

EtherNet/IP™



192-300081
04.12.2023

AC20 Series

Ethernet IP Onboard

Configuration and Programming with Rockwell Studio Logix Designer



ENGINEERING YOUR SUCCESS.

Non-warranty clause

We checked the contents of this publication for compliance with the associated hardware and software. We can, however, not exclude discrepancies and do therefore not accept any liability for the exact compliance. The information in this publication is regularly checked, necessary corrections will be part of the subsequent publications.

English Master created.

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1 Introduction

1.1 About this document

This application note describes how to set up communication between AC20 driver and Allen Bradley Controllers through the Ethernet IP Onboard communication.

1.2 Tools

| | Name | Firmware Version |
|----------|----------------------------|------------------|
| Hardware | AC20 Drive | 1.1.3 |
| | ControlLogix 5580 | 31.011 |
| Software | Parker DSE Lite | 3.12 |
| | Studio 5000 Logix Designer | 31.00.00 |

PC with Programming tools:
DSE Lite and Studio 5000



Allen Bradley ControlLogix 5580 PLC



AC20 Onboard Ethernet IP



EtherNet/IP

EtherNet/IP

1.3 Abstract

The Parker AC20 drive can be easily integrated into Allen Bradley control architecture via the Ethernet IP communication. The communication requires the configuration of **network parameters** and **data exchange** for both the AC20 and the ControlLogix Controllers.

2 Setting up the AC20 Communication parameters

The configuration of the AC20 drive communication can be performed with AC20 keypad or Parker DSE Lite application or the AC20 Webserver.

Parameters listed in the tables below must be set to establish communication with master.

➤ Ethernet Parameters

| Keypad Menu Path | DSE-Lite Function Block | Webserver |
|------------------|-------------------------|-----------|
| | | |

| No. | Name | Value | Description |
|------|--|------------|--|
| 0640 | ADDRESS METHOD (Method for assigning the IP address) | AUTOMATIC | Address assigned by DHCP server |
| | | LINK LOCAL | Address assigned link-local by the inverter |
| | | FIXED | Ip address must be set manually via parameters "0641", "0642", "0643". |
| 0641 | SET IP ADDRESS | 0.0.0.0 | IP address of the inverter |
| 0642 | SET SUBNET MASK | 0.0.0.0 | Subnet Mask of the inverter |
| 0643 | SET GATEWAY ADDR | 0.0.0.0 | Gateway address of the inverter |

➤ Fieldbus Parameters

| Keypad Menu Path | DSE-Lite Function Block | Webserver |
|------------------|-------------------------|-----------|
| | | |

| No. | Name | Value | Description |
|------|--------------------------------|-------------------------|--|
| 0791 | Fieldbus | ETHERNET IP | Set the required on-board fieldbus to "Ethernet IP" |
| 0792 | Fieldbus Input Mapping | TAG ID of the parameter | Defined the process data sent from PLC to the AC20, the parameters TAG ID to read from PLC are defined into the parameter range [0793 ... 0824] |
| 0825 | Fieldbus Output Mapping | TAG ID of the parameter | Defined the process data sent from AC20 to the PLC, the parameters TAG ID to write to the PLC are defined into the parameter range [0826 ... 0857] |

a) Ethernet Config

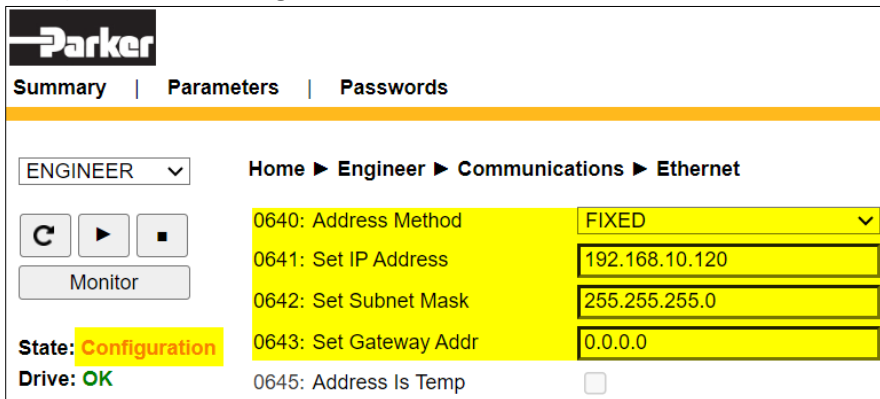


The screenshot shows the DSE Lite software interface. The main window is titled 'Parameters - A20v_DefaultCommsMod'. It has a menu bar with 'File', 'Edit', 'View', 'Command', 'Insert', 'Format', 'Window', and 'Help'. Below the menu bar is a toolbar with various icons. The main content area is divided into two panes. The left pane is titled 'Parameters - A20v_DefaultCommsMod' and contains a list of parameters: 'Fan Control', 'Feedbacks', 'Fieldbus Config', 'Fieldbus Input Mapping', 'Fieldbus Output mapping', 'Fire Mode', and 'Fluxing VHz'. The 'Fieldbus Input Mapping' and 'Fieldbus Output mapping' items are highlighted in yellow. The right pane is titled 'A20v_DefaultCommsMod*' and contains a diagram titled 'Ethernet IP and Profinet IO Fieldbus'. The diagram shows two mapping tables. The 'Fieldbus Input Mapping' table has columns for '430', '440', '450', and 'MAPPING[0]' through 'MAPPING[5]'. The 'Fieldbus Output mapping' table has columns for '105', '110', '120', and 'MAPPING[0]' through 'MAPPING[5]'. The 'Fieldbus Input Mapping' table is highlighted in yellow.

