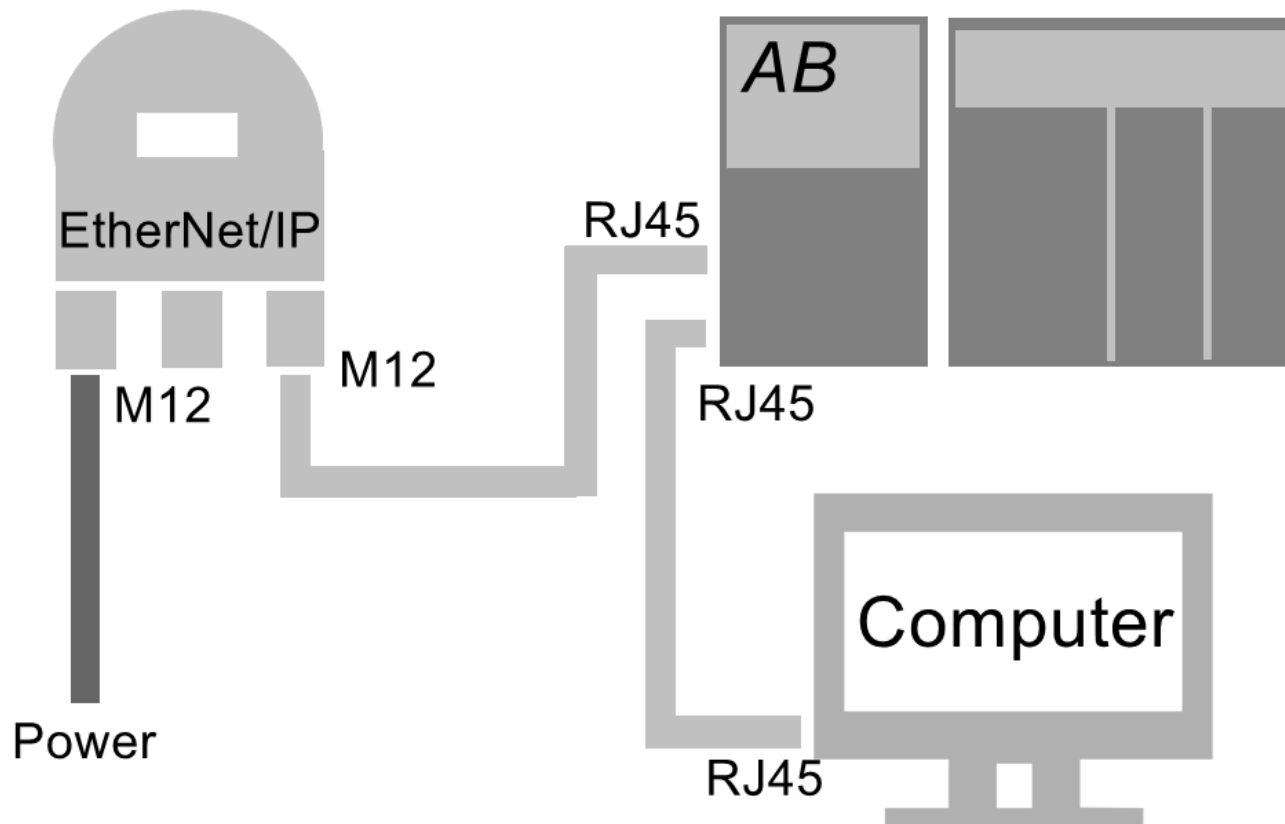




# EtherNet/IP Encoder Quick Start Manual



### > 1. Hardware Connection



- > 1. Set the power supply (voltage 10~30VDC via the female M12 connector
- > 2. Connect the encoder to the PLC via the male M12 connector
- > 3. Connect the PLC and the computer together via an RJ45 cable
- > 4. Start ControlLogix5563
- > 5. Have EDS Wizard, RSNetWorx, RSLogix 5000 installed on your computer
- > 6. On our website, download the EDS file and the Configuration Tools

Products > Absolute Encoders > Absolute Encoder Finder

Absolute Rotary Encoder



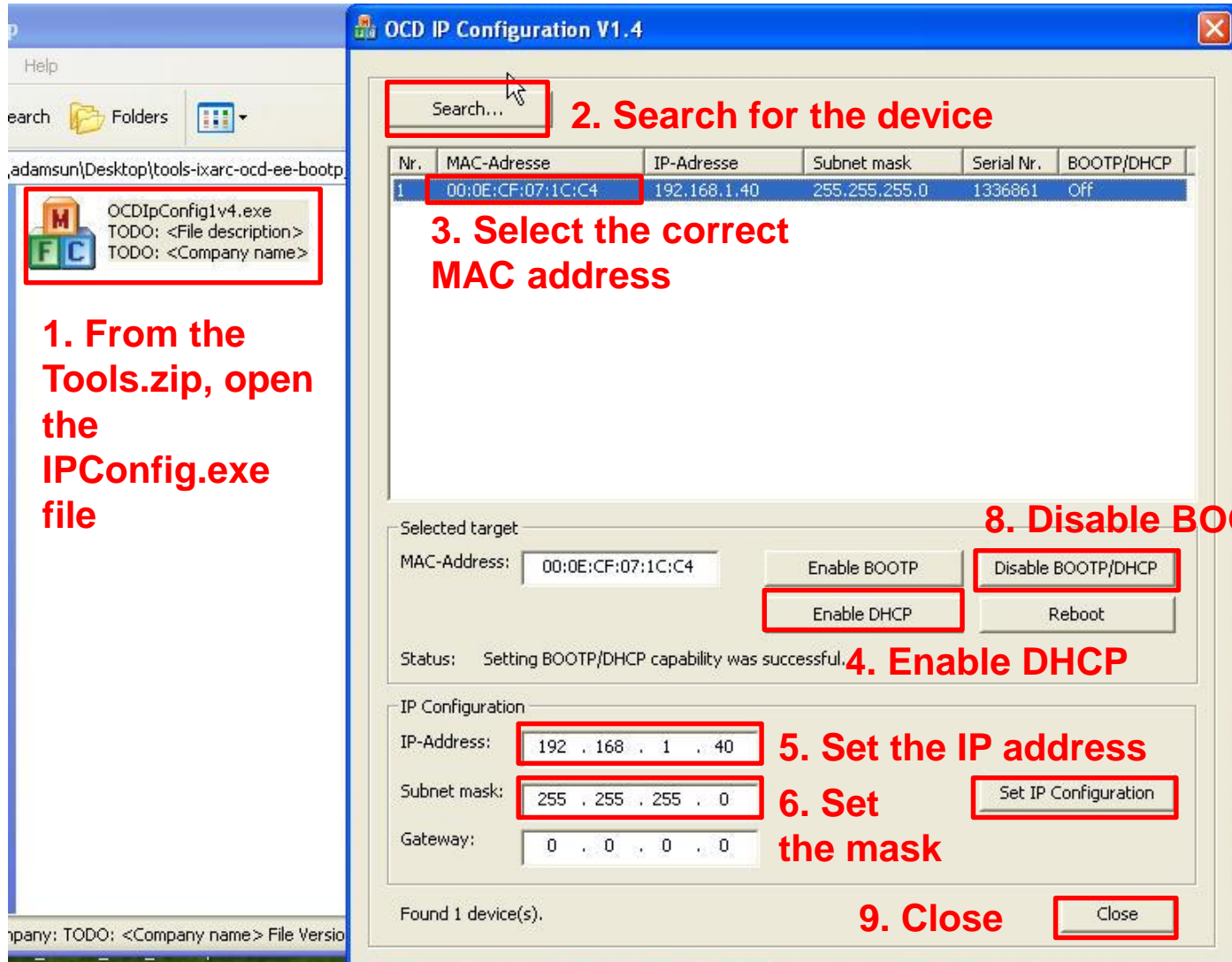
### Downloads

- Datasheet
- 2D Drawing
- Manual
- Configuration File**
- Tools**
- 3D Drawing Flange
- 3D Drawing Housing
- Project
- CE Certificate
- UL Certificate
- Certificate
- ISO Certificate

EDS file

Tools

## > 2. Set the IP address



**1. From the Tools.zip, open the IPConfig.exe file**

**2. Search for the device**

**3. Select the correct MAC address**

Nr.	MAC-Adresse	IP-Adresse	Subnet mask	Serial Nr.	BOOTP/DHCP
1	00:0E:CF:07:1C:C4	192.168.1.40	255.255.255.0	1336861	Off

