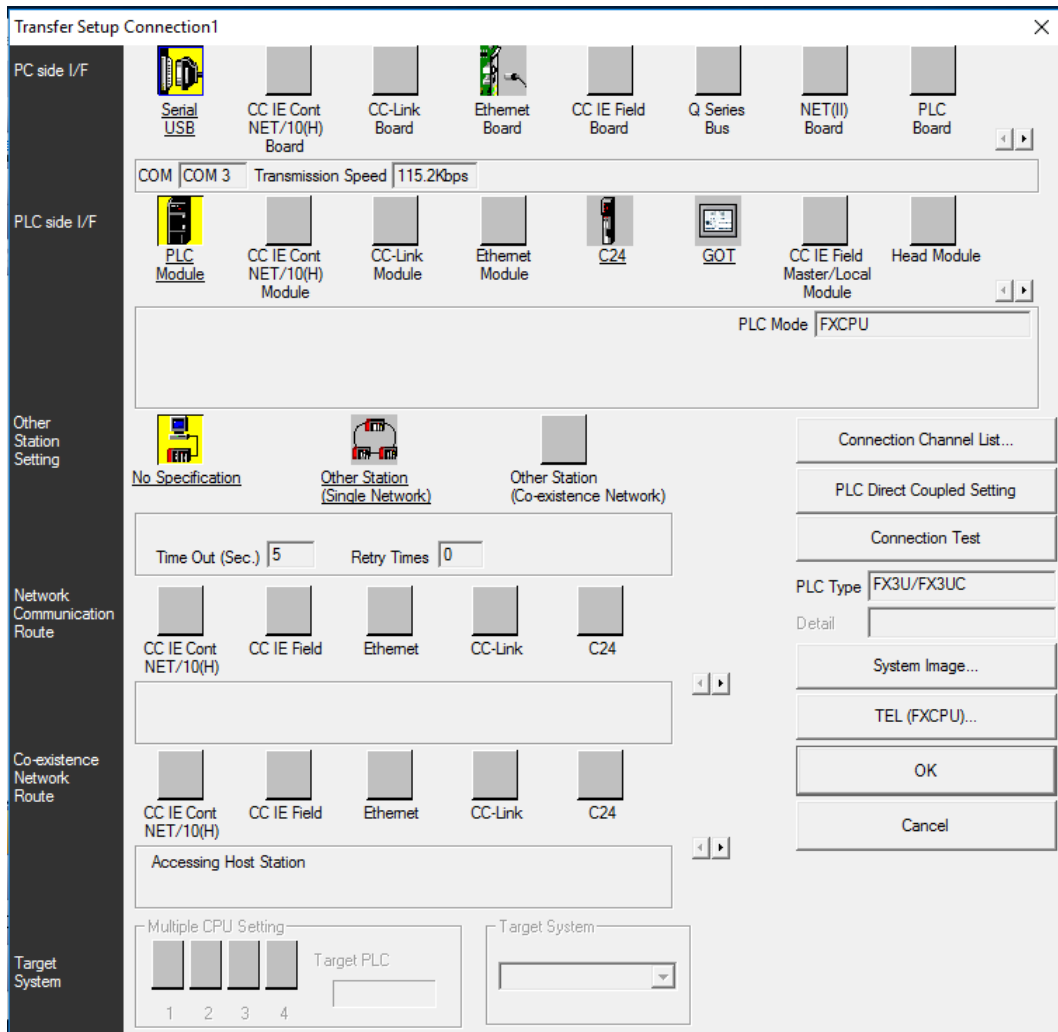
Use **MELSOFT GX Works2** to configure the port of the PLC.

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

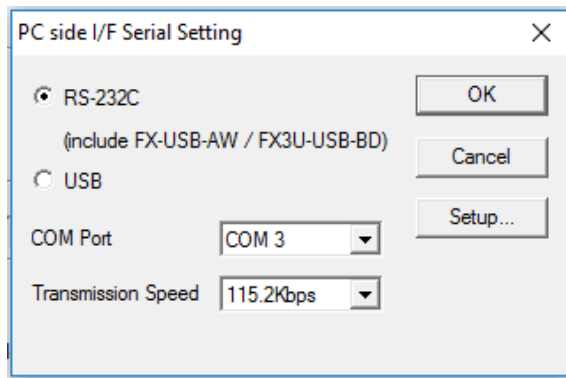
Select the **FXCPU** PLC series.



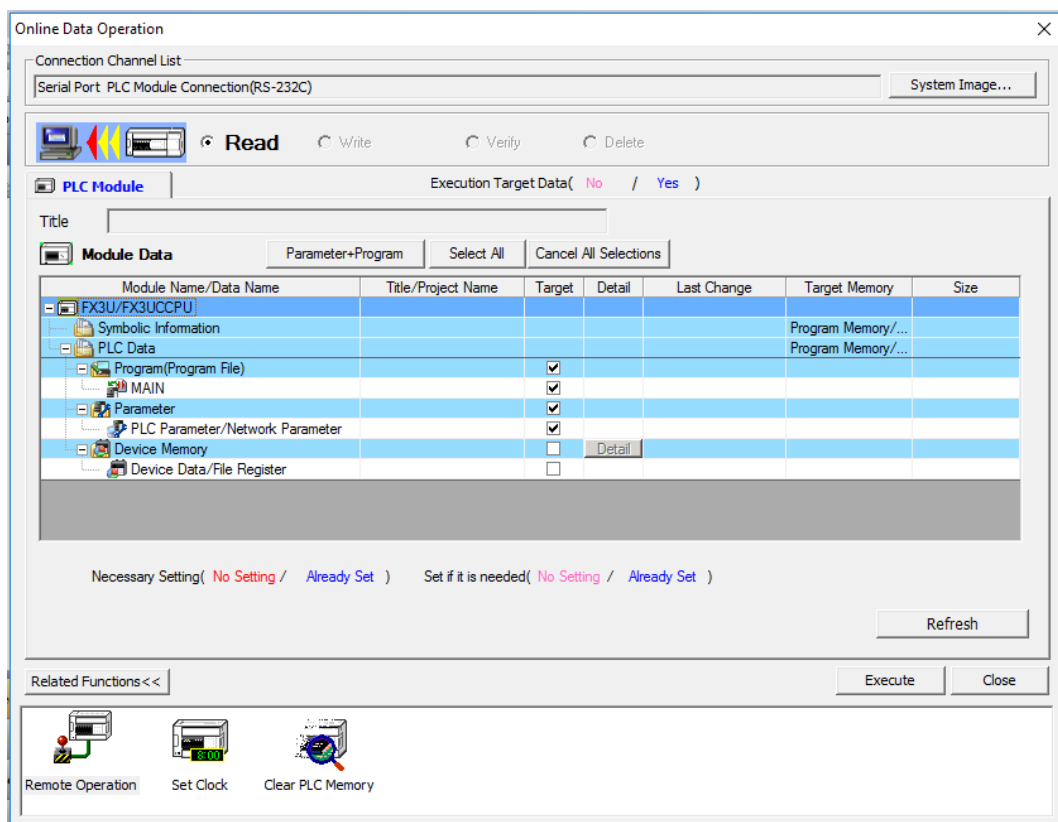
Select **Serial USB** in the Transfer Setup Communication window.



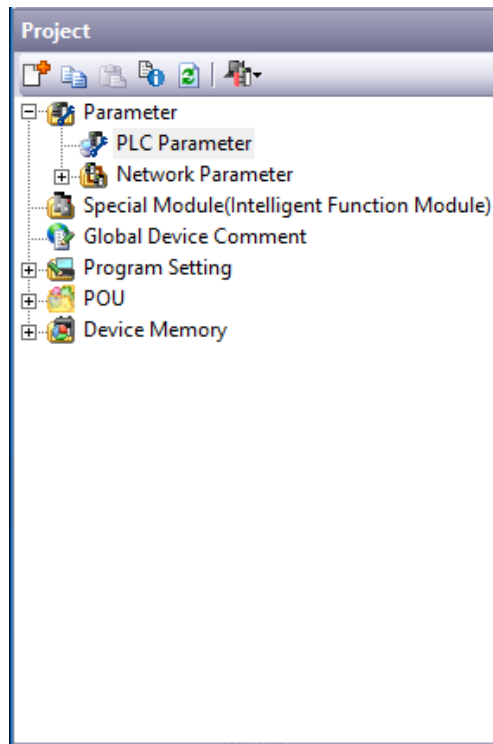
Select the **RS-232C** radio button and select the **COM Port** that the PLC is connected at. Click **Connection Test** to verify the connection and then press OK.



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.

FX Parameter

Memory Capacity | Device | PLC Name | **PLC System(1)** | **PLC System(2)**

☒ Operate Communication Setting

The setting contents are cleared when unchecked.
(When communicate with GX Works2, GOT, etc. by PLC using optional board for FX etc., the D8120 special register of PLC must be 0 cleared, and must be unchecked.)

| | |
|-------------------------------------|--|
| Protocol Dedicated Protocol | <input type="checkbox"/> Control Line |
| Data Length 7Bit | H/W Type RS-485 |
| Parity Even | Control Mode Invalid |
| Stop Bit 1Bit | <input checked="" type="checkbox"/> Sum Check |
| Transmission Speed 19200 (bps) | Transmission Control Procedure Form1(Without CR,LF) |
| <input type="checkbox"/> Header | Station Number Setting 00 H (00H--0FH) |
| <input type="checkbox"/> Terminator | Time Out Judge Time 1 X 10ms (1--255) |

Print Window... Print Window Preview Default Check End Cancel

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.

Connecting PLC to HMI

Edit Link Property

Link Setting

Name: Link0

Interface Type: Serial

Manufacturer: Mitsubishi Electric Corporation

Product Series: Mitsubishi FX2N-485BD

Interface Setting

Basic | Comm. Error Handling

Port: COM3 | Timeout(ms): 3000

Baudrate: 19200 | Command Delay(ms): 0

Parity: Even | Retry Count: 0

Data Bits: 7 | TX Control Procedure: Form1(Without CR,LF)

Stop Bits: 1 | Sum Check: ☒

Device Specific Setting

☐ Sub-links

Device Name:

Station Number: 0

OK

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

Under **Interface Type** select Serial

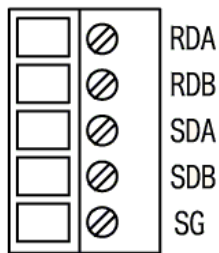
Under **Manufacturer** select Mitsubishi Electric Corporation

Under **Product Series** select Mitsubishi FX2N-485BD.


Under **Port** select COM3

2.2.2.4 Wiring Diagrams

PLC RS422 Pinout



HMI COM3 Pinout

|  <p>*Looking into HMI Device</p> | |
|---|-------------------------|
| PIN# | COM3 (RS-422/RS-485) |
| 1 | |
| 2 | |
| 3 | ISO_GND |
| 4 | RX+ |
| 5 | RX- |
| 6 | TX+ |
| 7 | TX- |

P5070S/P5070N/P5070N1/P5102N/P5102N1

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

2.2.3 FX3U CPU

2.2.3.1 Communication Setting

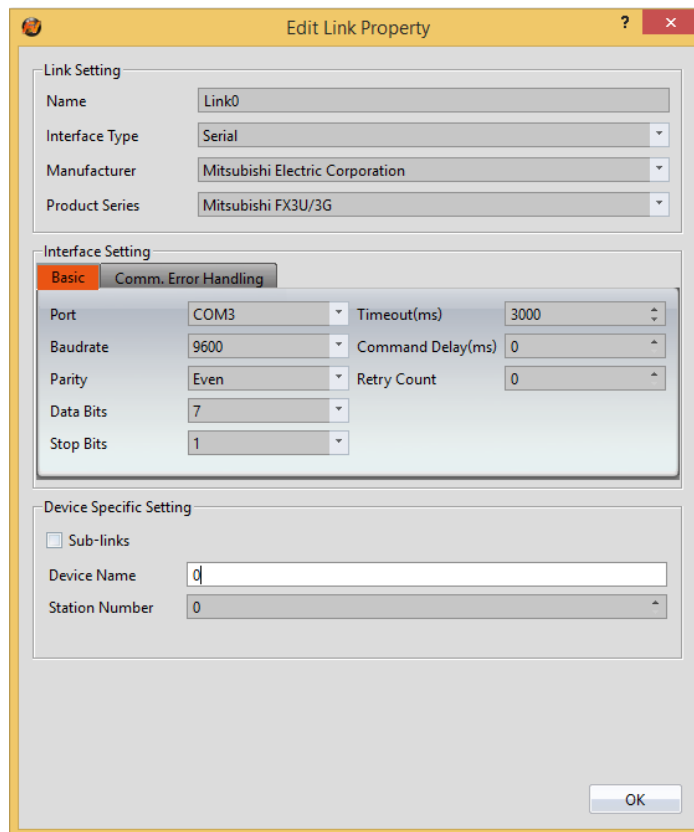
| Item | Default Setting | Remark |
|----------------------|----------------------|--------|
| Signal Level | RS485 4W | |
| Baud Rate | 9600 | |
| Data Length | 7 | |
| Stop Bit | 1 | |
| Parity | Even | |
| PLC Station No. | 0 | |
| Communication Method | Programming Protocol | |

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 Connecting to HMI

Connecting PLC to HMI



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

Under **Interface Type** select Serial

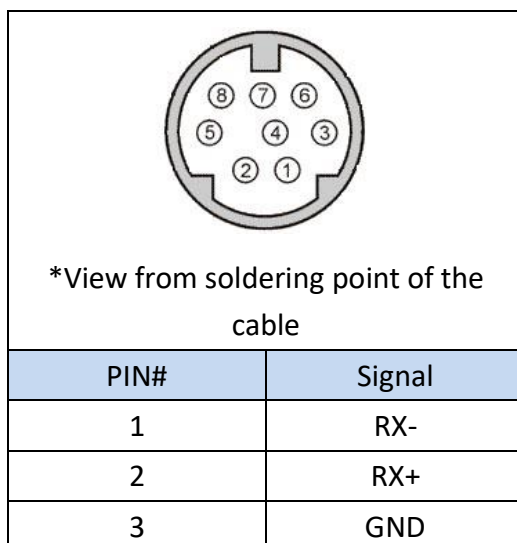
Under **Manufacturer** select Mitsubishi Electric Corporation

Under **Product Series** select Mitsubishi FX3U/3G

Under **Port** select COM3

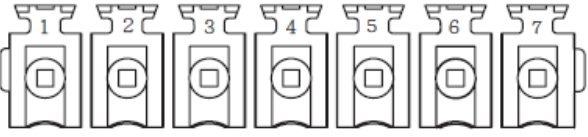
2.2.3.4 Wiring Diagrams

PLC RS422 Pinout



| | |
|---|-----|
| 4 | TX- |
| 5 | |
| 6 | |
| 7 | TX+ |
| 8 | |

HMI COM3 Pinout

|  <p>*Looking into HMI Device</p> | |
|---|-------------------------|
| PIN# | COM3 (RS-422/RS-485) |
| 1 | |
| 2 | |
| 3 | ISO_GND |
| 4 | RX+ |
| 5 | RX- |
| 6 | TX+ |
| 7 | TX- |

P5070S/P5070N/P5070N1/P5102N/P5102N1

| 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 |

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 |

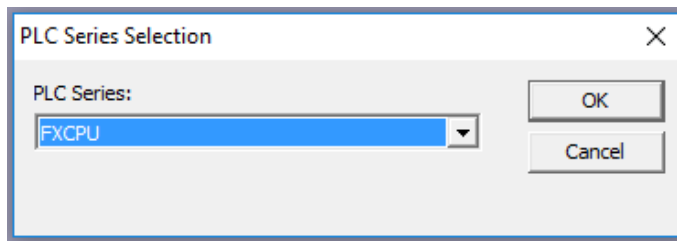
2.2.4.3 Connecting to HMI

Configuring the PLC

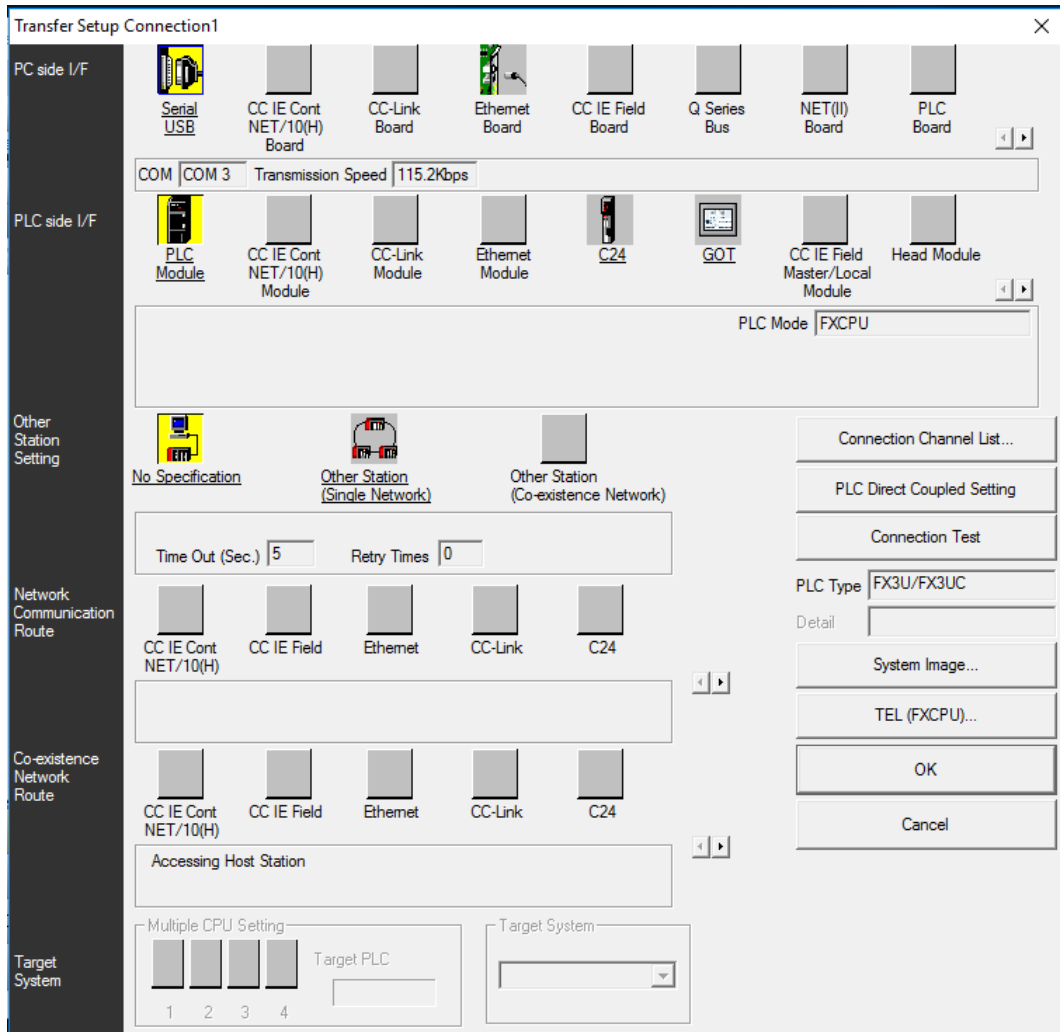
Use **MELSOFT GX Works2** to configure the port of the PLC.

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

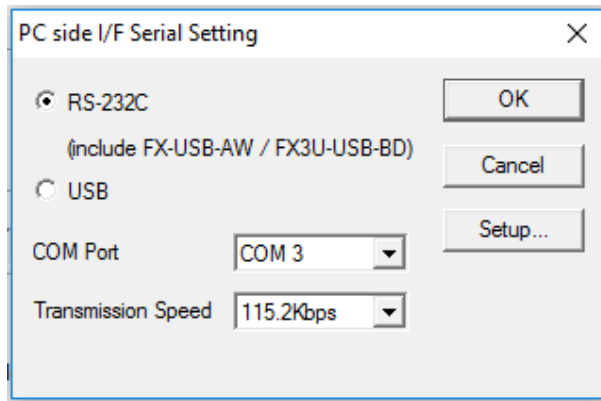
Select the **FXCPU** PLC series.



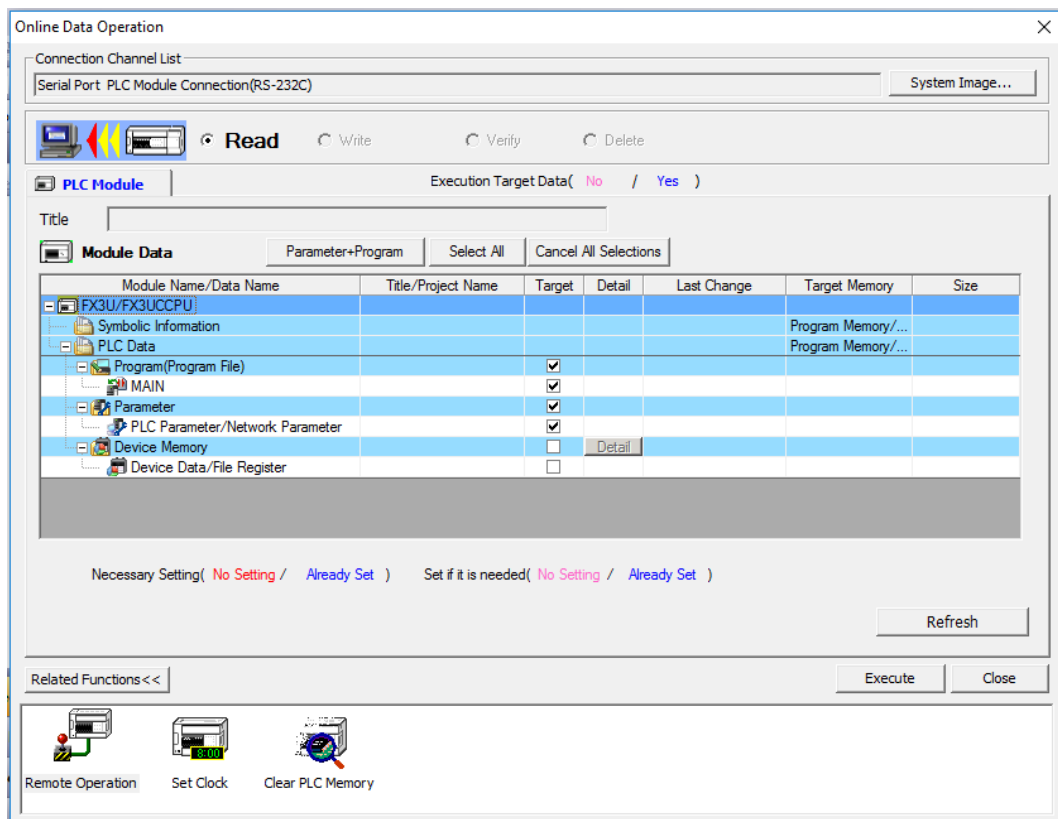
Select **Serial USB** in the Transfer Setup Communication window.



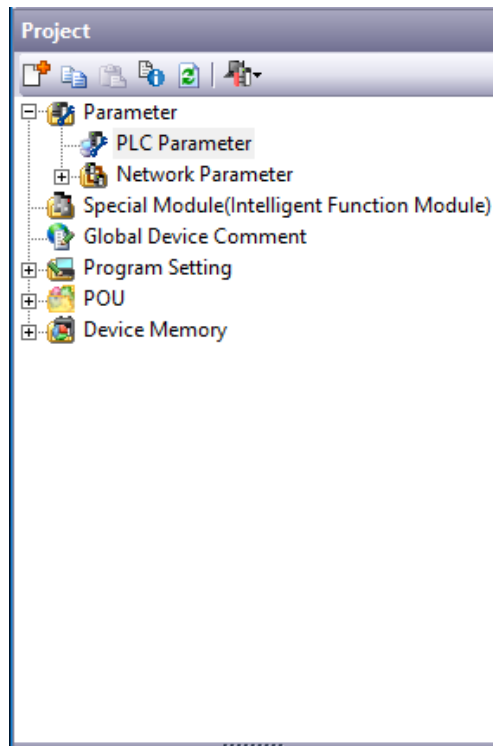
Select the **RS-232C** radio button and select the **COM Port** that the PLC is connected at. Click **Connection Test** to verify the connection and then press OK.



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.

FX Parameter

Memory Capacity | Device | PLC Name | **PLC System(1)** | **PLC System(2)** | Special Function Block | Positioning | Ethernet Port

CH1

☒ Operate Communication Setting

The setting contents are cleared when unchecked.
(When communicate with GX Works2, GOT, etc. by PLC using optional board for FX etc., the D8120 special register of PLC must be 0 cleared, and must be unchecked.)

Protocol: Dedicated Protocol

Data Length: 7Bit

Parity: Even

Stop Bit: 1Bit

Transmission Speed: 19200 (bps)

☐ Header

☐ Terminator

☐ Control Line

H/W Type: RS-485

Control Mode: Invalid

☒ Sum Check

Transmission Control Procedure: Form1(Without CR,LF)

Station Number Setting: 00 H (00H-0FH)

Time Out Judge Time: 1 X 10ms (1--255)

Print Window... | Print Window Preview | Default | Check | End | Cancel

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.

Connecting PLC to HMI

Edit Link Property

Link Setting

Name: Link0

Interface Type: Serial

Manufacturer: Mitsubishi Electric Corporation

Product Series: Mitsubishi FX3U/3G-485BD

Interface Setting

Basic | Comm. Error Handling

Port: COM3 | Timeout(ms): 3000

Baudrate: 19200 | Command Delay(ms): 0

Parity: Even | Retry Count: 0

Data Bits: 7 | TX Control Procedure: Form1(Without CR,LF)

Stop Bits: 1 | Sum Check: ☒

Device Specific Setting

☐ Sub-links

Device Name: Q

Station Number: 0

OK

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

PLC RS422 Pinout



HMI COM3 Pinout

|  <p>*Looking into HMI Device</p> | |
|---|-------------------------|
| PIN# | COM3 (RS-422/RS-485) |
| 1 | |
| 2 | |
| 3 | ISO_GND |
| 4 | RX+ |
| 5 | RX- |
| 6 | TX+ |
| 7 | TX- |

P5070S/P5070N/P5070N1/P5102N/P5102N1

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

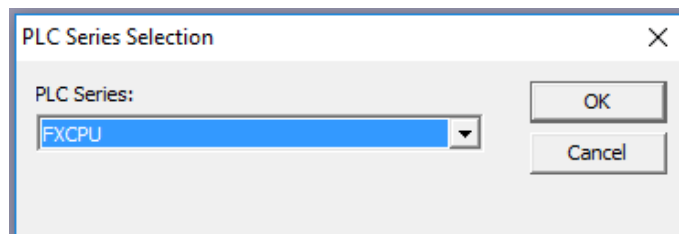
2.2.5.3 Connecting to HMI

Configuring IP Address on PLC

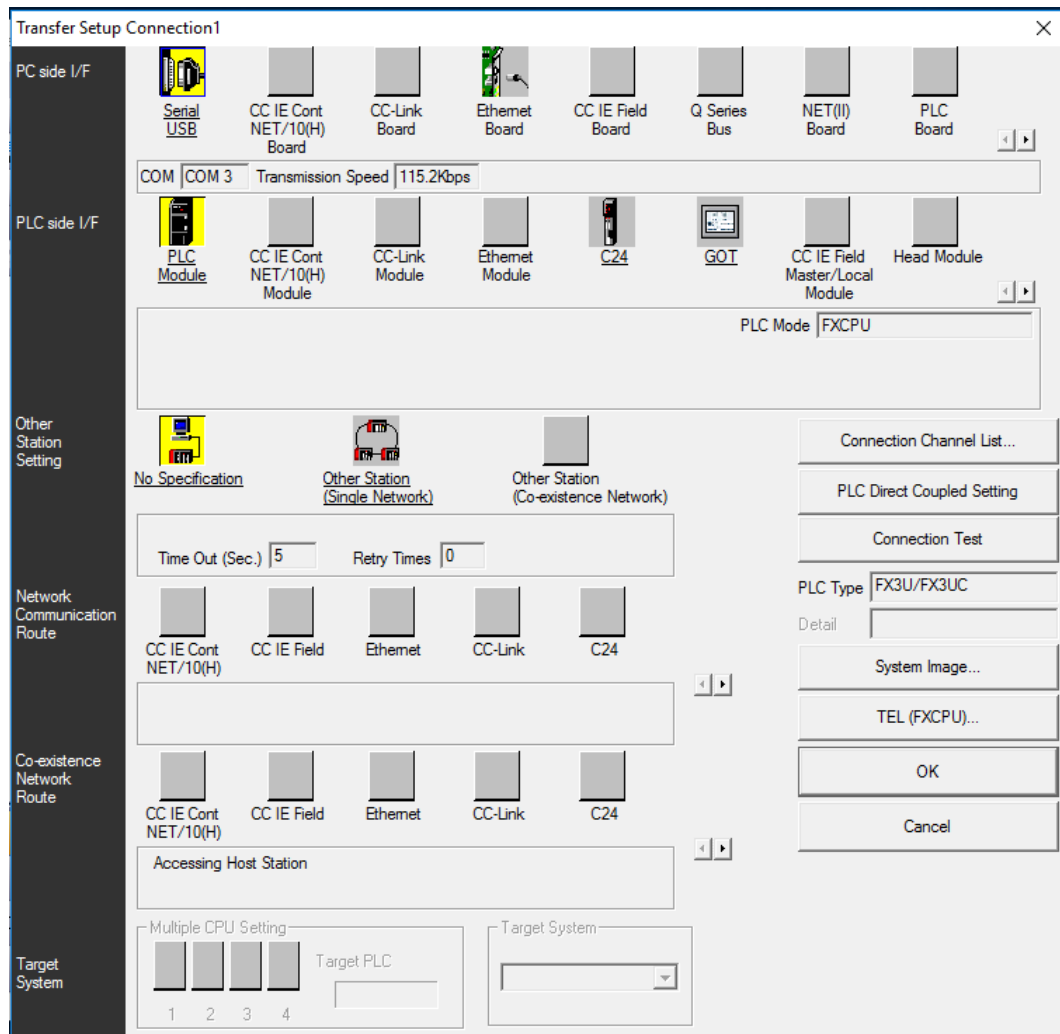
Use **MELSOFT GX Works2** to configure the IP address of the PLC.

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

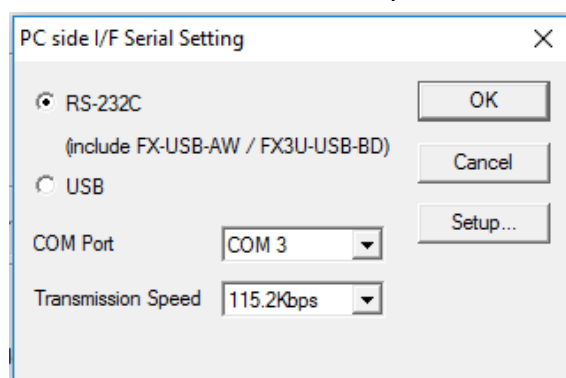
Select the **FXCPU** PLC series.



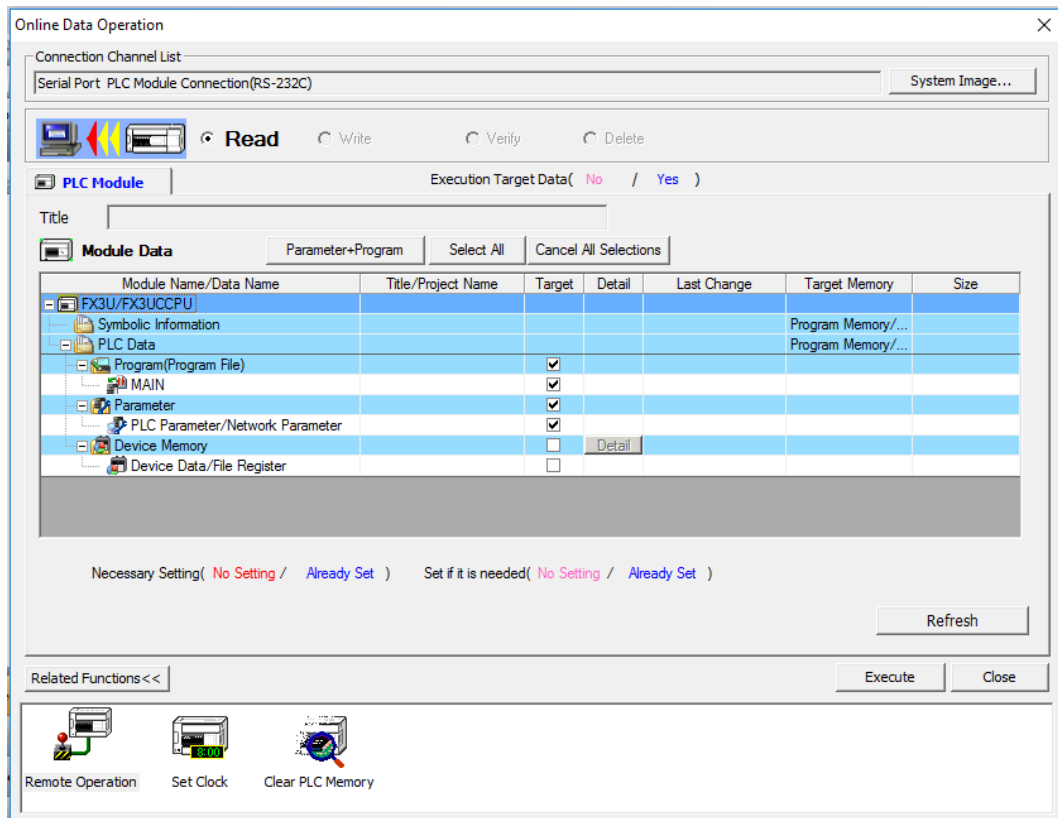
Select **Serial USB** in the Transfer Setup Communication window.



