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***proNet* - PROFINET / PROFIsafe communication module Configuration Instructions**

IMPORTANT

This document of example is for the purpose of demonstration only. It represents only part of a complete safety system and does not fulfil any safety function on its own. It is the customer's responsibility to ensure that the setting of the *proNet* units is correct and complies with the relevant risk assessment of the applications, safety standards and regulations. No responsibility is accepted if the document is misused. The information in this document is subject to change without notice and should not be construed as a commitment by Fortress Interlocks. Fortress Interlocks assumes no responsibility for any errors that may appear in this document.

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proNet - PROFINET / PROFIsafe communication module Configuration Instructions

General Information

This document demonstrates how to connect a Fortress *proNet* unit to Siemens S7-1200 Failsafe PLC. The information provided in this document accompanies the installation instructions for *proNet*.

List of components and software

proNet communication module

This document uses a Fortress Interlocks amGard*pro* *proNet* PF10 unit. The PF10 is composed of 2 data ports and 2 power ports. Please refer to *proNet* datasheet for further details.



Siemens PLC

The PLC used for this demonstration is Siemens SIMATIC S7-1214FC Failsafe PLC.

Software used for this document

The programming and commissioning software used were as follows:

1. Siemens Proneta 2.3 - Commissioning and diagnostics tool for PROFINET networks
2. SIMATIC Step 7 Safety Basic version 14.0
3. SIMATIC Step 7 Basic version 14.0

General information about *proNet*

The *proNet* module allows the features of amGard*pro* to become distributed IO on a PROFINET network. Safety data is exchanged using PROFIsafe protocol.

See individual datasheets for further details about the modules. Also see the installation instruction for the information of mounting and product dimensions. These documents are both available from Fortress Interlocks website.

The GSDML file for *proNet* units can also be downloaded from Fortress website link below:

<http://www.fortressinterlocks.com/Product/169/pronet-profinet-profisafe-communication-module>

Two GSDML files are provided on the website:

- For units with part numbers containing N0xxxxN or N2xxxxN please download: "GSDML Zip File". This is for units that **do not** support MRP.
- For units with part numbers containing N6xxxxN or N8xxxxN please download: "GSDML Zip File for MRP". This is for units that **do** support MRP.

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Assigning an IP address and device name using Proneta

Assign the IP address and device name of the unit by using PRONETA 2.3 Commissioning and Diagnostics Tool for PROFINET (Available from: <https://www.siemens.com/global/en/home.html>)



Figure 1: Open PRONETA, go to GSDML Manager Page and click on load button to add GSDML file for the first time

