Application Note

Replacing an old CPX-FB36 EtherNet/IP Bus Node

Festo CPX-FB36 communication to Allen Bradley Compact Logix PLC

The CPX-FB36 bus node is used as part of a CPX terminal and for communication as a participant in networks with the protocol EtherNet/IP.

This document has information combined from multiple resources for the intention of reducing the effort of a user who is configuring this application type.

CPX-FB36
CPX Terminal

100664

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Author .....Festo

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Table of contents

Table of contents

1 Components/Software used

Type/Name	Version Software/Firmware	Description
CPX-FB36		Festo CPX EtherNet/IP Fieldbus Terminal
Festo Automation Suit	Latest	
Studio 5000/RS Logix 5000	V16, V20 and Above	
RS Links Classic Lite	V4.30.00	
EtherNet IP Address Commissioning Tool	V3.0	

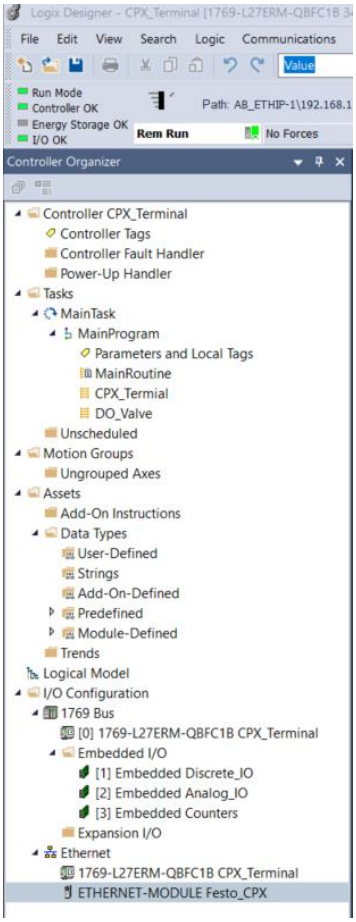
Table 1.1: 1 Components/Software used

2 Information gathering from former CPX-FB36 Module

2.1 Information gathering of DIP Switch details in CPX-FB36 Module

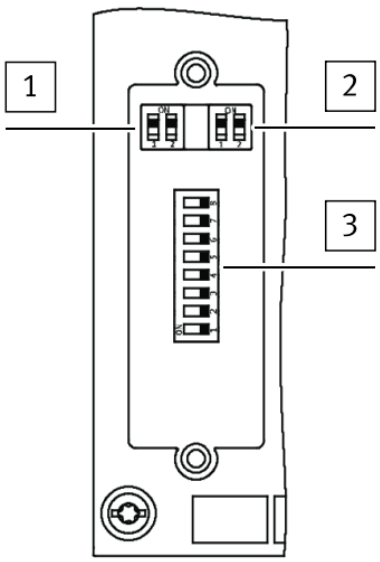
Step – 1

- In a working old CPX-FB36 module, User need to notify the DIP switch selected details. User can find the DIP switch located area as green color highlighted Section in above image.



- PLC Running Project in Studio 5000.

Step – 2

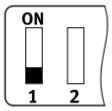
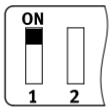


1 DIL switch 1:
Operating mode and network protocol
2 DIL switch 2:
Diagnostic mode or data field size
(depending on the set operating mode)
3 DIL switch 3:
IP addressing

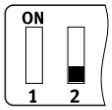
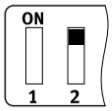
- DIL Switch arrangement in CPX-FB36 Module.

DIL Switch Mode Setting Details:

DIL Switch 1:

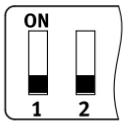
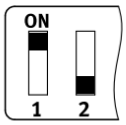
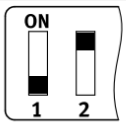
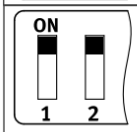
DIL switch 1.1		Mode of operation
	DIL 1.1: OFF (factory setting)	**Remote I/O** All functions of the CPX terminal are controlled directly by the higher-order controller (SPS). A control block integrated into the CPX terminal (e.g. CPX-CEC or CPX-FEC) works as a passive function module without controller.
	DIL 1.1: ON	**Remote Controller** A control block integrated into the CPX terminal (e.g. CPX-CEC or CPX-FEC) controls the I/O controller. This operating mode is only useful if a control block is integrated into the CPX terminal.

- Setting operating mode

DIL switch 1.2		Network protocol
	DIL 1.2: OFF (factory setting)	EtherNet/IP The CPX terminal uses the EtherNet/IP network protocol.
	DIL 1.2: ON	Modbus TCP The CPX terminal uses the EtherNet/IP network protocol.

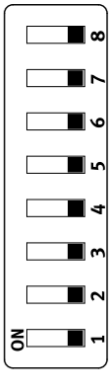
- Setting network protocol

DIL Switch 2:

DIL switch 2		Diagnostics mode (Remote I/O)[1]	Data field size (Remote Controller)[2]
	2.1: OFF 2.2: OFF (factory setting)	I/O diagnostics interface and status bits switched off	8 byte I/8 byte O for communication of the bus node with a control block (e.g. CPX-CEC)
	2.1: ON 2.2: OFF	I/O diagnostics interface is switched on	32 Byte I/32 Byte O for communication of the bus node with a control block (e.g. CPX-CEC)[3]
	2.1: OFF 2.2: ON	Status bits switched on	16 byte I/16 byte O for communication of the bus node with a control block (e.g. CPX-CEC)
	2.1: ON 2.2: ON	reserved	64 byte I/64 byte O for communication of the bus node with a control block (e.g. CPX-CEC)[4]

- Setting diagnostic mode or data field size

DIL Switch 3:

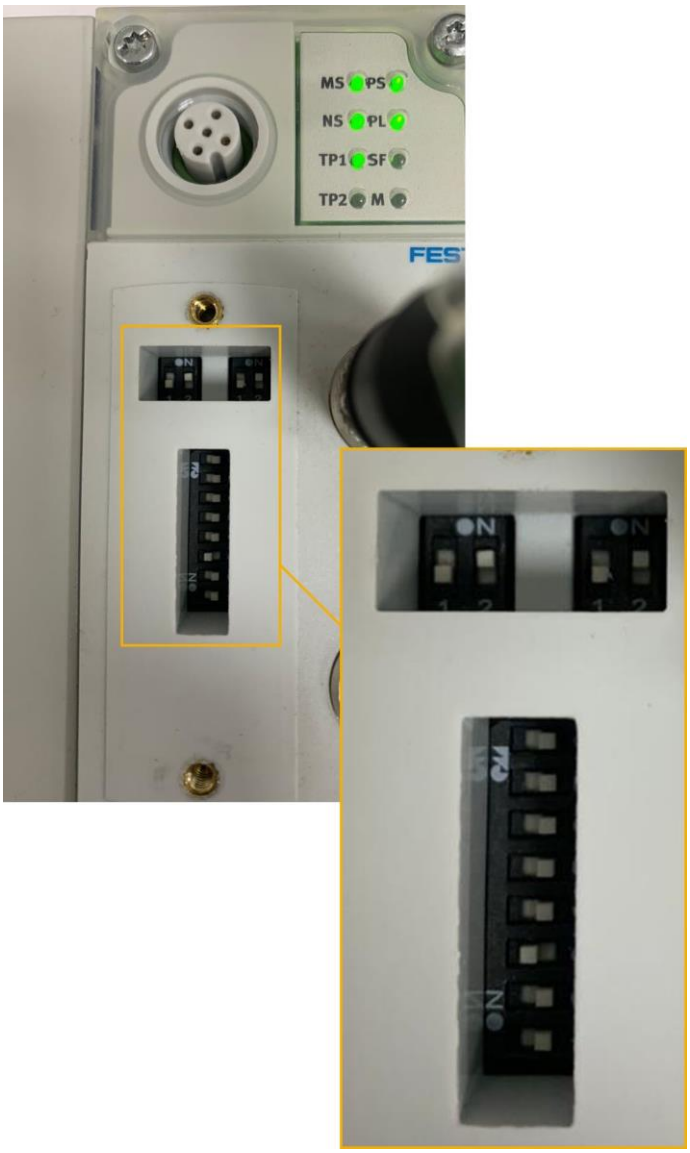
DIL switch 3		IP addressing
	DIL 3.8: 2^7 = 128 DIL 3.7: 2^6 = 64 DIL 3.6: 2^5 = 32 DIL 3.5: 2^4 = 16 DIL 3.4: 2^3 = 8 DIL 3.3: 2^2 = 4 DIL 3.2: 2^1 = 2 DIL 3.1: 2^0 = 1	The type of addressing or the Host-ID of the IP address of the bus node is set via the DIL switch elements 3.1 ... 3.8. Possible settings: 0 = dynamic addressing via DHCP/BOOTP 1 ... 254 = permissible address range 255 = reset all IP parameters to factory setting Factory setting: 0

- Setting IP addressing

User can find the below link to download the User manual from Festo Support Portal

https://www.festo.com/de/en/support-portal-specific/?query=1912451&productName=Bus+node&groupId=3&documentId=661278&documentTypeGroup=USER_DOCUMENTATION&documentTypes=

Step – 3



- User need to Mark it down or take a picture of DIL switch settings from a working old CPX-FB36 module.
- DIL Switch details in above Picture

DIL Switch 1	
Switch-1	OFF
Switch-2	ON

DIL Switch 2	
Switch-1	OFF
Switch-2	ON

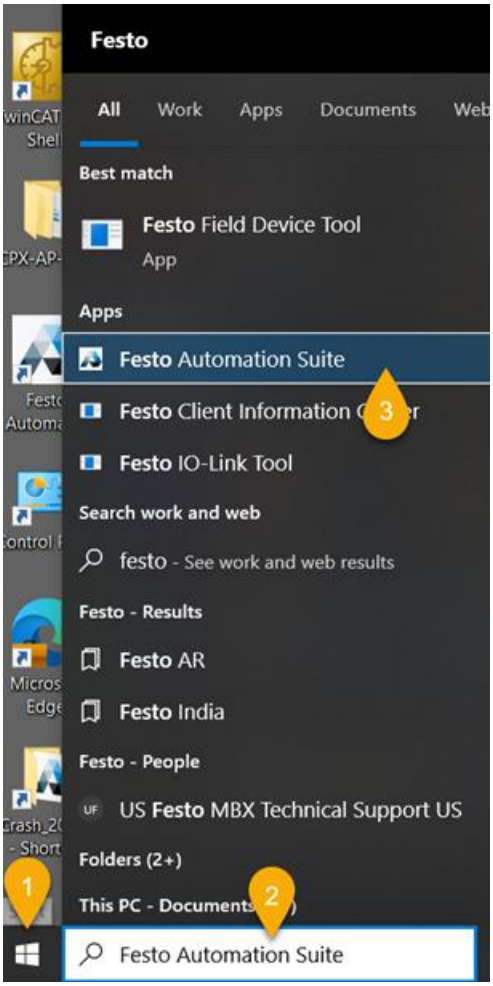
DIL Switch 3	
Switch-1	OFF

Switch-2	OFF
Switch-3	ON
Switch-4	OFF
Switch-5	OFF
Switch-6	OFF
Switch-7	OFF
Switch-8	OFF

2.2 Gathering of IP Address details of Old Working CPX-FB36 Module

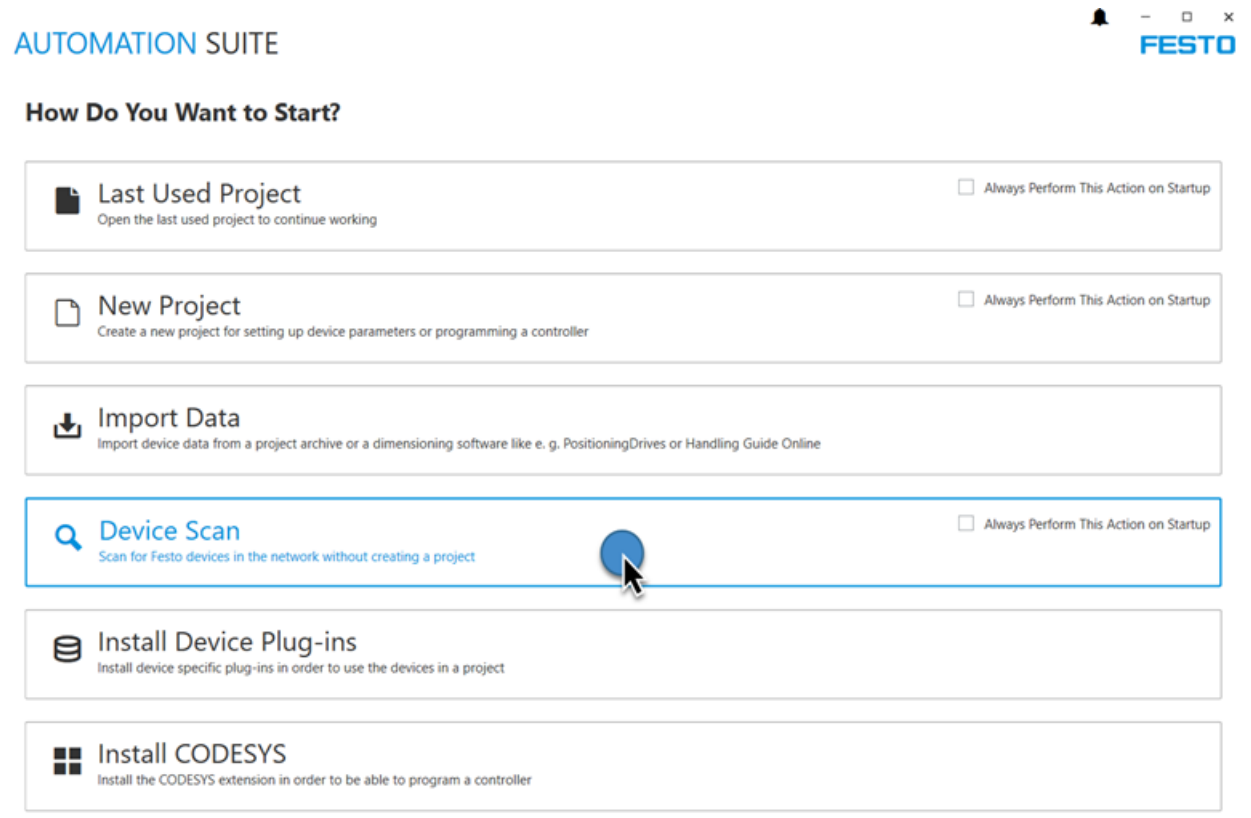
2.2.1 Gathering IP Address details by using Festo Automation Suit

