

Quick Guide to

CPX-FB38 EtherCAT connected e.g. with a PLC from Beckhoff



General information / preparation

Setting up the network configuration and parameters

XML available at www.festo.com/fieldbus

XML with parameters for CPX modules and valve terminals

Documentation with detailed descriptions available at www.festo.com (Automation -> Documentation)

Search for:

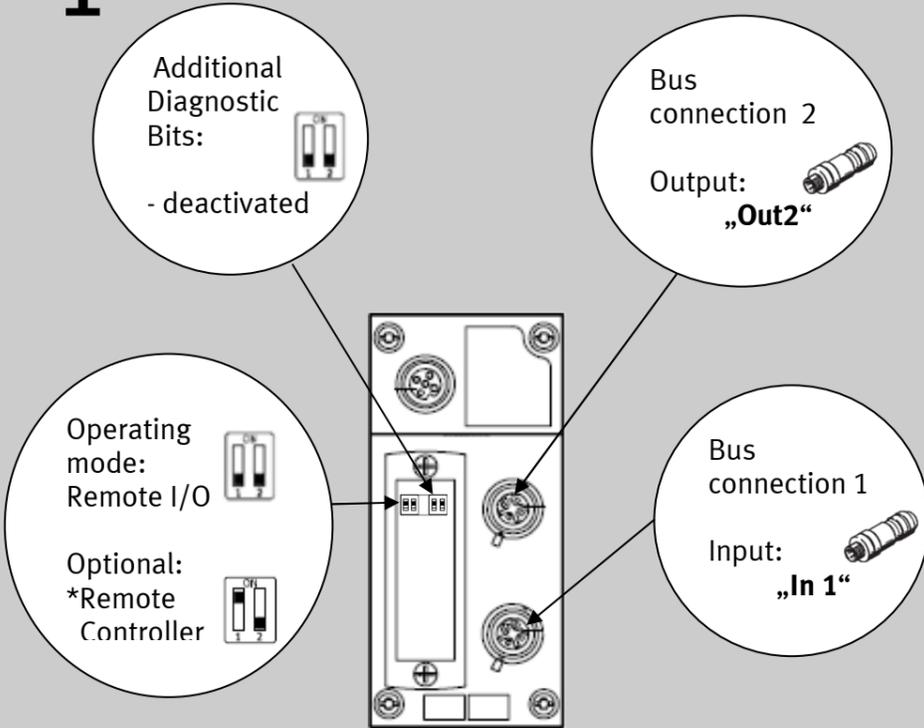
CPX-FB38 (EtherCAT manual): EN - 562525

CPX-SYS (CPX system manual): EN - 526446

Additional information about EtherCAT you can find on:

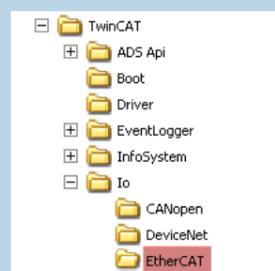
- www.ethercat.org

1 Start-up hardware settings

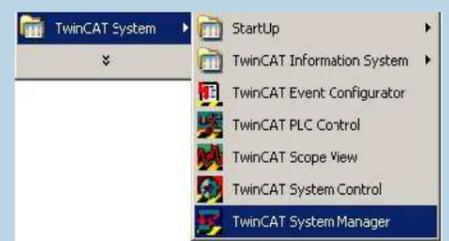


2 Using TwinCAT for EtherCAT Hardware configuration

1. Install the XML device description file to the following directory:
C:\TwinCAT\IO\EtherCAT



2. Use System Manager for Network configuration



3. Add field devices manually
Right click on “Device 1”
-> Append box -> Choose Festo



4. Scanning for field device online
Right click on “Device 1”
-> “Scan Boxes”



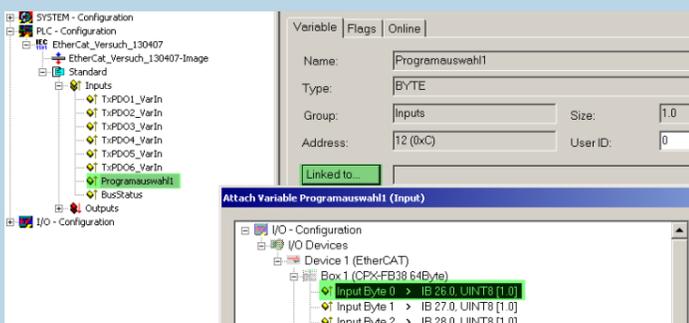
3 Configuration with TwinCAT

→ The I/O data of the CPX is in Byte format ⚡

1. Add your PLC project to the System Manager



2. Select the PLC Input object and link it to the first Input byte of the CPX Terminal (additional see “Tip I/O Mapping FB38”).



Repeat the point two until you have linked all variables with the Bytes of the CPX modules.