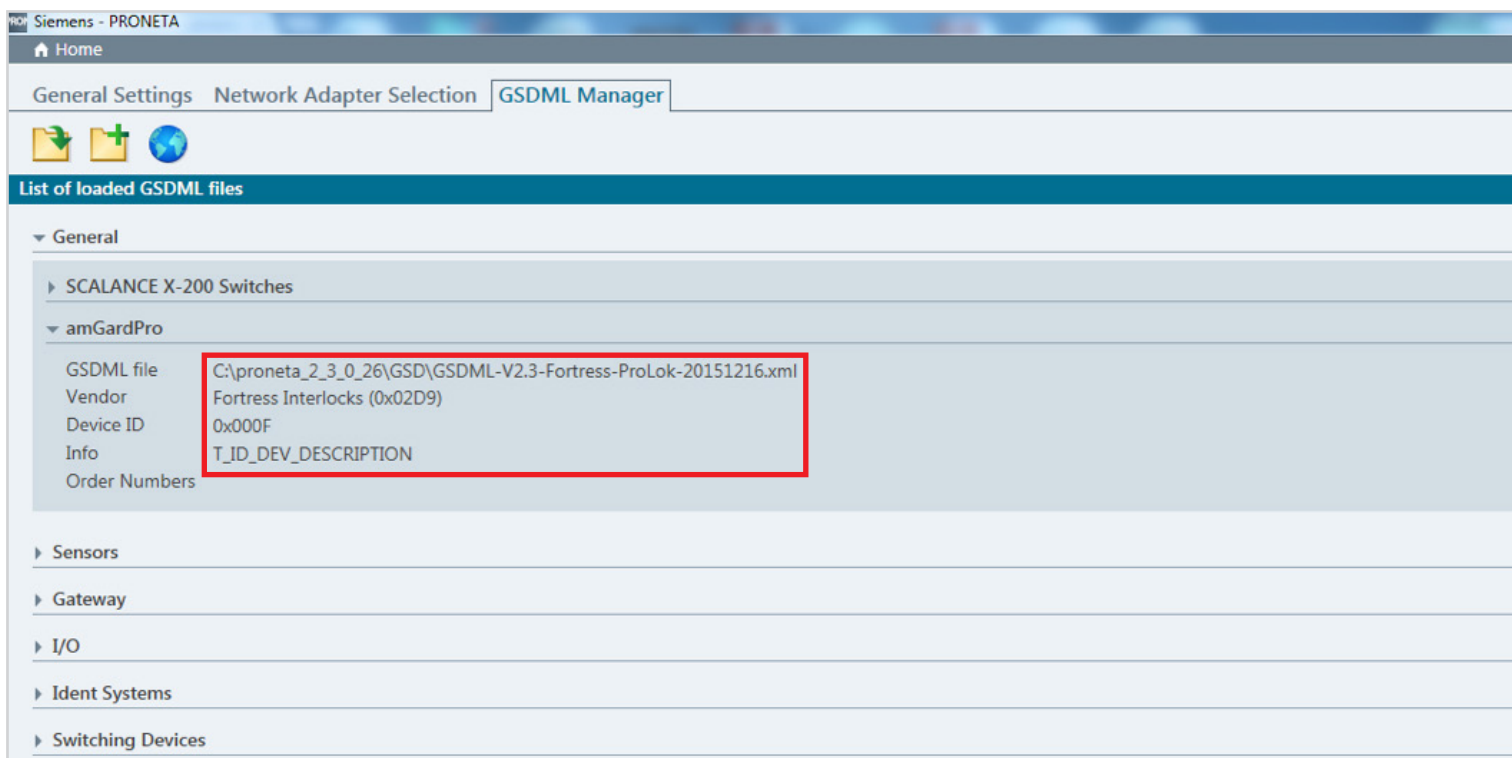


Figure 2: The proNet GSDML is now added to the product library

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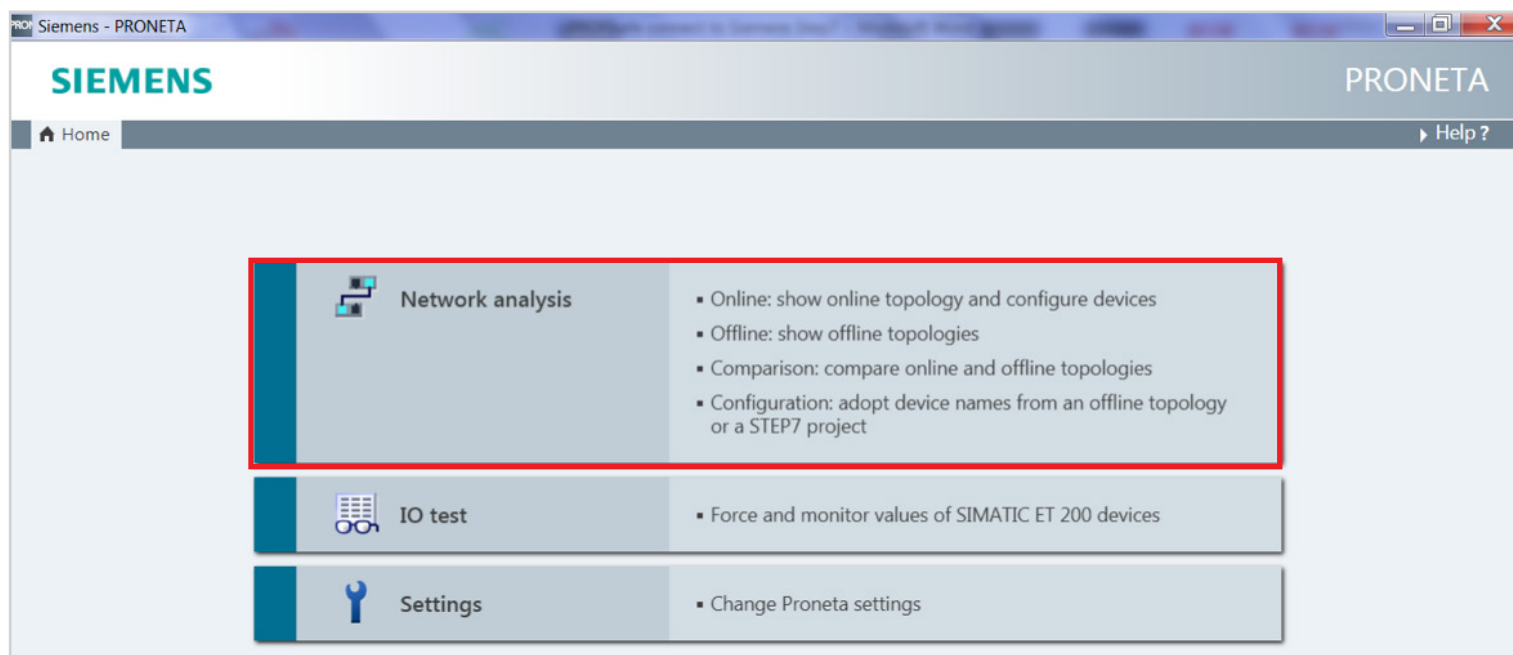