Step – 1



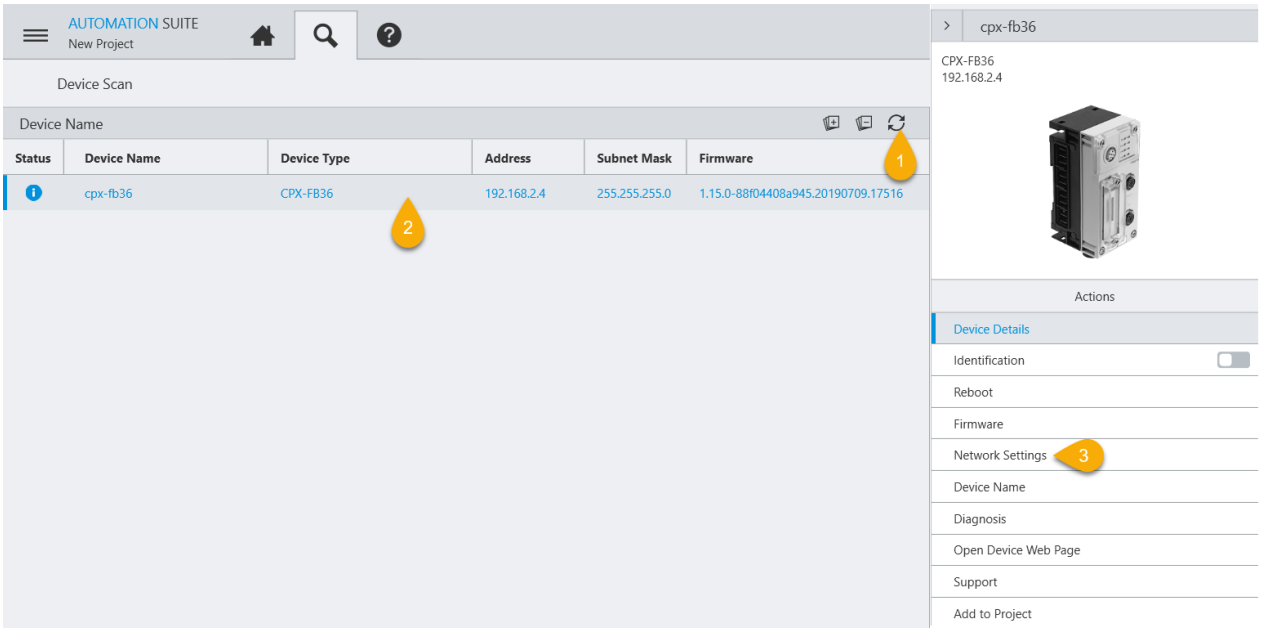
1. Click **"Start"** button of Windows.
2. Type the name **"Festo Automation Suite"** in search box.
3. Select **"Festo Automation Suite"** from search result.

Step – 2



- Click **"Device Scan"** to Scan the connected CPX-FB36 devices.

Step – 3



1. Click **"Refresh"** button, if old working CPX-FB36 device is not browsed.
2. Select the old **"CPX-FB36"** device which is browsed.
3. Click on **Network Settings** on right side of device settings.

Step – 4

CPX-FB36
192.168.2.4

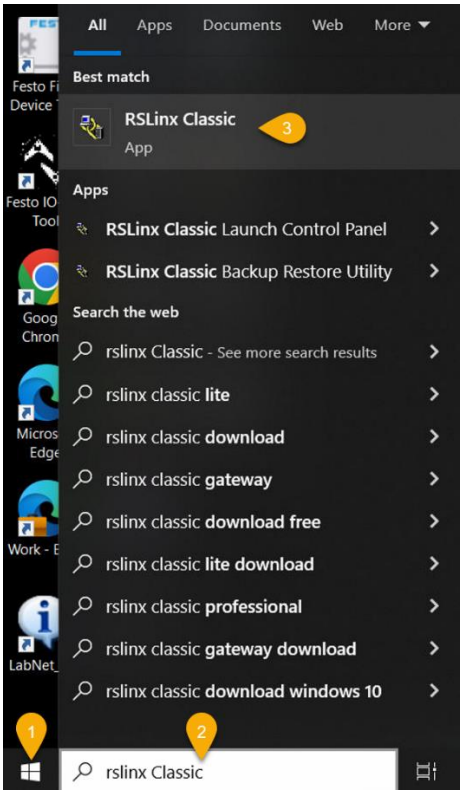
< Actions Network Settings

DHCP:	☐ Enable
Address:	192 . 168 . 2 . 4
Subnet Mask:	255 . 255 . 255 . 0
Gateway:	0 . 0 . 0 . 0
DNS:	0 . 0 . 0 . 0

- User need to Mark it down or take a picture of above green color highlighted details from the Festo Automation Suit.

2.2.2 Gathering IP Address details by using RsLink Classic

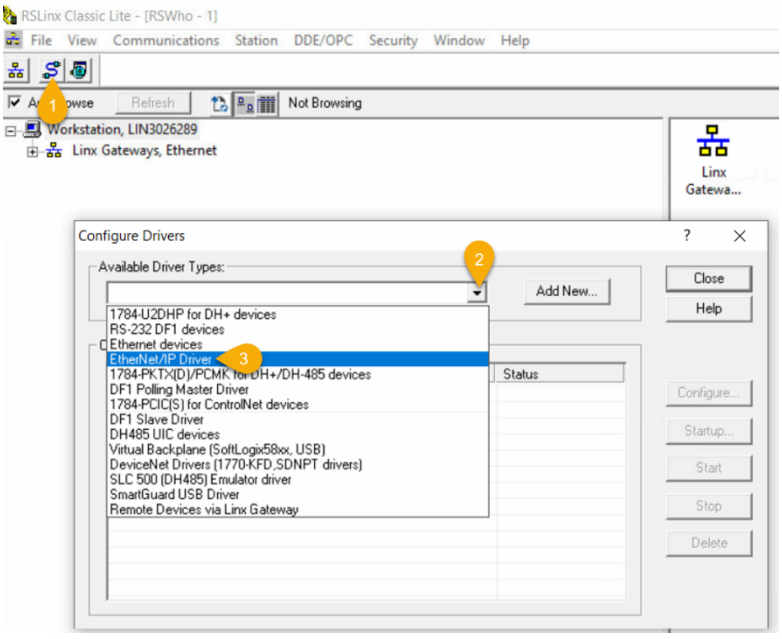
Step – 1



1. Click **"Start"** button of Windows.
2. Type the name **"RsLinx Classic"** in search box.
3. Select **"RsLinx Classic"** from search result.

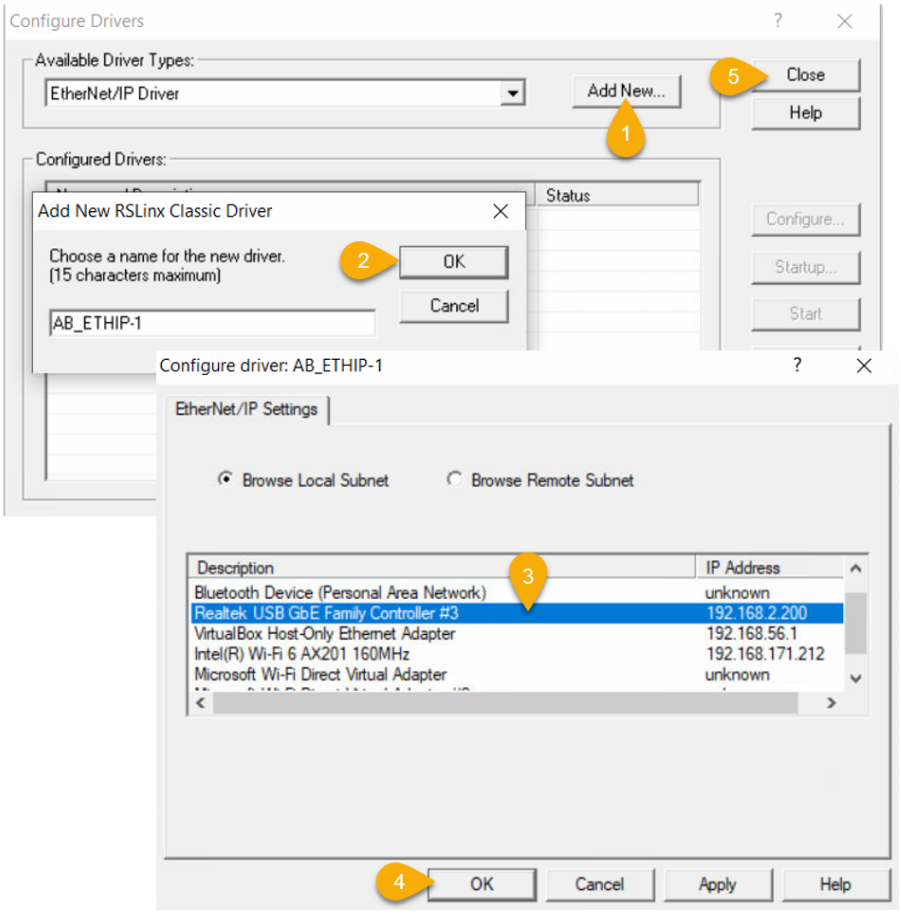
Step – 2

➔ **Note**
If EtherNet Driver is already Configured then User can jump directly to the Step-4.



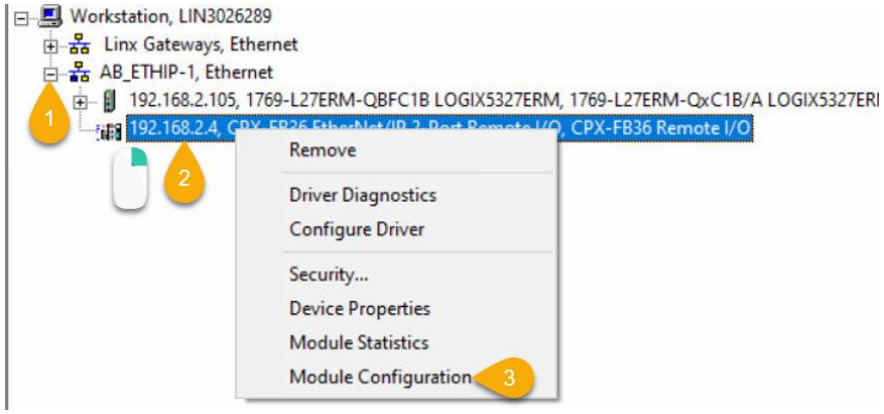
1. Click **“Configure Driver”** button.
2. Click Drop Down button.
3. Select **“EtherNet/IP Driver”** option.

Step – 3



1. Click **“Add New”**.
2. Click **“OK”** on Name Selection.
3. Select the EtherNet Driver on which the CPX-FB36 is connected.
4. Click **“OK”**.

