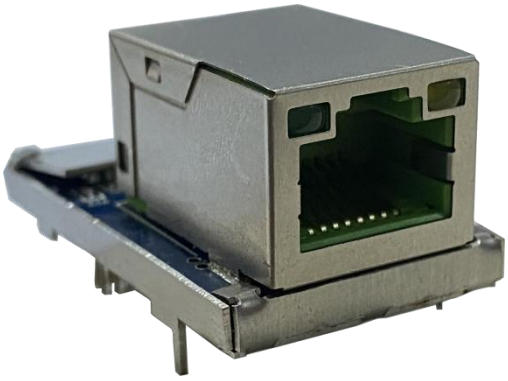
Embedded EtherNet/IP Module

EIP-341L

User Manual

REV 2.0

RevA



SiboTech Automation Co., Ltd.

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Catalog

1. Product Overview

1.1 Product Function

EIP-341L is an embedded EtherNet/IP module that enables user devices to communicate via a UART serial interface, facilitating connection between the Ethernet EtherNet/IP protocol and the user device.

1.2 Product Features

- Allows users to easily upgrade to EtherNet/IP via a serial interface
- Supports one EtherNet/IP connection
- Comes with dedicated configuration software for easy setup
- Optional feature to configure the module's IP address via the serial port

1.3 Technical Specifications

[1] Supports the EtherNet/IP communication protocol and follows ODVA standards.

[2] EIP-341L provides one Ethernet port and one UART interface (included in the 20-pin connector) to convert data between EtherNet/IP and serial.

[3] Ethernet 10/100M (auto-negotiating).

[4] The size of input and output buffers can be set by users:

- Maximum input buffer size: 256 bytes.
- Maximum output buffer size: 256 bytes.

[5] Functions as an EtherNet/IP Adapter (Server) device on the Ethernet side and can only support one EtherNet/IP Scanner (Client) connection at a time. The minimum data transmit rate is 5ms.

[6] Serial interface parameters:

- UART.
- Operation mode: Half duplex.
- Data Bits: 8.
- Stop Bits: 1.
- Parity: None.

[7] Baud Rate: Supports 2400, 4800, 9600, 19200, 38400, 57600, 115200, and 230400 bps options.

[8] Serial port uses a pre-defined UART message protocol that is easy to use for serial communication.

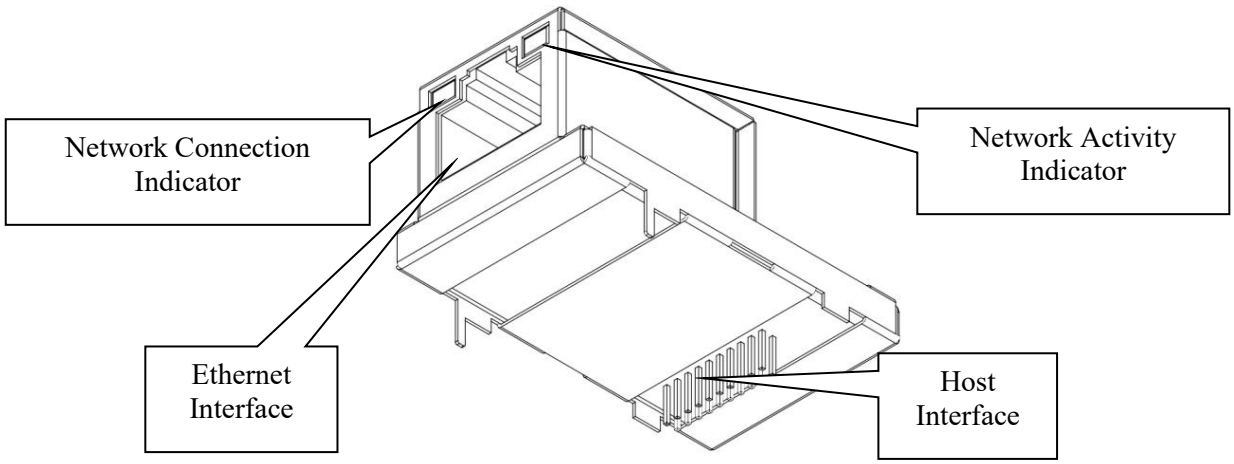
[9] Power supply: +3.3VDC (3.14 ~ 3.45V), 190mA.

[10] Working temperature: -40°F~185°F (-40°C~85°C), humidity: 5% ~ 90%.

[11] Dimensions (L x W x H): 1.46 in x 0.89 in x 0.95 in (37.2mm x 22.6mm x 24.2mm).

2. Hardware Description

2.1 Product Appearance



Note: This picture is for reference only. Product appearance is subject to the actual product.

2.2 LED Indicator

Indicator	Status	Description
Green	Off	No network connection
	Always on	Network connection normal
Yellow	Off	No network data transmitting
	Blinking	Network data transmitting normal

2.3 Interface

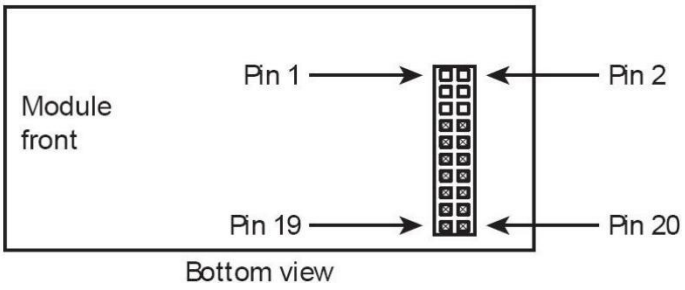
2.3.1 Ethernet Interface

The Ethernet interface uses an 8-position RJ-45 interface, follows IEEE802.3u 100BASE-T standard, with 10/100M auto-negotiation. The pin definitions are as follows:

Pin	Signal Name	Signal Description
Pin 1	TXD+	Transmit Data+
Pin 2	TXD-	Transmit Data-
Pin 3	RXD+	Receive Data+
Pin 6	RXD-	Receive Data-
Pin 4,5,7,8	BID	Keep（reserved）

2.3.2 Host Interface

EIP-341L has a 20-pin socket connector (needle-type), including power interface, UART interface , SPI interface, and GPIO. The pin position and definition are as follows:



Pin	Signals	Description
1	SPI_CLK	Clock Signal
2	SPI_MISO	Master Device Data Input, Slave Device Data Output
3	SPI_MOSI	Master Device Data Output, Slave Device Data Input
4	SPI_NSS	Chip Select Signal
5 ~ 6	NC	No Pin
7	RXD	UART Receive (Input), connected to the User Board processor's TXD
8	TXD	UART Transmit (Output), connected to the User Board processor's RXD
9	GPIO	Reserved
10	RUN	The status of EIP-341L (Output), which needs a 10kΩ pull-up resistor on the user board. Logic 1 (light on): The EIP-341L module on the startup. Logic 0 (light off): The module's startup has been completed. (Include waiting for initialization state, start the EtherNet/IP protocol stack and data exchange state, etc.) *Default IP address mode: By pulling down Pin 10 to low voltage before starting the module (by using a 1kΩ pull-down resistor), the module will start with default IP address (192.168.0.11), and this mode is only used to update the firmware.
11	BAUD2	UART Baud Rate Setting (Input): See the table below for detailed configuration.
12	BAUD1	
13	BAUD0	
14	RESET	Reset Signal (Input): Active low
15	+3.3V	Connect to DC power supply +3.3V
16	GND	Connect to Power Ground

17 ~ 19	NC	Reserved
20	DATAEXCH	Data Exchange Status (Output). Requires 10K pull-up resistor on user board. Logic 1: Module in non-data exchange state (e.g., startup, waiting for initialization, starting EtherNet/IP stack); Logic 0: Module ready and in data exchange state.

2.4 UART Baud Rate

UART baud rate settings:

Index	BAUD2	BAUD1	BAUD0	Baud Rate (bps)
0	0	0	0	2400
1	0	0	1	4800
2	0	1	0	9600
3	0	1	1	19200
4	1	0	0	38400
5	1	0	1	57600
6	1	1	0	115200
7	1	1	1	230400

2.5 SPI Rate (Under Development)

SPI functionality is under development and will be released subsequently.

2.6 Reset Signal

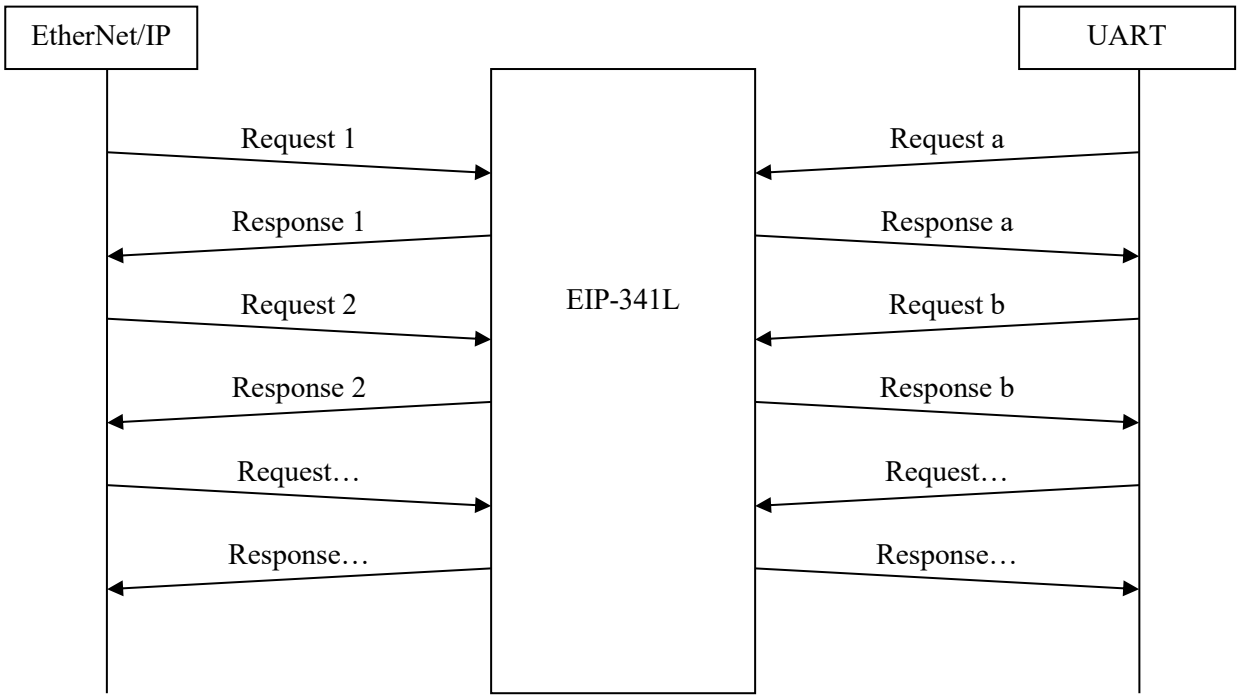
EIP-341L RESET (Pin 14) supports input of hardware reset signal. When the RESET pin is pulled down to GND or connects with voltage lower than 2.88V for more than 1 millisecond, the module will be forced to reset. The host must wait for 250 ms (typical value, after reset the module) after reset, then the user must check the Pin 10 (/RUN) and Pin 20(/DATAEXCH). If the two pins are both Logic 0 (low voltage), then the host (user board) can exchange data.

3. Communication Protocol

3.1 Description

EIP-341L acts as an EtherNet/IP adapter at the Ethernet side, and communicates with a user-defined protocol over UART at the serial port side. The EtherNet/IP communication and UART communication are completely independent. The data exchange can be finished through the internal input and output data buffer of EIP-341L. According to the EIP-341Lserial communication protocol, the user board can complete the input and output data exchange.

The procedure of message transmission is as follows:

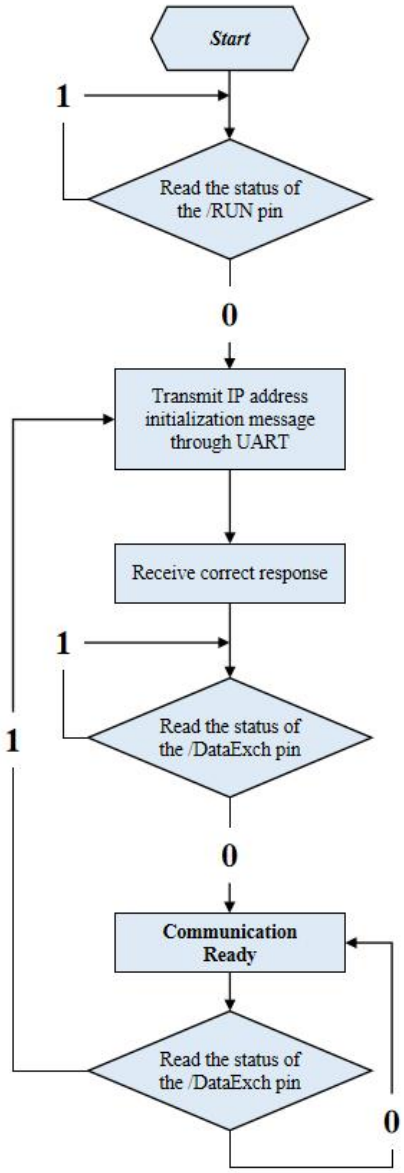


3.2 EIP-341L Initialization Flowchart

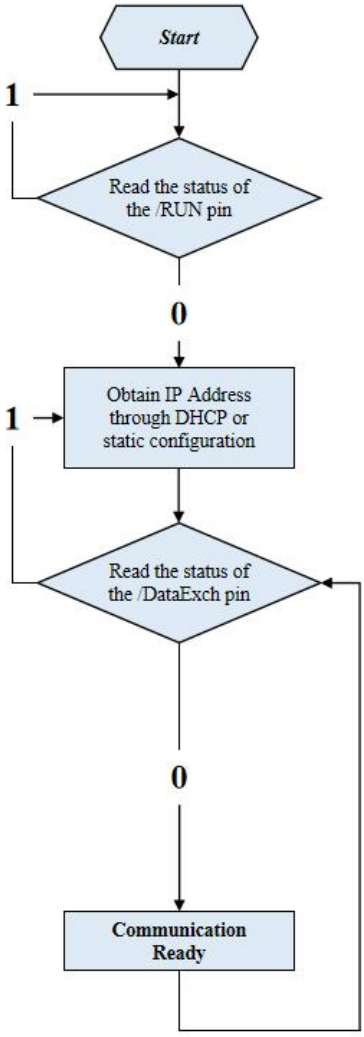
The IP Address for the EIP-341L module can be initialized by using UART or the EIP-123 PC configuration software. The flowcharts in this chapter show the steps for the two kinds of IP configuration modes. Users can choose either one of them according to their application needs. Before choosing flowchart, please refer to the “How to Set the Module’s IP Address”

section in Chapter 6.5.4 to set the IP configuration mode. The factory default for the EIP-341Lmodule is set to PC configuration with DHCP.

Initialization flow chart for using the serial port (UART) method:



Initialization flow chart for using the PC configuration software method:



3.3 Real-time IP Monitoring

If the EIP-341L module is set to DHCP, then the module will monitor its IP address while it is running. If the IP address changes, it will pull up the /DATAEXCH pin to logic 1. The EIP-341L module's action after this will depend on the IP configuration mode:

1. When using the configuration software IP address setting mode: The module will obtain an IP address again. The user will need to read //DATAEXCH pin state. If it returns to logic 0, this indicates that the module has obtained IP address and that the module is ready to communicate.

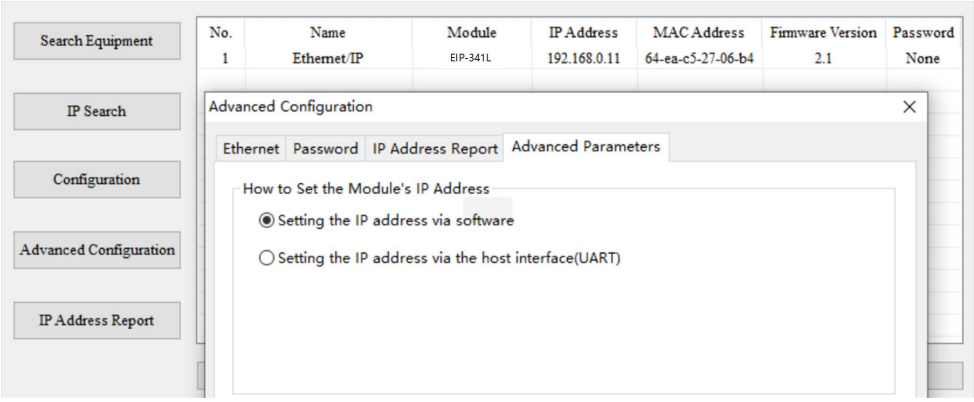
2. When using the UART IP address setting mode: The module will wait for the user to send the IP Address Initialization request message. The next step will be the same as with the first initialization.

3.4 Initialization Communication

Communication Method: The user board initiates communication; the EIP-341L module responds passively.

Baud Rate Setting: The EIP-341L determines the UART baud rate at startup by reading the state of pins BAUD0~BAUD2.