**4. Enable DHCP**

**5. Set the IP address**

**6. Set the mask**

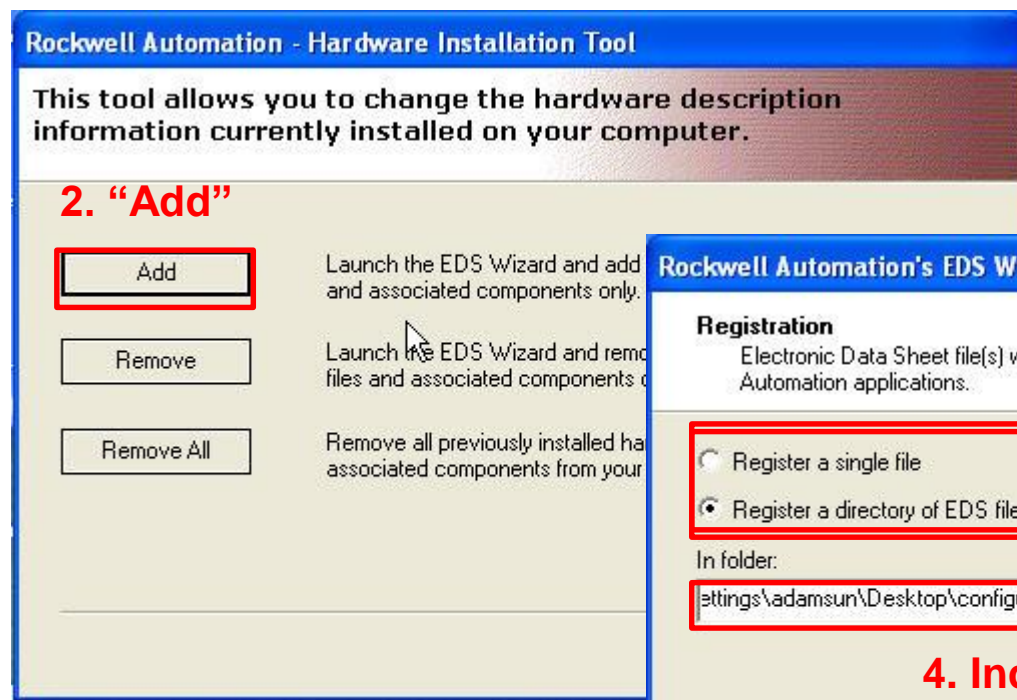
**7. Confirm Settings**

**8. Disable BOOT/DHCP**

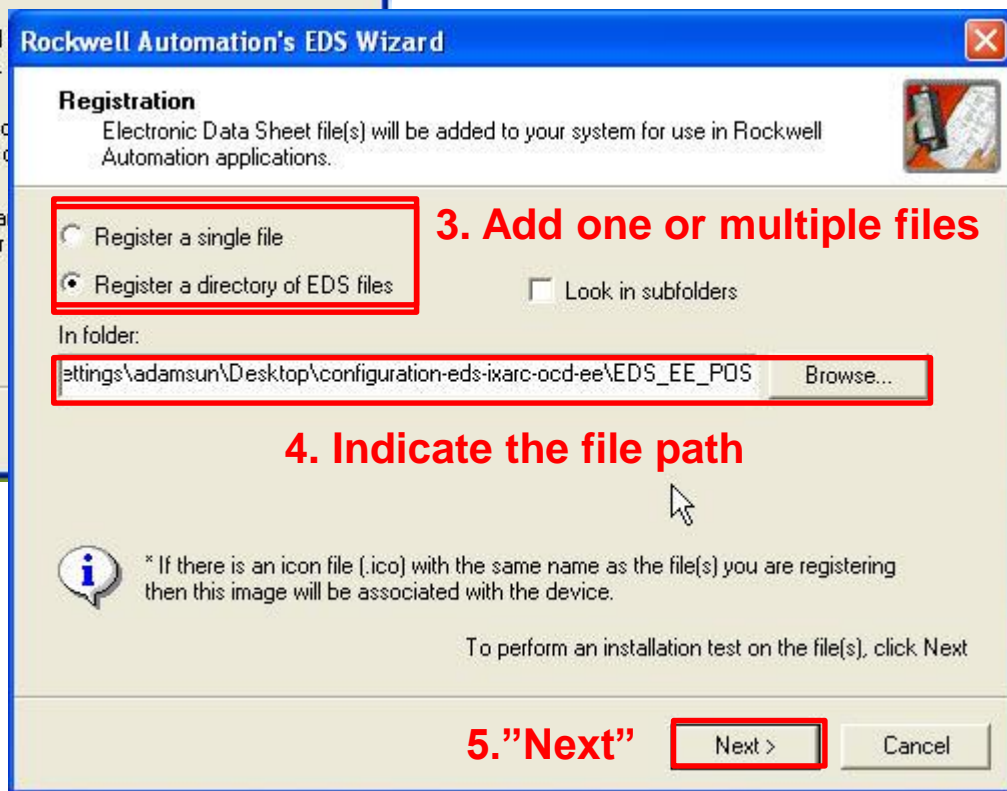
**9. Close**

Found 1 device(s).

### > 3. Associate an EDS file



1. Launch the EDS Wizard



3. Add one or multiple files

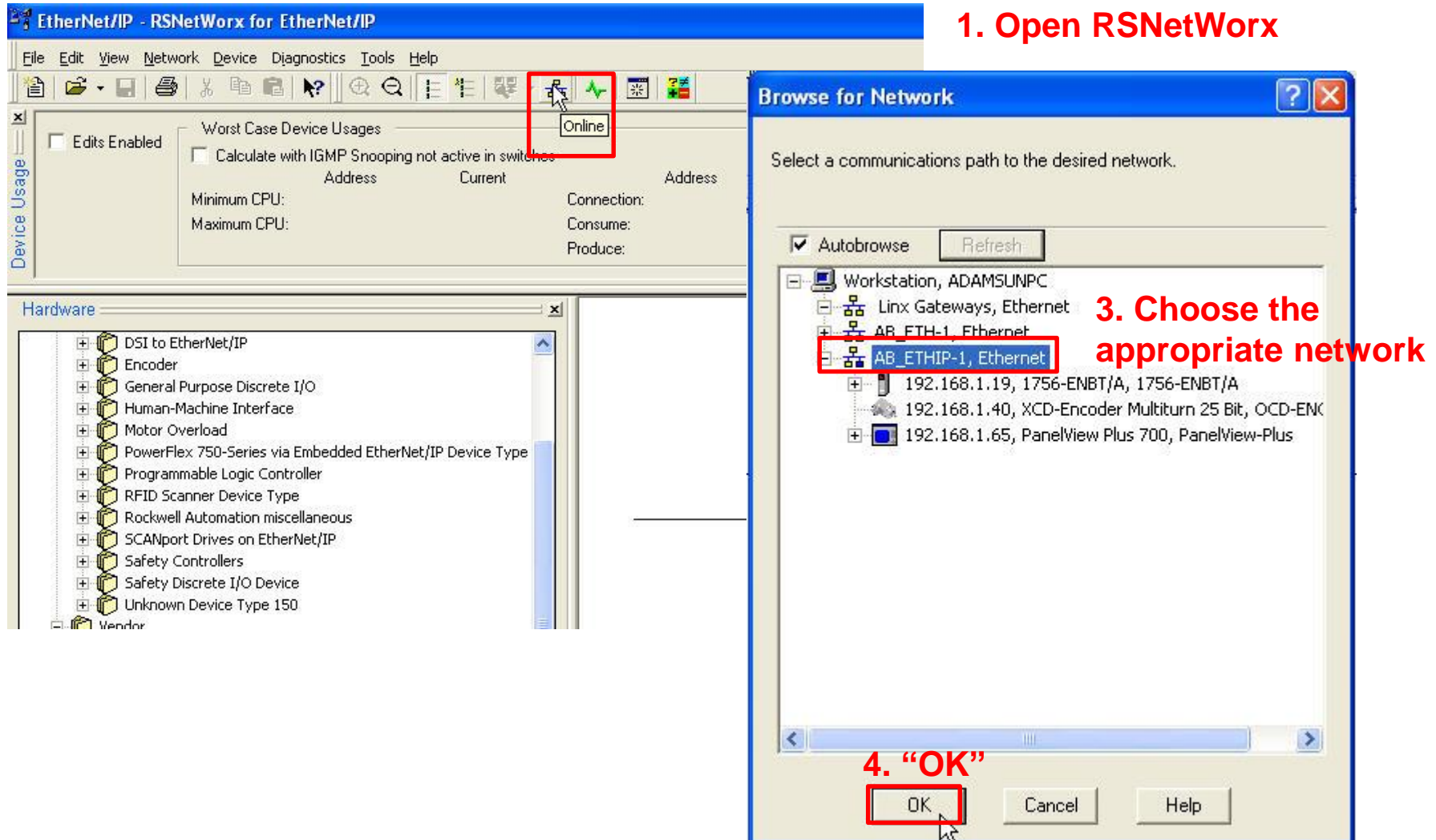
4. Indicate the file path

5. "Next"

### > 4. Create a Network

2. Click on "Online"

1. Open RSNetWorx



The screenshot displays the RSNetWorx software interface. The main window is titled "EtherNet/IP - RSNetWorx for EtherNet/IP". In the top toolbar, the "Online" button (represented by a green up arrow) is highlighted with a red box. Below the toolbar, the "Worst Case Device Usages" section is visible, containing checkboxes for "Calculate with IGMP Snooping not active in switches", "Minimum CPU:", "Maximum CPU:", "Connection:", "Consume:", and "Produce:". The "Hardware" pane on the left lists various device types, including "DSI to EtherNet/IP", "Encoder", "General Purpose Discrete I/O", "Human-Machine Interface", "Motor Overload", "PowerFlex 750-Series via Embedded EtherNet/IP Device Type", "Programmable Logic Controller", "RFID Scanner Device Type", "Rockwell Automation miscellaneous", "SCANport Drives on EtherNet/IP", "Safety Controllers", "Safety Discrete I/O Device", and "Unknown Device Type 150".

