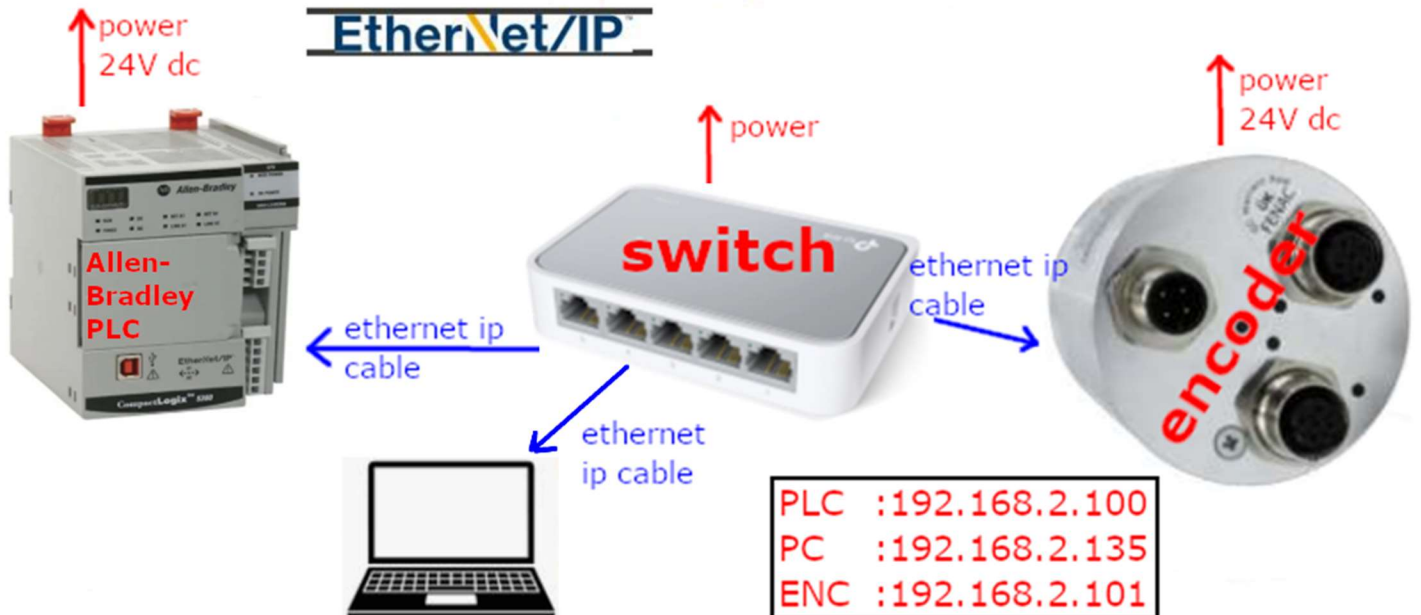
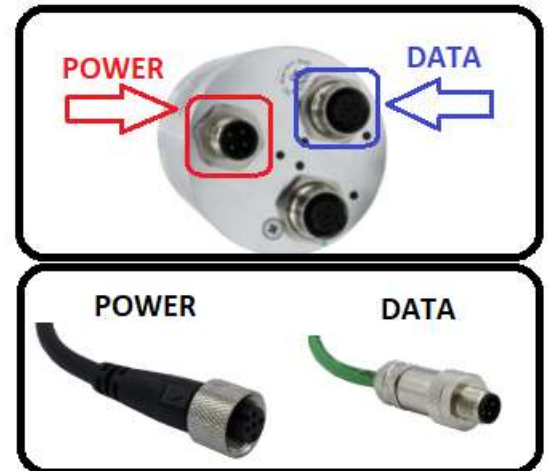


# Establishing a Connection with the Fenac Ethernet IP Encoder Device

Power cable and data cable are correctly connected to the device. Details about the connection pinout structure are explained in the section "4.Connector & Pin Assignment". Power cable and data cable are indicated in the figure on the side. It is also specified to which input ports the power cable and data cable will be connected to the Fenac Ethernet IP encoder. The device can be supplied with DC voltage in the range of 10V to 30V. The other end of the data cable must be connected to an Ethernet IP master. Here we will talk about two methods. Defining a personal computer as an ethernet IP master device and connect the data cable to the ethernet port of a PC is an easy method, as no external hardware is required. You can do your various tests in this way. The other method is to use a PLC device with Ethernet IP Master as traditionally.