1.Initialization Request Message (User Board -> Module): Sent when choosing to use the UART to set the IP address and other information. Before sending this message, you must use EIP-123 (Background Parameter Configuration section) to set the "Obtain IP Address Method" to "Use UART Settings". After successful configuration download, you must send the correct initialization message to the UART to start the Ethernet interface. This message must be sent after every module reset or restart. The input/output byte lengths for the EtherNet/IP side still need to be set via EIP-123 Initialization Request Message Format (20 bytes):



Byte	EtherNet/IP Description

0	**Message Length (Bytes):** This length must always be 17 bytes (in hexadecimal) which includes all following bytes from 2 through 18. This length does not include the check sum byte. High-byte first.
1	
2	**DHCP Flag:** Default value is 0. When the user sets EIP-341L via UART to use DHCP to assign the IP address, the value of this byte is 1 (See ***Note**)
3	**IP Configuration Mode:** 0: Static Configuration 1: DHCP
4	**IP Address:** High-byte first
5	
6	
7	
8	**Subnet Mask:** High-byte first
9	
10	
11	
12	**Default Gateway Address:** High-byte first
13	
14	
15	
16	**Reserved:** Always 0
17	**Reserved:** Always 0
18	**Reserved:** Always 0
19	**Check Sum:** Byte 0+byte 1+…+byte 18

***Note:**

When setting the EIP-341L module via UART to use DHCP to assign the IP address, the user board should first send the IP Address Initialization message through UART (the value of Byte 2 must be set to 1).

For example: The user board sends the following message to the EIP-341L:
00 11 01 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 13.

If the EIP-341L module does not receive an IP address from the DHCP Server on the network, it will send 0x2E to the user board each second.

If the DHCP Server assigns an IP address to the EIP-341L module, then the EIP-341L will send a message which contains the IP address, the subnet mask, and the default gateway to the user board.

For example: The EIP-341L sends the following message to the user board:
0C C0 A8 00 BB FF FF FF 00 C0 A8 00 01 95.

The 0x0C is the header and indicates that the message is 12 bytes long. It is followed by 4 bytes for the IP Address (192.168.0.187), 4 bytes for the Subnet Mask (255.255.255.0), 4 bytes for the Default Gateway (192.168.0.1), and the last byte represents the checksum.

When setting the EIP-341L module IP address via UART to use a static configuration, the user board should send the IP Address Initialization message through UART (the value of Byte 2 must be set to 0),

For example: The user board sends the following message to the EIP-341L:
00 11 00 00 C0 A8 00 0A FF FF FF 00 C0 A8 00 01 00 00 00 E9.

The 0x0011 is the header and indicates that the message is 17 bytes long. It is followed by 4 bytes for the I P Address (192.168.0.10), 4 bytes for the Subnet Mask (255.255.255.0), 4 bytes for the Default Gateway (192.168.0.1), 3 bytes for the reserved data (0x000000), and the last byte represents the checksum.

and then the module will send the following message to the user board.

2. Initialization Response Message (EIP-341L module -> User board):

Byte	Successful Response	Error Response
0	**Data Length:** 2	**Data Length:** 2
1	**0**	**Error Code:** (not 0)
2	**0**	**Extra Error Code**
3	**Check Sum:** 0x02	**Check Sum:** Byte 0+byte 1+byte 2

Note: Extra error code is always 0xFF

3. Response Message Error Codes:

Index	Error Code	Explanation
0	1	Check Sum Error
1	2	Data Length Error
2	3	IP configuration mode does not exist.

Example UART Exchange (Static IP Config):

→◇00 11 00 00 C0 A8 00 5A FF FF FF 00 C0 A8 00 01 00

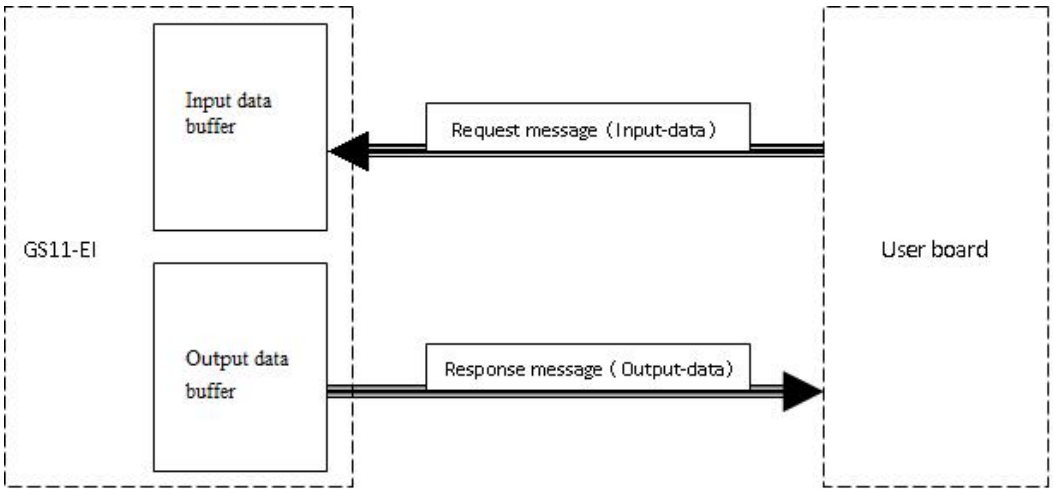
←◆02 00 00 02

No.	Name	Module	IP Address	MAC Address	Firmware Version	Password
1	Ethernet/IP	EIP-341L	192.168.0.11	64-ea-c5-27-06-b4	2.1	None

3.5 Custom Protocol Communication

Communication Method: The user board initiates communication; the EIP-341L module responds passively.

This protocol includes input data in the request message and output data in the response message, enabling data exchange.



1. Custom Protocol Request Message (User Board -> Module)

Byte	Description
0	**Message Length (Bytes):** This length includes all following bytes except the check sum byte. High-byte first. The size of the message length must match the number of Input bytes of the largest Assembly Instance configured in Chapter 6.5.4. The default size is 256 bytes.
1	
2	**Input data:** High-byte first.
…	
n	
n+1	**Check Sum:** Byte 0+byte 1+…+byte n

2. Custom Protocol Response Message (Module -> User Board)

Byte	Successful Response	Byte	Error Response
0	**Message Length (Bytes):** Includes all following bytes	0	**0x80**

1	except the check sum byte. High-byte first.	1	**Data Length:** 2
2	**Output Data:** High-byte first.	2	**Error Code**
…		3	**Extra Error Code**
n			
n+1	**Check Sum:** Byte 0+byte 1+…+byte n	4	**Check Sum:** Byte 0+byte 1+byte 2+byte3

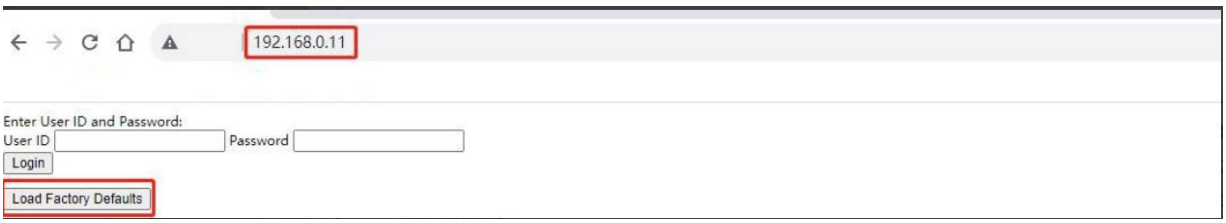
Note: Extra error code is always 0xFF.

3. Error Codes:

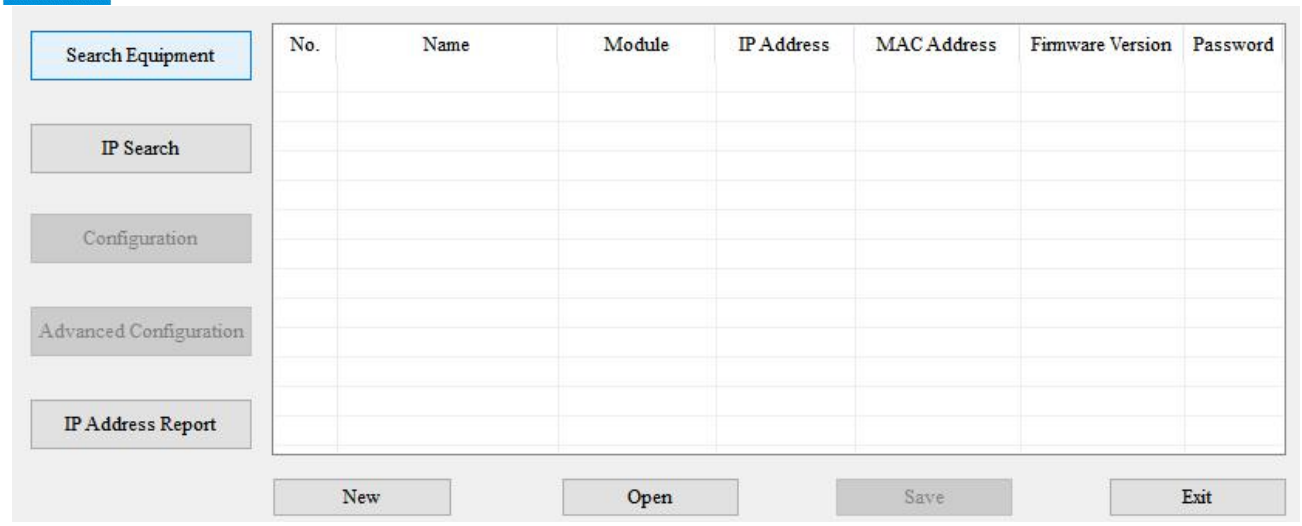
Index	Error Code	Description
0	1	Check Sum Error
1	2	Data Length Error

3.6 Restore Default IP Address

When the module's IP setting mode is configured via PC software and the module's IP address cannot be confirmed, connect Pin 10/RUN to ground through a 1K pull-down resistor to pull it low before the module starts up or resets. After startup, open a browser and enter 192.168.0.11, then click "Load Factory Defaults"—this will restore the gateway IP address to the fixed 192.168.0.11.

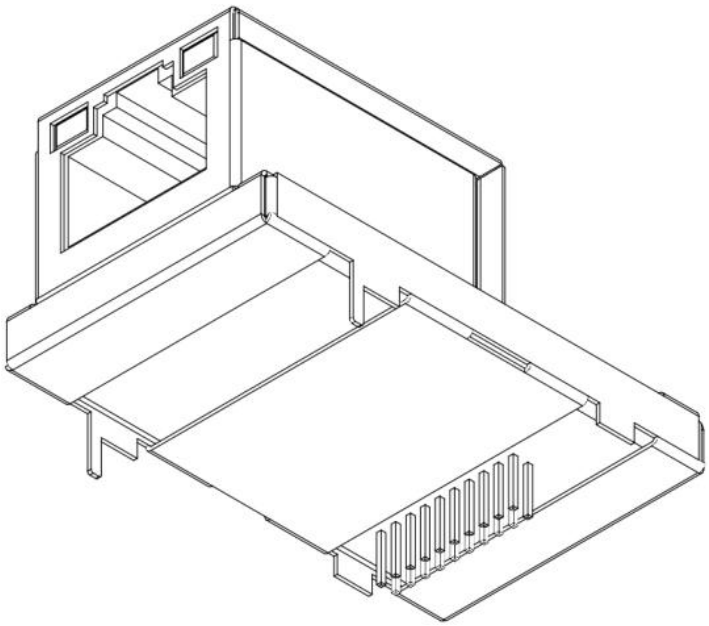


Before the module starts up or resets, connect Pin 10/RUN and Pin 20/DATAEXCH to low level through a 10K pull-up resistor. After startup, set the IP address of the computer connected to the module to a fixed IP 192.168.0.X. Then, scan for the module's IP address (192.168.0.11) using software EIP-123 and configure it.

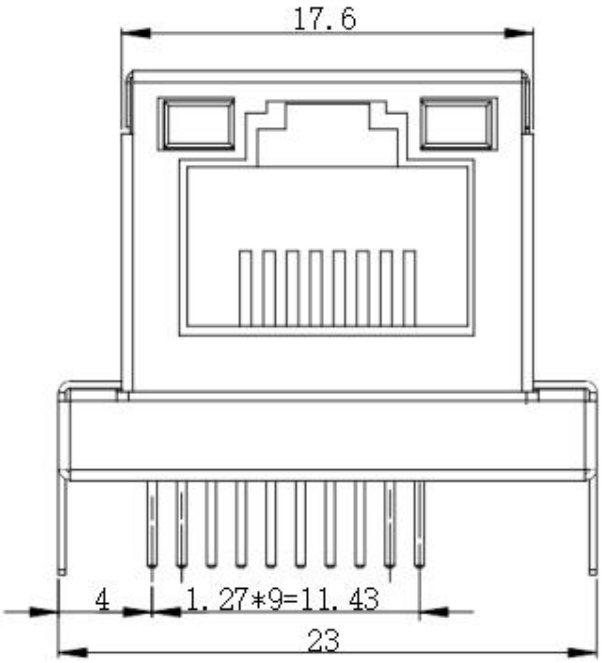

Search Equipment
IP Search
Configuration
Advanced Configuration
IP Address Report
No.
Name
Module
IP Address
MAC Address
Firmware Version
Password
New
Open
Save
Exit

4. Dimensions

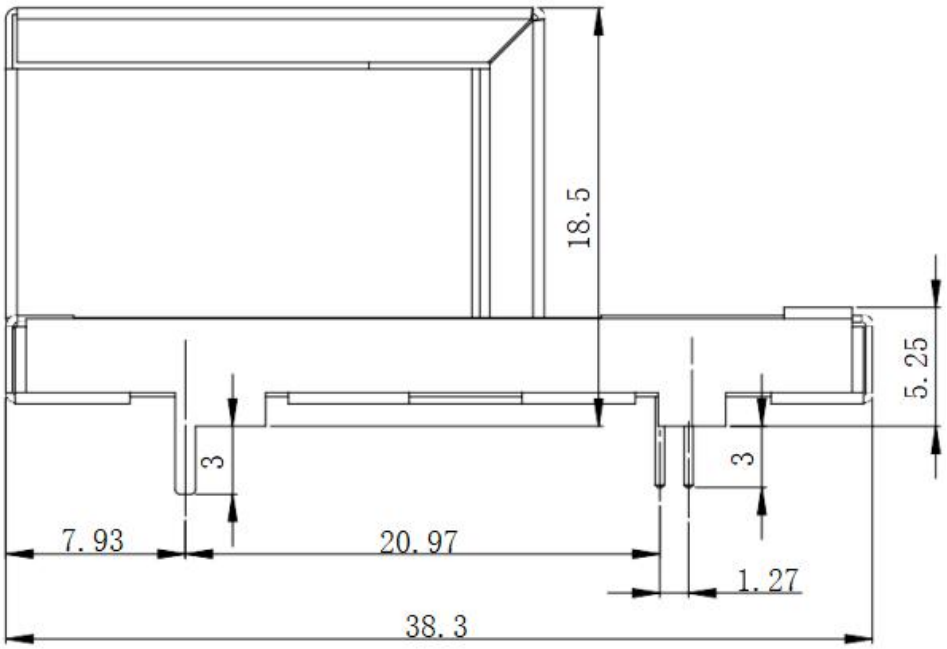
Unit: [mm]



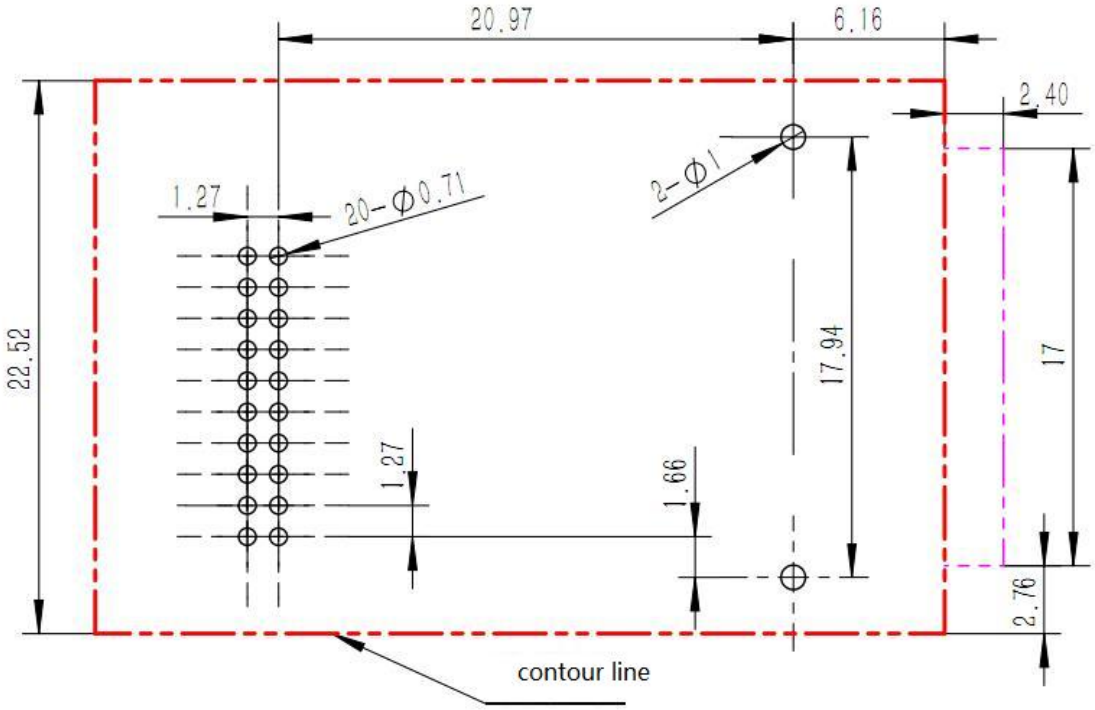
Front:



Side:

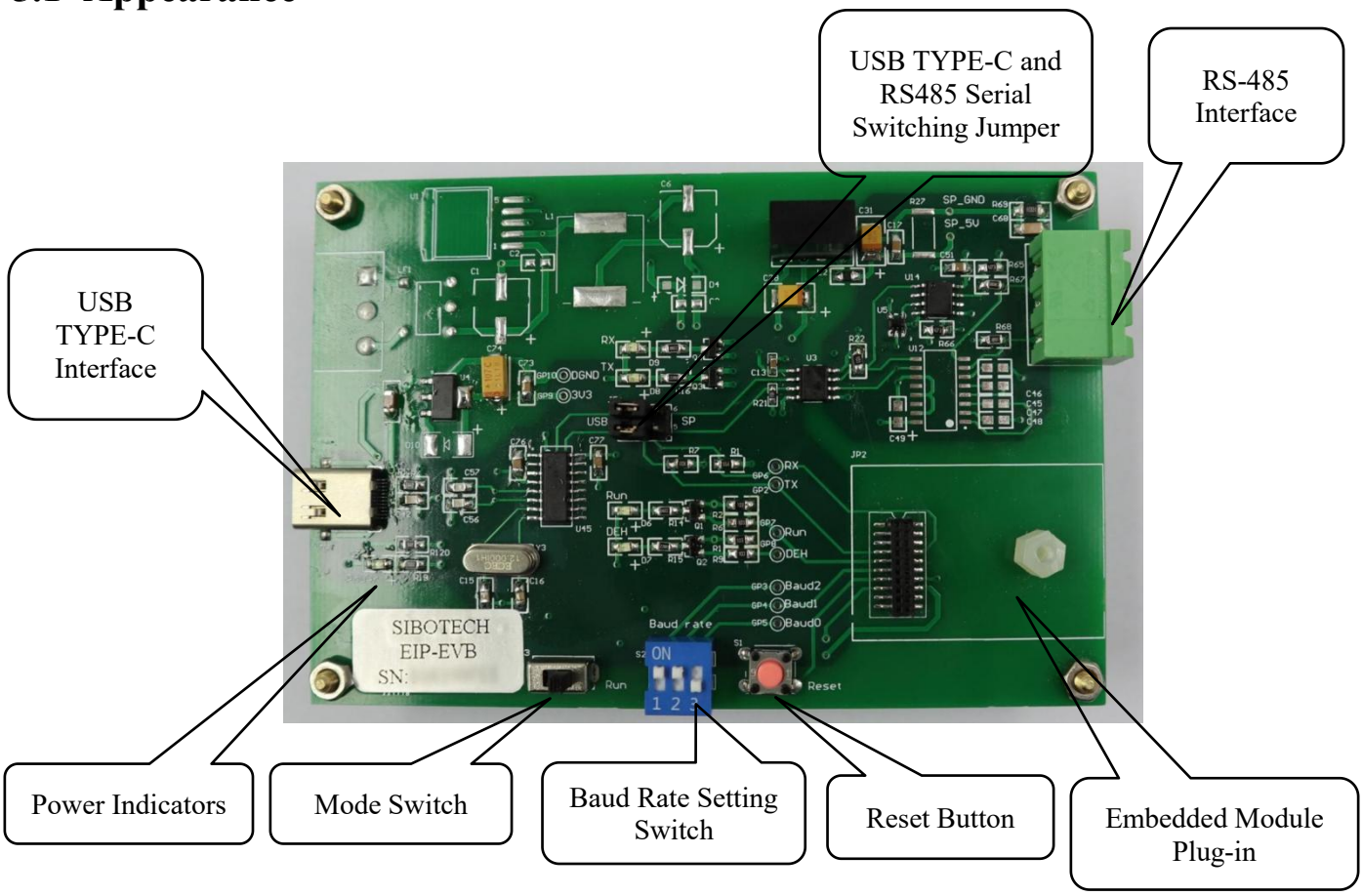


PCB dimensions:



5. Evaluation Board

5.1 Appearance



5.2 Functions

5.2.1 RS485 Interface

The EV board uses a three-pin pluggable terminal for RS-485:

PIN	Function
1	D+, RS485 Data Positive
2	D-, RS485 Data Negative
3	GND

5.2.2 TYPE-C Interface

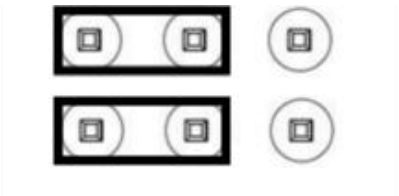
① Supports power supply via Type-C alone.

② Supports serial communication and can be used as a communication port.

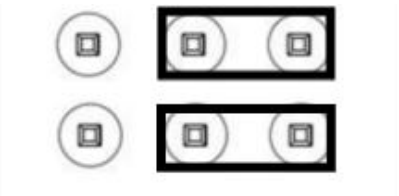
5.2.3 Serial Switching Jumper

The interface switching jumper is located in the middle of the evaluation board; users can switch USB TYPE-C communication or serial communication according to actual needs.

1. When the jumper is connected to the middle two pins and the left two pins, the evaluation board uses USB TYPE-C for communication.

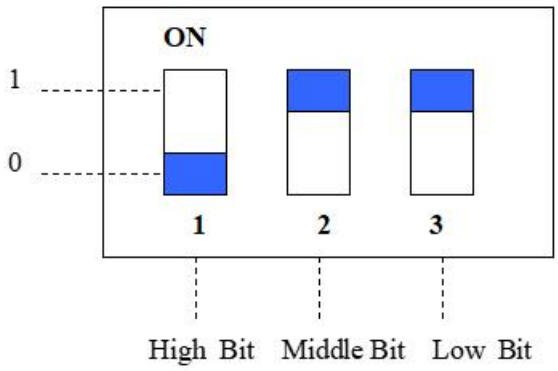


2. When the jumper is connected to the middle two pins and the right two pins, the evaluation board uses RS-485 for communication.



5.2.4 Baud Rate Setting Switch

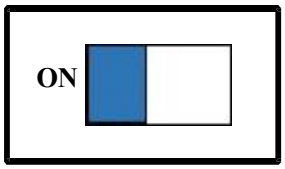
The 3-position DIP switch below the evaluation board is used to set the serial port baud rate, as shown in the figure below:



The displayed baud rate in the figure above is 115200bps. The correspondence of baud rates is as follows:

Index	Pos 1 (High/BAUD2)	Pos 2 (Mid/BAUD1)	Pos 3 (Low/BAUD0)	Baud Rate (bps)
0	0	0	0	2400
1	0	0	1	4800
2	0	1	0	9600
3	0	1	1	19200
4	1	0	0	38400
5	1	0	1	57600
6	1	1	0	115200
7	1	1	1	230400

5.2.5 Mode Selection Switch



The left side of the DIP switch is the mode switching switch. When this bit is “ON”, the module is in firmware update state (unable to communicate normally), and the module will start up with default IP configuration.

IP address：192.168.0.11

Subnet mask：255.255.255.0

Default gateway：192.168.0.1

5.2.6 Reset Button

The button on the development board is the reset button, used to manually reset the EIP-341L module. Useful for applying changes (like mode or baud rate) without power cycling.

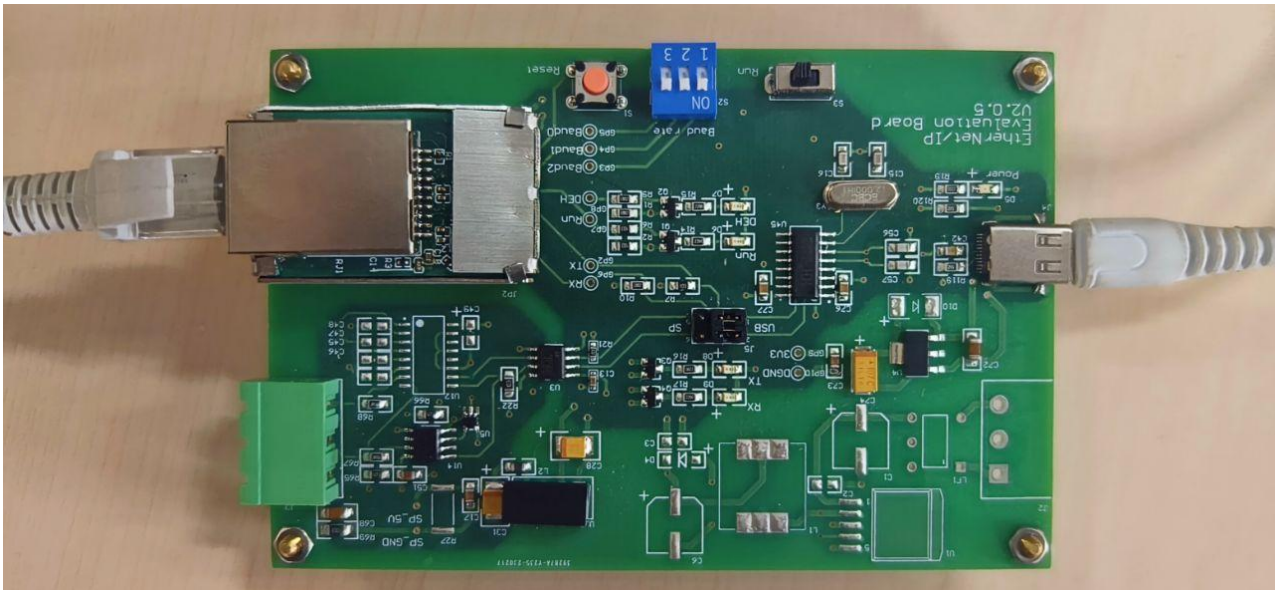
5.2.7 LED Indicators

There are five indicators on the evaluation board, and the description is as follows:

Index	Name	COLOR	Description
0	Power	Orange	Steady On: Power Applied; Off: No Power.
1	TX	Green	Flashing: UART Transmitting Data; Off: UART Idle.
2	RX	Green	Flashing: UART Receiving Data; Off: UART Idle.
3	Run	Green	Steady On: Module in Running State; Off: Module in Startup State.
4	DataExch	Green	Steady On: Module in Data Exchange State; Off: Module in Non-Data Exchange State.

5.3 Wiring

Take USB power supply and serial communication as an example, the wiring is shown in the figure.



Note: Ensure UART Interface Selection Jumper connects Left and Middle pins.

6. Configuration Software

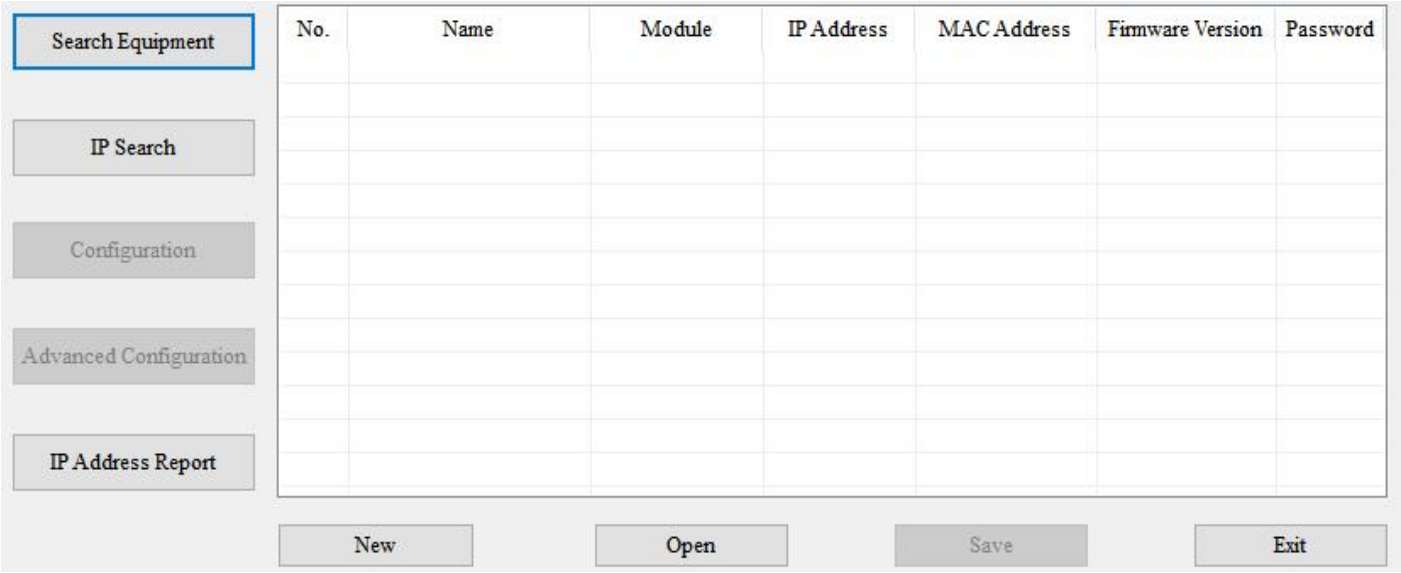
Download the configuration software EIP-123 from the Shanghai Sibotech website. After installation, EIP-123 can be used to configure the EIP-341L module.

System Requirements:

- 1GHz processor or higher PC.
- Windows® 7 / Windows® 10 / Windows® 11.

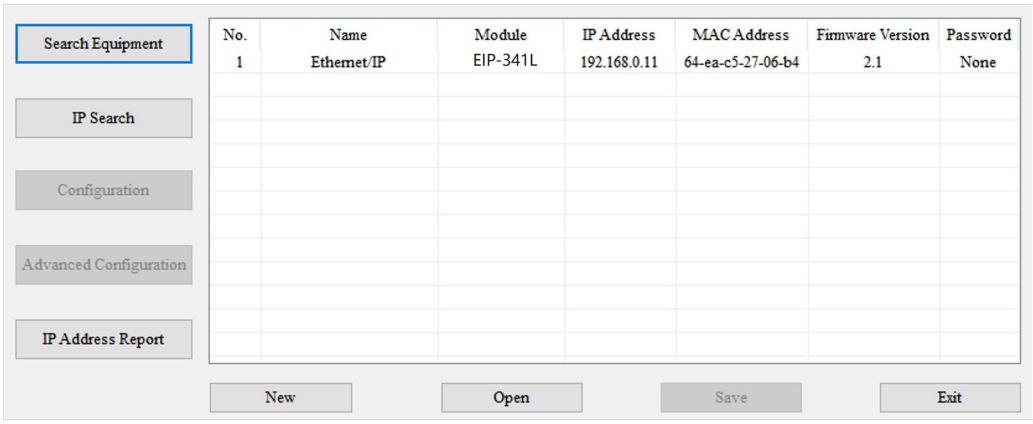
6.1 EIP-123 Introduction

EIP-123 is Windows-based software for configuring EIP-341L parameters. The main interface after launching EIP-123 is shown below:



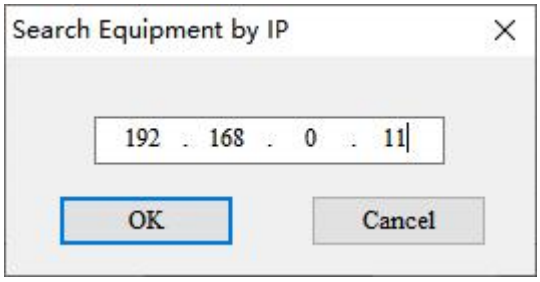
6.2 Search Device

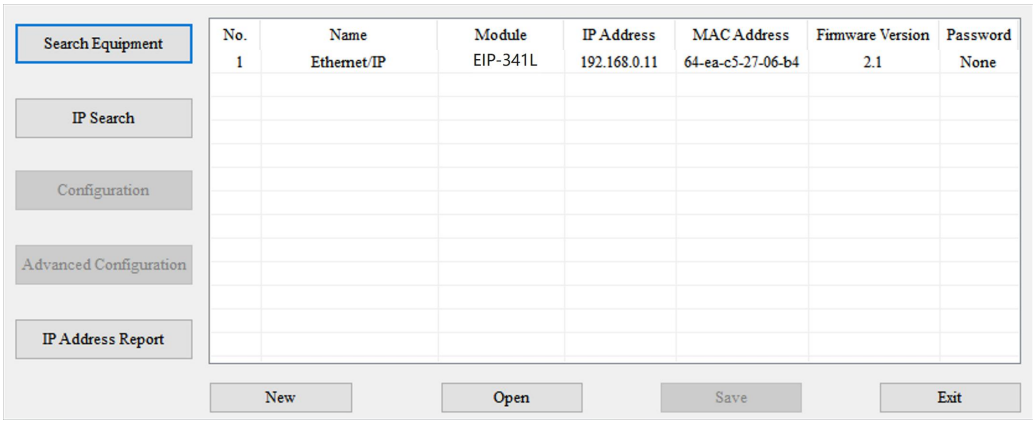
To configure the EIP-341L, first search for the target module by clicking the Search Device button in EIP-123. All networked EIP-341L modules will be listed automatically:



6.3 Designated IP Search

To search for devices with a known IP address, click Designated IP Search, enter the IP address, and confirm:



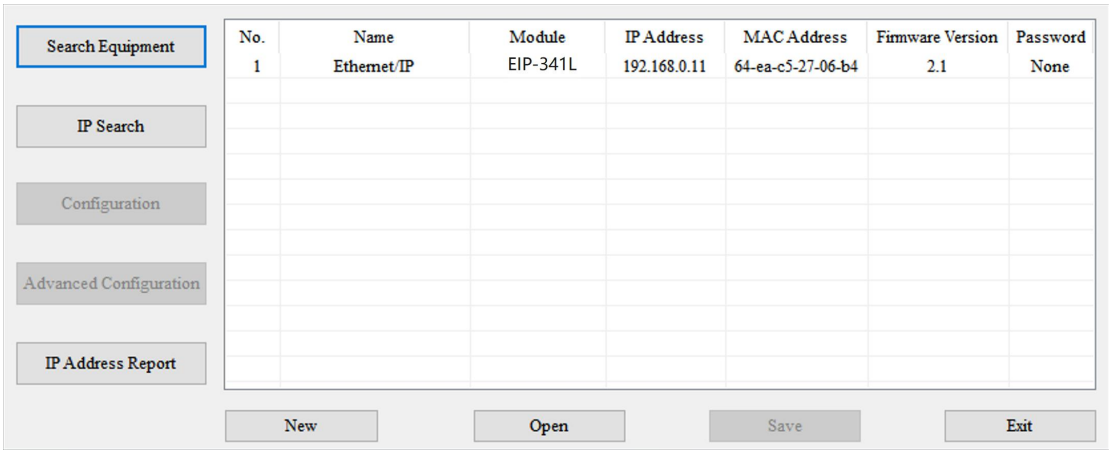


6.4 Configuration

The Configuration window is used to set user parameters relating to the EIP-341L module's Ethernet settings. The IP address can be set through DHCP or static configuration (to set the IP address through UART, the "Setting the IP address via host interface(UART)" option must be enabled through the Advanced Configuration window. See Chapter 6.5). The EIP-341L module supports setting a user password to protect the configuration data from being modified.