2.2 Config drive using AC20 Webserver

Access the AC20 webserver by typing the IP-Address of the drive into a web browser. Switch the driver state from “Operational” to “Configuration” by clicking on stop button, then set the parameters.

a) Ethernet Config



Parker

Summary | Parameters | Passwords

ENGINEER ▾ Home ► Engineer ► Communications ► Ethernet

0640: Address Method FIXED ▾

0641: Set IP Address 192.168.10.120

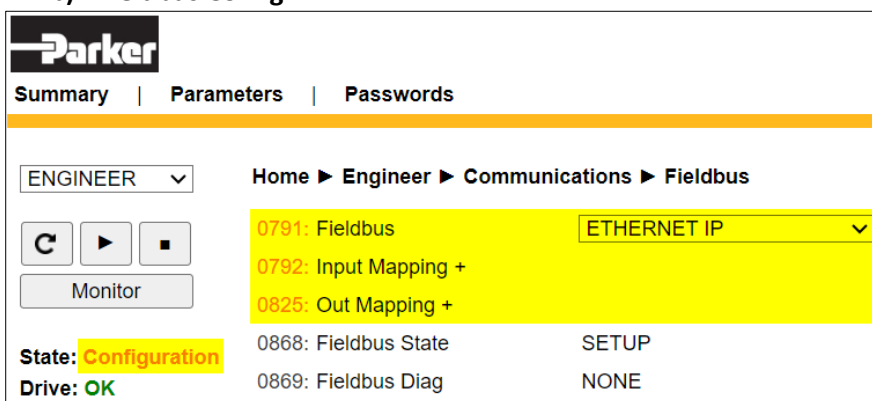
0642: Set Subnet Mask 255.255.255.0

0643: Set Gateway Addr 0.0.0.0

0645: Address Is Temp ☐

State: **Configuration**
Drive: **OK**

b) Fieldbus Config



Parker

Summary | Parameters | Passwords

ENGINEER ▾ Home ► Engineer ► Communications ► Fieldbus

0791: Fieldbus ETHERNET IP ▾

0792: Input Mapping +

0825: Out Mapping +

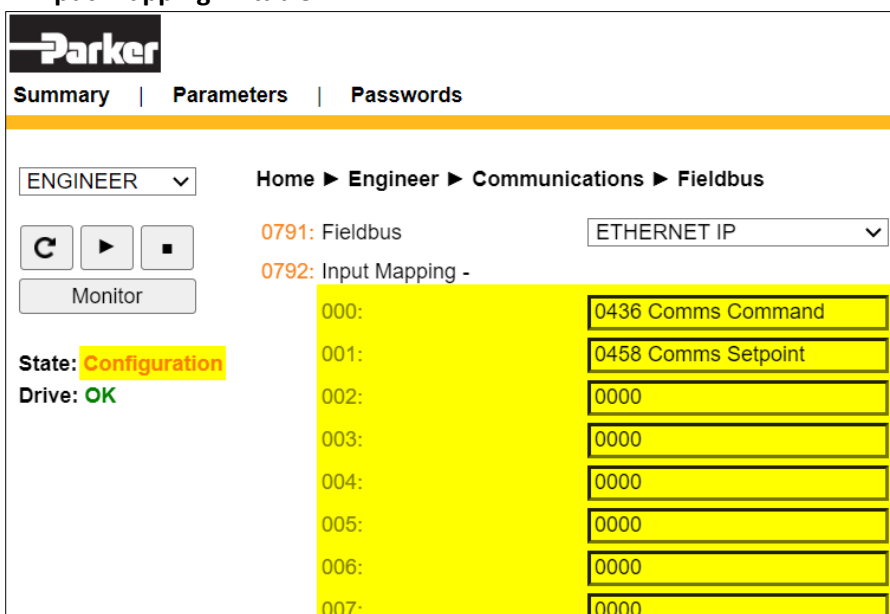
0868: Fieldbus State SETUP

0869: Fieldbus Diag NONE

State: **Configuration**
Drive: **OK**

Use tables below to set the process data mapping. Add the parameters TAG ID into the tables.