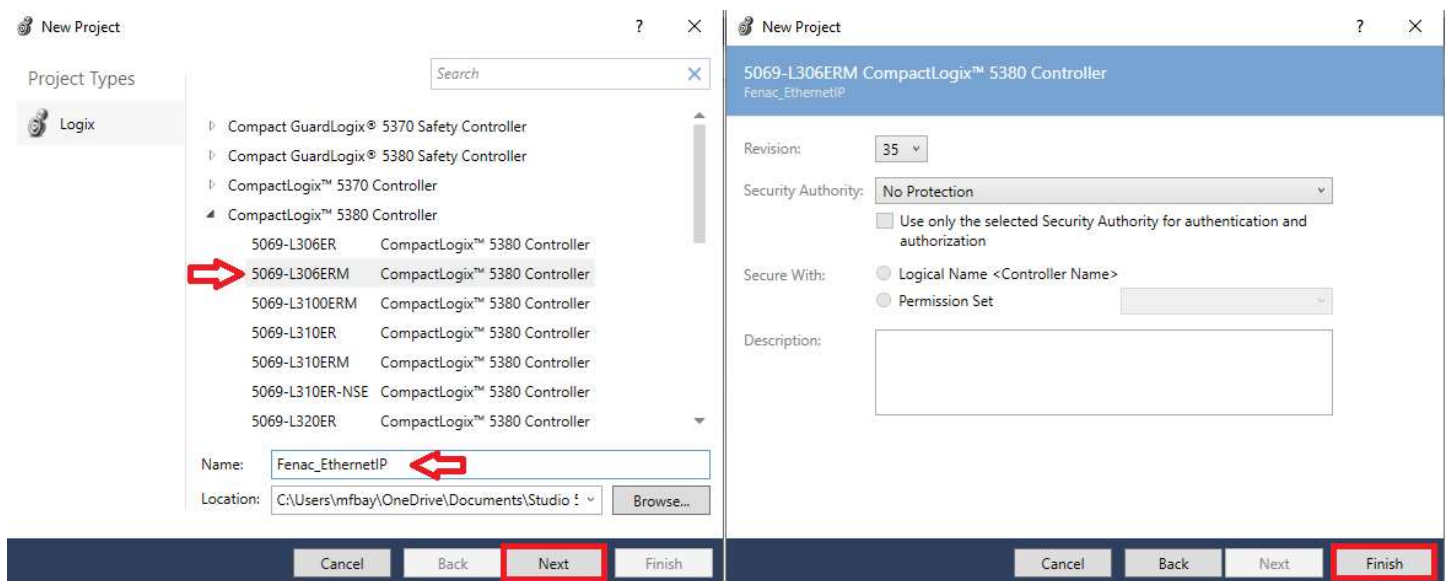
# Allen- Bradley PLC as Ethernet IP Master

In our example here, we will use Allen Bradley's PLC as the master device. After supplying the Fenac Ethernet Ip Encoder by a voltage in the range of 10-30V from the power supply, connect the data cable to the Ethernet port of your PC. After this process, the status LEDs on the ethernet port of your PLC will light up, indicating that there is a successful connection.

Rockwell's Studio 5000 (in our case version 35.00.00) must be installed in your PC. Open the Studio 5000 interface.

**1)** Click on File>New> to start a new project. Select your PLC device, in our case it is 5069-L306ERM. Give the project to a name then click Next.

**2)** Next click Finish button to create project.



**3)** Click on Tool menu and Click EDS Hardware Installation Tool.



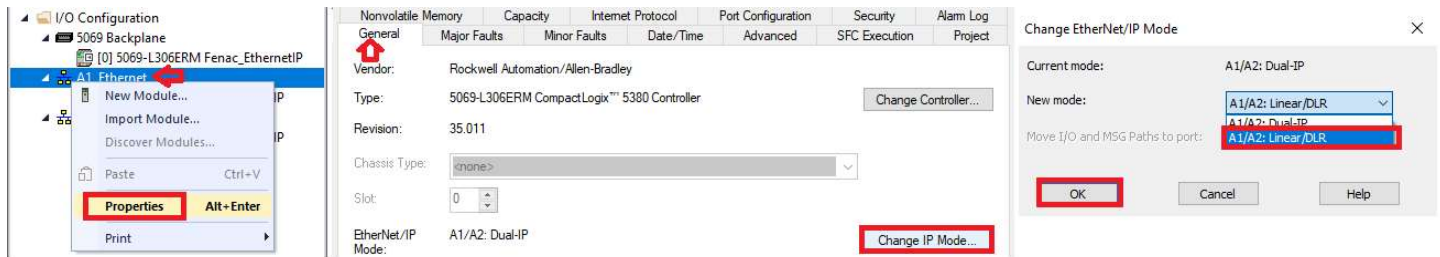
4) Click next. Make sure Register a device description files selected then click Next. Browse the eds file (you can download from fenac.com.tr) and click Next till the finish button.

The image displays five sequential screenshots of the Rockwell Automation's Device Wizard interface, illustrating the process of registering a device description file.