4 Using LED's for the identification of device status

EtherCAT network status

RUN	PS	Communication status (RUN)		Init (Normal status)
Error	PL	Communication Error (Error)		Pre-operational
L/A2	SF			Safe-operational
L/A1	M	Connection status (L/A2 & L/A1)		Operational
				Initialisation
		Communication Error (Error)		No Error
				Error (Invalid Config..)
		Connection status (L/A2 & L/A1)		No network connection
				Network connection
				Traffic

CPX hardware status

RUN	PS	System failure		Ok
Error	PL	Power system/load		Information
L/A2	SF			Diagnostic
L/A1	M	Modify status		Hardware defect
				Power ok
				Outside tolerance
				(PS) No sensor supply
				Saved parameters
				Forced active

Tip

I/O Mapping FB38

Input data order

Output data order

I/O Diagnostic Bits (Deactivated by default)	1	I/O Diagnostic Bits (Deactivated by default)
Analogue modules, each channel 16 Bit	2	Analogue modules, each channel 16 Bit
Technology modules (e.g. CPI Interface, CPX-FEC)	3	Technology modules (e.g. CPI Interface, CPX-FEC)
Digital and valve modules (I/O, MPA, Pneu. Interface)	4	Digital and valve modules (I/O, MPA, Pneu. Interface)

! The internal CPX mapping cannot be changed by the configuration tools.

Note: For EtherCAT are always 64 Byte visible. ⚡

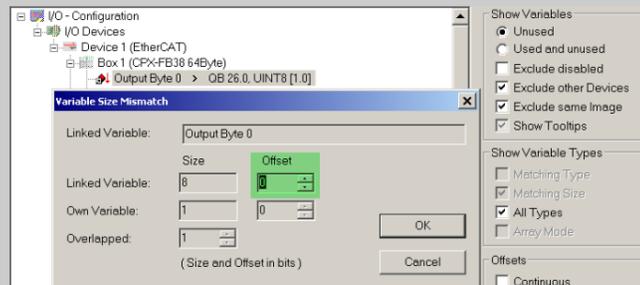
Tip

Combination of I/O data and variables

➔ The CPX EtherCAT data are represented in Byte

To link PLC object from type BIT with a CPX module type Byte do follow steps:

1. Select the PLC object (Type : Bool) and press "Linked to.."
2. Activate the field "All Types" in the Pop-Up window
3. Select now the Byte of the module and press Button "OK".



4. Select your Offset and press Button "OK".

Offset 0 mean -> First Bit of Byte ⚡

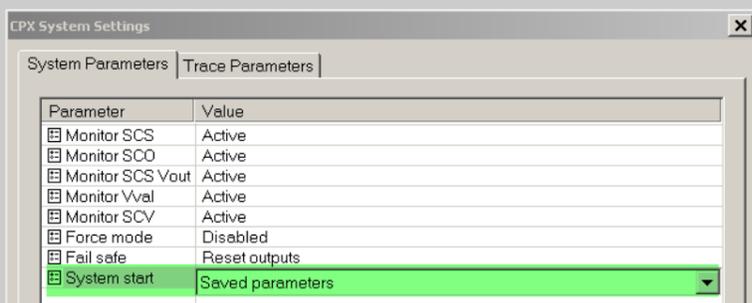
Tip

Change parameter of the CPX

- Use CPX-MMI or FMT (Festo Maintenance Tool) with USB adapter to change parameter.

➔ At the moment there is no other option ⚡

- In "System parameter" choose for the Start-UP parameter the option -> "Saved parameter"



- ➔ Be carefully if you change the node. You might lose saved parameters. ⚡
- ➔ See yellow M-LED at changing ⚡

Tip

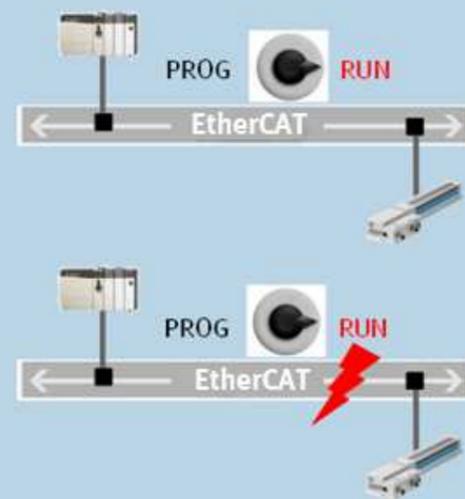
Fault mode

FAULT mode:
Defines the status of output signals during a network failure when connected to a running PLC

The default setup defines all output signals to the OFF state during one of the modes

An optional channel based setup can be made:

- Value to OFF (default)
- Value to ON
- Hold Last State

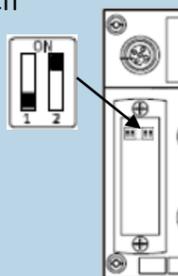


Tip

Alternative diagnostics

The "Status Bits" are 8 major signals which can be considered inside the PLC program. They are accessed via the optional "Strobed connection"

Bit	Diagnostic information	Description
0	Fault at valve	Module type on which a fault has occurred
1	Fault at output	
2	Fault at input	
3	Fault on analogue/function module	
4	Under voltage	Type of fault
5	Short circuit/overload	
6	Wire fracture/open load	
7	Other faults	



Additional and advanced diagnostics can be read out with:

- Handheld unit CPX-MMI
- USB adapter/ Ethernet with CPX-FMT software

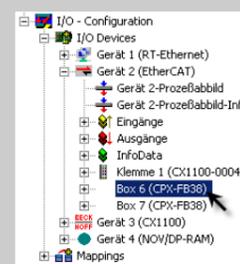
Tip

Manual addressing

Every device in the network gets by default an address depending on the position in the network. This means that device 1 has address 1, device 2 has address 2 etc.

To change the address manual you can use TwinCAT:

1. Click on the device:



2. Mark the empty field and enter new address:

