Application Note

FESTO

Replacing an old CPX-FB37 EtherCAT Bus Node

Festo CPX-FB37 communication to EtherCAT PLC

The CPX-FB37 bus node is used as part of a CPX terminal and for communication as a participant in networks with the protocol EtherCAT.

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-FB37

CPX Terminal

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Table of contents

Table of contents

1 Components/Software used

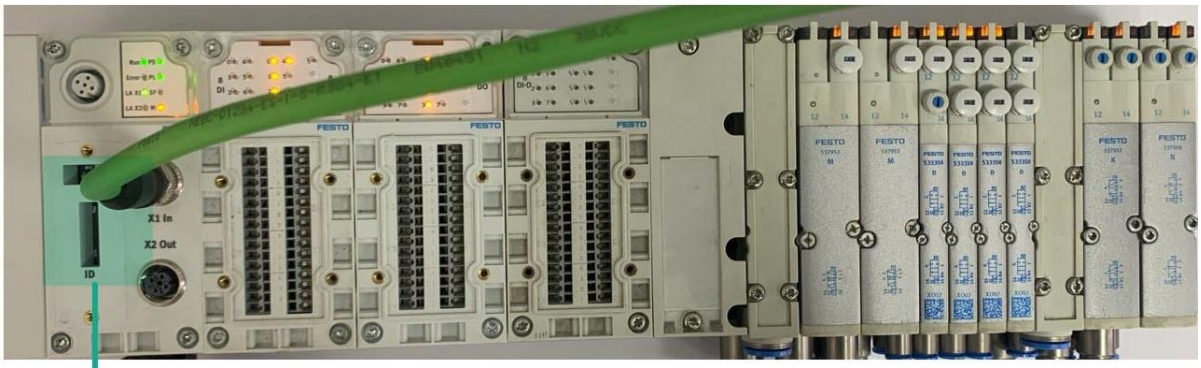
Type/Name	Version Software/Firmware	Description
CPX-FB37	----	Festo CPX EtherCAT Fieldbus Terminal
Codesys	----	

Table 1.1: 1 Components/Software used

2 Information gathering from former CPX-FB37 Module

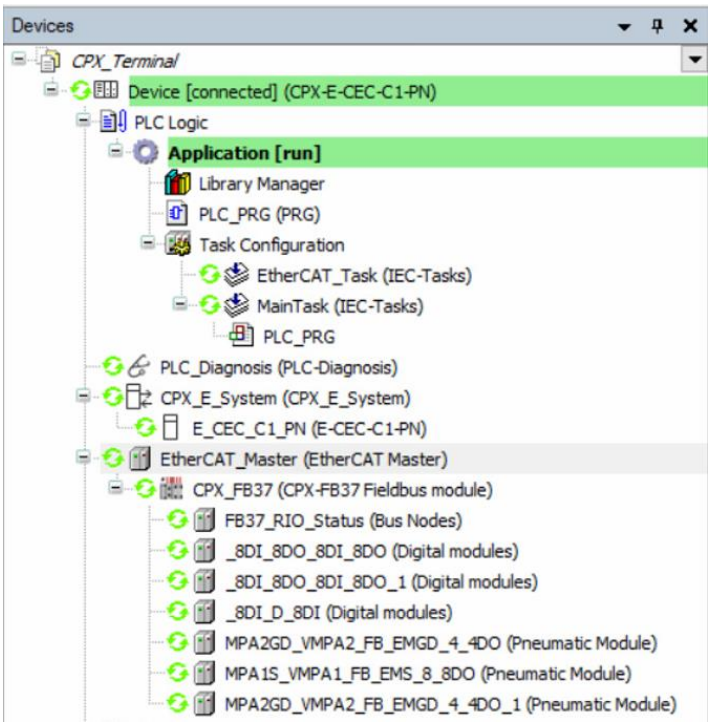
2.1 Information gathering of DIL Switch details in CPX-FB37 Module

