

## EtherNet/IP Encoder Quick Start Manual

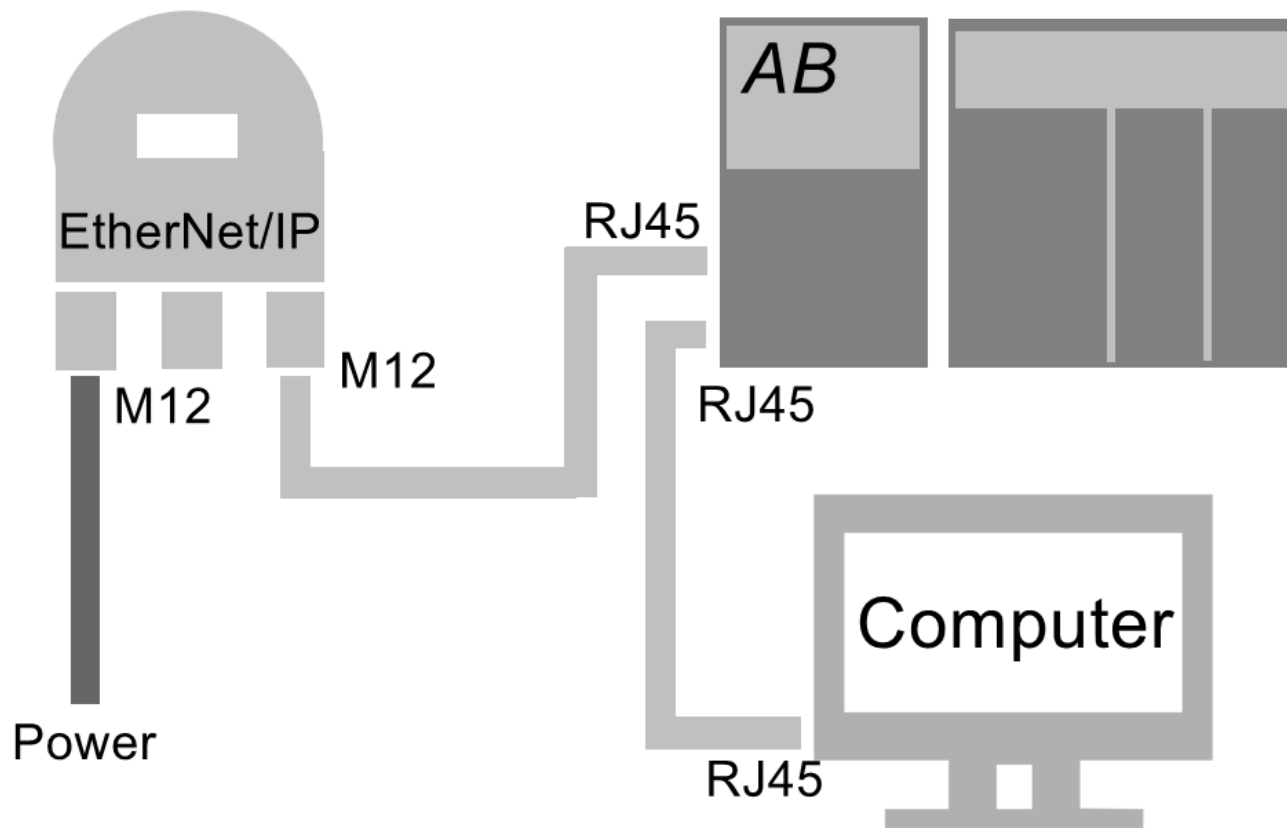


> E.g.: OCD-EEA1B-1213-C100-PRM

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### > 1. Hardware Connection



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- > 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