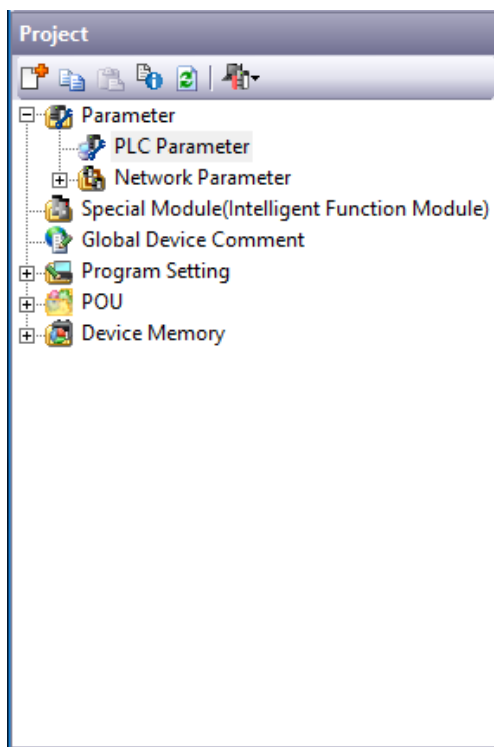
Select the **RS-232C** radio button and select the **COM Port** that the PLC is connected at. Click **Connection Test** to verify the connection and then press OK.



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.

FX Parameter

Memory Capacity | **Device** | PLC Name | PLC System(1) | PLC System(2) | Special Function Block | Positioning | Ethernet Port

Channel: CH2

IP Address Setting

Input Format: DEC

IP Address: 192 168 0 30

Subnet Mask Pattern:

Default Router IP Address:

Open Setting

Time Setting

Log Record Setting

Optional Settings (Default / Changed)

Communication Data Code

☒ Binary Code

☐ ASCII Code

☐ Disable direct connection to MELSOFT

☐ Do not respond to search for CPU on network

Print Window... Print Window Preview Default Check End Cancel

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.

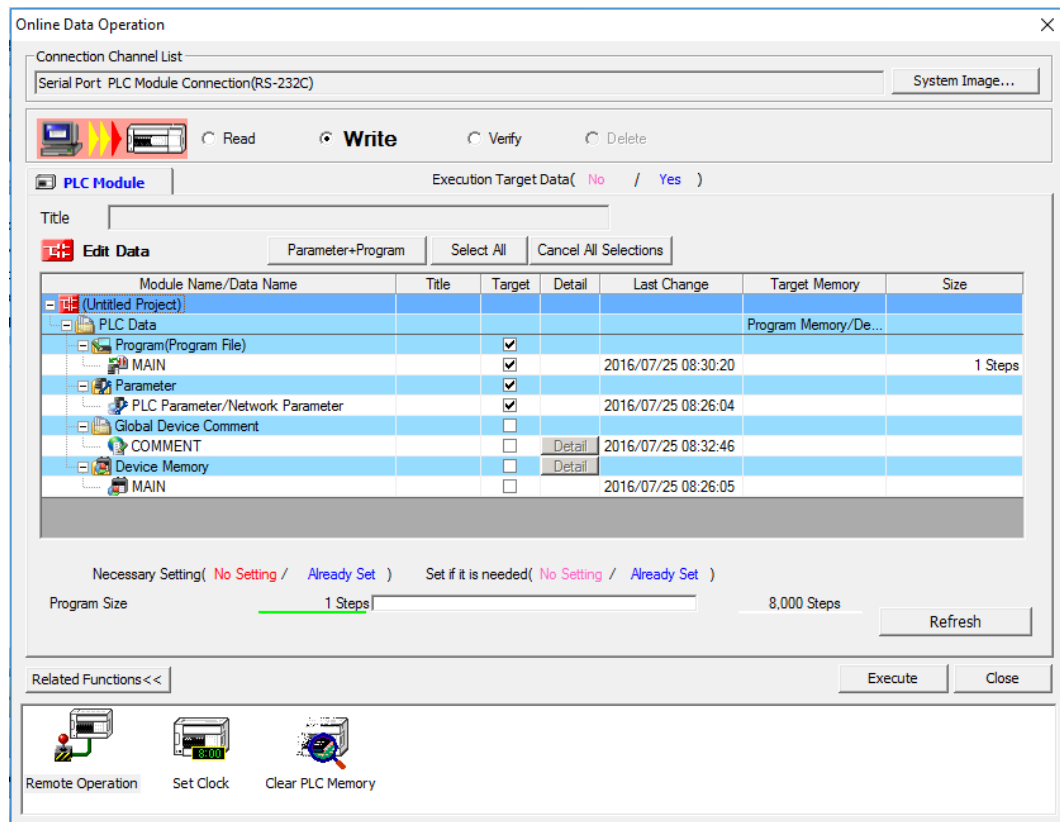
Ethernet Port Open Setting

| | Protocol | Open System | Host Station Port No. | Destination IP Address | Destination Port No. |
|---|----------|-------------|-----------------------|------------------------|----------------------|
| 1 | TCP | MC Protocol | 5001 | | |
| 2 | TCP | MC Protocol | 5002 | | |
| 3 | TCP | MC Protocol | 5003 | | |
| 4 | TCP | MC Protocol | 5004 | | |

Input decimal value for the Host Station Port No., Destination IP Address and Destination Port No..

End Cancel

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.

Connecting PLC to HMI

Edit Link Property

Link Setting

Name: Link0

Interface Type: Ethernet

Manufacturer: Mitsubishi Electric Corporation

Product Series: Mitsubishi FX3U-ENET-ADP(BINARY)

Interface Setting

Basic | Comm. Error Handling | Advance

IP Address: 192.168.0.30 | Timeout(ms): 3000

Port: 5001 | Command Delay(ms): 0

Retry Count: 0

Device Specific Setting

☐ Sub-links

Device Name: Q

Station Number: 0

OK

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 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...

2.2.6.3 Connecting to HMI

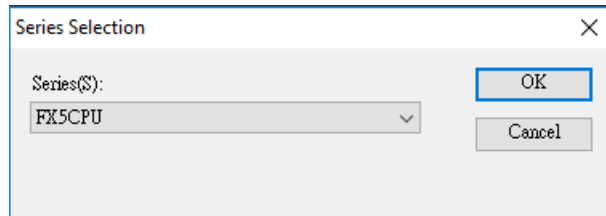
Configuring the PLC

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

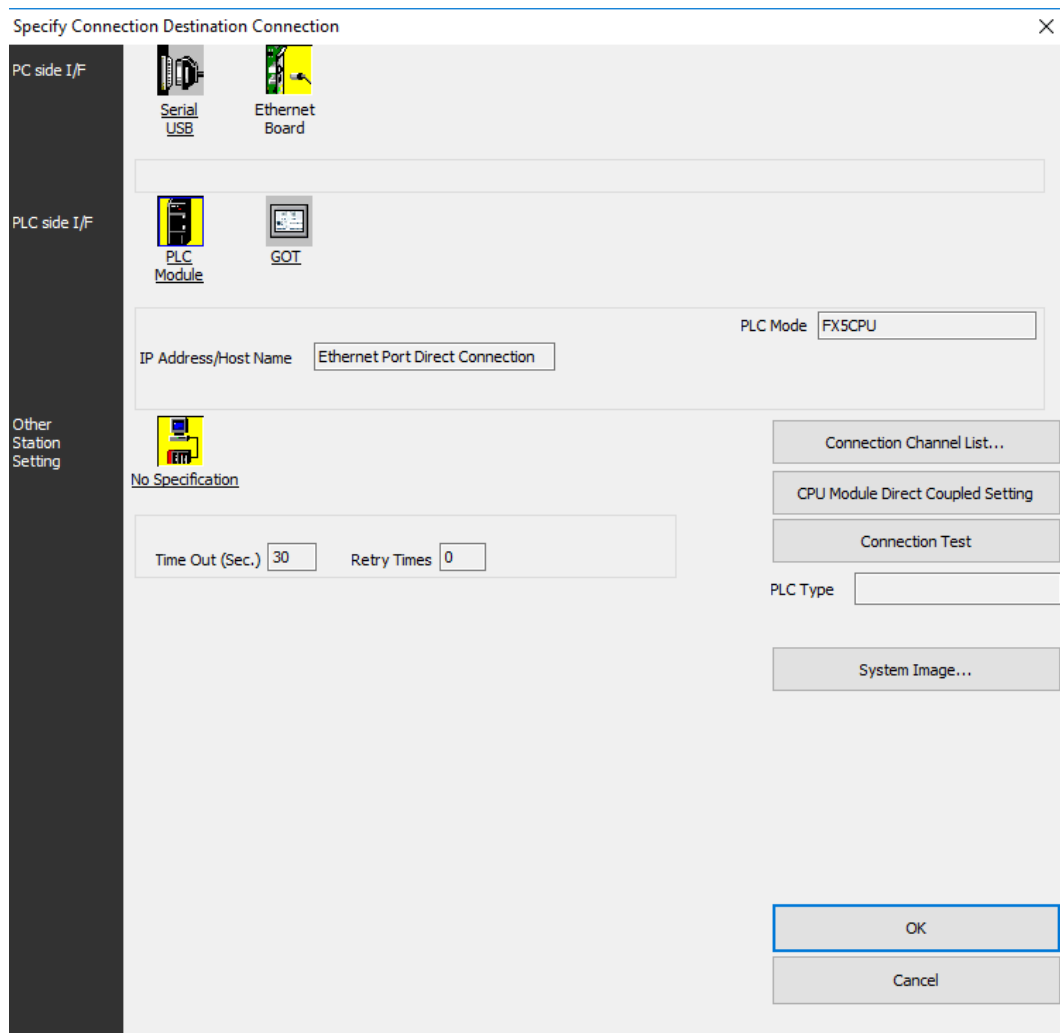
Use **MELSOFT GX Works3** to configure the port of the PLC.

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

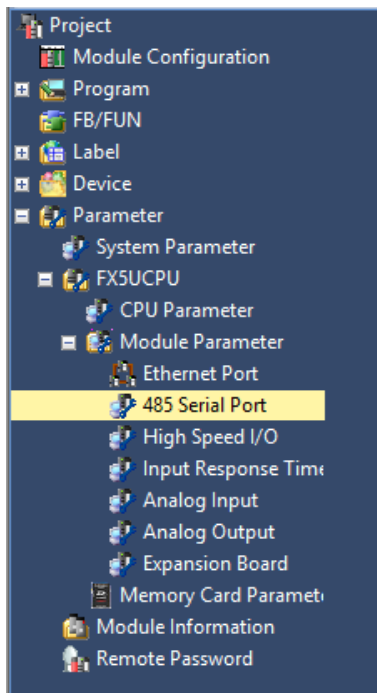
Select the **FX5CPU** option for the Series.



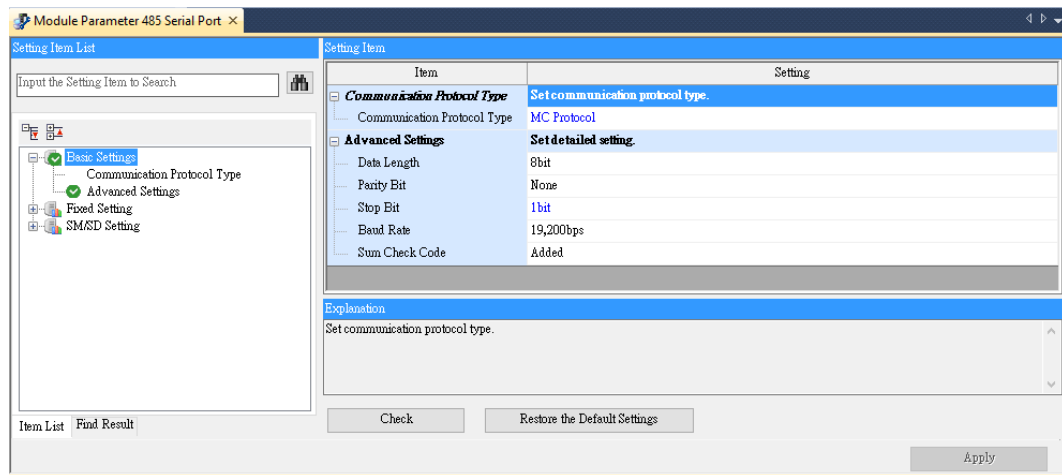
In the connection window, select **Ethernet Board**. Click **PLC Module** and in the dialog window, select the **Ethernet Port Direct Connection** radio button.



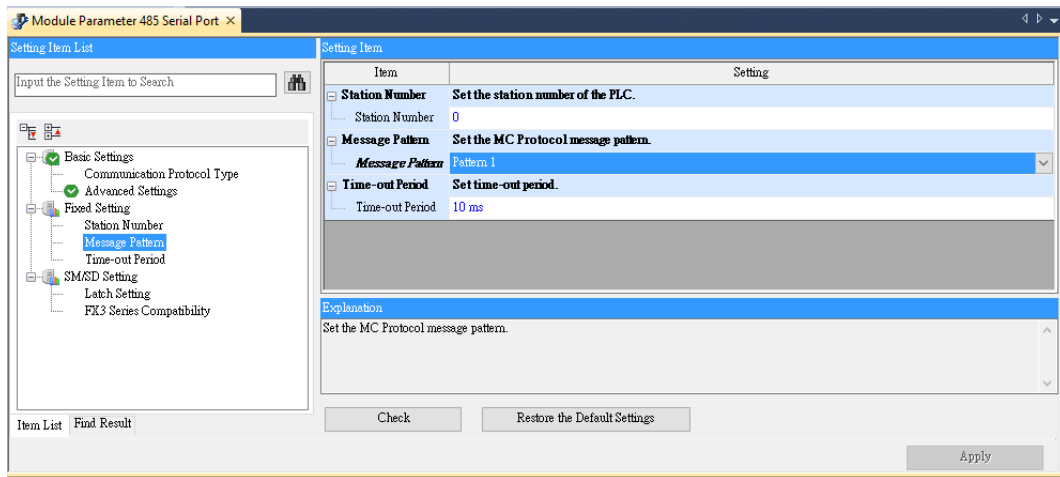
In the **Project** sidebar, expand **Parameter**, **FX5UCPU**, and **Module Parameter** and select **485 Serial Port**.



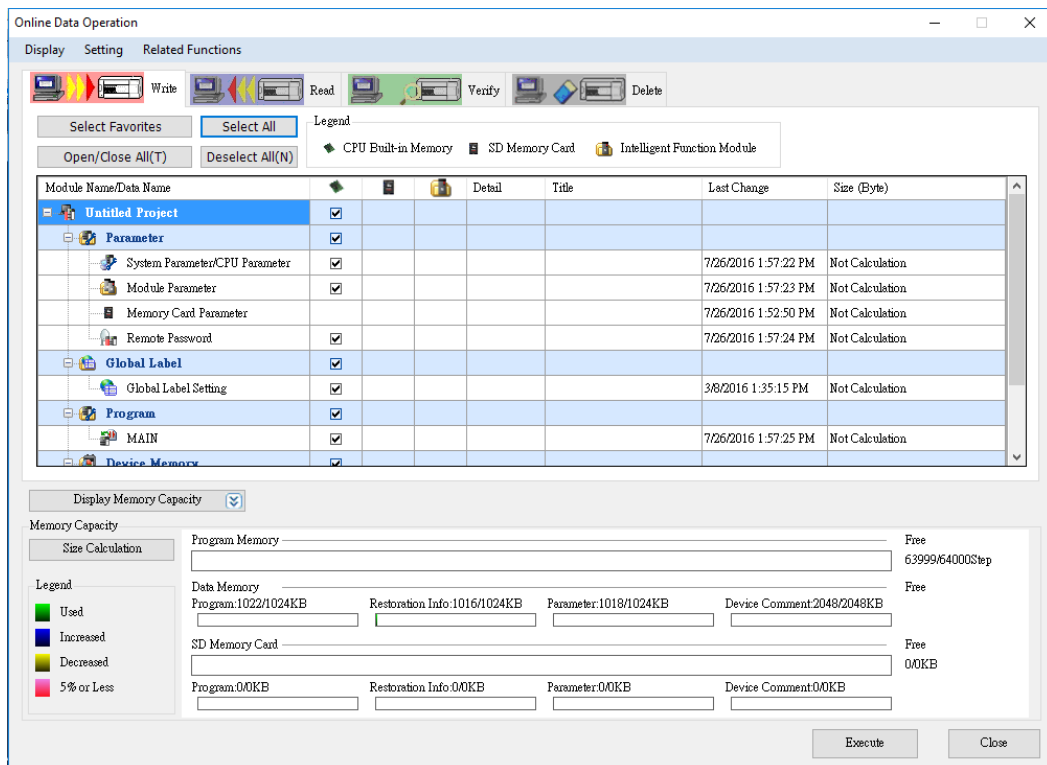
Under Basic Settings, change **Communication Protocol Type** to MC Protocol.



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.

Connecting PLC to 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.

Edit Link Property

Link Setting

Name: Link0

Interface Type: Serial

Manufacturer: Mitsubishi Electric Corporation

Product Series: Mitsubishi FX5U-SERIAL

Interface Setting

Basic | Comm. Error Handling

Port: COM3 | Timeout(ms): 3000

Baudrate: 19200 | Command Delay(ms): 0

Parity: None | Retry Count: 0

Data Bits: 8 | TX Control Procedure: Form1(Without CR,LF)

Stop Bits: 1 | Sum Check: ☒

Device Specific Setting

☐ Sub-links

Device Name: Q

Station Number: 0

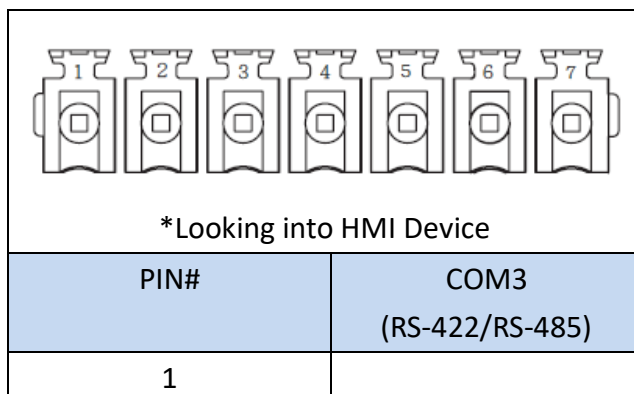
OK

2.2.6.4 Wiring Diagrams

PLC RS422 Pinout



HMI COM3 Pinout



| | |
|---|---------|
| 2 | |
| 3 | ISO_GND |
| 4 | RX+ |
| 5 | RX- |
| 6 | TX+ |
| 7 | TX- |

P5070S/P5070N/P5070N1/P5102N/P5102N1

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

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 Connecting to HMI

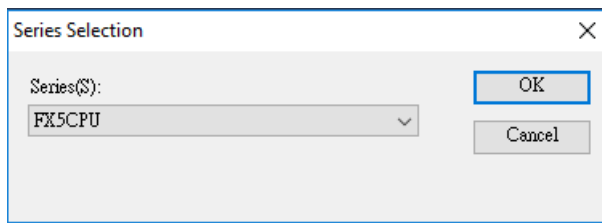
Configuring IP Address on PLC

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

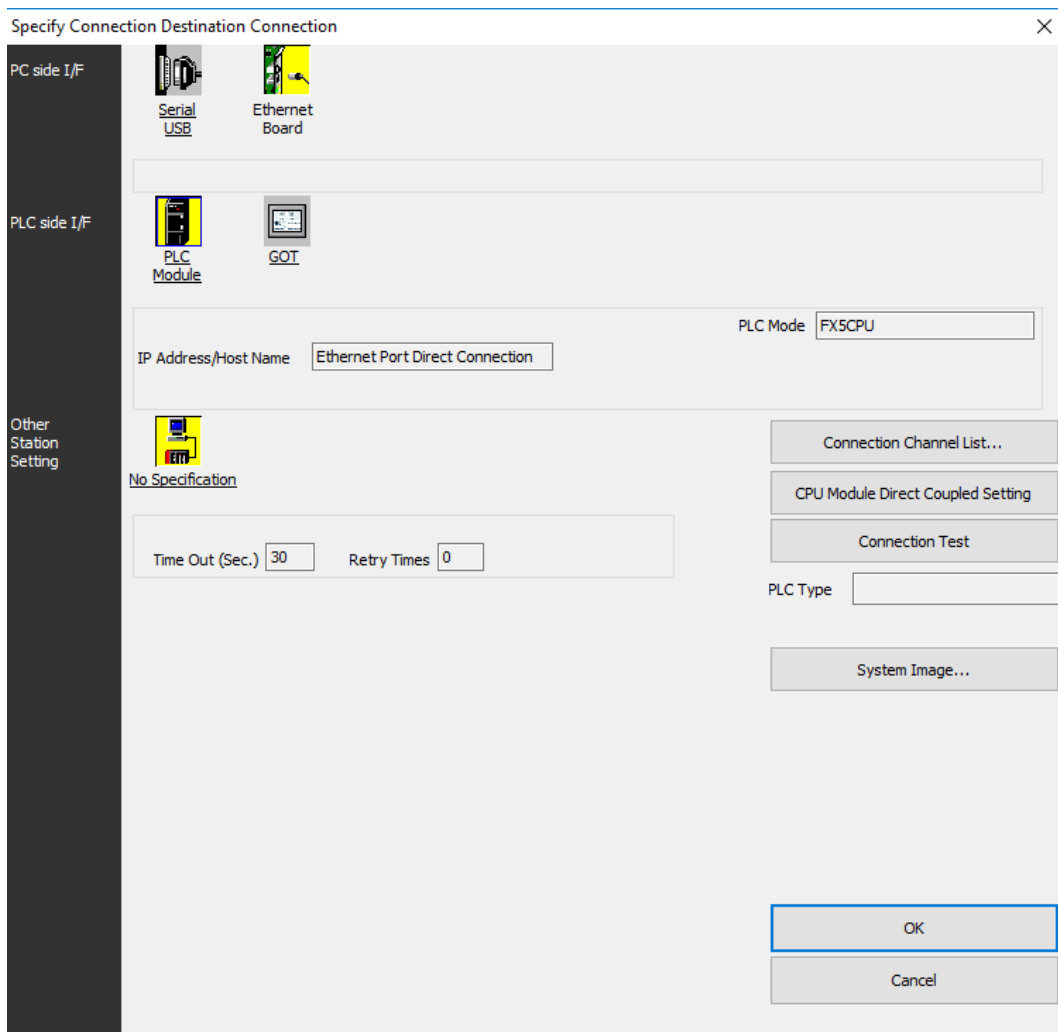
Use **MELSOFT GX Works3** to configure the port of the PLC.

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

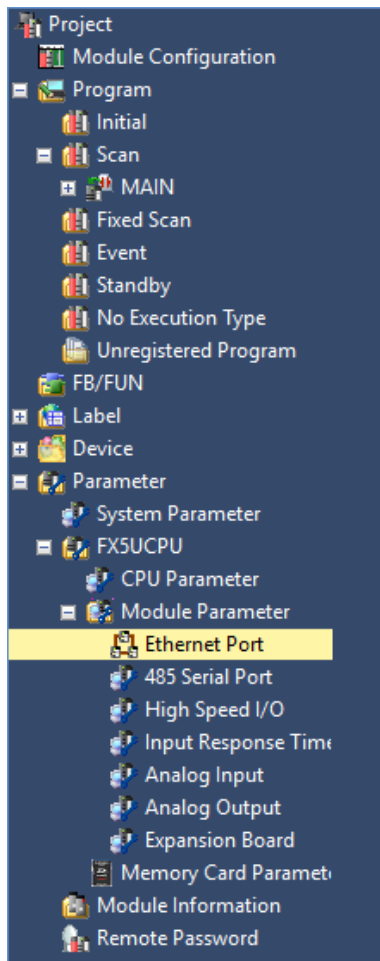
Select the **FX5CPU** option for the Series.



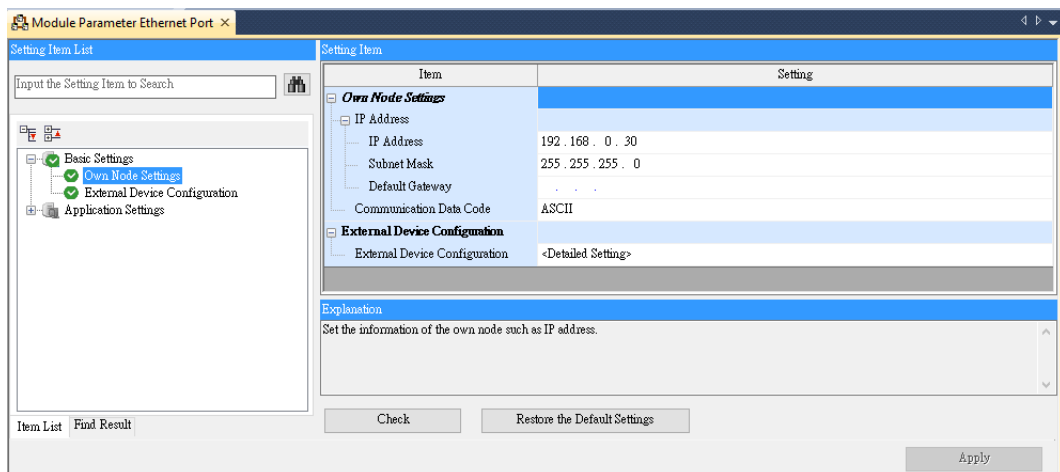
In the connection window, select **Ethernet Board**. Click **PLC Module** and in the dialog window, select the **Ethernet Port Direct Connection** radio button.

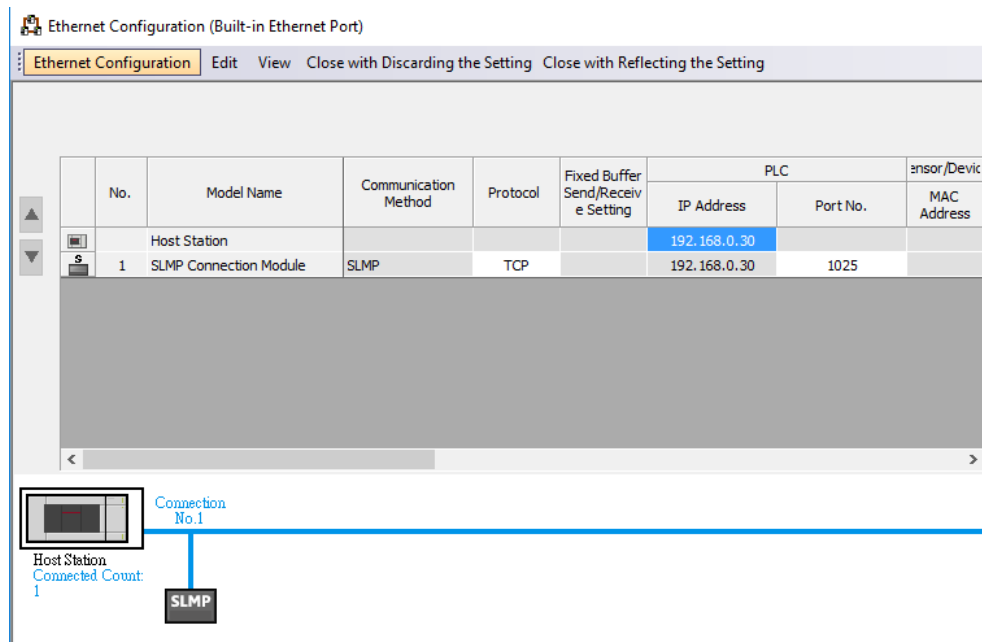


In the **Project** sidebar, expand **Parameter**, **FX5UCPU**, and **Module Parameter** and select **Ethernet Port**.

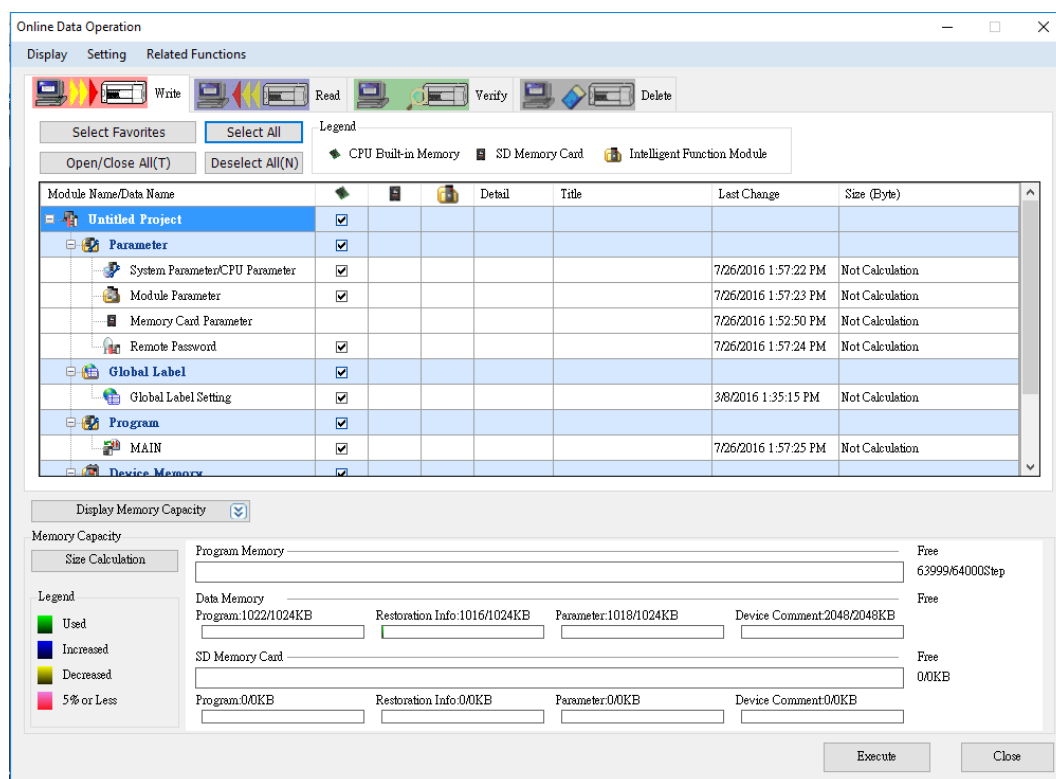


The **IP Address** of the PLC can be obtained here. Switch the **Communication Data Code** to the mode needed (Binary or ASCII). Double click "<Detailed Setting>" under **External Device Configuration** to get the port information. Verify the **Protocol** is TCP.



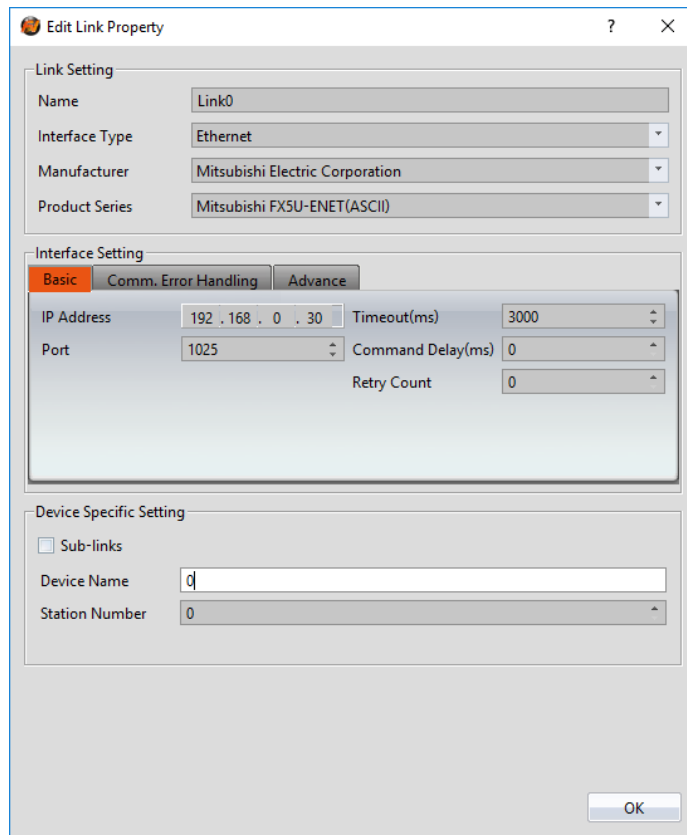


If the user needs to change the **IP Address**, edit the IP address under the **Own Node Settings**. Then enter the Detailed Settings and press **Close with Reflecting the Setting**. Under the **Online** menu option, select **Write to PLC** to save the settings to the PLC. Click **Select All** and press **Execute** in the Online Data Operation window.