Step – 1



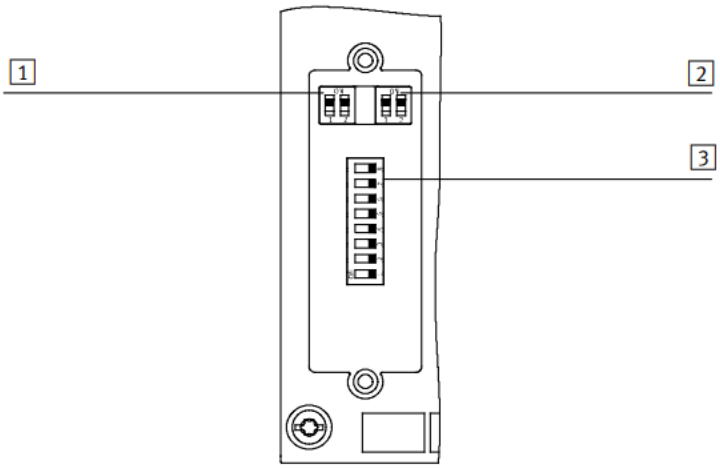
DIL Switch Located Section

- In a working old CPX-FB37 module, User need to notify the DIL switch selected details. User can find the DIL switch located area as green color highlighted Section in above image.



- PLC Running Project in Codesys.

Step – 2

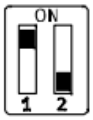


1 DIL switch 1: Bus node operating mode
2 DIL switch 2: Diagnostics mode, number of I/O bytes, bootloader
3 DIL switch 3: EtherCAT address of the bus node

- DIL Switch arrangement in CPX-FB37 Module.

DIL Switch Mode Setting Details:

DIL Switch 1:

Operating mode	Setting DIL switch 1	
Remote I/O All functions of the CPX terminal are controlled directly by the EtherCAT controller or a higher-level PLC. The bus node thereby takes over the connection to the EtherCAT network.		DIL 1.1: OFF (factory setting)
Remote controller A CPX-FEC or CPX-CEC integrated into the terminal controls all functions. The bus node thereby takes over the connection to the EtherCAT network.		DIL 1.1: ON

- Setting operating mode

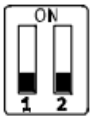
EtherCAT addressing type	Setting DIL switch 1	
Modular Device Profile (MDP) active		DIL 1.2: OFF (factory setting)
Fixed I/O size active (64 byte I/O) (compatible with the bus node CPX-FB38)		DIL 1.2: ON

- Configuring the EtherCAT addressing type

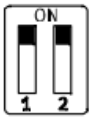
DIL Switch 2:

Diagnostics mode (remote I/O operating mode)	Setting DIL switch 2	
I/O diagnostics interface and status bits are switched off (+ 0 I/O bits)		DIL 2.1: OFF DIL 2.2: OFF (factory setting)
Status bits are switched on (+ 8 (16) I bits)[1)]		DIL 2.1: OFF DIL 2.2: ON
I/O diagnostics interface is switched on (+ 16 I/O bits)[1)]		DIL 2.1: ON DIL 2.2: OFF

- Setting diagnostic mode (Remote I/O operating mode)

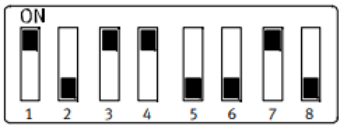
Number of I/O bytes (remote controller operating mode)	Setting DIL switch 2	
8 bytes I/8 bytes O for communication of the bus node with the CPX-FEC or CPX-CEC		DIL 2.1: OFF DIL 2.2: OFF (factory setting)
16 bytes I/16 bytes O for communication of the bus node with the CPX-FEC or CPX-CEC		DIL 2.1: OFF DIL 2.2: ON
Reserved for future extensions		DIL 2.1: ON DIL 2.2: OFF

- Setting the number of I/O bytes (Remote Controller operating mode)

Starting the bootloader	Setting DIL switch 2	
for firmware restore		DIL 2.1: ON DIL 2.2: ON