IXARC Absolute Rotary Encoder

OCD-EEA1B-1213-C100-PRM



### Downloads

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

EDS file

Tools

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### > 2. Set the IP address

The screenshot shows the 'OCD IP Configuration V1.4' window. On the left, a file explorer shows 'OCDIpConfig1v4.exe' selected. The main window has a 'Search...' button at the top. Below it is a table with one row of device information. The 'Selected target' section shows the MAC address '00:0E:CF:07:1C:C4' and buttons for 'Enable BOOTP', 'Disable BOOTP/DHCP', 'Enable DHCP', and 'Reboot'. The 'IP Configuration' section has input fields for IP address (192.168.1.40), Subnet mask (255.255.255.0), and Gateway (0.0.0.0). A 'Set IP Configuration' button is next to these fields. At the bottom, there is a 'Close' button. Red boxes and numbers 1-9 are overlaid on the image to guide the user through the steps.

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

**2. Search for the device**

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

**3. Select the correct MAC address**

**4. Enable DHCP**

**5. Set the IP address**

**6. Set the mask**

**7. Confirm Settings**

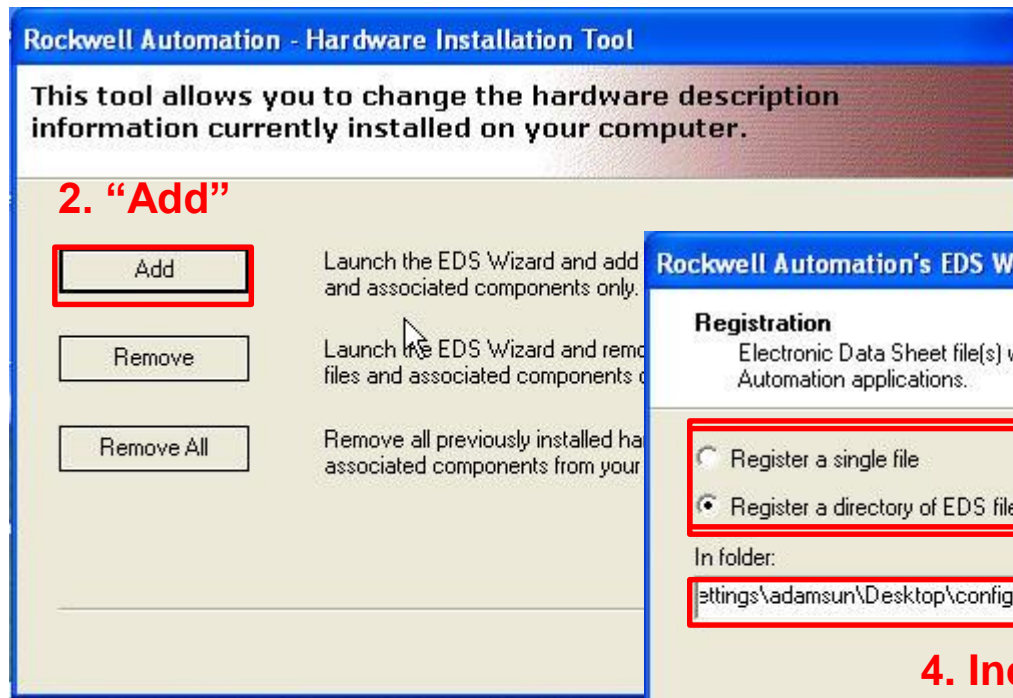
**8. Disable BOOT/DHCP**

**9. Close**

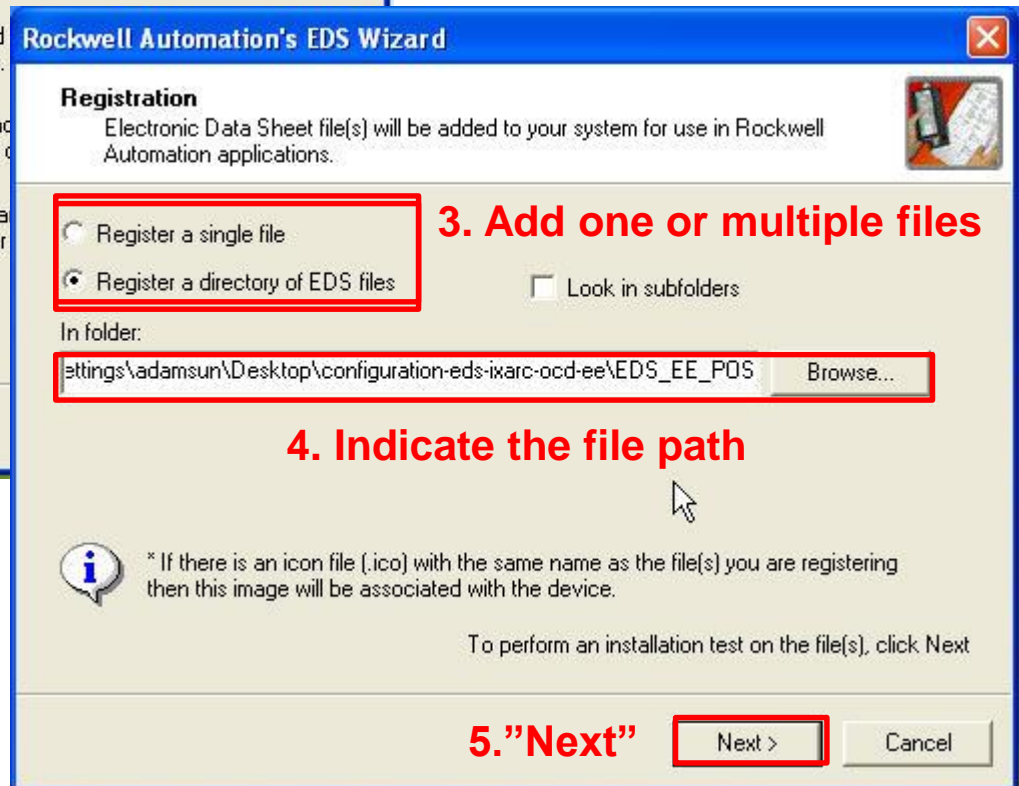
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### > 3. Associate an EDS file



**1. Launch the EDS Wizard**



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### > 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'. The 'Online' button in the top toolbar is highlighted with a red box. Below the toolbar, the 'Worst Case Device Usages' section is visible, showing a table with columns for Address, Current, and Address. The 'Hardware' section 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. A 'Browse for Network' dialog box is open on the right, showing a tree view of network components. The 'AB\_ETHIP-1, Ethernet' component is highlighted with a red box. The 'OK' button at the bottom of the dialog box is also highlighted with a red box.