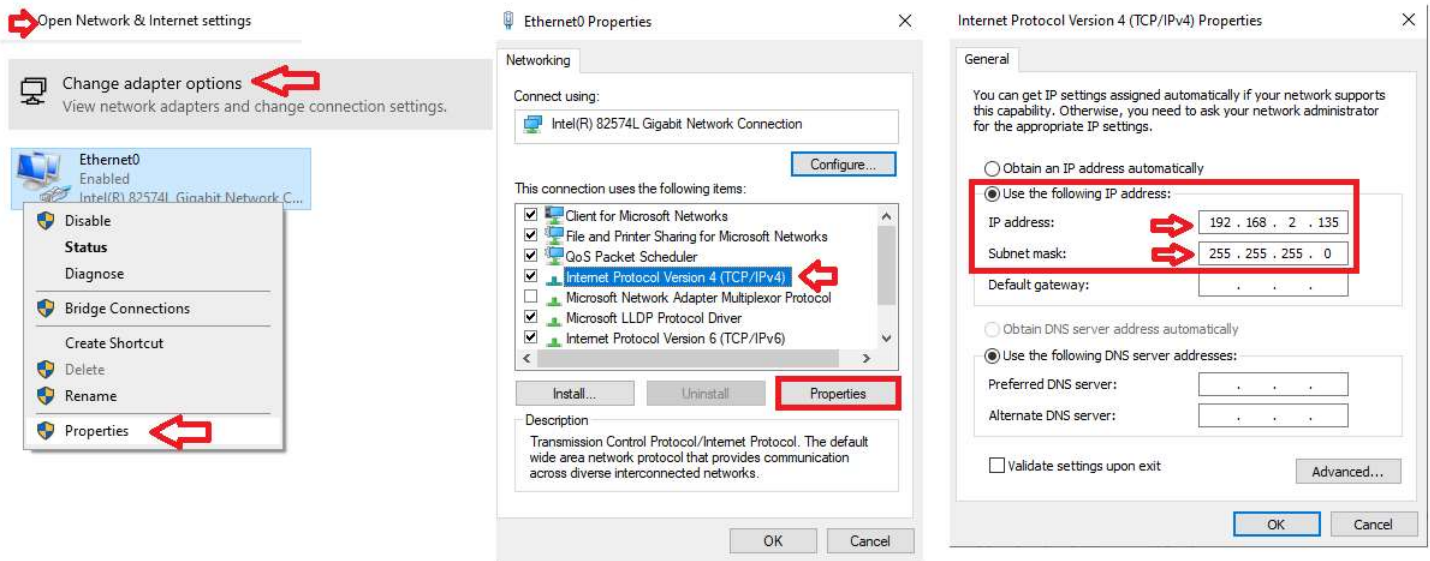
- Screen 1: Welcome to Rockwell Automation's Device Wizard**  
The Device Wizard allows you to:
  - register devices.
  - unregister a device.
  - change the graphic images associated with a device.
  - create a device description file from an unknown device.
  - upload device description file(s) stored in a device.To continue click Next.
- Screen 2: Options**  
What task do you want to complete?
  - Register a device description file(s). This option will add a device(s) to our database.
  - Unregister a device. This option will remove a device that has been registered by a Device Description File from our database.
  - Create a device description file. This option creates a new device description file that allows our software to recognize your device.
  - Upload device description file(s) from the device. This option uploads and registers the device description file(s) stored in the device.
- Screen 3: Registration**  
Device Description File(s) will be added to your system for use in Rockwell Automation applications.
  - Register a single device description file
  - Register a directory of device description files  Look in subfoldersNamed:  **Browse...**
- File Selection Dialog:** Select a Device description file. This PC > Desktop > EDS. The file **FNC\_AEIPM\_ETHERNETIP\_ENCODER** is selected.

- Screen 4: Device Description File Installation Test Results**  
This test evaluates each Device Description File for errors in the device description file. This test does not guarantee Device Description File validity.
- Installation Test Results
  - c:\users\mrbay\onedrive\desktop\veds\fnc\_aeipm\_ethernetip\_encoder.eds
- Screen 5: Change Graphic Image**  
You can change the graphic image that is associated with a device.
- Product Types
  - Vendor Specific Type
    - FNC\_AEIPM\_ETHERNETIP\_ENCODER
- Screen 6: Final Task Summary**  
This is a review of the task you want to complete.
- You would like to register the following device:
  - FNC\_AEIPM\_ETHERNETIP\_ENCODER