- “Input Mapping +” table



Parker

Summary | Parameters | Passwords

ENGINEER ▾ Home ► Engineer ► Communications ► Fieldbus


0791: Fieldbus ETHERNET IP ▾

0792: Input Mapping -

| | |
|------|---------------------|
| 000: | 0436 Comms Command |
| 001: | 0458 Comms Setpoint |
| 002: | 0000 |
| 003: | 0000 |
| 004: | 0000 |
| 005: | 0000 |
| 006: | 0000 |
| 007: | 0000 |

State: **Configuration**
Drive: **OK**

- "Out Mapping +" table



Summary | Parameters | Passwords

ENGINEER ▾

Home ▶ Engineer ▶ Communications ▶ Fieldbus

↺ ▶ ▢

Monitor

0791: Fieldbus

ETHERNET IP ▾

0792: Input Mapping +

0825: Out Mapping -

State: Configuration

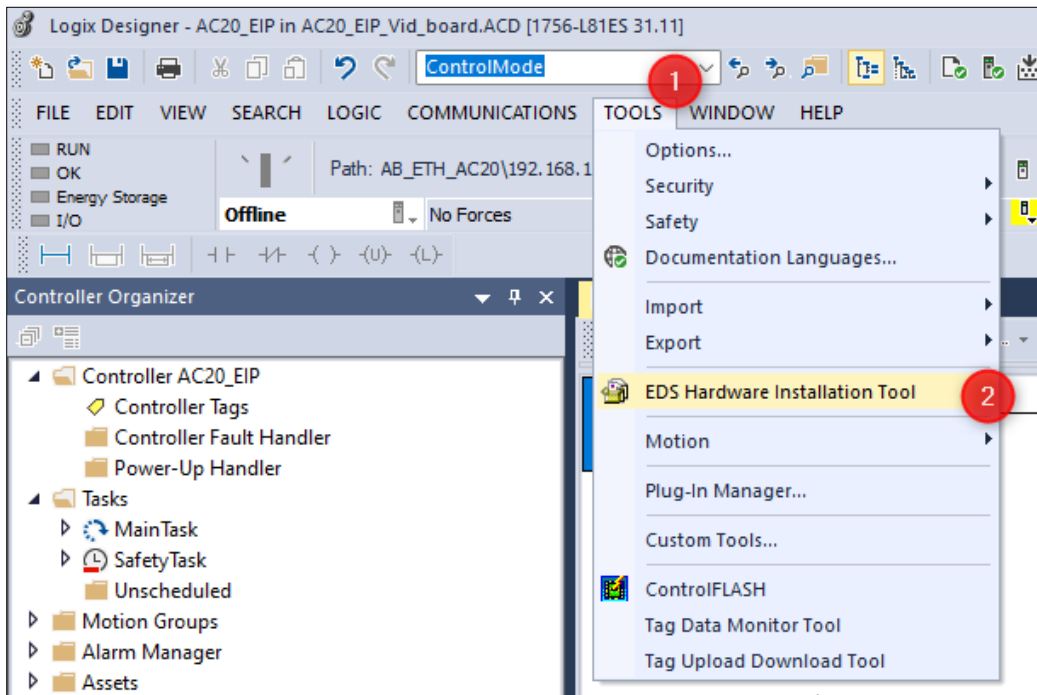
Drive: OK

| | |
|------|--------------------|
| 000: | 0105 Speed Percent |
| 001: | 0507 Status Word |
| 002: | 0000 |
| 003: | 0000 |
| 004: | 0000 |
| 005: | 0000 |
| 006: | 0000 |
| 007: | 0000 |

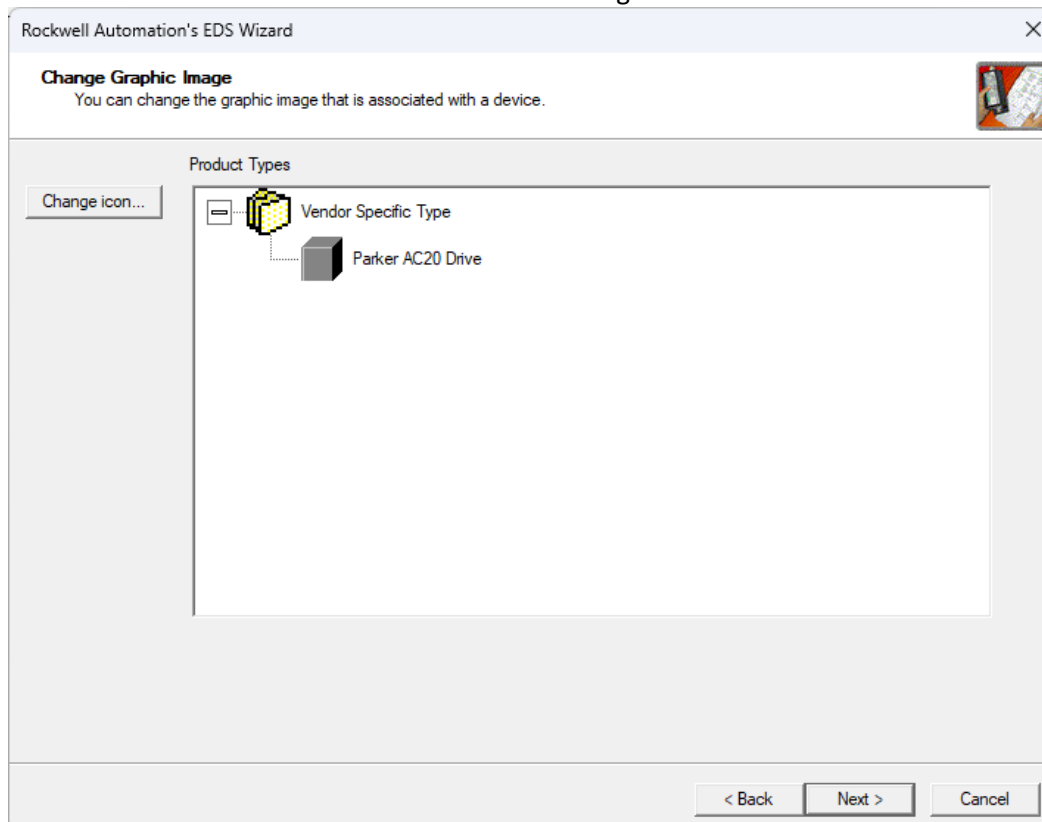
3 Communication set between PLC and AC20 drive.