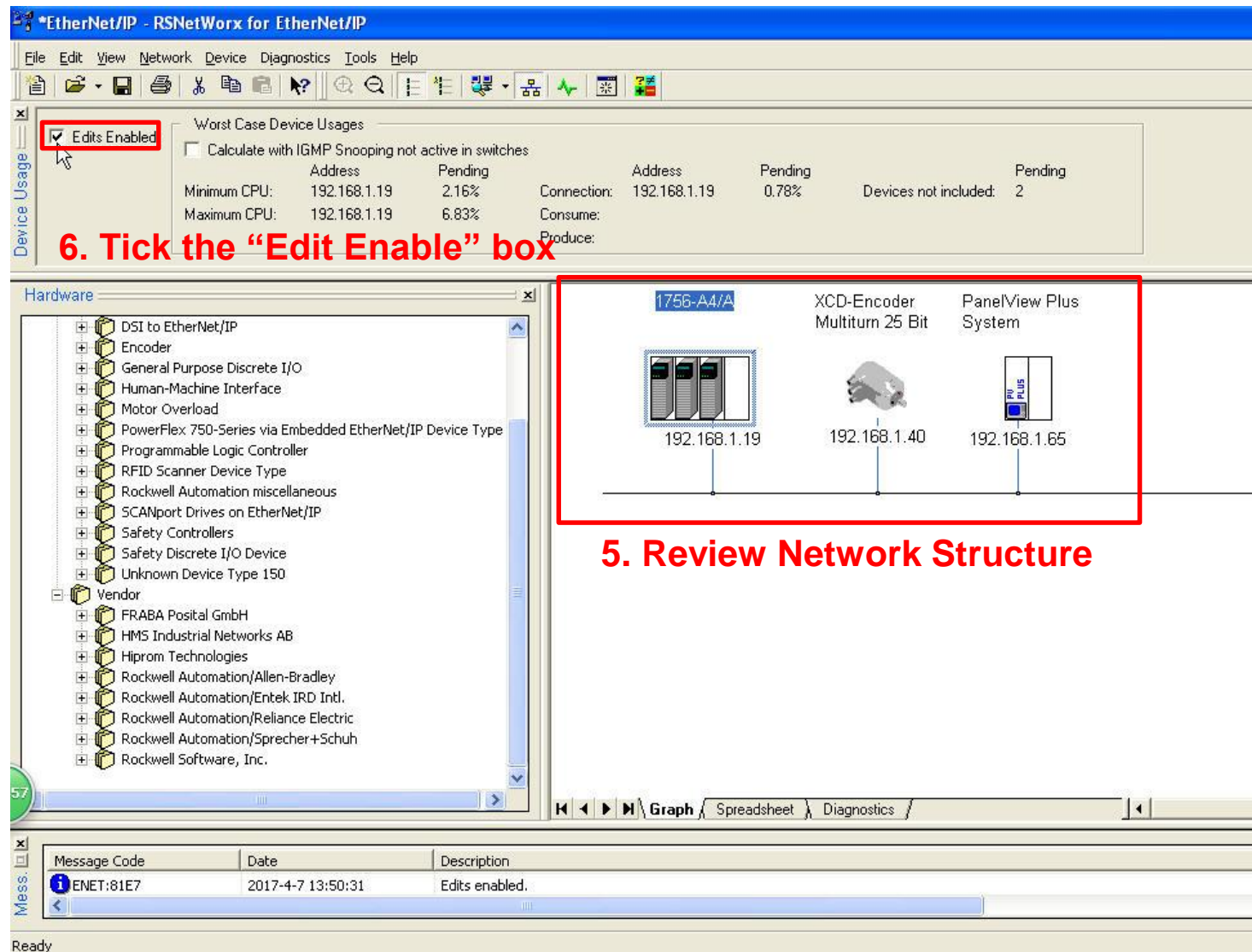
Overlaid on the main window is the "Browse for Network" dialog box. It prompts the user to "Select a communications path to the desired network." The "Autobrowse" checkbox is checked, and the "Refresh" button is visible. The network tree shows the following structure:

- Workstation, ADAMSUNPC
  - Linux Gateways, Ethernet
    - AB\_ETH-1, Ethernet
      - AB\_ETHIP-1, Ethernet (highlighted with a red box)
  - 192.168.1.19, 1756-ENBT/A, 1756-ENBT/A
  - 192.168.1.40, XCD-Encoder Multiturn 25 Bit, OCD-ENC
  - 192.168.1.65, PanelView Plus 700, PanelView-Plus

At the bottom of the dialog, the "OK" button is highlighted with a red box, and a mouse cursor is pointing at it.

3. Choose the appropriate network

4. "OK"



The screenshot displays the RSNetWorx for EtherNet/IP software interface. The top menu bar includes File, Edit, View, Network, Device, Diagnostics, Tools, and Help. The main window is divided into several panes:

- Device Usage:** A pane on the left showing a tree view of device categories. A red box highlights the "Edits Enabled" checkbox, which is checked. Below this, a table titled "Worst Case Device Usages" is visible.
- Hardware:** A pane on the left showing a tree view of hardware components. A red box highlights the "1756-A4/A" component, which is an XCD-Encoder Multiturn 25 Bit. Below this, a diagram shows the network structure with three devices connected to a common bus: "1756-A4/A" at IP 192.168.1.19, "XCD-Encoder Multiturn 25 Bit" at IP 192.168.1.40, and "PanelView Plus System" at IP 192.168.1.65.
- Message Log:** A pane at the bottom showing a table of messages. A red box highlights the message "ENET:81E7" with the description "Edits enabled."

**6. Tick the "Edit Enable" box**

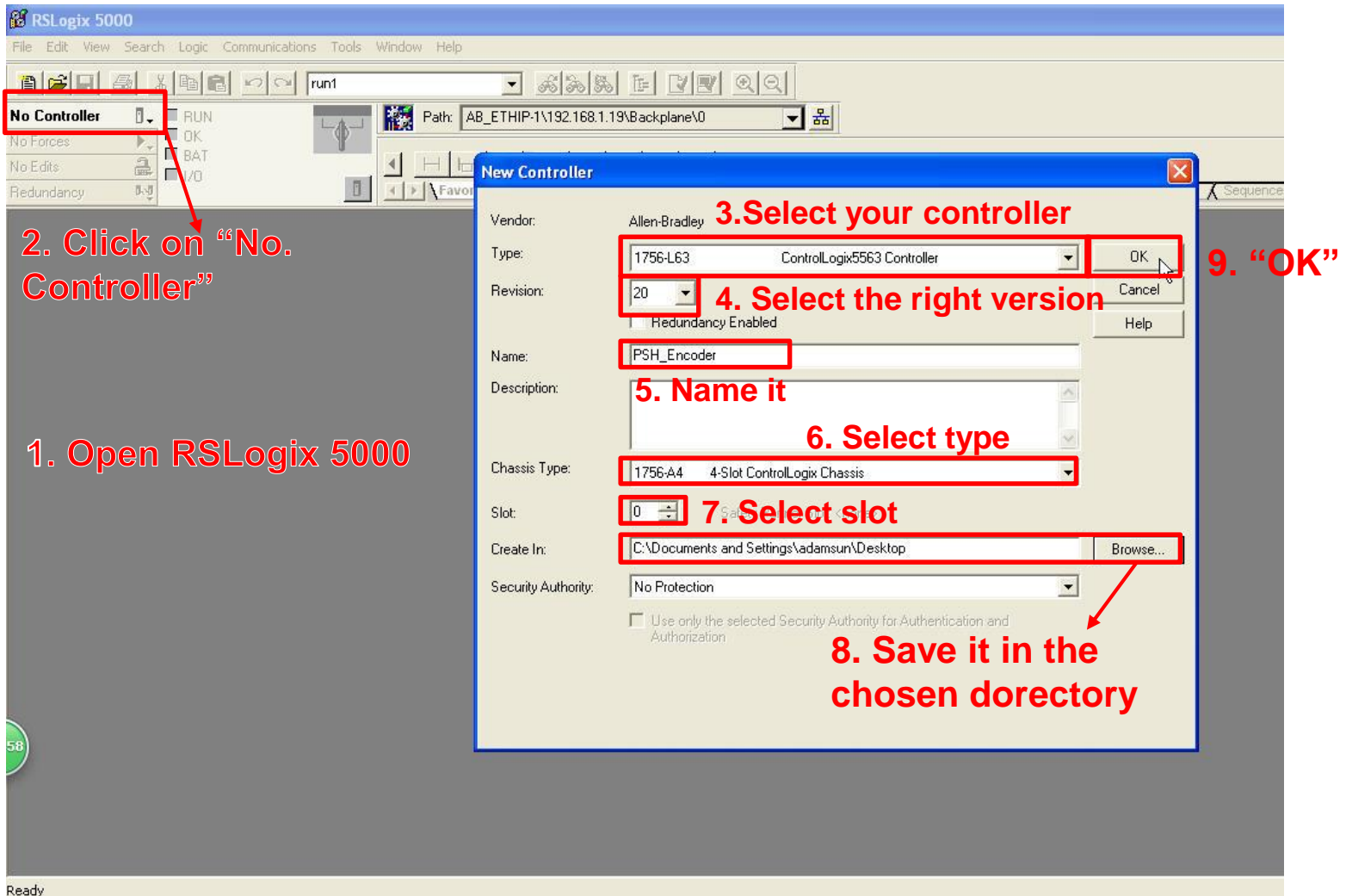
**5. Review Network Structure**

	Address	Pending	Connection:	Address	Pending	Devices not included:	Pending
Minimum CPU:	192.168.1.19	2.16%		192.168.1.19	0.78%	2	
Maximum CPU:	192.168.1.19	6.83%					

Message Code	Date	Description
ENET:81E7	2017-4-7 13:50:31	Edits enabled.