- Starting the bootloader

DIL Switch 3:

Example: Set EtherCAT address 77								
DIL switch 3								
DIL switch element	1	2	3	4	5	6	7	8
Switch position	**ON**	Off	**ON**	**ON**	Off	Off	**ON**	Off
Binary	1	0	1	1	0	0	1	0
Potency (significance)	2^0	2^1	2^2	2^3	2^4	2^5	2^6	2^7
Numerical value (decimal)	1	0	4	8	0	0	64	0
EtherCAT address	1 + 0 + 4 + 8 + 0 + 0 + 64 + 0 = **77**							

- Setting EtherCAT address with DIL switch

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

https://www.festo.com/in/en/search/?tab=SUPPORT_PORTAL&q=CPX-FB37&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-FB37 module.
- DIL Switch details in above Picture

DIL Switch 1	
Switch-1	OFF
Switch-2	OFF

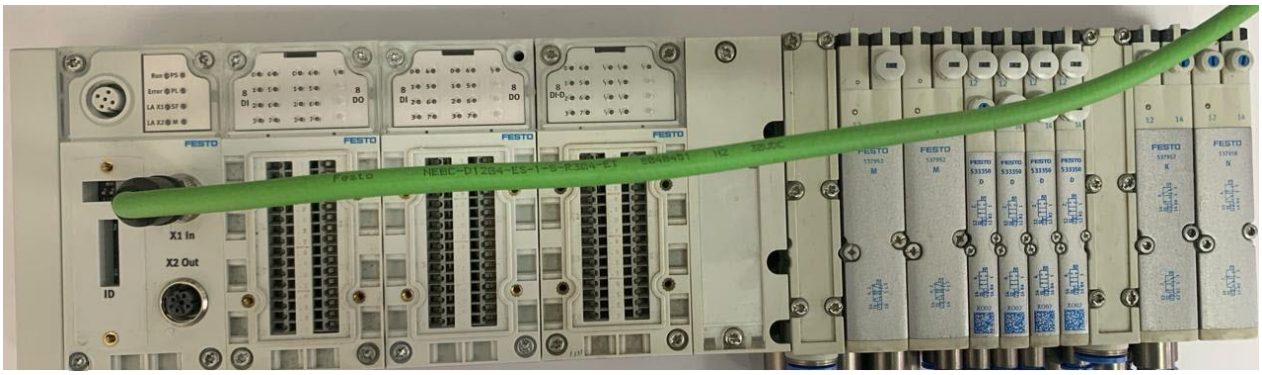
DIL Switch 2	
Switch-1	OFF
Switch-2	ON

DIL Switch 3	
Switch-1	OFF
Switch-2	OFF
Switch-3	OFF
Switch-4	OFF
Switch-5	OFF
Switch-6	OFF
Switch-7	OFF
Switch-8	OFF

2.2 Dismantle the Old Working CPX-FB37 Module

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

Step – 1

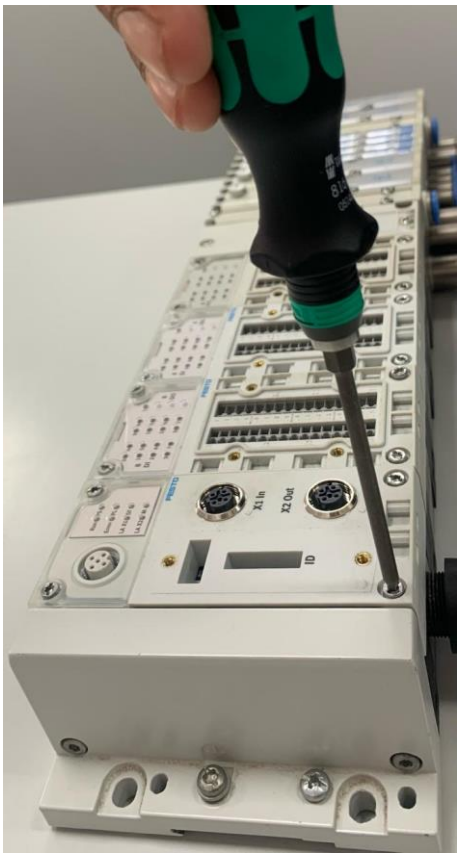


- Turn off the Power supply of CPX-Terminal before replacing the CPX-FB37 Module and turn off the Pneumatic air supply if its available on the user device.