Figure 3: Click on network analysis to scan the devices on PROFINET network

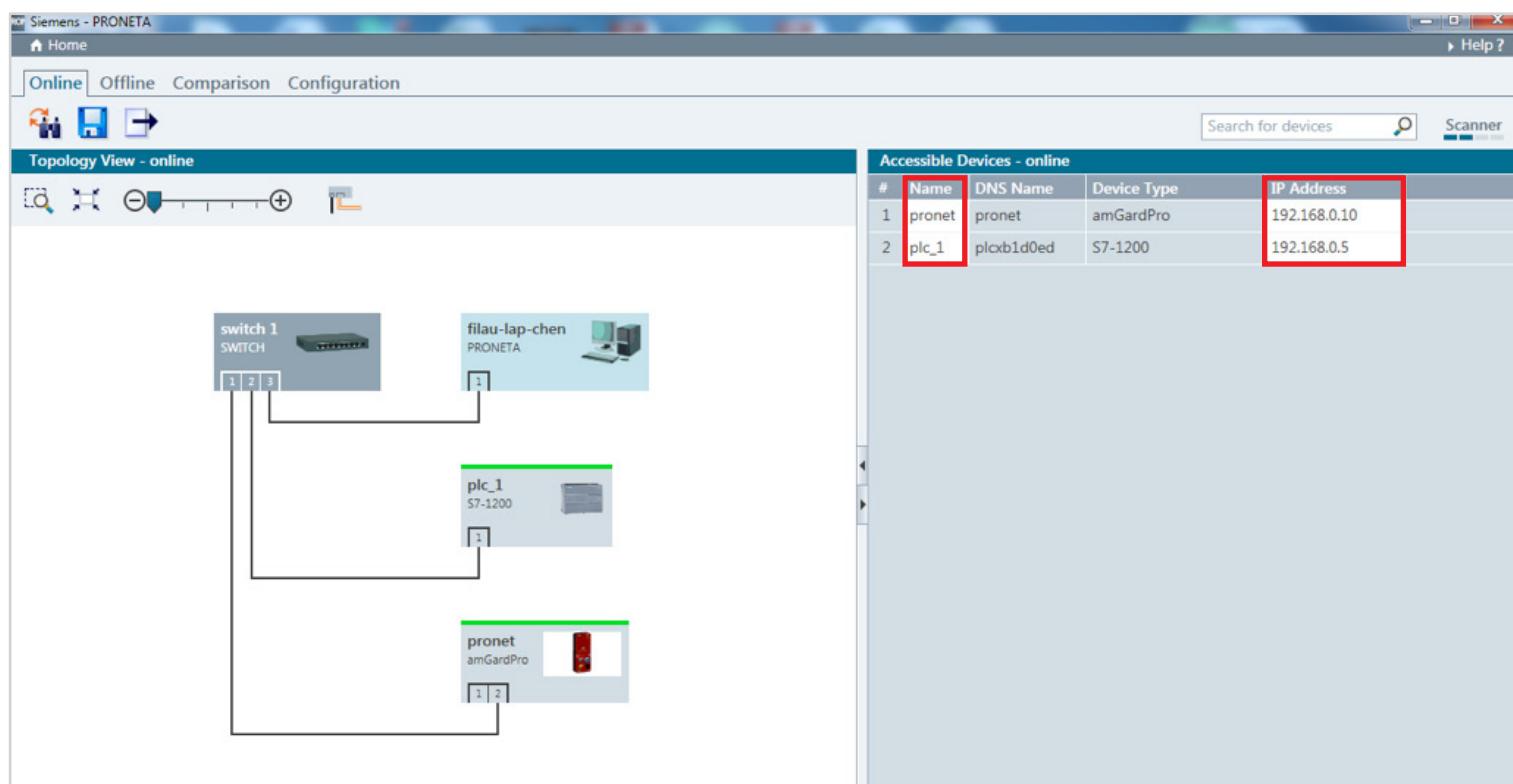


Figure 4: Device names and IP addresses of units can be changed on the above page

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Set up F-Address in the proNet unit

F-Address provides the unique identification for the F-Device on the PROFIsafe network. The F-Address of the proNet unit must be set via DIP switches in the proNet unit. The range of F-Addresses that can be set is 1 to 1023. F-Addresses need to be unique for each device on the network. After the F-Address is set, the power of the unit must be cycled.

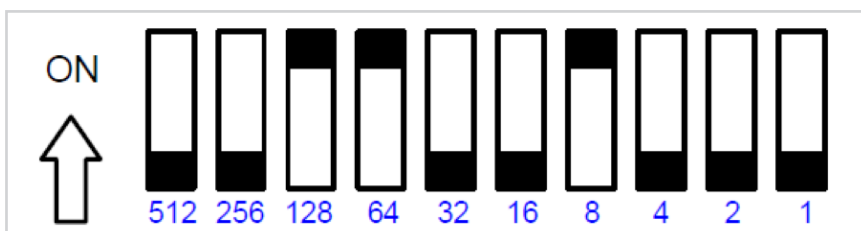
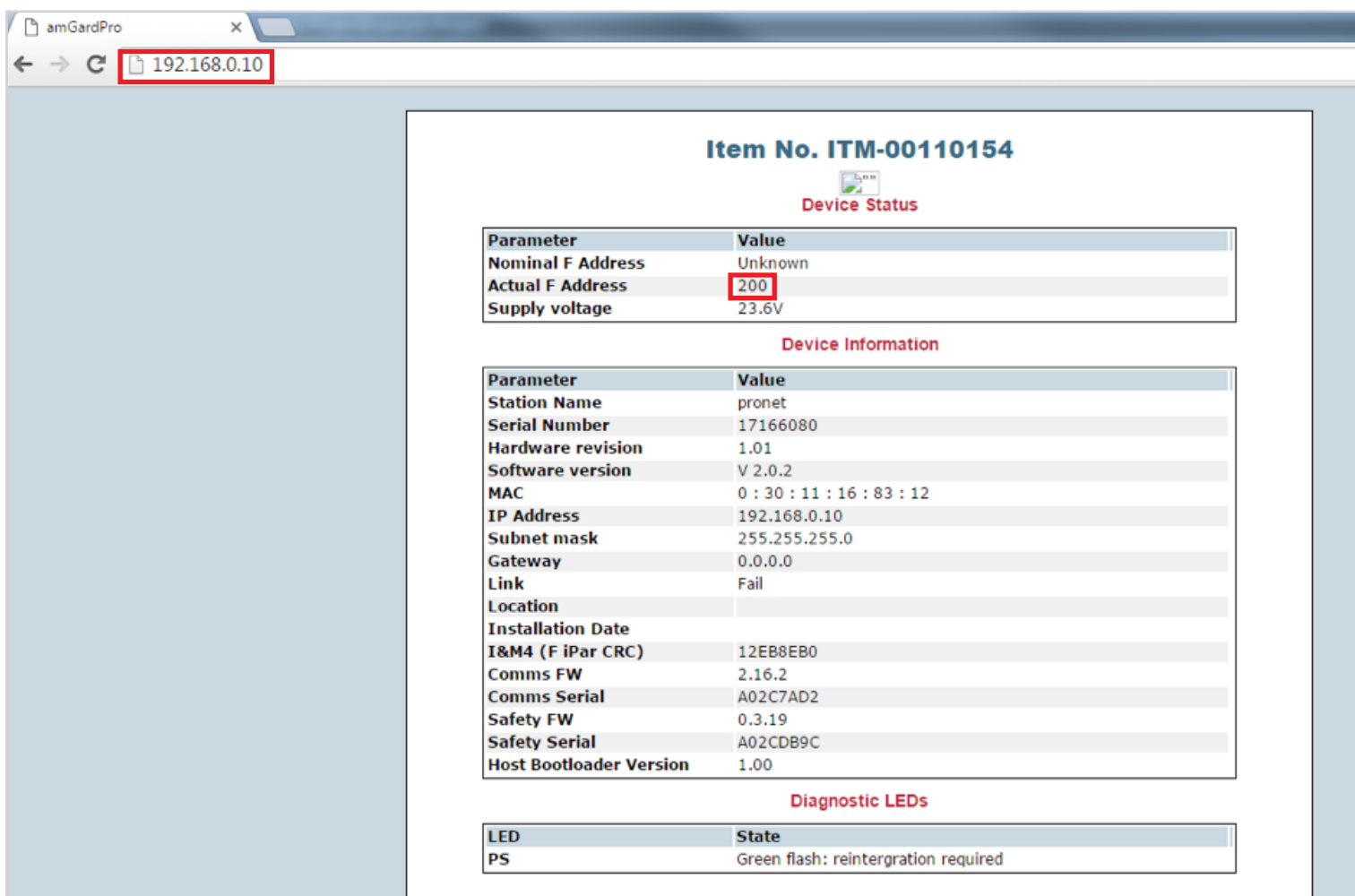