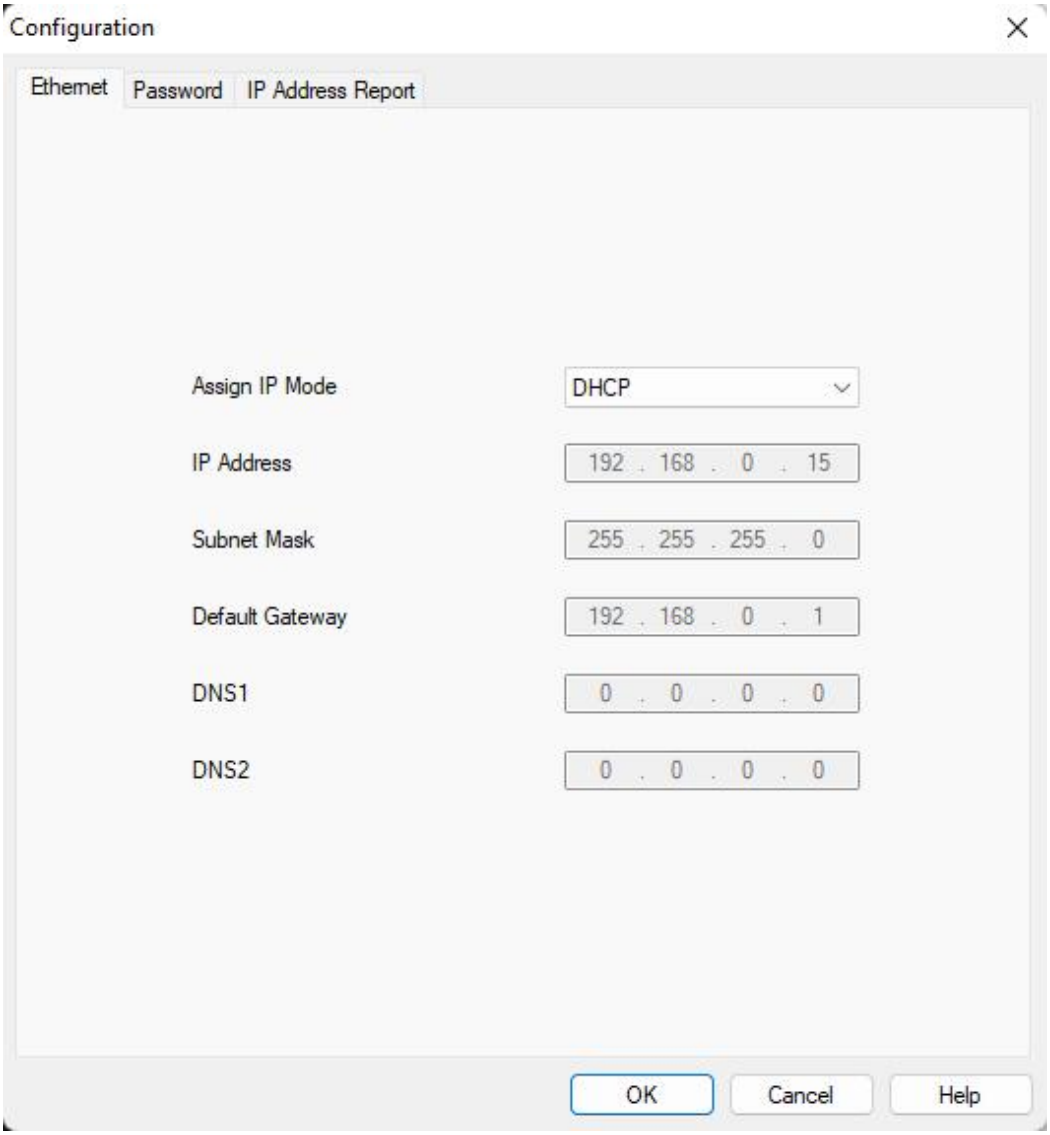
In the Configuration interface, users can configure the following options: Ethernet, Password, and IP Address Report.

To open the Configuration window, select the device to be configured in the main window and click the "Configuration" button.



6.4.1 Ethernet

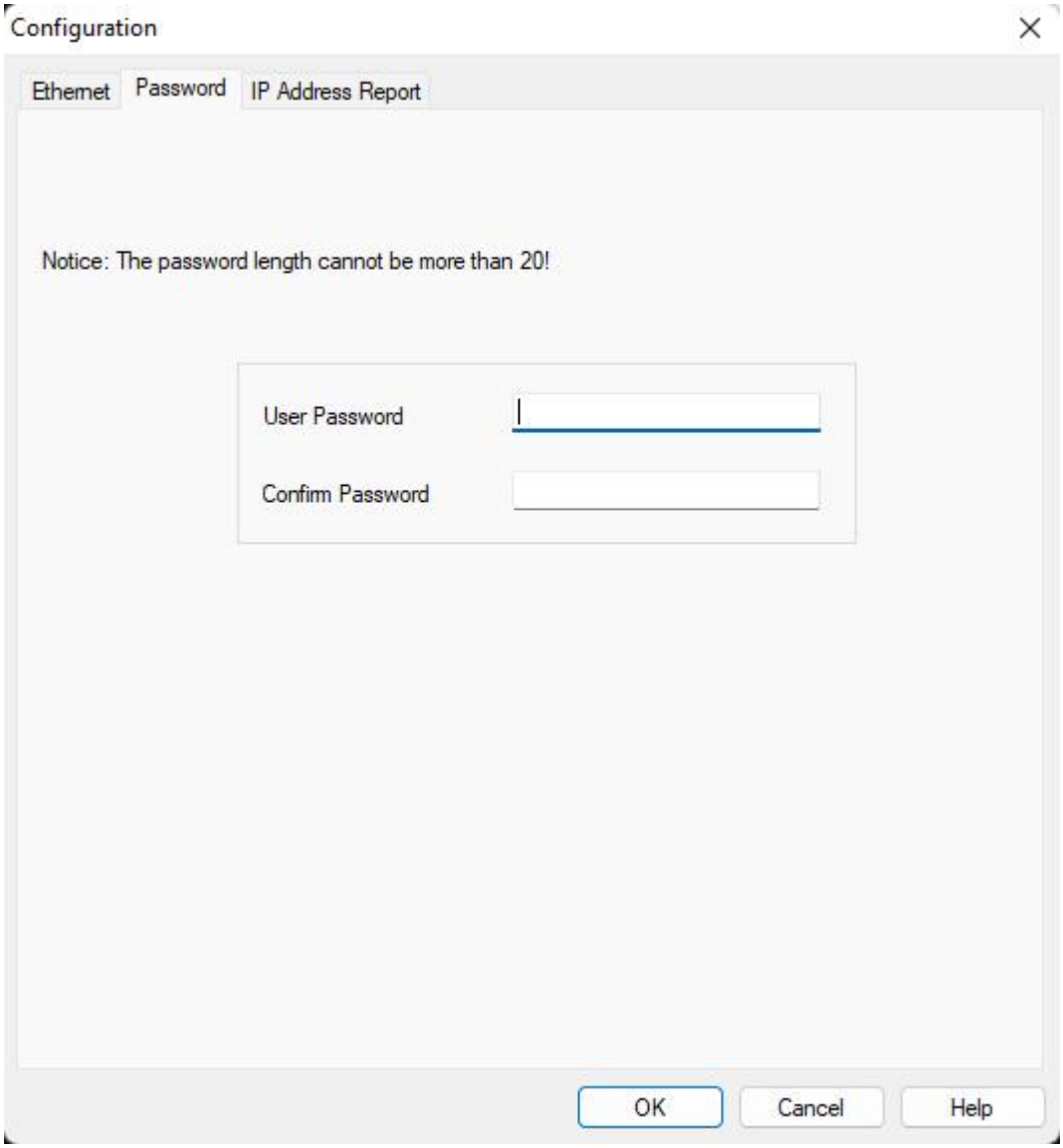
➢ Ethernet Parameters:



- **Assign IP Mode:** Set the device's IP address configuration mode, Static or DHCP.
- **IP Address: Set the device's IP address.**
- **Subnet Mask: Set the subnet mask of the device.**
- **Default Gateway: Set the default gateway address of the network.**
- **DNS1: Currently not supported.**
- **DNS2: Currently not supported.**

6.4.2 Password

➢ Password Setup:

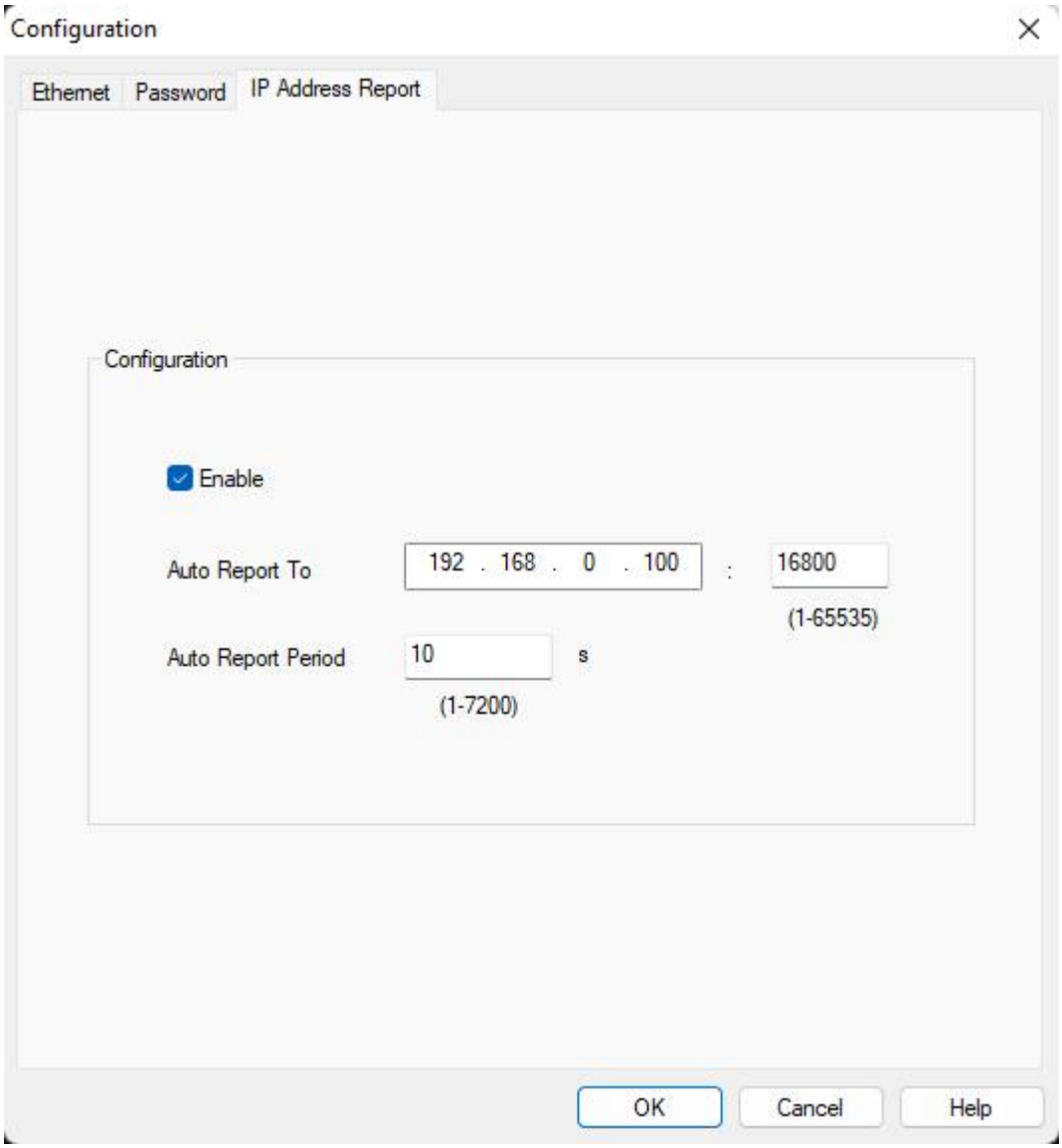


- **User Password:** Refers to the password that the user needs to enter when clicking the "Configuration" button on the main screen. Once the user password is set, the user needs to enter this password every time when configuring EIP-123 for user parameters. It is recommended not to set this password, as this password is for users.

6.4.3 IP Address Report Parameters

➢ IP Address Report:

The IP Address Report function is used to identify the EIP-341L on the network by sending a UDP packet that reports its current IP address, subnet mask, and default gateway to a port of the specified IP address device. Users can enable this function by clicking on the "Enable" check box in the IP Address Report tab of the Configuration window.



After this function is enabled, the user will need to set the following parameters:

- **Auto Report To:** Set the IP address and Port Number of the remote device.
- **Auto Report Period:** Set the Auto Report Period to the remote device.

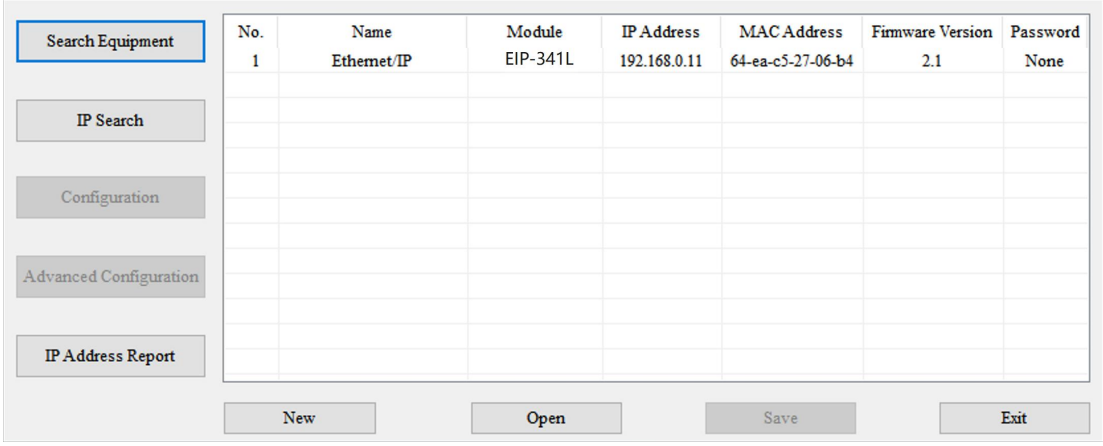
For detailed instructions on how to use the IP Search Function, see Chapter 6.3.

6.5 Advanced Configuration

The Advanced Configuration window is used to set the EIP-341L module settings such as UART IP address configuration, EtherNet/IP assembly instance data sizes, and device identification parameters. The EIP-341L module supports setting an administrator password to protect the advanced configuration data from being modified.

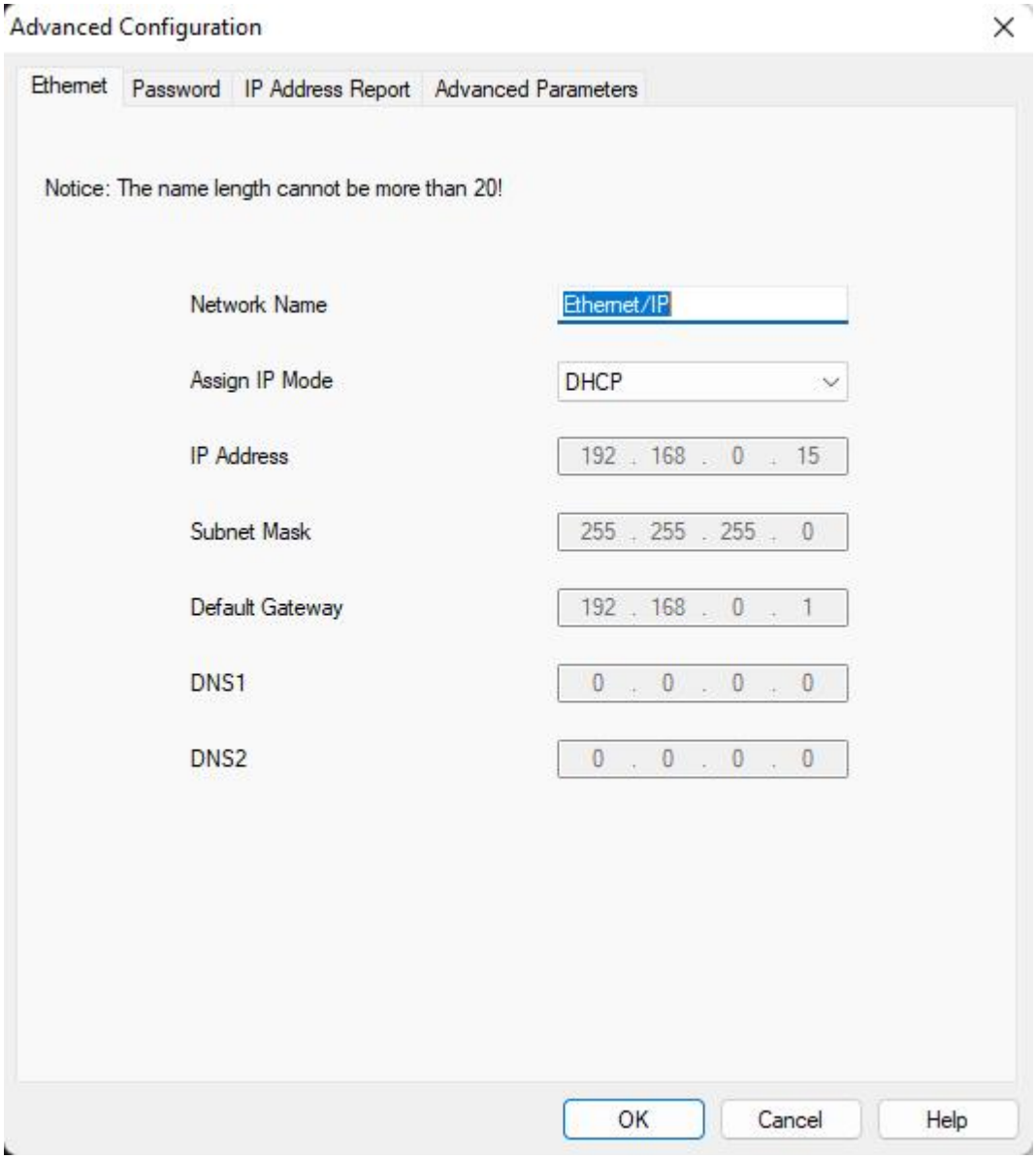
In the Advanced Configuration interface, users can configure the following options: Ethernet, Password, IP Address Report, and Advanced Parameters.

