

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

Title Replacing an old CPX-FB37 EtherCAT Bus Node
Version 1.10
Document no. 100662
Originalen
AuthorFesto

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.

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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

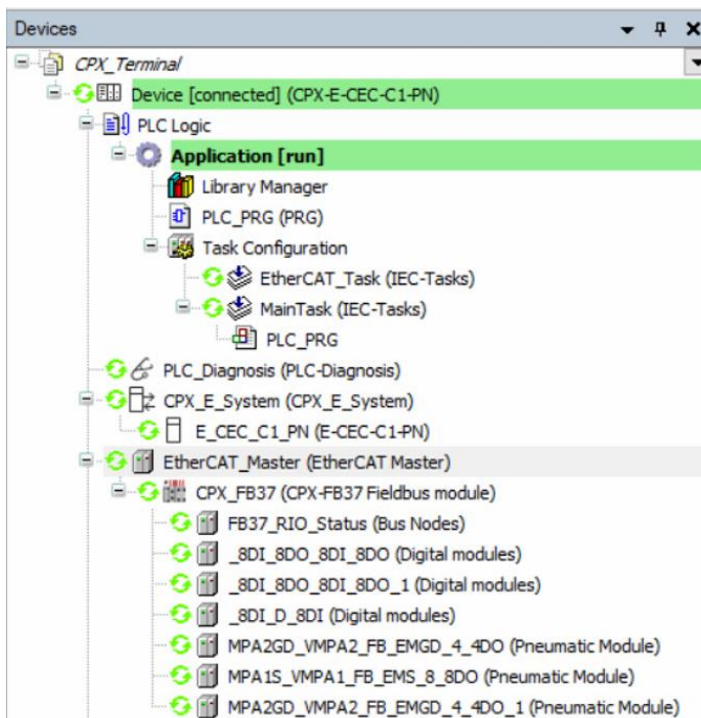
2.1 Information gathering of DIL Switch details in CPX-FB37 Module

Step – 1



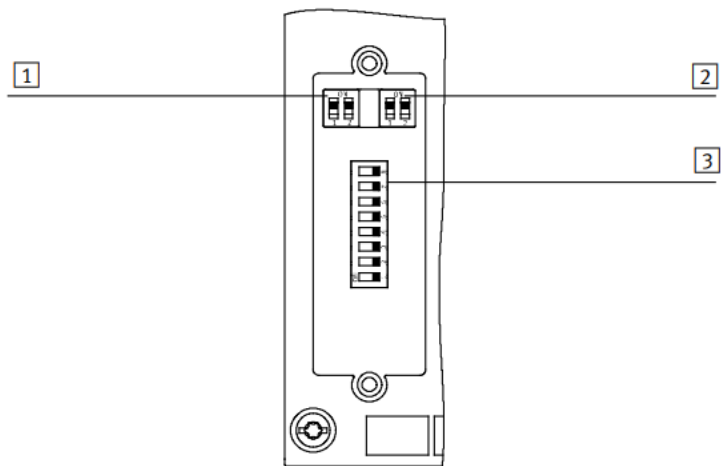
DIL Switch Located Section

- 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

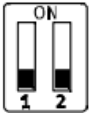
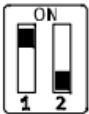


- 1** DIL switch 1: Bus node operating mode
- 2** DIL switch 2: Diagnostics mode, number of I/O bytes, bootloader
- 3** DIL switch 3: EtherCAT address of the bus node



- 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)

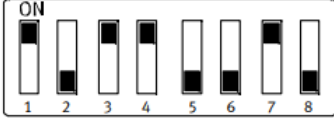
Number of I/O bytes (remote controller operating mode)	Setting DIL switch 2	
8 bytes I/8 bytes O for communication of the bus node with the CPX-FEC or CPX-CEC		DIL 2.1: OFF DIL 2.2: OFF (factory setting)
16 bytes I/16 bytes O for communication of the bus node with the CPX-FEC or CPX-CEC		DIL 2.1: OFF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