3. Choose the appropriate network

4. “OK”

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**EtherNet/IP - RSNetWorx for EtherNet/IP**

File Edit View Network Device Diagnostics Tools Help

Device Usage

☒ Edits Enabled

Worst Case Device Usages

☐ Calculate with IGMP Snooping not active in switches

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

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

Hardware

- 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
- Unknown Device Type 150
- Vendor
  - FRABA Posital GmbH
  - HMS Industrial Networks AB
  - Hiprom Technologies
  - Rockwell Automation/Allen-Bradley
  - Rockwell Automation/Entek IRD Intl.
  - Rockwell Automation/Reliance Electric
  - Rockwell Automation/Sprecher+Schuh
  - Rockwell Software, Inc.

1756-A4/A

XCD-Encoder Multiturn 25 Bit

PanelView Plus System

192.168.1.19

192.168.1.40

192.168.1.65

**5. Review Network Structure**

Graph Spreadsheet Diagnostics

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

Ready



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### > 5. Create a new controller

The screenshot shows the RSLogix 5000 software interface. A 'New Controller' dialog box is open, and several steps are highlighted with red boxes and numbers:

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
- 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 (unchecked)

The 'OK' button is highlighted with a red box and the number 9.



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### > 6. Create a new Ethernet Module

RSLogix 5000 - PSH\_Encoder [1756-L63 20.11]

File Edit View Search Logic Communications Tools Window Help

run1

Select a Language...

