

Siemens TIA Portal with CPX I-Port Master for IO Link Devices

Basic steps for commissioning the CPX-CTEL-2-M12-5POL-LK with our SDAT-MHS-M80-1L-SA-E-0.3-M8 in the TIA Portal are described in this application note

CPX-CTEL-2-M12-5POL-LK,
SDAT-MHS-M80-1L-SA-E-0.3-M8,
CPX-FB34,
IM151-8F PN/DP CPU

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1 Components/Software used

Type/Name	Version Software/Firmware	Date of manufacture
CPX-CTEL-2-M12-5POL-LK	Rev 2	--
SDAT-MHS-M80-1L-SA-E-0.3-M8	Rev 2	--
CPX-FB34	Rev 23	--
IM151-8F PN/DP CPU	FW 3.2.8	--
TIA Portal	V13 Update 4	--

Table 1.1: 1 Components/Software used

1.1 Utilised manuals

SDAT-MHS-DE manual:

<http://www.festo.com/net/SupportPortal/Files/342426/8037938g1.pdf>

CPX-CTEL-LK-DE manual:

<http://www.festo.com/net/SupportPortal/Files/335395/8034115g1.pdf>

2 Introduction

2.1 The CPX-CTEL-2-M12-5POL-LK I-Port Master for IO-Link devices

The CPX-CTEL...-LK has 2 communication ports (X1 & X2):

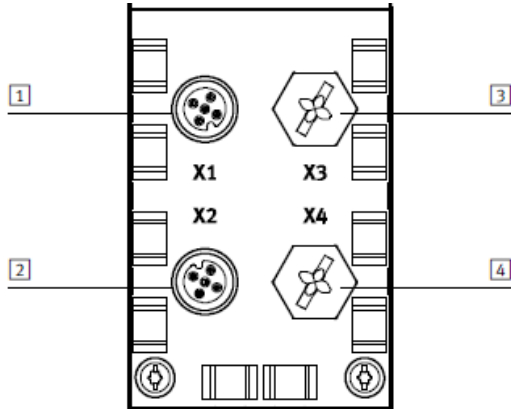
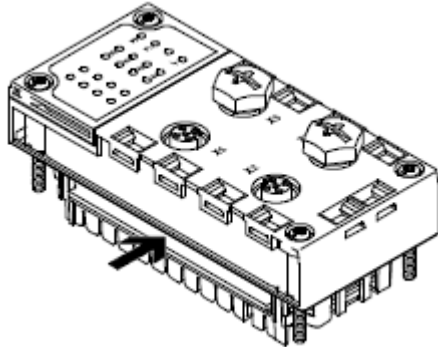


Figure 2.0: Communication ports

- ➔ And thus up to two IO-Link devices can be connected per interface. The I/O length of the connected device is determined with the DIL switch at the side.



DIL-Schalter 1	S1.1	S1.2	Funktion
	OFF	OFF	4 Byte E/A
	OFF	ON	8 Byte E/A
	ON	OFF	12 Byte E/A
	ON	ON	16 Byte E/A

Figure 2.1: I/O length setting

2.2 The SDAT-MHS-M80-1L-SA-E-0.3-M8

The SDAT-MHS-...M8 is an IO-Link V1.1 position transmitter with a process data width of 2 bytes.