Download the Ethernet IP EDS File from Parker website and install into Studio 5000 Logix Designer hardware Catalog.

From programming interface click on “**TOOLS > EDS Hardware Installation Tool**” to open the “Rockwell Automation’s EDS Wizard”.

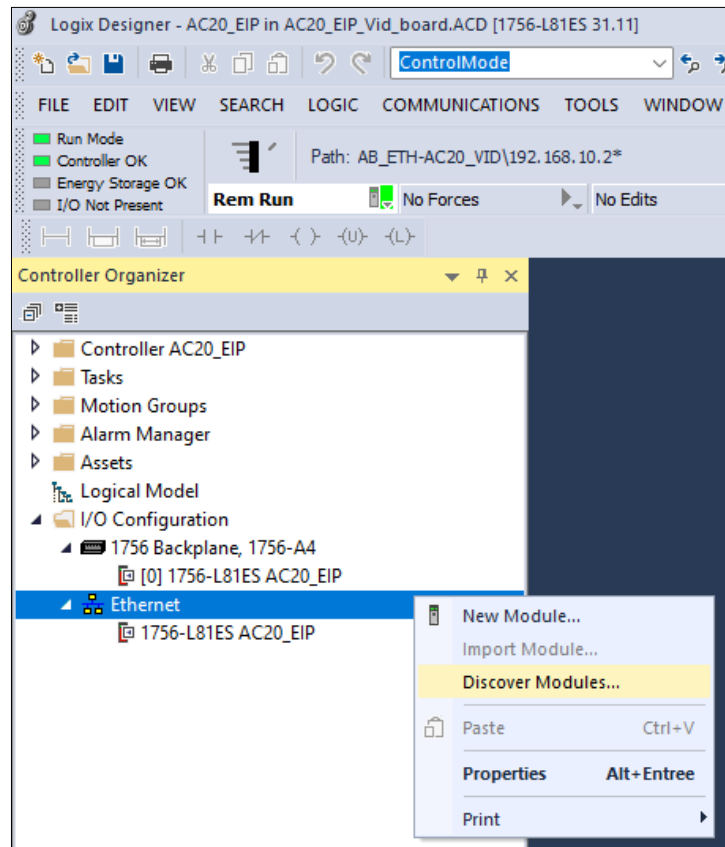


In the “Rockwell Automation’s EDS Wizard” Tab, select the path of your EDS file, follow the instruction for AC20 Ethernet IP device installation into the Catalog.



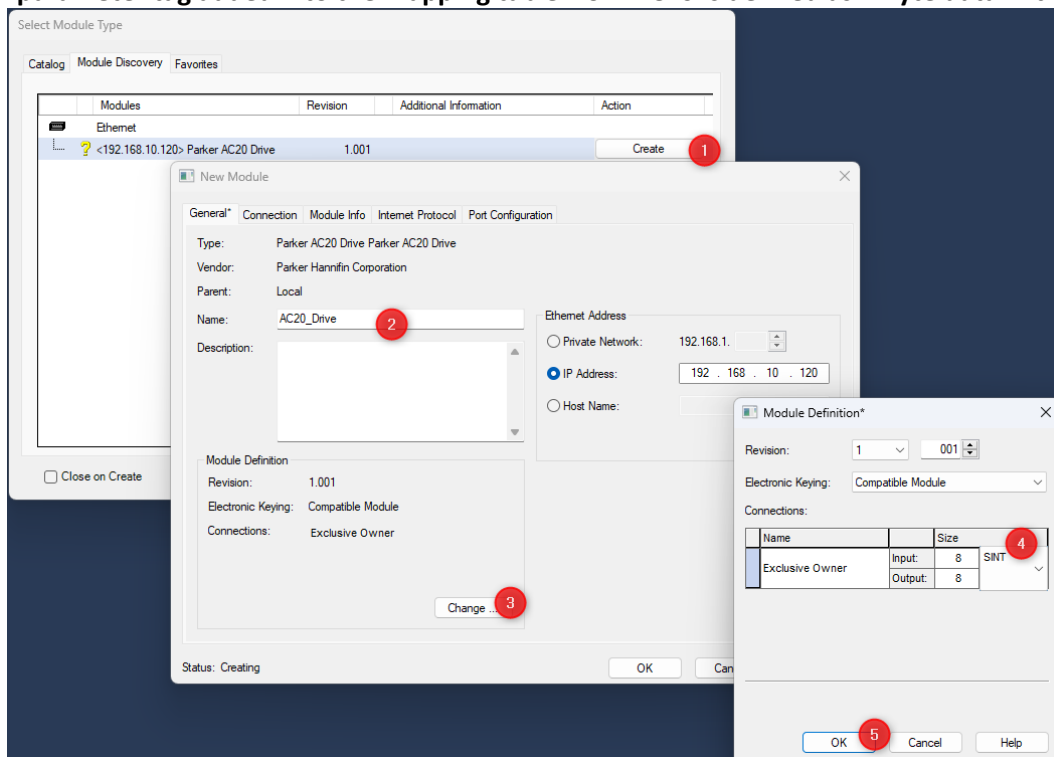
3.1 Add the AC20 into Studio 5000 Logix Designer project.

- **Module scanning:** Go online and download project into controller. In the I/O configuration tree, right-click Ethernet and select **“Discover Modules...”**

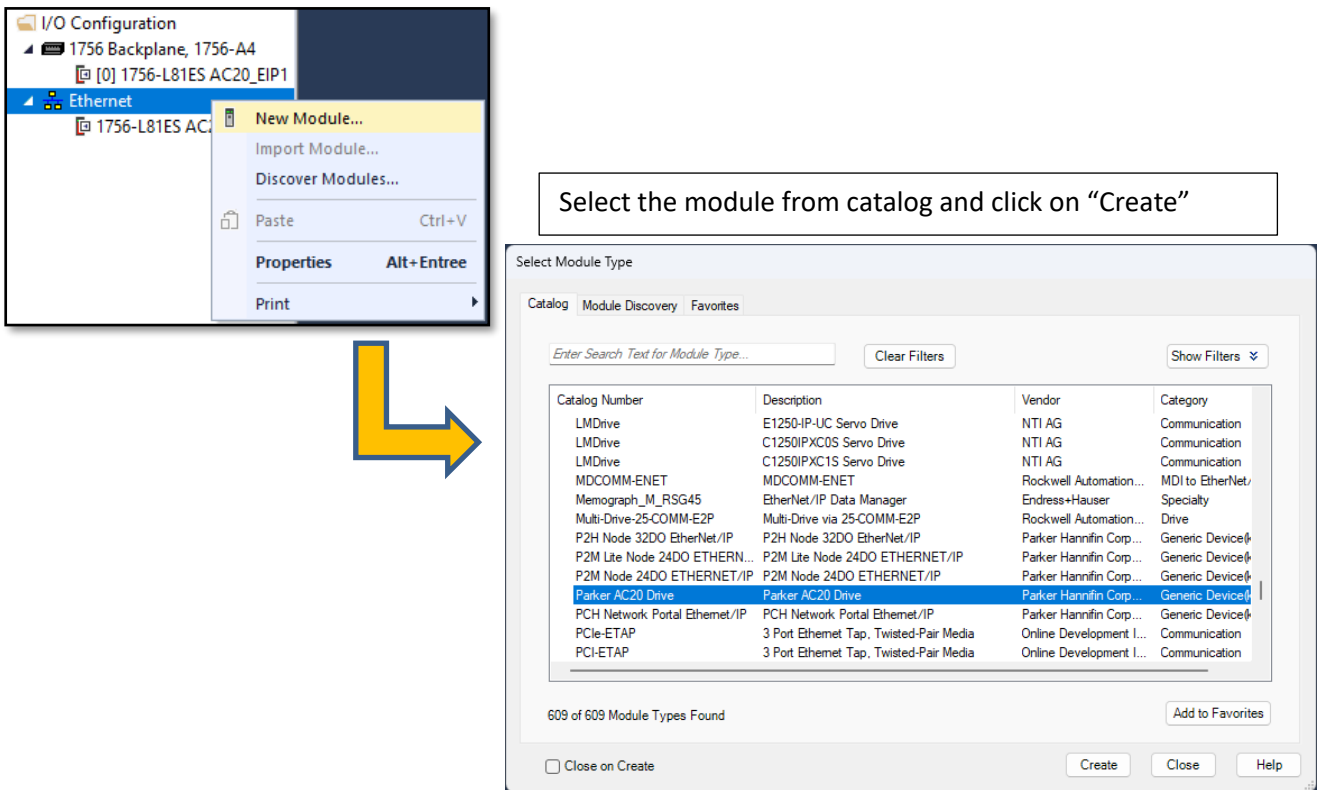


Select the discovered AC20 device and click on create, assign module name then click on “change” to define the process data size. Click on “OK” to add the module into the project.

Note: each parameter tag added into the mapping table from AC20 is defined as 4 Byte data in the PLC side.