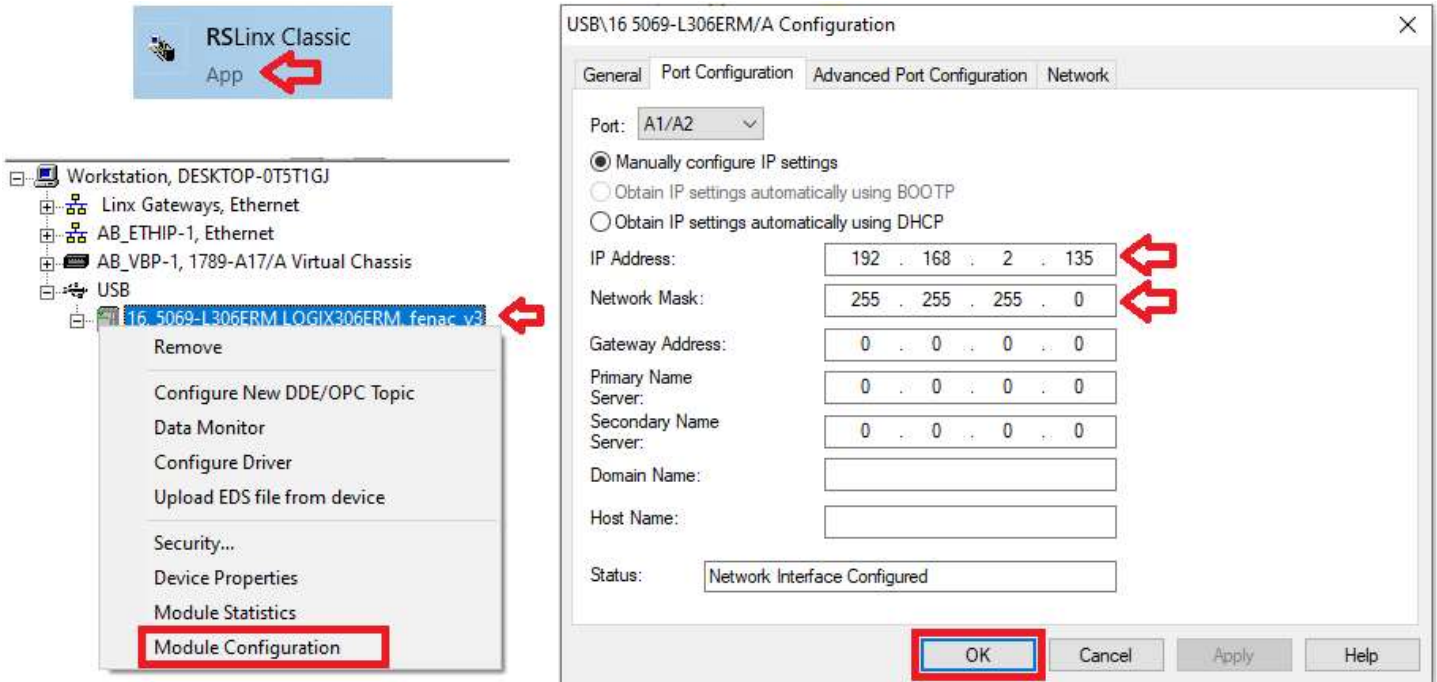
5) Right click on “A1, Ethernet” and chose Properties. On the “General” tab window click on “Change IP Mode” then select A1/A2: Linear/DLR and click OK to save.