### > 5. Create a new controller



The screenshot shows the RSLogix 5000 software interface. The 'New Controller' dialog box is open, and the following steps are indicated by red text and arrows:

1. Open RSLogix 5000
2. Click on "No. Controller"
3. Select your controller
4. Select the right version
5. Name it
6. Select type
7. Select slot
8. Save it in the chosen dorectory
9. "OK"

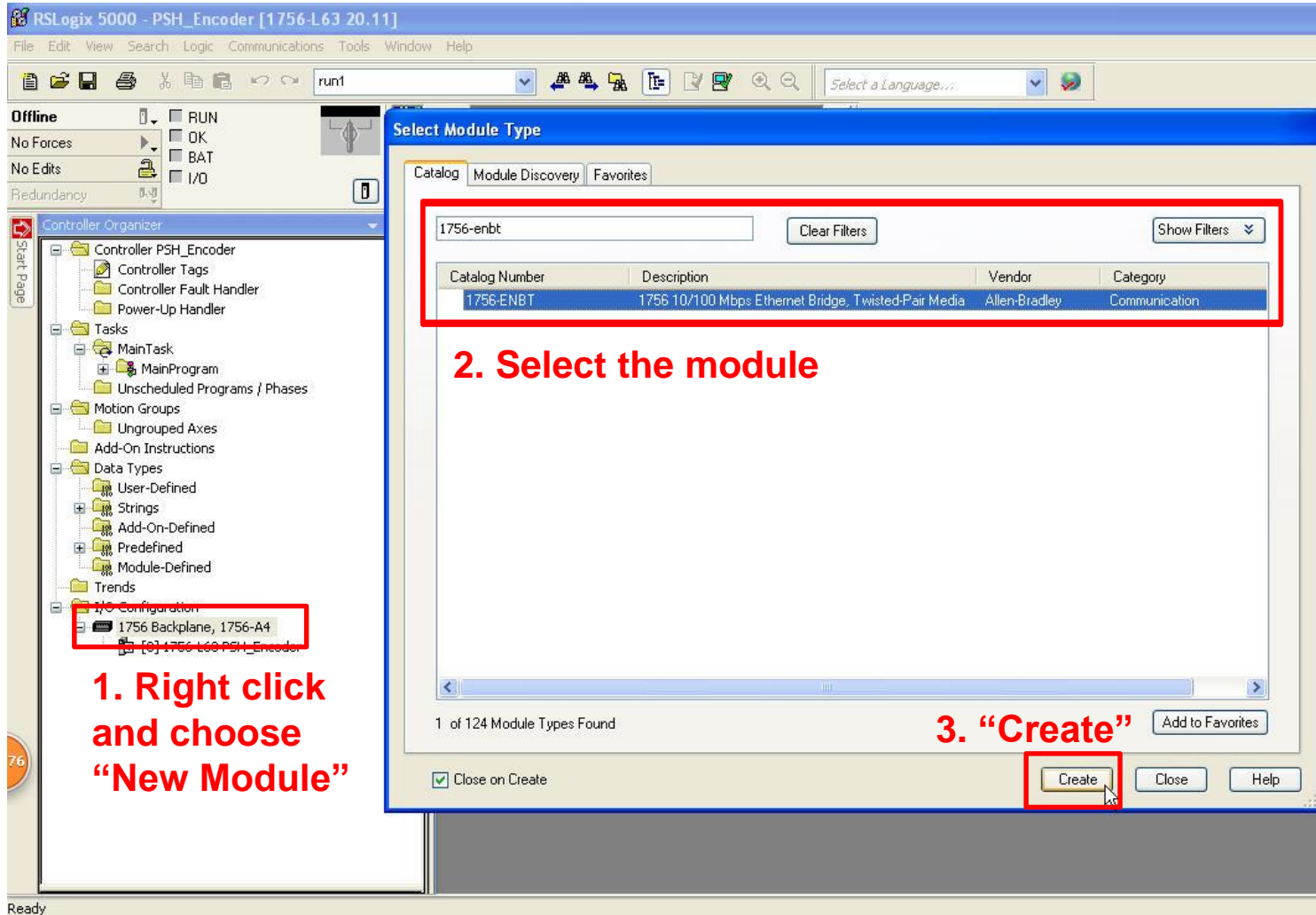
The 'New Controller' dialog box contains the following fields and options:

- Vendor: Allen-Bradley
- Type: 1756-L63 ControlLogix5563 Controller
- Revision: 20
- Redundancy Enabled: ☐
- Name: PSH\_Encoder
- Description:
- Chassis Type: 1756-A4 4-Slot ControlLogix Chassis
- Slot: 0
- Create In: C:\Documents and Settings\adamson\Desktop
- Security Authority: No Protection
- ☐ Use only the selected Security Authority for Authentication and Authorization

The 'OK' button is highlighted with a red box and an arrow pointing to it.



## > 6. Create a new Ethernet Module



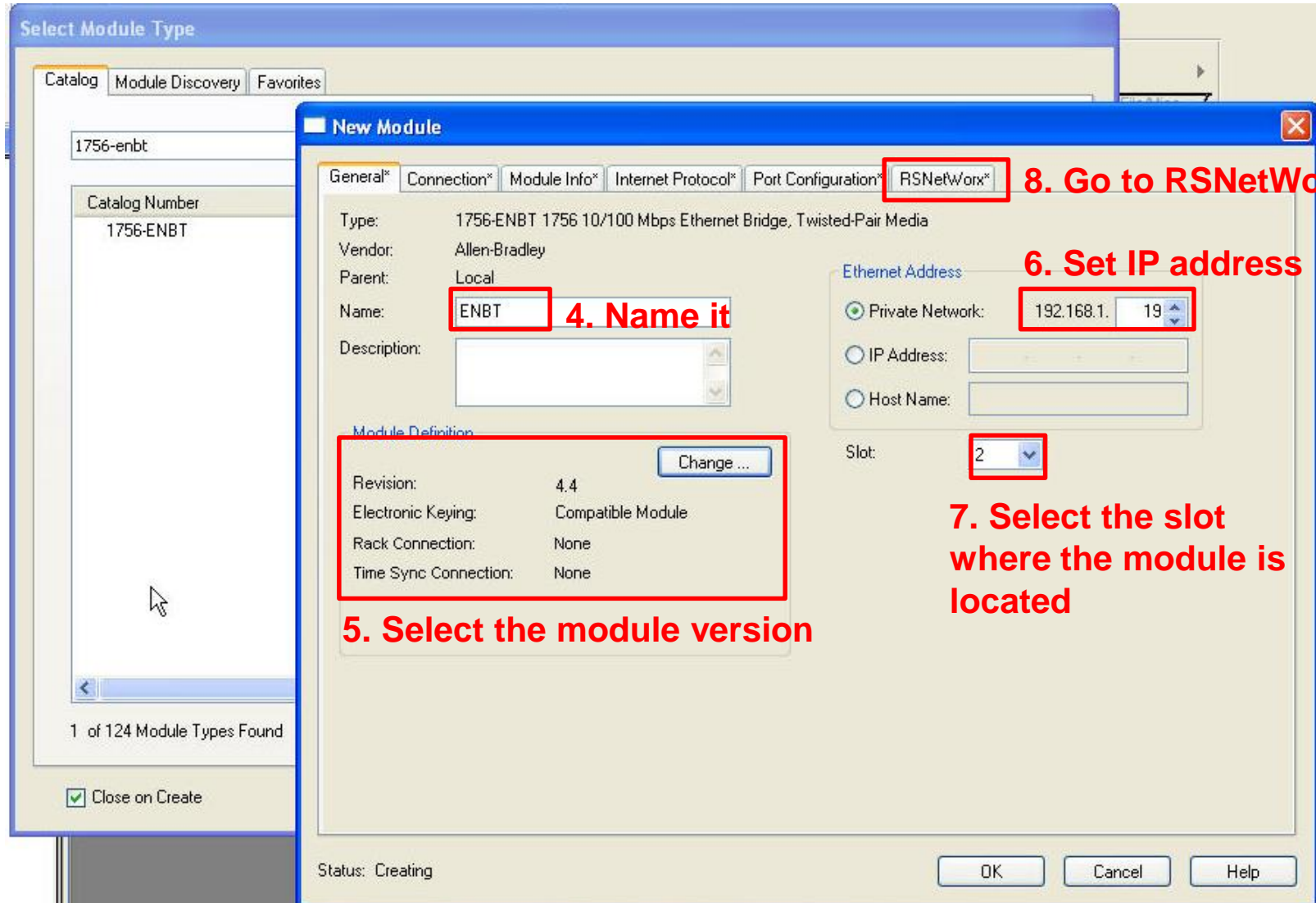
**1. Right click and choose "New Module"**

**2. Select the module**

Catalog Number	Description	Vendor	Category
1756-ENBT	1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media	Allen-Bradley	Communication

**3. "Create"**

Ready



**8. Go to RSNetWorx Tab**

**6. Set IP address**

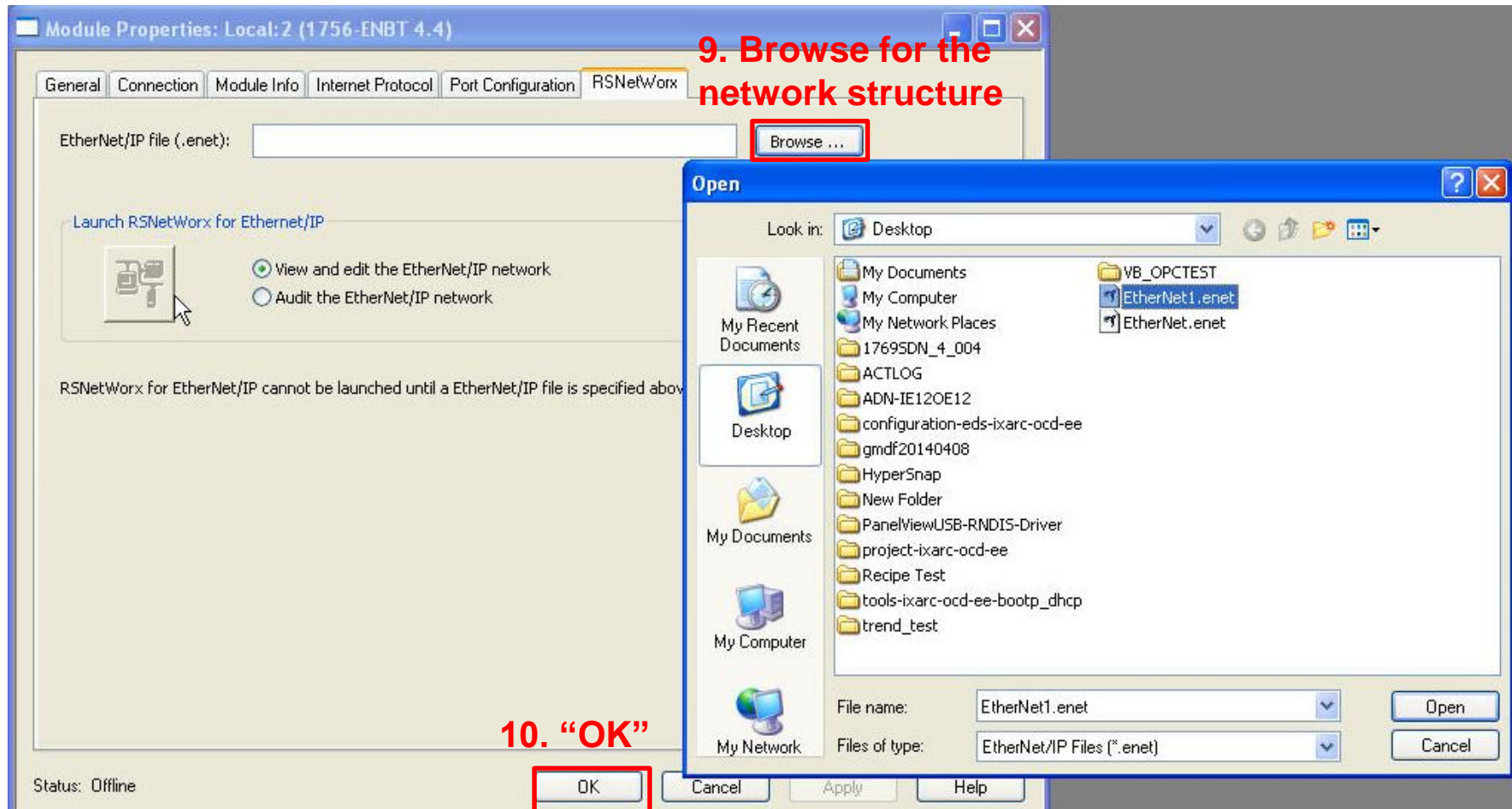
**4. Name it**

**5. Select the module version**

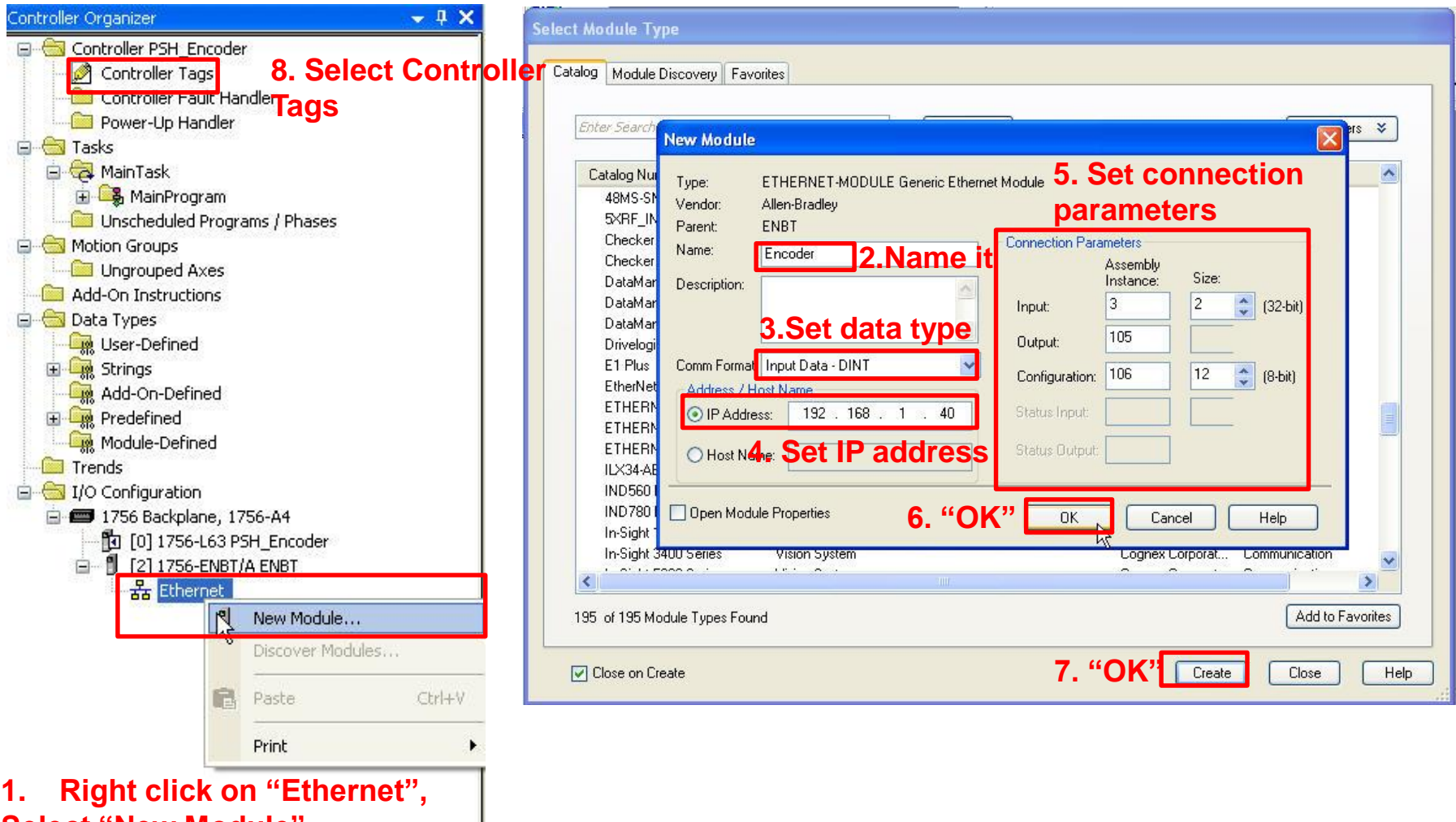
**7. Select the slot where the module is located**

Status: Creating

OK Cancel Help



## > 7. Create a new Ethernet encoder module



The image shows two screenshots from the Hohner Automation software. The left screenshot shows the 'Controller Organizer' tree with the 'Ethernet' module selected under 'I/O Configuration'. The right screenshot shows the 'Select Module Type' dialog box with the 'New Module' sub-dialog open, displaying the configuration for an 'ETHERNET-MODULE Generic Ethernet Module'.