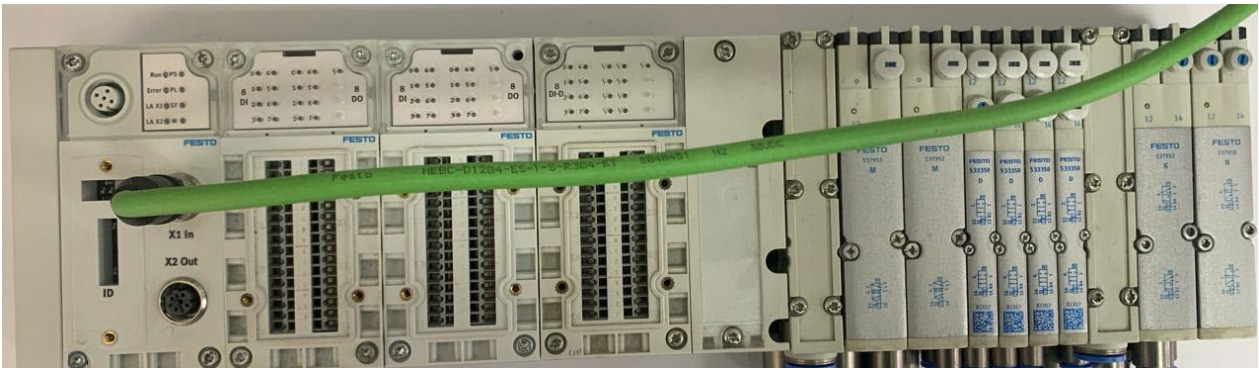
2.2 Dismantle the Old Working CPX-FB37 Module



Note

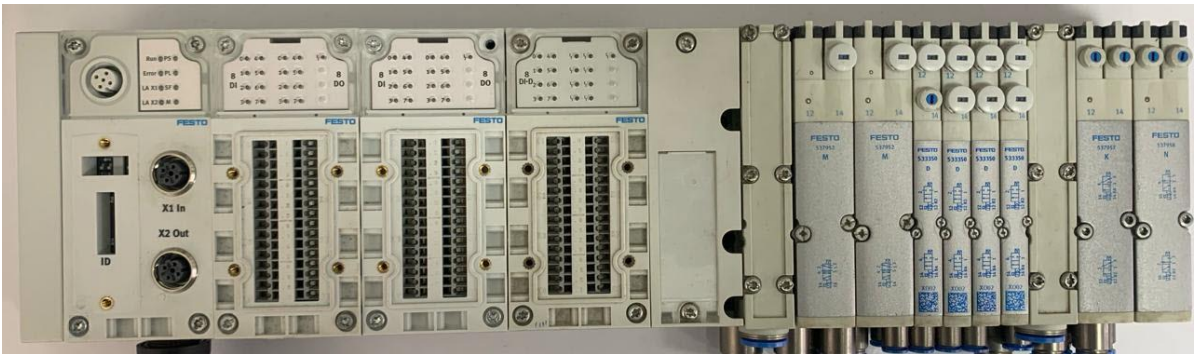
Ensure that your Machine is in Stop Mode and No active production or running Operation.

Step – 1



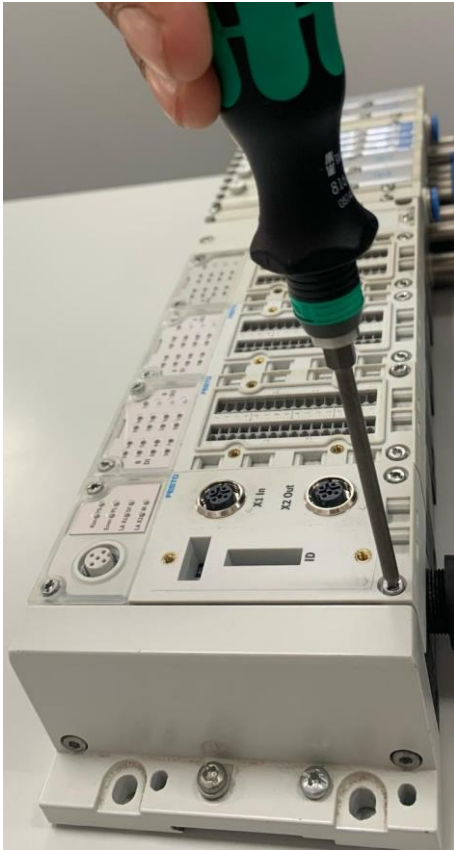
- Turn off the Power supply of CPX-Terminal before replacing the CPX-FB37 Module and turn off the Pneu-
matic air supply if its available on the user device.