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

Connecting 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 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

2.2.8.1 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 Procedure | Form1 | Without CR,LF |
| Sum Check | Yes | |
| Communication Method | MC Protocol 3C | |

2.2.8.2 Memory Resource Review

| Device | Description | Data bit | Min. | Max. | Description |
|--------|-------------------------|----------|-------|------|-------------|
| 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 |

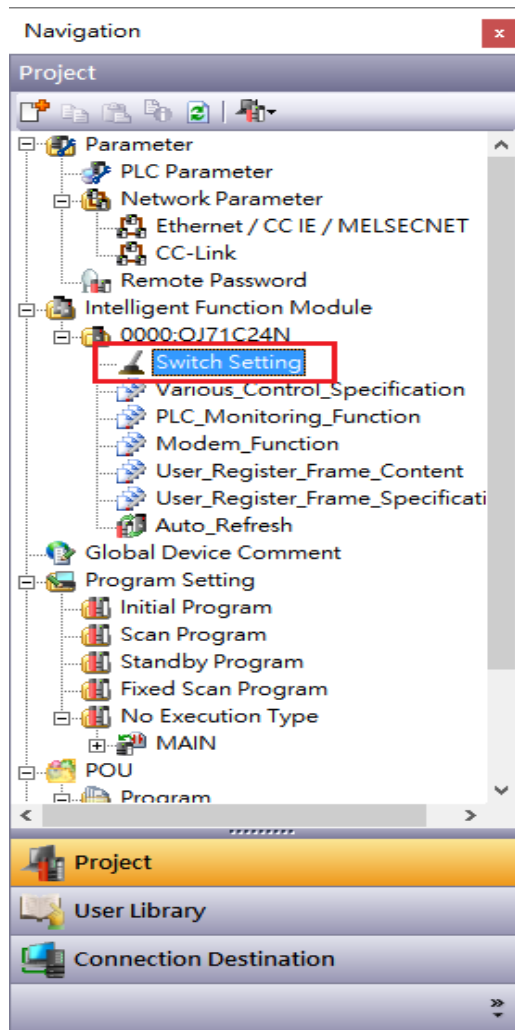
| | | | | | |
|---------|-------------------------------|----|-------|---|-------|
| WM | Internal Relay | 16 | DDDDD | 0 | 61424 |
| WL | Link Relay | 16 | DDDD | | 32752 |
| B_Word | Link Relay | 16 | HHHH | 0 | eff0 |
| F_Word | Annunciator | 16 | DDDDD | 0 | 32752 |
| WV | Edge relay | 16 | DDDDD | 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 Connecting to HMI

Configuring the PLC

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

Under the Project Sidebar, expand **Intelligent Function Module** and select **Switch Setting**.



Configure it to the settings detailed below.

Switch Setting 0000:QJ71C24N

| Item | CH1 | CH2 |
|----------------------------------|------------------------|------------------------|
| Operation setting | Independent | Independent |
| Data Bit | 7 | 7 |
| Parity Bit | None | None |
| Even/odd parity | Odd | Odd |
| Stop bit | 1 | 1 |
| Sum check code | None | None |
| Online Change | Disable | Disable |
| Setting modifications | Disable | Disable |
| Communication rate setting | 115200bps | 115200bps |
| Communication protocol setting | MC protocol (Format 4) | MC protocol (Format 4) |
| Station number setting (0 to 31) | 0 | |

The following setting is available for product information 10122000000000-B or later.
Communication protocol setting
- Predefined protocol

* This dialog setting is linked to the Switch Setting of the PLC parameter.
Default value will be shown in the dialog
if the Switch Setting of the PLC parameter contains an out-of-range value.

OK Cancel

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

Connecting PLC to HMI

新增連結屬性

連結設定

名稱: 連結0

通訊介面類型: 直接連線(串列埠)

製造商: Mitsubishi Electric Corporation

產品系列: Mitsubishi QSeries-Serial Communication(Link Port)

通訊介面設定

基本 通訊異常處理

連接埠: COM1 超時(毫秒): 3000

傳輸速率: 19200 命令延遲(毫秒): 0

校驗: 無 重試次數: 0

數據位元: 8 傳輸控制程序: Form1(不包含 CR,LF)

停止位元: 1 總和檢查: ☒

設備配置

☐ 次連線

設備名稱: 0

站號: 0 ☐ Set By Register

確定 取消

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.

2.2.8.4 Wiring Diagrams

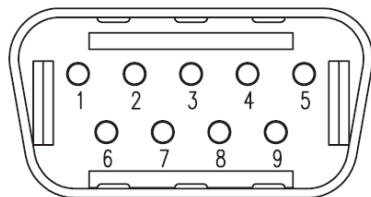
QJ71C24N RS232 Pinout



* Looking into PLC Device

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

HMI COM1 腳位



*Looking into COM1 Port

| PIN# | COM1 (RS232) |
|------|--------------|
| 1 | |
| 2 | RX |
| 3 | TX |
| 4 | |
| 5 | GND |

| | |
|---|-----|
| 6 | |
| 7 | RTS |
| 8 | CTS |
| 9 | |

All P5 Series

| HMI COM1 | PLC RS232 Port | |
|----------|----------------|---------|
| 2 RX | 2 TXD | |
| 3 TX | 3 RXD | |
| 5 GND | 9 GND | |
| | 1 DCD | circuit |
| | 4 DTR | |
| | 6 DSR | |
| | 7 RTS | circuit |
| | 8 CTS | |

2.2.9 Q/L Series-ENET

2.2.9.1 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 |

2.2.9.2 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 | 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 |

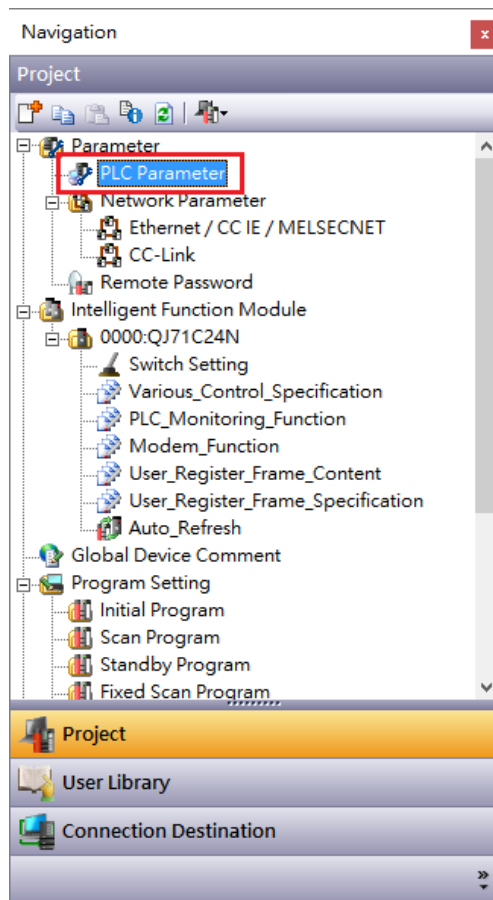
*1 Address increased by 0, 20, 40, 60...

2.2.9.3 Connecting to HMI

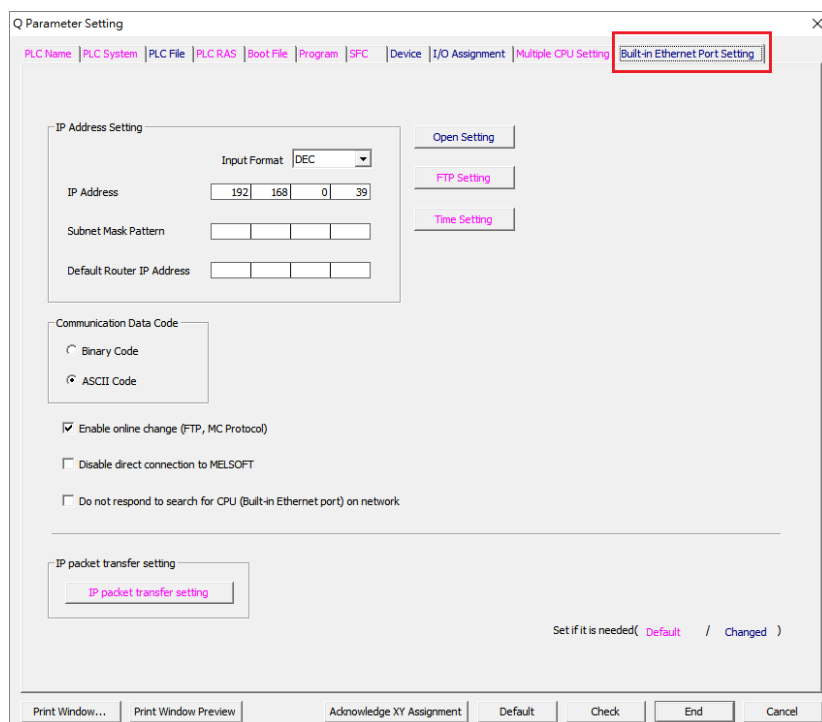
Configuring IP Address on PLC

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**.

Built-in Ethernet Port Open Setting

IP Address/Port No. Input Format: DEC

| | Protocol | Open System | TCP Connection | Host Station | Destination IP Address | Destination Port No. | Start Device to Store Predefined Protocol |
|----|----------|--------------------|----------------|--------------|------------------------|----------------------|---|
| 1 | TCP | MC Protocol | | 4999 | | | |
| 2 | TCP | MELSOFT Connection | | | | | |
| 3 | TCP | MELSOFT Connection | | | | | |
| 4 | TCP | MELSOFT Connection | | | | | |
| 5 | TCP | MELSOFT Connection | | | | | |
| 6 | TCP | MELSOFT Connection | | | | | |
| 7 | TCP | MELSOFT Connection | | | | | |
| 8 | TCP | MELSOFT Connection | | | | | |
| 9 | TCP | MELSOFT Connection | | | | | |
| 10 | TCP | MELSOFT Connection | | | | | |
| 11 | TCP | MELSOFT Connection | | | | | |
| 12 | TCP | MELSOFT Connection | | | | | |
| 13 | TCP | MELSOFT Connection | | | | | |
| 14 | TCP | MELSOFT Connection | | | | | |
| 15 | TCP | MELSOFT Connection | | | | | |
| 16 | TCP | MELSOFT Connection | | | | | |

(*) IP Address and Port No. will be displayed by the selected format.
Please enter the value according to the selected number.

End Cancel

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

Connect PLC to HMI

新增連結屬性

連結設定

名稱: 連結0

通訊介面類型: 直接連線(乙太網路)

製造商: Mitsubishi Electric Corporation

產品系列: Mitsubishi Q/L Series-ENET(ASCII)

通訊介面設定

基本 通訊異常處理 進階

IP位址: 0 . 0 . 0 . 0 超時(毫秒): 3000

連接埠: 4999 命令延遲(毫秒): 0

重試次數: 0

設備配置

☐ 次連線

設備名稱: 0

站號: 0 ☐ Set By Register

確定 取消

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.

2.3 Omron

2.3.1 Omron SYSMAC CP Series

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

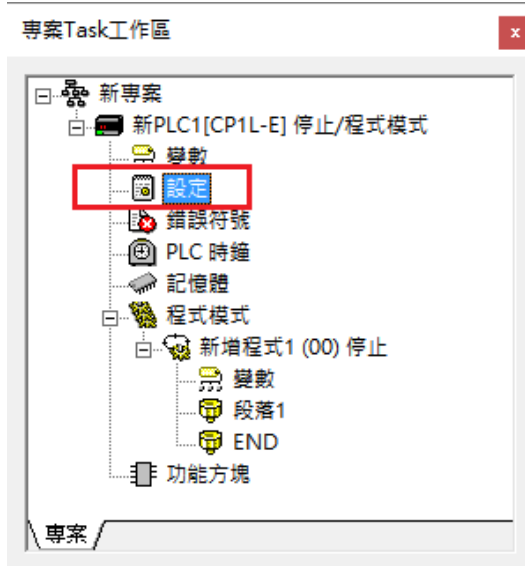
| Device | Description | Data bit | Min. | Max. |
|--------|--------------------|----------|------|-------|
| TIM | Timer Area | 1 | 0 | 4095 |
| CNT | Counter Area | 1 | 0 | 4095 |
| CIO | CIO Area | 16 | 0 | 6143 |
| W | Work Area | 16 | 0 | 511 |
| H | Holding Bit Area | 16 | 0 | 511 |
| A | Auxiliary 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 Connecting to HMI

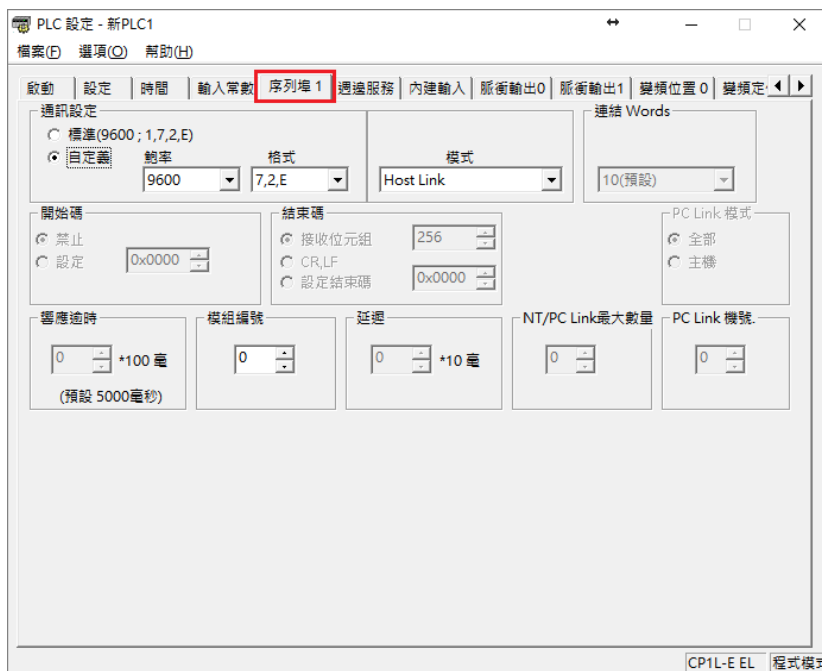
Configuring the PLC

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

Under **專案 Task 工作區** Sidebar, expand **設定**.



Navigate to **序列埠 1** tab and configure it to the settings detailed below.

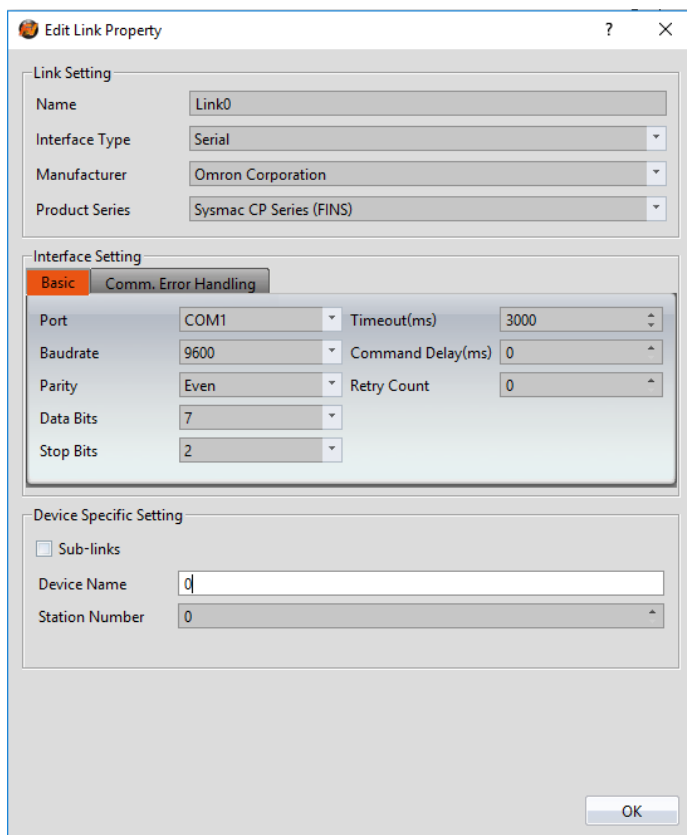


After click **傳輸到 PLC** to write in PLC.



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

Connecting PLC to HMI

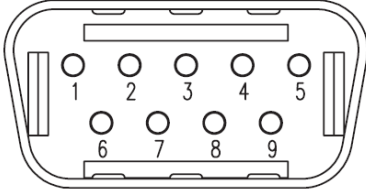


Within the **Link** configuration window in FvDesigner:
Under **Interface Type** select Serial

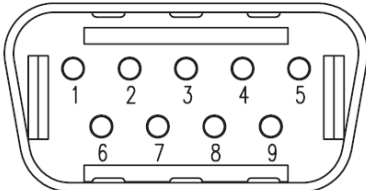
Under **Manufacturer** select Omron Corporation
 Under **Product Series** select Sysmac CP Series (FINS)
 Under **Port** select COM1

2.3.1.4 Wiring Diagrams

PLC RS232 Pinout

|  | |
|---|--------|
| *Looking into male RS232 Cable | |
| PIN# | Signal |
| 1 | |
| 2 | TX |
| 3 | RX |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | GND |

HMI COM1 Pinout

|  | |
|---|--------------|
| *Looking into COM1 Port | |
| PIN# | COM1 (RS232) |
| 1 | |
| 2 | RX |
| 3 | TX |
| 4 | |
| 5 | GND |
| 6 | |

| | |
|---|-----|
| 7 | RTS |
| 8 | CTS |
| 9 | |

All P5 Series

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

2.3.2 Omron SYSMAC CP Series Ethernet

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

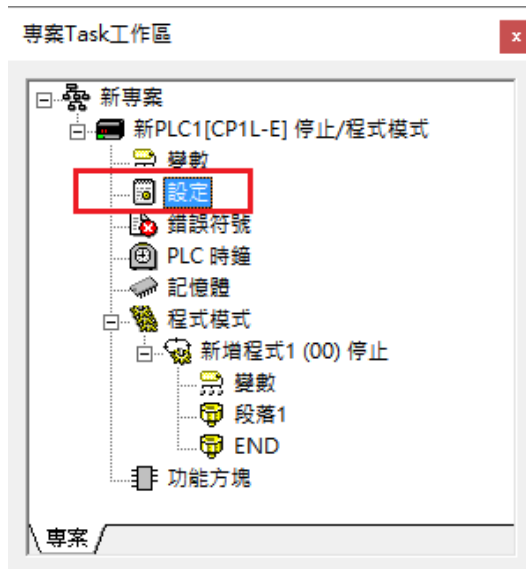
| Device | Description | Data bit | Min. | Max. |
|--------|------------------|----------|------|-------|
| TK | Task Flag | 1 | 0 | 31 |
| TIM | Timer Area | 1 | 0 | 4095 |
| CNT | Counter Area | 1 | 0 | 4095 |
| CIO | CIO Area | 16 | 0 | 6143 |
| W | Work Area | 16 | 0 | 511 |
| H | Holding Area | 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 Connecting to HMI

Configuring IP Address on PLC

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

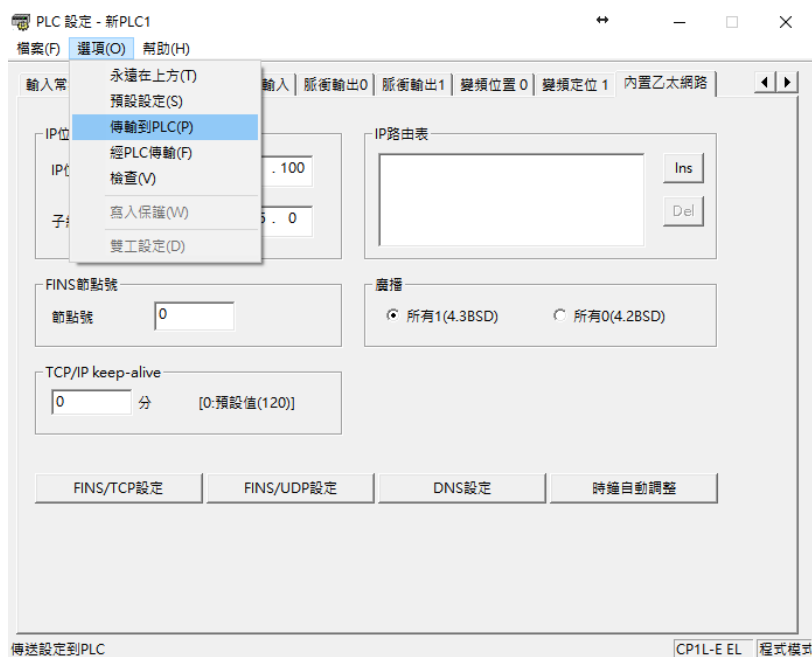
In the **專案 Task** sidebar, expand 設定



Navigate to 內置乙太網路 tab, the IP address and other parameters can be set.

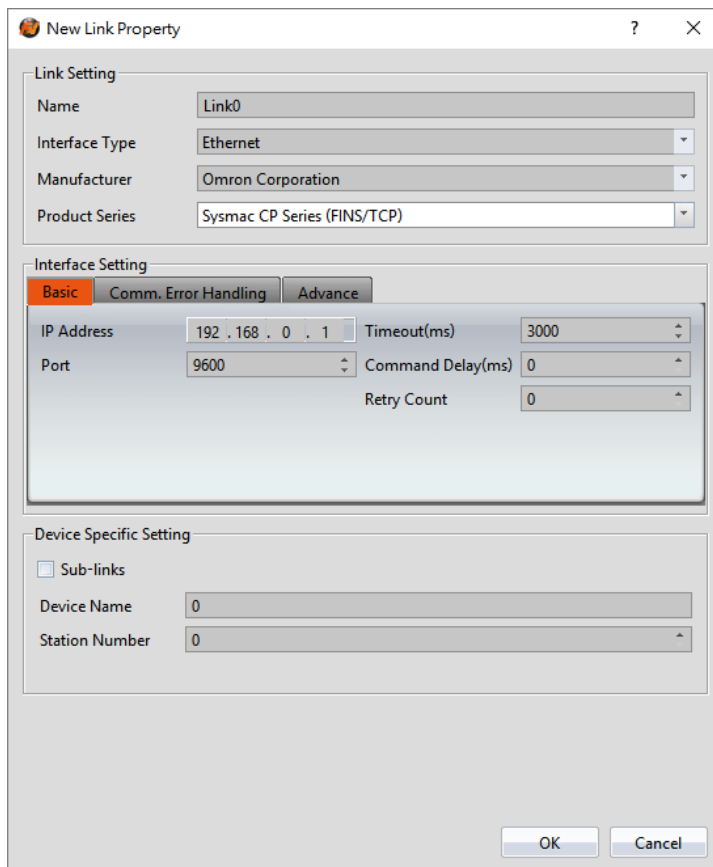


After click 傳輸到 PLC to write in PLC.



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

HMI 設定



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 Omron SYSMAC CS/CJ Series

2.3.3.1 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 | |

2.3.3.2 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 |

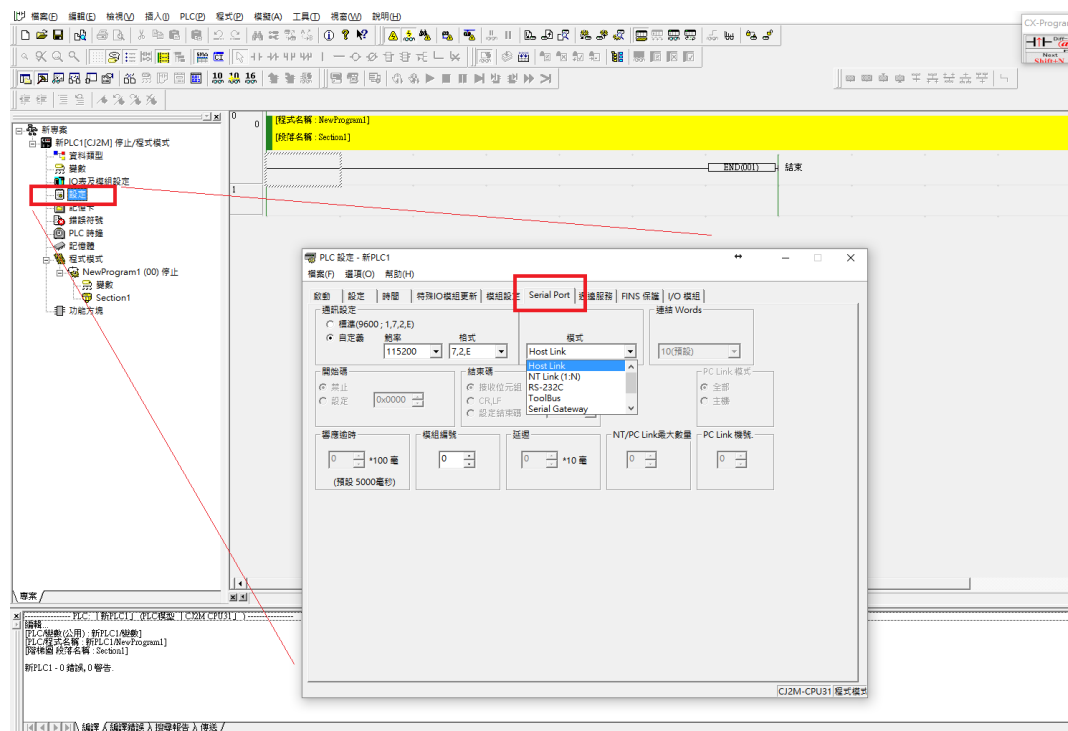
2.3.3.3 Connecting to HMI

Configuring the PLC

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

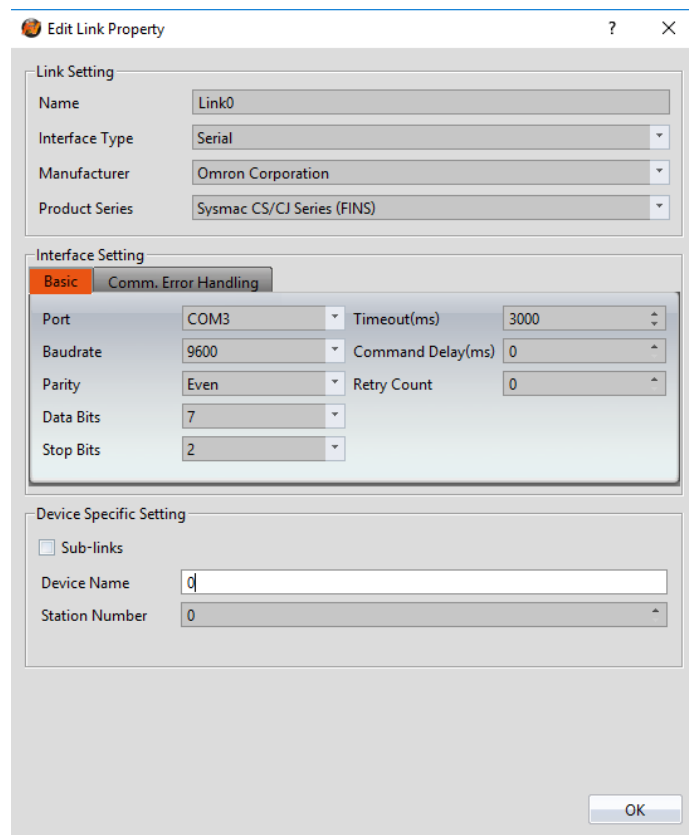
Under **專案 Task 工作區 Sidebar**, expand **設定**.

After navigate to **Serial Port** tab and configure it to the settings detailed below.



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

Connecting PLC to HMI



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

Under **Interface Type** select Serial

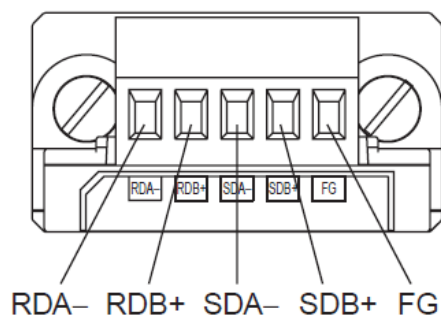
Under **Manufacturer** select Omron Corporation

Under **Product Series** select Sysmac CS/CJ Series (FINS)

Under **Port** select COM3

2.3.3.4 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- |

P5070S/P5070N/P5070N1/P5102N/P5102N1

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

2.3.4 Omron SYSMAC CS/CJ Series Ethernet

2.3.4.1 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 | |

2.3.4.2 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 |

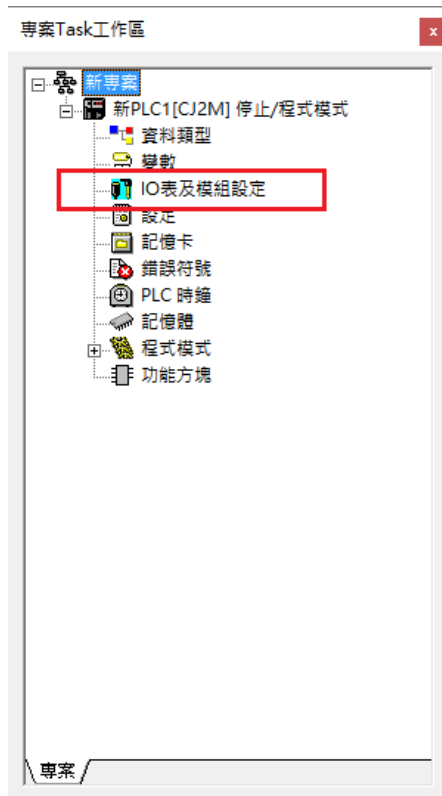
| | | | | |
|----|----------------|----|---|----|
| IR | Index Register | 32 | 0 | 15 |
|----|----------------|----|---|----|

2.3.4.3 Connecting to HMI

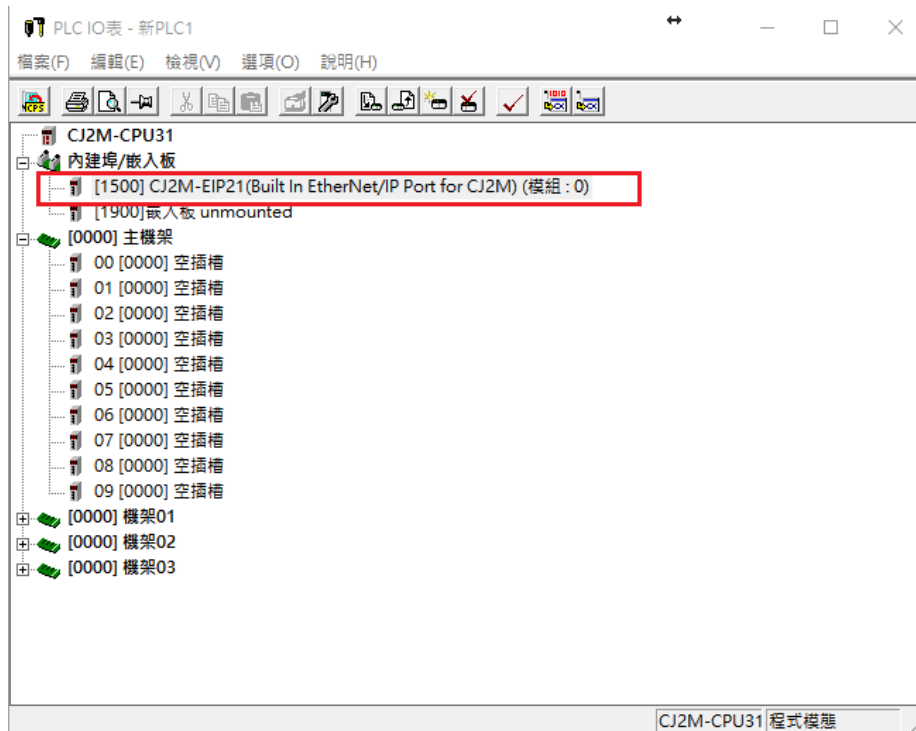
Configuring the PLC

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

In the 專案 Task 工具區 sidebar, expand **IO 表及模組設定**.



Expand 內建埠/嵌入板, and expand **EtherNet/IP Port**



IP address and other parameters can be set.



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

Connect PLC to HMI

Edit Link Property

Link Setting

Name: Link0

Interface Type: Ethernet

Manufacturer: Omron Corporation

Product Series: Sysmac CS/CJ Series (FINS/TCP)

Interface Setting

Basic | Comm. Error Handling | Advance

IP Address: 192 . 168 . 250 . 251 Timeout(ms): 3000

Port: 9600 Command Delay(ms): 0

Retry Count: 0

Device Specific Setting

☐ Sub-links

Device Name: 0

Station Number: 0

OK

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

2.4Siemens

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

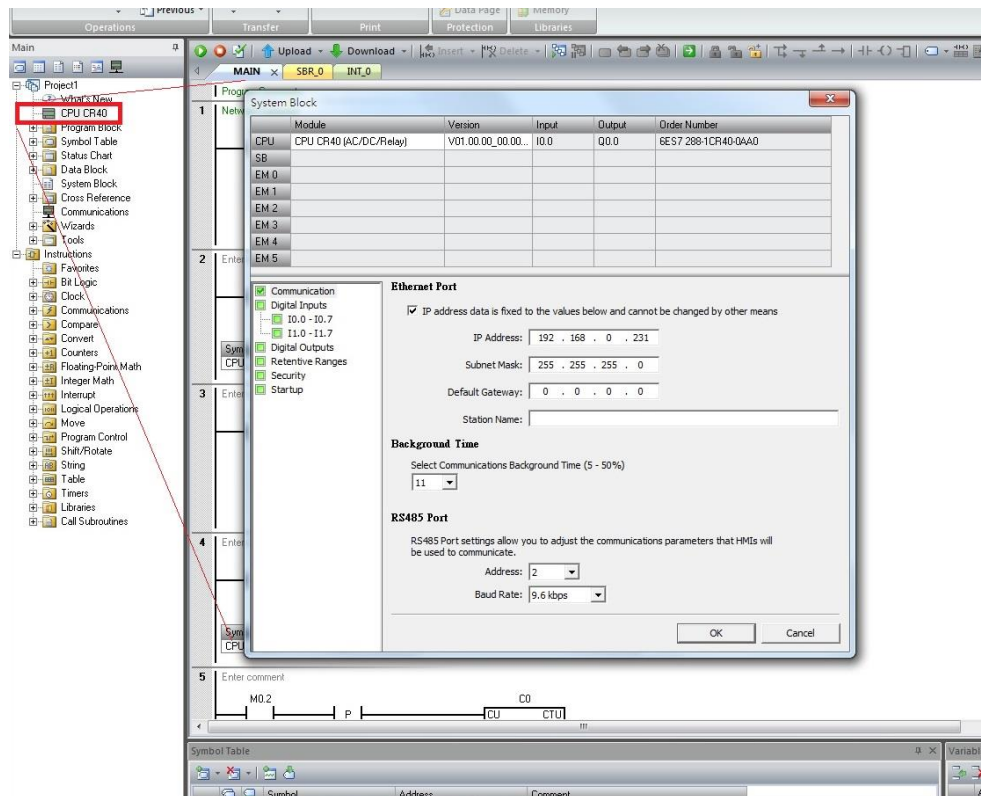
| Device | Description | Data bit | Min. | Max. |
|--------|---------------------------|----------|------|-------|
| I | Input | 1 | 0 | 31 |
| Q | Output | 1 | 0 | 31 |
| M | Bit Memory | 1 | 0 | 31 |
| V | Variable Memory | 1 | 0 | 20479 |
| C | Counter | 1 | 0 | 255 |
| T | Timer | 1 | 0 | 255 |
| 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 Connecting to HMI

Configuring the PLC

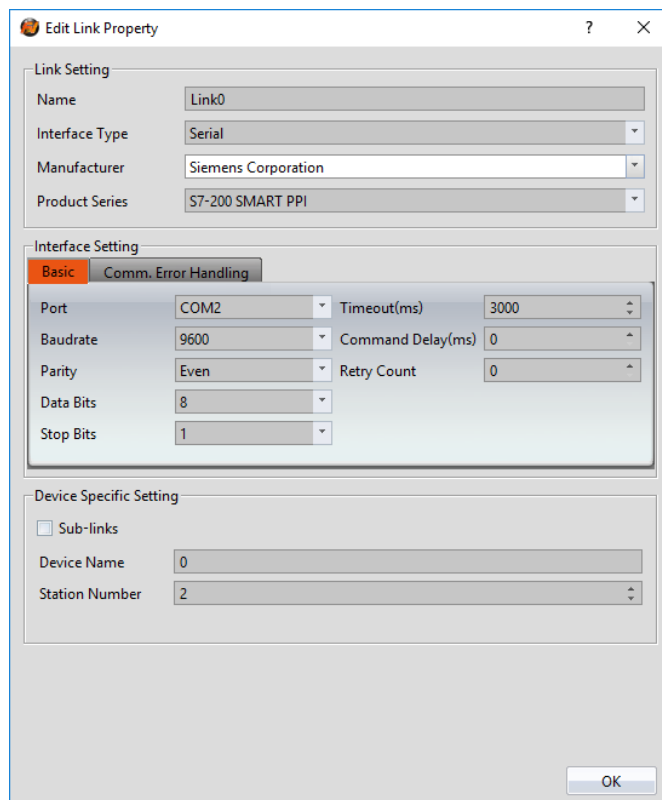
Use **Step7 microWIN smart** to configure the port of the PLC.