Figure 5: For example, the F-Address is set to 200 in the above photo.



The screenshot shows the web interface for the proNet unit. The browser address bar displays **192.168.0.10**. The page title is **Item No. ITM-00110154**. The **Device Status** section shows:

Parameter	Value
Nominal F Address	Unknown
Actual F Address	200
Supply voltage	23.6V

The **Device Information** section shows:

Parameter	Value
Station Name	pronet
Serial Number	17166080
Hardware revision	1.01
Software version	V 2.0.2
MAC	0 : 30 : 11 : 16 : 83 : 12
IP Address	192.168.0.10
Subnet mask	255.255.255.0
Gateway	0.0.0.0
Link	Fail
Location	
Installation Date	
I&M4 (F iPar CRC)	12EB8EB0
Comms FW	2.16.2
Comms Serial	A02C7AD2
Safety FW	0.3.19
Safety Serial	A02CDB9C
Host Bootloader Version	1.00

The **Diagnostic LEDs** section shows:

LED	State
PS	Green flash: reintegration required

Figure 6: Cycle the power after the dip switches are set. Open the web interface in the browser by using the IP address of the unit. The current F-Address is shown on the page.

Note: The number shown in the photo is for illustration purposes only.

proNet - PROFINET / PROFIsafe communication module **Configuration Instructions**

