# **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

Title	Replacing an old CPX-FB36 EtherNet/IP Bus Node
	1.10
Original	en
Author	Festo
Last saved	26.02.2024

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Users of this document (application note) must verify that all functions described here also work correctly in the application. By reading this document and adhering to the specifications contained therein, users are also solely responsible for their own application.

# **Table of contents**

1	Components/Software used		5
2	Inform	nation gathering from former CPX-FB36 Module	6
2.1	Inform	ation gathering of DIP Switch details in CPX-FB36 Module	6
2.2	Gather	ring of IP Address details of Old Working CPX-FB36 Module	10
	2.2.1 2.2.2	Gathering IP Address details by using Festo Automation Suit	
2.3	Disma	ntle the Old Working CPX-FB36 Module	15
3	Setting	g up the New Replacement CPX-FB36 Hardware	18
3.1	Mount	ing the CPX-FB36 Hardware in Festo CPX Terminal	18
3.2	Setting	g up the DIL Switch Settings to the Replaced CPX-FB36 Module	22
3.3	Setting	g back the Old module IP Address to New CPX-FB36 Module	24
	3.3.1	Setting up the IP address of New CPX-FB36 Module if DIL Switch-3 is used and set as the fo	
		g Festo Automation Suiteg RsLink Classic 29	25
	3.3.2 3.3.3	Setting up the IP address of New CPX-FB36 Module if DIL Switch-3 is Not Selected Setting up the IP Address using EtherNet IP Address Commissioning Tool	
3.4	Final S	etting of the device after New module Replacement	40

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

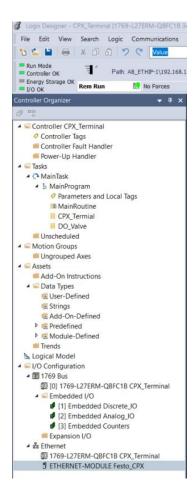
# 2.1 Information gathering of DIP Switch details in CPX-FB36 Module

### Step - 1



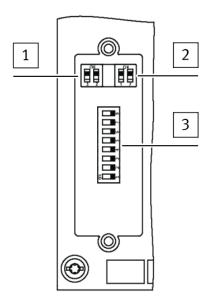
DIP Switch located Section

• 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.

<u>Step – 2</u>



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

Setting network protocol

# **DIL Switch 2:**

DIL switch	12	Diagnostics mode (Remote I/O) <sup>1)</sup>	Data field size (Remote Controller) <sup>2)</sup>
	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)
ON	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) <sup>3)</sup>
ON	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)
ON	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) <sup>4)</sup>

<sup>-</sup> Setting diagnostic mode or data field size

# DIL Switch 3:

DIL swite	:h 3			IP addressing
<b>□■∞</b>	DIL 3.8:	27 =	128	The type of addressing or the Host-ID of the IP address of
	DIL 3.7:	$2^6 =$	64	the bus node is set via the DIL switch elements 3.1 3.8.
	DIL 3.6:	$2^{5} =$	32	
	DIL 3.5:	24 =	16	Possible settings:
	DIL 3.4:	$2^{3} =$	8	0 = dynamic addressing via DHCP/BOOTP
	DIL 3.3:	$2^2 =$	4	1 254 = permissible address range
	DIL 3.2:	$2^1 =$	2	255 = reset all IP parameters to factory setting
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	DIL 3.1:	$2^{0} =$	1	
o T				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&product-Name=Bus+node&groupId=3&documentId=661278&documentType-Group=USER\_DOCUMENTATION&documentTypes=