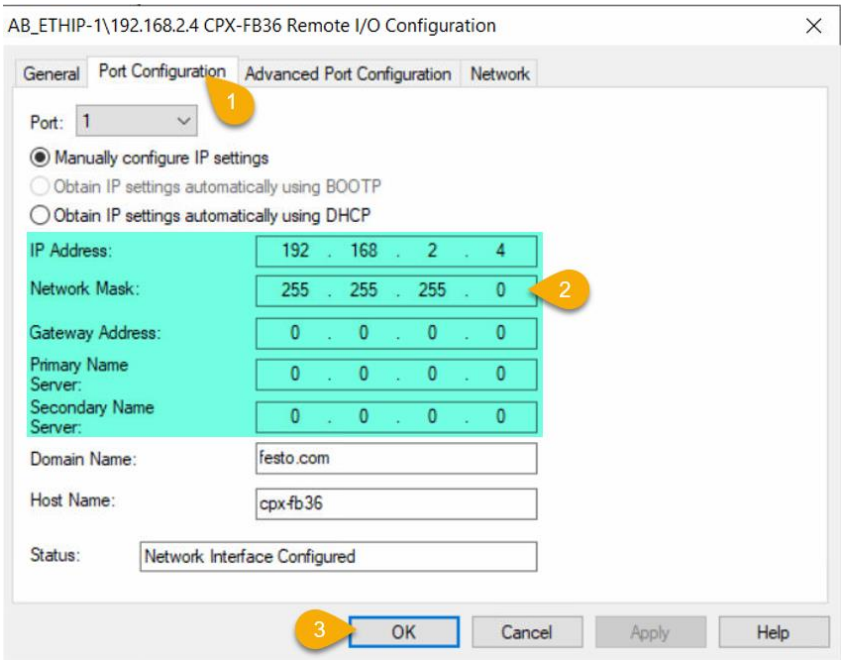
Step – 4



1. Debrach the created EtherNet Drive.
2. Right Click on the **“CPX-FB36”** Module.

3. Click on **“Module Configuration”**.

Step – 5

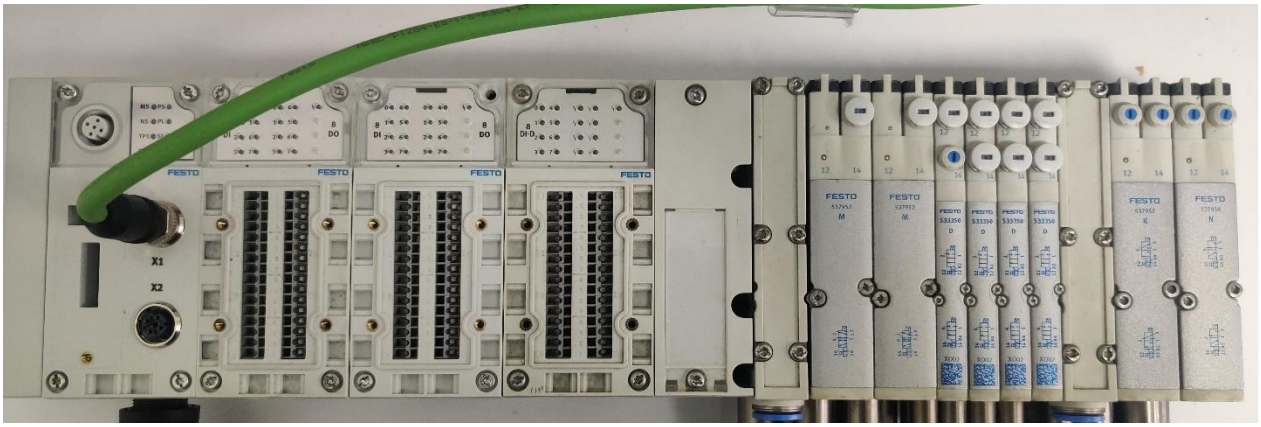


1. Click on **“Port Configuration”** Option.
2. User need to Mark it down or take a picture of above green color highlighted details.
3. Click **“OK”** to Close the Window.

2.3 Dismantle the Old Working CPX-FB36 Module

Note
Ensure that your Machine is in Stop Mode and No active production or running Operation.

Step – 1



- Turn off the Power supply of CPX-Terminal before replacing the CPX-FB36 Module and turn off the Pneumatic air supply if its available on the user device.

Step – 2

- Remove the connected EtherNet Cable (NEBC-D12G4-ES-1-S-R3G4-ET) which is connected to the CPX-FB36 Module.

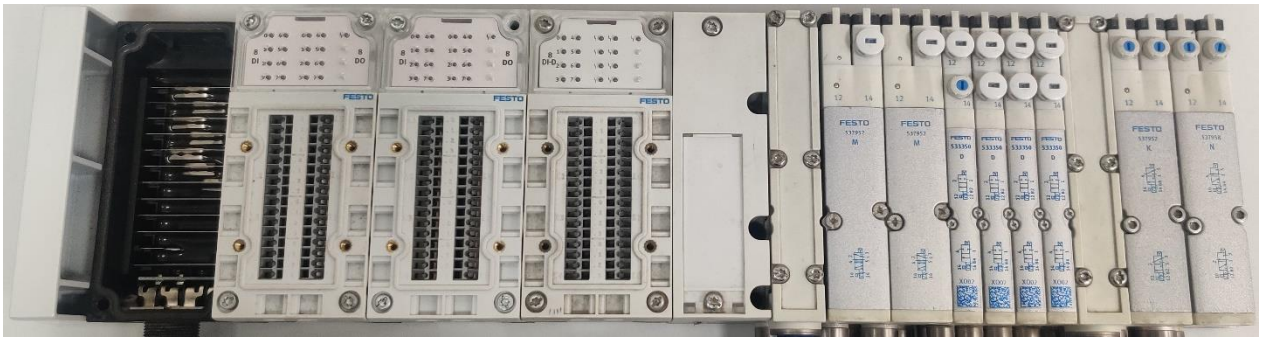
Step – 3

- Dismount the 4-screw of CPX-FB36 module with appropriate tool.

Step – 4

- Dismount the old CPX-FB36 module from the CPX-Terminal.

Step – 5

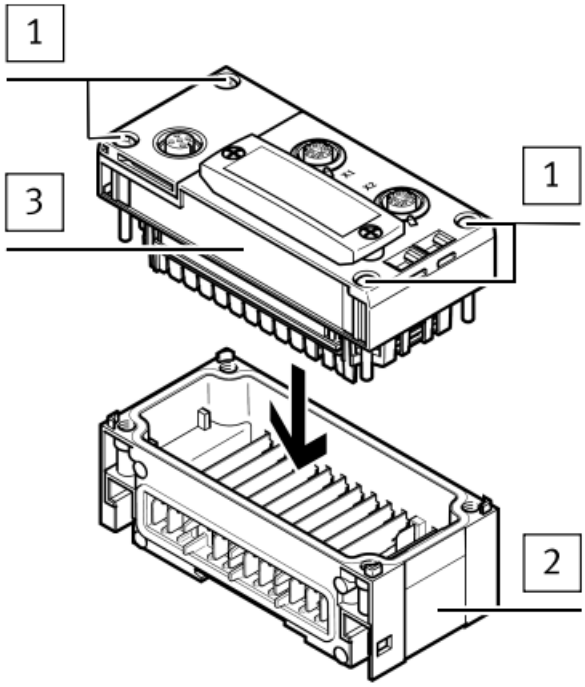


- Once the CPX-FB36 module is Dismounted from the CPX-Terminal device, Its looks like a above shown picture.

3 Setting up the New Replacement CPX-FB36 Hardware

3.1 Mounting the CPX-FB36 Hardware in Festo CPX Terminal

Step – 1

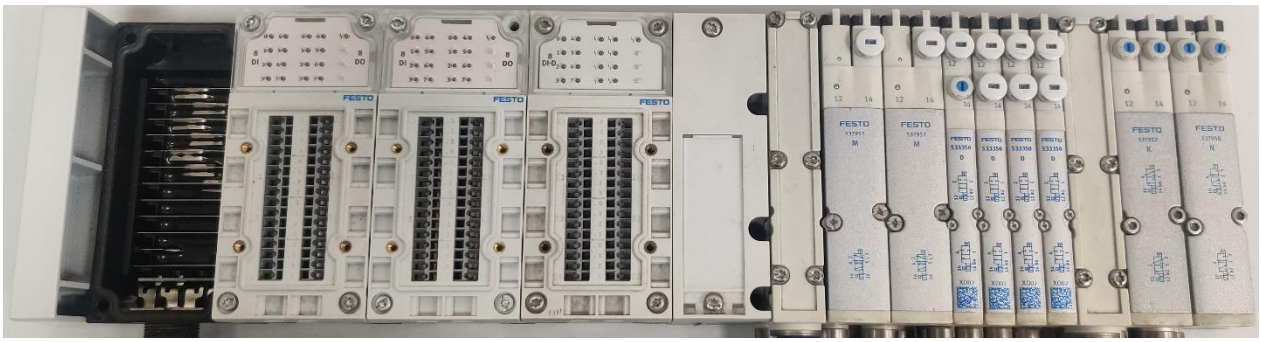


1 Screws
2 Interlinking block
3 Bus node CPX-M-FB36

- Pictorial view to Mounting the CPX-FB36 to the Bus Terminal

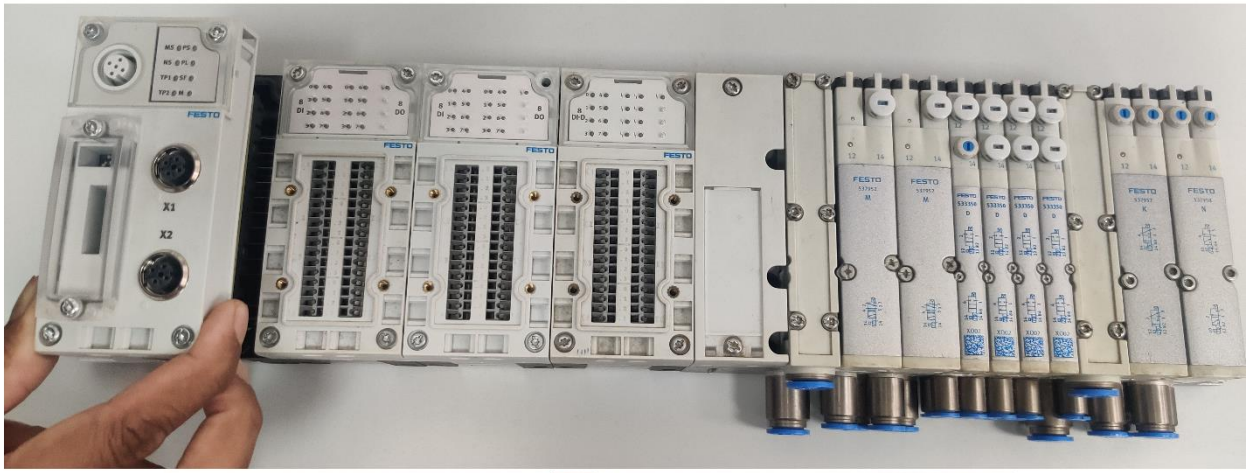
Step – 2

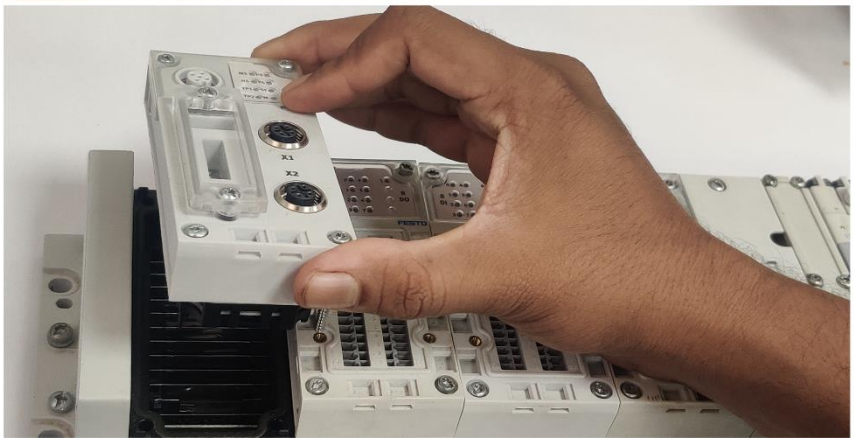
Mounting the CPX-FB36 Module to the Festo CPX Terminal



– Festo CPX Terminal

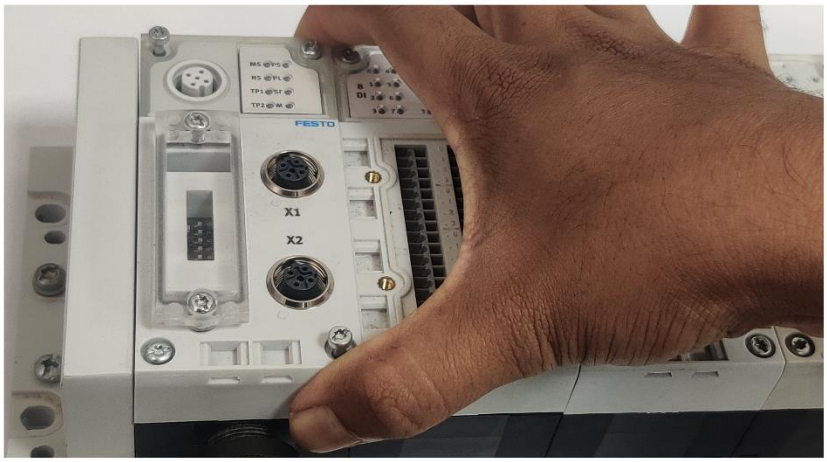
Step – 3

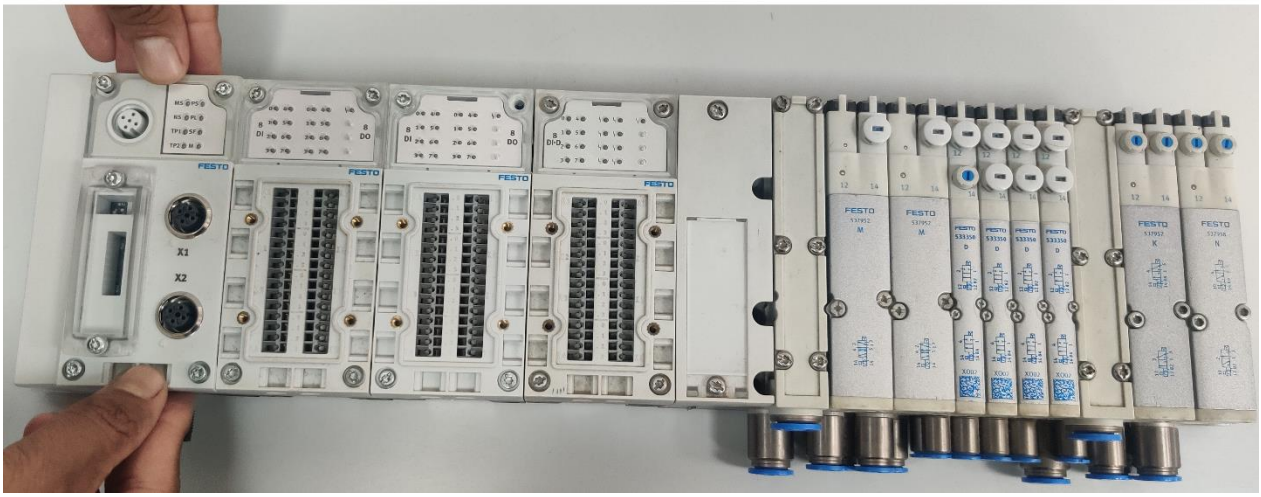




- Place the Festo CPX-FB36 module in the correct position of Festo CPX bus terminal.