Step – 2

- Remove the connected EtherNet Cable (NEBC-D12G4-ES-1-S-R3G4-ET) which is connected to the CPX-FB37 Module.

Step – 3

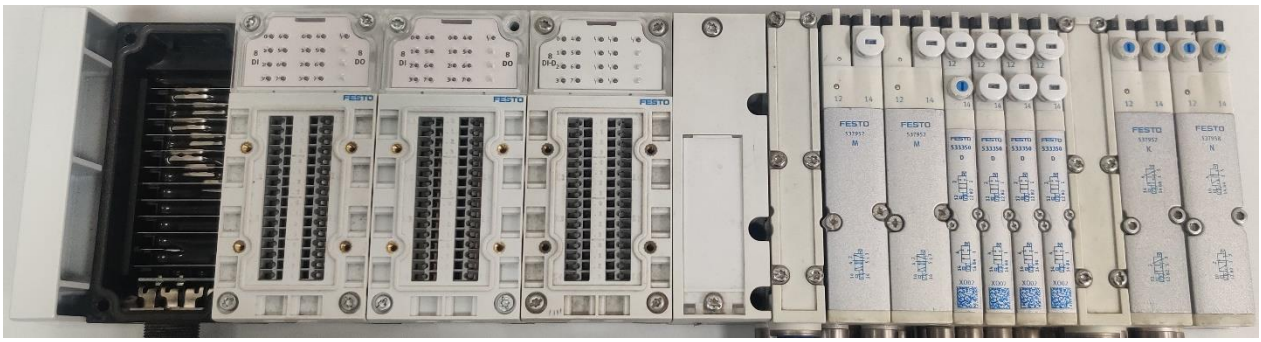


- Dismount the 4-screw of CPX-FB37 module with appropriate tool.

Step – 4

- Dismount the old CPX-FB37 module from the CPX-Terminal.

Step – 5



- Once the CPX-FB37 module is Dismounted from the CPX-Terminal device, Its looks like a above shown picture.

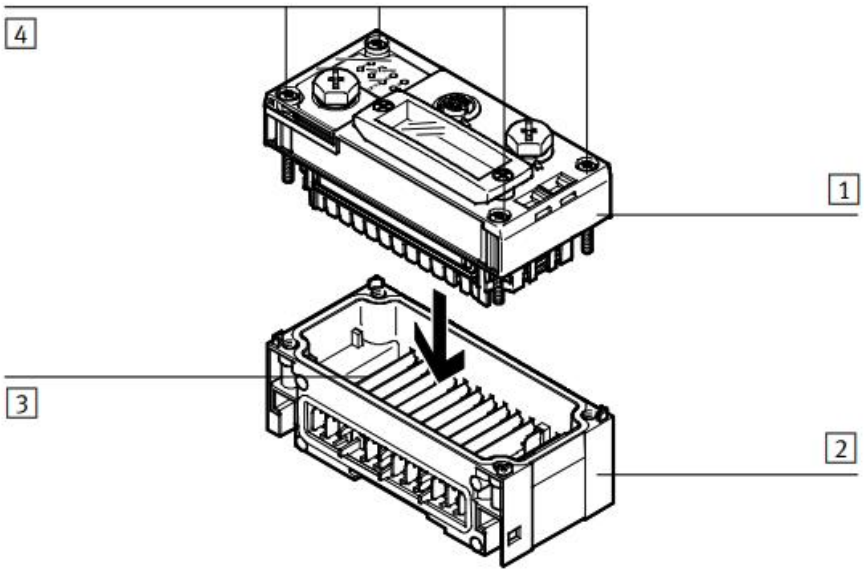
3 Setting up the New Replacement CPX-FB37 Hardware

Note

- If replacing and matching DIL switches didn't work, and system didn't came back to work mode then user must verify **Station Alias** Setting.