- 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

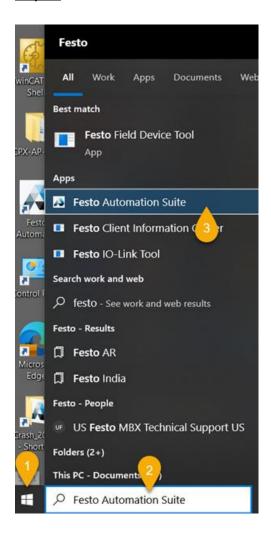
DIL Switch 2	
Switch-1	OFF
Switch-2	ON

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



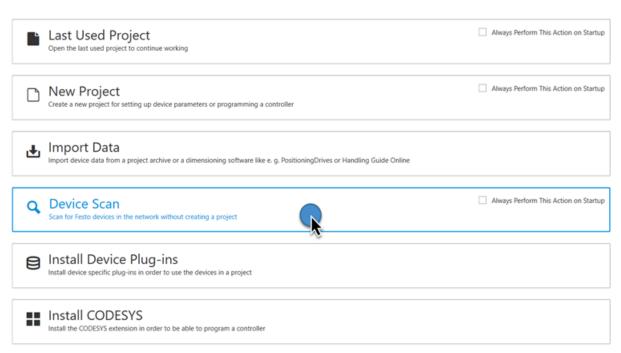
- 1. Click "Start" button of Windows.
- 2. Type the name "Festo Automation Suite" in search box.
- 3. Select "Festo Automation Suite" from search result.

### **Step - 2**

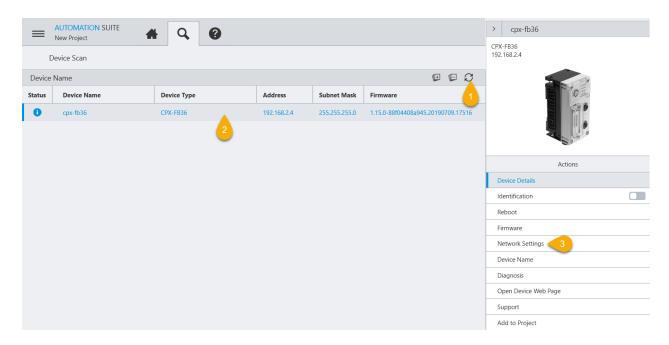
### **AUTOMATION SUITE**



### **How Do You Want to Start?**



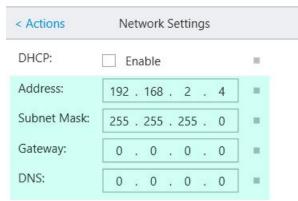
• Click "Device Scan" to Scan the connected CPX-FB36 devices.



- 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.

CPX-FB36 192.168.2.4

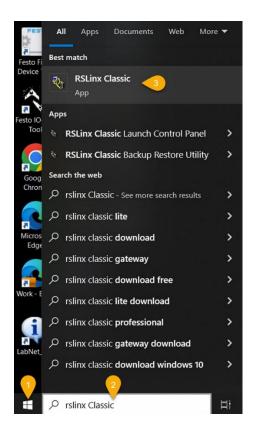




• User need to Mark it down or take a picture of above green color highlighted details from the Festo Automation Suit.

# 2.2.2 Gathering IP Address details by using RsLink Classic

### Step - 1



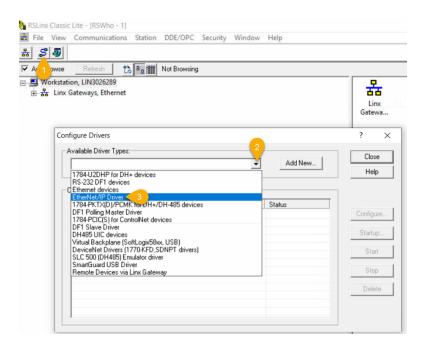
- 1. Click "Start" button of Windows.
- 2. Type the name "RsLinx Classic" in search box.
- 3. Select "RsLinx Classic" from search result.