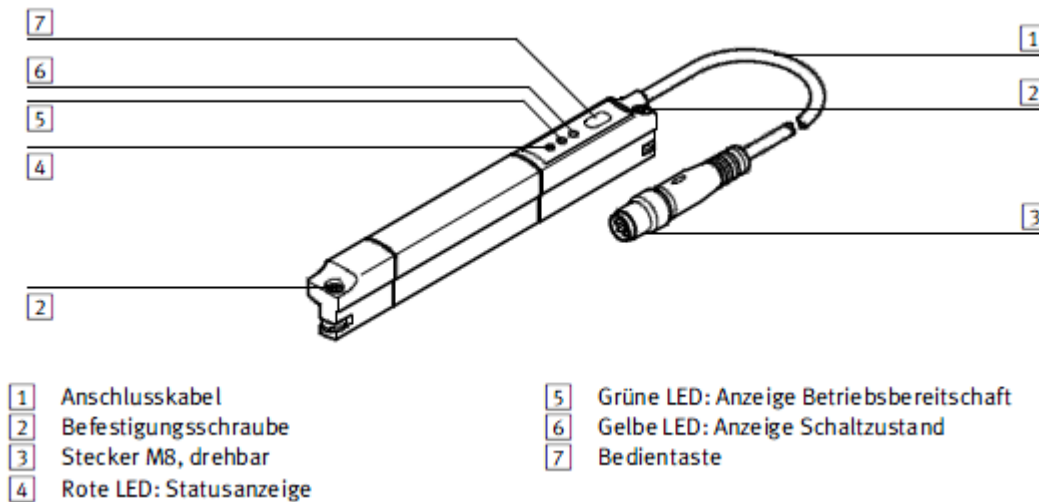


Figure 2.2: SDAT-MHS..

2.3 Why can the CPX-CTEL...-LK communicate with the SDAT-MHS...?

To a certain extent, IO-Link 1.1 master characteristics have been incorporated into the CPX-CTEL...-LK. If a 1.1 IO-Link device such as the SDAT-MHS... is connected, it will function. As a prerequisite, the device must not require IO-Link specification 1.1 characteristics for IO-Link communication, which are not incorporated into the CPX-CTEL...-LK.

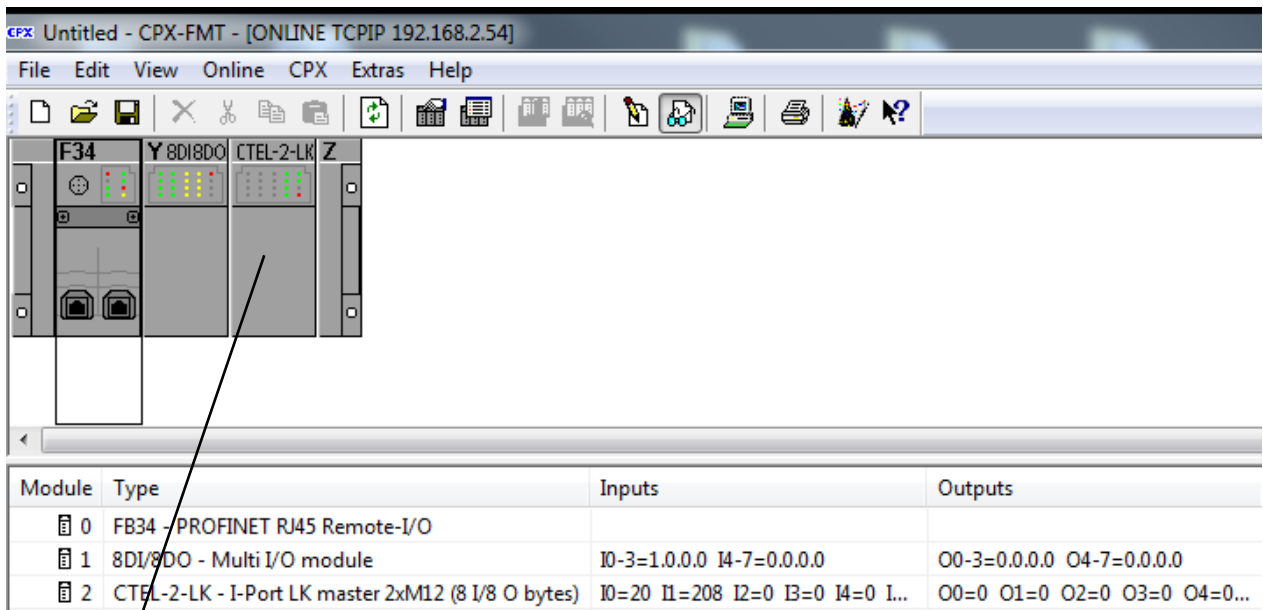
Rough IO-Link overview			
IO Link V1.0	CPX-CTEL...-LK	IO-Link V1.1	SDAT-MHS... V1.1
COM1: 4.8 kBaud	COM1: 4.8 kBaud	COM1: 4.8 kBaud	
COM2: 38.4 kBaud	COM2: 38.4 kBaud	COM2: 38.4 kBaud	
Optional: COM3: 230.4 kBaud	COM3: 230.4 kBaud	COM3: 230.4 kBaud	COM: 230.4 kBaud
Class A/B port	Class A/B port	Class A/B port	Class A port
	Not implemented	New: Parameters configuring function i.e. parameters data are remanently stored to the master's memory.	
	Process data width: max. 16 bytes per port	New: Process data width of 32 bytes	Process data width: 2 bytes