**1. Right click on "Ethernet", Select "New Module"**

**2. Name it**

**3. Set data type**

**4. Set IP address**

**5. Set connection parameters**

**6. "OK"**

**7. "OK"**

**8. Select Controller Tags**

**Connection Parameters**

Parameter	Value	Size
Input	3	2 (32-bit)
Output	105	
Configuration	106	12 (8-bit)
Status Input		
Status Output		

IP Address: 192 . 168 . 1 . 40

Comm Format: Input Data - DINT

Open Module Properties: ☐

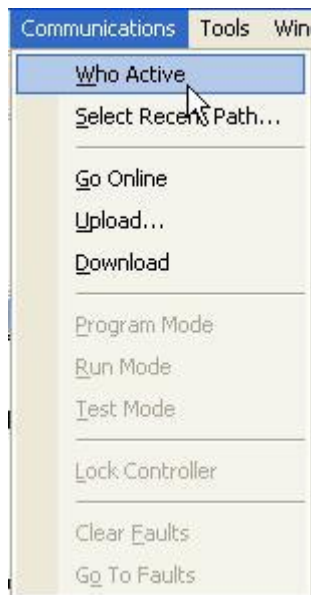
Close on Create: ☒



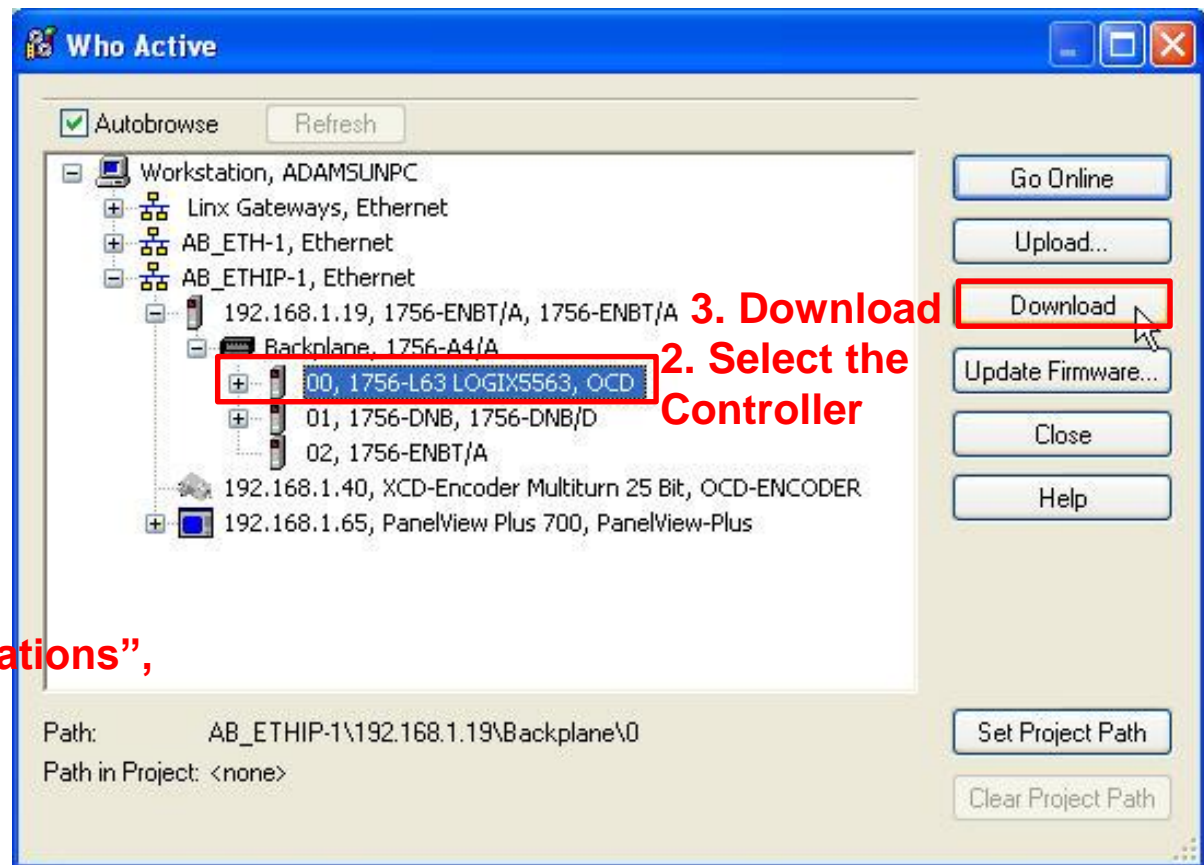
Scope:  PSH_Encoder		Show: All Tags		Enter Name Filter...		
Name	Value	Force Mask	Style	Data Type	Description	
Encoder:C	{...}	{...}		AB:ETHERNET_MODULE:C:0		
Encoder:C.Data	{...}	{...}	Hex	SINT[400]		
Encoder:C.Data[0]	16#00		Hex	SINT	Direction Counting Toggle	
Encoder:C.Data[1]	16#00		Hex	SINT	Scaling Function Control	
Encoder:C.Data[2]	16#00		Hex	SINT	Measuring Units per Span byte 0 (LSB)	
Encoder:C.Data[3]	16#00		Hex	SINT	Measuring Units per Span byte 1	
Encoder:C.Data[4]	16#00		Hex	SINT	Measuring Units per Span byte 2	
Encoder:C.Data[5]	16#00		Hex	SINT	Measuring Units per Span byte 3 (MSB)	
Encoder:C.Data[6]	16#00		Hex	SINT	Total Measuring byte 0 (LSB)	
Encoder:C.Data[7]	16#00		Hex	SINT	Total Measuring byte 1	
Encoder:C.Data[8]	16#00		Hex	SINT	Total Measuring byte 2	
Encoder:C.Data[9]	16#00		Hex	SINT	Total Measuring byte 3	
Encoder:C.Data[10]	16#00		Hex	SINT	Velocity 0 (LSB)	
Encoder:C.Data[11]	16#00		Hex	SINT	Velocity 1 (MSB)	
Encoder:C.Data[12]	16#00		Hex	SINT		
Encoder:C.Data[13]	16#00		Hex	SINT		
Encoder:C.Data[14]	16#00		Hex	SINT		
Encoder:C.Data[15]	16#00		Hex	SINT		
Encoder:C.Data[16]	16#00		Hex	SINT		
Encoder:C.Data[17]	16#00		Hex	SINT		
Encoder:C.Data[18]	16#00		Hex	SINT		
Encoder:C.Data[19]	16#00		Hex	SINT		
Encoder:C.Data[20]	16#00		Hex	SINT		
Encoder:C.Data[21]	16#00		Hex	SINT		
Encoder:C.Data[22]	16#00		Hex	SINT		

### 9. Control Tags and their definitions

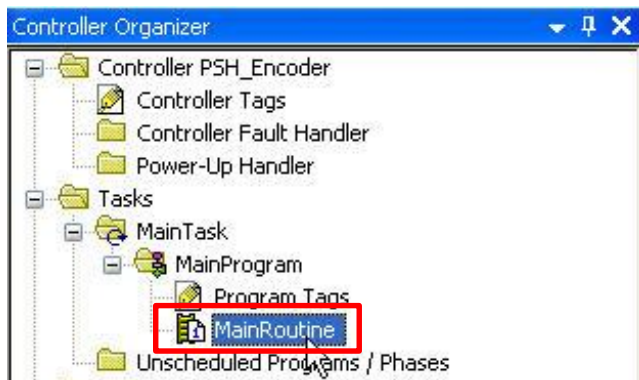
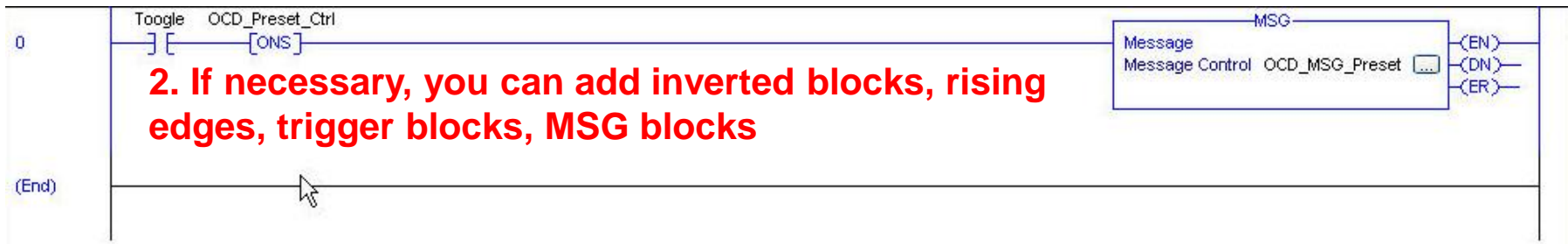
## > 8. Download Configuration