3.1 Mounting the CPX-FB37 Hardware in Festo CPX Terminal

Step – 1

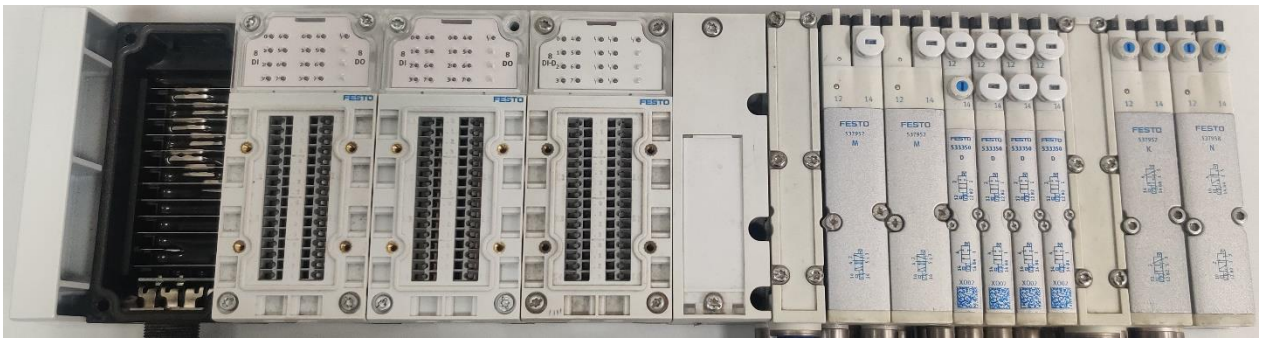


1 Bus node
2 Interlinking block
3 Contact rails
4 Torx T10 screws

- Pictorial view to Mounting the CPX-FB37 to the Bus Terminal

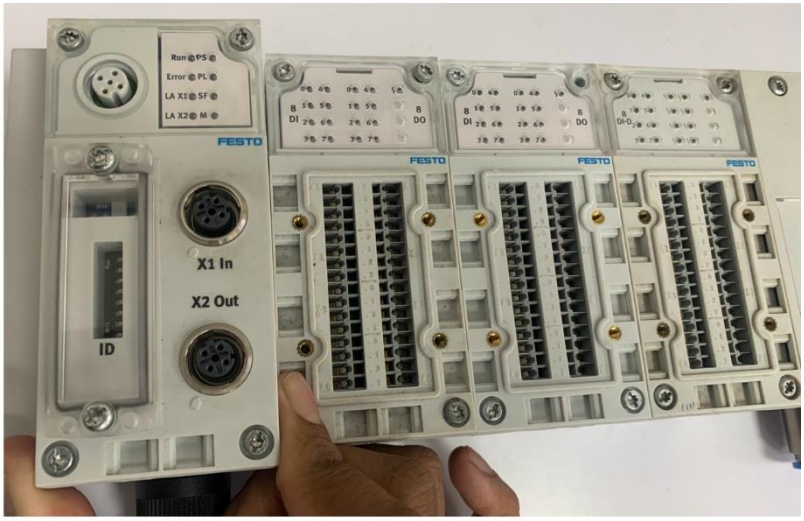
Step – 2

Mounting the CPX-FB37 Module to the Festo CPX Terminal



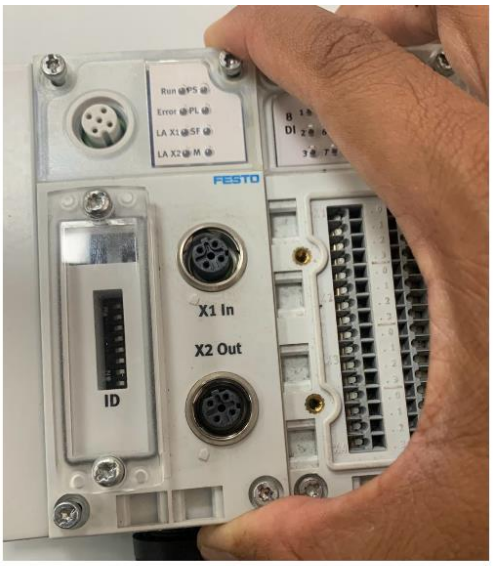
– Festo CPX Terminal

Step – 3



- Place the Festo CPX-FB37 module in the correct position of Festo CPX bus terminal.