← This works due to conformity. →

Table 2.0: Rough overview, IO-Link specification

3 Installation

3.1 How do I connect the CPX-CTEL...-LK to the SDAT-MHS...?



X1 Pinbelegung

Draufsicht	Pin	Belegung	Funktion
	1	24 V U _{EL/SEN}	Betriebsspannungsversorgung PS (Power System)
	2	24 V U _{VAL/OUT}	Lastspannungsversorgung PL (Power Load)
	3	0 V U _{EL/SEN}	Betriebsspannungsversorgung PS (Power System)
	4	C/Q	Kommunikation C/Q
	5	0 V U _{VAL/OUT}	Lastspannungsversorgung PL (Power Load)

Pin	Belegung SDAT...	
1	Betriebsspannung +24 V DC	
2	Analogausgang 0 ... 20 mA	
3	0 V	
4	IO-Link/Schaltausgang (C/Q-Leitung)	

Figure 3.0: IO-Link connection

4 Commissioning the TIA Portal

4.1 Installation of the Profinet GSDML in the TIA Portal

The CPX GSDML file can be found in the Festo Support Portal:

Support Portal

Please select a category on the left or use the search.

Search: GSDML

Find Help

FESTO
DNC-125-100-PPV-A
163501 R408
pmax. 12 bar
Part number Series Order code

- Contact
- Product conformity
- Terms and conditions of use for electronic documentation
- Support Community new!

Top 3	Product information [4]	Technical documentation [6]	Engineering software [0]	Firmware and drivers [4]	Expert knowledge [1]												
<table border="1"> <thead> <tr> <th>Description</th> <th>Version</th> <th>Filter result</th> </tr> </thead> <tbody> <tr> <td> PROFINET GSDML GSDML file for CMMP-AS M3 with CAMC-F-PN Supported systems: </td> <td> 2.25 12/08/2014 </td> <td> → Device Description Files → File and language versions ★★★★★ (5) </td> </tr> <tr> <td> PROFINET GSDML PROFINET GSDML-File for CTEU PROFINET GSDML-File for CTEU Supported systems: • Busknoten CTEU-PN (2201471) </td> <td> 01/12/2014 </td> <td> → Device Description Files → File and language versions ★★★★★ </td> </tr> <tr style="border: 2px solid red;"> <td> PROFINET GSDML GSDML file for CPX Supported systems: • Bus node CPX-FB33 (548755) • Bus node CPX-M-EP24 (548754) </td> <td> 01/07/2014 </td> <td> → Device Description Files → File and language versions ★★★★★ (15) </td> </tr> </tbody> </table>						Description	Version	Filter result	PROFINET GSDML GSDML file for CMMP-AS M3 with CAMC-F-PN Supported systems:	2.25 12/08/2014	→ Device Description Files → File and language versions ★★★★★ (5)	PROFINET GSDML PROFINET GSDML-File for CTEU PROFINET GSDML-File for CTEU Supported systems: • Busknoten CTEU-PN (2201471)	01/12/2014	→ Device Description Files → File and language versions ★★★★★	PROFINET GSDML GSDML file for CPX Supported systems: • Bus node CPX-FB33 (548755) • Bus node CPX-M-EP24 (548754)	01/07/2014	→ Device Description Files → File and language versions ★★★★★ (15)
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http://www.festo.com/net/en-gb_gb/SupportPortal/default.aspx?q=GSDML&tab=5&s=t#result