Offline

No Forces

No Edits

Redundancy

Controller Organizer

Start Page

Controller PSH\_Encoder

Controller Tags

Controller Fault Handler

Power-Up Handler

Tasks

MainTask

MainProgram

Unscheduled Programs / Phases

Motion Groups

Ungrouped Axes

Add-On Instructions

Data Types

User-Defined

Strings

Add-On-Defined

Predefined

Module-Defined

Trends

I/O Configuration

1756 Backplane, 1756-A4

[0] 1756-L63 PSH\_Encoder

Select Module Type

Catalog Module Discovery Favorites

1756-enbt

Clear Filters

Show Filters

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

2. Select the module

1 of 124 Module Types Found

3. "Create"

Create Close Help

Close on Create

Ready

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Select Module Type

Catalog   Module Discovery   Favorites

1756-enbt

Catalog Number  
1756-ENBT

1 of 124 Module Types Found

☒ Close on Create

**New Module**

General\*   Connection\*   Module Info\*   Internet Protocol\*   Port Configuration\*   **RSNetWorx\***   8. Go to RSNetWorx Tab

Type: 1756-ENBT 1756 10/100 Mbps Ethernet Bridge, Twisted-Pair Media  
Vendor: Allen-Bradley  
Parent: Local  
Name: **ENBT**   4. Name it  
Description:

Ethernet Address   6. Set IP address

☒ Private Network: 192.168.1. 19  
☐ IP Address:  
☐ Host Name:

Slot: 2   7. Select the slot where the module is located

Module Definition

Revision: 4.4   Change ...  
Electronic Keying: Compatible Module  
Rack Connection: None  
Time Sync Connection: None

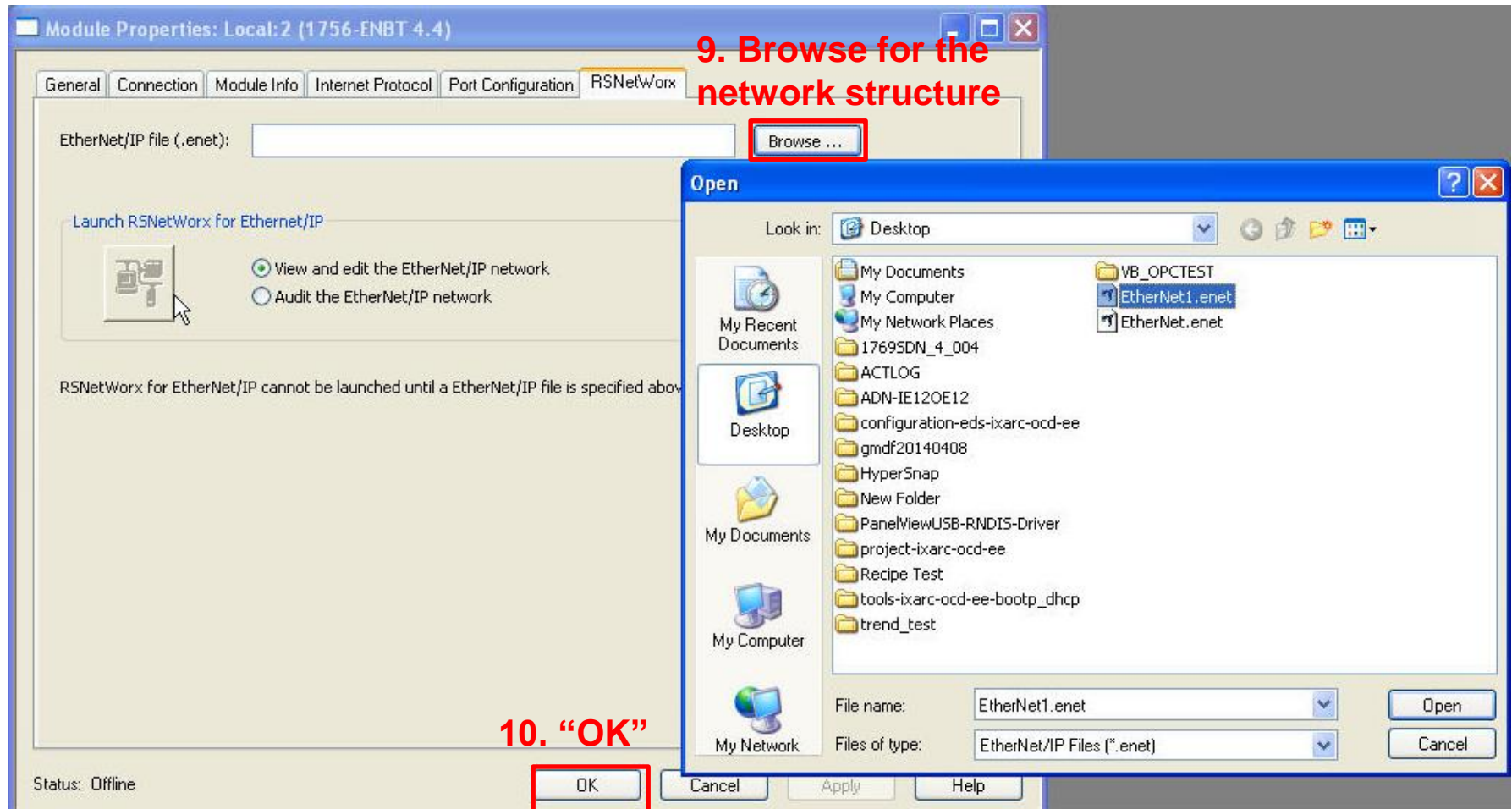
5. Select the module version

Status: Creating

OK   Cancel   Help

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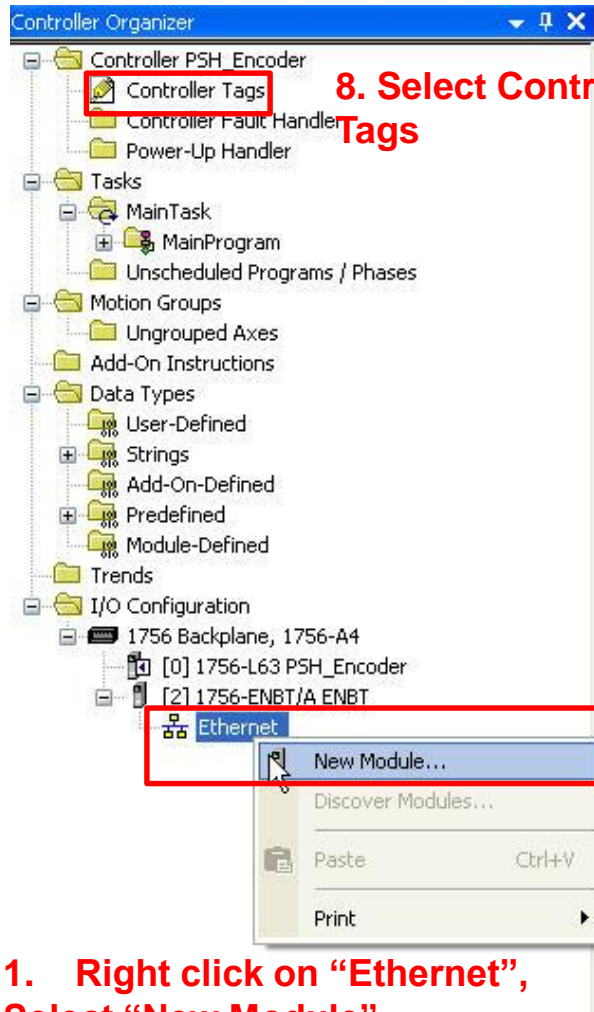
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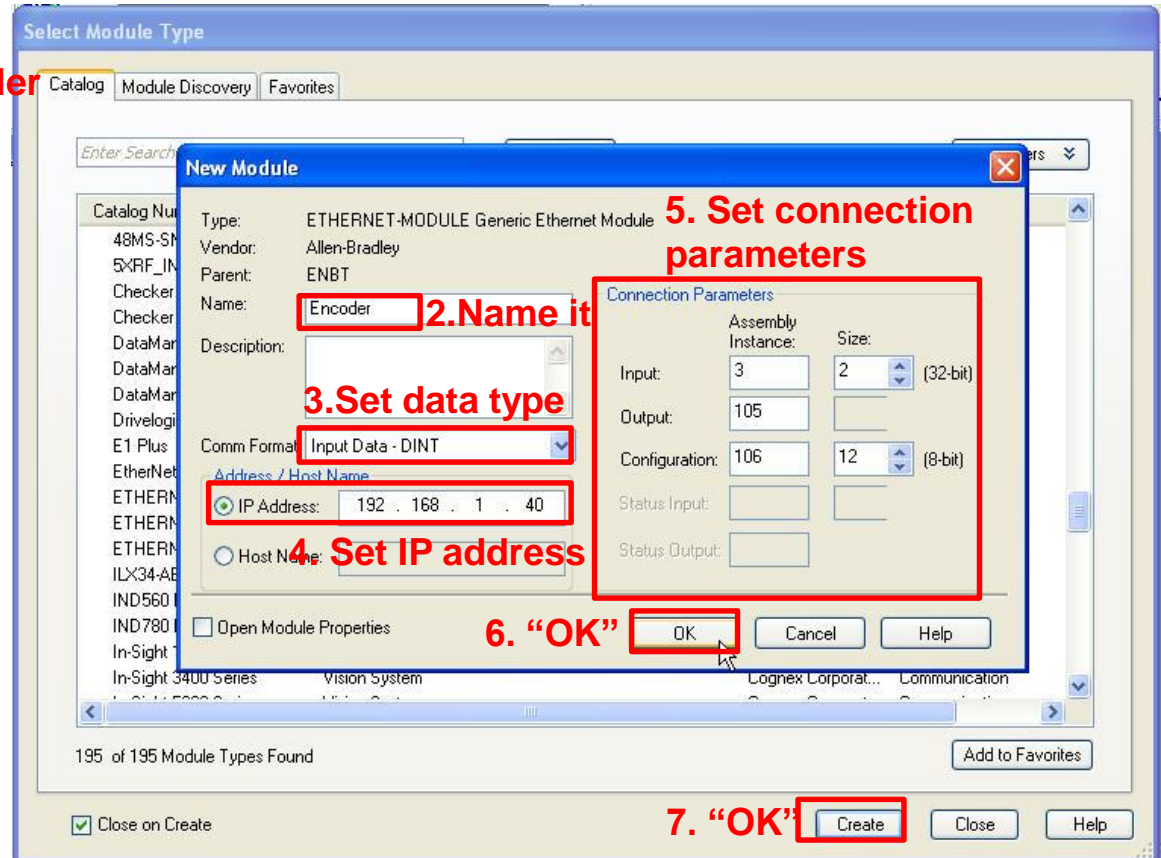
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### > 7. Create a new Ethernet encoder module



8. Select Controller Tags



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



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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		

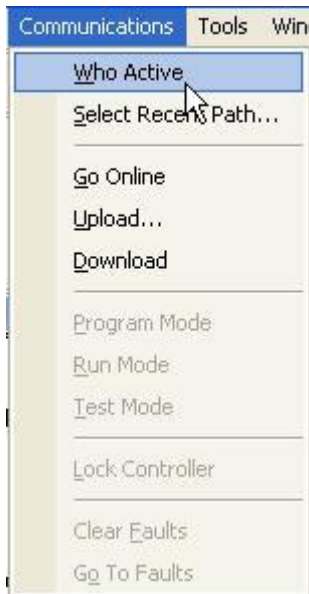
9. Control Tags and their definitions

**9. Control Tags and their definitions**

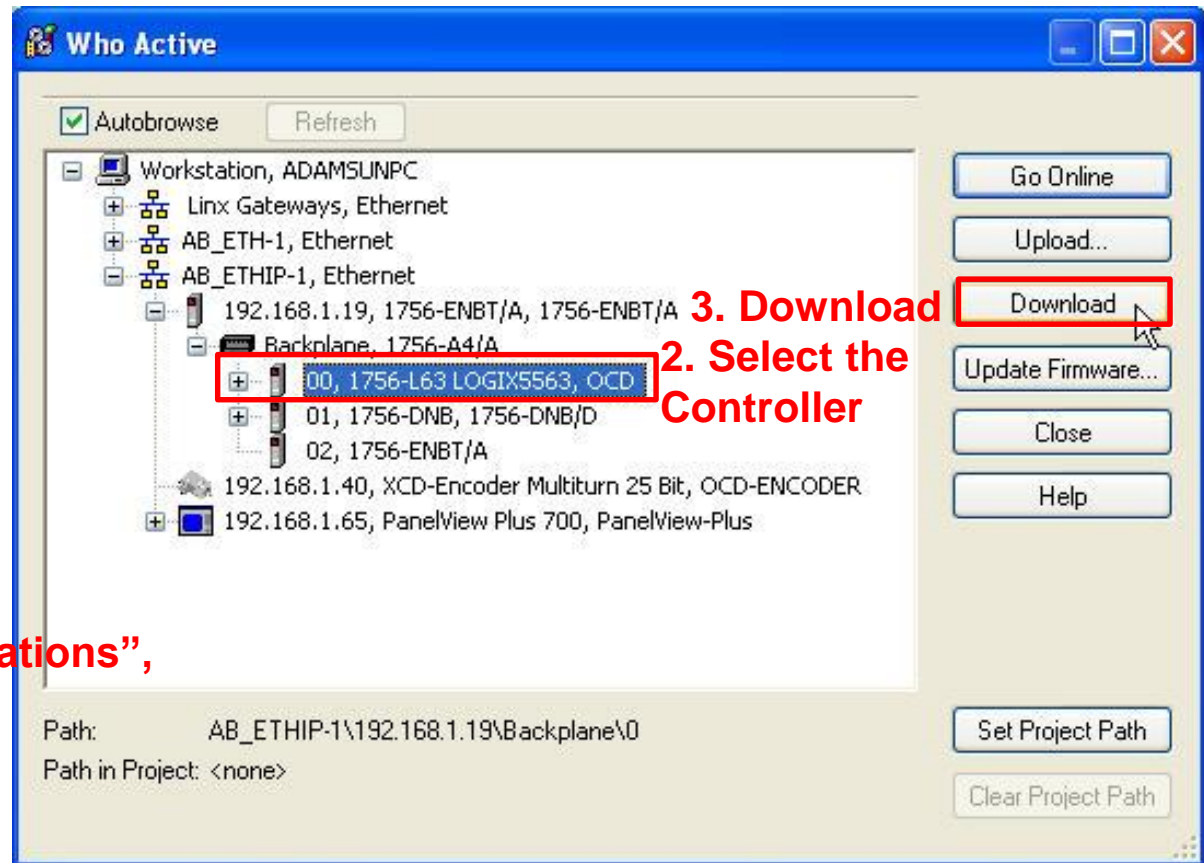
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### > 8. Download Configuration