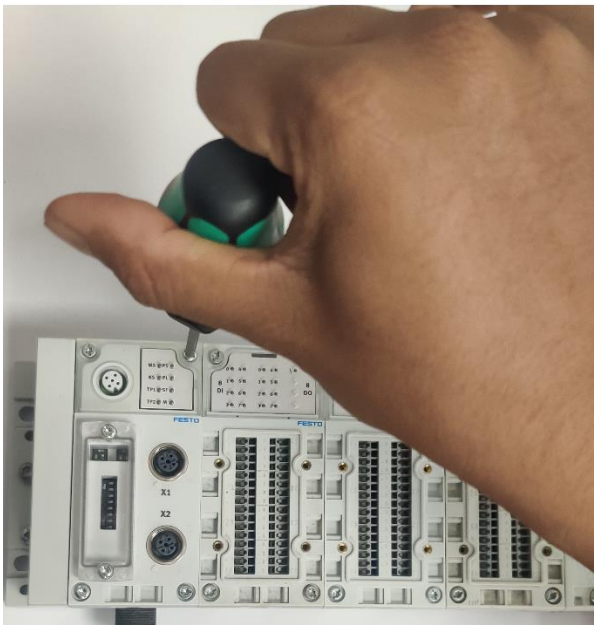
Step – 4





- Mount the CPX-FB36 module in the bus terminal and Press with little force to fix the module

Step – 5



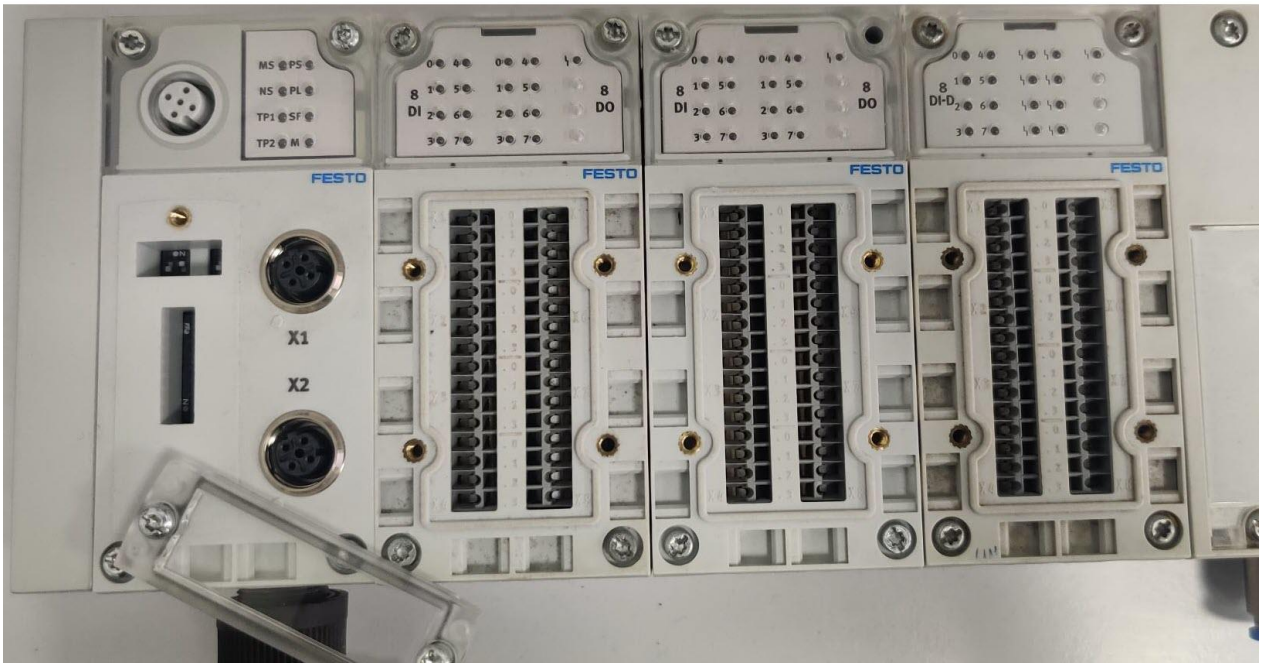
- Use appropriate tool to tighten the Screws of CPX-FB36 module. User do not use force multipliers such as breaker bars or long ratchets, It may damage the thread of the screw.

➔ **Note**

- Maximum Tighten screw value is **0.4Nm**.

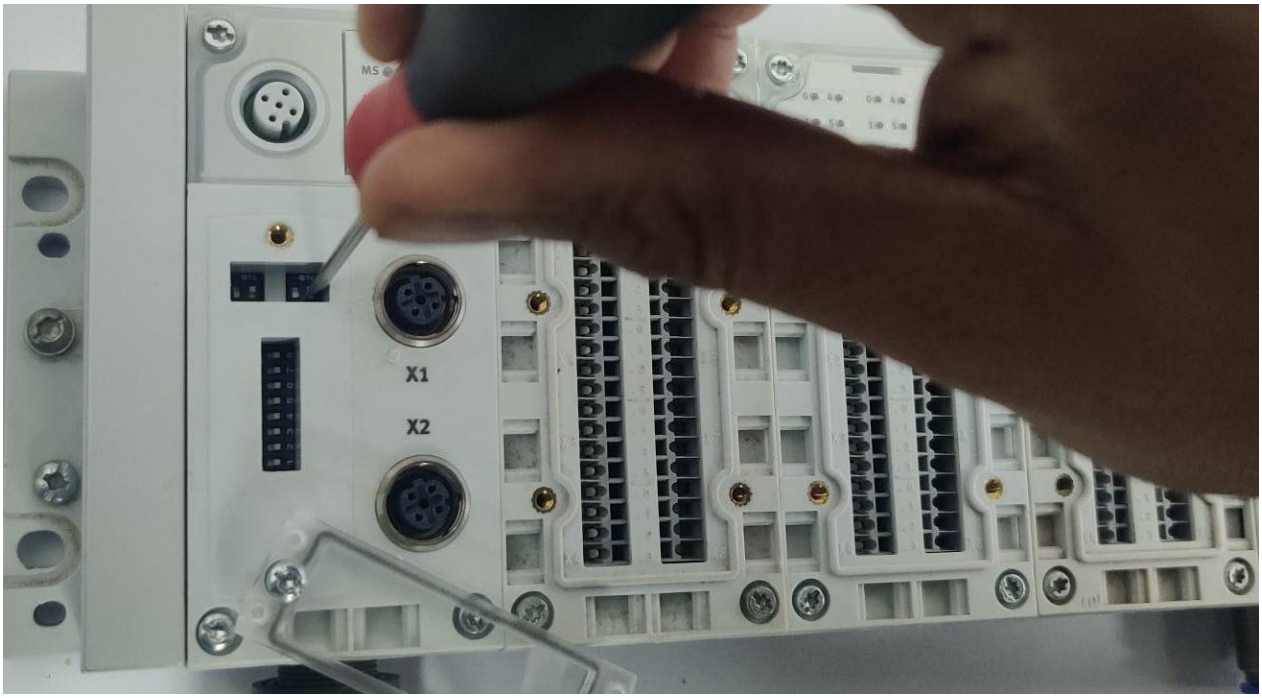
3.2 Setting up the DIL Switch Settings to the Replaced CPX-FB36 Module

Step – 1



- Dismount the DIL Switch Protection Cover in new CPX-FB36 Module to set up the DIL Switch Settings.

Step – 2

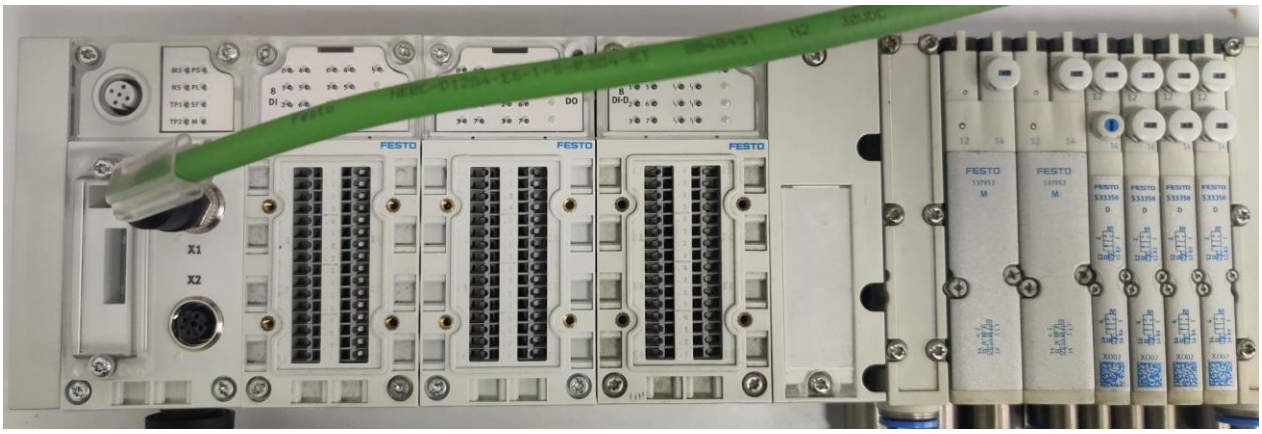


- Use appropriate tool to Set the DIL Switch Setting as per the old CPX-FB36 Module.

Step – 3

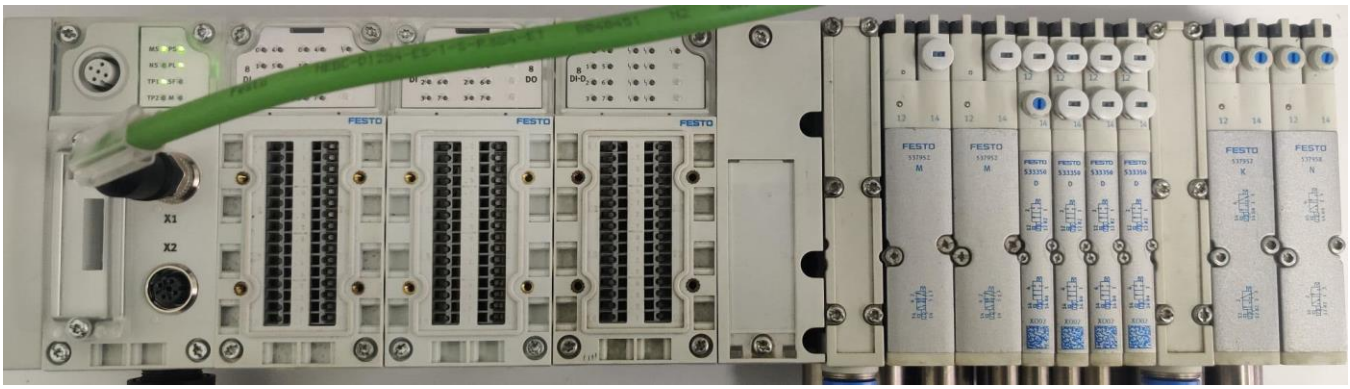
- Set up the DIL Switch as per the old CPX-FB36 Module

Step – 4



- Close the DIL Switch Protection cover and Connect back to the EtherNet Cable (NEBC-D12G4-ES-1-S-R3G4-ET) to the new CPX-FB36 Module.

3.3 Setting back the Old module IP Address to New CPX-FB36 Module

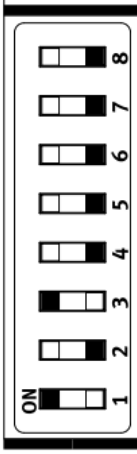
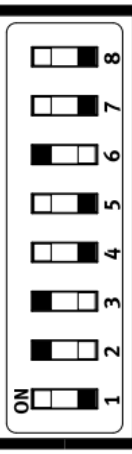


- Power On the CPX-Terminal device.

Setting IP addressing using different methods

- dynamic addressing via DHCP/BOOTP (factory setting)
- saved addressing
- static addressing using DIL switches

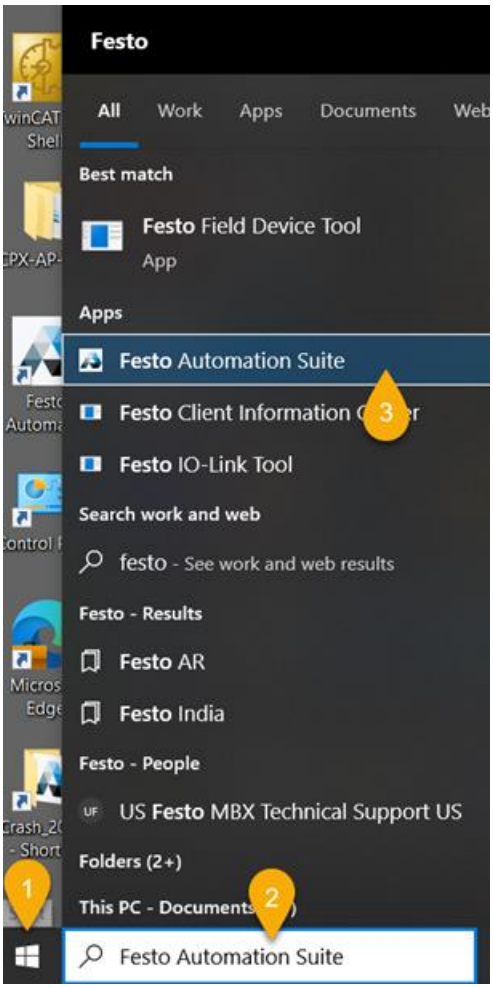
Example for Addressing via DIL switches

Example with IP address: 192.168.001.005	**Example with IP address: 192.168.001.038**
 $2^0 + 2^2 =$ $1 + 4 =$ 5	 $2^1 + 2^2 + 2^5 =$ $2 + 4 + 32 =$ 38

3.3.1 Setting up the IP address of New CPX-FB36 Module if DIL Switch-3 is used and set as the former node

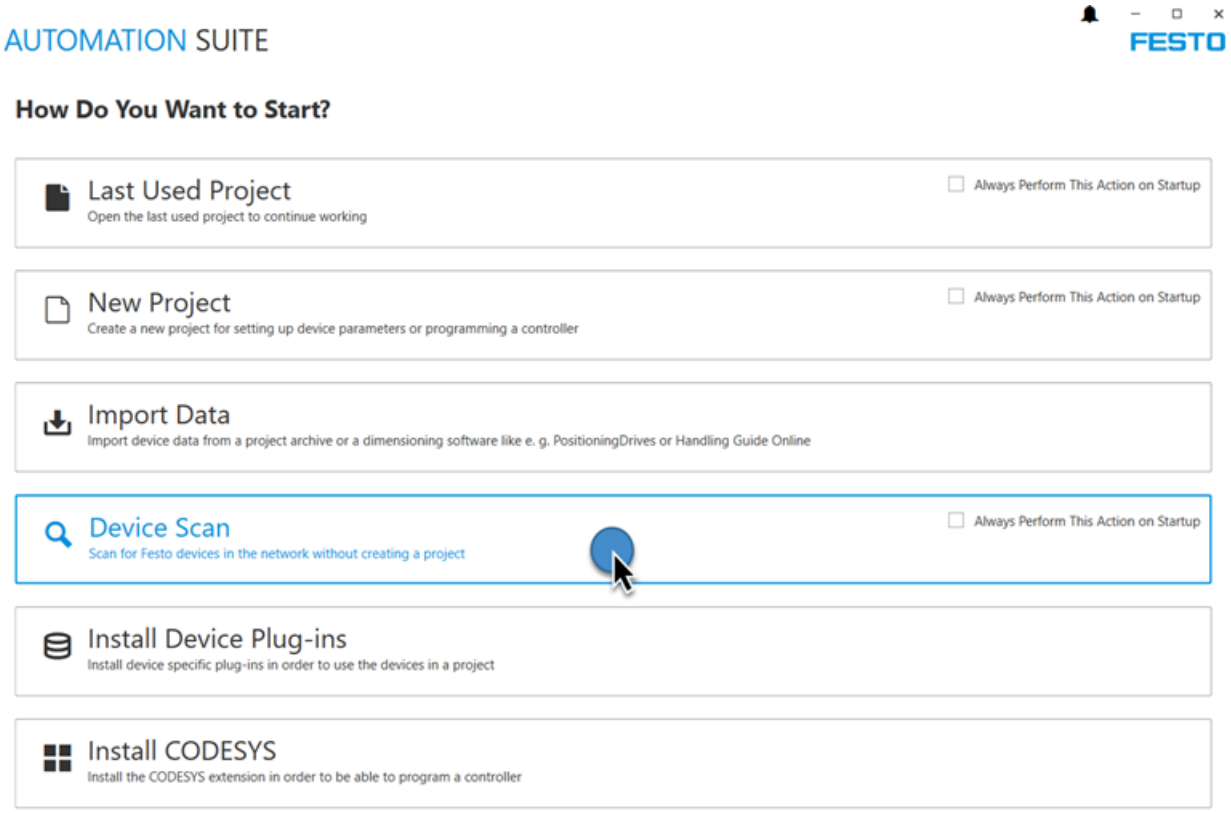
Using Festo Automation Suite

Step – 1



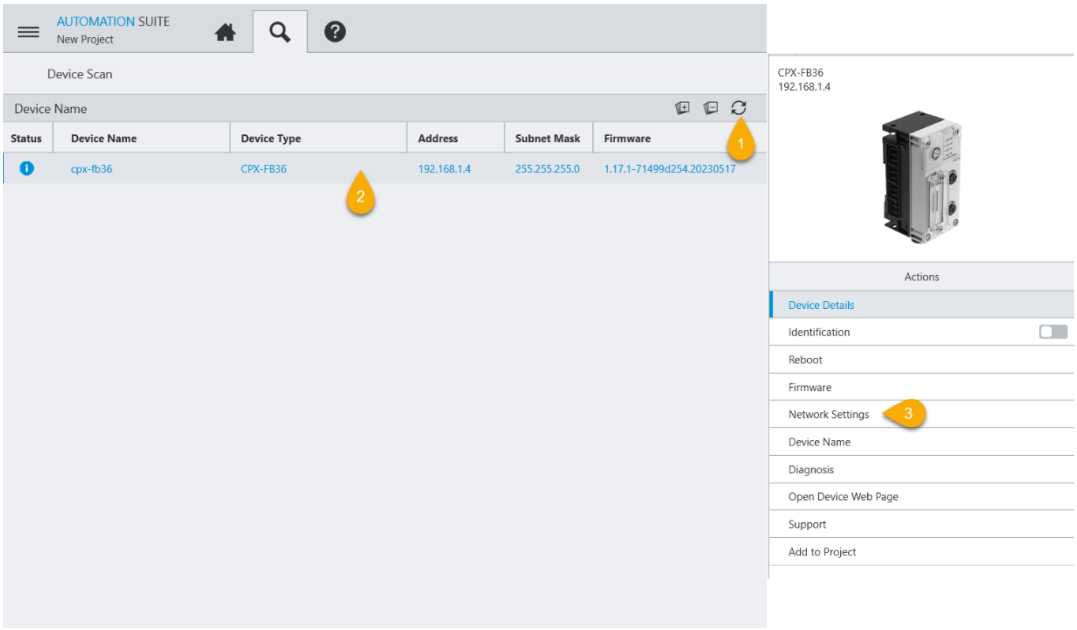
1. Click **"Start"** button of Windows.
2. Type the name **"Festo Automation Suite"** in search box.
3. Select **"Festo Automation Suite"** from search result.

Step – 2



- Click **"Device Scan"** to Scan the connected CPX-FB36 devices.

Step – 3

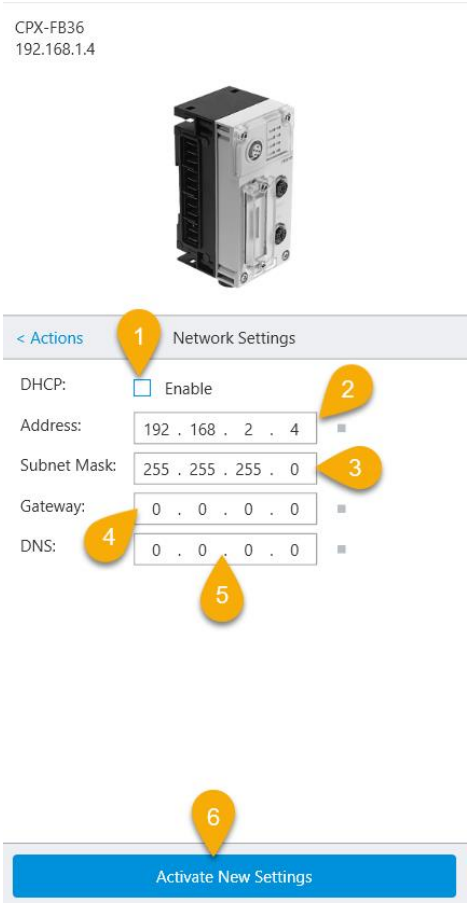


1. Click **"Refresh"** button, if New CPX-FB36 device is not browsed.
2. Select the New **"CPX-FB36"** device which is browsed.
3. Click on **Network Settings** on right side of device settings.

Note

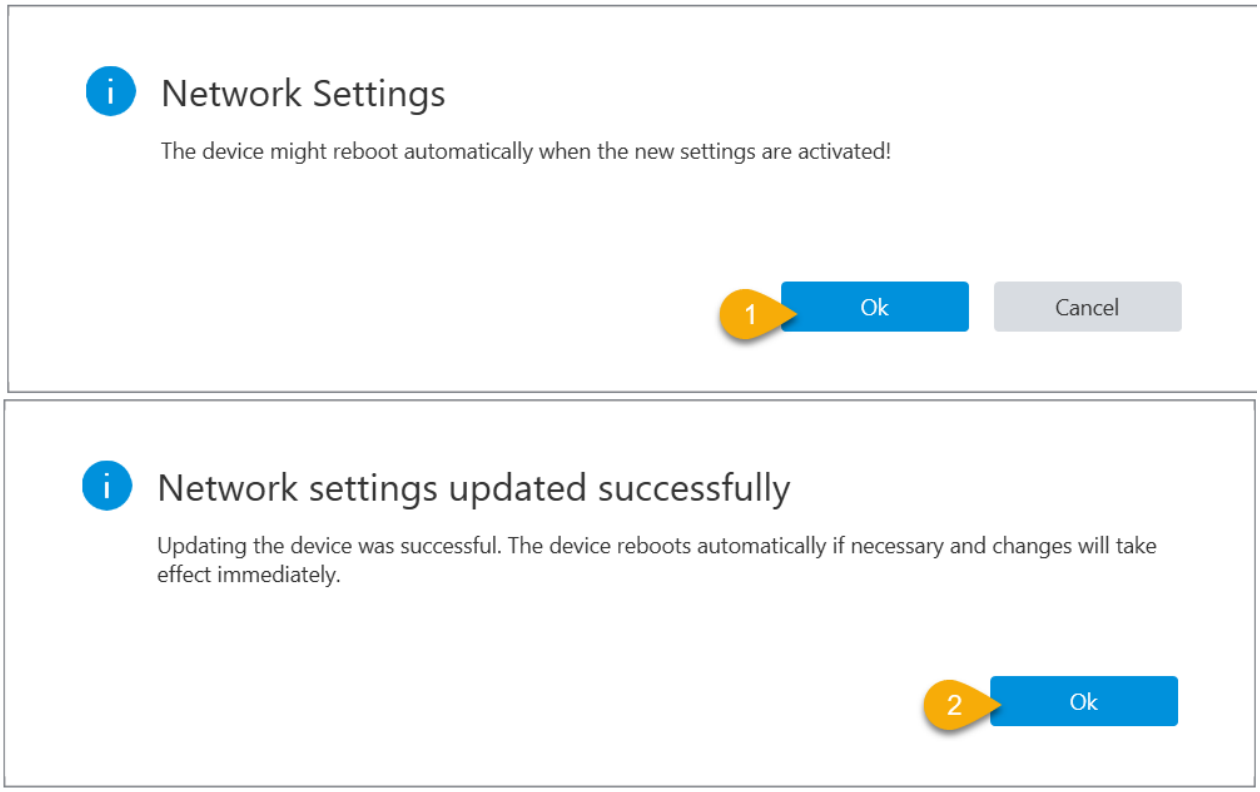
- As per the DIL Switch-3 Settings, For new CPX-FB36 Module default IP address has assigned automatically as **"192.168.1.4"**. User need to Change the IP address range as per the Old CPX-FB36 Module.

Step – 4



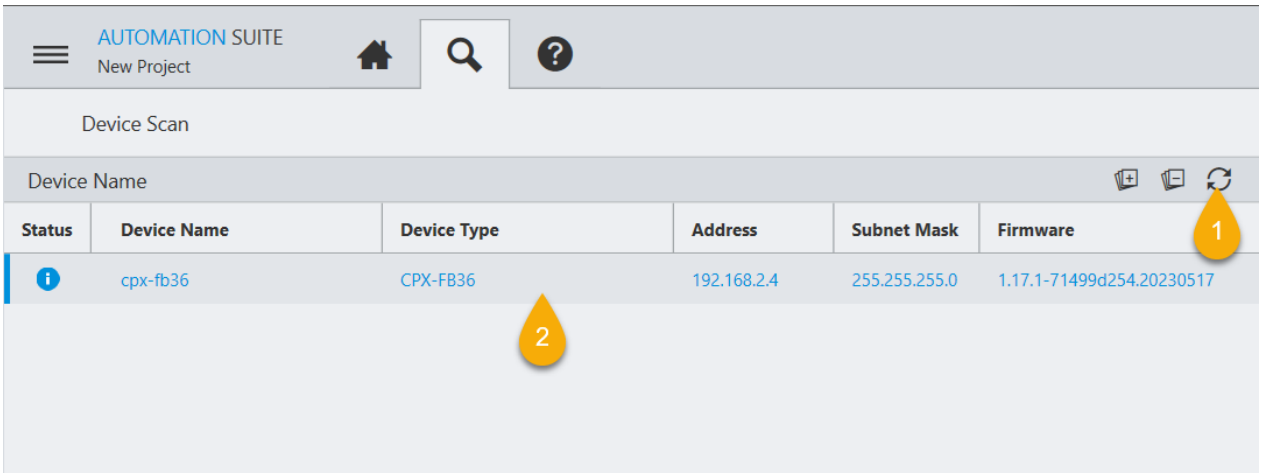
1. Disable the check box of **"DHCP"** if its enabled.
2. Enter the IP address range as per the Old CPX-FB36 Module. Here the IP Address of Old module is **"192.168.2.4"**.
3. Enter the Subnet Mask range as per the old CPX-FB36 Module.
4. Enter the Gateway details if it is available in the old CPX-FB36 Module else user can leave the gateway field.
5. Enter the DNS details if it is available in the old CPX-FB36 Module else user can leave the DNS field.
6. Click **"Activate New Settings"**.

Step – 5



1. Click **"OK"** on Network Setting Pop-up.
2. Click **"OK"** on Network setting updated successfully window to complete the set up.

Step – 6



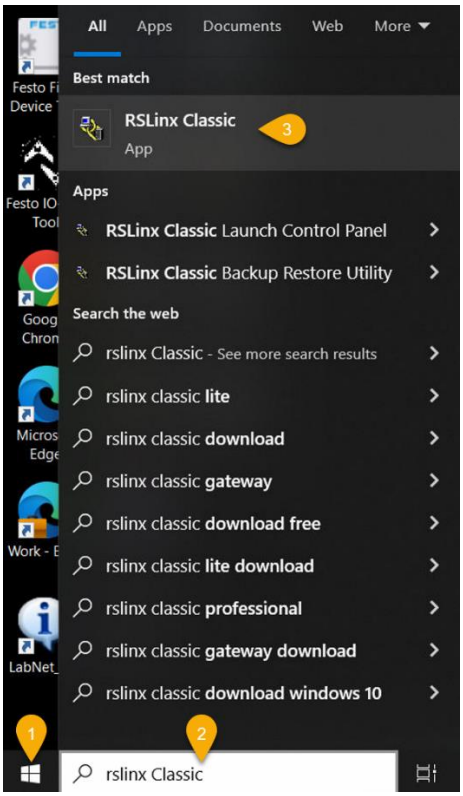
1. Click on refresh button to view the Module IP address Update.
2. In the Device Scan window User can view the updated IP address CPX-FB36 Module.

Using RsLink Classic

Note

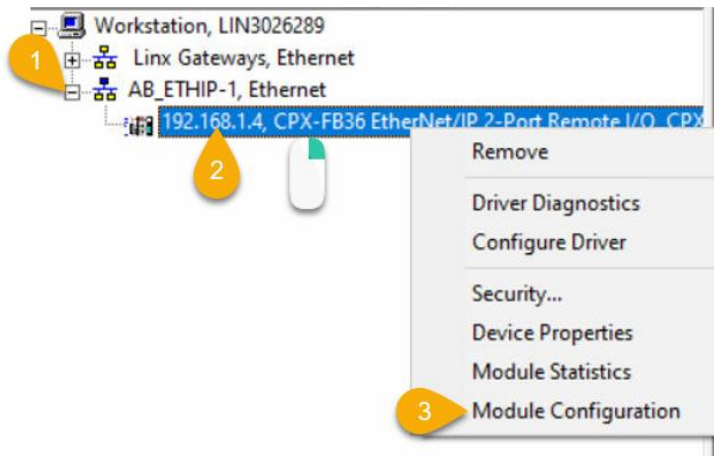
Before Opening the RsLink Software User should set the IP Address of the Working System in the Range of **"192.168.1.xxx"** series.

Step – 1



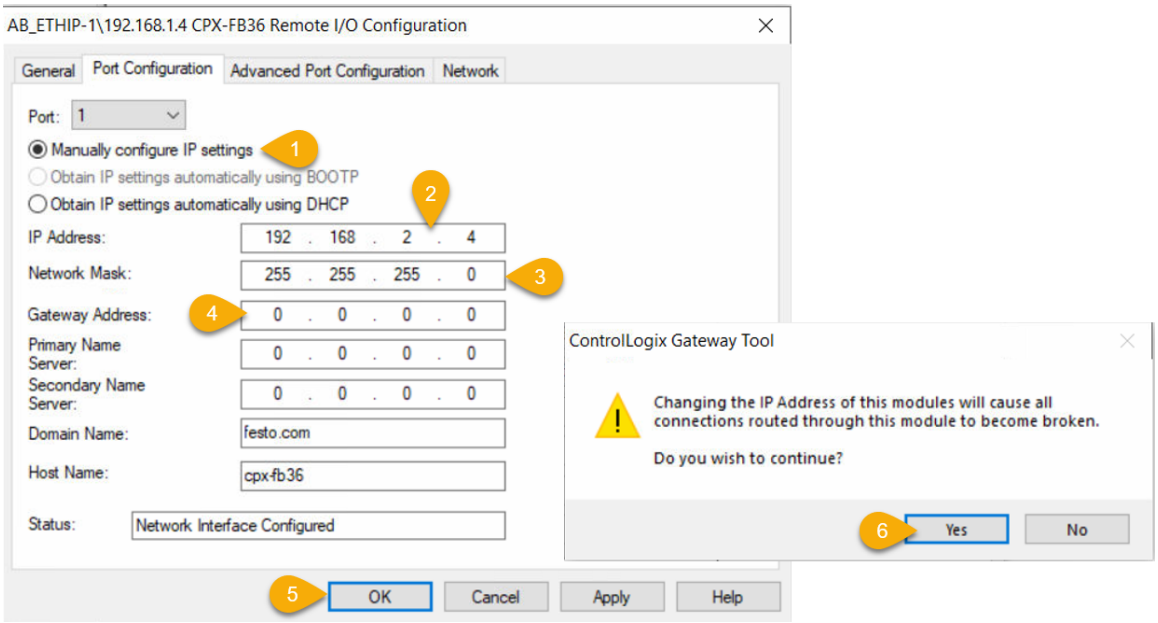
1. Click **"Start"** button of Windows.
2. Type the name **"RsLinx Classic"** in search box.
3. Select **"RsLinx Classic"** from search result.

Step – 2



1. Debrach the created EtherNet Drive.
2. Right Click on the **"CPX-FB36"** Module.
3. Click on **"Module Configuration"**.

Step – 3

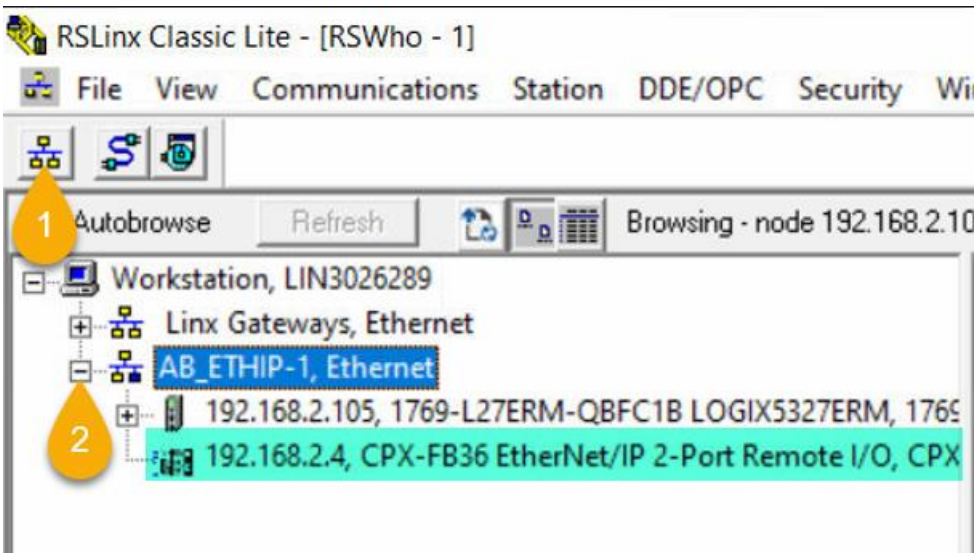


1. Select **"Manually configure IP settings"** if it is not selected Automatically.
2. Enter the IP address range as per the Old CPX-FB36 Module. Here the IP Address of Old module is **"192.168.2.4"**.
3. Enter the Subnet Mask range as per the old CPX-FB36 Module.
4. Enter the Gateway details if it is available in the old CPX-FB36 Module else user can leave the gateway field.
5. Click **"OK"**.
6. Click **"Yes"**.

Step – 4

Note

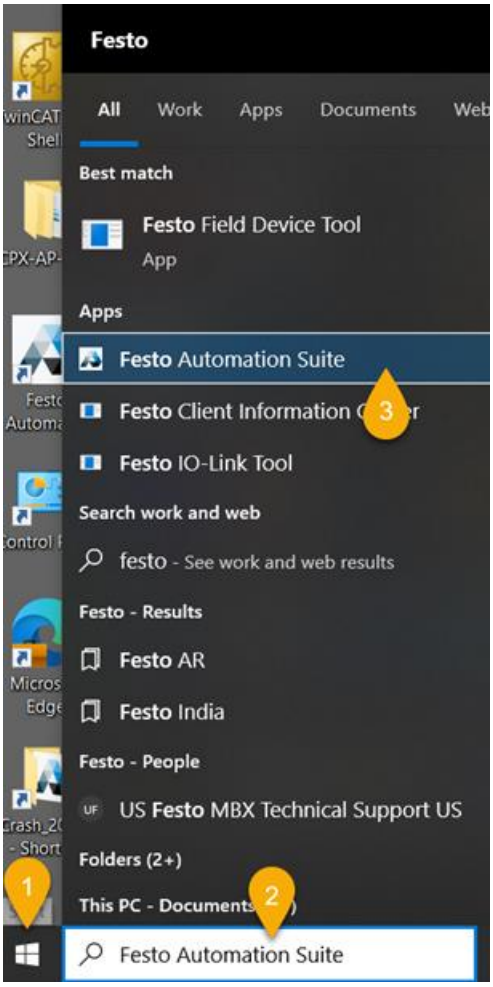
After changing the IP Address from the **"Rs-Linx"**, User need to change the IP address of Working Station to the Changed IP Address Range, Here in this example we changed the IP address module to **"192.168.2.xxx"** series.



1. Click on EtherNet button to Refresh.
2. Debranch EtherNet Driver to view the CPX-FB36 device.

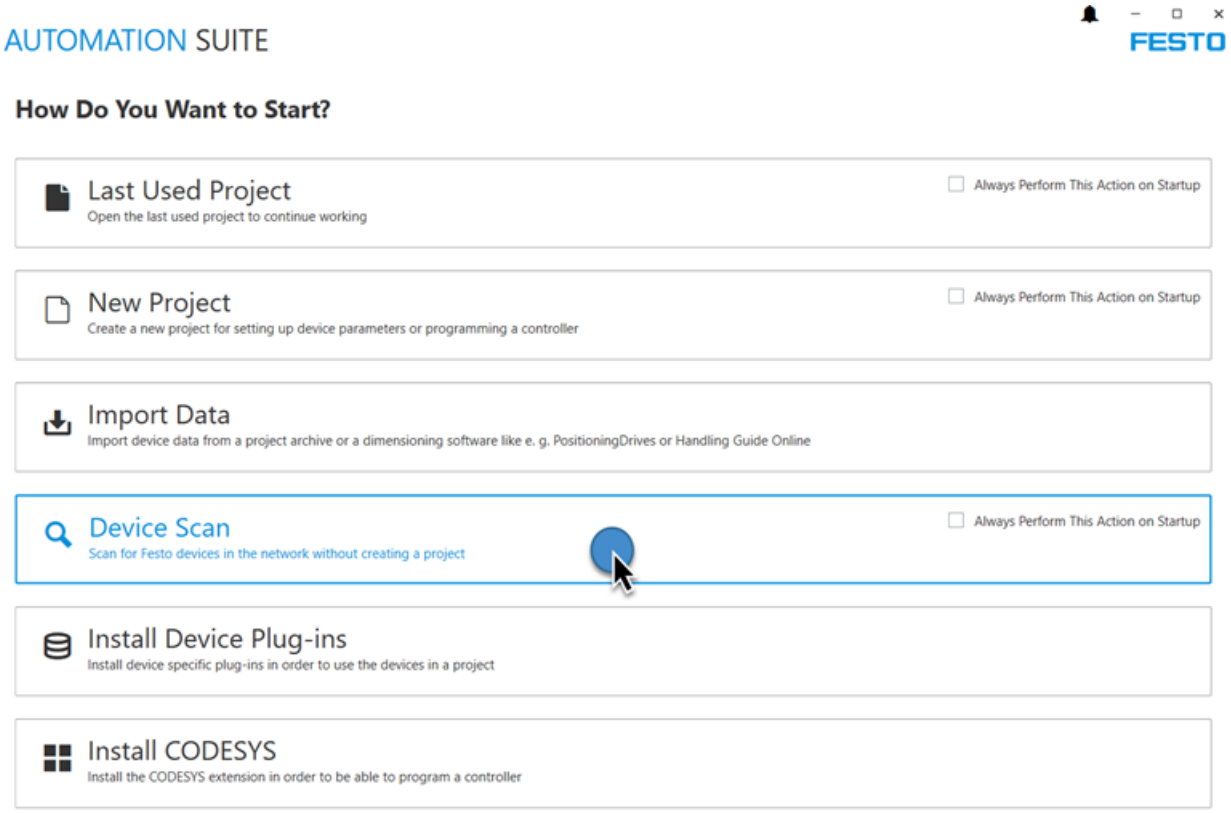
3.3.2 Setting up the IP address of New CPX-FB36 Module if DIL Switch-3 is Not Selected

Step – 1



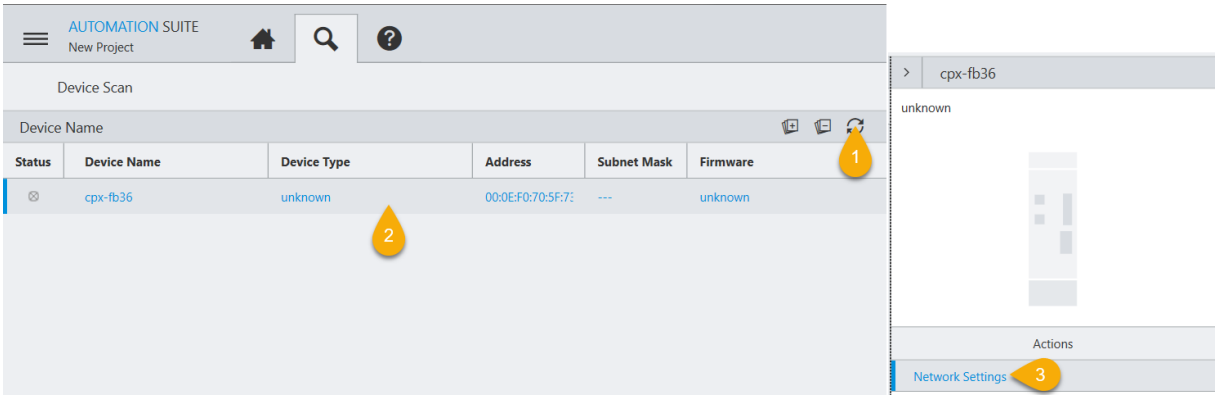
1. Click **"Start"** button of Windows.
2. Type the name **"Festo Automation Suite"** in search box.
3. Select **"Festo Automation Suite"** from search result.

Step – 2



- Click **"Device Scan"** to Scan the connected CPX-FB36 devices.

Step – 3

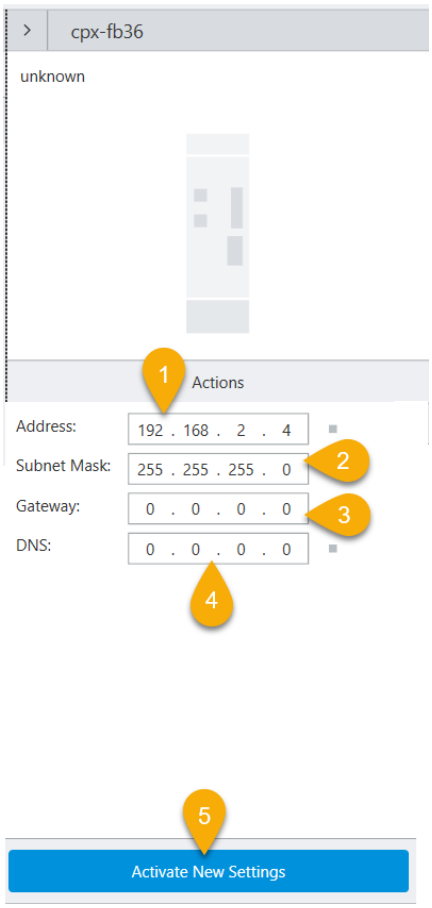


1. Click **"Refresh"** button, if New CPX-FB36 device is not browsed.
2. Select the New **"CPX-FB36"** device which is browsed.
3. Click on **Network Settings** on right side of device settings.

Note

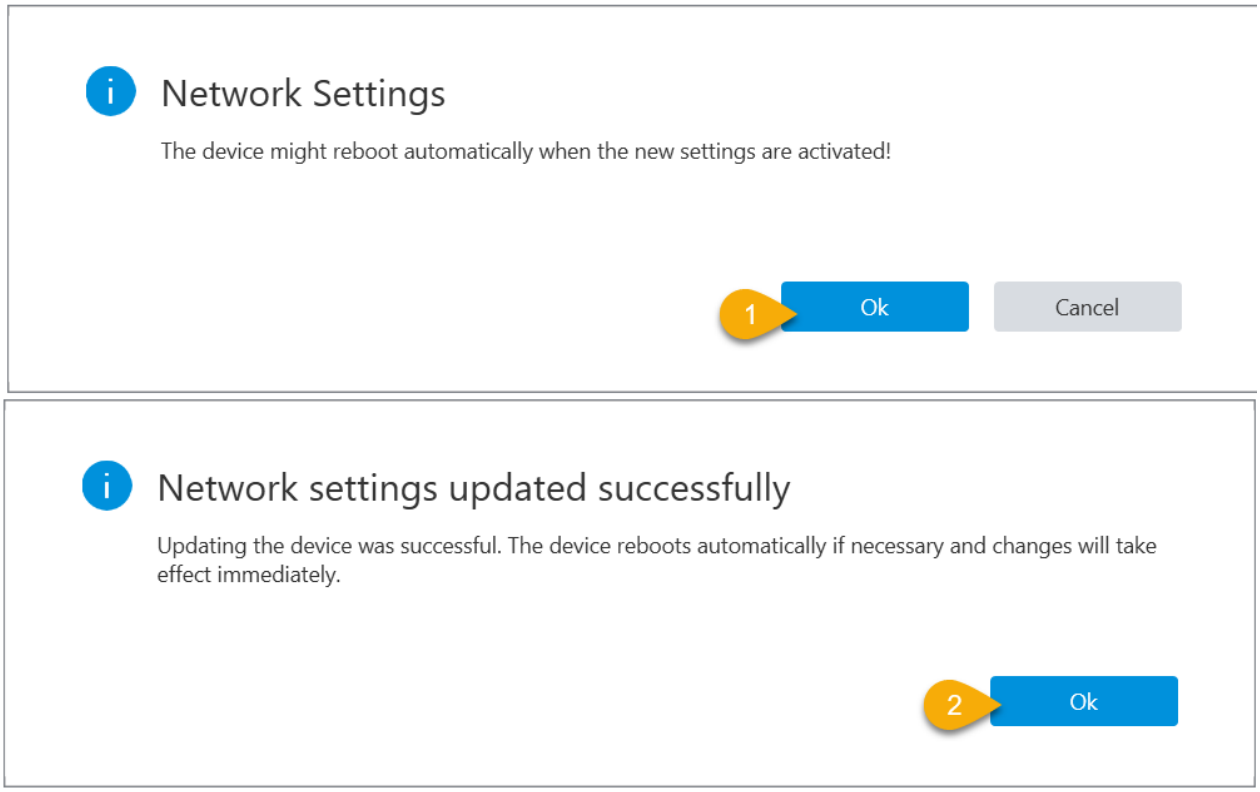
- If CPX-FB36 Module is in factory setting Mode(DIL 3 is off), Device details will appear like above image.

Step – 4



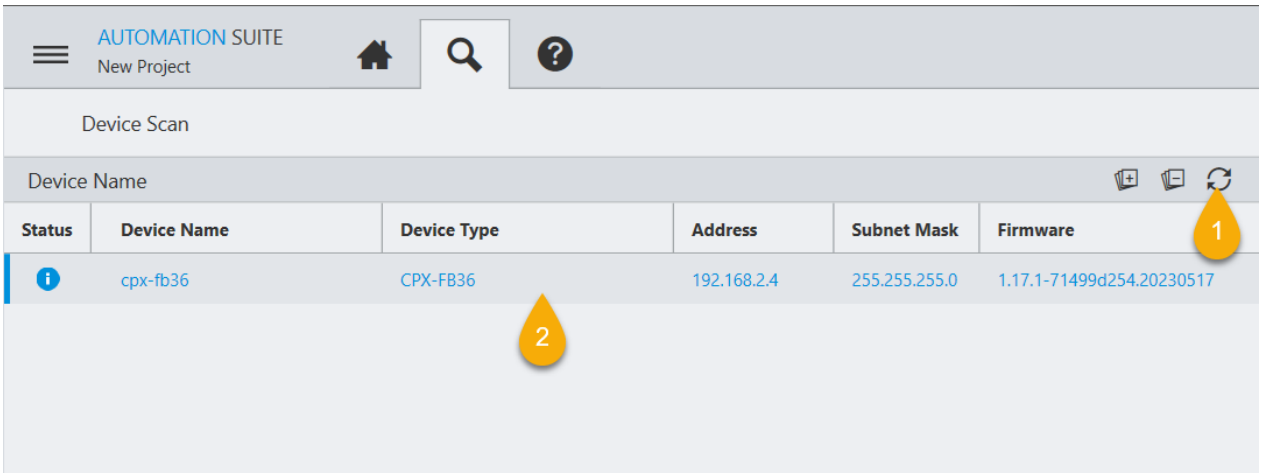
1. Enter the IP address range as per the Old CPX-FB36 Module. Here the IP Address of Old module is **"192.168.2.4"**.
2. Enter the Subnet Mask range as per the old CPX-FB36 Module.
3. Enter the Gateway details if it is available in the old CPX-FB36 Module else user can leave the gateway field.
4. Enter the DNS details if it is available in the old CPX-FB36 Module else user can leave the DNS field.
5. Click **"Activate New Settings"**.

Step – 5



1. Click **"OK"** on Network Setting Pop-up.
2. Click **"OK"** on Network setting updated successfully window to complete the set up.

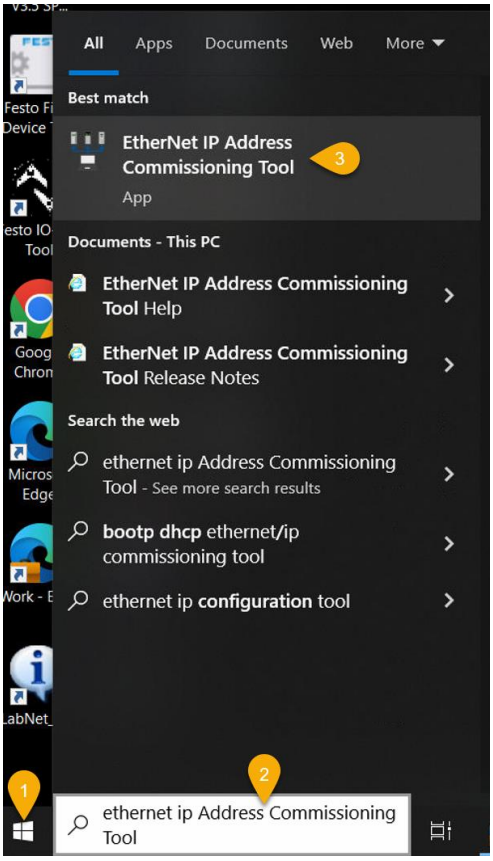
Step – 6



1. Click on refresh button to view the Module IP address Update.
2. In the Device Scan window User can view the updated IP address CPX-FB36 Module.

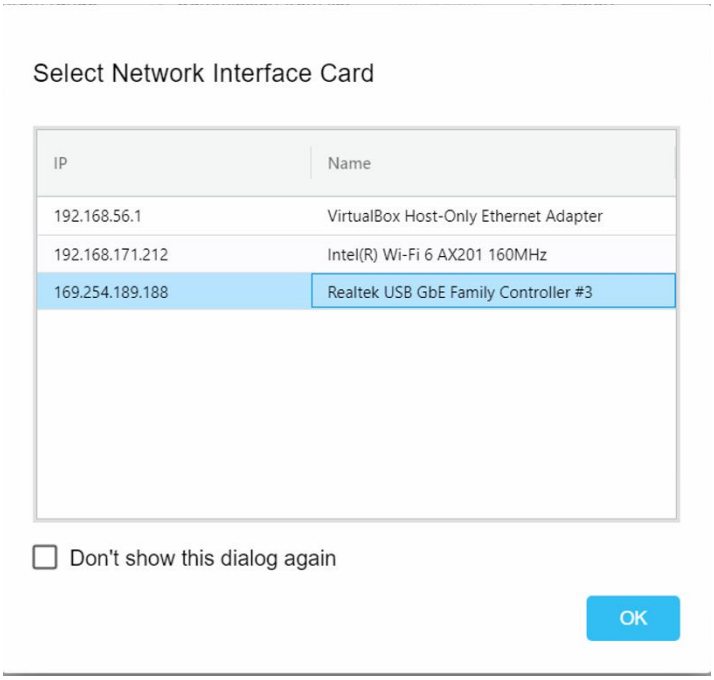
3.3.3 Setting up the IP Address using EtherNet IP Address Commissioning Tool

Step – 1



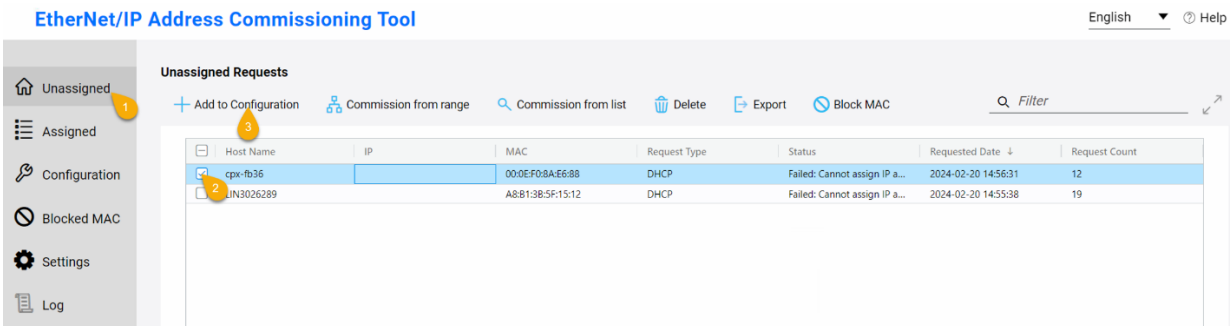
1. Click **"Start"** button of Windows.
2. Type the name **"EtherNet IP Address Commissioning Tool"** in search box.
3. Select **"EtherNet IP Address Commissioning Tool"** from search result.

Step – 2



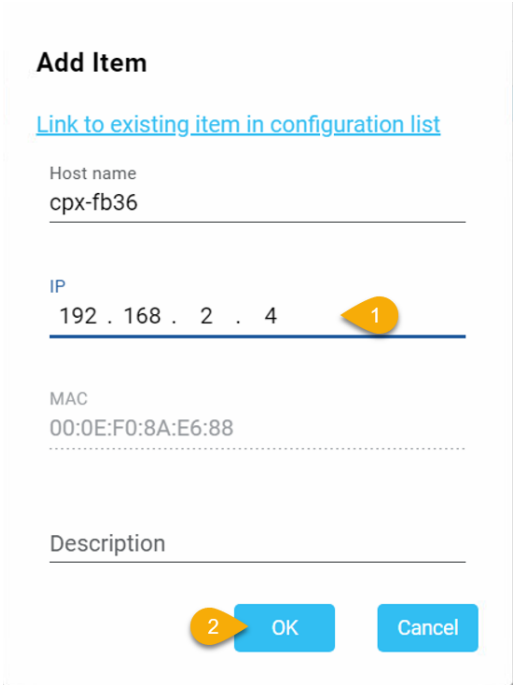
- Select the Network Interface of the Work Station

Step – 3



1. Click on **Unassigned**.
2. Select the check box of browsed **"CPX-FB36"** module.
3. Click in **"+Add to Configuration"**.

Step – 4

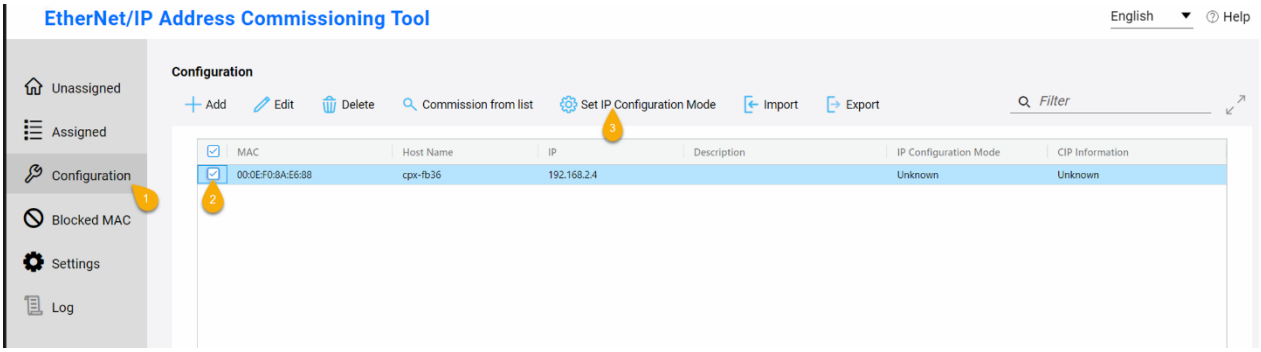


1. Enter the IP Address of CPX-FB36 Module as per the Old CPX-FB36 Module. Here Old CPX-FB36 Module IP Address is 192.168.2.4.
2. Click **"OK"** to Configure.

Step – 5

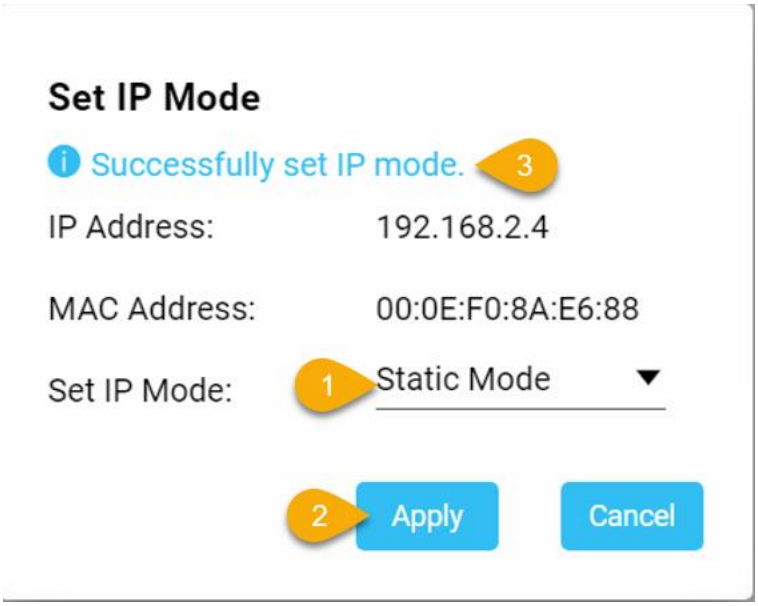
Note

- User need to change the Work Station IP Address to the Module IP address range, Here CPX-FB36 Module IP range is **"192.168.2.xxx"** range.



1. Click on **"Configuration"**.
2. Select the Check box of **"CPX-FB36"** Module.
3. Click **"Set IP Configuration Mode"** Option.

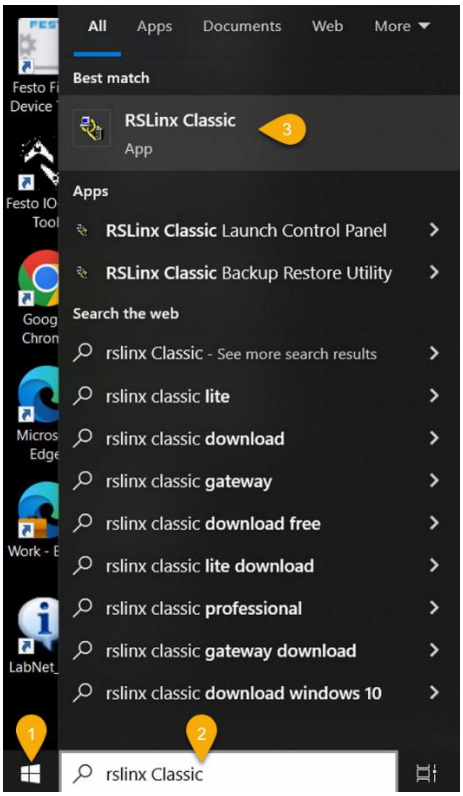
Step – 6



1. Select **"Static Mode"** option in **Set IP Mode**.
2. Click **"Apply"**.
3. Once Settings is applied successfully User get the Pop-up as **"Successfully set IP mode"**.

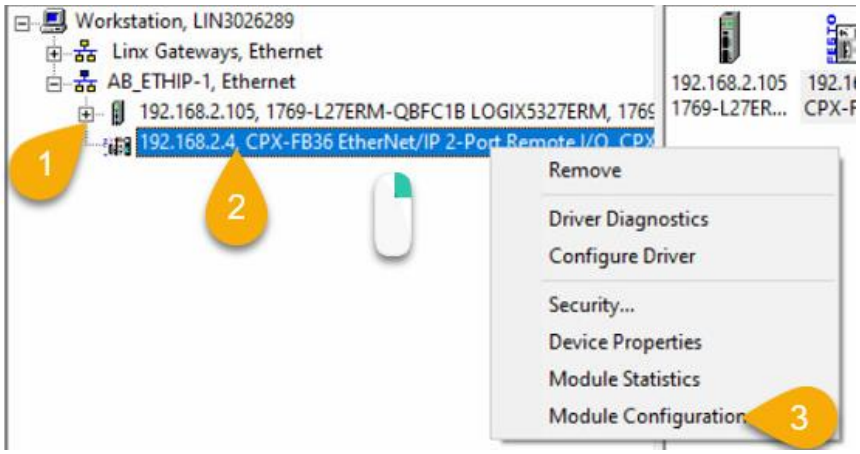
Step – 7

Need to disable Automatic IP address assigning from BootP option in RS-Links Software.



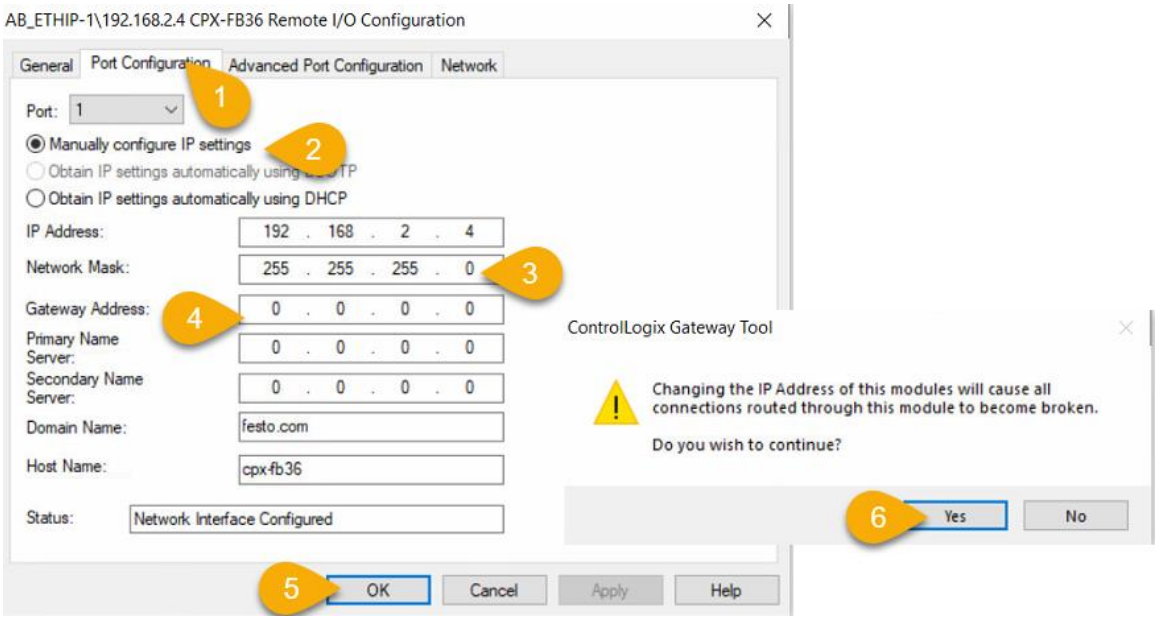
1. Click **"Start"** button of Windows.
2. Type the name **"RsLinx Classic"** in search box.
3. Select **"RsLinx Classic"** from search result.

Step – 8



1. Debrach the created EtherNet Drive.
2. Right Click on the **"CPX-FB36"** Module.
3. Click on **"Module Configuration"**.

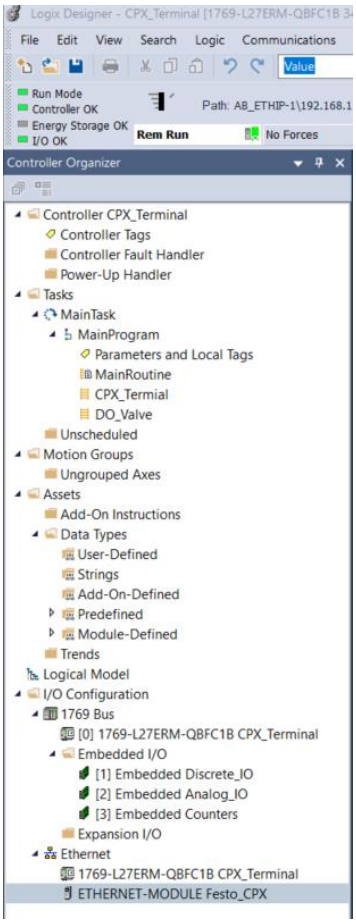
Step – 9



1. Click on **"Port Configuration"**.
2. Select **"Manually configure IP settings"** if **"Obtain IP Settings automatically using DHCP"** is selected.
3. Enter the Subnet Mask range as per the old CPX-FB36 Module.
4. Enter the Gateway details if it is available in the old CPX-FB36 Module else user can leave the gateway field.
5. Click **"OK"**.
6. Click **"Yes"**.

3.4 Final Setting of the device after New module Replacement

- After the IP Address settings and Pneumatic supply on if required, CPX-Terminal system will be back to the working mode.



- PLC Running Project in Studio 5000