Figure 4.0: Support Portal, GSDML

After downloading, it's installed via the TIA Portal:

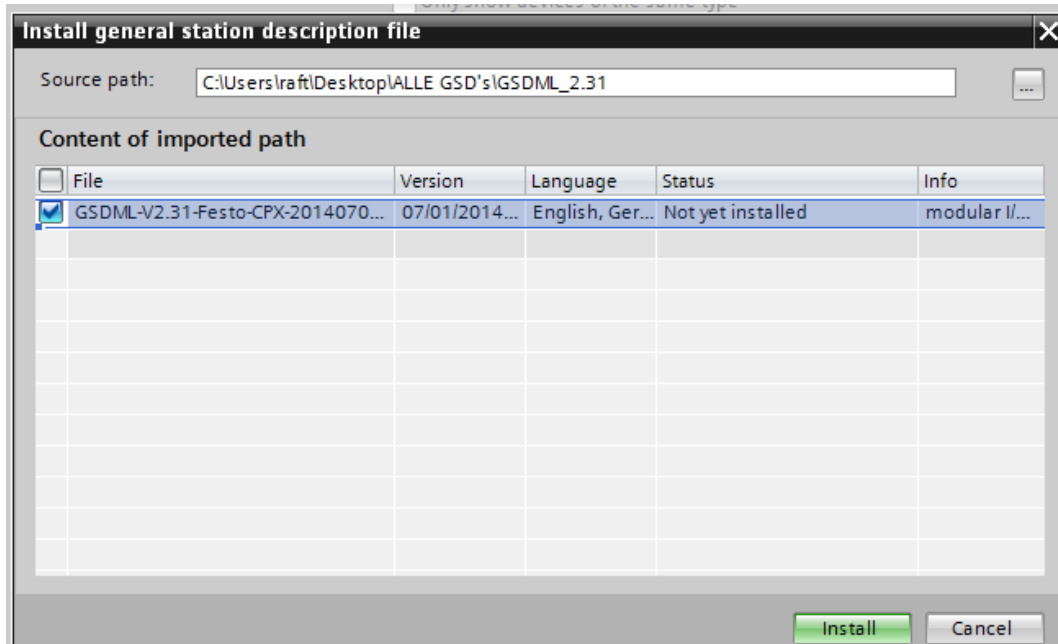
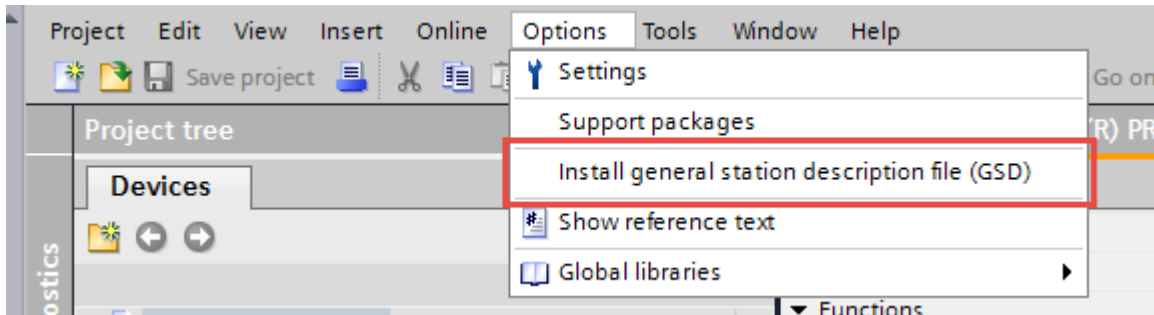


Figure 4.1: Installing the GSDML

4.2 Hardware configuration of the CPX valve terminal

After creating a new TIA Portal project and installing the CPX GSDML, the Festo Profinet valve terminal can be configured.

- First of all, drag and drop the correct CPX entry into the network to this end.