To open the Advanced Configuration window, select the device to be configured in the main window and click the "Advanced Configuration" button.



6.5.1 Ethernet

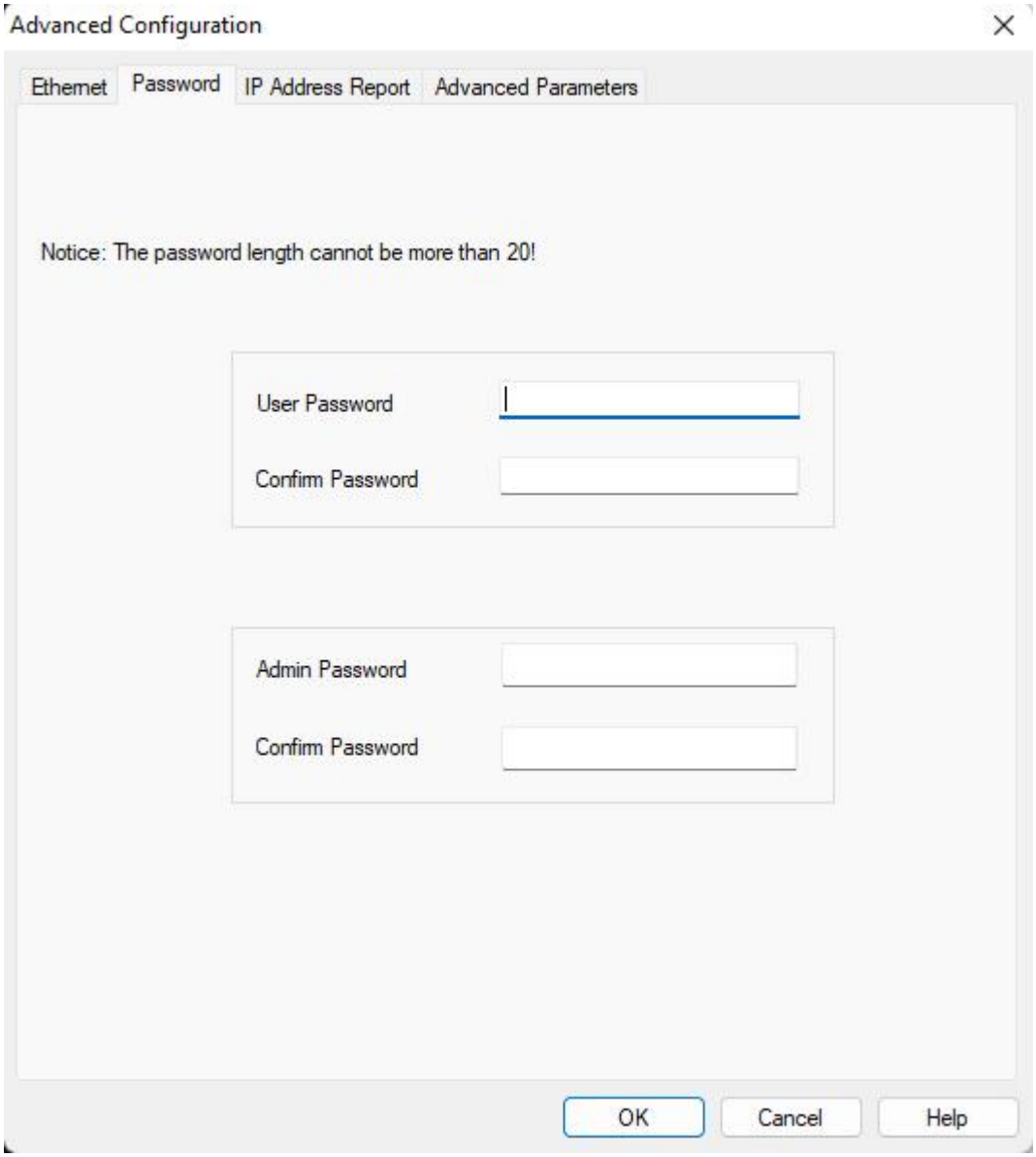
➢ Ethernet Parameters:



- **Network Name:** The name is used to identify the EIP-341L module on the network, it can also be the name of the device's model.
- **Assign IP Mode: Set the device's IP address configuration mode, Static or DHCP.**
- **IP Address: Set the device's IP address.**
- **Subnet Mask: Set the subnet mask of the device.**
- **Default Gateway: Set the default gateway address of the network.**
- **DNS1: Currently not supported.**
- **DNS2: Currently not supported.**

6.5.2 Password

➢ Password Setup:

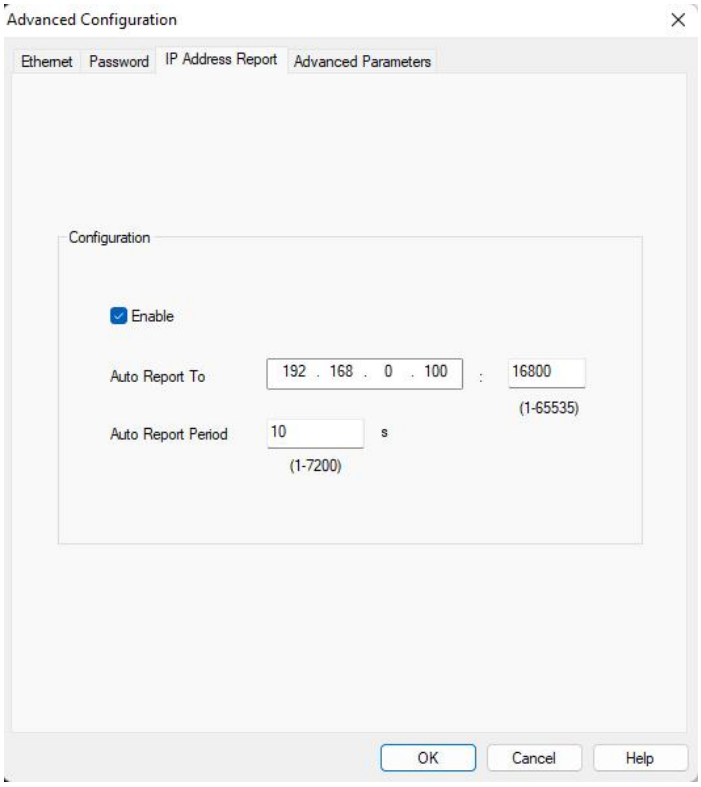


- User Password: Refers to the password that the user needs to enter when clicking the "Configuration" button on the main screen. After the user password is set, the user needs to enter this password when configuring EIP-123 for user parameters. It is recommended not to set this password, as this password is for users.
- Admin Password: Refers to the password that the administrator needs to enter when clicking the "Advanced Configuration" button on the main screen. After the admin password is set, the administrator needs to enter this password when configuring EIP-123 for advanced parameters. It is recommended that the administrator set this password after the product setup is complete since it protects the advanced parameters from being modified by other users.

6.5.3 IP Address Report Parameters

➢ IP Address Report:

The IP Address Report function is used to identify the EIP-341L on the network by sending a UDP packet that reports its current IP address, subnet mask, and default gateway to a port of the specified IP address device. Users can enable this function by clicking on the "Enable" check box in the IP Address Report tab of the Advanced Configuration window.



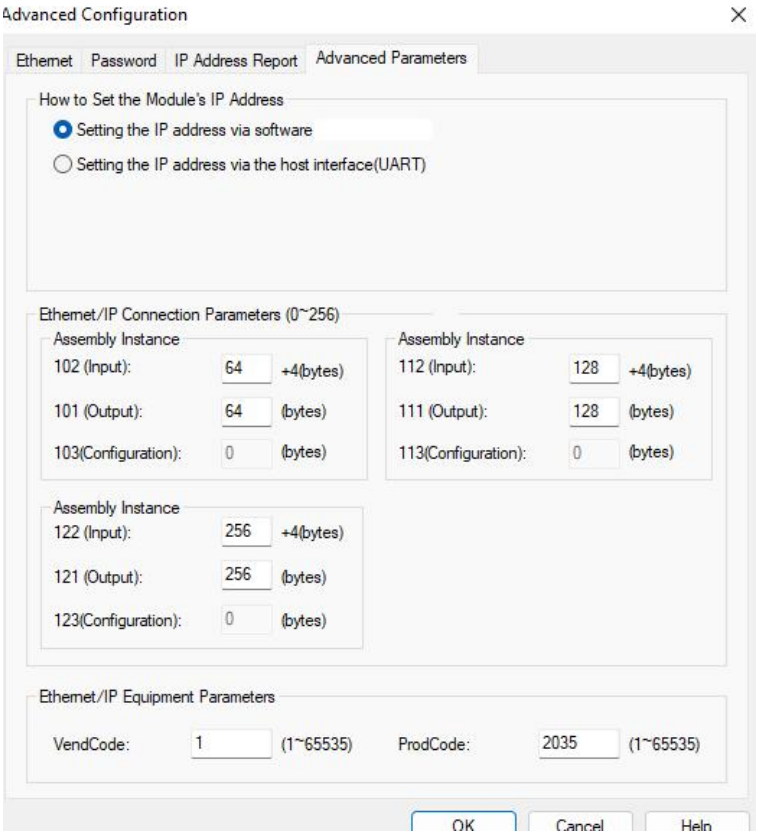
After this function is enabled, the user will need to set the following parameters:

- **Auto Report To:** Set the IP address and Port Number of the remote device.
- **Auto Report Period:** Set the Auto Report Period to the remote device.

For detailed instructions on how to use the IP Search Function, see Chapter 6.6.

6.5.4 Advanced Parameters

➢ Advanced Parameters:



How to Set the Module's IP Address:

- Setting the IP address via software EIP-123: The users use the SiboTech software to configure network parameters (user parameter configuration).
- Setting the IP address via host interface (UART): The user board sets the IP address and other parameters through UART. The user board sets parameters such as the IP address by sending an initialization request message. See Chapter 3.4.

EtherNet/IP Connection Parameters**:**

- The EIP-341L supports 3 sets of EtherNet/IP assembly instances. Each set of assembly instances has an input and output. The number of input and output bytes can be any value from 0 to 256 bytes. (All three sets of assembly instances will share the same memory buffer and will store the same data).

Note: The size of the message length for the Request Messages sent through UART in Chapter 3.5 must match the number of Input bytes of the largest Assembly Instance.

EtherNet/IP Equipment Parameters:

- Supports changing VendCode and ProdCode.

.

7. Operation, Maintenance, and Precautions

- Protect the module from heavy pressure to prevent damage to the panel.
- Protect the module from impacts, which may damage internal components.
- Keep the power supply voltage within the range specified in the manual to prevent the module from burning out.
- Protect the module from water ingress, as water entry may affect normal operation.
- Before powering on, check the wiring for incorrect connections or short circuits.

8. Copyright

The product has many applications. The users must make sure that all operations and results are in accordance with the safety of relevant fields, and the safety includes laws, rules, codes and standards.

9. Revision History

Date	Revision	Description
2025-6-13	ALL	New release

10. Related Products

Other related products of our company include:

PNE-422, CPD-521, GS20-PN, etc.

If you want to get more information about these products, please visit SiboTech website: https://www.sibotech.net.

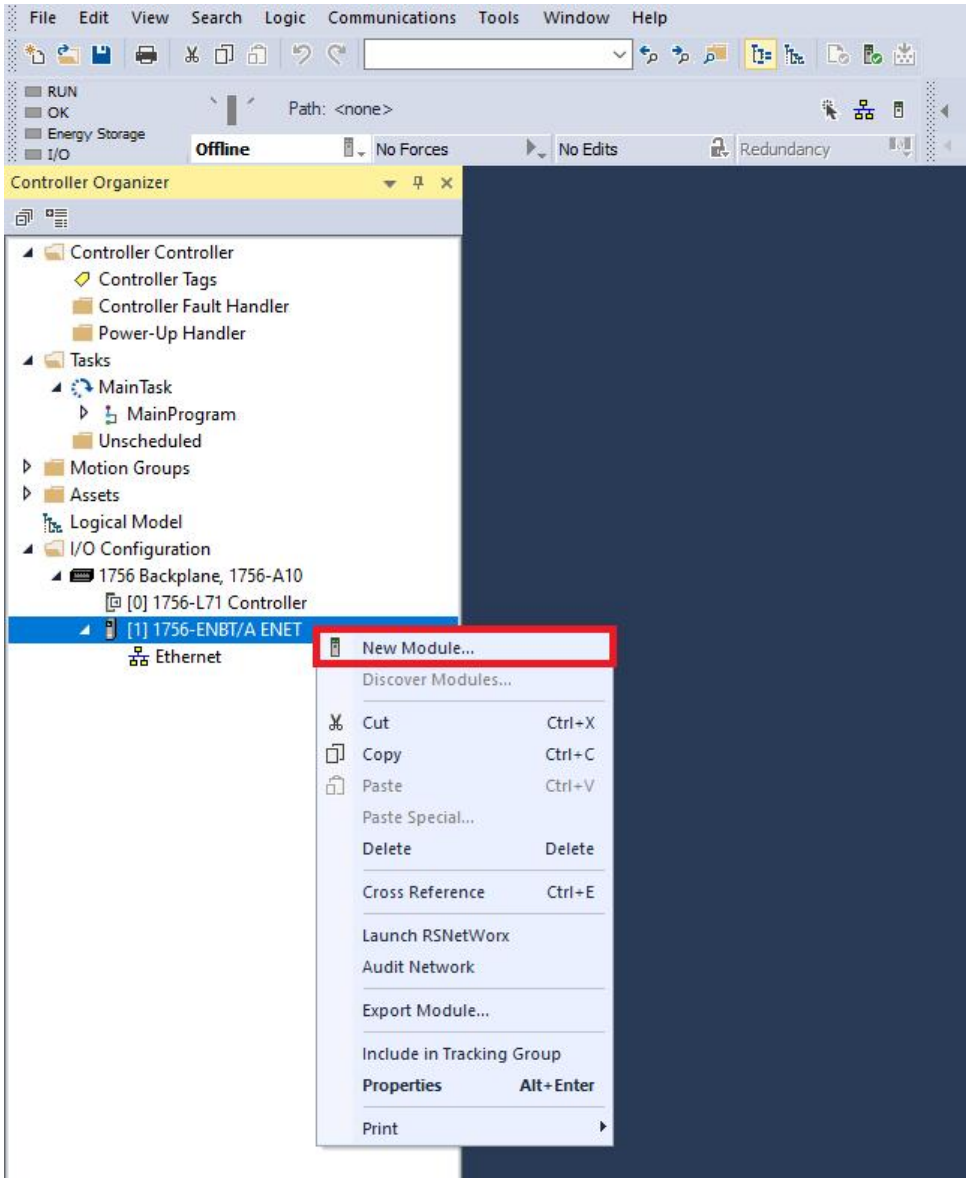
Appendix: How to Read and Write I/O Data

There are 2 ways to read and write I/O data.

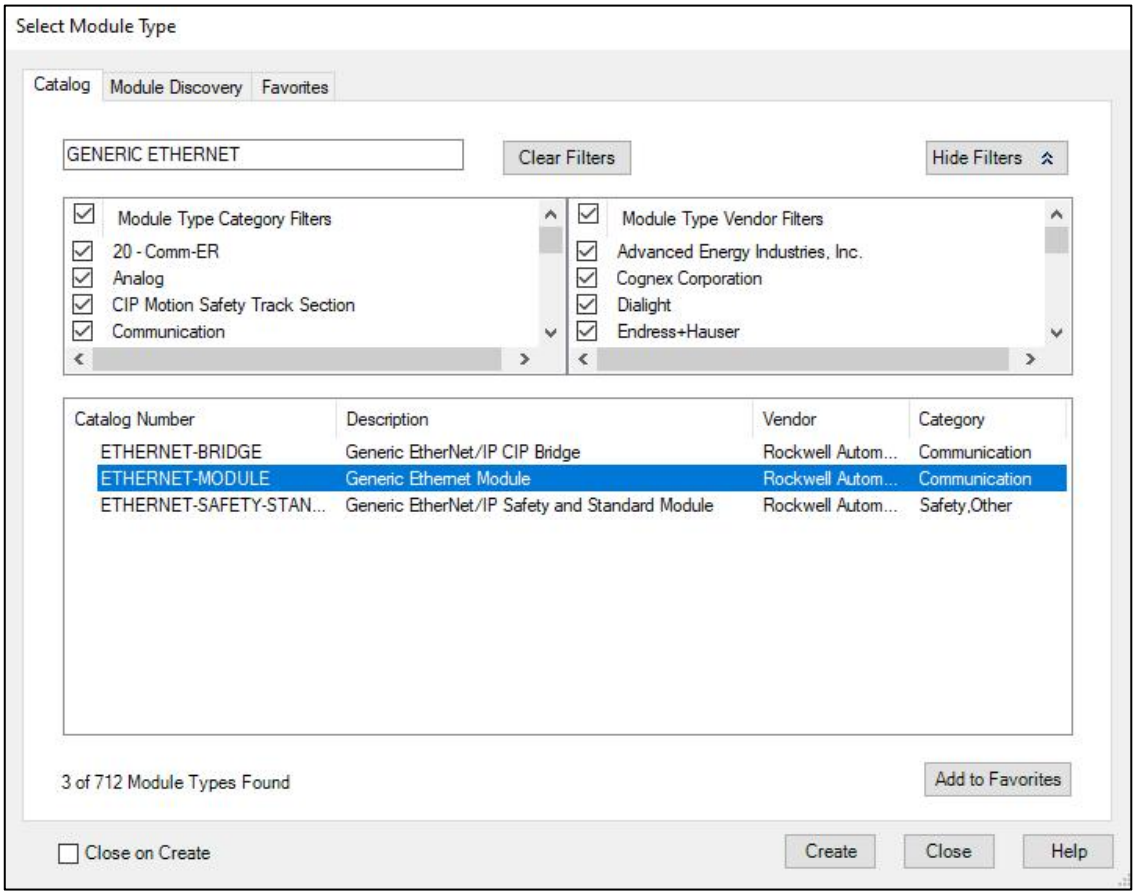
Implicit I/O Messaging Connection Method (Recommended)

The following Studio 5000 Logix example will show how to connect using Implicit I/O Messaging.

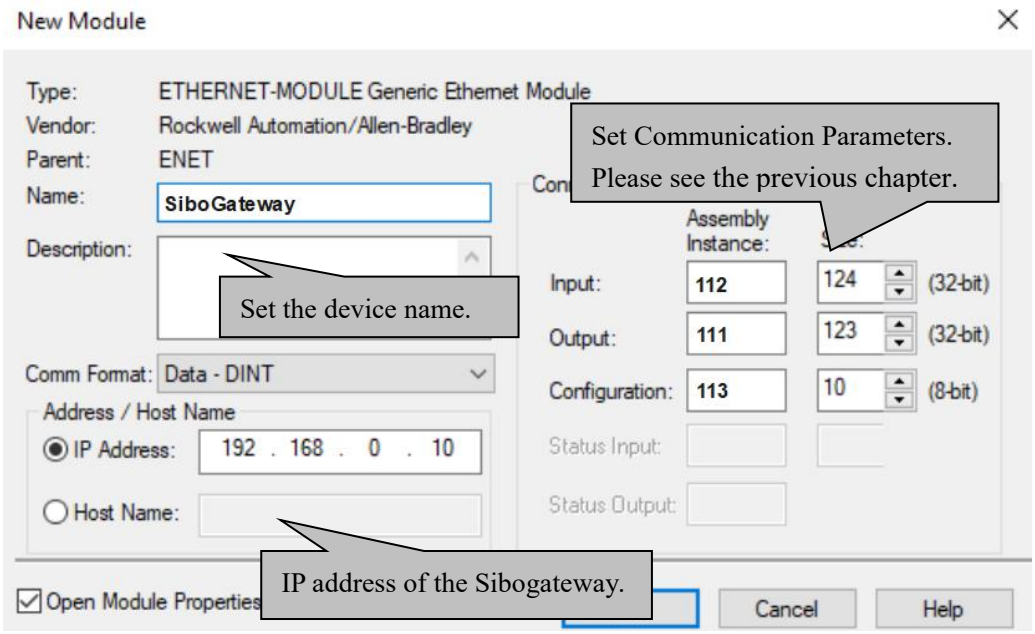
First, right click on the EtherNet/IP scanner module and click "New Module", as shown below:



In the pop-up dialog box, search for "GENERIC ETHERNET", choose "ETHERNET-MODULE", and click "Create" as shown below:



Configure relevant information of EIP-341L in the pop-up window, as shown below:



In the above picture, the module information needs to be configured includes:

Name: The name of the added EtherNet/IP device module.

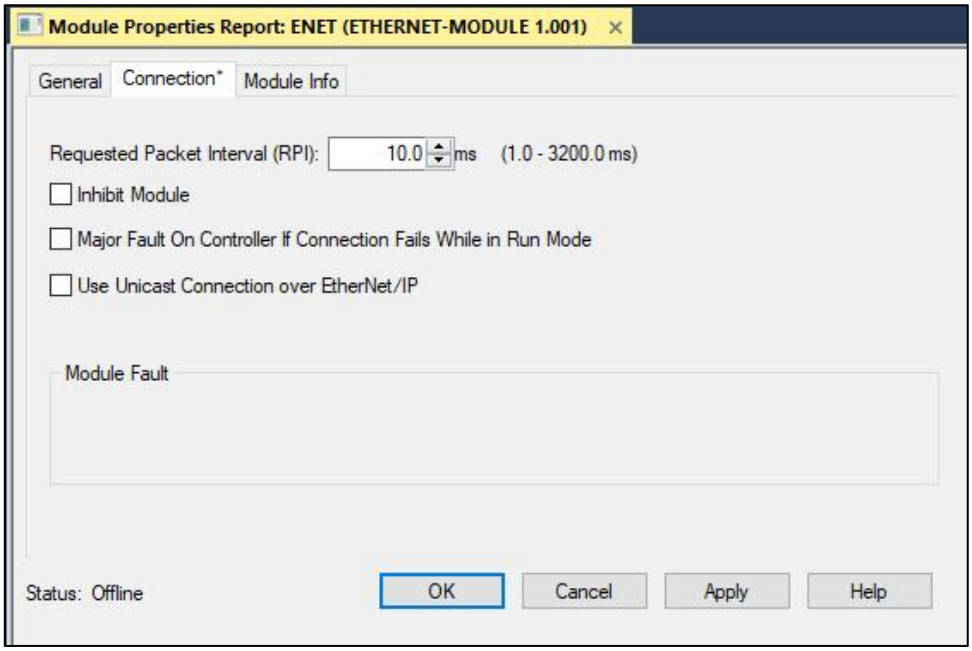
Comm Format: Configure data types such as DINT, INT, SINT, REAL and etc. After confirmation, this cannot be changed. To change data types, a new module must be created.

IP Address: Set the IP address of the EtherNet IP adapter module need to be connected, it is also the EIP-341L's IP address.

Connection Parameters: Set the connection parameters used in the communication. For the connection parameters supported by the EIP-341L, see the previous chapter..

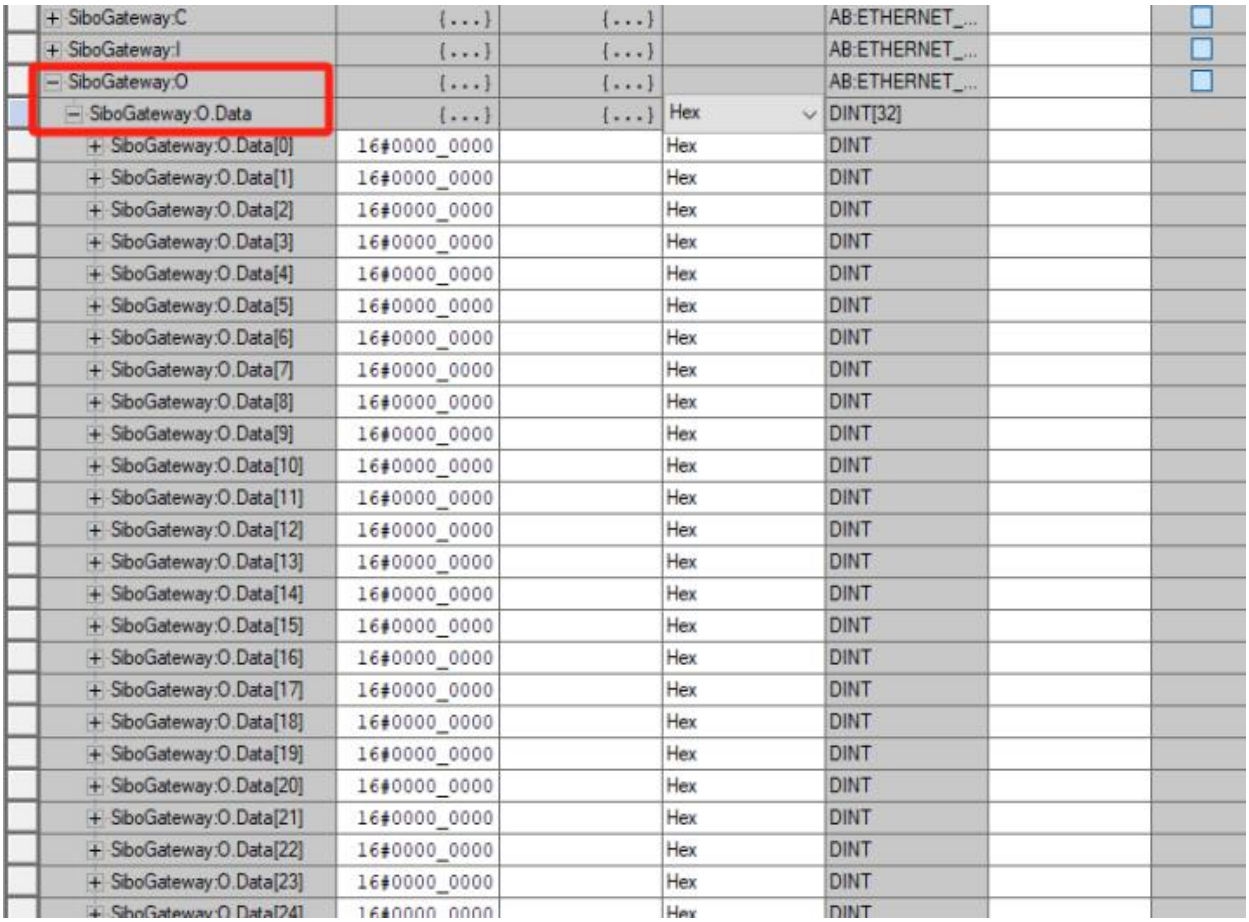
Note: "Size" (configured bytes) in the image above should be the consistent with relevant input and output bytes of the instance in the above chapter.

Click "OK", set scanner polling time interval in the pop-up dialog box, the default is 10ms, as shown below:



After setting this interval, click "OK" to save.

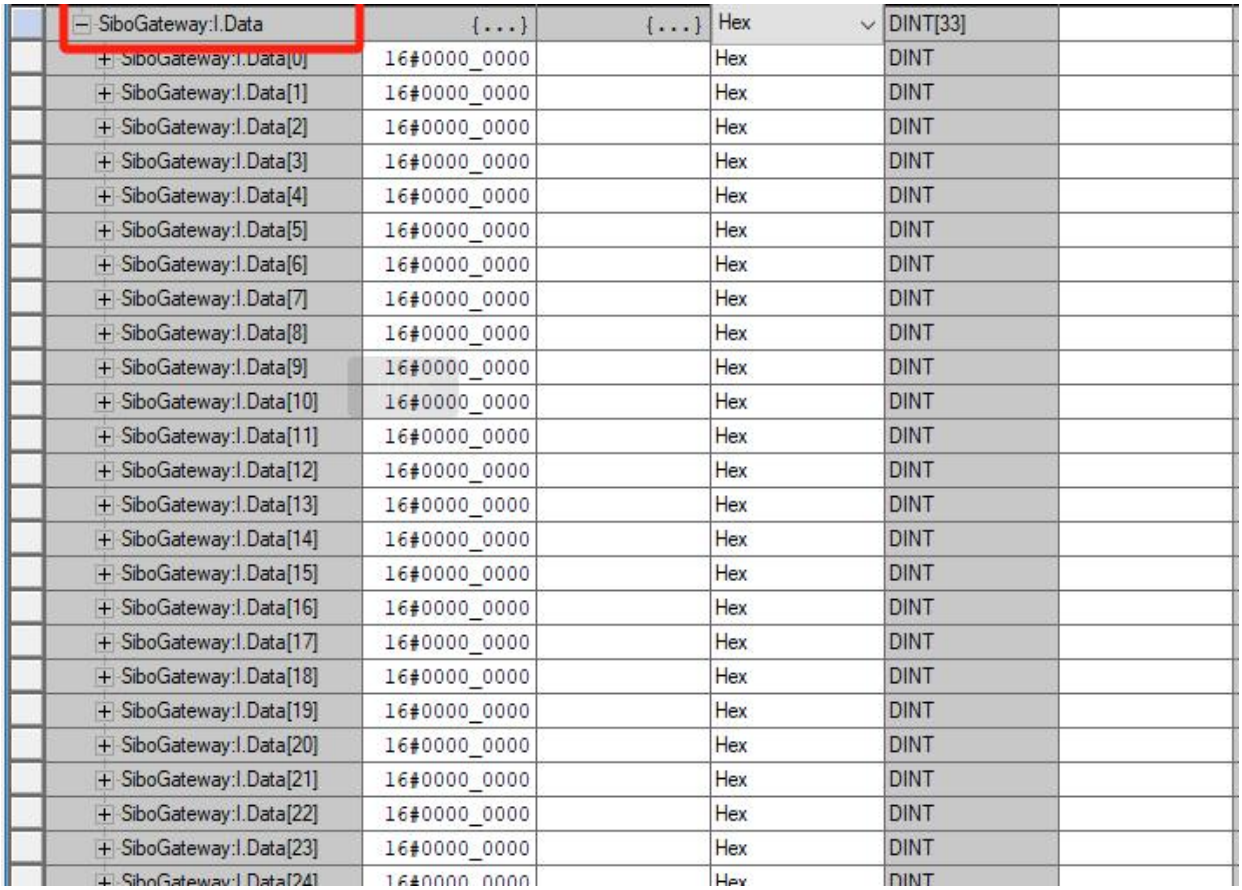
To view the output data, first double click the "Controller Tags" tree. Then expand the "SiboGateway:O" tag as shown below:



+ SiboGateway:C	{...}	{...}		AB:ETHERNET_...	
+ SiboGateway:I	{...}	{...}		AB:ETHERNET_...	
− SiboGateway:O	{...}	{...}		AB:ETHERNET_...	
− SiboGateway:O.Data	{...}	{...}	Hex	DINT[32]	
+ SiboGateway:O.Data[0]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[1]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[2]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[3]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[4]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[5]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[6]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[7]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[8]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[9]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[10]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[11]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[12]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[13]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[14]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[15]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[16]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[17]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[18]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[19]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[20]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[21]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[22]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[23]	16#0000_0000		Hex	DINT	
+ SiboGateway:O.Data[24]	16#0000_0000		Hex	DINT	

The SiboGateway:O data tag represents the corresponding output data addresses of the SiboTech Gateway.

To view the input data, expand the "SiboGateway: I" tag as shown below:



SiboGateway:I.Data	{...}	{...}	Hex	DINT[33]
SiboGateway:I.Data[0]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[1]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[2]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[3]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[4]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[5]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[6]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[7]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[8]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[9]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[10]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[11]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[12]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[13]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[14]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[15]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[16]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[17]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[18]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[19]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[20]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[21]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[22]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[23]	16#0000_0000		Hex	DINT
SiboGateway:I.Data[24]	16#0000_0000		Hex	DINT

The SiboGateway:I data tag represents the corresponding input data addresses of the SiboTech Gateway.

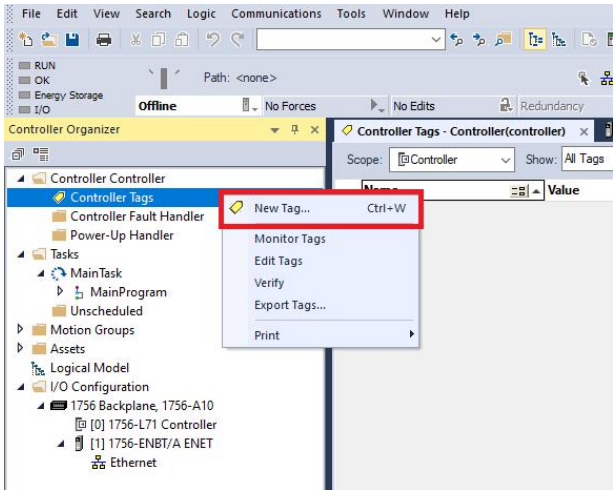
Please note that the first 4 input bytes are used to display the status bytes of the SiboTech Gateway.

Explicit MSG Connection Method

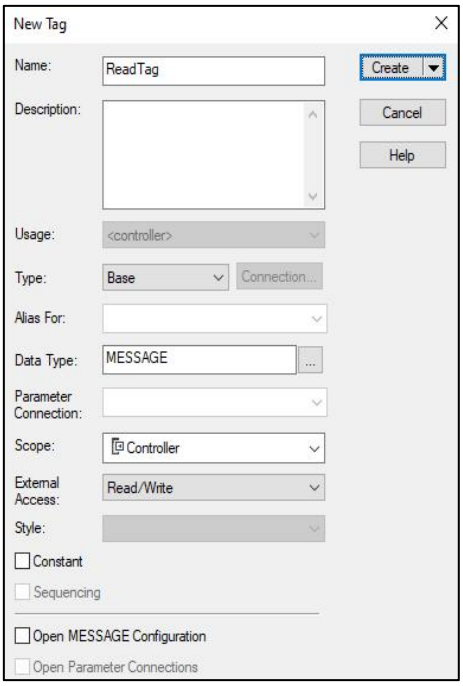
The following Studio 5000 Logix example will describe how to read/write EtherNet/IP data using explicit MSG messaging.

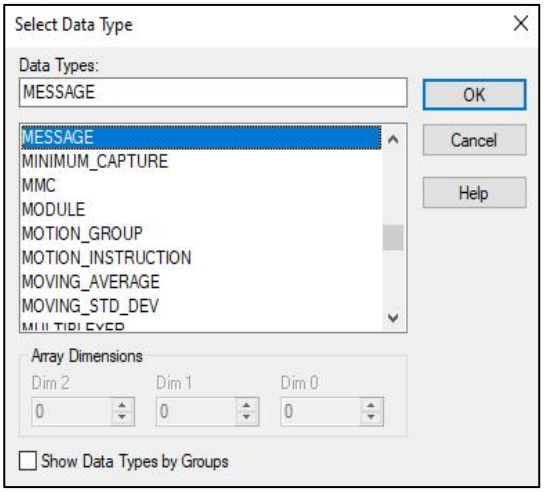
Read MSG Instruction Block

To start, create a new project in "Offline" mode. Then under "Controller Tags", add two new tags named "ReadTag" and "ReadData" as shown below:

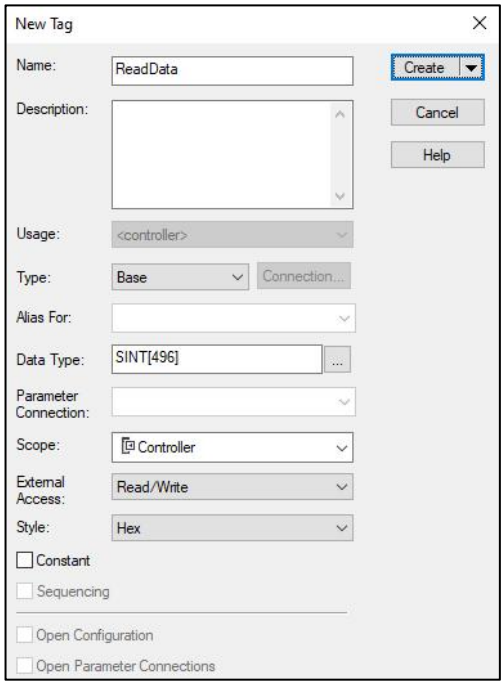


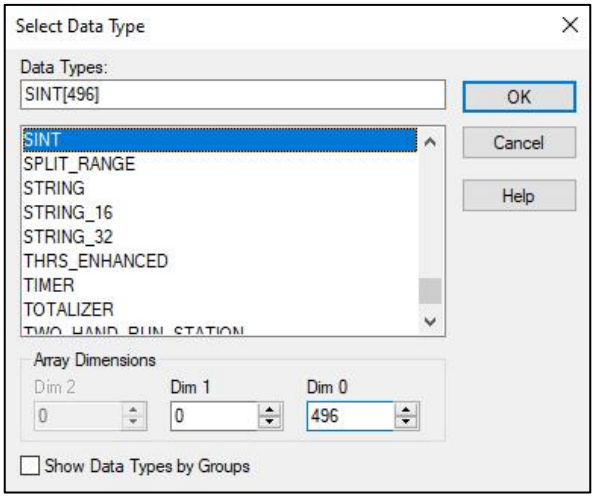
Set the data type of "ReadTag" as "MESSAGE":

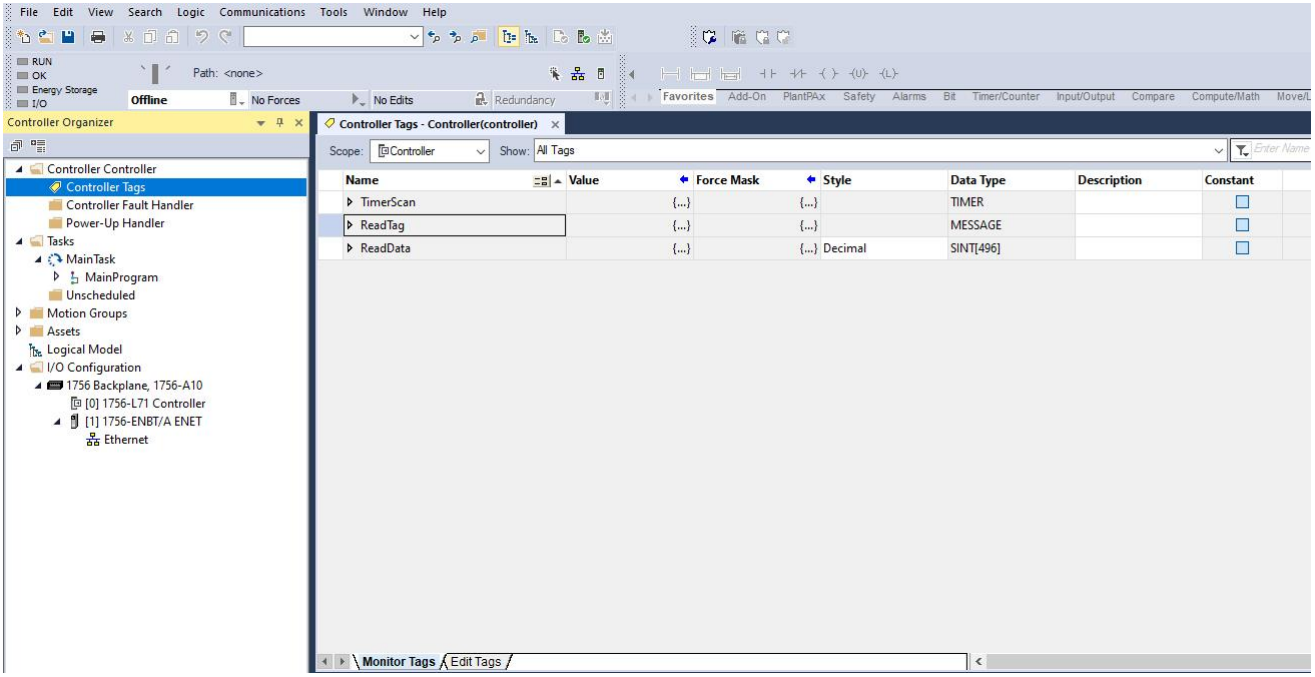




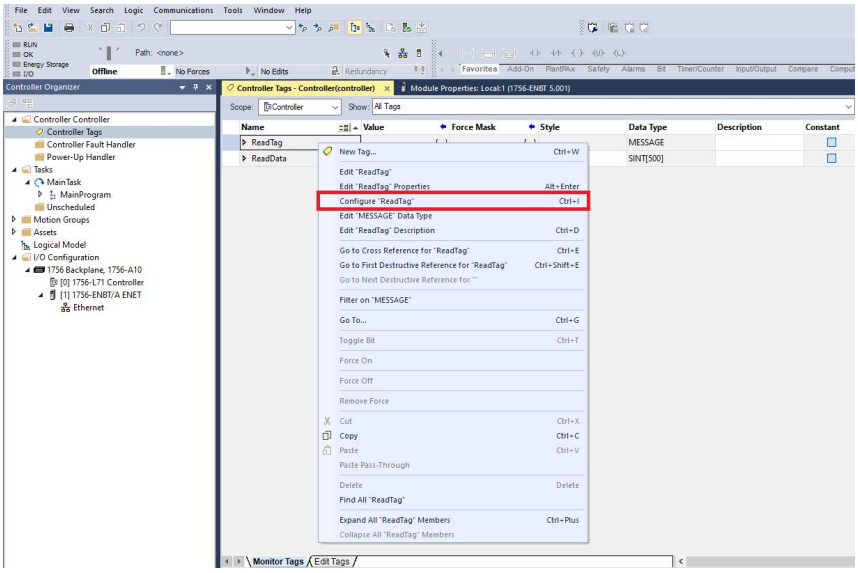
Set the data type of "ReadData" as "SINT", then set the Array Dimension "Dim 0" to match the Input Data Size.







Right click on "ReadTag", select "Configure "ReadTag" as shown below:



In pop-up window, configure the following settings:

Message Type: CIP Generic.

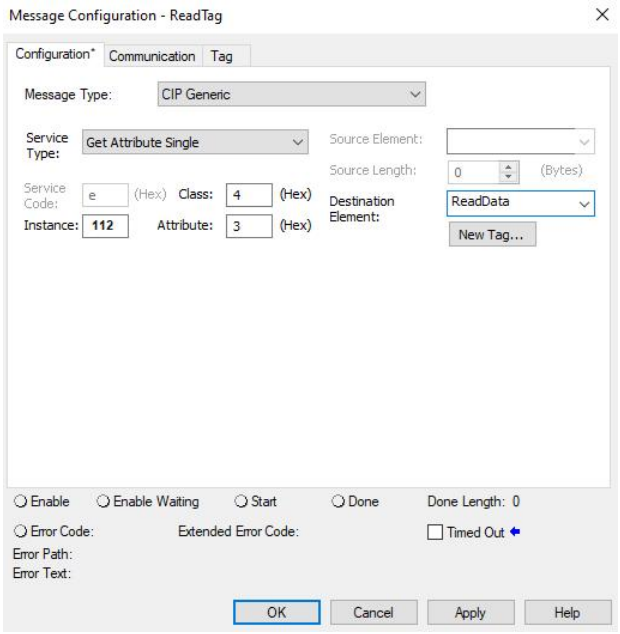
Service Type: Select "Get Attribute Single". The relevant service code will become "e (Hex)".

Class: 4 (Hex)

Instance: 112

Attribute: 3 (Hex)

Destination: Select the "ReadData" tag. The obtained data will be saved in this tag.

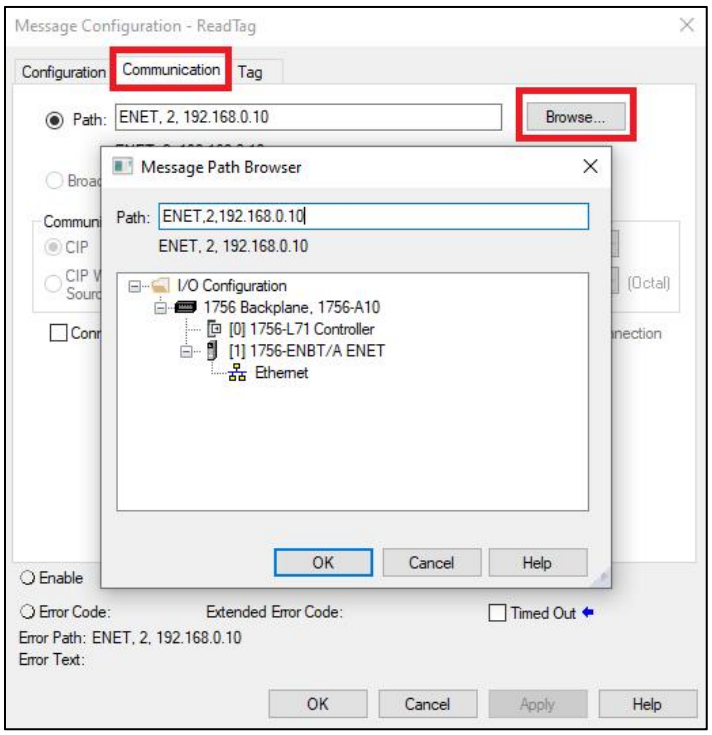

Message Configuration - ReadTag
Configuration*
Communication
Tag
Message Type:
CIP Generic
Service Type:
Get Attribute Single
Source Element:
Source Length:
0
(Bytes)
Service Code:
e
(Hex)
Class:
4
(Hex)
Instance:
112
Attribute:
3
(Hex)
Destination Element:
ReadData
New Tag...
Enable
Enable Waiting
Start
Done
Done Length: 0
Error Code:
Extended Error Code:
Timed Out
Error Path:
Error Text:
OK
Cancel
Apply
Help

Select the "Communication" tab and click the "Browse" button. Then input the network path to connect to the EIP-341L.

Enter the network path in the following format:

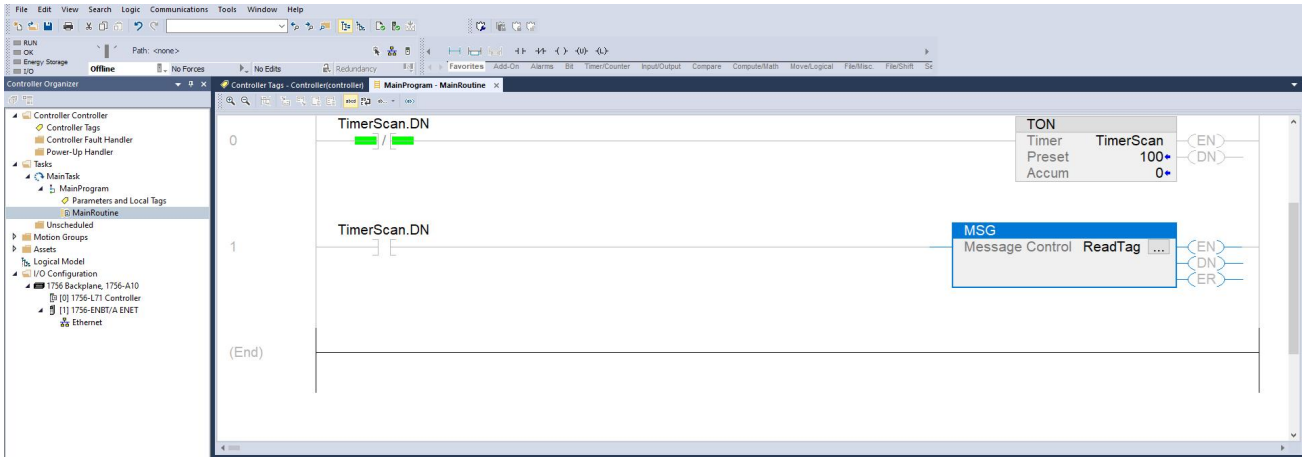
[EtherNet/IP Interface Name], 2 (Ethernet Communication), [EIP-341L IP Address]

Then click "OK" to confirm:



Add a "MSG" command and select "ReadTag" as "Message Control" in the "MainRoutine" of "MainProgram" as shown in the image below. This is a simple command which can send a read request. The user still needs to add some logic commands to trigger this command in common program. For further details, please refer to Studio 5000 Logix reference material.

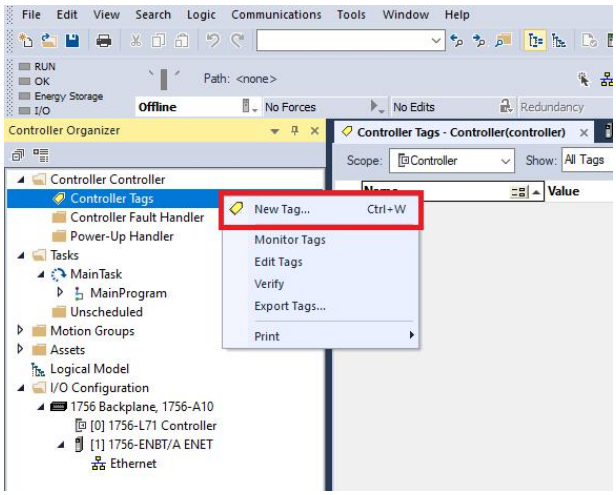
Download the program to the PLC and set PLC into "Online" state.



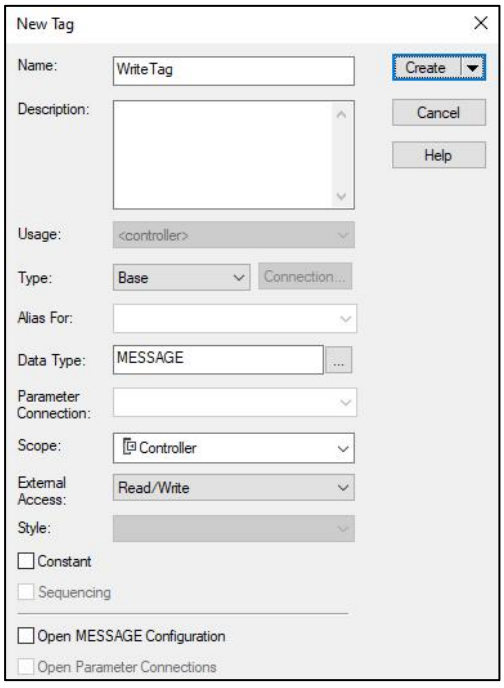
Click "Control Tags" and select "Monitor Tags". Expand "ReadData" to see that PLC can read Modbus TCP data through the EIP-341L gateway.