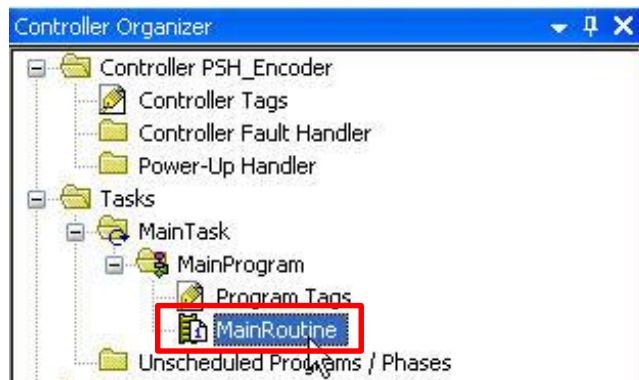
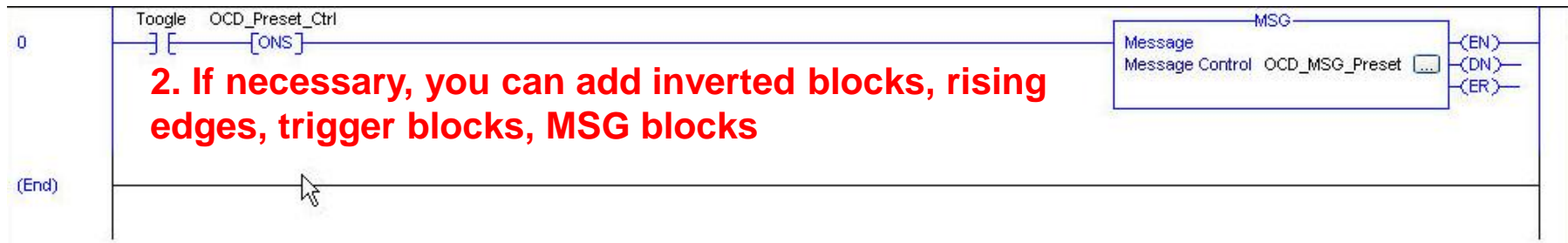
1. Under “Communications”,  
Select “Who Active”



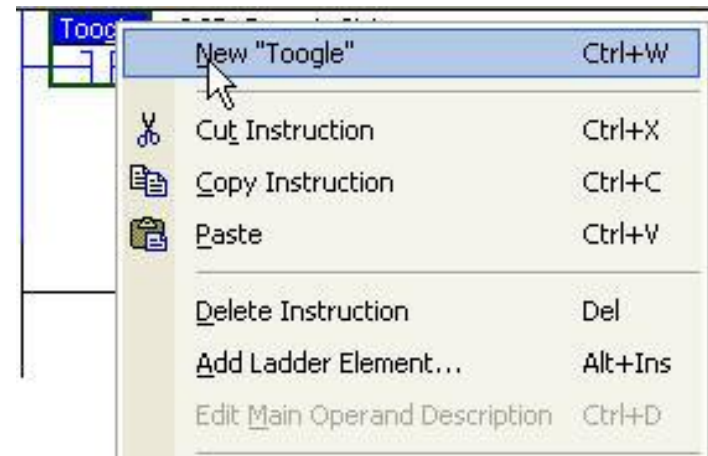
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### > 9. Read position and preset function



1. Click on “Main Routine”



3. In “Toogle”, add a “New Toogle”



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**New Tag**

Name:

Description:

Usage:

Type:

Alias For:

Data Type:

Scope:

External Access:

Style:

☐ Constant

☐ Open MESSAGE Configuration

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

**New Tag**

Name:

Description:

Usage:

Type:

Alias For:

Data Type:

Scope:

External Access:

Style:

☐ Constant

☐ Open Configuration

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

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

7. Go to the Communication tab

Message Configuration - OCD\_MSG\_Preset

Configuration\* **Communication** Tag

2. Select the MSG type

3. Service type

Message Type: ICIP Generic

Service Type: Set Attribute Single

5. Select source

Source Element: Preset\_Value

Source Length: 4 (Bytes)

6. Byte length

Service Code: 10 (Hex) Class: 23 (Hex)

Instance: 1 Attribute: 13 (Hex)

4. Set Class Code and Attribute ID

Destination Element:

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

10. "OK"

1. Open the Configuration Dialog



8. Select the EtherNet module

OK Cancel Help

9. "OK"

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### > 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

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### > 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

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### > 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

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### 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	Measuring units per Revolution (high byte)							
6	Total Measuring Range in measuring units (low byte)							
7								
8								
9	Total Measuring Range in measuring units (high byte)							
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.

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

## > 2. Data Definition

## > 3. Velocity units