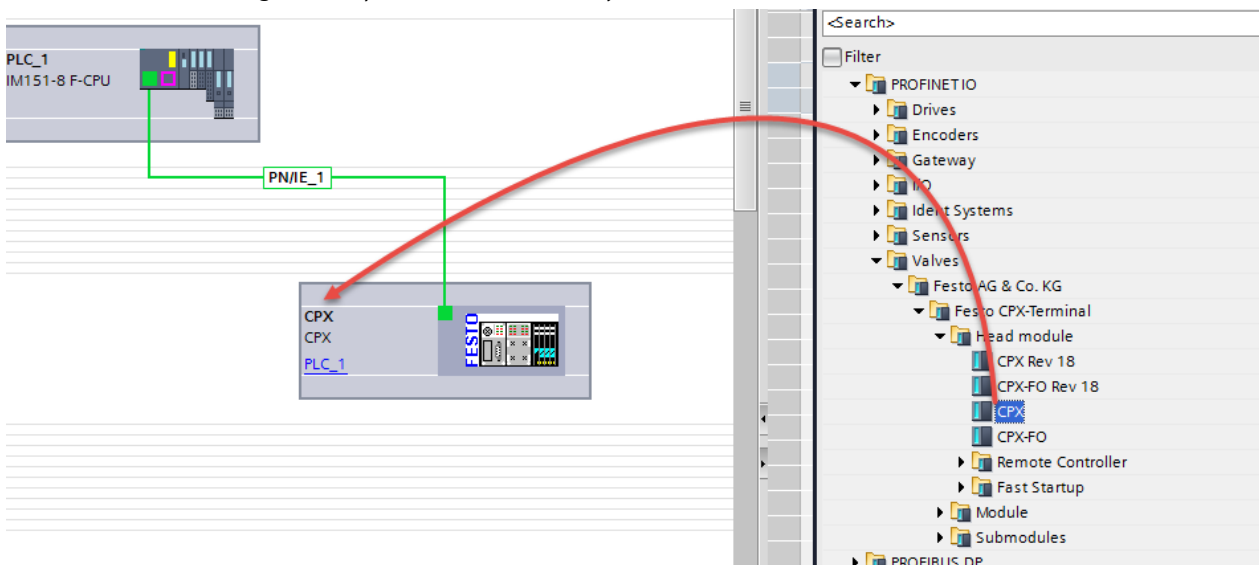


Figure 4.2: Drag and drop

Then conduct module configuration:

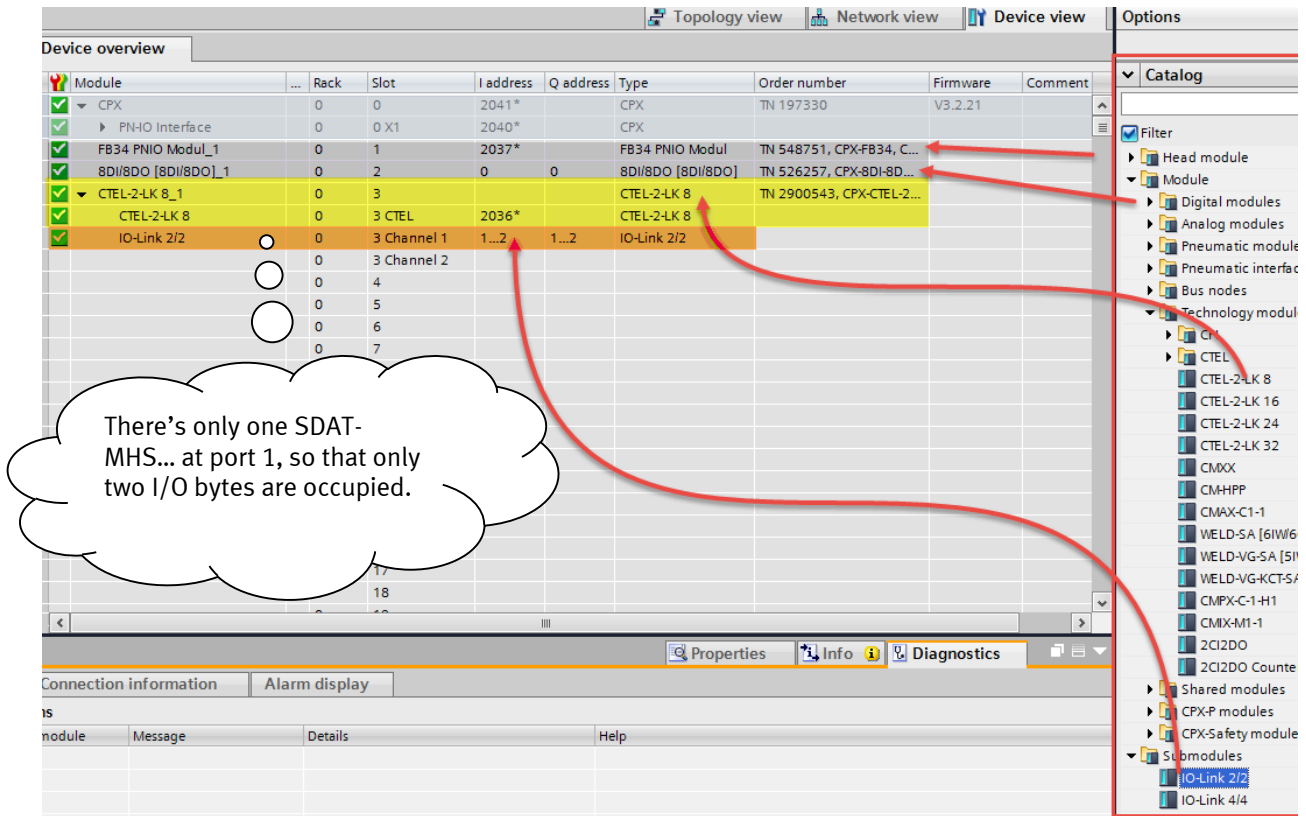


Figure 4.3: Drag and drop, module configuration

Recommendation: Use CPX-FMT software to compare the configuration.

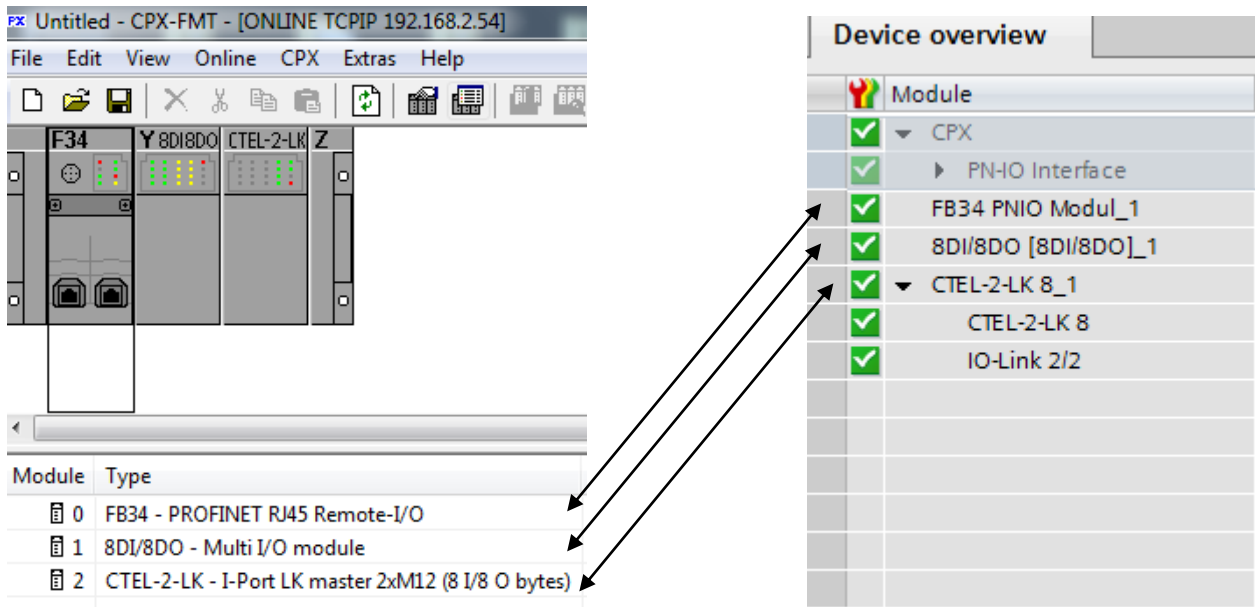


Figure 4.4: Comparing FMT with TIA module configuration

➔ Note

Details concerning successful **Profinet** commissioning are included in the CPX-Profinet manual:
<http://www.festo.com/net/SupportPortal/Files/349007/548759g1.pdf>

4.3 Online test

After successful project downloading, no more errors are apparent in the TIA Portal online mode:

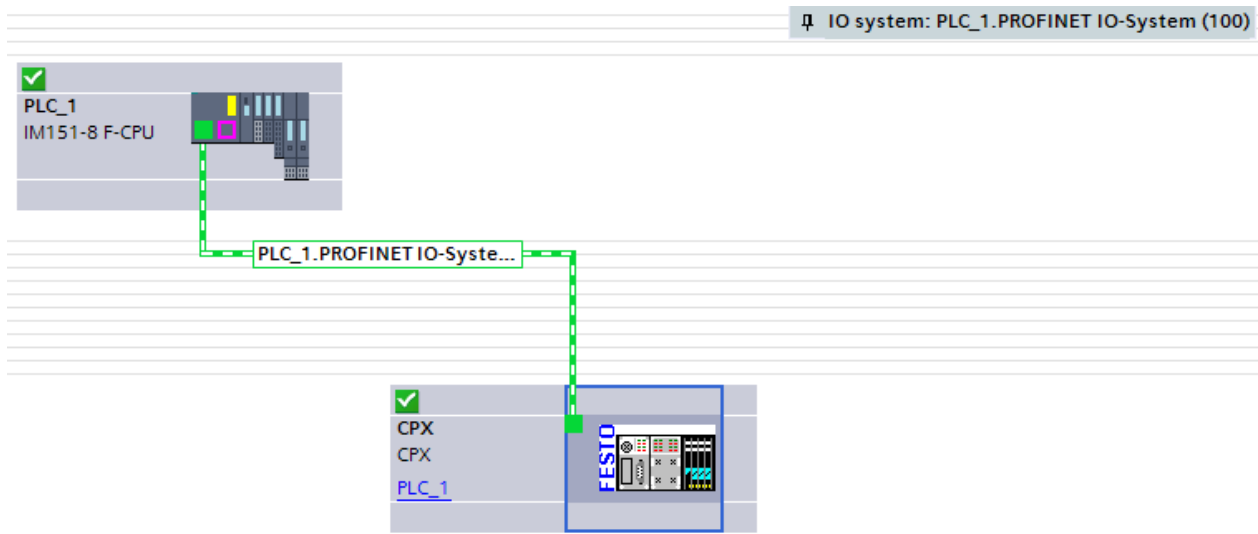


Figure 4.5: Online

Compliance of the SDAT values in the TIA Portal with FMT can be additionally checked using a TIA “watch table”.

The screenshot shows the TIA Portal interface with a watch table for address %IW1. The monitor value is displayed as 16#45C0 in hex. A callout box explains that the address is %IW1 because SDAT-MHS... has been mapped there as a submodule. Another callout box shows the conversion: 45 hex = 69 dec and C0 Hex = 192 dec. The right side of the screenshot shows the I/O configuration for Module #2, with inputs 10-17 and outputs.

Channel	Process	For
Inputs		
I0	69	
I1	192	
I2	0	
I3	0	
I4	0	
I5	0	
I6	0	
I7	0	
Outputs		

Figure 4.6: TIA “watch table” and FMT