Step – 2



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

Step – 3



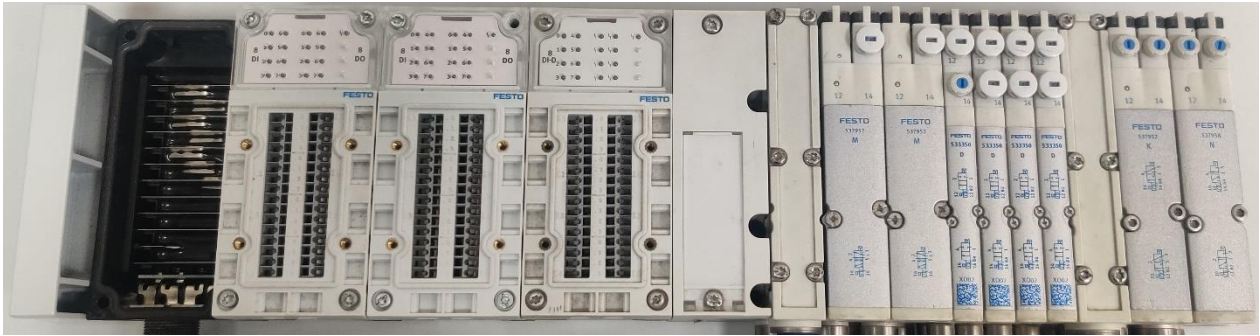
- Dismount the 4-screw of CPX-FB37 module with appropriate tool.

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

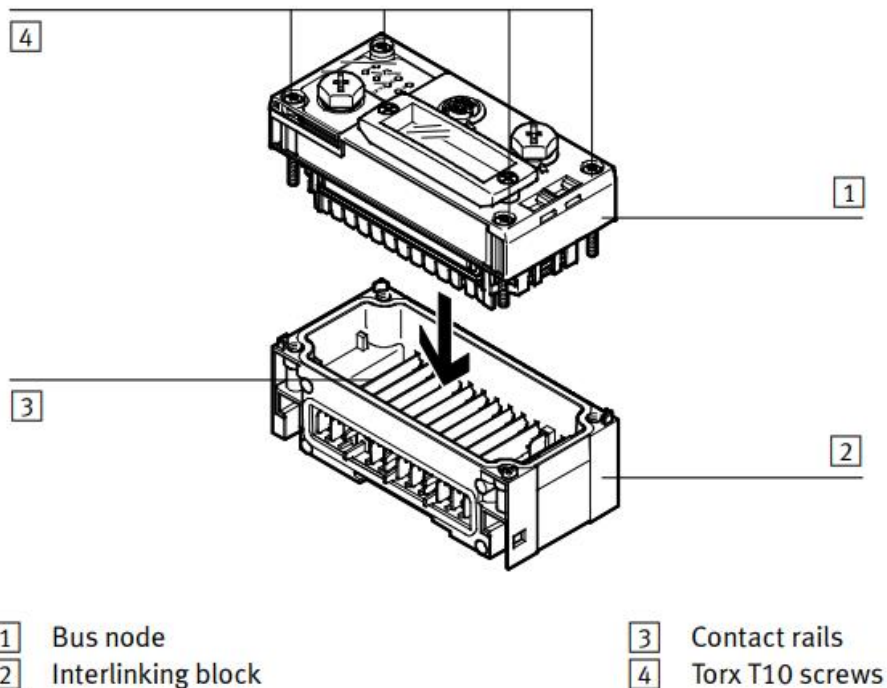


Note

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

3.1 Mounting the CPX-FB37 Hardware in Festo CPX Terminal

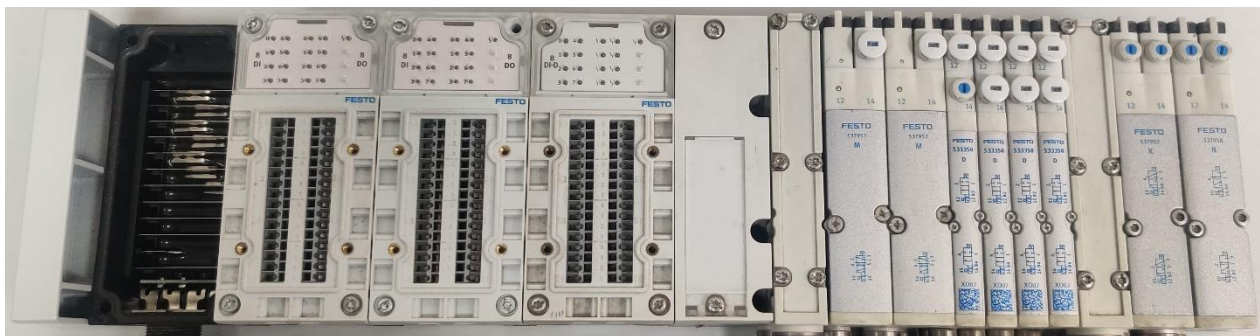
Step – 1



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

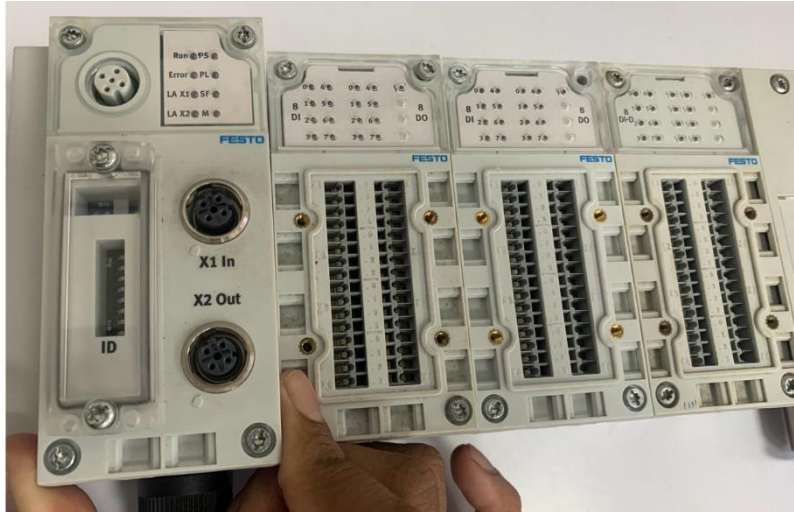
Step – 2

Mounting the CPX-FB37 Module to the Festo CPX Terminal



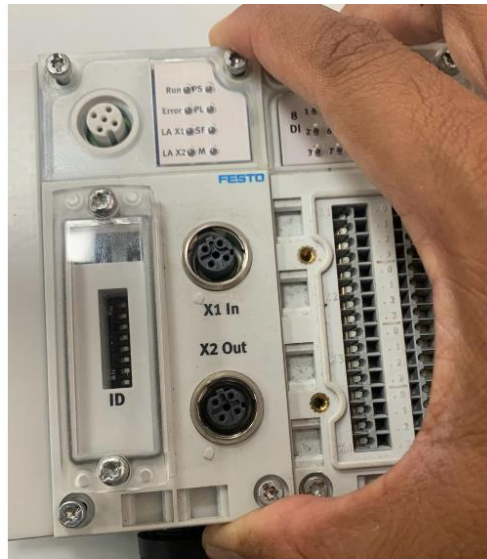
– Festo CPX Terminal

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.