Step – 4



- Mount the CPX-FB37 module in the bus terminal and Press with little force to fix the module

Step – 5

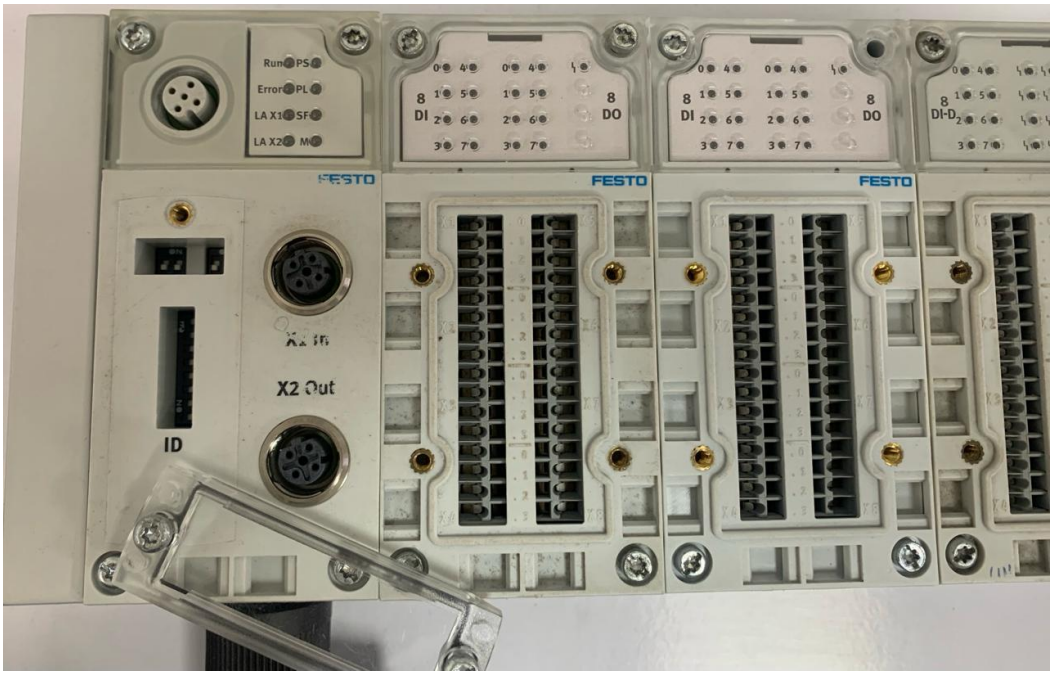
- Use appropriate tool to tighten the Screws of CPX-FB37 module. User do not use force multipliers such as breaker bars or long ratchets, It may damage the thread of the screw.

➔ **Note**

- Recommended Torque screw value is **0.4Nm**.

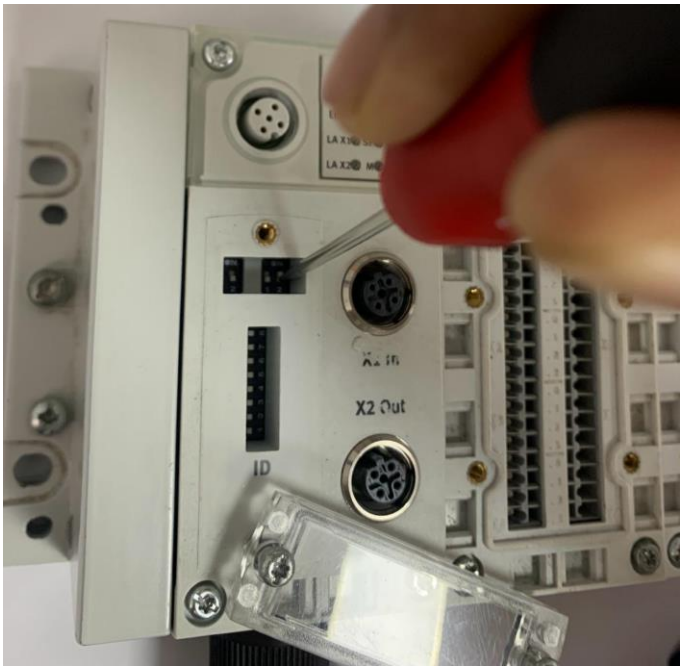
3.2 Setting up the DIL Switch Settings to the Replaced CPX-FB37 Module

Step – 1



- Dismount the DIL Switch Protection Cover in new CPX-FB37 Module to set up the DIL Switch Settings.

Step – 2



- Use appropriate tool to Set the DIL Switch Setting as per the old CPX-FB37 Module.

Step – 3

- Set up the DIL Switch as per the old CPX-FB37 Module

Step – 4

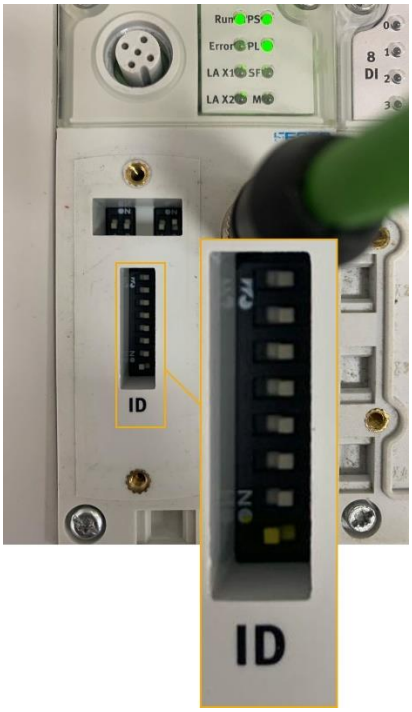
- Close the DIL Switch Protection cover and Connect back to the EtherNet Cable (NEBC-D12G4-ES-1-S-R3G4-ET) to the new CPX-FB37 Module.

Step – 5

- Once Power supply is back to the CPX-Terminal device, System will be back to working mode.

3.3 Setting up the new CPX-FB37 Module if DIL Switch-3 EtherCAT address is selected

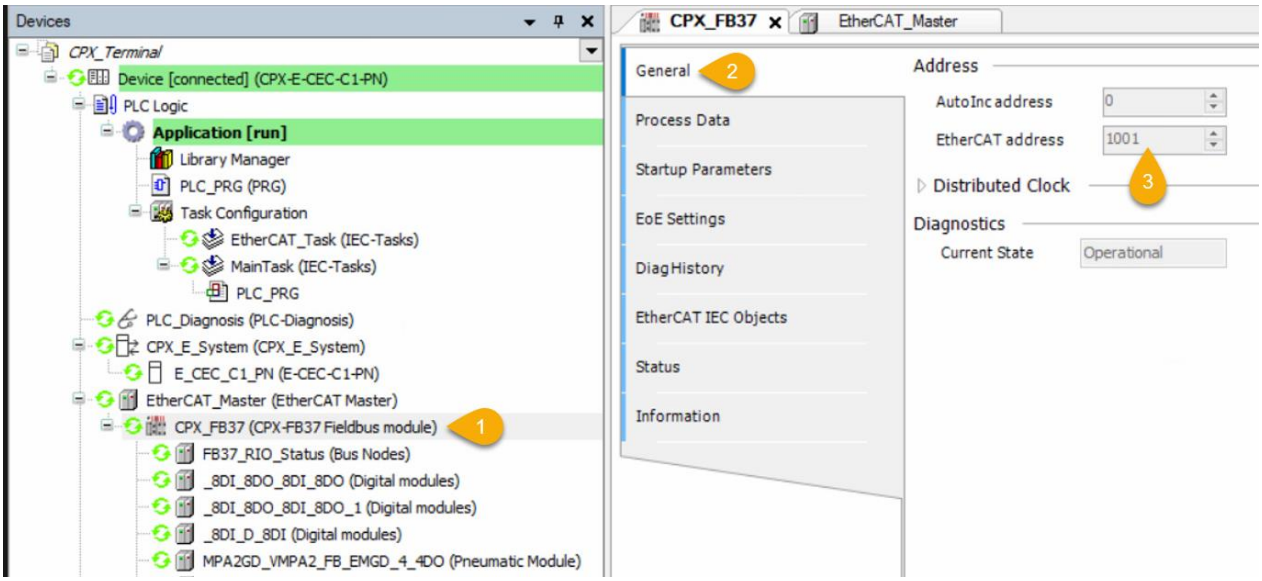
Step – 1



- In this example EtherCAT address switch **"1"** is selected on the Old running CPX-FB37 module. The same DIL switch should be selected in the new CPX-FB37 replacing module.

Step – 2

- If user is using Festo PLC then User can Confirm the **"EtherCAT Address"** from the following method.



1. Double click on **"CPX_FB37"** Module.
2. Click on **General** tab.
3. From the EtherCAT address field User can able to view the EtherCAT address of the old running Module.

Step – 3

Follow the Procedure from the Chapter- 2.2 and Chapter-3.1 to dismount the Old CPX-FB37 Module and Mounting the new CPX-FB37 module.

Step – 4

- Select the Same DIL Switch in EtherCAT address selector Switch-3 on the New Module of CPX-FB37.

Step – 5

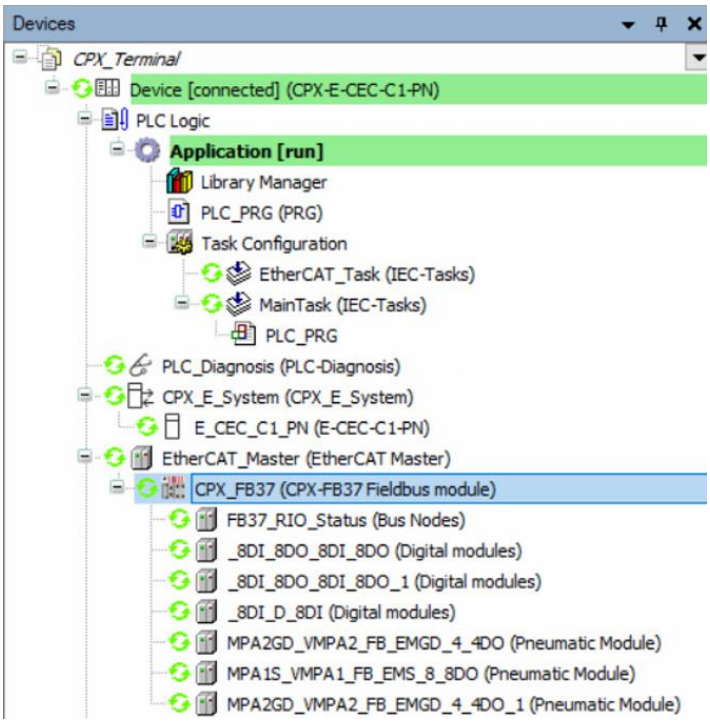
- Close the DIL Switch Protection cover and Connect back to the EtherNet Cable (NEBC-D12G4-ES-1-S-R3G4-ET) to the new CPX-FB37 Module.

Step – 6

- Once Power supply is back to the CPX-Terminal device, System will be back to working mode.

3.4 Final Setting of the device after New module Replacement

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



- PLC Running Project in Codesys.