Adding a *proNet* unit to a TIA Portal V14 Project

1. Installing the GSDML file

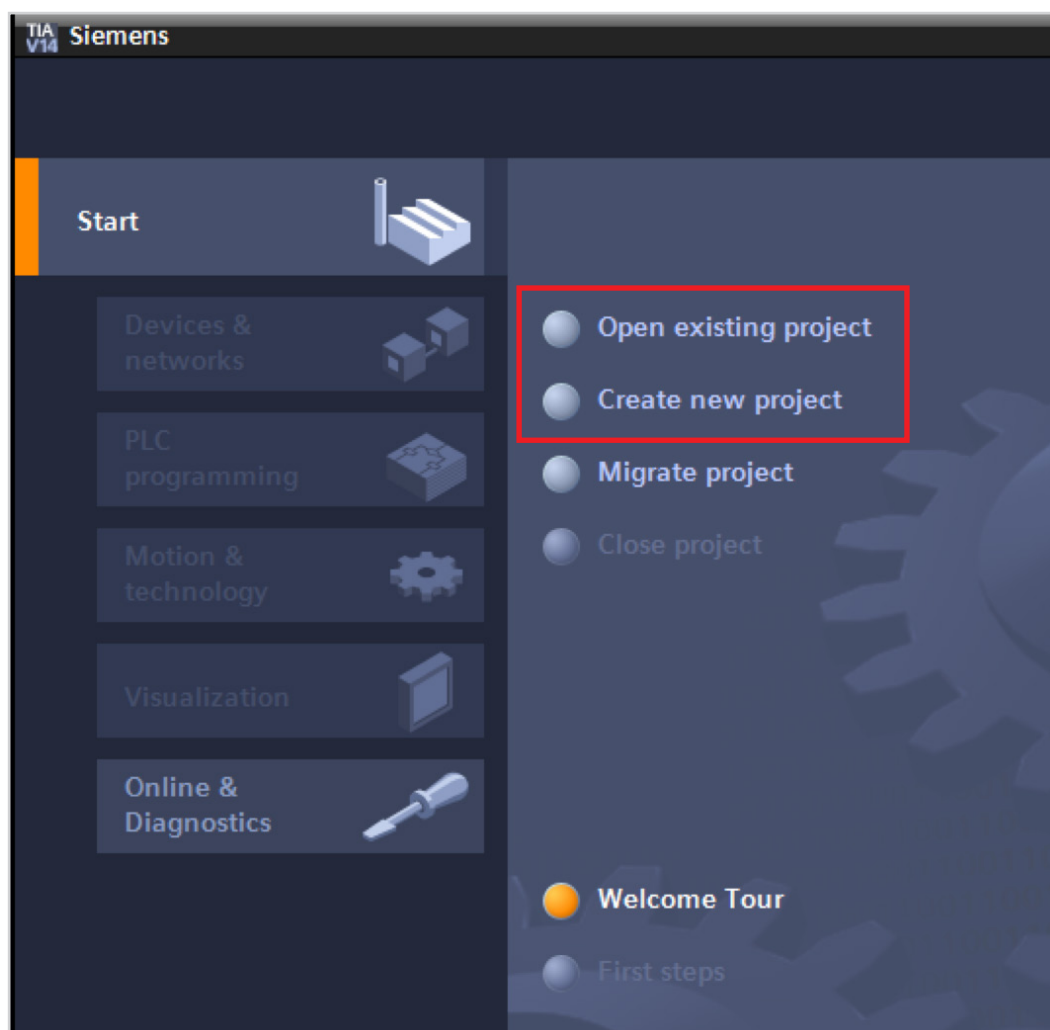


Figure 7: Create the new project or open up the existing project

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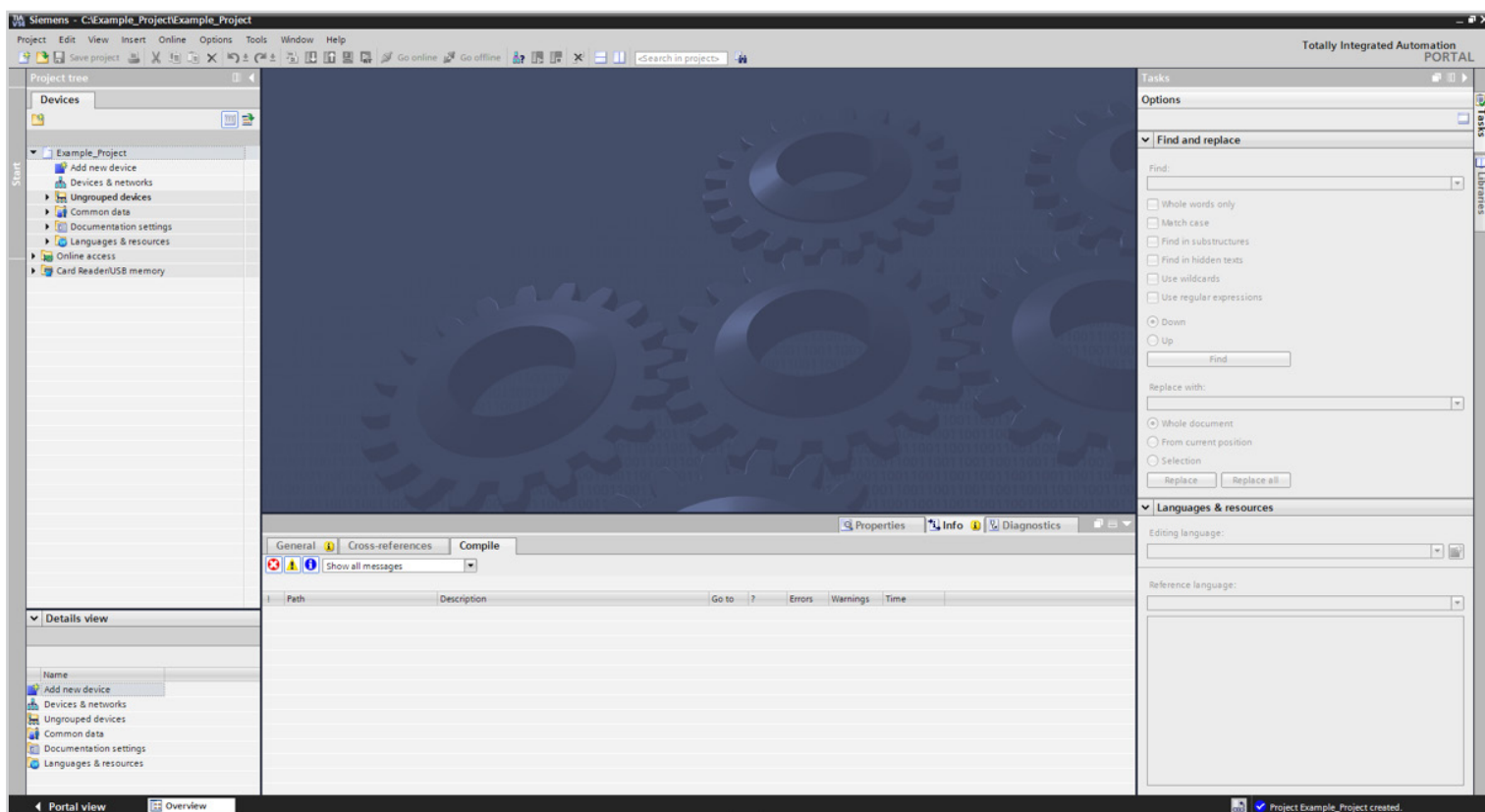