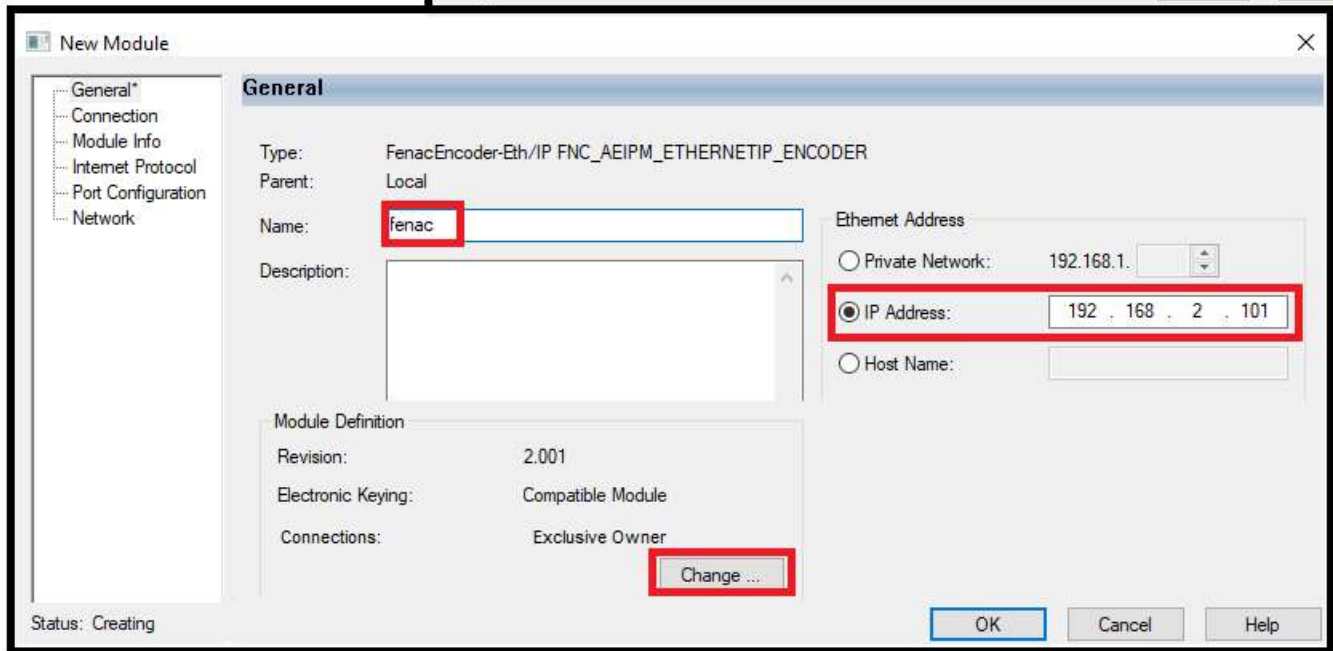
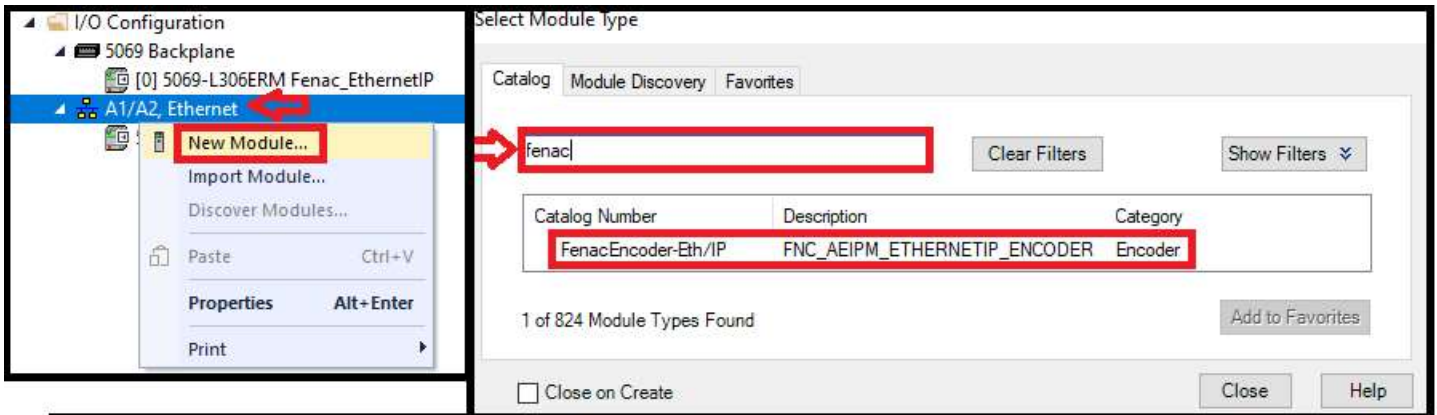
6) Open your PC’s Network & Internet Settings. Change adapter options than click properties. Select Internet Protocol Verison 4(TCP/Ipv4) then click on properties. Enter the IP address and Subnetmask below then click OK.



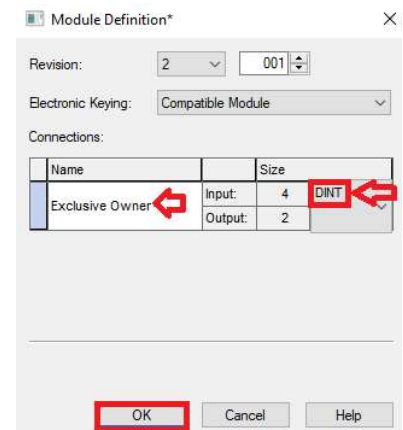
7) Open RSLinc Classic Application. Connect you PLC's usb cable (or ethernet) Under the USB section right click and select "Module Configuration". Under the "Port Configuration" tab, Set Port for A1 or A2 then set "Manually configure IP settings" and enter the values below in the image.