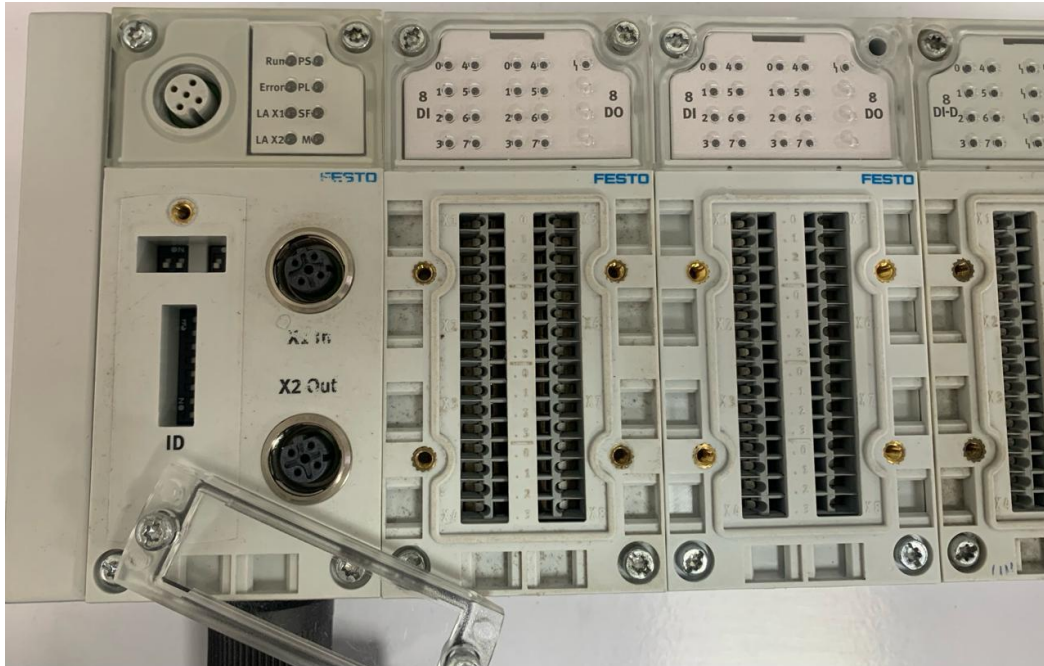


Note

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

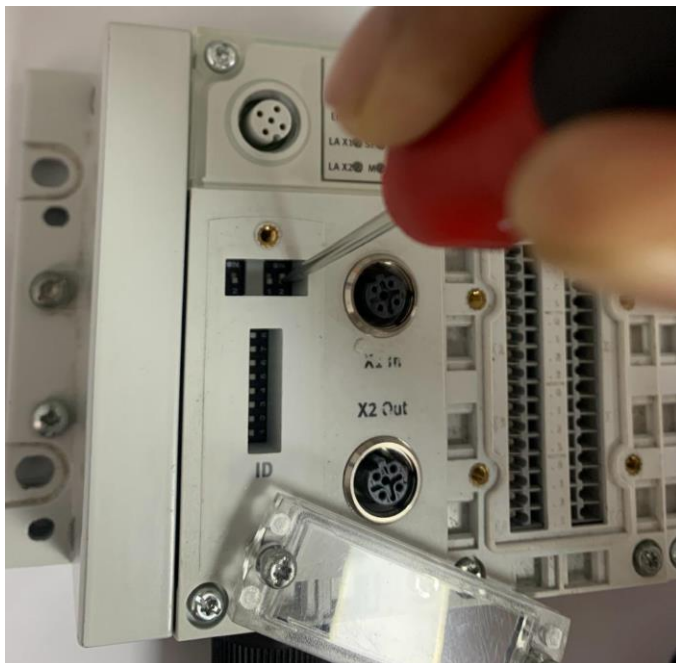
3.2 Setting up the DIL Switch Settings to the Replaced CPX-FB37 Module