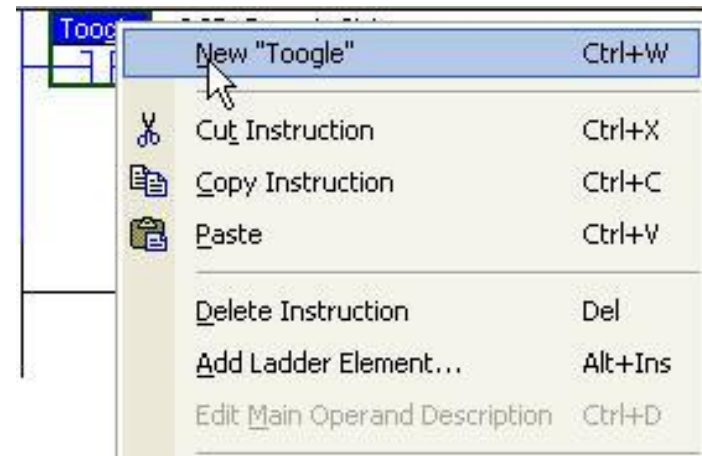
**1. Under “Communications”,  
Select “Who Active”**



## > 9. Read position and preset function

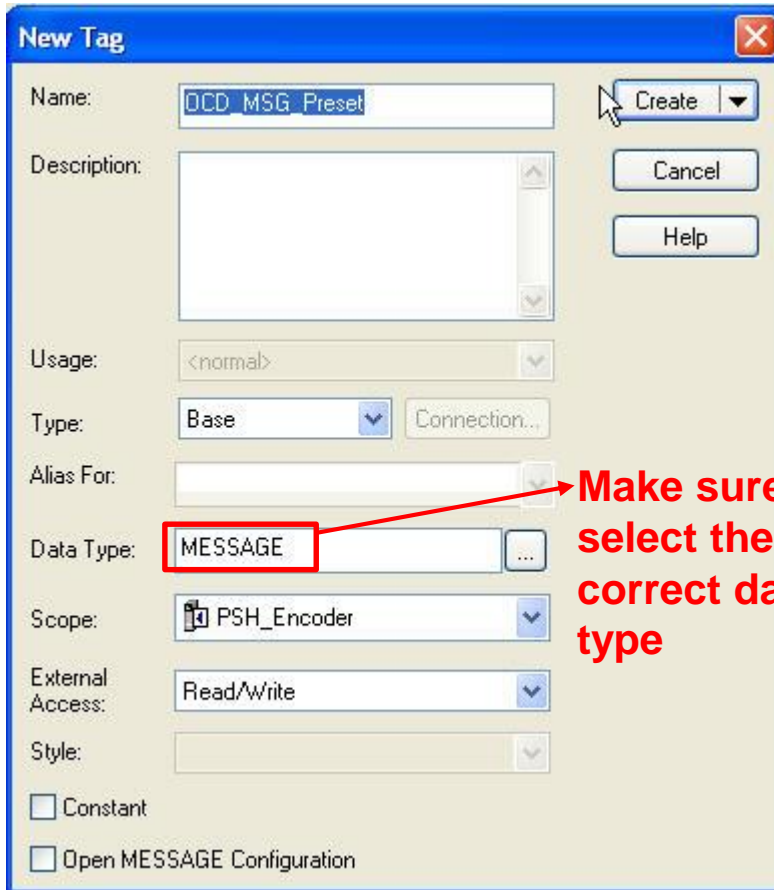


1. Click on “Main Routine”



3. In “Toogle”, add a “New Toogle”



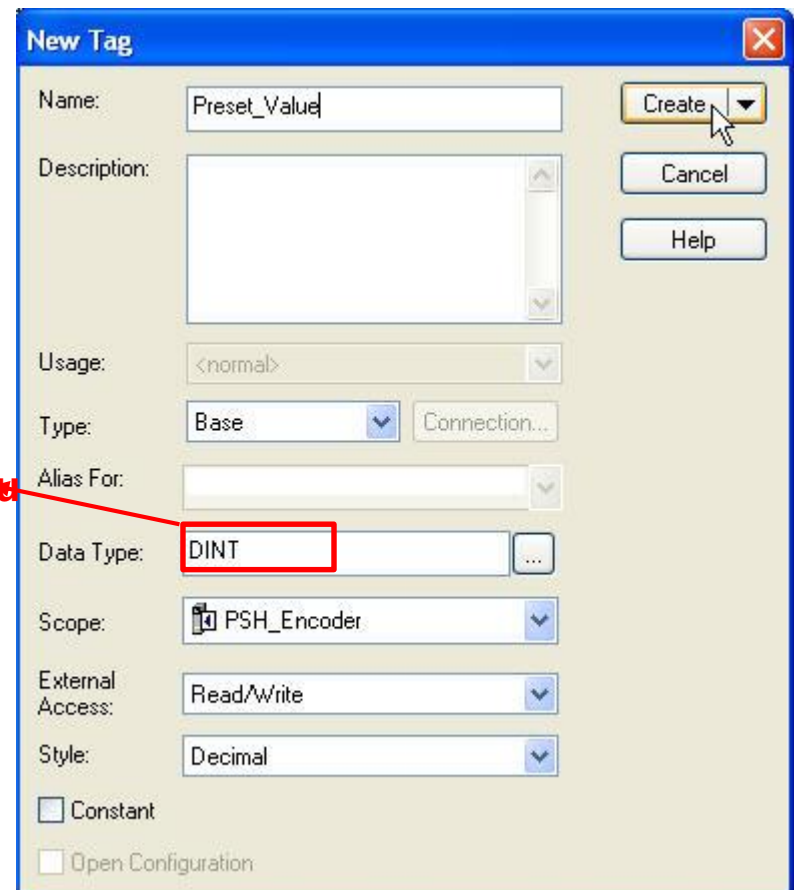


The 'New Tag' dialog box is shown with the following settings:

- Name: `OCD_MSG_Preset`
- Description: (empty)
- Usage: `<normal>`
- Type: `Base`
- Alias For: (empty)
- Data Type: `MESSAGE` (highlighted with a red box)
- Scope: `PSH_Encoder`
- External Access: `Read/Write`
- Style: (empty)
- ☐ Constant
- ☐ Open MESSAGE Configuration

Buttons: `Create`, `Cancel`, `Help`.

**4. Create the OCD\_MSG\_Preset**



The 'New Tag' dialog box is shown with the following settings:

- Name: `Preset_Value`
- Description: (empty)
- Usage: `<normal>`
- Type: `Base`
- Alias For: (empty)
- Data Type: `DINT` (highlighted with a red box)
- Scope: `PSH_Encoder`
- External Access: `Read/Write`
- Style: `Decimal`
- ☐ Constant
- ☐ Open Configuration

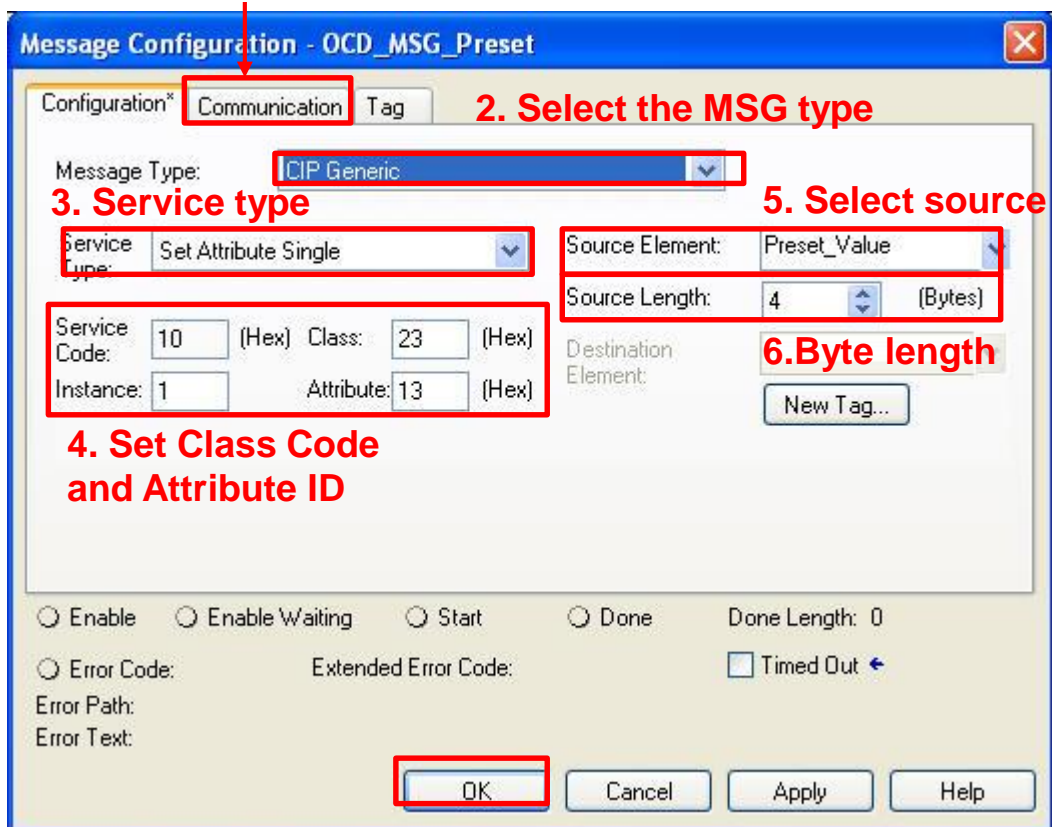
Buttons: `Create`, `Cancel`, `Help`.