Figure 8: When project is opened, go to Project View Window

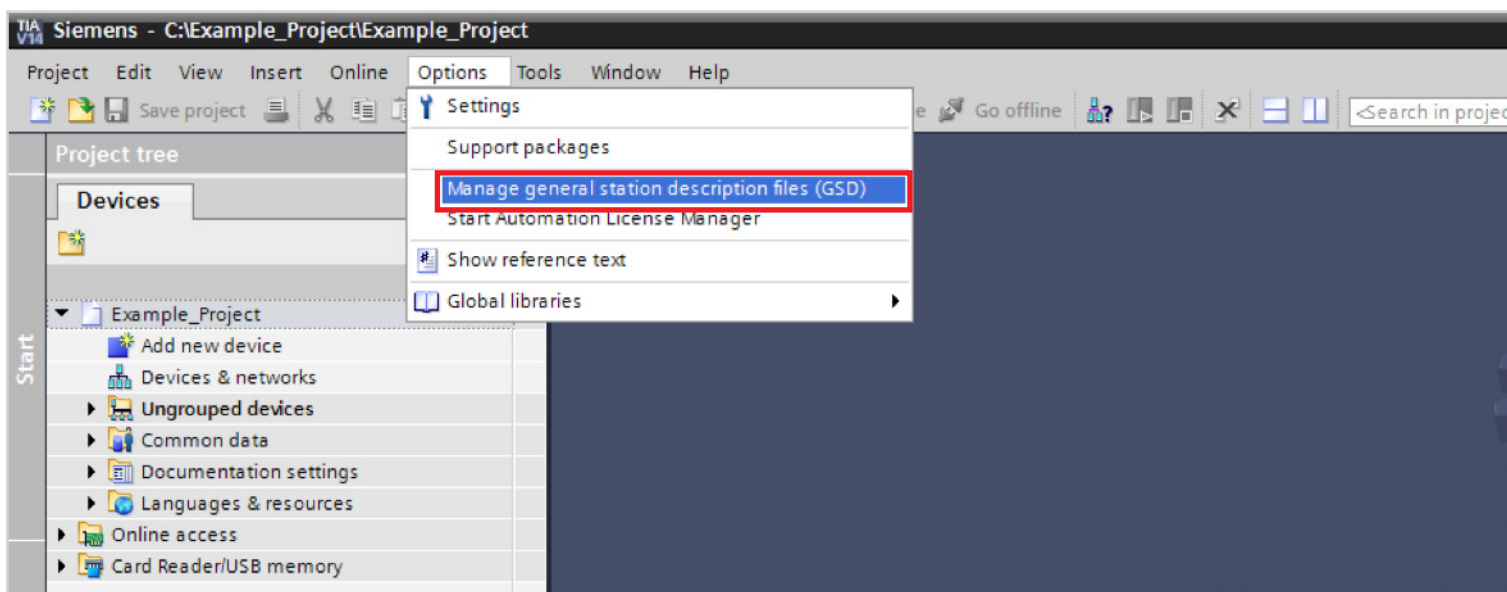


Figure 9: Install the Fortress GSDML file for the first time by clicking on “Manage general station description files (GSD)”

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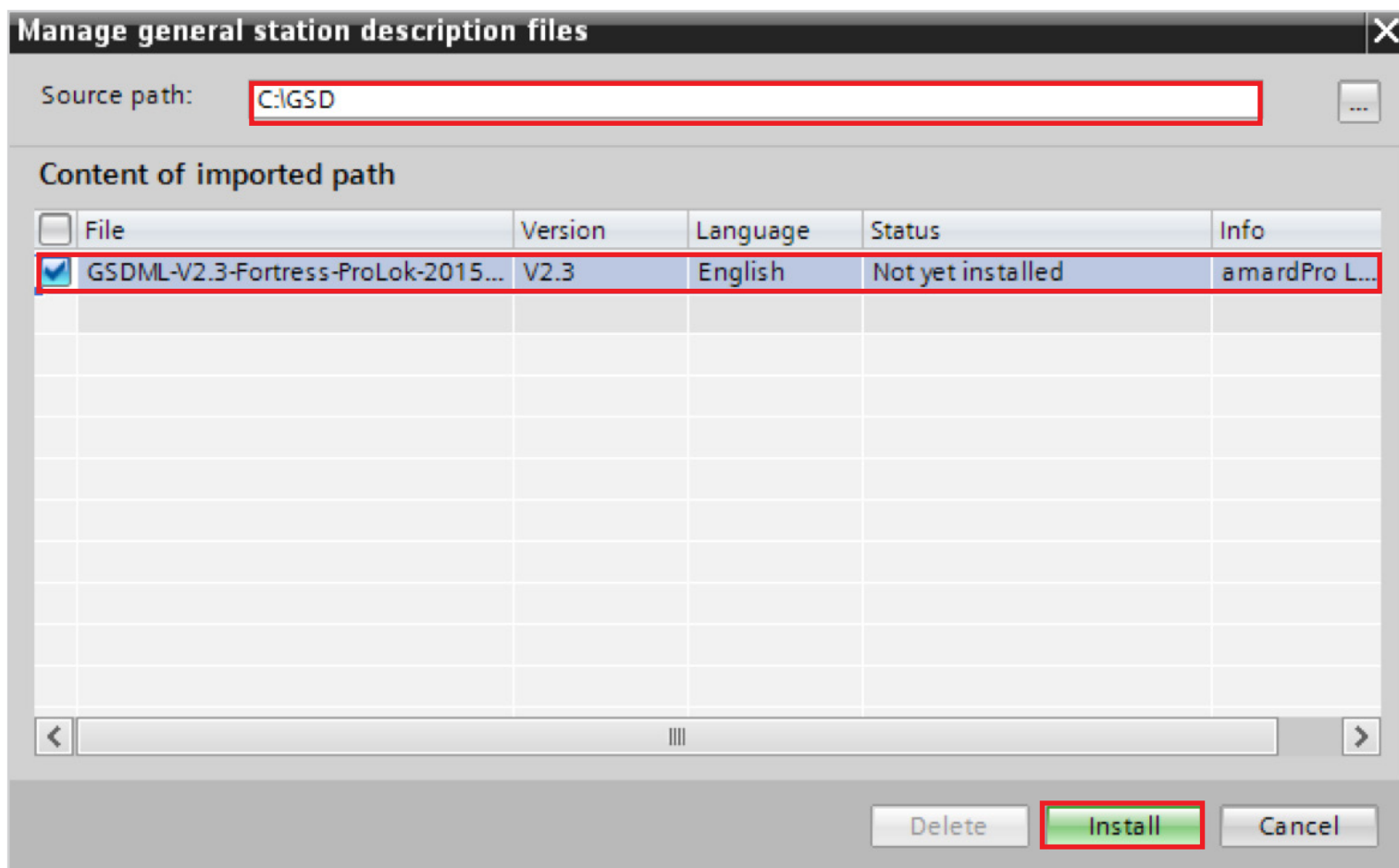


Figure 10: Install the GSDML file, which is available from the Fortress website.
See General Information of *proNet*