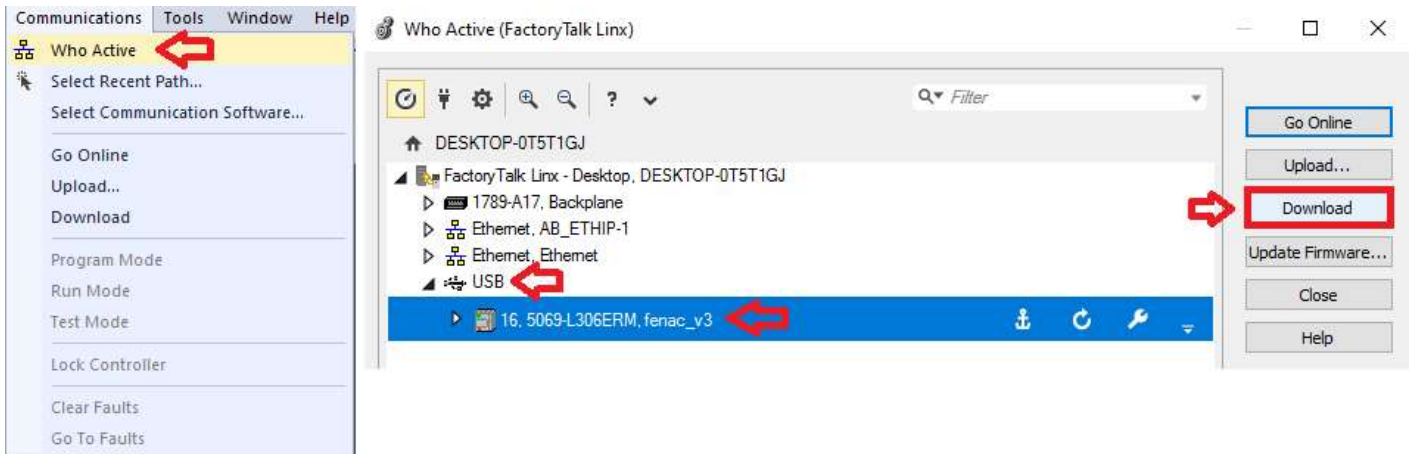
8) Right click on "A1/A2, Ethernet". Then In the Select Module Type menu search for fenac eds file and double click on it. Then write Name for Encoder in our case we use "fenac" as a name. Click IP Address and enter 192.168.2.101. To chose connection you can click on Change button.



9) Click on SINT to change it to DINT for proper parameter showing. Select connection, we chose Exclusive Owner and click OK. Click yes to any warning in this stage.



10) Click on Communications tab on Studio 5000 then select Who Active. Find you PLC under USB tab and click Download button. Click Download to warning again.



11) Double Click on Controllers Tags to see parameters.

Controller Tags - SUCCESS(controller)

Scope: SUCCESS Show: All Tags

Name	Value	Force Mask	Style	Data Type
▲ fenac:C	{...}	{...}		_0400:FenacEncoder_EthIP_13375B54:C:0
▶ fenac:C.SingleTurn	262144		Decimal	DINT
▶ fenac:C.TotalRange	1073741824		Decimal	DINT
▶ fenac:C.Preset_Parameter	0		Decimal	DINT
▶ fenac:C.preset_changed	0		Decimal	DINT
▶ fenac:C.Store_Parameters	0		Decimal	DINT
▶ fenac:C.Restore_Parameters	0		Decimal	DINT
▶ fenac:C.Operating_Parameter	0		Decimal	INT
▶ fenac:C.Change_IP_Address	101		Decimal	INT
▶ fenac:C.Change_IP_Address2	2		Decimal	INT
▶ fenac:C.Change_IP_Address3	168		Decimal	INT
▶ fenac:C.Change_IP_Address4	192		Decimal	INT
▲ fenac:I	{...}	{...}		_0400:FenacEncoder_EthIP_40A1F725:I:0
fenac:I.ConnectionFaulted	0		Decimal	BOOL
▲ fenac:I.Data	{...}	{...}	Decimal	DINT[4]
▶ fenac:I.Data[0] <b>FAULT HEADER</b>	0		Decimal	DINT
▶ fenac:I.Data[1] <b>POSITION</b>	268637		Decimal	DINT
▶ fenac:I.Data[2] <b>SPEED</b>	0		Decimal	DINT
▶ fenac:I.Data[3] <b>FLAGS</b>	0		Decimal	DINT
▲ fenac:O	{...}	{...}		_0400:FenacEncoder_EthIP_B992380C:O:0
▲ fenac:O.Data	{...}	{...}	Decimal	DINT[2]
▶ fenac:O.Data[0] <b>PRESET ONLINE</b>	1071		Decimal	DINT
▶ fenac:O.Data[1]	0		Decimal	DINT

**12)** We need to change the status and Go Offline to be able to configure the encoder device. Most of the time, single turn value and total turn value are changing in encoders. Lets change the SingleTurn and TotalRange parameters (to do this we also need to enable scaling option with setting Operating\_Parameter to 4) We also try to preset device from 50 (to do this we need to enable preset\_changed to 1). After that we need to Download this new configuration to out encoder device.