**5. Create a Preset\_Value Tag**

**Make sure you  
select the  
correct data  
type**

### > 6. Configure the OCD\_MSG\_Preset Tag

7. Go to the Communication tab

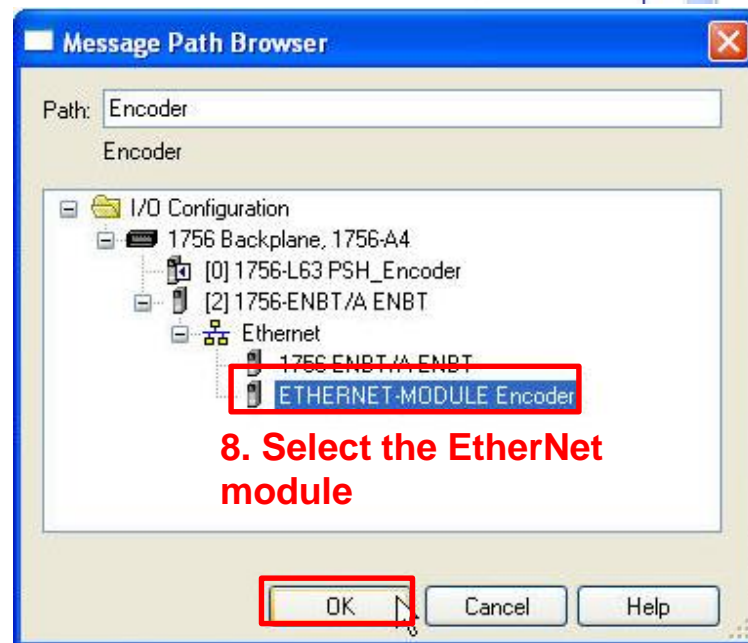


The dialog box 'Message Configuration - OCD\_MSG\_Preset' has three tabs: 'Configuration\*', 'Communication', and 'Tag'. The 'Communication' tab is selected. It contains the following fields and controls:

- Message Type:** A dropdown menu set to 'ICIP Generic'.
- Service Type:** A dropdown menu set to 'Set Attribute Single'.
- Source Element:** A dropdown menu set to 'Preset\_Value'.
- Source Length:** A numeric input set to '4' with '(Bytes)' next to it.
- Service Code:** A numeric input set to '10' with '(Hex)' next to it.
- Class:** A numeric input set to '23' with '(Hex)' next to it.
- Instance:** A numeric input set to '1'.
- Attribute:** A numeric input set to '13' with '(Hex)' next to it.
- Destination Element:** A label with a dropdown arrow.
- Buttons:** 'New Tag...', 'OK', 'Cancel', 'Apply', and 'Help'.
- Options:** Radio buttons for 'Enable', 'Enable Waiting', 'Start', and 'Done'. A 'Done Length: 0' field. A 'Timed Out' checkbox.
- Labels:** 'Error Code:', 'Extended Error Code:', 'Error Path:', and 'Error Text:'.

10. "OK"

1. Open the Configuration Dialog



The 'Message Path Browser' dialog box shows a tree view of the system configuration. The path 'Encoder' is selected. The tree view shows the following structure:

- I/O Configuration
  - 1756 Backplane, 1756-A4
    - [0] 1756-L63 PSH\_Encoder
    - [2] 1756-ENBT/A ENBT
      - Ethernet
        - 1756-ENBT/A ENBT
          - ETHERNET-MODULE Encoder**

8. Select the EtherNet module

9. "OK"

### > 7. Read the position value

	Name	Value	Force Mask	Style	Data Type
	[-] Encoder:C	{...}	{...}		AB:ETHERNET_MODULE:C:0
	+ Encoder:C.Data	{...}	{...}	Hex	SINT[400]
	[-] Encoder:I	{...}	{...}		AB:ETHERNET_MODULE_DIN...
	[-] Encoder:I.Data	{...}	{...}	Decimal	DINT[2]
	+ Encoder:I.Data[0]	43302		Decimal	DINT
	+ Encoder:I.Data[1]	0		Decimal	DINT
	Toogle	0		Decimal	BOOL
	OCD_Preset_Ctrl	0		Decimal	BOOL
	+ OCD_MSG_Preset	{...}	{...}		MESSAGE
	+ Preset_Value	0		Decimal	DINT

1. Position Value

2. Velocity Value

### > 8. Preset function

3. The position value  
changes to the preset value

2. Set trigger as high

Name	Value	Force Mask	Style	Data Type
Encoder:C	{...}	{...}		AB:ETHERNET_MODULE:C:0
+ Encoder:C.Data	{...}	{...}	Hex	SINT[400]
Encoder:I	{...}	{...}		AB:ETHERNET_MODULE_DIN...
- Encoder:I.Data	{...}	{...}	Decimal	DINT[2]
+ Encoder:I.Data[0]	1000		Decimal	DINT
+ Encoder:I.Data[1]	0		Decimal	DINT
Toogle	1		Decimal	BOOL
OCD_Preset_Ctrl	1		Decimal	BOOL
+ OCD_MSG_Preset	{...}	{...}		MESSAGE
+ Preset_Value	1000		Decimal	DINT

1. Set the desired  
Preset position value

## > Appendix

### > 1. Target Location addresses

#### 2.2.2 Position Sensor Objects

Instance Attributes (Get: read, Set: write + read)

Class Code: 23<sub>hex</sub>

Attrib. ID	Access	Name	Data Type	Description
01 <sub>hex</sub>	Get	Number of Attributes	USINT	Number of supported Attributes
02 <sub>hex</sub>	Get	Attribute List	Array of USINT	List of supported Attribute
0A <sub>hex</sub>	Get	Position Value Signed	DINT	Current position signed
0B <sub>hex</sub>	Get	Position Sensor Type	UINT	Specifies the device type
0C <sub>hex</sub>	Set	Direction Counting Toggle	Boolean	Controls the code sequence clockwise or counterclockwise
0E <sub>hex</sub>	Set	Scaling Function Control	Boolean	Scaling function on/off
10 <sub>hex</sub>	Set	Measuring units per Span	UDINT	Resolution for one revolution
11 <sub>hex</sub>	Set	Total Measuring Range in Measuring Units	UDINT	Total resolution
13 <sub>hex</sub>	Set	Preset Value	DINT	Setting a defined position value
18 <sub>hex</sub>	Get	Velocity Value	DINT	Current speed in format of attribute 19 <sub>hex</sub> and 2A <sub>hex</sub>
19 <sub>hex</sub>	Set	Velocity Format	ENGUINT	Format of the velocity attributes
29 <sub>hex</sub>	Get	Operating Status	BYTE	Encoder diagnostic operating status
2A <sub>hex</sub>	Get	Physical Resolution Span	UDINT	Resolution for one revolution
2B <sub>hex</sub>	Get	Number of Spans	UINT	Number of revolutions
33 <sub>hex</sub>	Get	Offset Value	DINT	Shift position value with the calculated value
64 <sub>hex</sub>	Set	Device Type	DINT	Encoder device = 22 <sub>hex</sub> Generic device = 0 (default)
65 <sub>hex</sub>	Set	Endless Shaft	DINT	Off = 0, On = 1, Auto = 2
66 <sub>hex</sub>	Set	Velocity Filter	DINT	Fine = 0, Middle = 1, Raw = 2

## > 2. Data Definition

### 2.1.3.1 Data Offset

Byte Offset	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	Direction Counting Toggle							
1	Scaling Function Control							
2	Measuring units per Revolution (low byte)							
3								
4								
5								
6	Total Measuring Range in measuring units (low byte)							
7								
8								
9								
10	Velocity Format (low byte)							
11	Velocity (high byte)							

### 4.1.6 Velocity Format

Default value for Velocity Format is steps per second. This parameter can be set with Configuration Assembly and Explicit Messaging.

## > 3. Velocity units

Attribute ID	Default value	Value range	Data length
19 <sub>hex</sub>	1F04 <sub>hex</sub>	1F04 <sub>hex</sub>	Steps per second
		1F05 <sub>hex</sub>	Steps per millisecond
		1F06 <sub>hex</sub>	Steps per microsecond
		1F07 <sub>hex</sub>	Steps per minute
		1F0F <sub>hex</sub>	RPM