### **Step - 2**



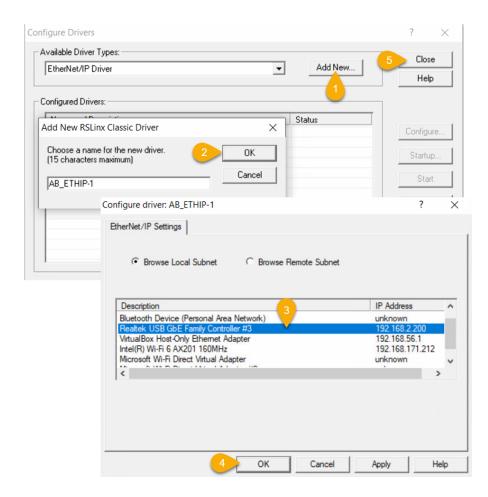
### Note

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



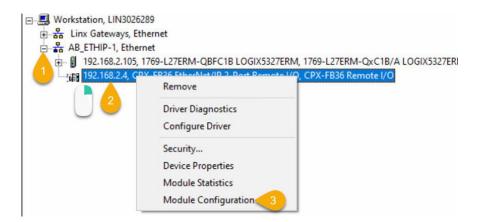
- 1. Click "Configure Driver" button.
- 2. Click Drop Down button.
- 3. Select "EtherNet/IP Driver" option.

### **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".

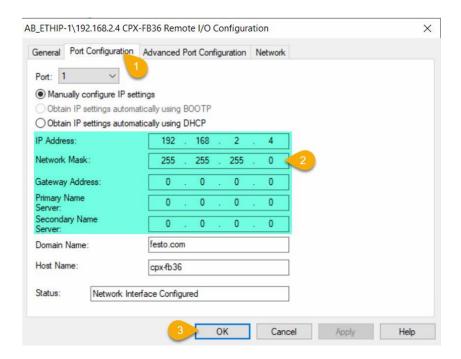
### **Step - 4**



- 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.

# <u>Step – 1</u>

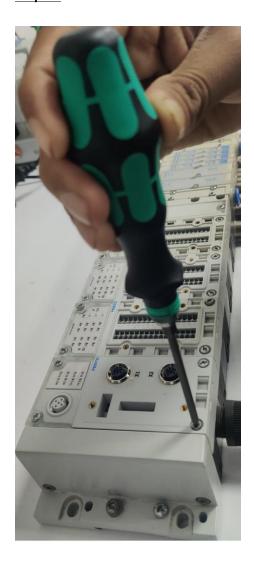


• Turn off the Power supply of CPX-Terminal before replacing the CPX-FB36 Module and turn off the Pneumatic air supply if its available on the user device.



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.



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

# <u>Step – 5</u>

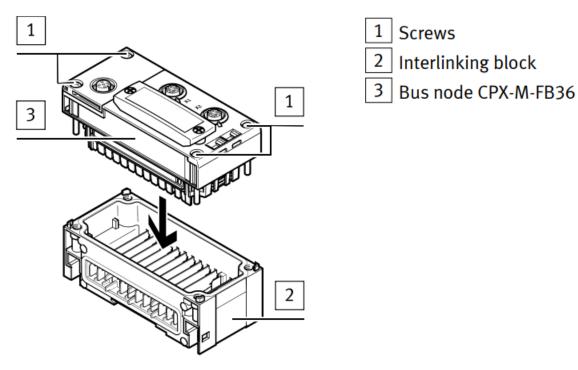


• Once the CPX-FB36 module is Dismounted from the CPX-Terminal device, Its looks like a above shown picture.

# 3 Setting up the New Replacement CPX-FB36 Hardware

# 3.1 Mounting the CPX-FB36 Hardware in Festo CPX Terminal

**Step – 1** 



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

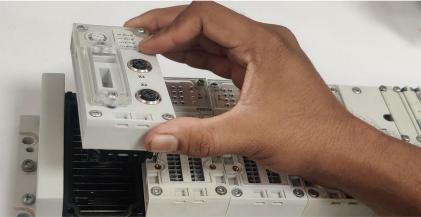
<u>Step – 2</u>

Mounting the CPX-FB36 Module to the Festo CPX Terminal

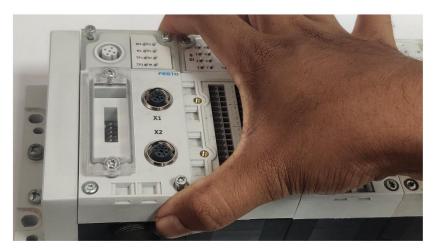


Festo CPX Terminal





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

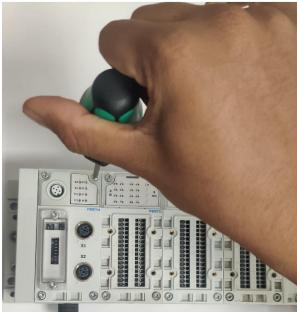




• Mount the CPX-FB36 module in the bus terminal and Press with little force to fix the module

**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.

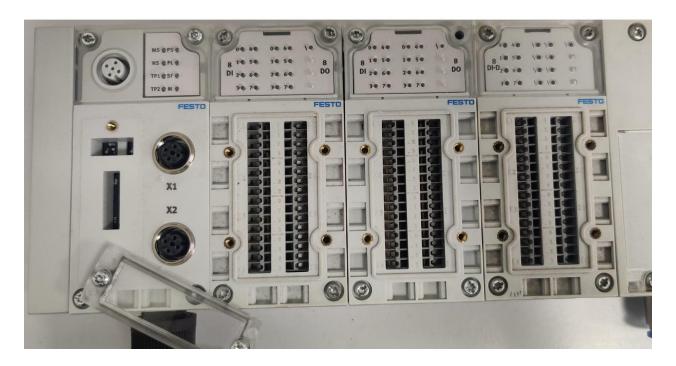


# Note

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

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

# <u>Step – 1</u>



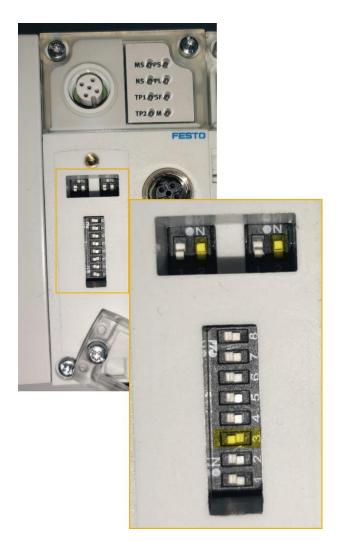
• Dismount the DIL Switch Protection Cover in new CPX-FB36 Module to set up the DIL Switch Settings.

<u>Step – 2</u>



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

# <u>Step – 3</u>



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

# <u>Step – 4</u>



• 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

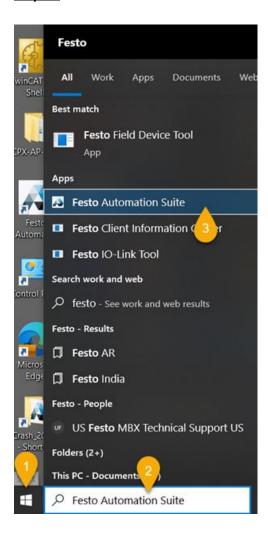
Example for Addressing via DIL switches

Example with IP address: 192.168.001.005	Example with IP address: 192.168.001.038
$2^{0} + 2^{2} = 1 + 4 = 5$ $1 + 4 = 5$	$ \begin{array}{c c}                                    $

# 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**

# <u>Step – 1</u>



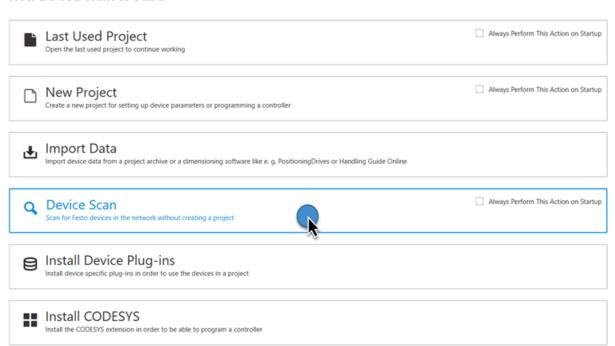
- 1. Click "Start" button of Windows.
- 2. Type the name **"Festo Automation Suite"** in search box.
- 3. Select "Festo Automation Suite" from search result.

### **Step - 2**

### **AUTOMATION SUITE**

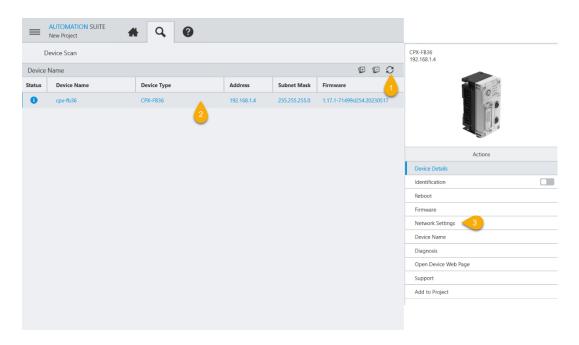


# **How Do You Want to Start?**



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

# <u>Step – 3</u>



- 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

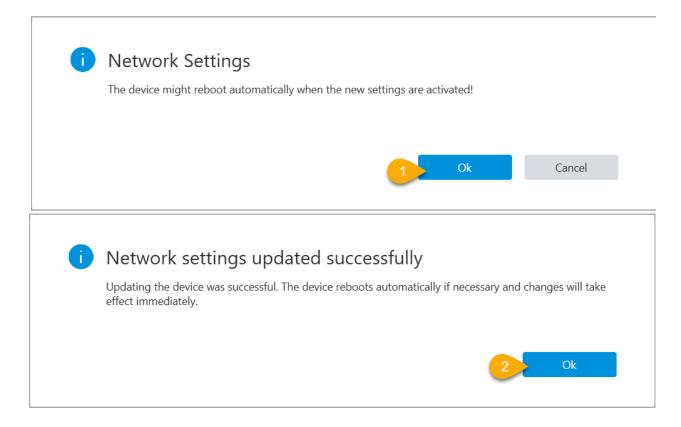
As per the DIL Switch-3 Settings, For new CPX-FB36 Module default IP address has assigned automatically as "192.168.1.4". User need to Change the IP address range as per the Old CPX-FB36 Module

# Step – 4

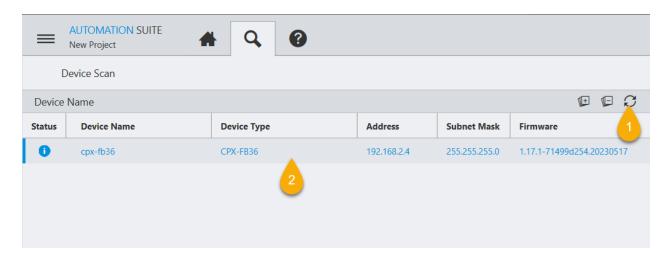


- 1. Disable the check box of "DHCP" if its enabled.
- 2. Enter the IP address range as per the Old CPX-FB36 Module. Here the IP Address of Old module is "192.168.2.4".
- 3. Enter the Subnet Mask range as per the old CPX-FB36 Module.
- 4. Enter the Gateway details if it is available in the old CPX-FB36 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".

Activate New Settings



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



- 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.

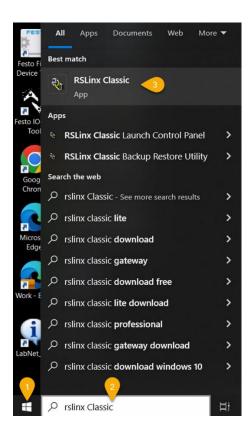
# **Using RsLink Classic**



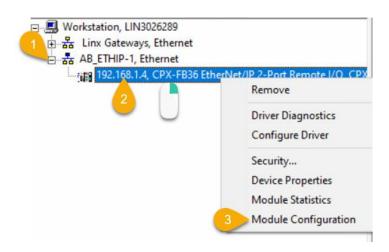
### Note

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

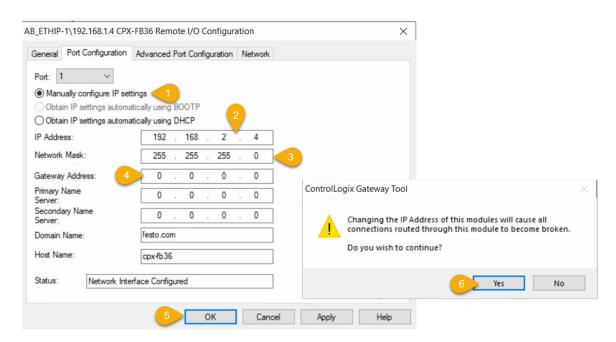
### **Step - 1**



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



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



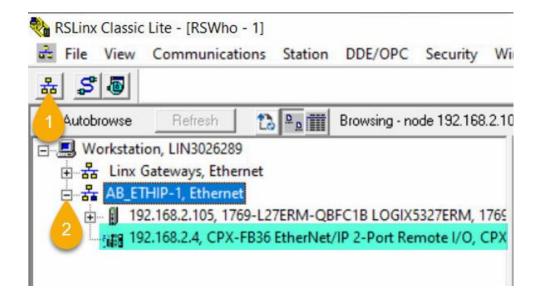
- 1. Select "Manually configure IP settings" if it is not selected Automatically.
- 2. Enter the IP address range as per the Old CPX-FB36 Module. Here the IP Address of Old module is "192.168.2.4".
- 3. Enter the Subnet Mask range as per the old CPX-FB36 Module.
- Enter the Gateway details if it is available 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

# <u>Step – 1</u>



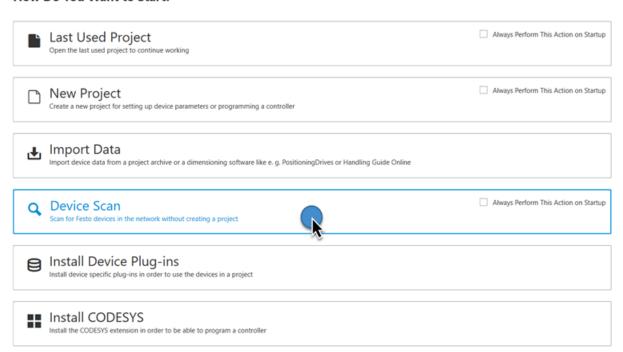
- 1. Click "Start" button of Windows.
- 2. Type the name "Festo Automation Suite" in search box.
- 3. Select "Festo Automation Suite" from search result.

### **Step - 2**

### **AUTOMATION SUITE**

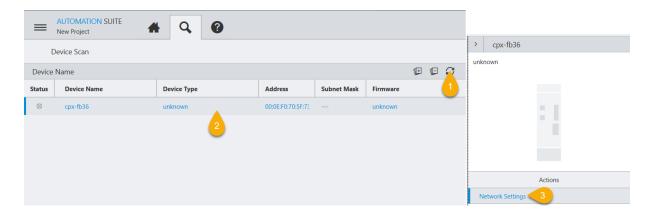


#### **How Do You Want to Start?**



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

# **Step – 3**



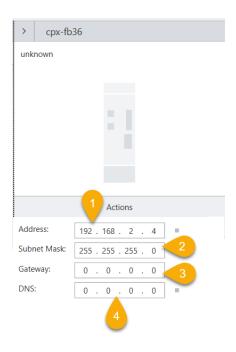
- 1. Click "Refresh" button, if New CPX-FB36 device is not browsed.
- 2. Select the New "CPX-FB36" device which is browsed.
- 3. Click on **Network Settings** on right side of device settings.



# Note

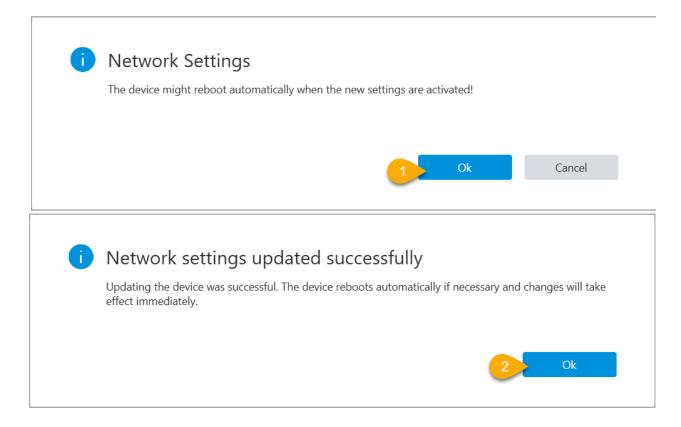
If CPX-FB36 Module is in factory setting Mode(DIL 3 is off), Device details will appear like above image.

# **Step - 4**

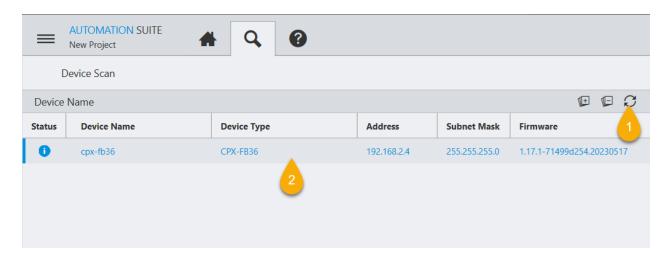




- 1. Enter the IP address range as per the Old CPX-FB36 Module. Here the IP Address of Old module is "192.168.2.4".
- 2. Enter the Subnet Mask range as per the old CPX-FB36 Module.
- 3. Enter the Gateway details if it is available in the old CPX-FB36 Module else user can leave the gateway field.
- 4.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



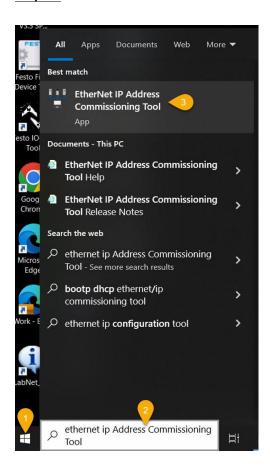
- 1. Click "OK" on Network Setting Pop-up.
- 2. Click "OK" on Network setting updated successfully window to complete the set up.



- 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.

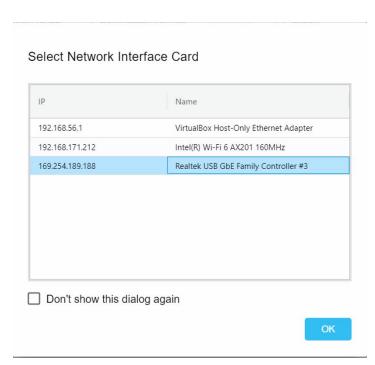
# 3.3.3 Setting up the IP Address using EtherNet IP Address Commissioning Tool

### Step - 1



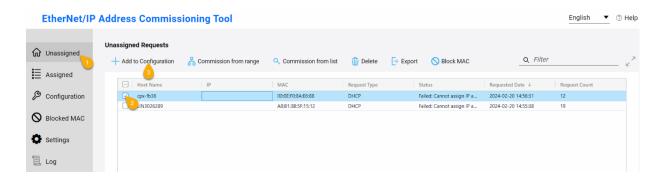
- 1. Click "Start" button of Windows.
- 2. Type the name "EtherNet IP Address Commissioning Tool" in search box.
- 3. Select "EtherNet IP Address Commissioning Tool" from search result.