The image consists of three screenshots from a software interface, likely a PLC or encoder configuration tool.

**Left Screenshot:** Shows the 'Rem Run' status. The 'Go Offline' button is highlighted in yellow, and a red arrow points to it. Other options in the menu include Upload..., Download, Program Mode, Run Mode, Test Mode, Clear Faults, Go To Faults, and Controller Properties.

**Middle Screenshot:** Shows a table of parameters for the device 'fenac:C'. The values for several parameters are circled in red and have red arrows pointing to them:

Name	Value
fenac:C	{...}
fenac:C.SingleTurn	100
fenac:C.TotalRange	250
fenac:C.Preset_Parameter	50
fenac:C.preset_changed	1
fenac:C.Store_Parameters	0
fenac:C.Restore_Parameters	0
fenac:C.Operating_Parameter	4
fenac:C.Change_IP_Address	101
fenac:C.Change_IP_Address2	2
fenac:C.Change_IP_Address3	168
fenac:C.Change_IP_Address4	192

**Right Screenshot:** Shows the 'Offline' status. The 'Download' button is highlighted in yellow. Other options in the menu include Go Online, Upload..., Program Mode, Run Mode, Test Mode, Clear Faults, Go To Faults, and Controller Properties.

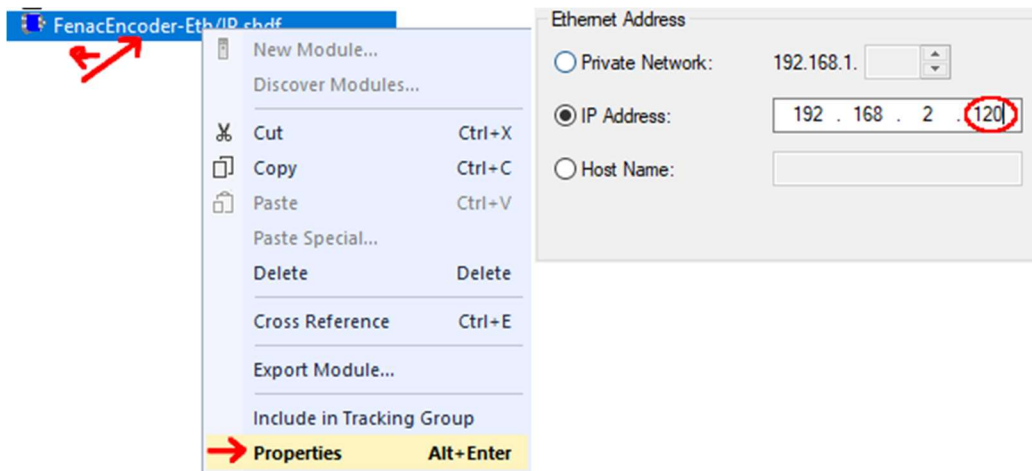


# CHANGING CONFIG INSTANCE PARAMETERS

To change config instance parameters user needs to be in offline mode. For instance we can change single turn value to 100, Preset to 1234 and preset changed flag to 1, Operating Parameter to 4 (Scaling enabler), IP Address to 120 (192.168.2.120) and lastly to save all the changes to flash memory set Store Parameters to 1702257011 (save in hex form).

Name	Value	Force Mask	Style	Data Type
shdf:C	{...}	{...}		_0400:FenacEncoder_EthIP_4100C9FF:C:0
shdf:C.SingleTurn	100		Decimal	DINT
shdf:C.TotalRange	1073741824		Decimal	DINT
shdf:C.Preset_Parameter	1234		Decimal	DINT
shdf:C.preset_changed	1		Decimal	DINT
shdf:C.Store_Parameters	1702257011		Decimal	DINT
shdf:C.Restore_Parameters	0		Decimal	DINT
shdf:C.Operating_Parameter	4		Decimal	INT
shdf:C.Change_IP_Address	120		Decimal	INT

After downloading, new configuration and re-starting the encoder we need to change the IP Address to 192.168.2.120 to be able to communicate.