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.

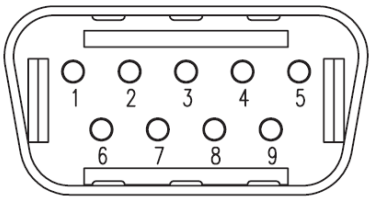
Connecting PLC to HMI



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

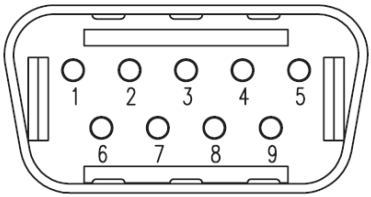
PLC RS485 Port



*Looking into male RS485 Cable

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

HMI (ex.P5043N) COM2 Pinout




*Looking into HMI

| PIN# | COM2 (RS485) |
|------|--------------|
| 1 | DATA+ |
| 2 | |

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

HMI (ex.P5070N1) COM3 Pinout

|  <p>*Looking into HMI Device</p> | |
|---|-------------------------|
| PIN# | COM3 (RS-422/RS-485) |
| 1 | |
| 2 | |
| 3 | ISO_GND |
| 4 | |
| 5 | |
| 6 | DATA+ |
| 7 | DATA- |

P5043S/P5043N

| HMI COM2 Port | PLC RS485 Port |
|---------------|----------------|
| 1 DATA+ | 3 DATA+ |
| 6 DATA- | 8 DATA- |
| 5 GND | 5 GND |

P5070S/P5070N/P5070N1/P5102N/P5102N1

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

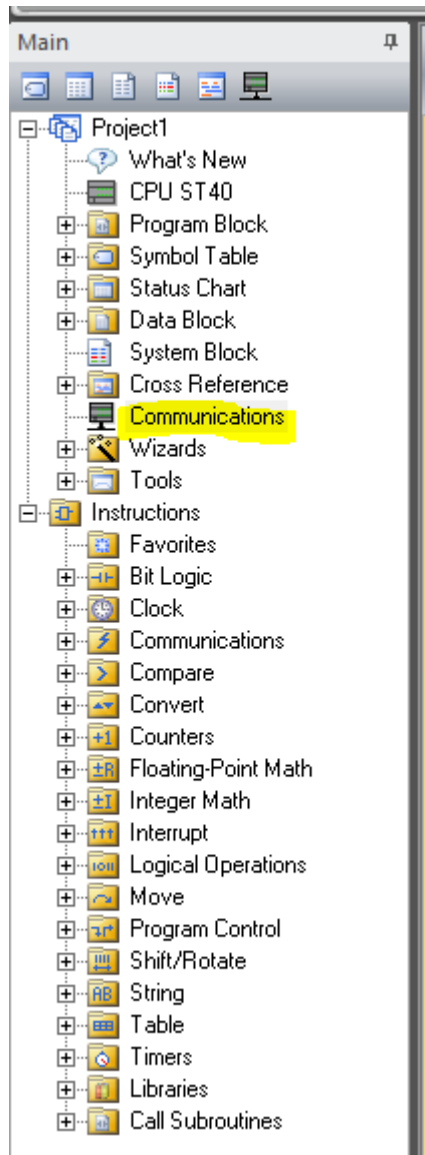
2.4.2.2 Memory Resource Review

| 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 |

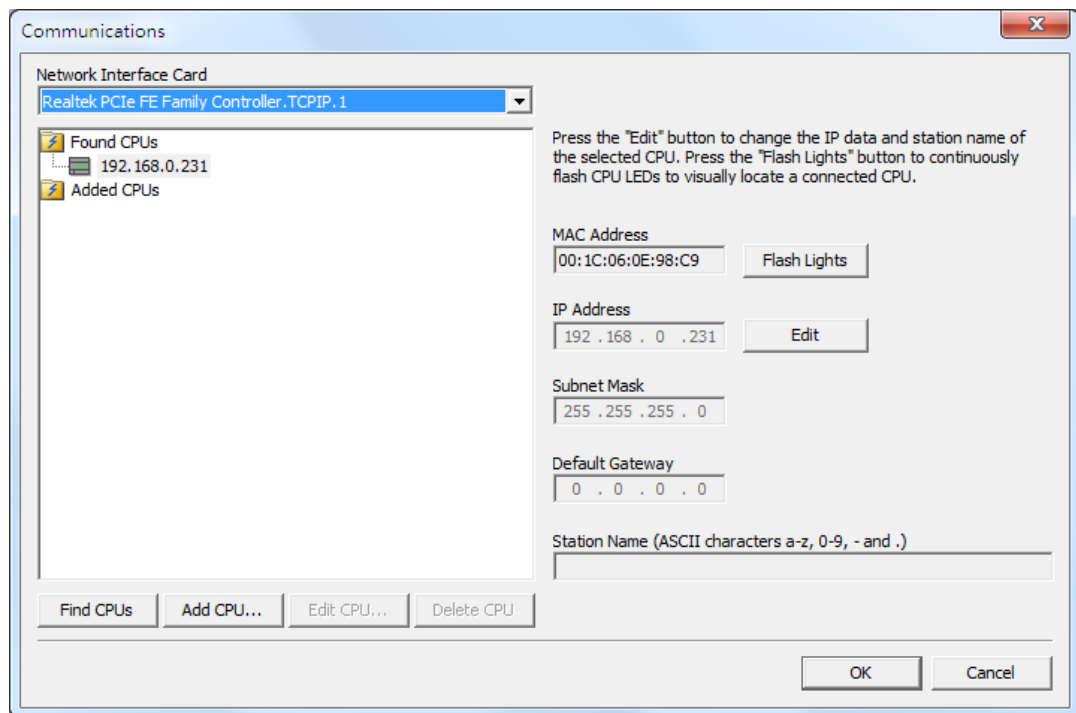
2.4.2.3 Connecting to HMI

Configuring IP Address on PLC

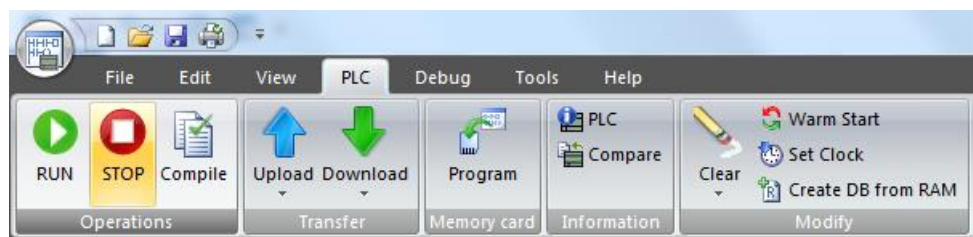
Use the application **STEP 7-MicroWIN SMART** to configure the IP address of the PLC. Under the **Project**, press the **Communications** option to connect to the PLC over the local network.



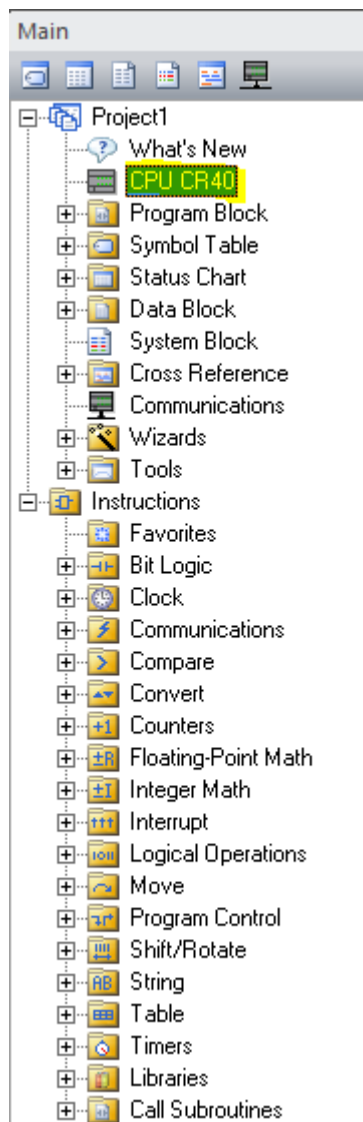
Under Network interface, select one of the options to scan the local network. The IP address of the PLC will show up. The MAC address can be verified with the one on the PLC.



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.

System Block

| | Module | Version | Input | Output | Order Number |
|------|------------------------|--------------------|-------|--------|---------------------|
| CPU | CPU CR40 (AC/DC/Relay) | V01.00.00_00.00... | I0.0 | Q0.0 | 6ES7 288-1CR40-0AA0 |
| SB | | | | | |
| EM 0 | | | | | |
| EM 1 | | | | | |
| EM 2 | | | | | |
| EM 3 | | | | | |
| EM 4 | | | | | |
| EM 5 | | | | | |

- ☒ Communication
- ☒ Digital Inputs
 - ☒ I0.0 - I0.7
 - ☒ I1.0 - I1.7
- ☒ Digital Outputs
- ☒ Retentive Ranges
- ☒ Security
- ☒ Startup

Ethernet Port

☒ IP address data is fixed to the values below and cannot be changed by other means

IP Address: 192 . 168 . 0 . 231

Subnet Mask: 255 . 255 . 255 . 0

Default Gateway: 0 . 0 . 0 . 0

Station Name:

Background Time

Select Communications Background Time (5 - 50%)

11

RS485 Port

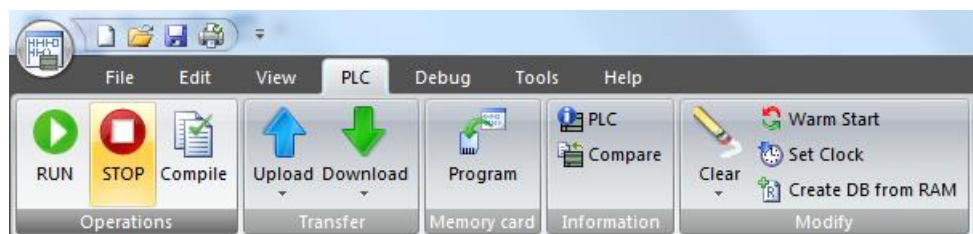
RS485 Port settings allow you to adjust the communications parameters that HMIs will be used to communicate.

Address: 2

Baud Rate: 9.6 kbps

OK Cancel

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



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

Connecting PLC to HMI

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

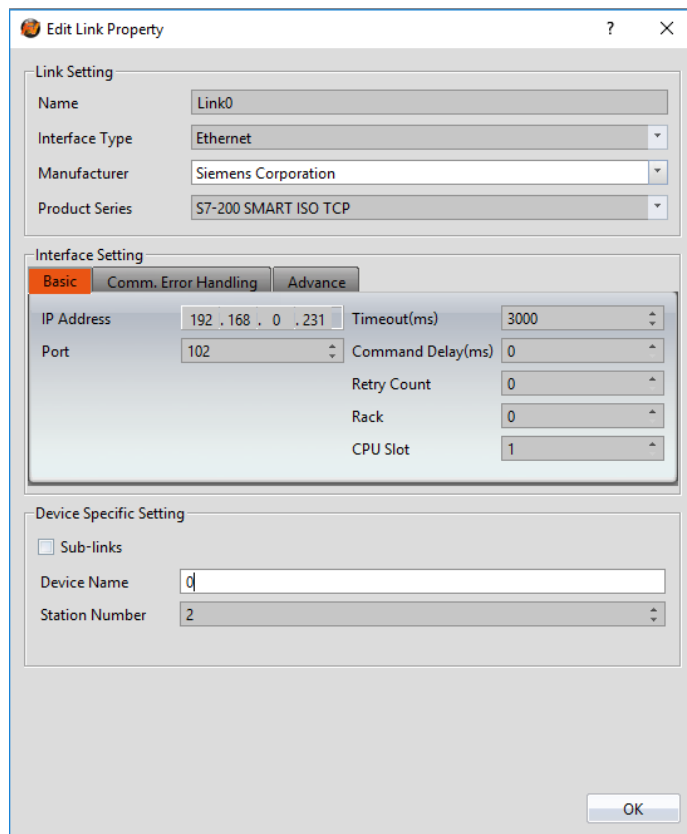
Under **Interface Type** select Ethernet


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.

The image shows a software window titled "Edit Link Property". It contains three main sections: "Link Setting", "Interface Setting", and "Device Specific Setting". The "Link Setting" section has fields for Name, Interface Type, Manufacturer, and Product Series. The "Interface Setting" section has tabs for "Basic", "Comm. Error Handling", and "Advance", with the "Basic" tab selected. It contains fields for IP Address, Port, Timeout(ms), Command Delay(ms), Retry Count, Rack, and CPU Slot. The "Device Specific Setting" section has a checkbox for "Sub-links" and fields for "Device Name" and "Station Number". An "OK" button is located at the bottom right.

 Edit Link Property ? X

Link Setting

Name

Interface Type

Manufacturer

Product Series

Interface Setting

Basic Comm. Error Handling Advance

| | | | |
|------------|--|-------------------|-----------------------------------|
| IP Address | <input type="text" value="192 . 168 . 0 . 231"/> | Timeout(ms) | <input type="text" value="3000"/> |
| Port | <input type="text" value="102"/> | Command Delay(ms) | <input type="text" value="0"/> |
| | | Retry Count | <input type="text" value="0"/> |
| | | Rack | <input type="text" value="0"/> |
| | | CPU Slot | <input type="text" value="1"/> |

Device Specific Setting

☐ Sub-links

Device Name

Station Number

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]

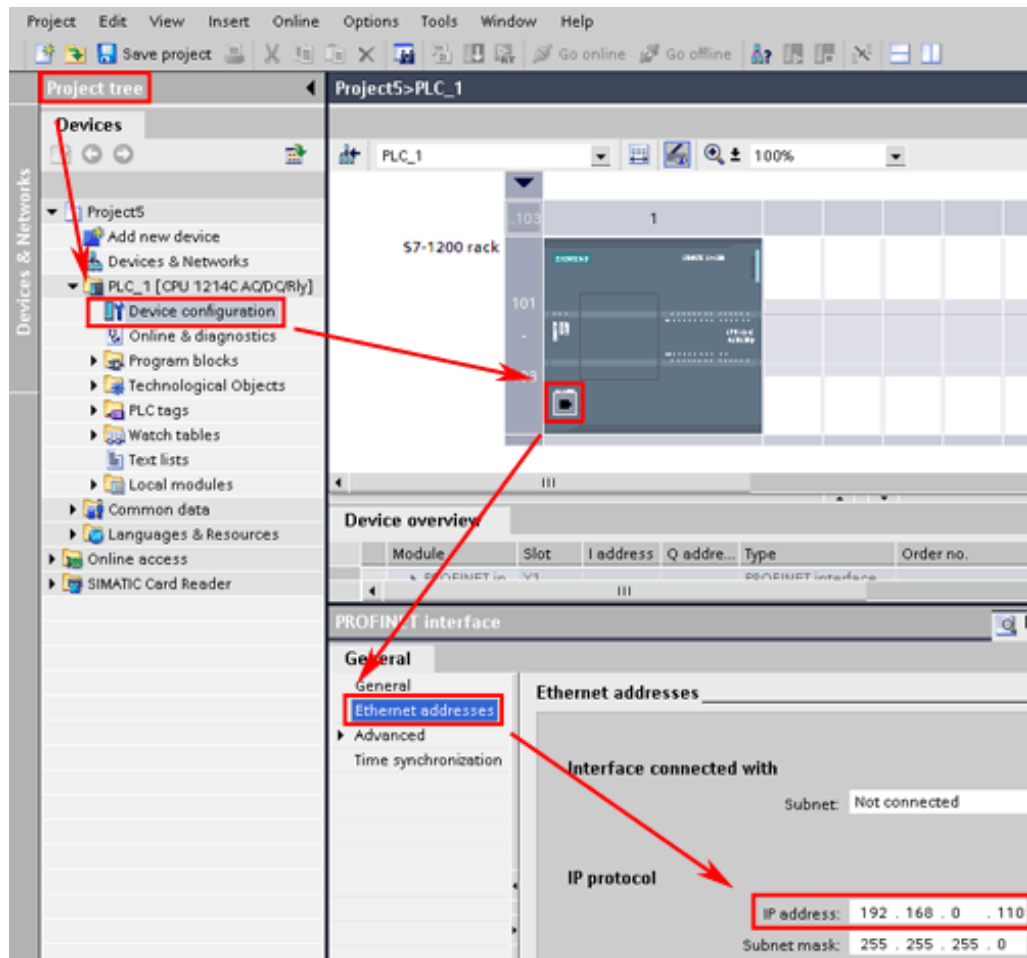
Configuring IP Address on PLC

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

Under the Online menu option, select **Extend Download to Device**. Select the

The screenshot displays the Siemens SIMATIC Manager interface. On the left, the 'Project tree' shows a project named 'Project5' with a device 'PLC_1 [CPU 1214C AC]'. The 'Online' menu is open, and 'Extended download to device...' is selected. The 'Extended download to device' dialog is shown, featuring a table of 'Configured access nodes of "PLC_1"'. Below this, the 'Accessible devices in target subnet:' section contains a table with 'PLC_1' highlighted. A red box highlights the 'Show all accessible devices' checkbox in the top right of the dialog.

| Device | Device type | Type | Address | Target device |
|--------|-------------------|--------|----------------|---------------|
| PLC_1 | CPU 1214C AC/D... | TCP/IP | 192.168.0.110 | PLC_1 |
| — | IRC | TCP/IP | 192.168.2.110 | — |
| — | — | TCP/IP | Access address | — |



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

Connecting PLC to 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.

Edit Link Property ? X

Link Setting

Name: Link0

Interface Type: Ethernet

Manufacturer: Siemens Corporation

Product Series: S7-1200

Interface Setting

Basic Comm. Error Handling Advance

IP Address: 192 . 168 . 0 . 17 Timeout(ms): 3000

Port: 102 Command Delay(ms): 0

Retry Count: 0

Rack: 0

CPU Slot: 1

Device Specific Setting

☐ Sub-links

Device Name: 0

Station Number: 1

Tags Import

OK

2.5Hitachi

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 Connecting to HMI

Connecting PLC to 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.

Edit Link Property

?

×

Link Setting

Name

Link0

Interface Type

Serial

Manufacturer

Hitachi Ltd.

Product Series

EHV Series

Interface Setting

Basic

Comm. Error Handling

Port

COM1

Timeout(ms)

3000

Baudrate

38400

Command Delay(ms)

0

Parity

Even

Retry Count

0

Data Bits

7

Stop Bits

1

Device Specific Setting

☐ Sub-links

Device Name

0

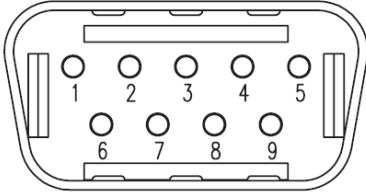
Station Number

1

OK

2.5.1.4 Wiring Diagrams

HMI COM1 Pinout

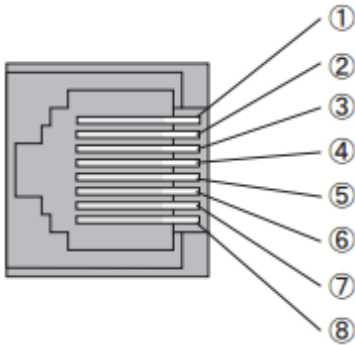


*Looking into COM1 Port

| PIN# | COM1 (RS232) |
|------|--------------|
| 1 | |
| 2 | RX |
| 3 | TX |
| 4 | |
| 5 | GND |
| 6 | |
| 7 | RTS |
| 8 | CTS |

| | |
|---|--|
| 9 | |
|---|--|

PLC RS232 Pinout

|  <p>*Looking into PLC</p> | |
|--|--------|
| PIN# | Signal |
| 1 | SG |
| 2 | VCC |
| 3 | ER |
| 4 | |
| 5 | TxD |
| 6 | RxD |
| 7 | |
| 8 | RTS |

All P5 Series

| HMI COM1 | PLC RS232 Port |
|----------|----------------|
| 2 RX | 5 TxD |
| 3 TX | 6 RxD |
| 5 GND | 1 SG |
| 8 CTS | 8 RTS |

2.5.2 EHV Series (Ethernet)

2.5.2.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-------------------------|--------|
| Signal Level | Ethernet | |
| Internet Protocol | 192.168.1.100 | |
| Port | 3004 | |
| PLC Station No. | 0 | |
| Communication Method | h protocol (Ethernet) | |

2.5.2.2 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 | Internal output 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 | Internal output word | 16 | HHHH | 0 | FFFF |
| WL | Link word | 16 | HHH | 0 | 3FF |
| TC | Timer / Counter | 16 | DDDD | 0 | 2559 |

2.6Schneider

2.6.1 MODBUS RTU

2.6.1.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|------------------------|--------|
| Signal Level | RS485 2W | |
| Baud Rate | 19200 | |
| Data Length | 8 | |
| Stop Bit | 1 | |
| Parity | None | |
| PLC Station No. | 0 | |
| Communication Method | MODBUS RTU(Zero-based) | |

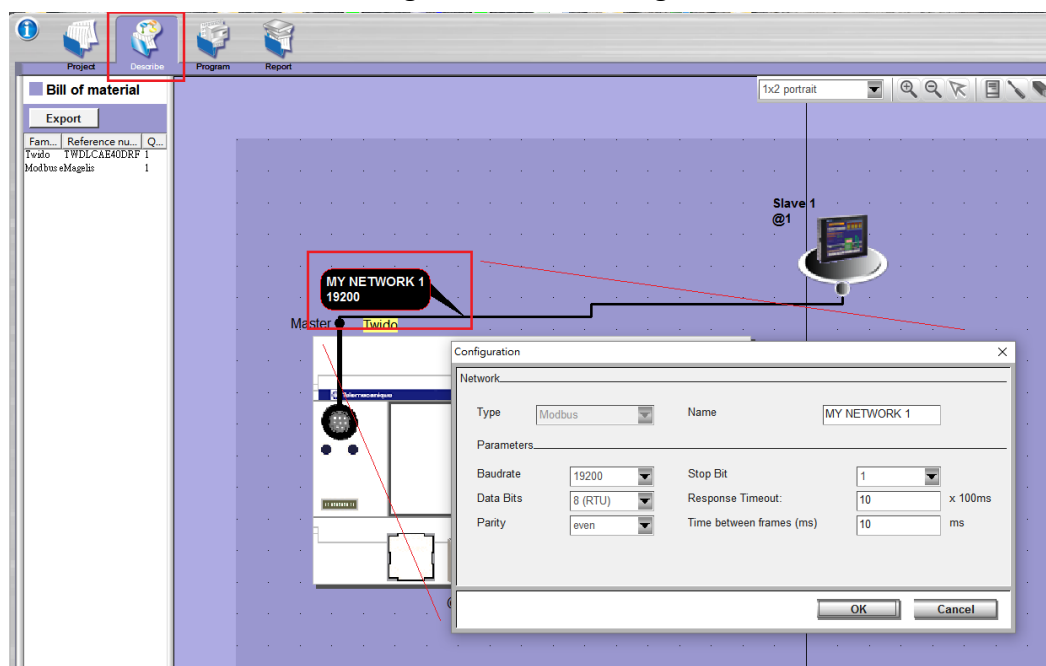
2.6.1.2 Memory Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|-------------|----------|--------------|------|-------|
| %M | Memory bit | 1 | DDDDD | 0 | 65535 |
| %MW | Memory word | 16 | DDDDD | 0 | 65535 |

2.6.1.3 Connecting to HMI

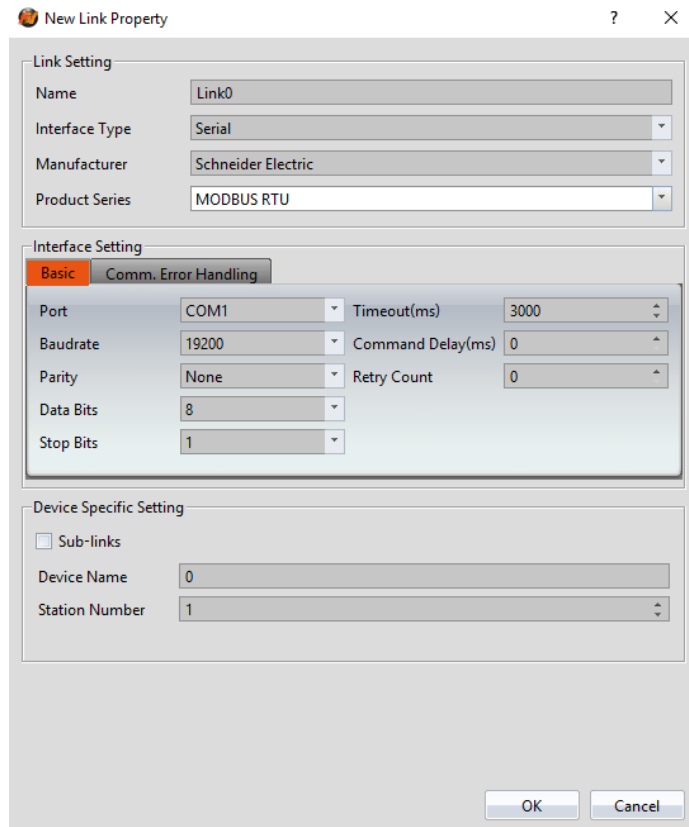
Configuring the PLC

Use **TwidoSuite** to configure the port of the PLC.,
expand **Describe** tab and creation Modbus setting,
Chick **MY NETWORK** and configure it to the settings detailed below.



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

Connecting PLC to HMI



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

Under **Interface Type** select Serial

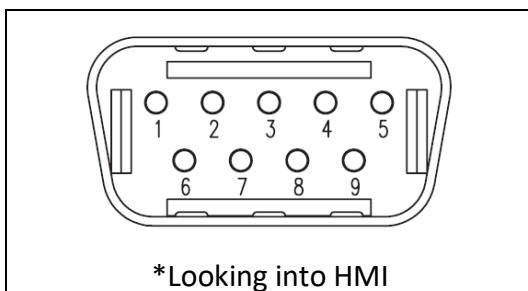
Under **Manufacturer** select Schneider

Under **Product Series** select MODBUS RTU

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


2.6.1.4 Wiring Diagrams

HMI (ex.P5043N) COM2 Pinout

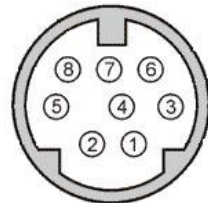


| PIN# | COM2 (RS485) |
|------|--------------|
| 1 | DATA+ |
| 2 | |
| 3 | |
| 4 | |
| 5 | GND |
| 6 | DATA- |
| 7 | |
| 8 | |
| 9 | |

HMI (ex.P5070N1) COM3 Pinout

|  <p>*Looking into HMI Device</p> | |
|---|-------------------------|
| PIN# | COM3 (RS-422/RS-485) |
| 1 | |
| 2 | |
| 3 | ISO_GND |
| 4 | |
| 5 | |
| 6 | DATA+ |
| 7 | DATA- |

PLC RS485 Pinout

|  <p>*Looking into PLC</p> | |
|--|--------|
| PIN# | Signal |
| 1 | DATA+ |
| 2 | DATA- |

| | |
|---|-----|
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | GND |
| 8 | |

P5043S/P5043N

| HMI COM2 Port | PLC RS485 Port |
|---------------|----------------|
| 1 DATA+ | 1 DATA+ |
| 6 DATA- | 2 DATA- |
| 5 GND | 5 GND |

P5070S/P5070N/P5070N1/P5102N/P5102N1

| HMI COM3 Port | PLC RS485 Port |
|---------------|----------------|
| 6 DATA+ | 1 DATA+ |
| 7 DATA- | 2 DATA- |
| 5 GND | 5 GND |

2.6.2 MODBUS TCP

2.6.2.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|------------------------|--------|
| Signal Level | Ethernet | |
| Internet Protocol | 192.168.0.2 | |
| Port | 502 | |
| PLC Station No. | 0 | |
| Communication Method | MODBUS TCP(Zero-based) | |

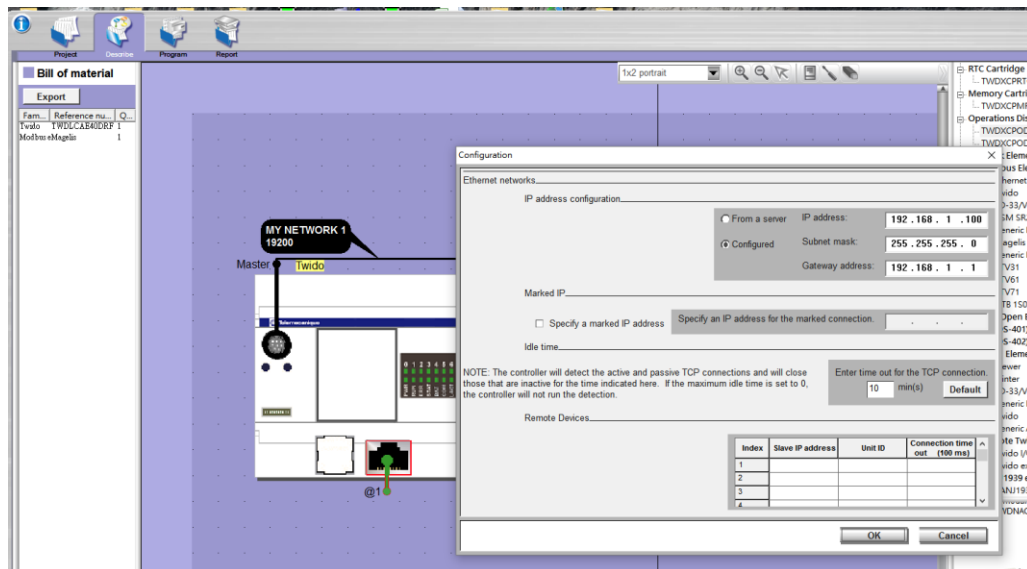
2.6.2.2 Memory Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|-------------|----------|--------------|------|-------|
| %M | Memory bit | 1 | DDDDD | 0 | 65535 |
| %MW | Memory word | 16 | DDDDD | 0 | 65535 |

2.6.2.3 Connecting to HMI

Configuring IP Address on PLC

Use **TwidoSuite** to configure the IP of the PLC.
 Expand **Describe** tab, and click Ethernet Port,
 The IP address and other parameters can be set.



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

Connect PLC to HMI

New Link Property

Link Setting

Name: Link0

Interface Type: Ethernet

Manufacturer: Schneider Electric

Product Series: MODBUS TCP

Interface Setting

Basic | Comm. Error Handling | Advance

IP Address: 192.168.0.2

Port: 502

Timeout(ms): 3000

Command Delay(ms): 0

Retry Count: 0

Device Specific Setting

☐ Sub-links

Device Name: 0

Station Number: 1

OK Cancel

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

Under **Interface Type** select Ethernet

Under **Manufacturer** select Schneider Electric.

Under **Product Series** select Modbus TCP.

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

2.7 Allen-Bradley

2.7.1 CompactLogix/ControlLogix/FlexLogix Tag Series

2.7.1.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-----------------|--------|
| Signal Level | Ethernet | |
| Internet Protocol | 192.168.0.2 | |
| Port | 44818 | |
| PLC Station No. | 0 | |
| Communication Method | EtherNet/IP | |

2.7.1.2 PLC Resource Review

| DataType | | bits | Description |
|------------------|-------|------|--------------------------|
| BOOL | --- | 1 | Boolean |
| SINT | --- | 8 | Single integer |
| INT | --- | 16 | Integer |
| DINT | --- | 32 | Double integer |
| REAL | --- | 32 | Float number |
| STRING | LEN | | Length of string |
| | DATA | | Character data of string |
| COUNTER | PRE | 32 | Preset value |
| | ACC | 32 | Accumulatedvalue |
| | CU | 1 | Count up flag |
| | CD | 1 | Count down flag |
| | DN | 1 | Done flag |
| | OV | 1 | Overflowflag |
| | UN | 1 | Underflowflag |
| TIMER | PRE | 32 | Preset value |
| | ACC | 32 | Accumulatedvalue |
| | EN | 1 | Enable flag |
| | TT | 1 | Timing flag |
| | DN | 1 | Done Flag |
| AB:1769_DI16:I:0 | Fault | 32 | |
| | Data | 16 | Data of DI16 |
| AB:1769_DI32:I:0 | Fault | 32 | |
| | Data | 32 | Data of DI32 |
| AB:1769_DO16:O:0 | Data | 16 | Data of DO16 |

| | | | |
|------------------|------|----|--------------|
| AB:1769_DO32:O:0 | Data | 32 | Data of DO32 |
|------------------|------|----|--------------|

2.7.1.3 Connecting to HMI

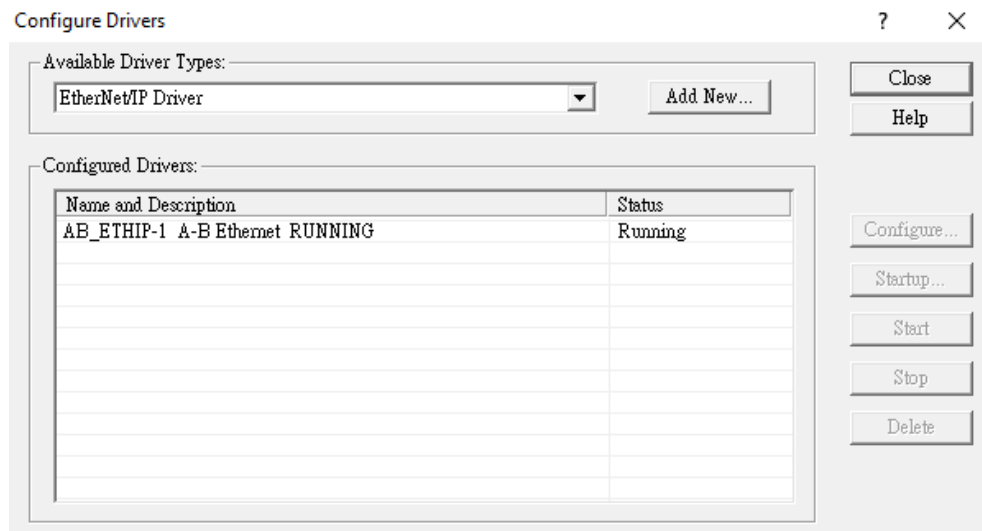
Configuring IP Address on PLC

The application **RSLink Classic** (ver. 3.51) was used to configure the IP address on the device.

On the PLC device, make sure the switch on the main module is not set to the **RUN** setting.

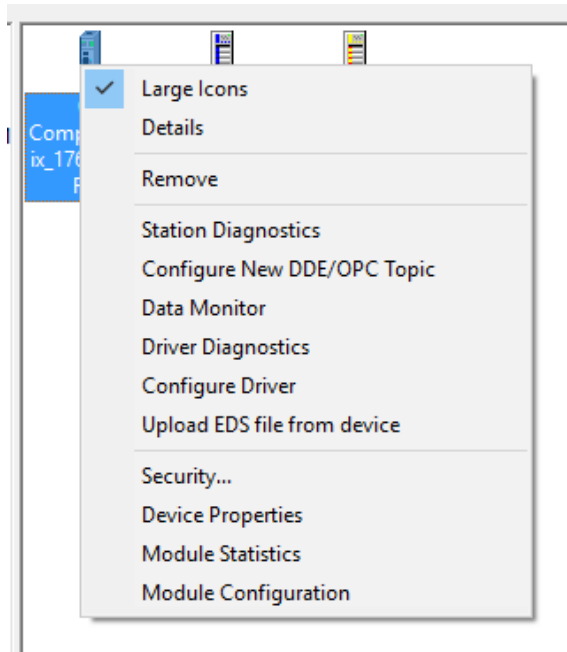
Open RSLink Classic and connect to the PLC either with a USB-Serial cable or through the local network. To connect to PLC via the local network, follow the steps below.

In the **Communications** menu tab, select **Configure Drivers**. Select **EtherNet/IP Driver** and press 'Add New'. Select "Your Network Interface Card" and press OK. Start the Driver and close out of the dialog window.

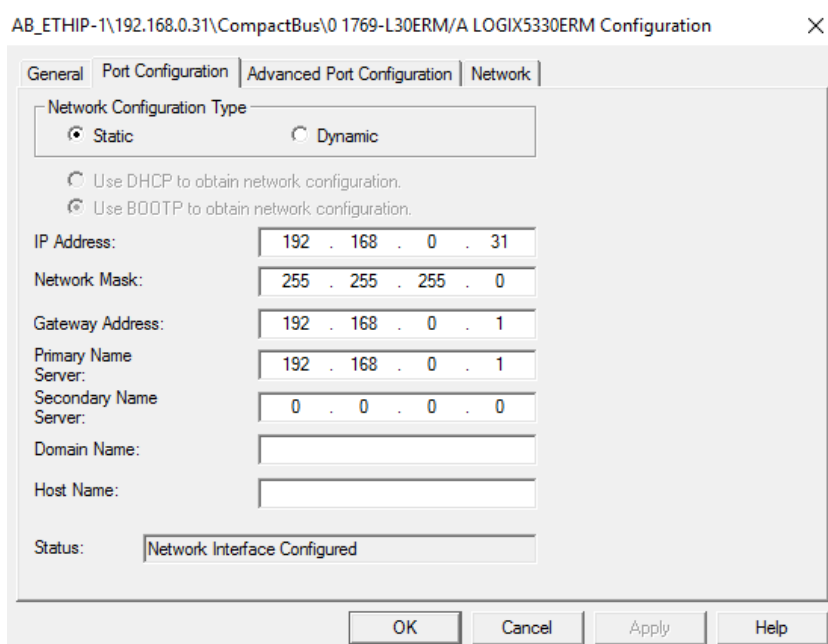


Under the new Ethernet driver, the PLC connected to the local network should be visible.

Right click the main module of the PLC and select **Module Configuration**.

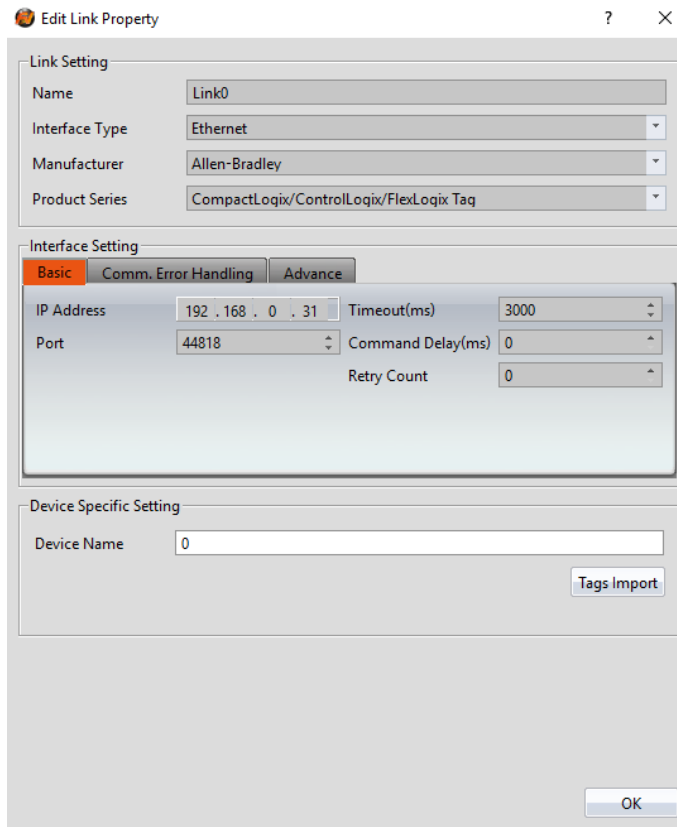


Navigate to the **Port Configuration** tab. Here, the IP address and other parameters can be set. Press OK to confirm the settings.



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

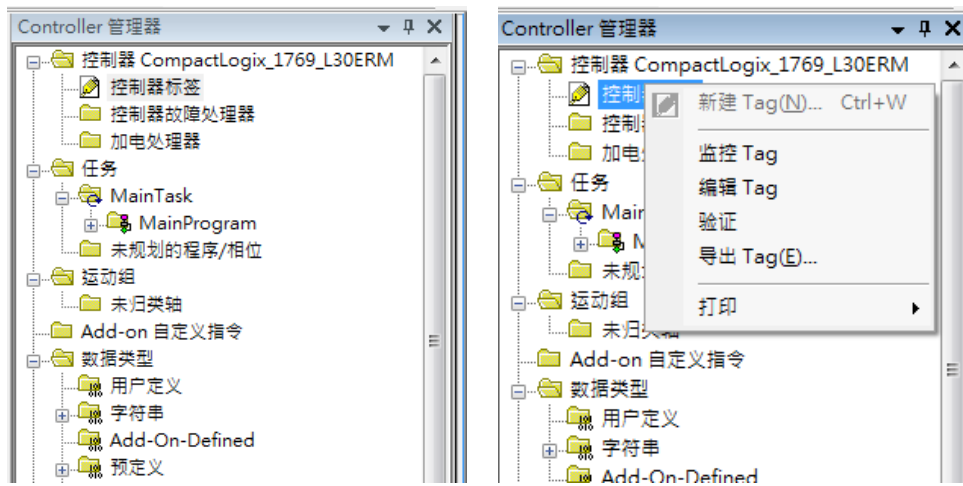
Under **Manufacturer** select Allen-Bradley.

Under **Product Series** select CompactLogix/ControlLogix/FlexLogix Tag.

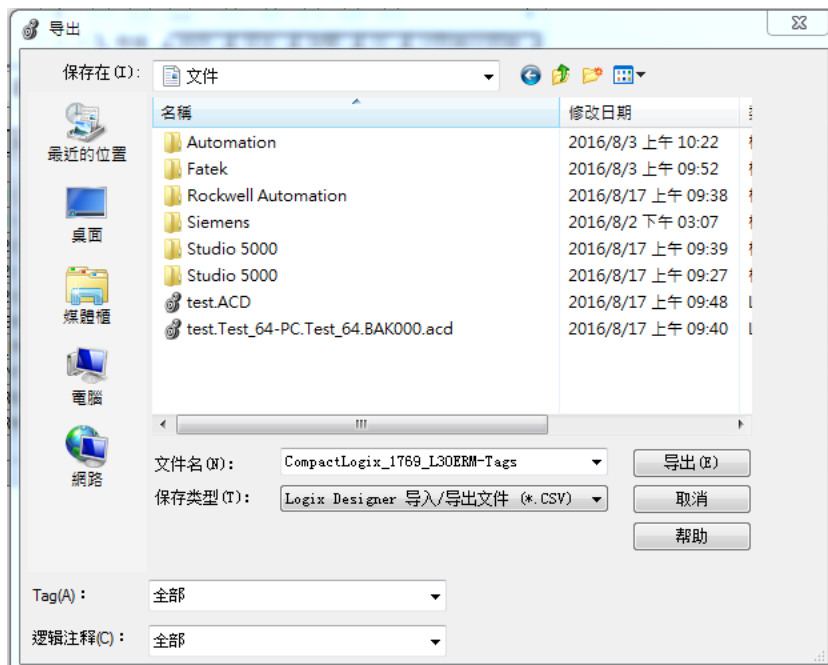
Enter the **IP Address** that was written into the PLC.

To access variables in the program, tags will have to be imported. Tags are created in the program RSLogix 5000.

Right click 控制器标签(controller tag) in the controller sidebar and select 导出 (Export) Tag.



Select which tags to export. The register tags can now be imported into the HMI project.



2.7.2 SLC series (EtherNet/IP)

2.7.2.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-----------------|--------|
| Signal Level | Ethernet | |
| Internet Protocol | 192.168.0.1 | |
| Port | 44818 | |
| Communication Method | EtherNet/IP | |

2.7.2.2 PLC Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|---------------|----------|--------------|---------|--------------|
| O | Output File | 1/16 | O F:S.D | O0:0.0 | O0:30.255 |
| I | Intput File | 1/16 | I F:S.D | I1:0.0 | I1:30.255 |
| S | Status File | 1/16 | S F:E | S2:0 | S2:163 |
| B | Bit File | 1/16 | B F:E | B3:0 | B255:255 |
| T | Timer File | 1/16 | T F:E.D | T4:0.0 | T255:255.2 |
| C | Counter File | 1/16 | C F:E.D | C5:0.0 | C255:255.2 |
| R | Control File | 1/16 | R F:E.D | R6:0.0 | R255:255.2 |
| N | Integer File | 1/16 | N F:E | N7:0 | N255:255 |
| F | Floating File | 32 | F F:E | F8:0 | F255:255 |
| A | ASCII File | 1/16 | A F:E | A9:0 | A255:255 |
| ST | String File | 1/16 | ST F:E.D | ST9:0.0 | ST255:255.41 |

2.7.2.3 Connecting to HMI

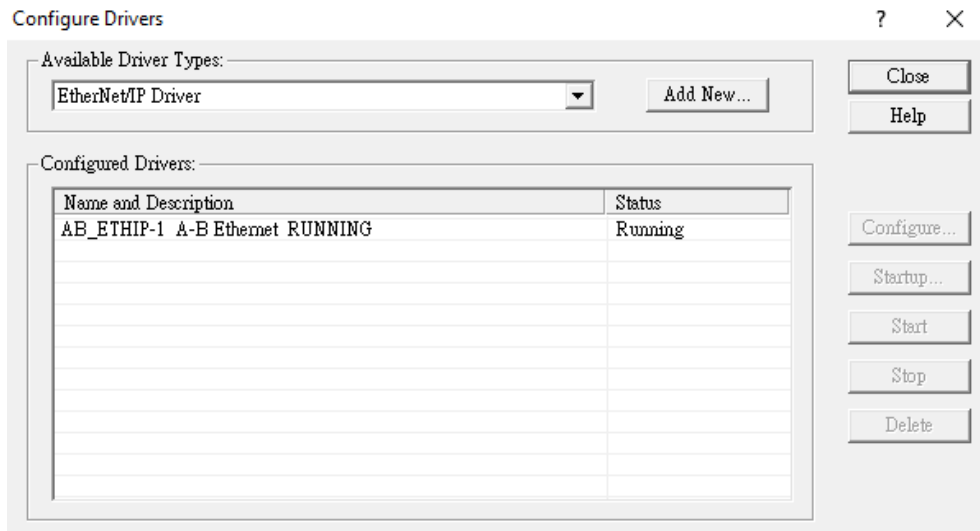
The SLC series PLC can be configured using the same procedure as the Micrologix series configuration. The figures refer to the Micrologix PLC but the procedure is the same.

Configuring IP Address on PLC

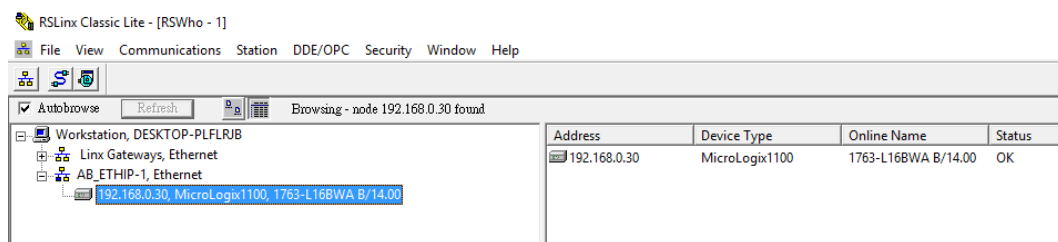
If the IP address needs to be configured, follow the steps below.

Use the applications **RSLink Classic Lite** and **RSLogix 500** to configure the IP address of the PLC.

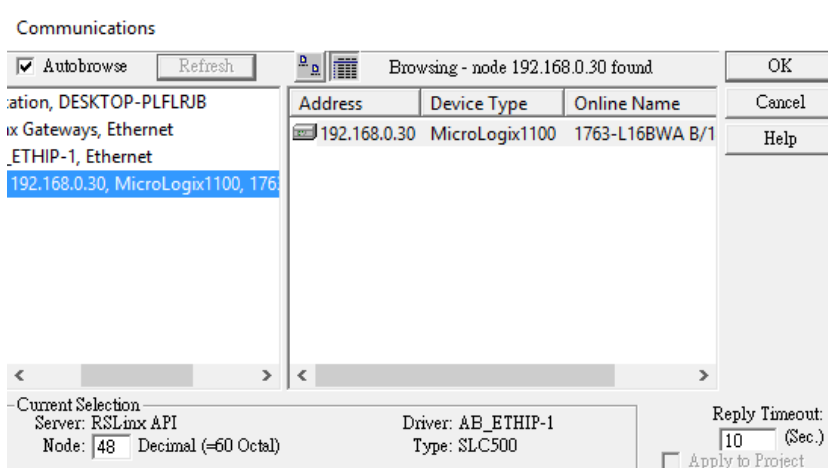
First open **RSLink Classic Lite** to set up a connection between the computer and PLC. An Ethernet cable needs to be connected to the PLC and the computer must be online. In the **Communications** menu tab, select **Configure Drivers**. Select **EtherNet/IP Driver** and press 'Add New'. Select "Your Network Interface Card" and press OK. Start the Driver and close out of the dialog window.



Under the new Ethernet driver, the PLC connected to the local network should be visible. If the status of the device is OK, open up **RSLogix 500**.



In **RSLogix 500**, under the **Comms** menu option, select **Who Active go Online**. In the dialog window that appears, select the PLC device connected through RSLogix.



Press **Create New File** in the dialog window that appears after pressing OK.

On the left side of the program, double click **Channel Configuration** to access the PLC's Ethernet settings. Under the Channel 1 tab, the IP address can be changed.

Channel Configuration

General
Channel 0
Channel 1

Driver
Ethernet

Hardware Address:
00:1D:9C:A1:62:93
Network Link ID:
0

IP Address:
192 . 168 . 0 . 30
Subnet Mask:
255 . 255 . 255 . 0
Gateway Address:
192 . 168 . 0 . 1
Default Domain Name:
Primary Name Server:
192 . 168 . 0 . 1
Secondary Name Server:
255 . 0 . 0 . 0

Protocol Control

☐ BOOTP Enable
☐ DHCP Enable
Msg Connection Timeout (x 1mS):
15000
☐ SNMP Server Enable
Msg Reply Timeout (x 1mS):
3000
☐ HTTP Server Enable

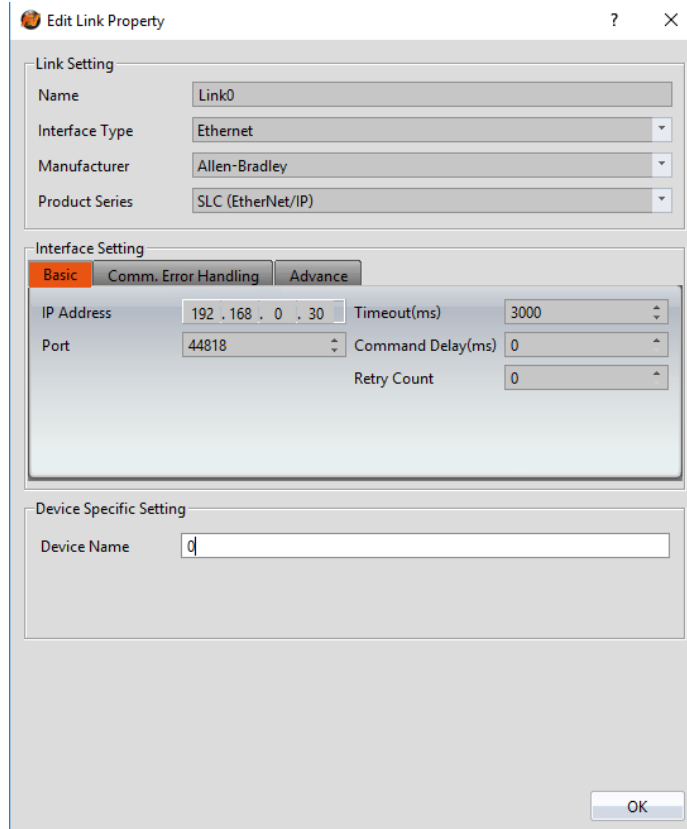
☒ Auto Negotiate
Port Setting:
10/100 Mbps Full Duplex/Half Duplex

Contact:
Location:

OK
Cancel
Apply
Help

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 Allen-Bradley

Under **Product Series** select SLC (Ethernet/IP)

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

Keep the **Port** at the default setting.

2.7.3 SLC Series

2.7.3.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-----------------|---------|
| Signal Level | RS232 | |
| Baud Rate | 19200 | |
| Data Length | 8 | |
| Stop Bit | 1 | |
| Parity | None | |
| PLC Station No. | 1 | |
| TX Control | CRC | CRC/BCC |
| Communication Method | DF1 | |

2.7.3.2 PLC Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|---------------|----------|--------------|---------|--------------|
| O | Output File | 1/16 | O F:S.D | O0:0.0 | O0:30.255 |
| I | Input File | 1/16 | I F:S.D | I1:0.0 | I1:30.255 |
| S | Status File | 1/16 | S F:E | S2:0 | S2:163 |
| B | Bit File | 1/16 | B F:E | B3:0 | B255:255 |
| T | Timer File | 1/16 | T F:E.D | T4:0.0 | T255:255.2 |
| C | Counter File | 1/16 | C F:E.D | C5:0.0 | C255:255.2 |
| R | Control File | 1/16 | R F:E.D | R6:0.0 | R255:255.2 |
| N | Integer File | 1/16 | N F:E | N7:0 | N255:255 |
| F | Floating File | 32 | F F:E | F8:0 | F255:255 |
| A | ASCII File | 1/16 | A F:E | A9:0 | A255:255 |
| ST | String File | 1/16 | ST F:E.D | ST9:0.0 | ST255:255.41 |

2.7.3.3 Connecting to HMI

Configuring the PLC

Use **RSLink Classic Lite** and **RSLogix 500** to configure the port of the PLC.

Under the Project Sidebar, expand **Channel Configuration**. And expand **Channel 0** tab, Configure it to the settings detailed below.

Channel Configuration ✕

General Channel 0 Channel 1

Driver DF1 Full Duplex Source ID 1 (decimal)

Baud 19200

Parity NONE

Protocol Control

Control Line No Handshaking ACK Timeout (x20 ms) 50

Error Detection CRC

Embedded Responses Auto Detect

☒ Duplicate Packet Detect

NAK Retries 3

ENQ Retries 3

OK Cancel Apply Help

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

Connecting PLC to HMI

New Link Property

Link Setting

Name: Link0

Interface Type: Serial

Manufacturer: Allen-Bradley

Product Series: SLC

Interface Setting

Basic Comm. Error Handling

Port: COM1 Timeout(ms): 3000

Baudrate: 19200 Command Delay(ms): 0

Parity: None Retry Count: 0

Data Bits: 8 TX Control Procedure: CRC

Stop Bits: 1

Device Specific Setting

☐ Sub-links

Device Name: 0

Station Number: 1

OK Cancel

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

Under **Interface Type** select Serial

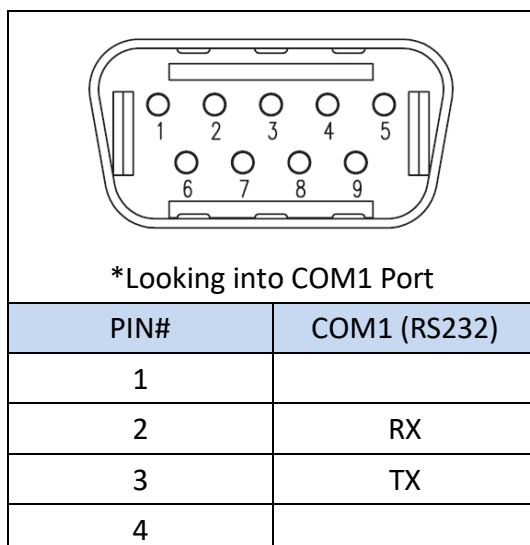
Under **Manufacturer** select Allen-Bradley

Under **Product Series** select SLC.

Verify the parameters match the window above.

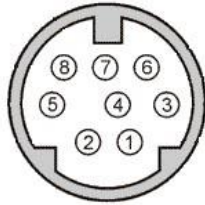
2.7.3.4 Wiring Diagrams

HMI COM1 Pinout



| | |
|---|-----|
| 5 | GND |
| 6 | |
| 7 | RTS |
| 8 | CTS |
| 9 | |

PLC RS232 Pinout



*Looking into PLC

| PIN# | Signal |
|------|--------|
| 1 | |
| 2 | GND |
| 3 | |
| 4 | RXD |
| 5 | |
| 6 | |
| 7 | TXD |
| 8 | |

All P5 Series

| HMI COM1 | PLC RS232 Port |
|----------|----------------|
| 2 RX | 7 TXD |
| 3 TX | 4 RXD |
| 5 GND | 2 GND |

2.7.4 MicroLogix Series (EtherNet/IP)

2.7.4.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-----------------|--------|
| Signal Level | Ethernet | |
| Internet Protocol | 192.168.0.1 | |
| Port | 44818 | |
| Communication Method | EtherNet/IP | |

2.7.4.2 PLC Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|----------------|----------|--------------|---------|--------------|
| O | Output File | 1/16 | O F:S.D | O0:0.0 | O0:30.255 |
| I | Input File | 1/16 | I F:S.D | I1:0.0 | I1:30.255 |
| S | Status File | 1/16 | S F:E | S2:0 | S2:163 |
| B | Bit File | 1/16 | B F:E | B3:0 | B255:255 |
| T | Timer File | 1/16 | T F:E.D | T4:0.0 | T255:255.2 |
| C | Counter File | 1/16 | C F:E.D | C5:0.0 | C255:255.2 |
| R | Control File | 1/16 | R F:E.D | R6:0.0 | R255:255.2 |
| N | Integer File | 1/16 | N F:E | N7:0 | N255:255 |
| F | Floating File | 32 | F F:E | F8:0 | F255:255 |
| ST | String File | 1/16 | ST F:E.D | ST9:0.0 | ST255:255.41 |
| L | Long word File | 32 | L F:E | L9:0 | L255:255 |

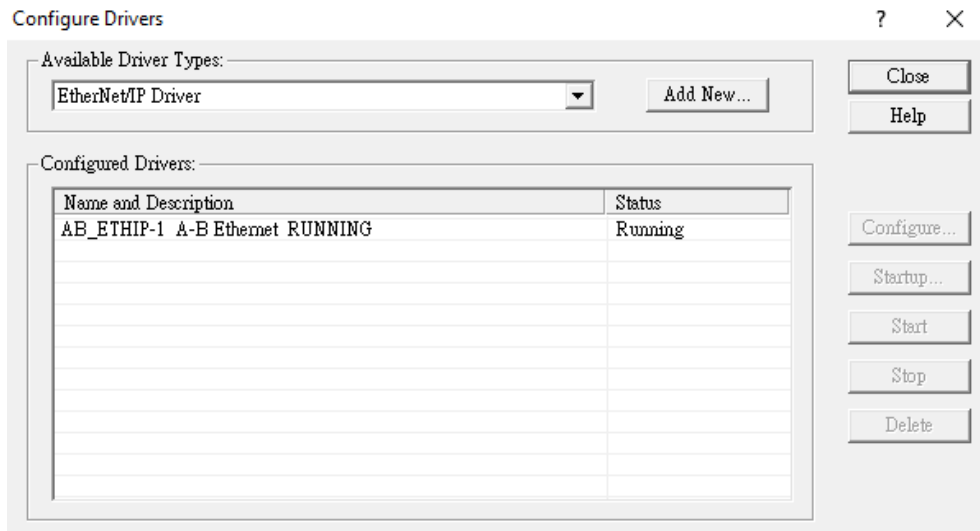
2.7.4.3 Connecting to HMI

Configuring IP Address on PLC

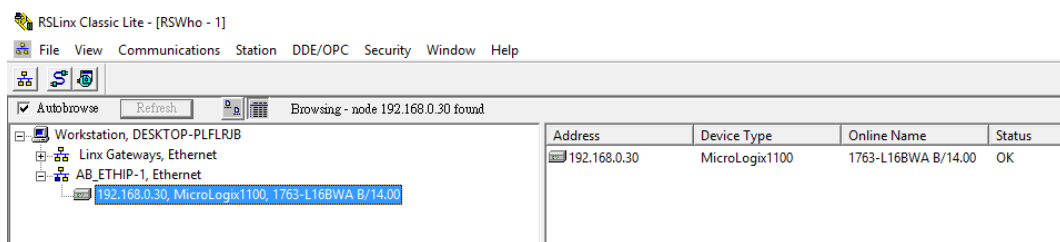
If the IP address needs to be configured, follow the steps below.

Use the applications **RSLink Classic Lite** and **RSLogix 500** to configure the IP address of the PLC.

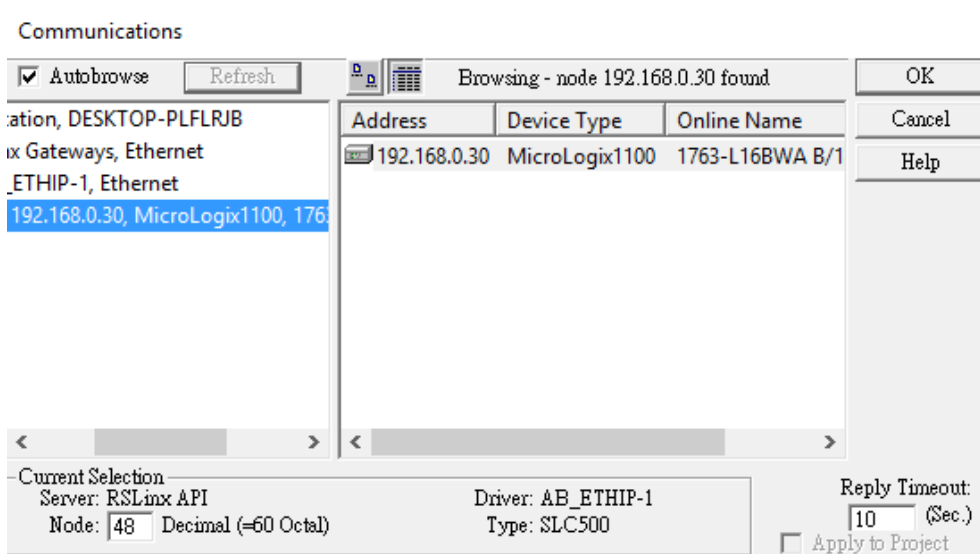
First open **RSLink Classic Lite** to set up a connection between the computer and PLC. An Ethernet cable needs to be connected to the PLC and the computer must be online. In the **Communications** menu tab, select **Configure Drivers**. Select **EtherNet/IP Driver** and press 'Add New'. Select "Your Network Interface Card" and press OK. Start the Driver and close out of the dialog window.



Under the new Ethernet driver, the PLC connected to the local network should be visible. If the status of the device is OK, open up **RSLogix 500**.



In **RSLogix 500**, under the **Comms** menu option, select **Who Active go Online**. In the dialog window that appears, select the PLC device connected through RSLinx.



Press **Create New File** in the dialog window that appears after pressing OK.

On the left side of the program, double click **Channel Configuration** to access the PLC's Ethernet settings. Under the Channel 1 tab, the IP address can be changed.

The image shows a 'Channel Configuration' dialog box with a close button (X) in the top right corner. It has three tabs: 'General', 'Channel 0', and 'Channel 1', with 'Channel 1' currently selected. The 'Driver' is set to 'Ethernet'. The 'Hardware Address' is '00:1D:9C:A1:62:93'. The 'Network Link ID' is '0'. The 'IP Address' is '192 . 168 . 0 . 30', 'Subnet Mask' is '255 . 255 . 255 . 0', and 'Gateway Address' is '192 . 168 . 0 . 1'. The 'Default Domain Name' is empty. The 'Primary Name Server' is '192 . 168 . 0 . 1' and the 'Secondary Name Server' is '255 . 0 . 0 . 0'. The 'Protocol Control' section contains several checkboxes: 'BOOTP Enable' (unchecked), 'DHCP Enable' (unchecked), 'SNMP Server Enable' (unchecked), and 'HTTP Server Enable' (unchecked). To the right of these are 'Msg Connection Timeout (x 1mS): 15000' and 'Msg Reply Timeout (x 1mS): 3000'. Below the checkboxes is a checked 'Auto Negotiate' option and a 'Port Setting' dropdown menu set to '10/100 Mbps Full Duplex/Half Duplex'. At the bottom of the dialog box are 'Contact:' and 'Location:' text boxes. At the very bottom of the window are 'OK', 'Cancel', 'Apply', and 'Help' buttons.

Channel Configuration

General | Channel 0 | Channel 1

Driver: Ethernet

Hardware Address: 00:1D:9C:A1:62:93

Network Link ID: 0

IP Address: 192 . 168 . 0 . 30

Subnet Mask: 255 . 255 . 255 . 0

Gateway Address: 192 . 168 . 0 . 1

Default Domain Name:

Primary Name Server: 192 . 168 . 0 . 1

Secondary Name Server: 255 . 0 . 0 . 0

Protocol Control

☐ BOOTP Enable ☐ DHCP Enable

Msg Connection Timeout (x 1mS): 15000

☐ SNMP Server Enable

Msg Reply Timeout (x 1mS): 3000

☐ HTTP Server Enable

☒ Auto Negotiate

Port Setting: 10/100 Mbps Full Duplex/Half Duplex

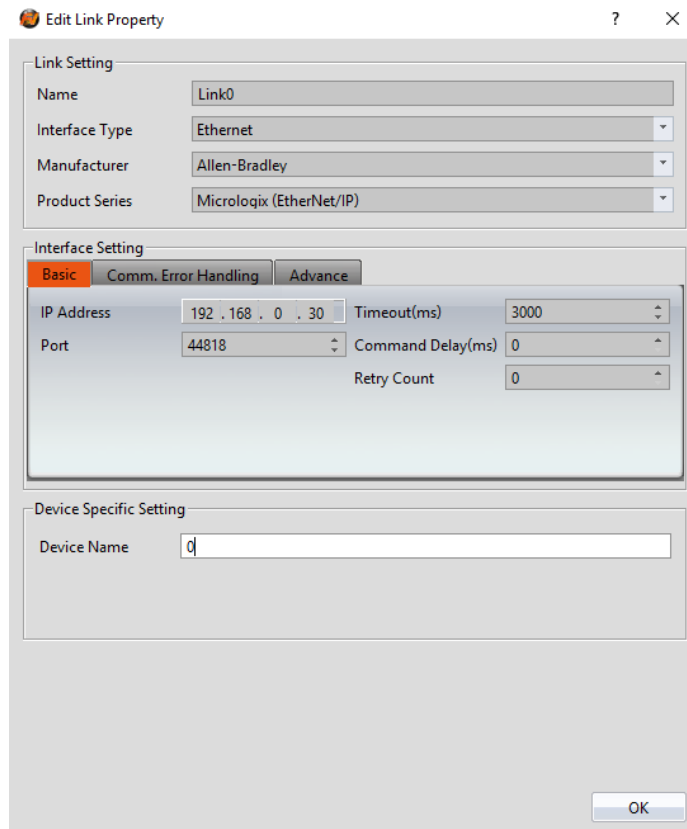
Contact:

Location:

OK Cancel Apply Help

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 Allen-Bradley

Under **Product Series** select Micrologix (Ethernet/IP)

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

Keep the **Port** at the default setting.

2.7.5 MicroLogix Series

2.7.5.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-----------------|---------|
| Signal Level | RS232 | |
| Baud Rate | 19200 | |
| Data Length | 8 | |
| Stop Bit | 1 | |
| Parity | None | |
| PLC Station No. | 1 | |
| TX Control | CRC | CRC/BCC |
| Communication Method | DF1 Protocol | |

2.7.5.2 PLC Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|----------------|----------|--------------|---------|--------------|
| O | Output File | 1/16 | O F:S.D | O0:0.0 | O0:30.255 |
| I | Input File | 1/16 | I F:S.D | I1:0.0 | I1:30.255 |
| S | Status File | 1/16 | S F:E | S2:0 | S2:163 |
| B | Bit File | 1/16 | B F:E | B3:0 | B255:255 |
| T | Timer File | 1/16 | T F:E.D | T4:0.0 | T255:255.2 |
| C | Counter File | 1/16 | C F:E.D | C5:0.0 | C255:255.2 |
| R | Control File | 1/16 | R F:E.D | R6:0.0 | R255:255.2 |
| N | Integer File | 1/16 | N F:E | N7:0 | N255:255 |
| F | Floating File | 32 | F F:E | F8:0 | F255:255 |
| ST | String File | 1/16 | ST F:E.D | ST9:0.0 | ST255:255.41 |
| L | Long word File | 32 | L F:E | L9:0 | L255:255 |

2.7.5.3 Connecting to HMI

Configuring the PLC

To connect the PLC to a computer, follow the same steps detailed in the previous chapter. Configuring the serial connection of the PLC is the same as configuring the IP address of the PLC.

Double click **Channel Configuration** and navigate to the Channel 0 tab. Here, the serial connection settings can be adjusted if needed.

Channel Configuration ✕

General Channel 0 Channel 1

Driver DF1 Full Duplex Source ID 1 (decimal)

Baud 19200

Parity NONE

Protocol Control

Control Line No Handshaking ACK Timeout (x20 ms) 50

Error Detection CRC

Embedded Responses Auto Detect

☒ Duplicate Packet Detect

NAK Retries 3

ENQ Retries 3

OK Cancel Apply Help

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

Connecting PLC to HMI

Edit Link Property

Link Setting

Name: Link0

Interface Type: Serial

Manufacturer: Allen-Bradley

Product Series: Micrologix

Interface Setting

Basic | Comm. Error Handling

Port: COM1 | Timeout(ms): 3000

Baudrate: 19200 | Command Delay(ms): 0

Parity: None | Retry Count: 0

Data Bits: 8 | TX Control Procedure: CRC

Stop Bits: 1

Device Specific Setting

☐ Sub-links

Device Name: 0

Station Number: 1

OK

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

Under **Interface Type** select Serial

Under **Manufacturer** select Allen-Bradley

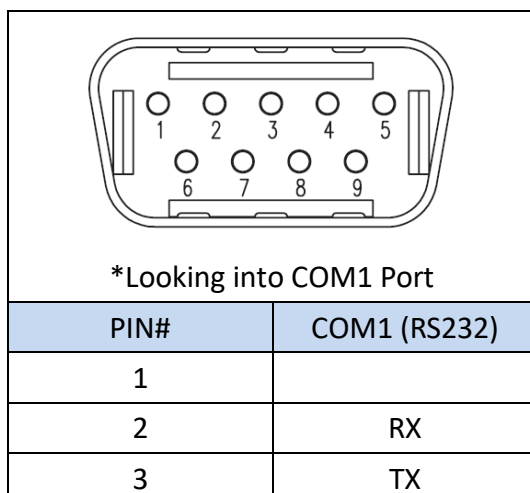
Under **Product Series** select Micrologix

Under **Port** select COM1

Verify the other parameters are consistent with the ones set on the PLC.

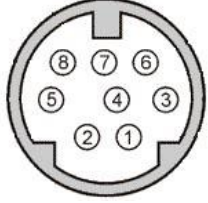
2.7.5.4 Wiring Diagrams

HMI COM1 Pinout



| | |
|---|-----|
| 4 | |
| 5 | GND |
| 6 | |
| 7 | RTS |
| 8 | CTS |
| 9 | |

PLC RS232 Pinout

|  <p>*Looking into PLC</p> | |
|--|--------|
| PIN# | Signal |
| 1 | |
| 2 | |
| 3 | GND |
| 4 | RXD |
| 5 | TXD |
| 6 | |
| 7 | |
| 8 | |

All P5 Series

| HMI COM1 | PLC RS232 Port |
|----------|----------------|
| 2 RX | 7 TXD |
| 3 TX | 4 RXD |
| 5 GND | 2 GND |

2.8Taiwan Instrument & Control Co., Ltd.

2.8.1 FY Series

2.8.1.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-----------------|--------|
| Signal Level | RS485 2W | |
| Baud Rate | 38400 | |
| Data Length | 8 | |
| Stop Bit | 1 | |
| Parity | Odd | |
| PLC Station No. | 0 | |
| Communication Method | MODBUS RTU | |

2.8.1.2 Memory Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|----------------------------------|----------|--------------|------|------|
| SV | Set Point | 16 | D | 0 | 0 |
| OUTL | Output Limit | 16 | D | 0 | 0 |
| AT | Auto Tuning | 16 | D | 0 | 0 |
| AL1 | Alarm 1 set value | 16 | D | 0 | 0 |
| AL2 | Alarm 2 set value | 16 | D | 0 | 0 |
| AL3 | Alarm 3 set value | 16 | D | 0 | 0 |
| PTN | Program Pattern | 16 | D | 0 | 0 |
| SEG | Program Segment Display | 16 | D | 0 | 0 |
| TIMR | Program Countdown Display | 16 | D | 0 | 0 |
| SV_1 | Set Point of Seg.1(Pattern 1) | 16 | D | 0 | 0 |
| TM_1 | Run Time of Seg.1(Pattern 1) | 16 | D | 0 | 0 |
| OUT1 | Output Limit of Seg.1(Pattern 1) | 16 | D | 0 | 0 |
| SV_2 | Set Point of Seg.2(Pattern 1) | 16 | D | 0 | 0 |
| TM_2 | Run Time of Seg.2(Pattern 1) | 16 | D | 0 | 0 |
| OUT2 | Output Limit of | 16 | D | 0 | 0 |

| | | | | | |
|------|-------------------------------------|----|---|---|---|
| | Seg.2(Pattern 1) | | | | |
| SV_3 | Set Point of Seg.3(Pattern 1) | 16 | D | 0 | 0 |
| TM_3 | Run Time of Seg.3(Pattern 1) | 16 | D | 0 | 0 |
| OUT3 | Output Limit of Seg.3(Pattern 1) | 16 | D | 0 | 0 |
| SV_4 | Set Point of Seg.4(Pattern 1) | 16 | D | 0 | 0 |
| TM_4 | Run Time of Seg.4(Pattern 1) | 16 | D | 0 | 0 |
| OUT4 | Output Limit of Seg.4(Pattern 1) | 16 | D | 0 | 0 |
| SV_5 | Set Point of Seg.5(Pattern 1) | 16 | D | 0 | 0 |
| TM_5 | Run Time of Seg.5(Pattern 1) | 16 | D | 0 | 0 |
| OUT5 | Output Limit of Seg.5(Pattern 1) | 16 | D | 0 | 0 |
| SV_6 | Set Point of Seg.6(Pattern 1) | 16 | D | 0 | 0 |
| TM_6 | Run Time of Seg.6(Pattern 1) | 16 | D | 0 | 0 |
| OUT6 | Output Limit of Seg.6(Pattern 1) | 16 | D | 0 | 0 |
| SV_7 | Set Point of Seg.7(Pattern 1) | 16 | D | 0 | 0 |
| TM_7 | Run Time of Seg.7(Pattern 1) | 16 | D | 0 | 0 |
| OUT7 | Output Limit of Seg.7(Pattern 1) | 16 | D | 0 | 0 |
| SV_8 | Set Point of Seg.8(Pattern 1) | 16 | D | 0 | 0 |
| TM_8 | Run Time of Seg.8(Pattern 1) | 16 | D | 0 | 0 |
| OUT8 | Output Limit of Seg.8(Pattern 1) | 16 | D | 0 | 0 |

| | | | | | |
|-------|-------------------------------------|----|---|---|---|
| SV_12 | Set Point of Seg.1(Pattern 2) | 16 | D | 0 | 0 |
| TM_12 | Run Time of Seg.1(Pattern 2) | 16 | D | 0 | 0 |
| OUT12 | Output Limit of Seg.1(Pattern 2) | 16 | D | 0 | 0 |
| SV_22 | Set Point of Seg.2(Pattern 2) | 16 | D | 0 | 0 |
| TM_22 | Run Time of Seg.2(Pattern 2) | 16 | D | 0 | 0 |
| OUT22 | Output Limit of Seg.2(Pattern 2) | 16 | D | 0 | 0 |
| SV_32 | Set Point of Seg.3(Pattern 2) | 16 | D | 0 | 0 |
| TM_32 | Run Time of Seg.3(Pattern 2) | 16 | D | 0 | 0 |
| OUT32 | Output Limit of Seg.3(Pattern 2) | 16 | D | 0 | 0 |
| SV_42 | Set Point of Seg.4(Pattern 2) | 16 | D | 0 | 0 |
| TM_42 | Run Time of Seg.4(Pattern 2) | 16 | D | 0 | 0 |
| OUT42 | Output Limit of Seg.4(Pattern 2) | 16 | D | 0 | 0 |
| SV_52 | Set Point of Seg.5(Pattern 2) | 16 | D | 0 | 0 |
| TM_52 | Run Time of Seg.5(Pattern 2) | 16 | D | 0 | 0 |
| OUT52 | Output Limit of Seg.5(Pattern 2) | 16 | D | 0 | 0 |
| SV_62 | Set Point of Seg.6(Pattern 2) | 16 | D | 0 | 0 |
| TM_62 | Run Time of Seg.6(Pattern 2) | 16 | D | 0 | 0 |
| OUT62 | Output Limit of Seg.6(Pattern 2) | 16 | D | 0 | 0 |
| SV_72 | Set Point of | 16 | D | 0 | 0 |

| | | | | | |
|-------|----------------------------------|----|---|---|---|
| | Seg.7(Pattern 2) | | | | |
| TM_72 | Run Time of Seg.7(Pattern 2) | 16 | D | 0 | 0 |
| OUT72 | Output Limit of Seg.7(Pattern 2) | 16 | D | 0 | 0 |
| SV_82 | Set Point of Seg.8(Pattern 2) | 16 | D | 0 | 0 |
| TM_82 | Run Time of Seg.8(Pattern 2) | 16 | D | 0 | 0 |
| OUT82 | Output Limit of Seg.8(Pattern 2) | 16 | D | 0 | 0 |
| P1 | OUT1 Proportional Band | 16 | D | 0 | 0 |
| I1 | OUT1 Integral Time | 16 | D | 0 | 0 |
| D1 | OUT1 Derivative Time | 16 | D | 0 | 0 |
| DB1 | Dead-band Time | 16 | D | 0 | 0 |
| ATVL | Auto Tuning Offset | 16 | D | 0 | 0 |
| CYT1 | OUT1 Cycle Time | 16 | D | 0 | 0 |
| HYS1 | OUT1 Hysteresis | 16 | D | 0 | 0 |
| P2 | OUT2 Proportional Band | 16 | D | 0 | 0 |
| I2 | OUT2 Integral Time | 16 | D | 0 | 0 |
| D2 | OUT2 Derivative Time | 16 | D | 0 | 0 |
| CYT2 | OUT2 Cycle Time | 16 | D | 0 | 0 |
| HYS2 | OUT2 Hysteresis | 16 | D | 0 | 0 |
| GAP1 | OUT1 Control Gap | 16 | D | 0 | 0 |
| GAP2 | OUT2 Control Gap | 16 | D | 0 | 0 |
| LCK | Function Lock | 16 | D | 0 | 0 |
| INP1 | Input Type Selection | 16 | D | 0 | 0 |
| ANL1 | Linear Input Zero Calibration | 16 | D | 0 | 0 |
| ANH1 | Linear Input Span Calibration | 16 | D | 0 | 0 |
| DP | Decimal Point Position | 16 | D | 0 | 0 |



| | | | | | |
|------|---|----|---|---|---|
| LSPL | Lower Set Point Limit | 16 | D | 0 | 0 |
| USPL | Upper Set Point Limit | 16 | D | 0 | 0 |
| ANL2 | Remote Input Zero Calibration | 16 | D | 0 | 0 |
| ANH2 | Linear Input Span Calibration | 16 | D | 0 | 0 |
| ALD1 | Alarm mode for AL1 | 16 | D | 0 | 0 |
| ALT1 | Alarm time for AL1 | 16 | D | 0 | 0 |
| ALD2 | Alarm mode for AL2 | 16 | D | 0 | 0 |
| ALT2 | Alarm time for AL2 | 16 | D | 0 | 0 |
| ALD3 | Alarm mode for AL3 | 16 | D | 0 | 0 |
| ALT3 | Alarm time for AL3 | 16 | D | 0 | 0 |
| HYSA | Hysteresis for all Alarms | 16 | D | 0 | 0 |
| CLO1 | OUT1 Lower Calibration | 16 | D | 0 | 0 |
| CHO1 | OUT1 Upper Calibration | 16 | D | 0 | 0 |
| CLO2 | OUT1 Lower Calibration | 16 | D | 0 | 0 |
| CHO2 | OUT1 Upper Calibration | 16 | D | 0 | 0 |
| CLO3 | TRS Lower Calibration | 16 | D | 0 | 0 |
| CHO3 | TRS Upper Calibration | 16 | D | 0 | 0 |
| RUCY | Full run time of motor valve | 16 | D | 0 | 0 |
| WAIT | Full run time of proportional motor valve | 16 | D | 0 | 0 |
| SETA | | 16 | D | 0 | 0 |
| PSL | Protocol Selection | 16 | D | 0 | 0 |
| BITS | Communication Bits | 16 | D | 0 | 0 |
| IDNO | ID Number | 16 | D | 0 | 0 |
| BAUD | Baud rate | 16 | D | 0 | 0 |
| SVOS | SV Compensation | 16 | D | 0 | 0 |

| | | | | | |
|------|-----------------------------|----|---|---|---|
| PVOS | PV Compensation | 16 | D | 0 | 0 |
| UNIT | Unit of PV and SV | 16 | D | 0 | 0 |
| PVFT | PV Filter | 16 | D | 0 | 0 |
| CASC | | 16 | D | 0 | 0 |
| ODD | Heating / Cooling selection | 16 | D | 0 | 0 |
| OPAD | Control Algorithm | 16 | D | 0 | 0 |
| HZ | Power Frequency | 16 | D | 0 | 0 |
| SET1 | Hide/ Display parameter | 16 | D | 0 | 0 |
| SET2 | Hide/ Display parameter | 16 | D | 0 | 0 |
| SET3 | Hide/ Display parameter | 16 | D | 0 | 0 |
| SET4 | Hide/ Display parameter | 16 | D | 0 | 0 |
| SET5 | Hide/ Display parameter | 16 | D | 0 | 0 |
| SET6 | Hide/ Display parameter | 16 | D | 0 | 0 |
| SET7 | Hide/ Display parameter | 16 | D | 0 | 0 |
| SET8 | Hide/ Display parameter | 16 | D | 0 | 0 |
| SET9 | Hide/ Display parameter | 16 | D | 0 | 0 |
| SET0 | Hide/ Display parameter | 16 | D | 0 | 0 |
| INP2 | Hide/ Display parameter | 16 | D | 0 | 0 |
| OUTY | Hide/ Display parameter | 16 | D | 0 | 0 |
| VER | Output mode selection | 16 | D | 0 | 0 |
| OUT% | Firmware Version | 16 | D | 0 | 0 |
| OBIT | Output percentage | 16 | D | 0 | 0 |
| CV | CT Current Value | 16 | D | 0 | 0 |

| | | | | | |
|----|---------------|----|---|---|---|
| PV | Process Value | 16 | D | 0 | 0 |
|----|---------------|----|---|---|---|

2.8.1.3 Connecting to HMI

Configuring the PLC

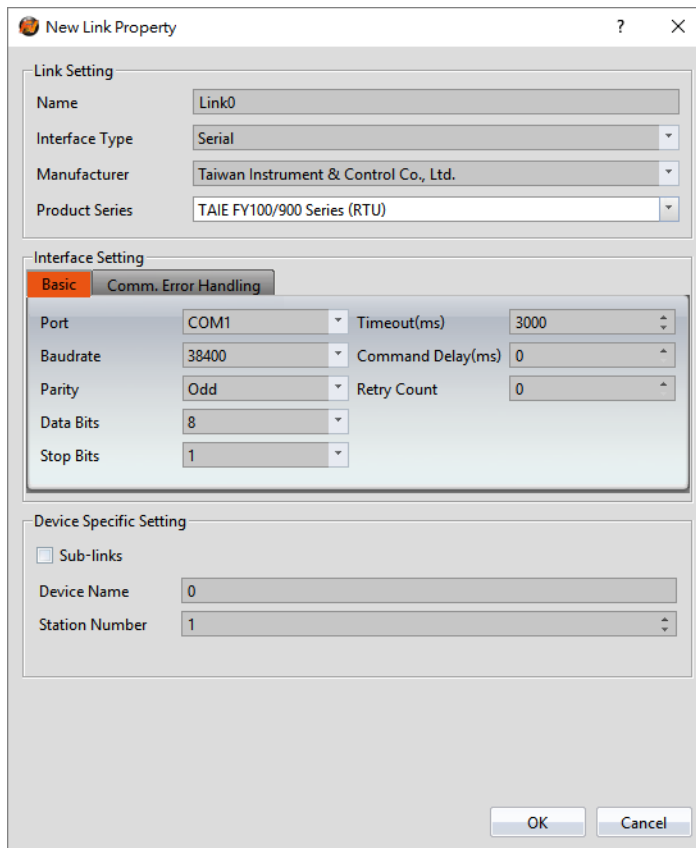
Press  +  key 3 seconds to configure parameters in Level 3

| Character | Name , Functions and Setting range | Default |
|-----------------|--|----------------|
| <i>P S L</i> | Protocol Selection <i>r t U</i> : MODBUS RTU Protocol <i>A S C I</i> : MODBUS ASCII Protocol <i>t A I E</i> : TAIE Protocol | <i>r t U</i> |
| <i>b i t S</i> | Communication Bits <i>O _ B 1</i> : Odd parity , Data bits = 8 , Stop Bit = 1 <i>O _ B 2</i> : Odd parity , Data bits = 8 , Stop Bit = 2 <i>E _ B 1</i> : Even parity , Data bits = 8 , Stop Bit = 1 <i>E _ B 2</i> : Even parity , Data bits = 8 , Stop Bit = 2 | <i>O _ B 1</i> |
| <i>I d, N O</i> | ID Number Range : 0 ~ 255 | <i>1</i> |
| <i>b R U d</i> | Communication Baud rate <i>2 4</i> : 2400 bps <i>4 8</i> : 4800 bps <i>9 6</i> : 9600 bps <i>1 9 2</i> : 19200 bps <i>3 8 4</i> : 38400 bps | <i>3 8 4</i> |

- When parameter *b i t S* or *b R U d* was changed, always turn on the power again. Otherwise, no communication is performed by using the changed value.

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

Connecting PLC to HMI



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

Under **Interface Type** select Serial

Under **Manufacturer** select Taiwan Instrument & Control Co.,Ltd.

Under **Product Series** select TAIE FY100/900 Series.

Verify the parameters match the window above.

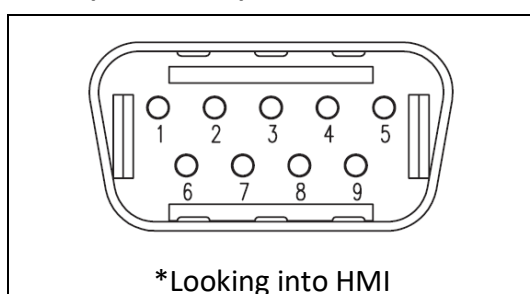
2.8.1.4 Wiring diagrams

RS485

Dx- — 11

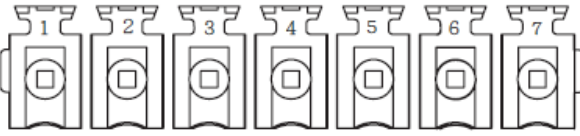
Dx+ — 12

HMI (ex.P5043N) COM2 Pinout



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

HMI COM3 Pinout

|  <p>*Looking into HMI Device</p> | |
|---|-------------------------|
| PIN# | COM3 (RS-422/RS-485) |
| 1 | |
| 2 | |
| 3 | ISO_GND |
| 4 | |
| 5 | |
| 6 | DATA+ |
| 7 | DATA- |

P5043S/P5043N

| HMI COM2 Port | PLC RS485 Port |
|---------------|----------------|
| 1 DATA+ | 12 DATA+ |
| 6 DATA- | 11 DATA- |
| 5 GND | GND |

P5070S/P5070N/P5070N1/P5102N/P5102N1

| HMI COM3 Port | PLC RS485 Port |
|---------------|----------------|
| 6 DATA+ | 12 DATA+ |
| 7 DATA- | 11 DATA- |

| | |
|-----------|-----|
| 3 ISO_GND | GND |
|-----------|-----|

2.9Delta

2.9.1 DVP Series

2.9.1.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-----------------|--------|
| Signal Level | RS232C | |
| Baud Rate | 9600 | |
| Data Length | 7 | |
| Stop Bit | 1 | |
| Parity | Even | |
| PLC Station No. | 0 | |
| Communication Method | MODBUS ASCII | |

2.9.1.2 Memory Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|-----------------|----------|--------------|------|-------|
| X | Input relay | 1 | OOO | 0 | 377 |
| Y | Output relay | 1 | OOO | 0 | 377 |
| M | Auxiliary relay | 1 | DDDD | 0 | 4095 |
| S | Step | 1 | DDDD | 0 | 1023 |
| T | Timer | 1 | DDD | 0 | 255 |
| C | Counter | 1 | DDD | 0 | 255 |
| CV | Counter memory | 16 | DDD | 0 | 199 |
| TV | Timer memory | 16 | DDD | 0 | 255 |
| D | Data register | 16 | DDDDD | 0 | 11999 |
| SCV | Counter memory | 32 | DDD | 200 | 255 |

2.9.1.3 Connecting to HMI

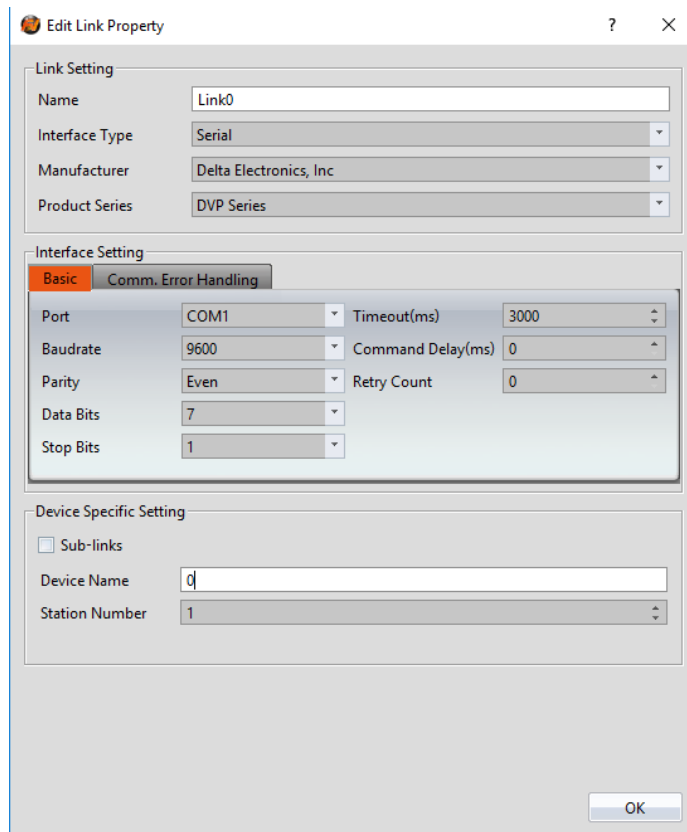
Configuring the PLC

Use ISPsoft to configure the port of the PLC.

But RS232 can't change setting.

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

Connecting PLC to HMI



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

Under **Interface Type** select Serial

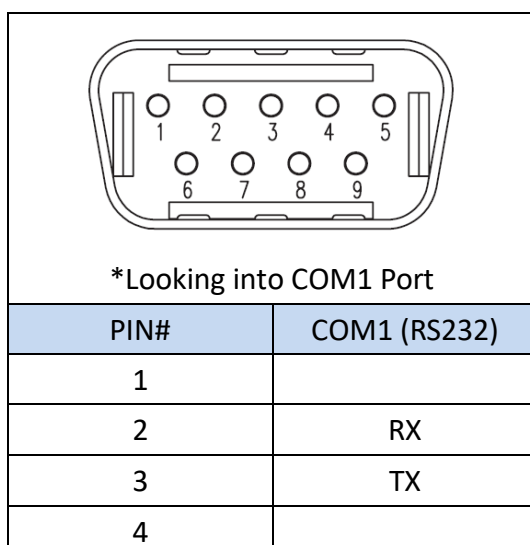
Under **Manufacturer** select Delta Electronics, Inc

Under **Product Series** select DVP Series

Make sure the other parameters are set at the values in the figure.

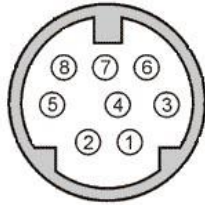
2.9.1.4 Wiring Diagrams

HMI COM1 Pinout



| | |
|---|-----|
| 5 | GND |
| 6 | |
| 7 | RTS |
| 8 | CTS |
| 9 | |

PLC RS232 Pinout



*Looking into PLC

| PIN# | Signal |
|------|--------|
| 1 | |
| 2 | |
| 3 | GND |
| 4 | RXD |
| 5 | TXD |
| 6 | |
| 7 | |
| 8 | |

All P5 Series

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

2.9.2 AH500 Series

2.9.2.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-----------------|--------|
| Signal Level | RS232C | |
| Baud Rate | 9600 | |
| Data Length | 7 | |
| Stop Bit | 1 | |
| Parity | Even | |
| PLC Station No. | 1 | |
| Communication Method | MODBUS ASCII | |

2.9.2.2 Memory Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|-------------------------|----------|--------------|------|----------|
| X | Input relay | 1 | DDD.D | 0.0 | 511.15 |
| | | 16 | DDD | 0 | 511 |
| Y | Output relay | 1 | DDD.D | 0.0 | 511.15 |
| | | 16 | DDD | 0 | 511 |
| D | Data register | 1 | DDDDD. D | 0 | 65535.15 |
| | | 16 | DDDDD | 0 | 65535 |
| L | Link register | 1 | DDDDD. D | 0 | 65535.15 |
| | | 16 | DDDDD | 0 | 65535 |
| M | Auxiliary relay | 1 | DDDD | 0 | 8191 |
| SM | Special Auxiliary Relay | 1 | DDDD | 0 | 2047 |
| S | Stepping Relay | 1 | DDDD | 0 | 2047 |
| T | Timer | 1 | DDDD | 0 | 2047 |
| TV | Timer memory | 16 | DDDD | 0 | 2047 |
| C | Counter | 1 | DDDD | 0 | 2047 |
| CV | Counter memory | 16 | DDDD | 0 | 2047 |
| HC | 32-bit Counter | 1 | DD | 0 | 63 |
| HCV | 32-bit Counter memory | 32 | DD | 0 | 63 |
| SR | Special data register | 16 | DDDD | 0 | 2047 |
| E | Index register | 16 | DD | 0 | 31 |

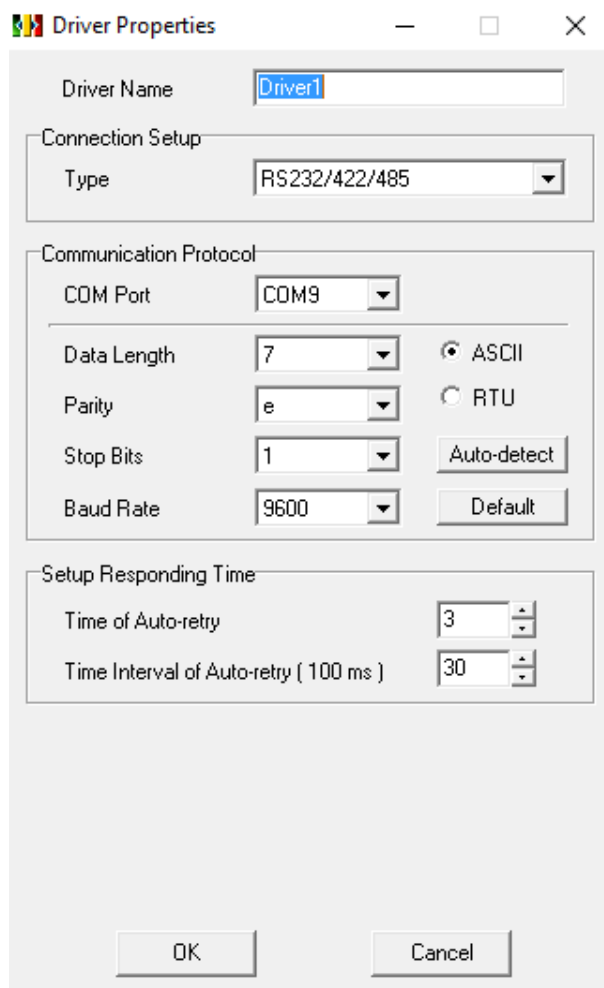
2.9.2.3 Connecting to HMI

Configuring the PLC

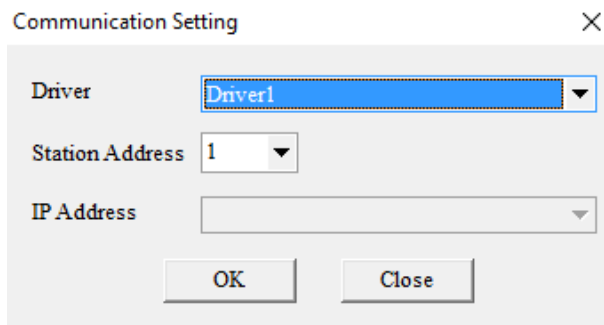
Use the application **ISPSoft** (Ver. 2.05) to configure the PLC. The application **COMMGR** is used to establish the connection between the PLC and the computer.

Open **COMMGR**. The application opens in the system tray. Double click the icon to open it.

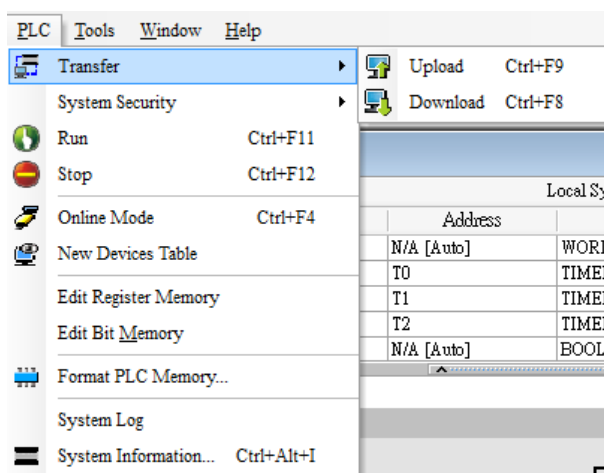
In Device Manager, verify the port number the PLC is connected to. In COMMGR, press **Add** and for **Connection Setup**, select RS232/422/485 for type. Select the port number the PLC is connected to for the **COM Port** setting. Press **Auto-detect** and the application will automatically adjust the rest of the parameters.