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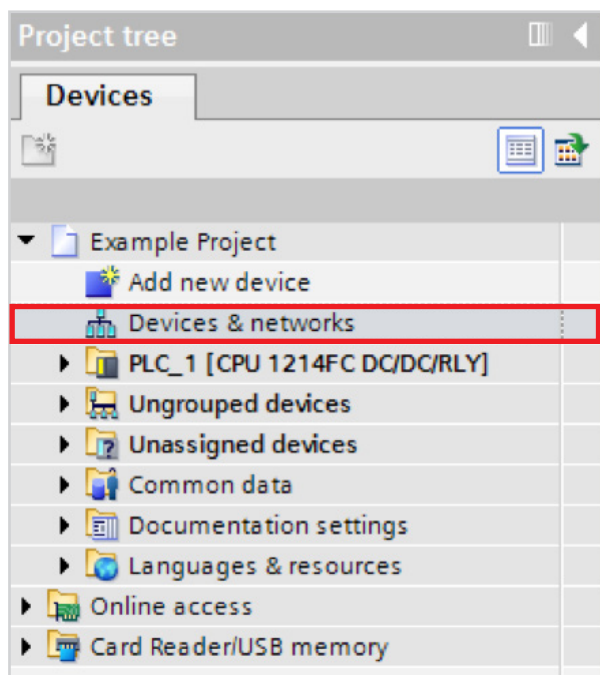


Figure 12: Click on Devices & networks tab under project tree.

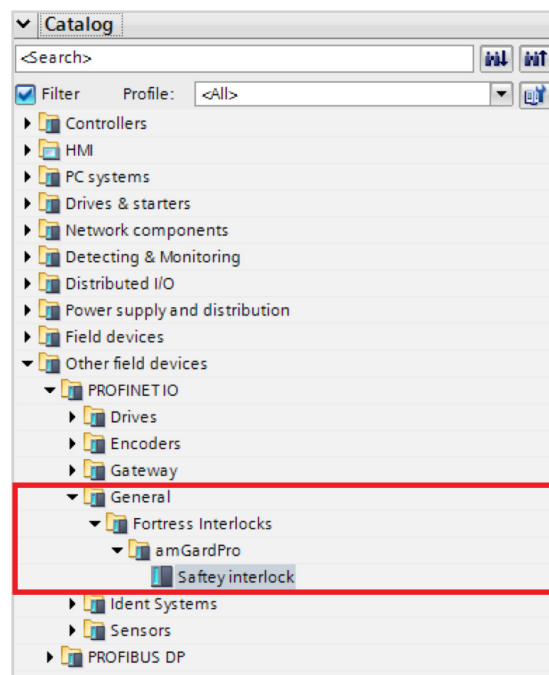


Figure 13: The proNet unit will be shown in the device catalog

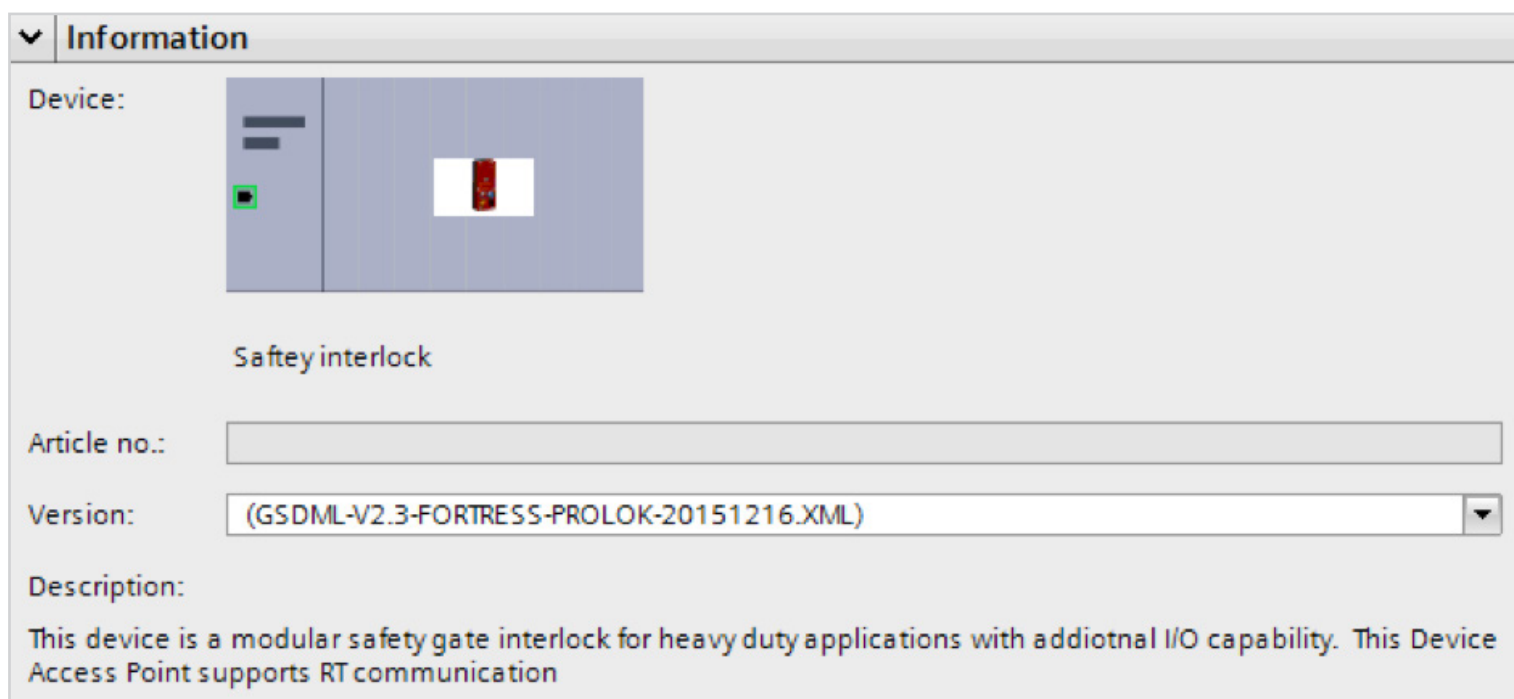


Figure 14: The ProNet unit shown in the information page

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Adding a proNet unit to Network and setup parameters