We can go online mode to see our changes. We can see Presetted value 1234 and we are able to connect 192.168.2.120 IP Address. And if we turn 1 turn the encoder we can see 100 counts per turn.

shdf:I	{...}	{...}		_0400:FenacEncoder_EthIP_40A1F725:I:0
shdf:I.ConnectionFaulted	0		Decimal	BOOL
shdf:I.Data	{...}	{...}	Decimal	DINT[4]
shdf:I.Data[0]	0		Decimal	DINT
shdf:I.Data[1]	1234		Decimal	DINT
shdf:I.Data[2]	0		Decimal	DINT
shdf:I.Data[3]	0		Decimal	DINT
shdf:O	{...}	{...}		_0400:FenacEncoder_EthIP_B992380C:O:0
shdf:O.Data	{...}	{...}	Decimal	DINT[2]
shdf:O.Data[0]	0		Decimal	DINT
shdf:O.Data[1]	0		Decimal	DINT

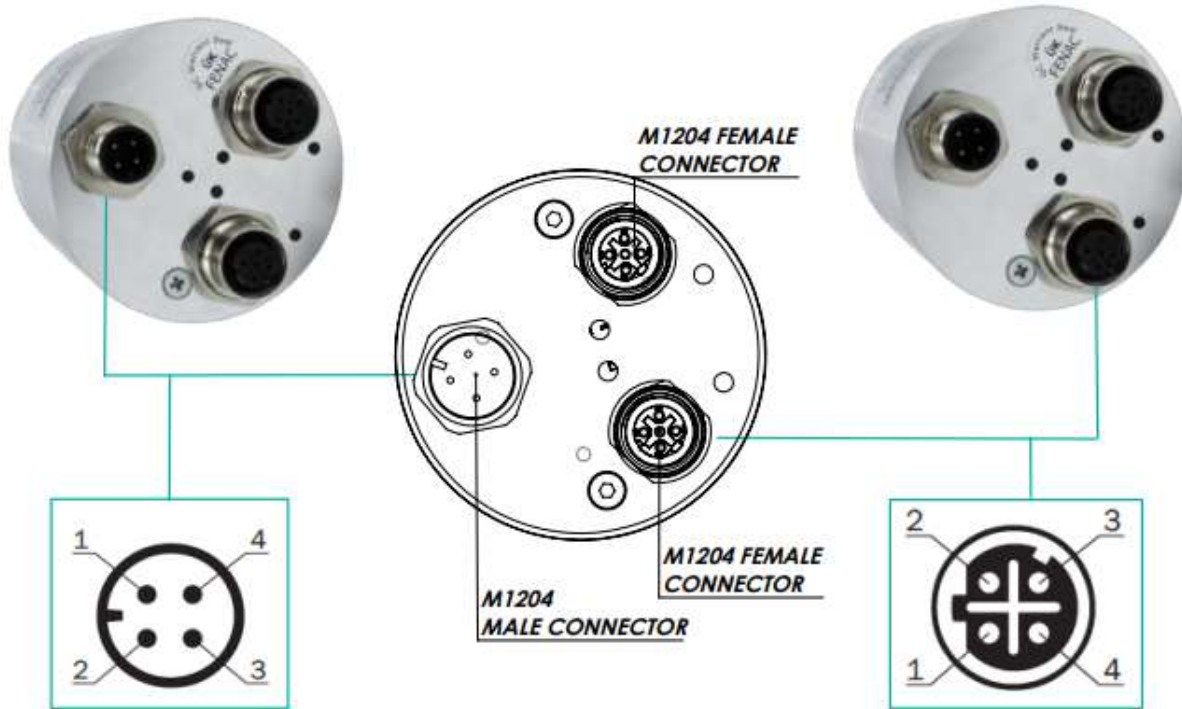
# PRESET WHEN ONLINE

If we set Data[0] of Output parameters we can Preset Position value when online too as you can see in the below picture.

▲ shdf:I	{...}	{...}		_0400:FenacEncoder_EthIP_40A1F725:I:0
shdf:I.ConnectionFaulted	0		Decimal	BOOL
▲ shdf:I.Data	{...}	{...}	Decimal	DINT[4]
▶ shdf:I.Data[0]	0		Decimal	DINT
▶ shdf:I.Data[1] <b>POSITION</b>	50		Decimal	DINT
▶ shdf:I.Data[2]	0		Decimal	DINT
▶ shdf:I.Data[3]	0		Decimal	DINT
▲ shdf:O	{...}	{...}		_0400:FenacEncoder_EthIP_B992380C:O:0
▲ shdf:O.Data	{...}	{...}	Decimal	DINT[2]
▶ shdf:O.Data[0] <b>PRESET ONLINE</b> →	50		Decimal	DINT
▶ shdf:O.Data[1]	0		Decimal	DINT

## 4. Connector & Pin Assignment

### Pin Assignment



PIN	Signal
1	U <sub>s</sub> 10 V...30V
2	Not assigned
3	GND
4	Not assigned

PIN	Signal
1	T x D+
2	R x D+
3	T x D-
4	R x D-

#### Counter Connector Part Number

**FCSF M1204** : M1204 Female Connector  
**FCSF M1204 R200** : M1204 Female Connector with 2 meter cable



#### Counter Connector Part Number

**FCSM DTM1204** : D Type M1204 Female Connector  
**FCSM DTM1204 R200** : D Type M1204 Female Connector with 2 meter cable