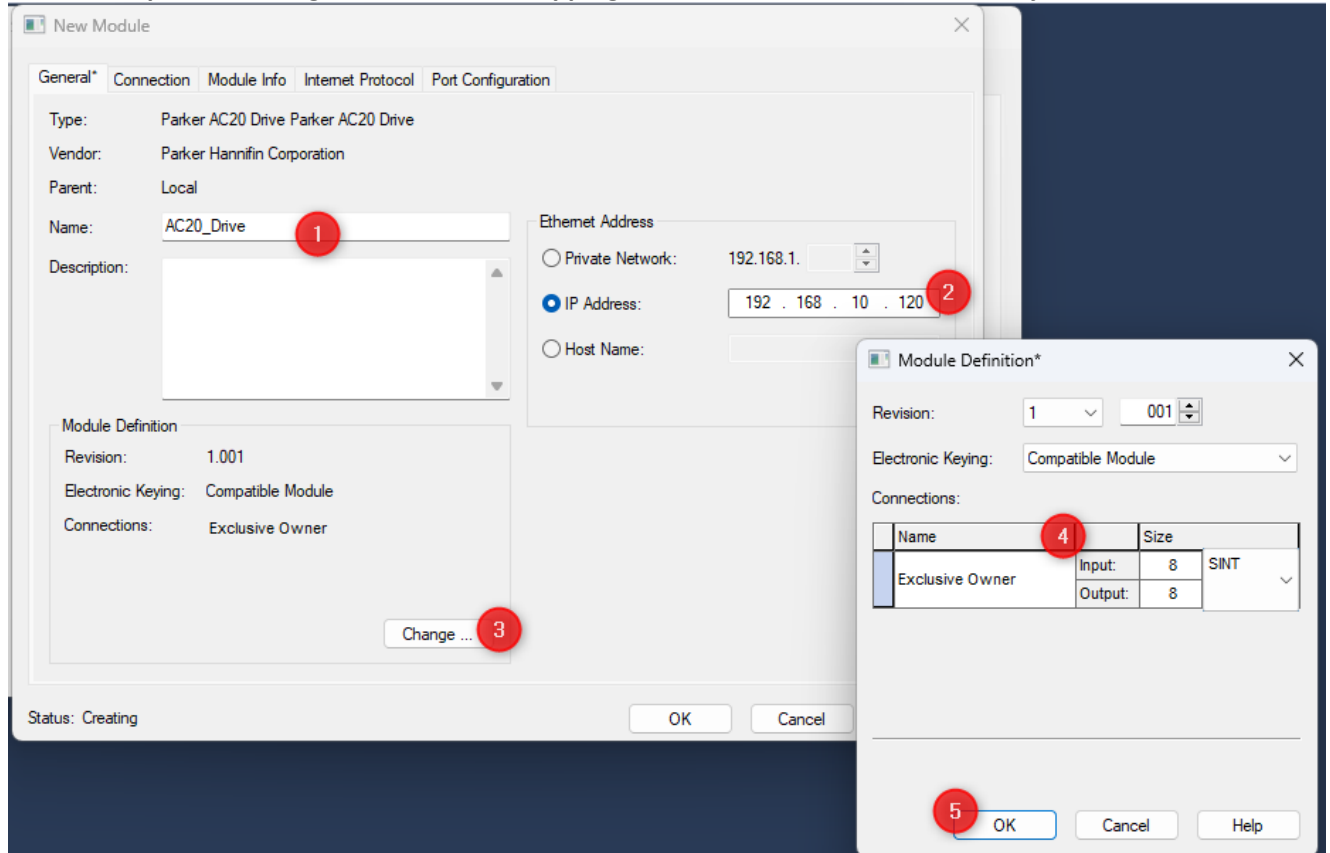


- **Add module manually:** from I/O configuration tree, right-click Ethernet and click on “New Module”.