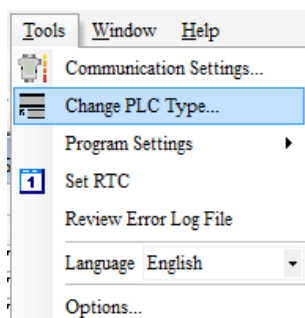
In **ISPSoft**, under the **Tools** menu option, select **Communication Settings**. Select the name of the connection configured in COMMGR and press OK.



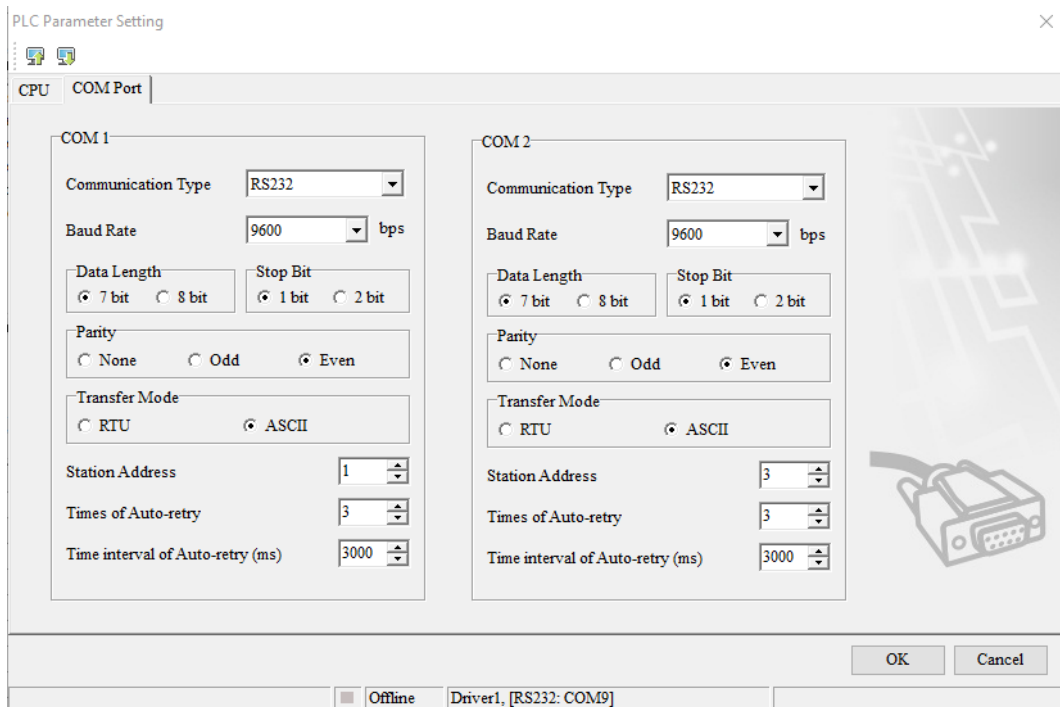
Under the **PLC** menu option, select **Transfer** and **Upload**. If there is a program on the PLC, it will be uploaded and the system settings can be configured. If there is no program present on the PLC one will have to be downloaded.



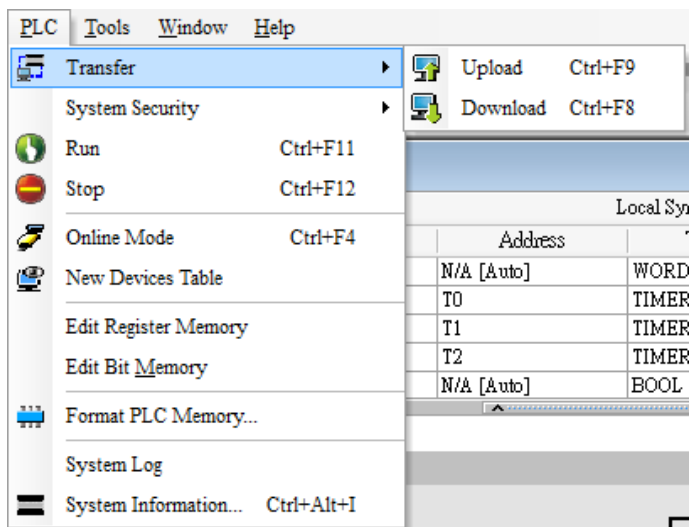
If program has to be downloaded onto the PLC, press open and select a program. In the active folder, there are example programs. The device associated with the example program may not be the same as the device connected. Under **Tools**, select **PLC Type** and select the device currently used. Once a program is opened, the PLC settings can be configured.



In the Project sidebar, double click **HWCONFIG**. Double click the **CPU** module and navigate to the **COM Port** tab in the settings dialog. Adjust communication parameters and press OK to confirm the settings.

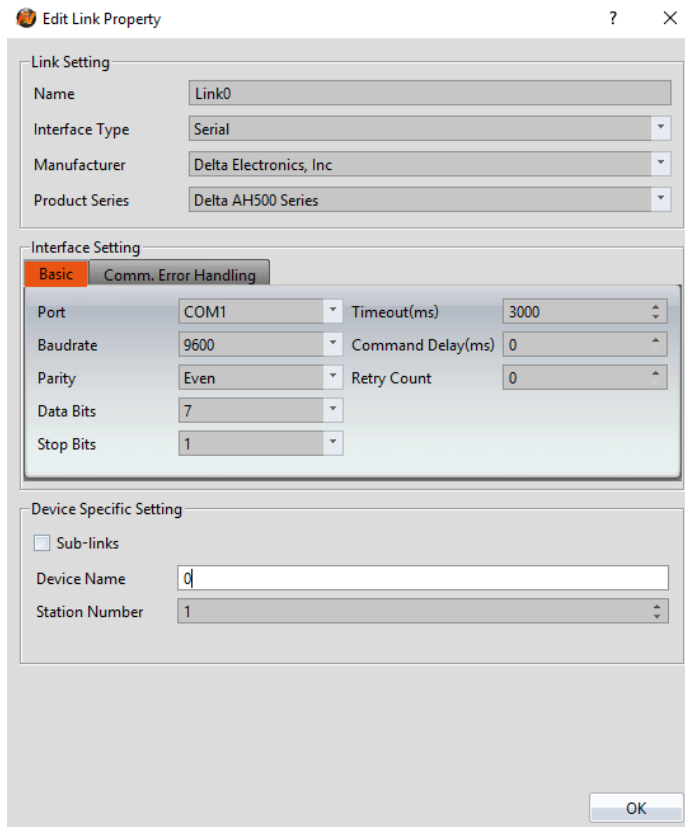


Under the **PLC** menu option, the program and PLC configurations can be downloaded onto the device.



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

Connecting PLC to HMI



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

Under **Interface Type** select Serial

Under **Manufacturer** select Delta Electronics, Inc

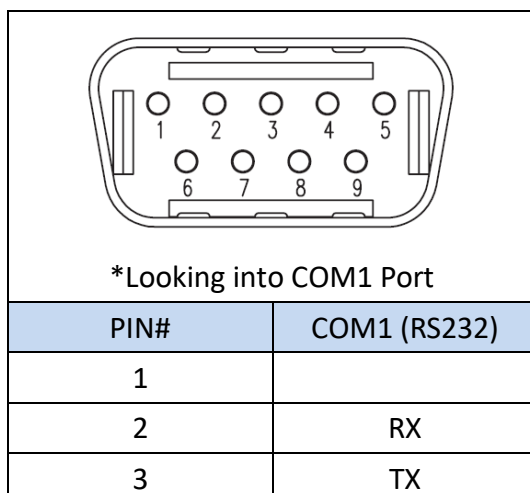
Under **Product Series** select Delta AH500 Series

Select the appropriate **Port** to establish connection with the PLC.

Verify the other parameters are configured correctly.

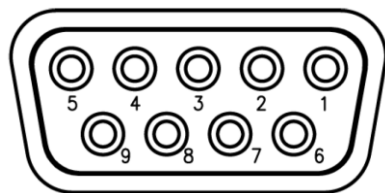
2.9.2.4 Wiring Diagrams

HMI COM1 Pinout



| | |
|---|-----|
| 4 | |
| 5 | GND |
| 6 | |
| 7 | RTS |
| 8 | CTS |
| 9 | |

PLC COM1/COM2 Pinout



*Looking into PLC

| PIN# | Signal |
|------|--------|
| 1 | |
| 2 | RXD |
| 3 | TXD |
| 4 | |
| 5 | GND |
| 6 | |
| 7 | |
| 8 | |
| 9 | |

All P5 Series

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

2.10 Panasonic

2.10.1 FP Series

2.10.1.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|-----------------------------|--------|
| Signal Level | RS232C | |
| Baud Rate | 9600 | |
| Data Length | 8 | |
| Stop Bit | 1 | |
| Parity | Odd | |
| PLC Station No. | 1 | |
| Communication Method | MEWTOCOL (computer link) | |

2.10.1.2 Memory Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|--------|----------------------------------|----------|--------------|------|-------|
| X | External input relay | 1 | DDDD | 0 | 8191 |
| Y | External output relay | 1 | DDDD | 0 | 8191 |
| R | Internal relay | 1 | DDDDD | 0 | 14191 |
| L | Link Relay | 1 | DDDDD | 0 | 10239 |
| T | Timer | 1 | DDDD | 0 | 3071 |
| C | Counter | 1 | DDDD | 0 | 3071 |
| WX | External input relay | 16 | DDD | 0 | 511 |
| WY | External output relay | 16 | DDD | 0 | 511 |
| WR | Internal relay | 16 | DDD | 0 | 886 |
| WL | Link Relay | 16 | DDD | 0 | 639 |
| DT | Data register | 16 | DDDDD | 0 | 99999 |
| LD | Link data register | 16 | DDDD | 0 | 8447 |
| SV | Timer/Counter set value area | 16 | DDDD | 0 | 3071 |
| EV | Timer/Counter elapsed value area | 16 | DDDD | 0 | 3071 |
| FL | File register | 16 | DDDDD | 0 | 99999 |

2.10.1.3 Connecting to HMI

Configuring the PLC

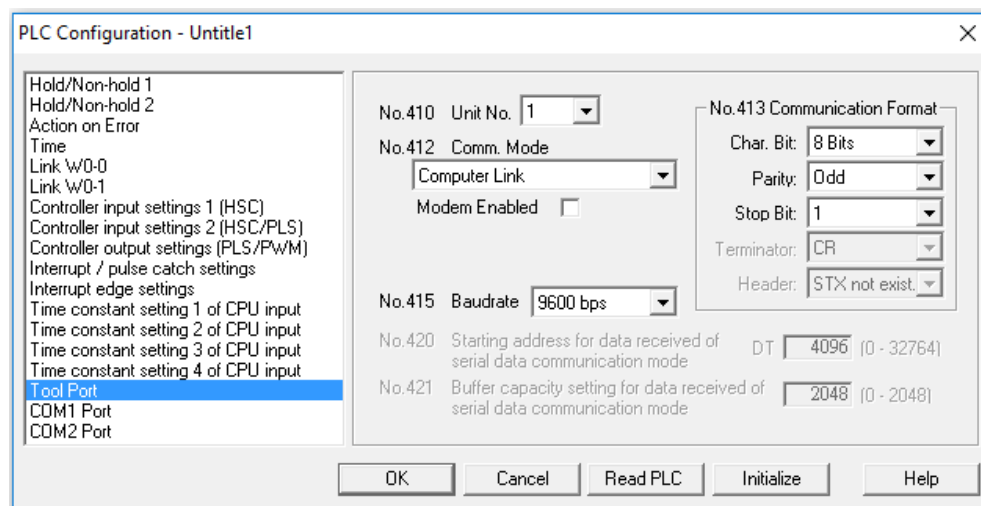
If the PLC does not connect based on the default communication settings,

configuration of the PLC settings is needed.

Within **FPWIN GR**:

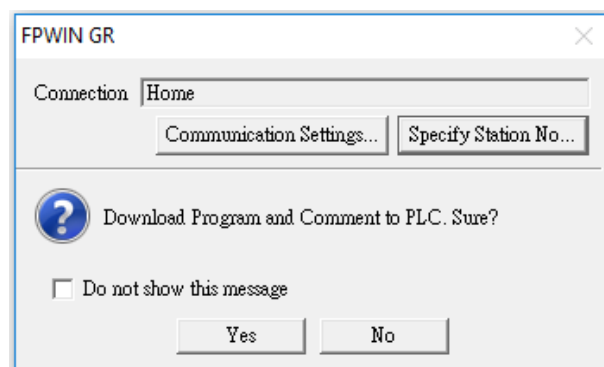
Connect the PLC to the computer via USB and navigate to the **Online** menu option and switch to **Online Editing Mode**.

Navigate to the **Option** menu option and select **PLC Configuration**.



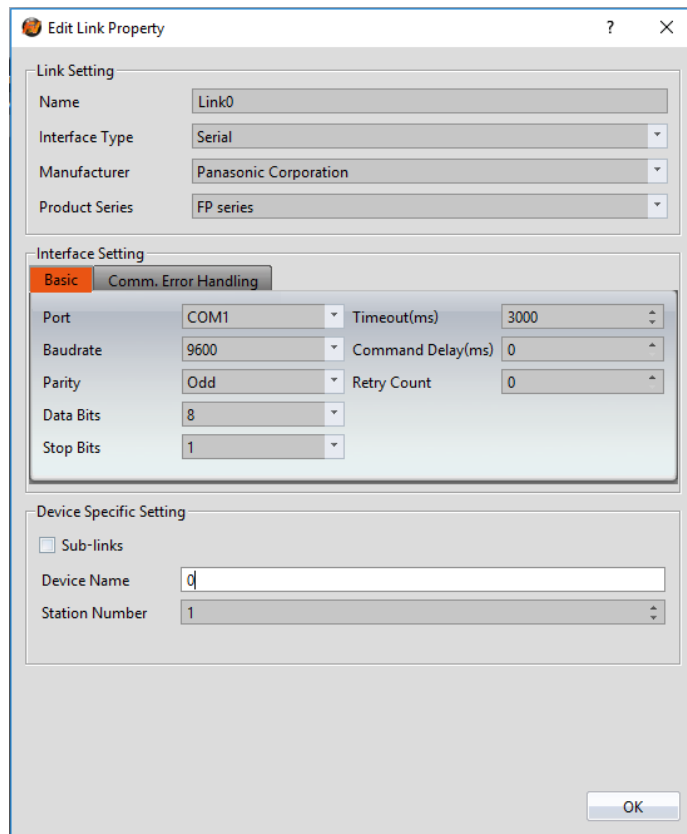
Go to the **Tool Port** option in the sidebar and select **Read PLC** to see the current PLC settings. Change the settings needed to be changed and press OK.

Navigate to the **File** menu option and select **Download to PLC** to save the settings to the PLC.



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

Connecting PLC to HMI



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

Under **Interface Type** select Serial

Under **Manufacturer** select Panasonic Corporation

Under **Product Series** select FP Series

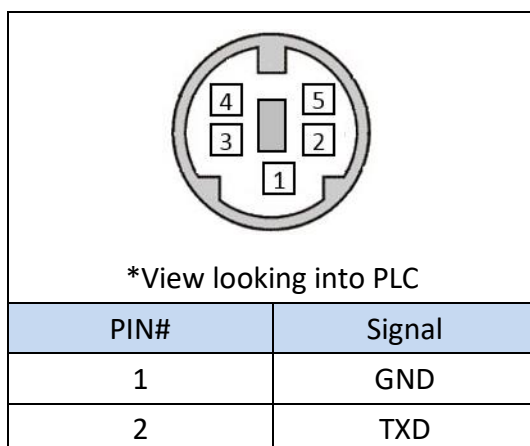
Select **COM1** for the port

Select **1** for the station number

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

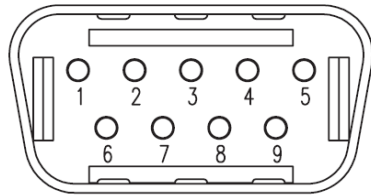
2.10.1.4 Wiring Diagrams

PLC RS232 Pinout



| | |
|---|-----|
| 3 | RXD |
| 4 | |
| 5 | |

HMI COM1 Pinout



*Looking into COM1 Port

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

All P5 Series

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

2.10.2 FP Series (Ethernet)

2.10.2.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|--------------------------|-------------------|
| Signal Level | Ethernet | With AFPX-COM5 |
| Internet Protocol | 192.168.1.100 | |
| Port | 9094 | |
| PLC Station No. | 1 | |
| Communication Method | MEWTOCOL (computer link) | |

2.10.2.2 Memory Resource Review

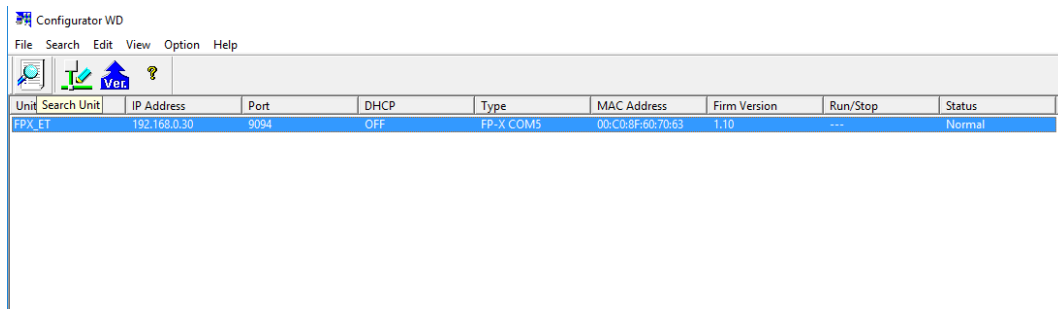
| Device | Description | Data bit | Input format | Min. | Max. |
|--------|----------------------------------|----------|--------------|------|-------|
| X | External input relay | 1 | DDDD | 0 | 8191 |
| Y | External output relay | 1 | DDDD | 0 | 8191 |
| R | Internal relay | 1 | DDDDD | 0 | 14191 |
| L | Link Relay | 1 | DDDDD | 0 | 10239 |
| T | Timer | 1 | DDDD | 0 | 3071 |
| C | Counter | 1 | DDDD | 0 | 3071 |
| WX | External input relay | 16 | DDD | 0 | 511 |
| WY | External output relay | 16 | DDD | 0 | 511 |
| WR | Internal relay | 16 | DDD | 0 | 886 |
| WL | Link Relay | 16 | DDD | 0 | 639 |
| DT | Data register | 16 | DDDDD | 0 | 99999 |
| LD | Link data register | 16 | DDDD | 0 | 8447 |
| SV | Timer/Counter set value area | 16 | DDDD | 0 | 3071 |
| EV | Timer/Counter elapsed value area | 16 | DDDD | 0 | 3071 |
| FL | File register | 16 | DDDDD | 0 | 99999 |

2.10.2.3 Connecting to HMI

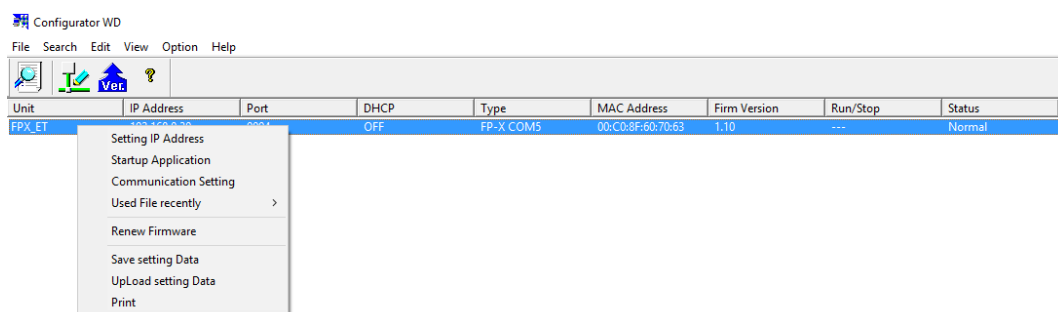
Configuring IP Address on PLC

Use the application Configurator WD to view/change the IP address on the PLC.

Press the **Search Unit** to search for the PLC on the local network. Right click the PLC and press **Setting IP Address** to change the IP address if needed.



Right click the PLC and press **Communication Setting** to change the port if necessary.



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

Connecting PLC to HMI

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

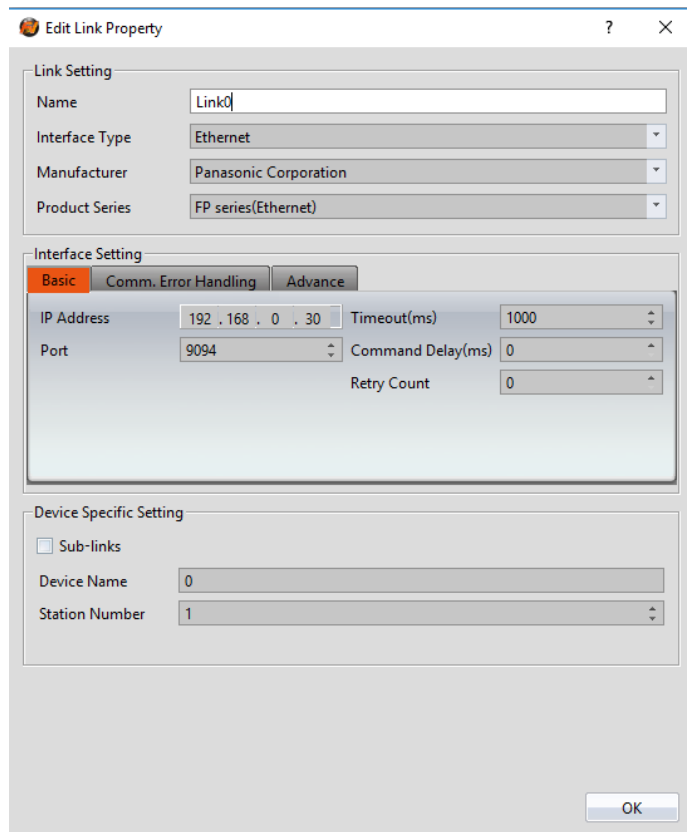
Under **Interface Type** select Ethernet


Under **Manufacturer** select Panasonic Corporation

Under **Product Series** select FP Series(Ethernet)

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

Enter the **Port** number that was set on the PLC.

The image shows a software window titled "Edit Link Property". It contains three main sections: "Link Setting", "Interface Setting", and "Device Specific Setting". The "Link Setting" section has fields for Name, Interface Type, Manufacturer, and Product Series. The "Interface Setting" section has tabs for Basic, Comm. Error Handling, and Advance, with the Basic tab selected. It contains fields for IP Address, Port, Timeout(ms), Command Delay(ms), and Retry Count. The "Device Specific Setting" section has a checkbox for Sub-links and fields for Device Name and Station Number. An OK button is located at the bottom right.

 Edit Link Property ? X

Link Setting

Name

Interface Type

Manufacturer

Product Series

Interface Setting

Basic Comm. Error Handling Advance

IP Address Timeout(ms)

Port Command Delay(ms)

Retry Count

Device Specific Setting

☐ Sub-links

Device Name

Station Number

OK

2.11 YASKAWA

2.11.1 Extended MEMOBUS

2.11.1.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|------------------|--------|
| Signal Level | Ethernet | |
| Internet Protocol | 192.168.1.1 | |
| Port | 502 | |
| PLC Station No. | 1 | |
| Communication Method | Extended MEMOBUS | |

2.11.1.2 Memory Resource Review

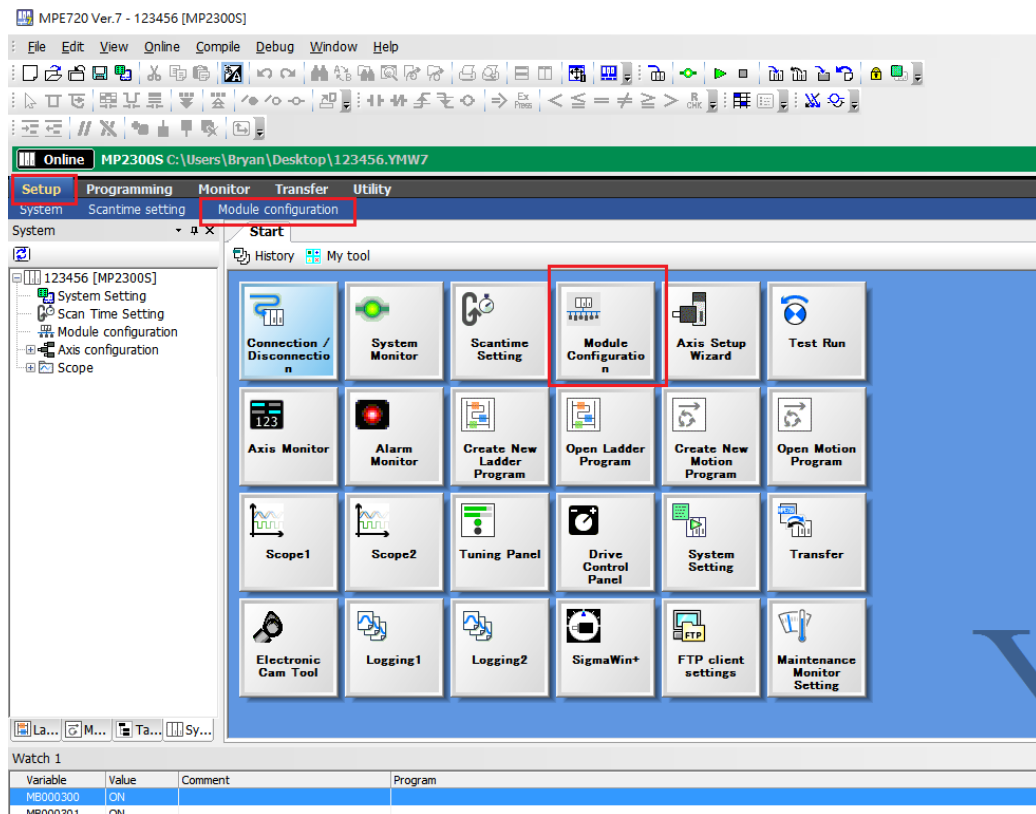
| Device | Description | Data bit | Input format | Min. | Max. |
|--------|-------------------------------------|----------|--------------|------|--------|
| IB | Input bits(Read only) | 1 | HHHHH | 0 | FFFFF |
| MB | Data bits | 1 | DDDDDH | 0 | 65534F |
| IW | Input registers(Read only) | 16 | HHHH | 0 | FFFF |
| MW | Data registers | 16 | DDDDD | 0 | 65534 |
| IL | Input registers (DWord / Read only) | 32 | HHHH | 0 | FFFF |
| ML | Data registers (Dword) | 32 | DDDDD | 0 | 65533 |
| IF | Input registers (Float / Read only) | 32 | HHHH | 0 | FFFF |
| MF | Data registers(Float) | 32 | DDDDD | 0 | 65533 |

2.11.1.3 Connecting to HMI

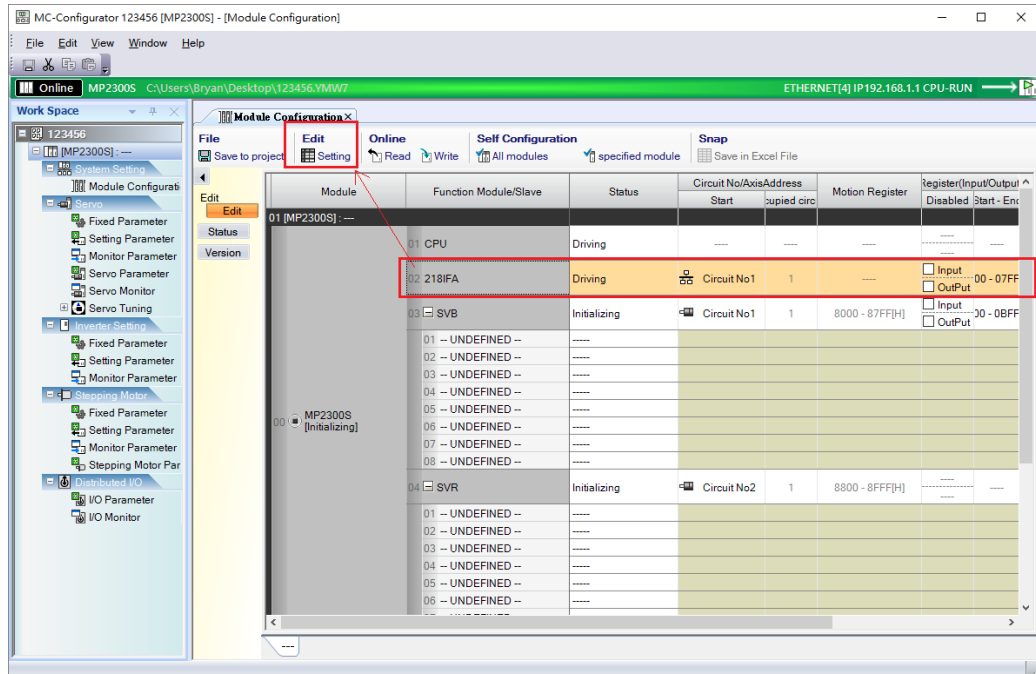
Configuring IP Address on PLC

Use **MPE720 Ver.7** to configure the IP of the PLC.

Click **Module configuration** function



Double click 218IFA, or chick 218IFA then chick Edit-Setting



the IP address and other parameters can be set.

Detail - [218IFA]

File Edit View

PT#: 4 IP#:192.168.1.1 CPU#: 1 CIR#01 00000-007FF

Transmission Parameters Status

Transmission Parameters

IP Address : 192 168 1 1 (0-255) Subnet Mask : 255 255 255 0 (0-255) Gateway IP Address : 0 0 0 0 (0-255)

Module Name Definition

Equipment name : CONTROLLER NAME

Detail Definition

Connection Parameter

Message Communication

Easy setting It is possible to following parameter setting easily that communicate the message.

| CNO | Local Port | Node IP Address | Node Port | Connect Type | Protocol Type | Code | Detail |
|-----|------------|-----------------|-----------|--------------|------------------|------|---------|
| 01 | 00502 | 192.168.001.011 | 00502 | TCP | Extended MEMOBUS | BIN | Setting |
| 02 | 00503 | 192.168.001.022 | 00503 | UDP | None | BIN | Setting |
| 03 | 00504 | 192.168.001.012 | 32769 | TCP | Extended MEMOBUS | BIN | Setting |
| 04 | --- | --- | --- | --- | --- | --- | Setting |

Cannot the overlap to local station port number used by the communicate the I/O message.

I/O Message Communication

☒ Disable ☐ Enable

Easy setting It is possible to set easily that communicate the I/O message.

Data update timing Low Scan

| Read/Write | Local Port | Node IP Address | Node Port | Connect Type | Protocol Type | Code | Detail |
|------------|------------|-----------------|-----------|--------------|---------------|------|---------|
| Read | --- | --- | --- | --- | --- | --- | Setting |
| Write | --- | --- | --- | --- | --- | --- | Setting |

Head register number data size

MP2300S ☐ input disable 1W00000 4 W-< ☐ output disable 0W00004 4 W->

Head register number data size

Hold register(MW) 00000 4 W Hold register(MW) 00000 4 W

Node equipment

For Help, press F1

NUM

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

Connect PLC to HMI

New Link Property

Link Setting

Name: Link0

Interface Type: Ethernet

Manufacturer: YASKAWA Electric Corporation

Product Series: Extended MEMOBUS

Interface Setting

Basic | Comm. Error Handling | Advance

IP Address: 192 . 168 . 1 . 1 Timeout(ms): 3000

Port: 502 Command Delay(ms): 0

Retry Count: 0

Device Specific Setting

☐ Sub-links

Device Name: 0

Station Number: 1

OK Cancel

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

Under **Interface Type** select Ethernet

Under **Manufacturer** select YASKAWA Electric Corporation.

Under **Product Series** select Extended MEMOBUS.

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

Verify the parameters match the window above.