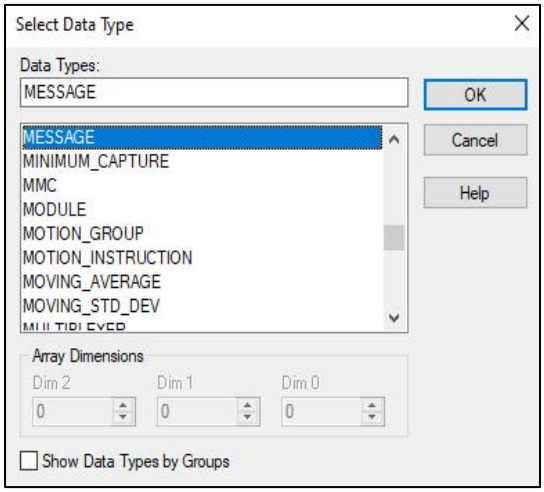
Write MSG Instruction Block

Switch to "Offline" mode and add two new tags "WriteTag" and WriteData", under the "Controller Tags". Define the type of "WriteTag" as "MESSAGE" and "WriteData" as "SINT[500]" as shown below:

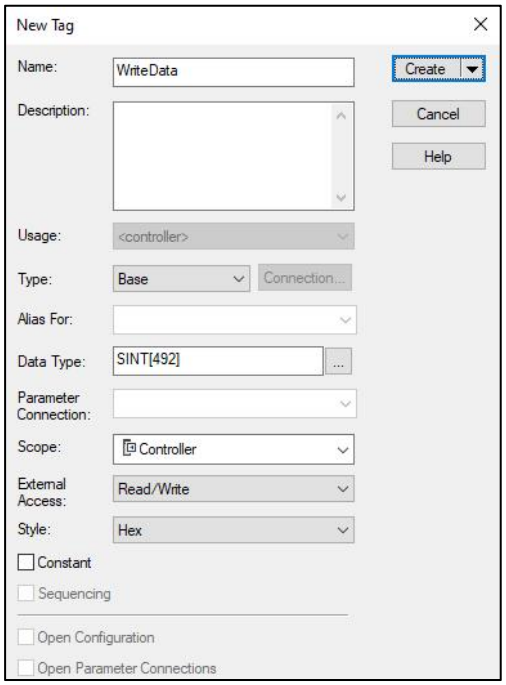


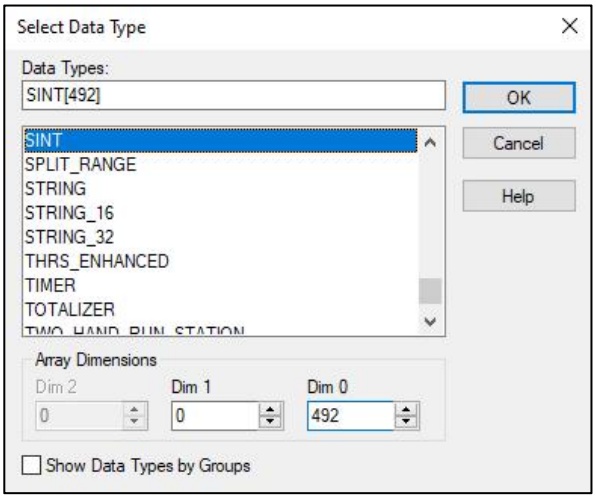
Set the data type of "WriteTag" as "MESSAGE":

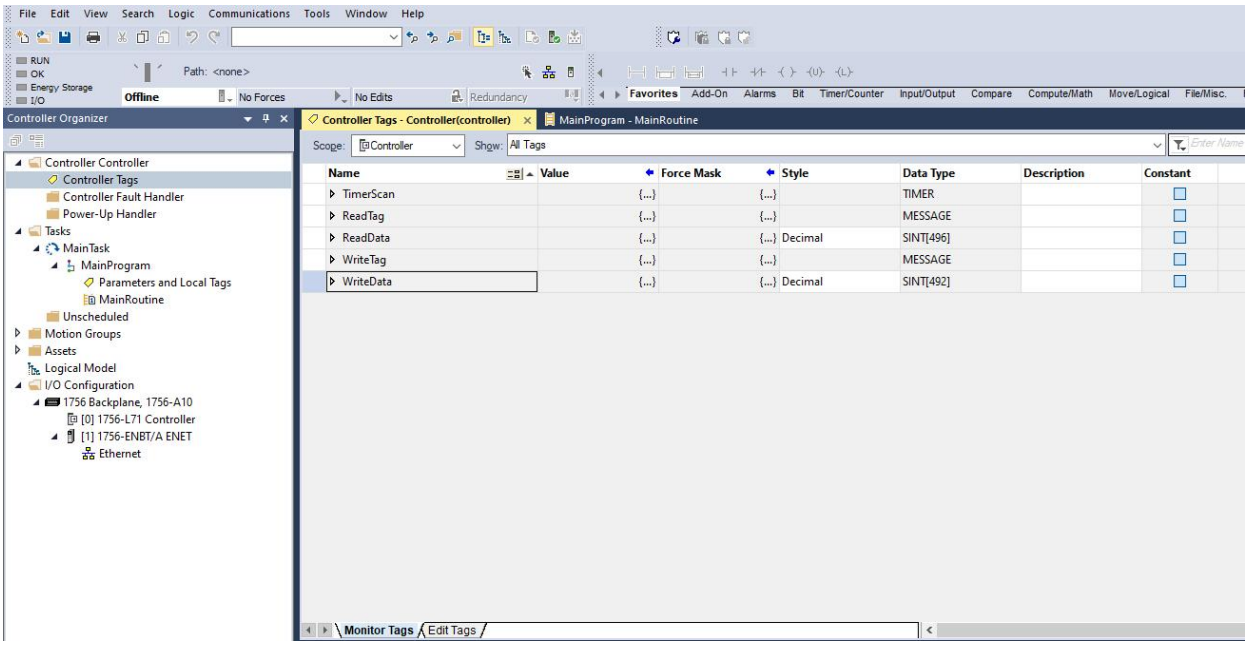




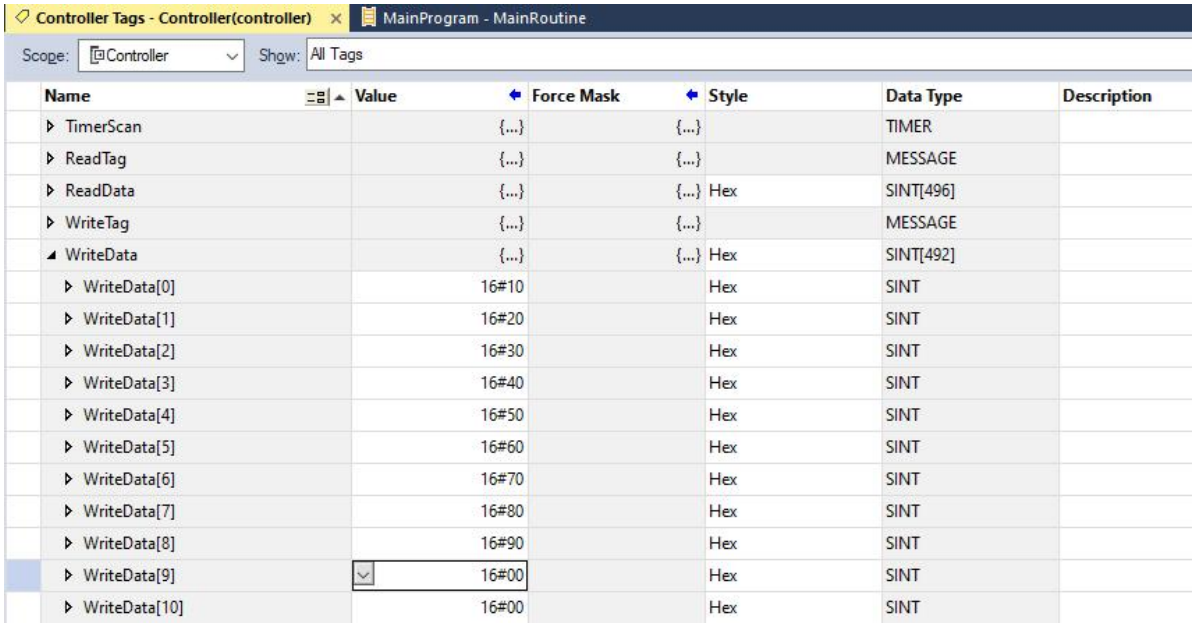
Set the data type of "WriteData" as "SINT", then set the Array Dimension "Dim 0" to match the Output Data Size.


New Tag
Name:
WriteData
Description:
Usage:
<controller>
Type:
Base
Connection...
Alias For:
Data Type:
SINT[492]
Parameter Connection:
Scope:
Controller
External Access:
Read/Write
Style:
Hex
Constant
Sequencing
Open Configuration
Open Parameter Connections
Create
Cancel
Help


Select Data Type
Data Types:
SINT[492]
SINT
SPLIT_RANGE
STRING
STRING_16
STRING_32
THRS_ENHANCED
TIMER
TOTALIZER
Array Dimensions
Dim 2
Dim 1
Dim 0
0
0
492
Show Data Types by Groups
OK
Cancel
Help

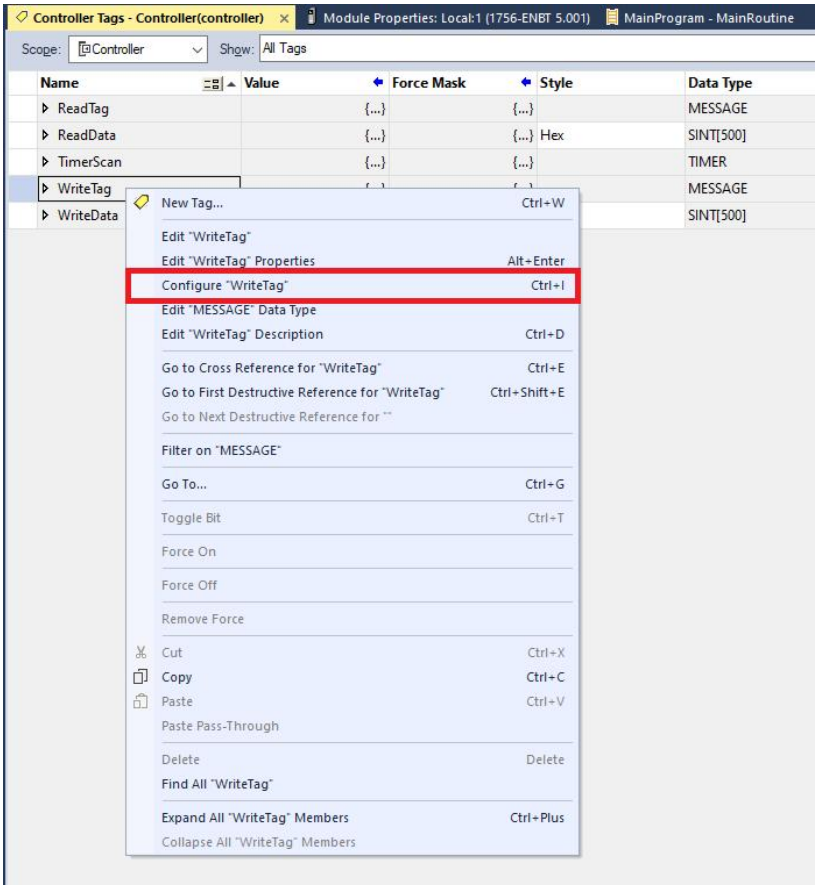

File Edit View Search Logic Communications Tools Window Help
Controller Organizer
Controller Tags - Controller(controller)
MainProgram - MainRoutine
Name
Value
Force Mask
Style
Data Type
Description
Constant
TimerScan
ReadTag
ReadData
WriteTag
WriteData
TIMER
MESSAGE
SINT[496]
SINT[492]
Monitor Tags
Edit Tags

Enter into the "Monitor Tags" interface and input some data in the "WriteData" tag. This data will be outputted to EIP-341L through PLC. As shown in the image below, 0x10, 0x20, 0x30, 0x40, 0x50, 0x60, 0x70, 0x80 and 0x90 are the data that will be outputted.



Name	Value	Force Mask	Style	Data Type	Description
TimerScan	{...}	{...}		TIMER	
ReadTag	{...}	{...}		MESSAGE	
ReadData	{...}	{...}	Hex	SINT[496]	
WriteTag	{...}	{...}		MESSAGE	
WriteData	{...}	{...}	Hex	SINT[492]	
WriteData[0]	16#10		Hex	SINT	
WriteData[1]	16#20		Hex	SINT	
WriteData[2]	16#30		Hex	SINT	
WriteData[3]	16#40		Hex	SINT	
WriteData[4]	16#50		Hex	SINT	
WriteData[5]	16#60		Hex	SINT	
WriteData[6]	16#70		Hex	SINT	
WriteData[7]	16#80		Hex	SINT	
WriteData[8]	16#90		Hex	SINT	
WriteData[9]	16#00		Hex	SINT	
WriteData[10]	16#00		Hex	SINT	

Right click "WriteTag" and select "Configure "WriteTag" as shown below:



In the new pop-up window, configure the following settings:

Message Type: CIP Generic

Service Type: Select "Set Attribute Single", and the relevant Service Code will become "10 (Hex)"

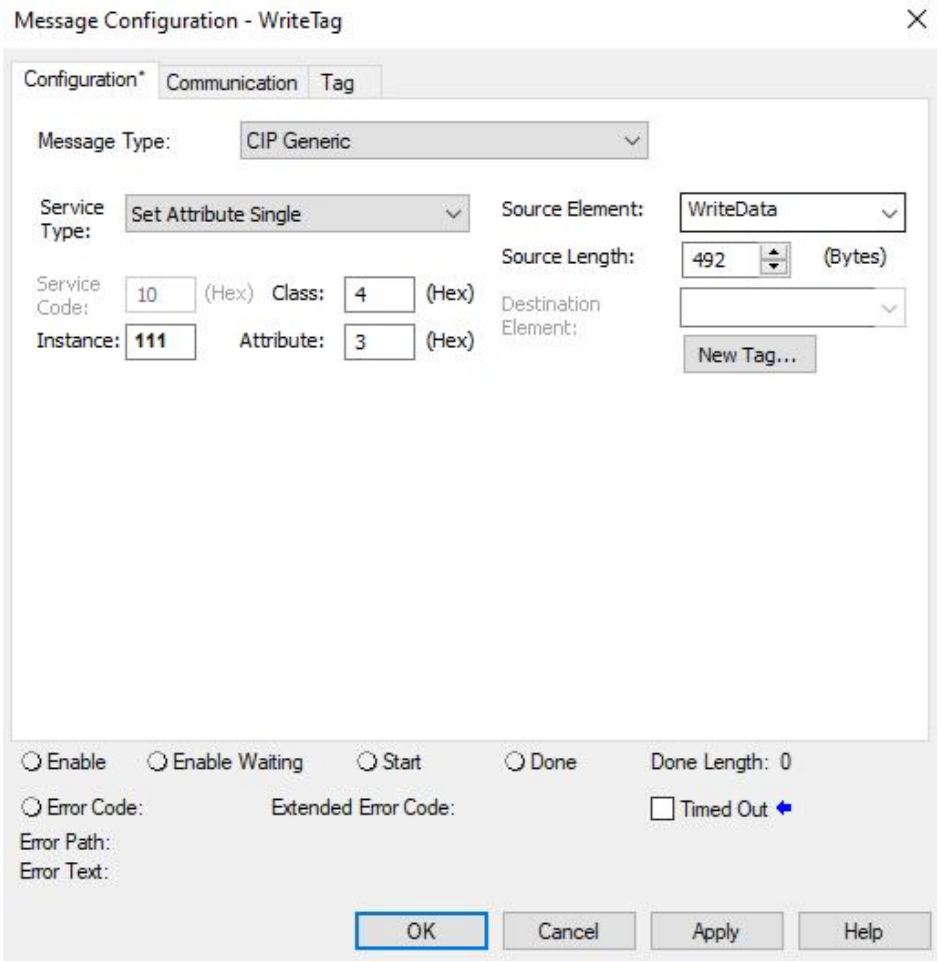
Class: 4 (Hex)

Instance: 111

Attribute: 3 (Hex)

Source Element: Select "WriteData" tag, indicatiing that the data in the "WriteData" tag will become the data PLC outputs.

Source Length: Use byte as unit, and this value should be less than or equal to the currently selecting bytes which instance represents (Configured bytes number in EIP-123).

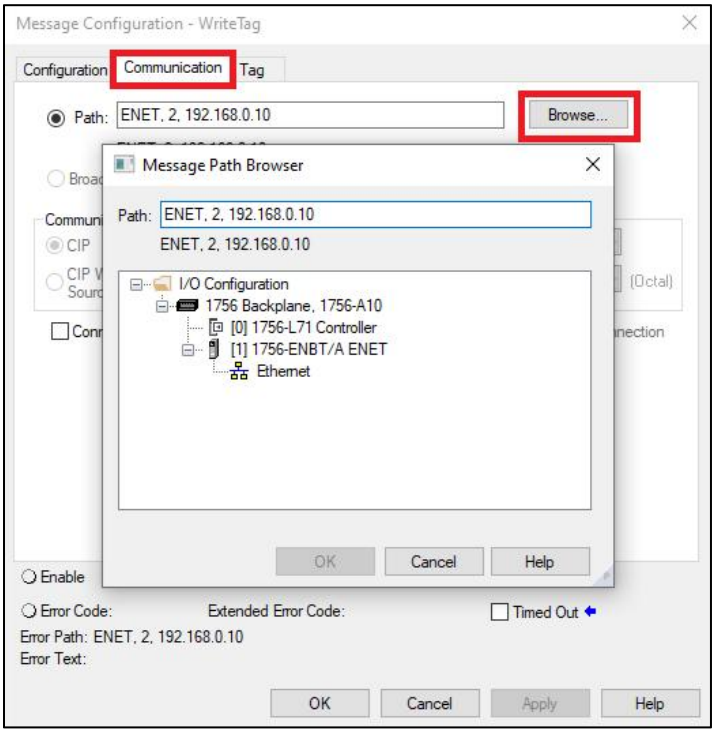


Select the "Communication" tab and click the "Browse" button. Then input the network path to connect to the EIP-341L.

Enter the network path in the following format:

[EtherNet/IP Interface Name], 2 (Ethernet Communication), [EIP-341L IP Address]

Then click "OK" to confirm:



Add a "MSG" command in the "MainRoutine" of "MainProgram" and select "WriteTag" as "Message Control" as shown below.Download the PLC program to the PLC and set PLC to "Online" state,. The data in "WriteData" will be outputted to Modbus TCP master or server through EIP-341L.