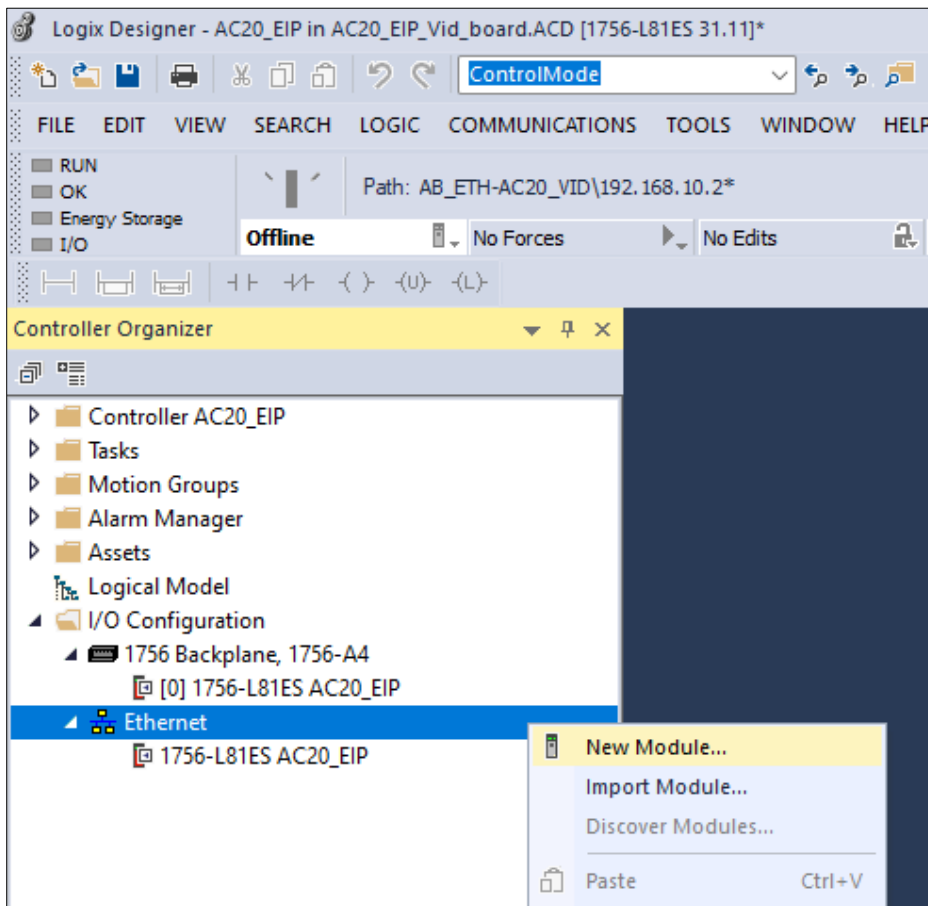


Assign a module name and Ip address then click on “Change” to define the process data size. Click on “OK” to add the module into the project.

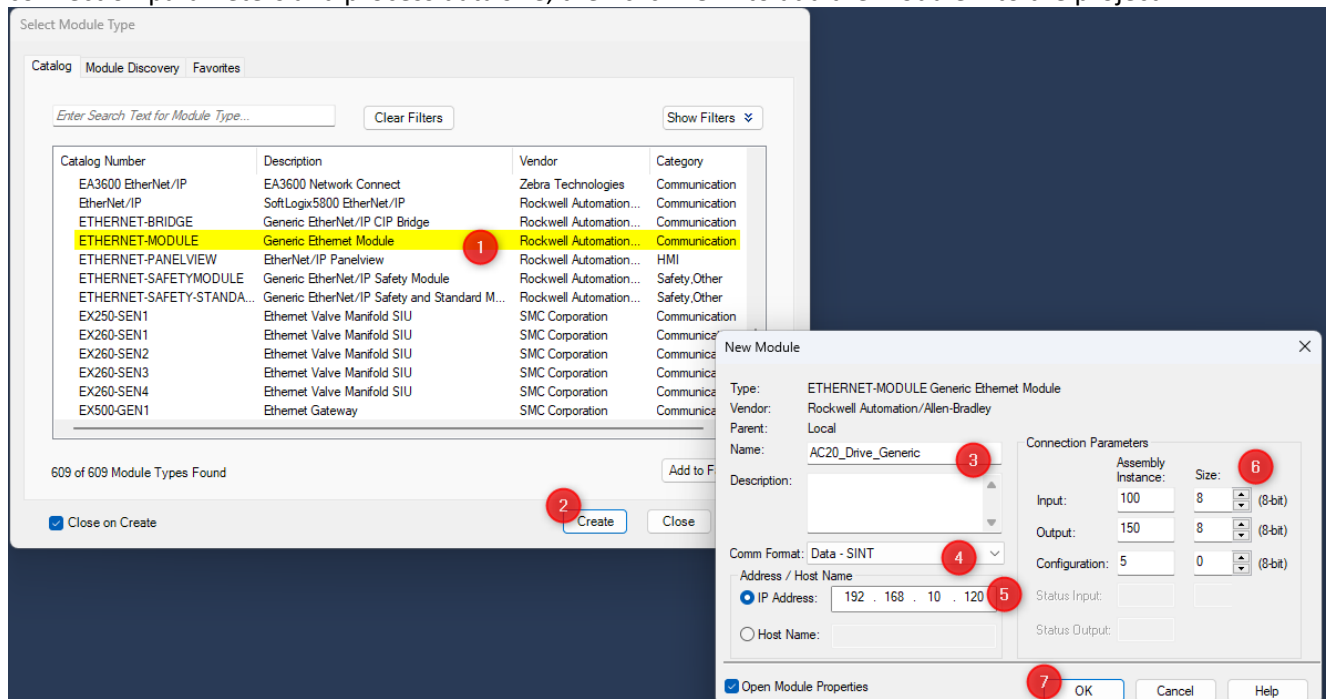
Note: each parameter tag added into the mapping table from AC20 is defined as 4 Byte data in the PLC side.



- **Use Generic Ethernet Module:** From I/O configuration tree, right-click Ethernet and select “New Module”.