2.12 Keyence

2.12.1 KV-3000/5000/5500/7500(Ethernet)

2.12.1.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|----------------------------|--------|
| Signal Level | Ethernet | |
| Internet Protocol | 0.0.0.0 | |
| Port | 8501 | |
| PLC Station No. | 0 | |
| Communication Method | HOST-LINK COMMUNICATION | |

2.12.1.2 Memory Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|---------|---|----------|--------------|------|--------|
| R | Relay | 1 | DDDdd | 0 | 99915 |
| B | Link relay | 1 | HHHH | 0 | 7FFF |
| MR | Internal auxiliary relay | 1 | DDDDdd | 0 | 399915 |
| LR | Latch relay | 1 | DDDdd | 0 | 99915 |
| T | Timer | 1 | DDDD | 0 | 3999 |
| C | Counter | 1 | DDDD | 0 | 3999 |
| CTC_sts | High-speed counter comparator (contact) | 1 | D | 0 | 7 |
| CR | Control relay | 1 | DDdd | 0 | 7915 |
| VB | Work relay | 1 | HHHH | 0 | F9FF |
| DM | Data memory | 16 | DDDDD | 0 | 65534 |
| EM | Extended data memory | 16 | DDDDD | 0 | 65534 |
| FM | File register | 16 | DDDDD | 0 | 32767 |
| ZF | File register | 16 | DDDDDD | 0 | 524287 |
| W | Link register | 16 | HHHH | 0 | 7FFFF |
| TM | Temporary data memory | 16 | DDD | 0 | 511 |
| CM | Control memory | 16 | DDDD | 0 | 5999 |
| VM | Work memory | 16 | DDDDD | 0 | 50999 |

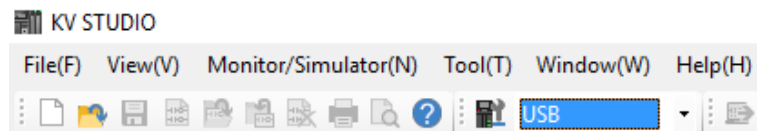
| | | | | | |
|-----|---|----|------|---|------|
| Z | Index register | 32 | D | 1 | 12 |
| TC | Timer (current value) | 32 | DDDD | 0 | 3999 |
| TS | Timer (set value) | 32 | DDDD | 0 | 3999 |
| CC | Counter (current value) | 32 | DDDD | 0 | 3999 |
| CS | Counter (set value) | 32 | DDDD | 0 | 3999 |
| CTH | High-speed counter (current value) | 32 | D | 0 | 3 |
| CTC | High-speed counter comparator (set value) | 32 | D | 0 | 7 |
| TRM | Digital trimmer | 32 | D | 0 | 7 |

2.12.1.3 Connecting to HMI

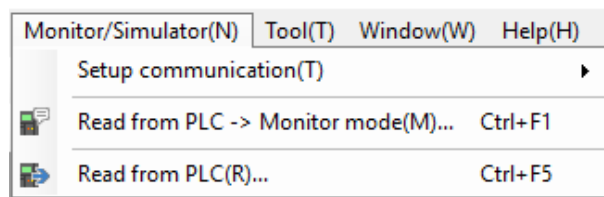
Configuring IP address on PLC

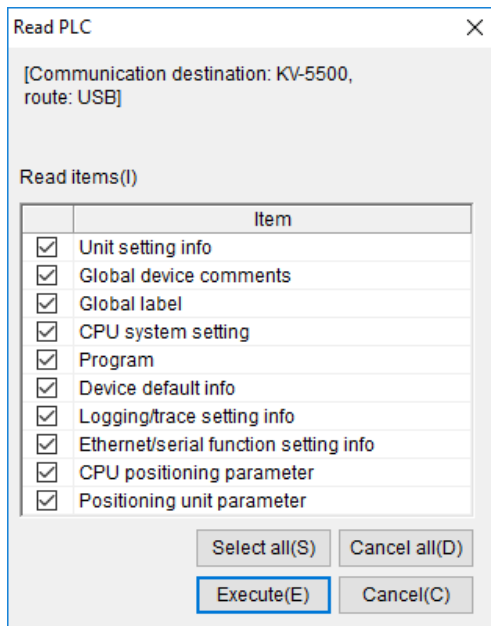
Use the application **KV Studio** to configure the IP address of the PLC.

Select the connection between the PLC and the computer. A USB connection was used in this case.

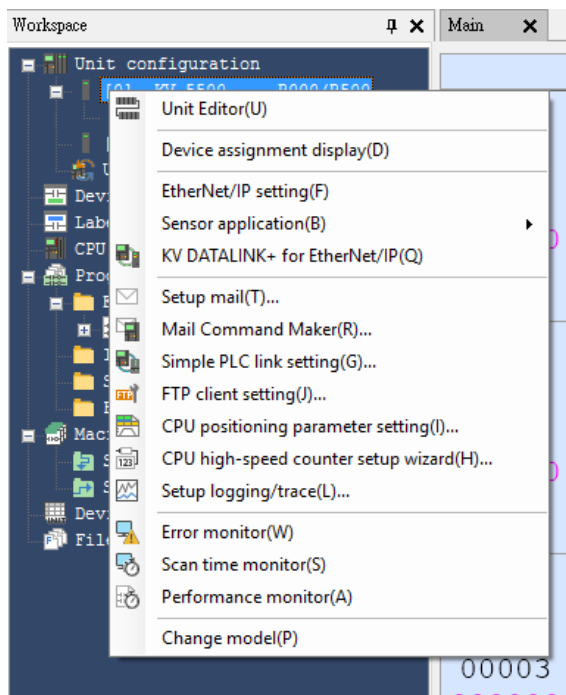


Under the **Monitor/Simulator** menu option, select **Read from PLC** and execute the operation.





In the Workspace, right click the PLC model name and select **Unit Editor**.

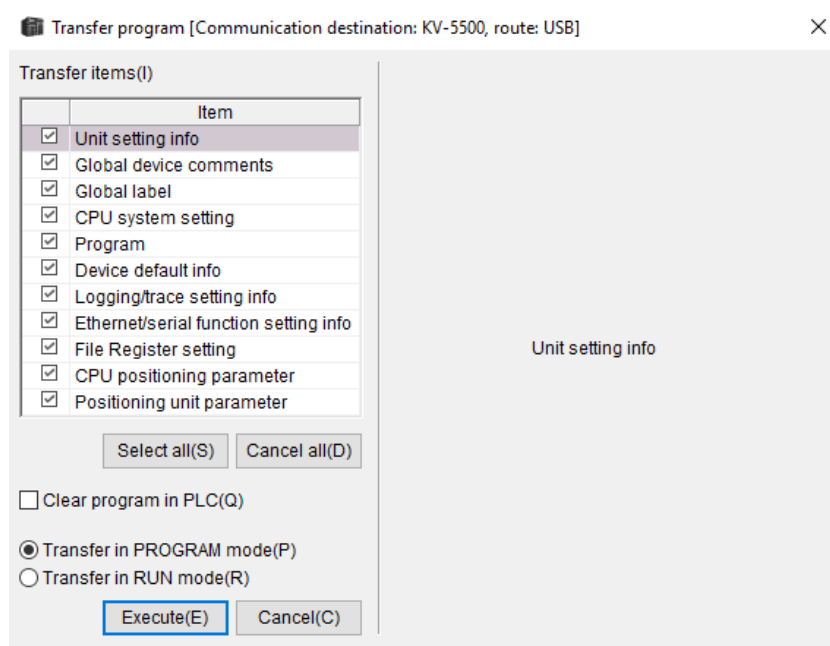


On the right side of the dialog window, the IP address and Port can be changed. When done, close out of the window and select 'Yes' to save the settings.

| Unit | |
|-----------------------------|-------------------------|
| Select unit(1) | Setup unit(2) |
| [0] KV-5500 | |
| Base | |
| Leading DM No. | DM10000 |
| Number of DMs in use | 230 |
| Leading relay No. (ch... | R30000 |
| Number of relays in use | 640 |
| Baud rate | 100/10Mbps automatic(*) |
| Setting method of IP ... | Fixed IP address(*) |
| IP address | 192.168.0.25 |
| Subnet mask | 255.255.255.0 |
| Default gateway | 192.168.0.1 |
| DNS server | 0.0.0.0 |
| Receive timeout[s] | 10 |
| Keep Alive[s] | 600 |
| Port No. | |
| Port No. (KVS, KV COM+, DB) | 8500 |
| Port No. (uplink) | 8501 |
| Port No. (VT) | 8502 |
| Port No. (system expa... | 8504 |
| Port No. (system expa... | 8506 |
| Simple PLC link port ... | 5001 |
| MC protocol port No. ... | 5000 |
| MC protocol port No. ... | 5000 |

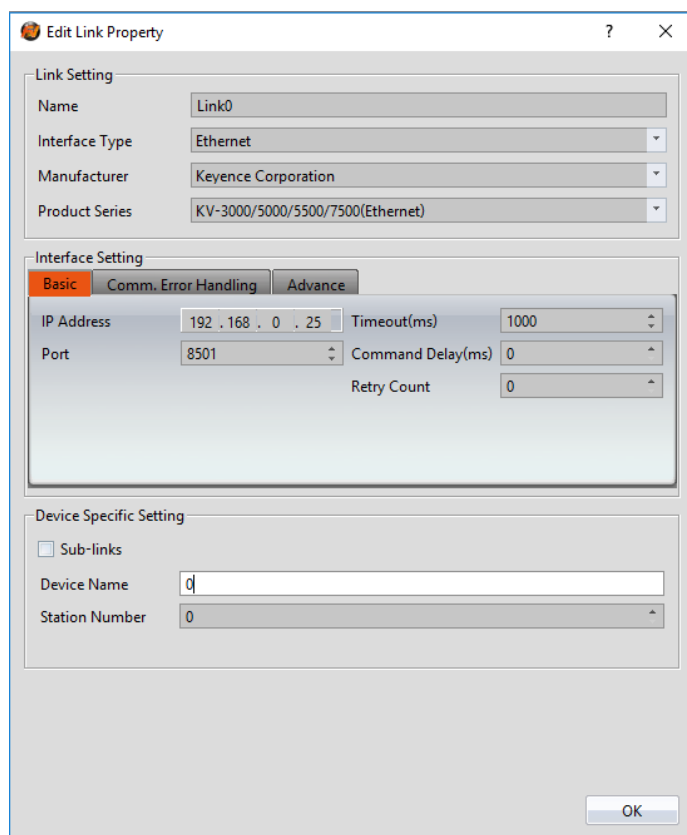
Under **Monitor/Simulator**, select **Transfer to PLC** to download the changes onto the PLC. Confirm the execution of the operation

| Monitor/Simulator(N) | Debug(D) | Tool(T) | Window(W) |
|---|----------|---------|---------------|
| Return to Editor(X) | | | Ctrl+F1 |
| Setup communication(T) | | | |
| Monitor mode(B)... | | | Ctrl+Shift+F3 |
| Transfer to PLC -> Monitor mode(C)... | | | Ctrl+F8 |
| Read from PLC -> Monitor mode(M)... | | | Ctrl+F1 |
| Transfer to PLC(W)... | | | |
| Read from PLC(R)... | | | Ctrl+F5 |
| Verify with PLC/synchronize(V)... | | | |
| Start Monitor(S) | | | |
| Stop Monitor(E) | | | |
| Start online edit(O) | | | F10 |
| Transfer online edit(F) | | | |
| Setup online edit(J)... | | | |
| Simulator(L) | | | Ctrl+F2 |
| Setup simulator(A)... | | | |
| VT simulator start(I)... | | | |
| Real time chart monitor(H)... | | | |
| Registration monitor window(G)... | | | |
| Batch monitor window(K)... | | | |
| Device value batch modify/read window(D)... | | | |
| Display/hide watch window(N) | | | |
| Unit Monitor(U)... | | | |
| Built-in function monitor(P)... | | | |
| Command monitor(Y) | | | |



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

Connecting PLC to HMI



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

Under **Interface Type** select Ethernet

Under **Manufacturer** select Keyence Corporation

Under **Product Series** select KV-3000/5000/5500/7500(Ethernet)

Set the **IP address** and **Port** to the values configured on the PLC.

2.12.2 KV-L21V/3000/5000/5500 (host link)

2.12.2.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|----------------------------|--------|
| Signal Level | RS232C | |
| Baud Rate | 115200 | |
| Data Length | 8 | |
| Stop Bit | 1 | |
| Parity | Even | |
| PLC Station No. | 0 | |
| Communication Method | HOST-LINK COMMUNICATION | |

2.12.2.2 Memory Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|---------|---|----------|--------------|------|--------|
| R | Relay | 1 | DDDdd | 0 | 99915 |
| B | Link relay | 1 | HHHH | 0 | 7FFF |
| MR | Internal auxiliary relay | 1 | DDDDdd | 0 | 399915 |
| LR | Latch relay | 1 | DDDdd | 0 | 99915 |
| T | Timer | 1 | DDDD | 0 | 3999 |
| C | Counter | 1 | DDDD | 0 | 3999 |
| CTC_sts | High-speed counter comparator (contact) | 1 | D | 0 | 7 |
| CR | Control relay | 1 | DDdd | 0 | 7915 |
| VB | Work relay | 1 | HHHH | 0 | F9FF |
| DM | Data memory | 16 | DDDDD | 0 | 65534 |
| EM | Extended data memory | 16 | DDDDD | 0 | 65534 |
| FM | File register | 16 | DDDDD | 0 | 32767 |
| ZF | File register | 16 | DDDDDD | 0 | 524287 |
| W | Link register | 16 | HHHH | 0 | 7FFFF |
| TM | Temporary data memory | 16 | DDD | 0 | 511 |
| CM | Control memory | 16 | DDDD | 0 | 5999 |
| VM | Work memory | 16 | DDDDD | 0 | 50999 |

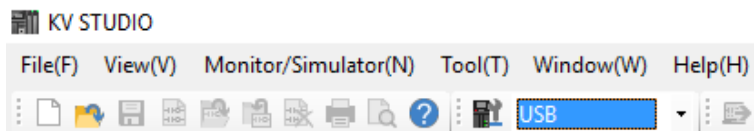
| | | | | | |
|-----|---|----|------|---|------|
| Z | Index register | 32 | D | 1 | 12 |
| TC | Timer (current value) | 32 | DDDD | 0 | 3999 |
| TS | Timer (set value) | 32 | DDDD | 0 | 3999 |
| CC | Counter (current value) | 32 | DDDD | 0 | 3999 |
| CS | Counter (set value) | 32 | DDDD | 0 | 3999 |
| CTH | High-speed counter (current value) | 32 | D | 0 | 3 |
| CTC | High-speed counter comparator (set value) | 32 | D | 0 | 7 |
| TRM | Digital trimmer | 32 | D | 0 | 7 |

2.12.2.3 Connecting to HMI

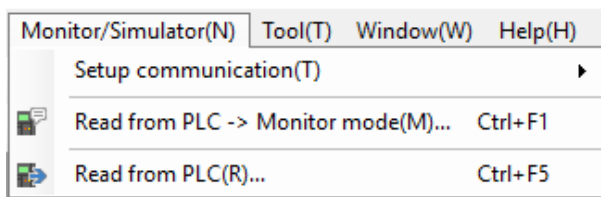
Configuring the PLC

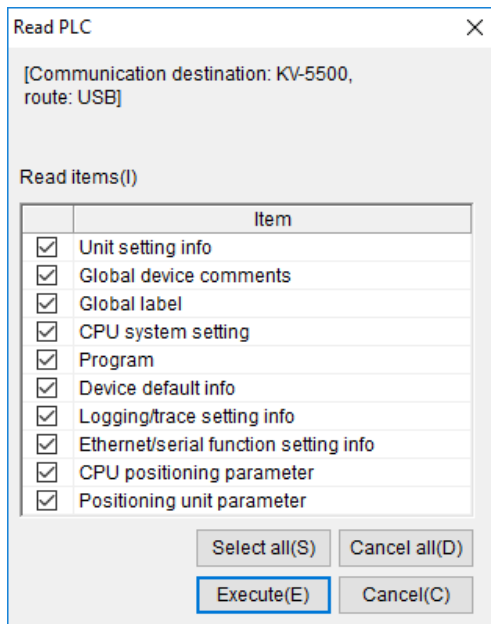
Use the application **KV Studio** to configure the serial connection of the PLC.

Select the connection between the PLC and the computer. A USB connection was used in this case.

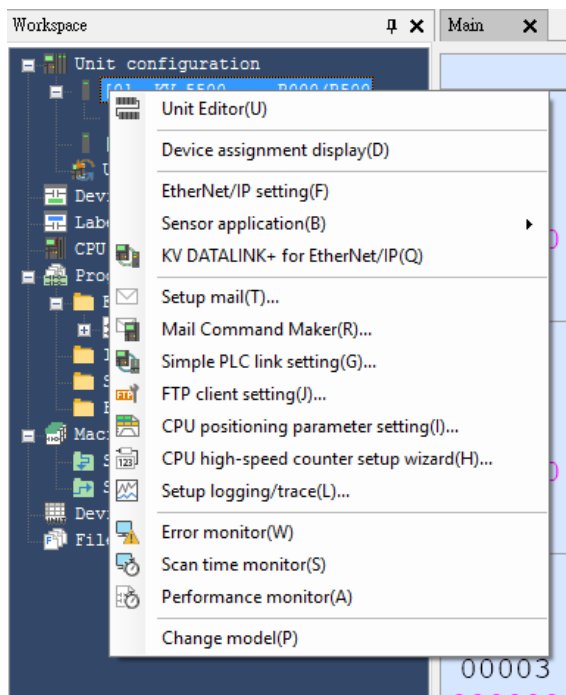


Under the **Monitor/Simulator** menu option, select **Read from PLC** and execute the operation.





In the Workspace, right click the PLC model name and select **Unit Editor**.

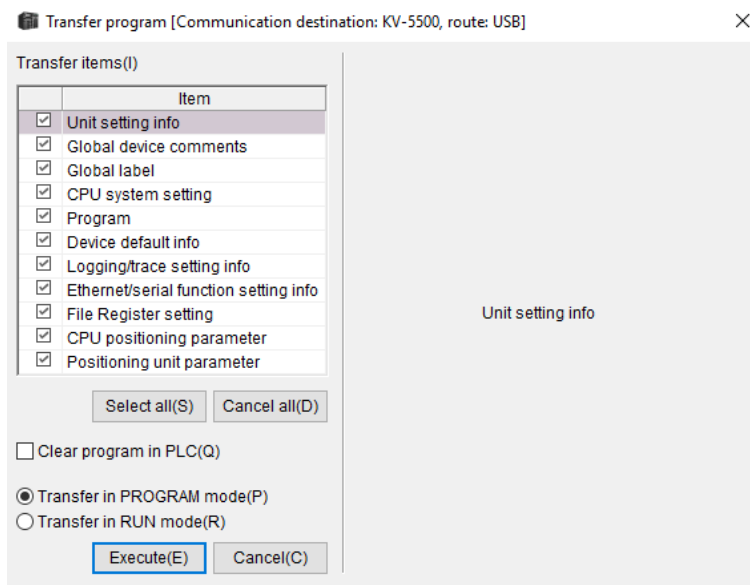


On the right side of the dialog window, verify the baud rate is **115200bps**. Close out of the window and select 'Yes' to save the settings.

| Unit | |
|------------------|---------------------|
| Select unit(1) | Setup unit(2) |
| [1] KV-L2*V | |
| Base | |
| Leading DM No. | DM10300 |
| Number of DMs... | 1 |
| Leading relay... | R34000 |
| Number of rel... | 32 |
| Node No. | 0 (*) |
| Port 1 | |
| Operation mode | KV mode (host li... |
| Detail | --- (*) |
| Interface | RS-232C (*) |
| Baudrate | 115200bps |
| Data bit length | 8 bits (*) |
| Start bit | 1 bits (*) |
| Stop bit | 1 bits (*) |
| Parity | Even (*) |
| Checksum | none (*) |
| RS/CS flow co... | OFF (*) |

Under **Monitor/Simulator**, select **Transfer to PLC** to download the changes onto the PLC. Confirm the execution of the operation

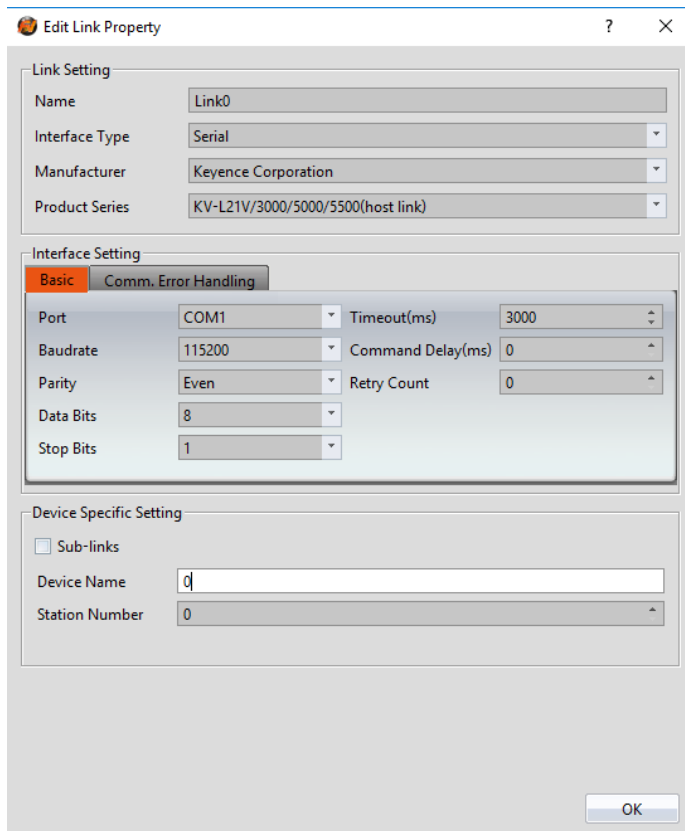
| Monitor/Simulator(N) | Debug(D) | Tool(T) | Window(W) |
|---|----------|---------|---------------|
| Return to Editor(X) | | | Ctrl+F1 |
| Setup communication(T) | | | |
| Monitor mode(B)... | | | Ctrl+Shift+F3 |
| Transfer to PLC -> Monitor mode(C)... | | | Ctrl+F8 |
| Read from PLC -> Monitor mode(M)... | | | Ctrl+F1 |
| Transfer to PLC(W)... | | | |
| Read from PLC(R)... | | | Ctrl+F5 |
| Verify with PLC/synchronize(V)... | | | |
| Start Monitor(S) | | | |
| Stop Monitor(E) | | | |
| Start online edit(O) | | | F10 |
| Transfer online edit(F) | | | |
| Setup online edit(J)... | | | |
| Simulator(L) | | | Ctrl+F2 |
| Setup simulator(A)... | | | |
| VT simulator start(I)... | | | |
| Real time chart monitor(H)... | | | |
| Registration monitor window(G)... | | | |
| Batch monitor window(K)... | | | |
| Device value batch modify/read window(D)... | | | |
| Display/hide watch window(N) | | | |
| Unit Monitor(U)... | | | |
| Built-in function monitor(P)... | | | |
| Command monitor(Y) | | | |



Note: Port 2 of the PLC can also be configured following the steps above. The parameters for Port 2 are under the parameters for Port 1 in the dialog window.

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

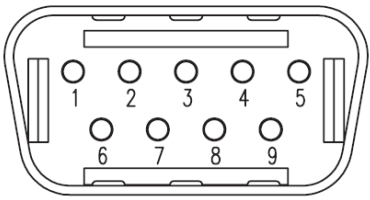
Connecting PLC to HMI



Within the **Link** configuration window in FvDesigner:
 Under Interface Type select Serial
 Under **Manufacturer** select Keyence Corporation
 Under **Product Series** select KV-L21V/3000/5000/5500(host link)
 Under **Port** select required COM port. Verify the baud rate is the same as the value set on the PLC.

2.12.2.4 Wiring Diagrams

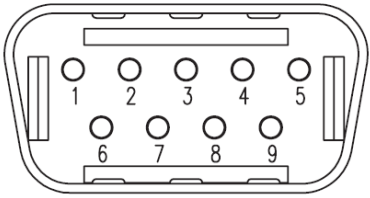
Using Port 1
PLC RS232 Port (PORT1)



*Looking into PLC

| PIN# | Signal |
|------|--------|
| 1 | |
| 2 | RXD |
| 3 | TXD |
| 4 | |
| 5 | GND |
| 6 | |
| 7 | |
| 8 | |
| 9 | |

HMI COM1 Pinout



*Looking into COM1 Port

| PIN# | COM1 (RS232) |
|------|--------------|
| 1 | |


| | |
|---|-----|
| 2 | RX |
| 3 | TX |
| 4 | |
| 5 | GND |
| 6 | |
| 7 | RTS |
| 8 | CTS |
| 9 | |

P5 Series

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

Using Port 2

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- |

PLC RS485 Port (PORT2)

| | | |
|---------|-------------|-------------|
| 1 SG | 3 SDA(-) | 5 SDB(+) |
| | 2 RDA(-) | 4 RDB(+) |

P5070S/P5070N/P5070N1/P5102N/P5102N1

| HMI COM3 | PLC RS485 Port |
|-----------|----------------|
| 5 RX- | 3 SDA(-) |
| 4 RX+ | 5 SDB(+) |
| 7 TX- | 2 RDA(-) |
| 6 TX+ | 4 RDA(+) |
| 3 ISO_GND | 1 SG |

2.12.3 KV-Nano (host link)

2.12.3.1 Communication Setting

| Item | Default Setting | Remark |
|----------------------|----------------------------|----------|
| Signal Level | RS232C | OP-26486 |
| Baud Rate | 115200 | |
| Data Length | 8 | |
| Stop Bit | 1 | |
| Parity | Even | |
| PLC Station No. | 0 | |
| Communication Method | HOST-LINK COMMUNICATION | |

2.12.3.2 Memory Resource Review

| Device | Description | Data bit | Input format | Min. | Max. |
|---------|---|----------|--------------|------|-------|
| R | Relay | 1 | DDDdd | 0 | 59915 |
| B | Link relay | 1 | HHHH | 0 | 1FFF |
| MR | Internal auxiliary relay | 1 | DDDDdd | 0 | 59915 |
| LR | Latch relay | 1 | DDDdd | 0 | 19915 |
| T | Timer | 1 | DDDD | 0 | 511 |
| C | Counter | 1 | DDDD | 0 | 255 |
| CTC_sts | High-speed counter comparator (contact) | 1 | D | 0 | 7 |
| CR | Control relay | 1 | DDdd | 0 | 8915 |
| VB | Work relay | 1 | HHHH | 0 | 1FFF |
| DM | Data memory | 16 | DDDDD | 0 | 32767 |
| W | Link register | 16 | HHHH | 0 | 3FFF |
| TM | Temporary data memory | 16 | DDD | 0 | 511 |
| CM | Control memory | 16 | DDDD | 0 | 8999 |
| VM | Work memory | 16 | DDDDD | 0 | 9999 |
| Z | Index register | 32 | D | 1 | 12 |
| TC | Timer (current value) | 32 | DDDD | 0 | 511 |
| TS | Timer (set value) | 32 | DDDD | 0 | 511 |

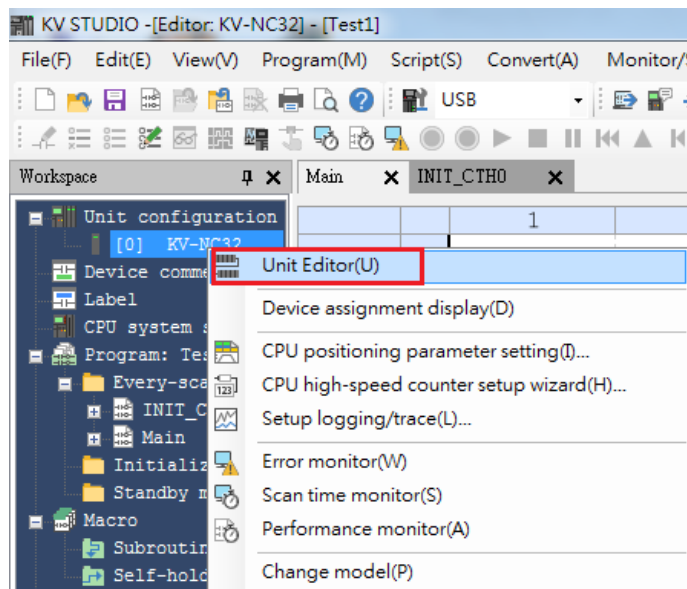
| | | | | | |
|-----|---|----|------|---|-----|
| CC | Counter (current value) | 32 | DDDD | 0 | 255 |
| CS | Counter (set value) | 32 | DDDD | 0 | 255 |
| CTH | High-speed counter (current value) | 32 | D | 0 | 3 |
| CTC | High-speed counter comparator (set value) | 32 | D | 0 | 7 |

2.12.3.3 Connecting to HMI

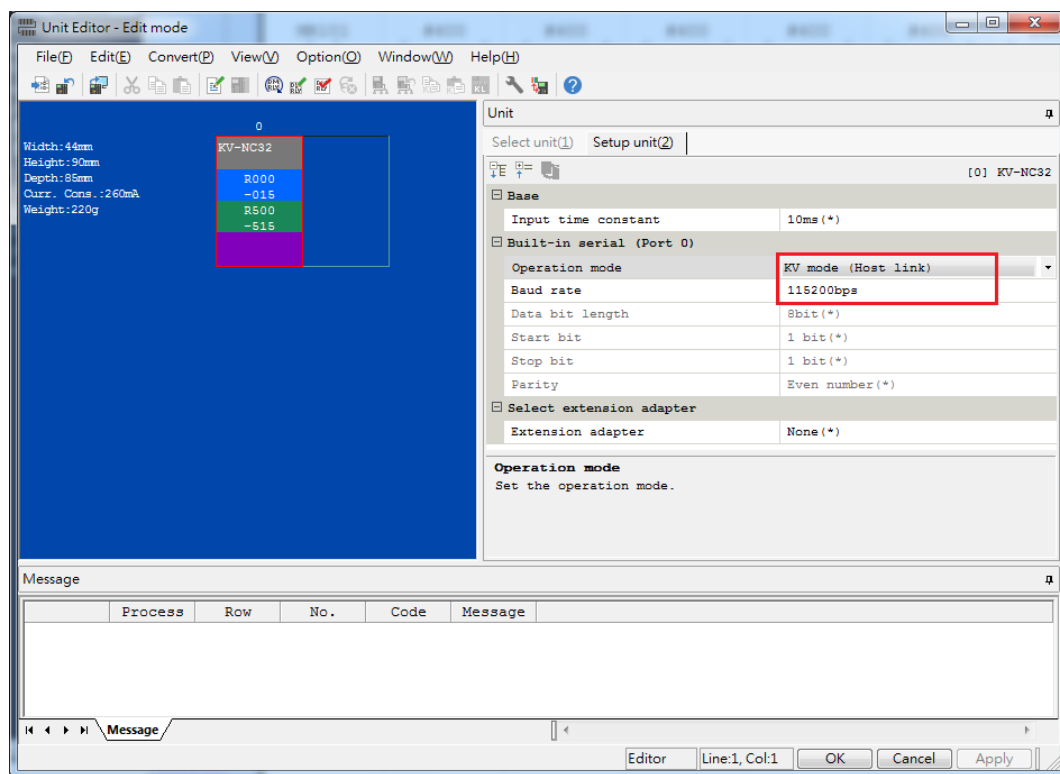
Configuring the PLC

Use the software KV Studio (ver. 9.02) to configure the PLC.

Right click the device in **Unit configuration** and select Unit Editor.



Choose **KV mode (Host Link)** and set the Baud rate to 115200.



Download the settings back onto the PLC and reset it.

Required register ranges

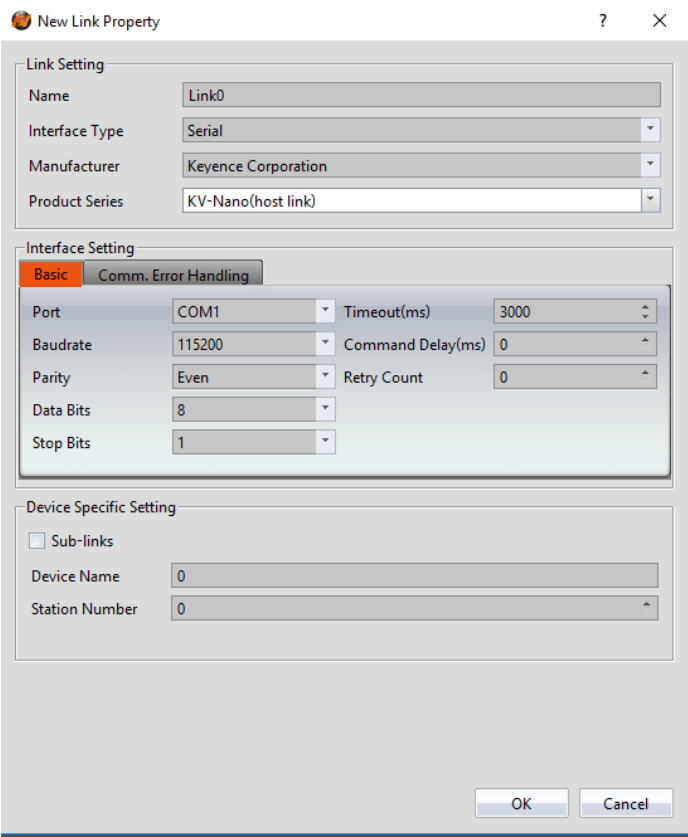
| Device | Total | Global device range | Local dev Rsv nums | Display configuration ratio |
|--------|-------|---------------------|--------------------|-----------------------------|
| R(ch) | 600 | R000 to R59915 | 0 | |
| MR(ch) | 600 | MR000 to MR49915 | 100 | |
| LR(ch) | 200 | LR000 to LR17915 | 20 | |
| T | 512 | T0 to T511 | 0 | |
| C | 256 | C0 to C255 | 0 | |
| DM | 32768 | DM0 to DM27767 | 5000 | |
| TM | 512 | TM0 to TM511 | 0 | |

| | R | MR | LR | T | C | DM | TM |
|---------------------|---|-----|----|---|---|------|----|
| Assignable quantity | 0 | 100 | 20 | 0 | 0 | 5000 | 0 |
| Used nums | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Residual nums | 0 | 100 | 20 | 0 | 0 | 5000 | 0 |
| Main | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INIT_CTH0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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

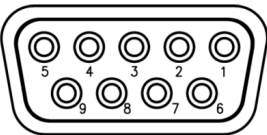
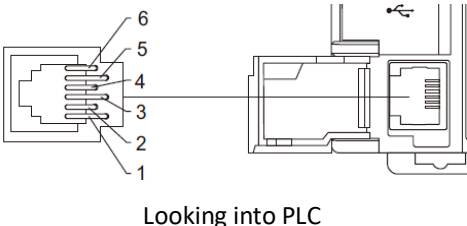
Connecting PLC to HMI

Link settings screen to connect PLC to HMI



2.12.3.4 Wiring Diagrams

Port 1: RS232

| | HMI | | PLC | |
|------------------|---|--------|--|--------|
| Serial Interface | COM1 RS-232 9 pin D-SUB Female | | RS232 6 pin | |
| |  | |  | |
| | PIN# | Signal | PIN# | Signal |
| | 2 | RX | 5 | SD |
| | 3 | TX | 3 | RD |
| | 5 | GND | 4 | SG |