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

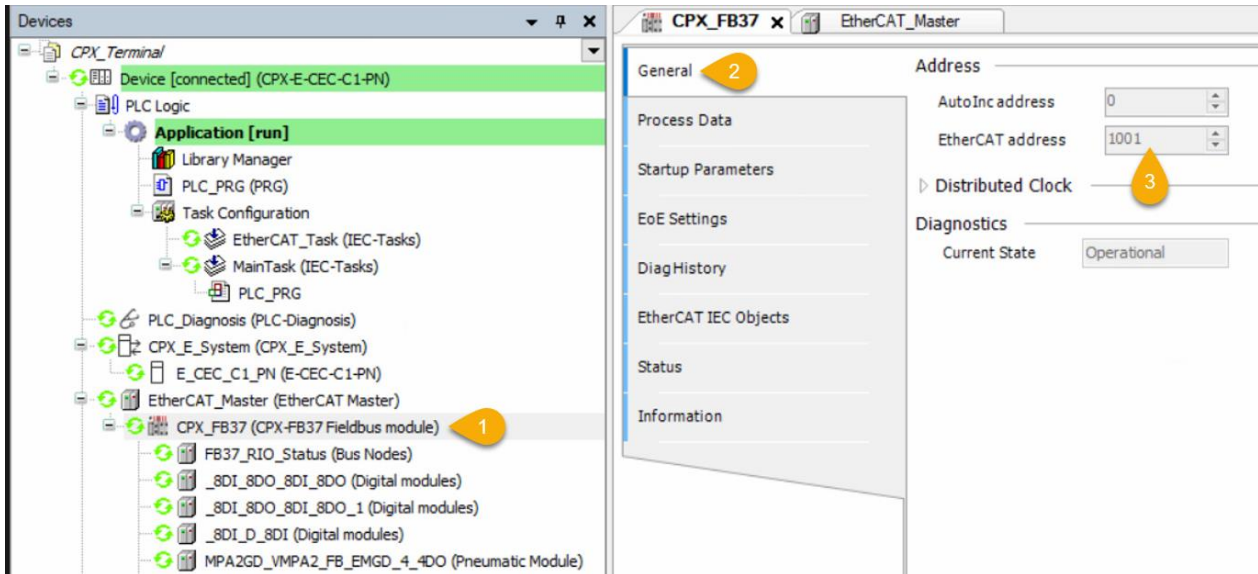
Step – 1



- 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

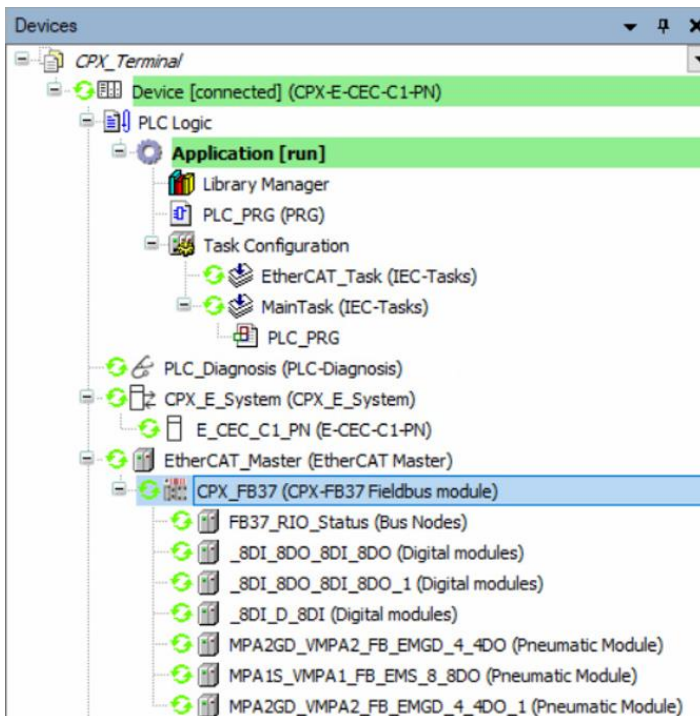


- Once Power supply is back to the CPX-Terminal device, System will be back to working mode.

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.