# **Step – 2**

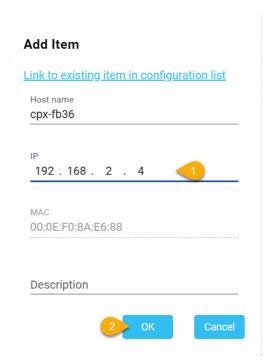


Select the Network Interface of the Work Station

# <u>Step – 3</u>



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

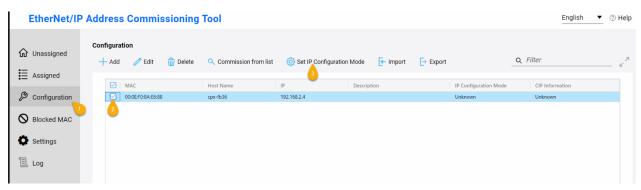


- 1. Enter the IP Address of CPX-FB36 Module as per the Old CPX-FB36 Module. Here Old CPX-FB36 Module IP Address is 192.168.2.4.
- 2. Click "OK" to Configure.



# 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.

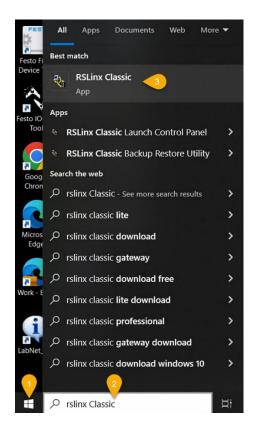


- 1. Click on "Configuration".
- 2. Select the Check box of "CPX-FB36" Module.
- 3. Click "Set IP Configuration Mode" Option.

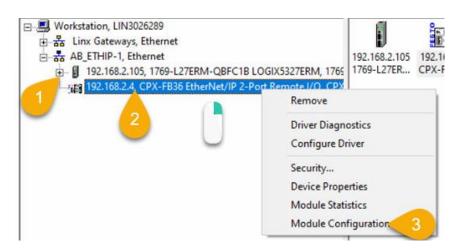


- 1. Select "Static Mode" option in Set IP Mode.
- 2. Click "Apply".
- 3. Once Settings is applied successfully User get the Pop-up as "Successfully set IP mode".

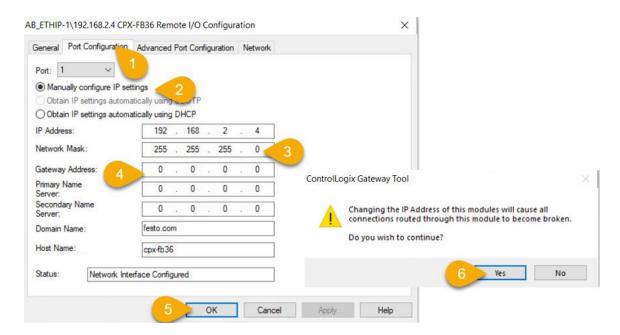
Need to disable Automatic IP address assigning from BootP option in RS-Links Software.



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



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

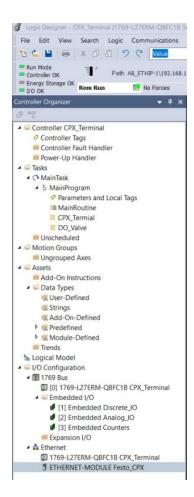


- 1. Click on "Port Configuration".
- 2. Select "Manually configure IP settings" if "Obtain IP Settings automatically using DHCP" is selected.
- 3. Enter the Subnet Mask range as per the old CPX-FB36 Module.
- Enter the Gateway details if it is available in the old CPX-FB36 Module else user can leave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