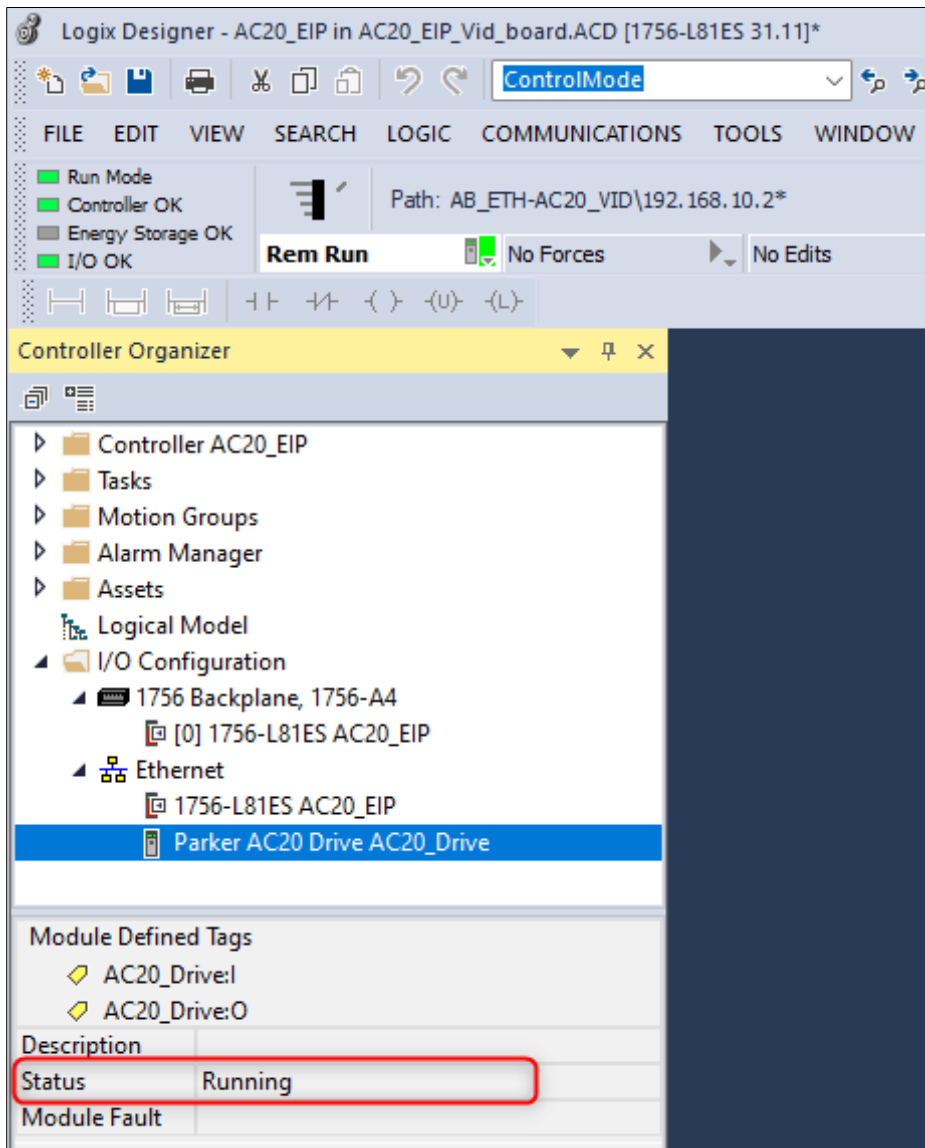


Select the generic module from Catalog, click on “create”: define module name, Ip address, module revision, connection parameters and process data size, then click “OK” to add the module into the project.



3.2 Run AC20 device with controller.

After completing the operation above, the communication should be established between PLC and AC20 slave, the view below shows the communication diagnostic.



✓ DSE Lite Online Monitor

| DSE Monitor List | |
|------------------------------|---------|
| Parameter | Value |
| Comms Control::COMMS COMMAND | 0x0C0F |
| Feedbacks::SPEED PERCENT | 15.07 % |
| Reference::COMMS SETPOINT | 15 % |
| Sequencing::STATUS WORD | 0x4237 |

✓ Tia Portal Online Monitor

Logix Designer - AC20_EIP in AC20_EIP_Vid_board.ACD [1756-L81ES 31.11]*

ControlMode

FILE EDIT VIEW SEARCH LOGIC COMMUNICATIONS TOOLS WINDOW HELP

Run Mode
Controller OK
Energy Storage OK
I/O OK

Path: AB_ETH-AC20_VID\192.168.10.2*

Rem Run No Forces No Edits Safety Unlocked

Controller Organizer

- Controller AC20_EIP
 - Tasks
 - MainTask
 - MainProgram
 - Parameters and Local Tags
 - MainRoutine
 - AC20_PRG
 - SafetyTask
 - Unscheduled
 - Motion Groups
 - Alarm Manager
 - Assets
 - Logical Model
 - I/O Configuration
 - 1756 Backplane, 1756-A4
 - Ethernet
 - 1756-L81ES AC20_EIP
 - ETHERNET-MODULE AC20_Drive_

Type: 1756-L81ES GuardLogi
Description
Slot: 0

Logical Organizer Controller Organizer

Search Results Errors

Controller Tags - AC20_EIP(controller)

MainProgram - AC20_PRG*

Program Parameters and Local Tags - MainProgram

AlwaysON

0

AlwaysON

1

COP

Source: AC20_Drive_Generic:I.Data[0]
Dest: L_SpeedFeedback
Length: 4

MOV

Source: L_SpeedFeedback
Dest: AC20_Data_SpeedFeedback
15.2123165

COP

Source: AC20_Drive_Generic:I.Data[4]
Dest: L_StatusWord
Length: 2

MOV

Source: L_StatusWord
Dest: AC20_Data_StatusWord
16951

MOV

Source: AC20_Data_ControlWord
Dest: O_ControlCommand
3087

COP

Source: O_ControlCommand
Dest: AC20_Drive_Generic:O.Data[0]
Length: 2

MOV

Source: AC20_Data_SpeedSetpoint
Dest: O_SpeedSetpoint
15.0

COP

Source: O_SpeedSetpoint
Dest: AC20_Drive_Generic:O.Data[4]
Length: 4

Watch

Ready

Communication Software: RSLogix Classic

Rung 0 of 2

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