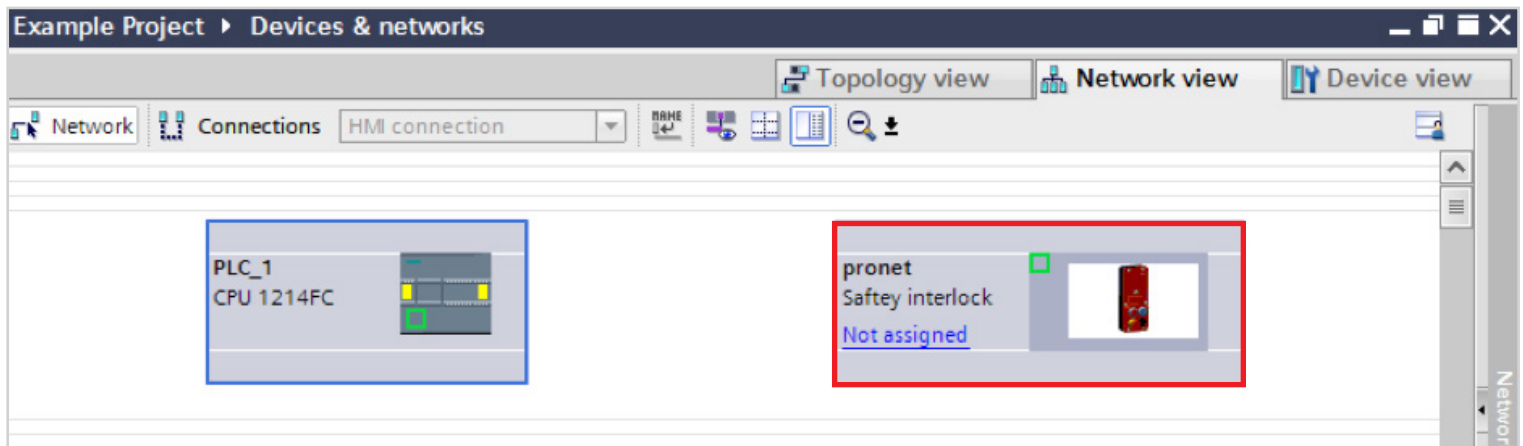


Figure 15: Drag *proNet* unit into network, and double click on the new proNet unit to access to the device view of the new unit

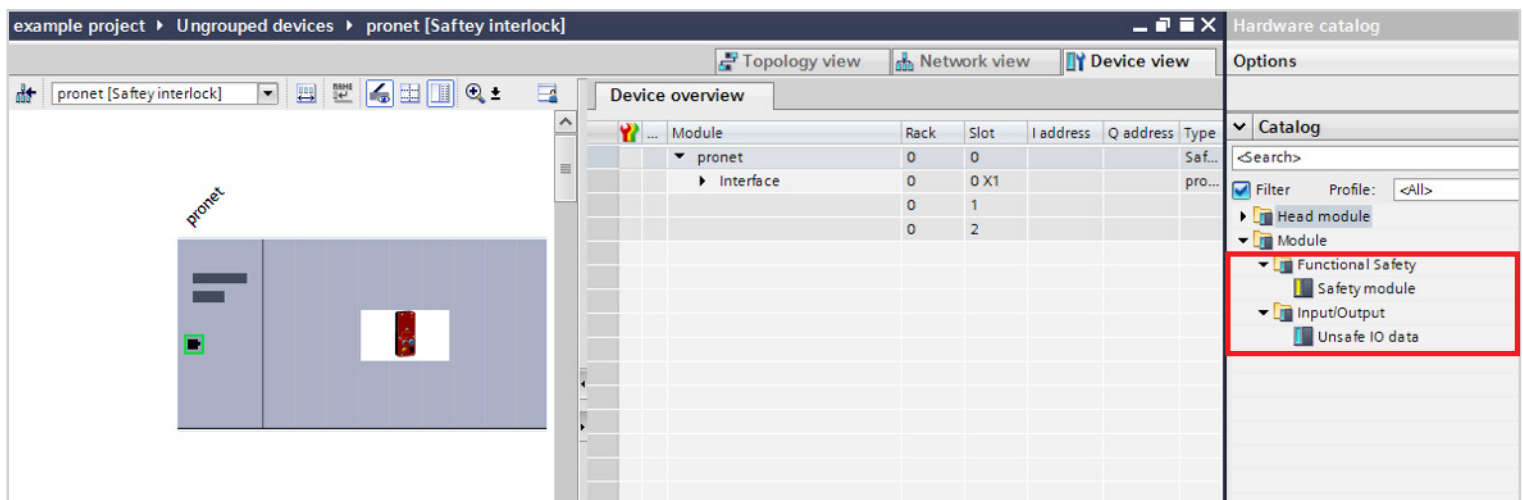


Figure 16: Drag the safety module and Unsafe IO module from catalog into the device interface

proNet - PROFINET / PROFIsafe communication module Configuration Instructions

Device overview							
	...	Module	Rack	Slot	I address	Q address	Type
		▼ pronet	0	0			Safety interlock
		▶ Interface	0	0 X1			pronet
		Safety module_1	0	1			Safety module
		▼ Unsafe IO data_1	0	2			Unsafe IO data
		IO lamps	0	2 1			IO lamps
		IO switches	0	2 2			IO switches
		Solenoid drive	0	2 3			Solenoid drive
		Gate monitor	0	2 4			Gate monitor
		Solenoid monitor	0	2 5			Solenoid monitor

Figure 17: The safety module and unsafe IO module is added to the unit

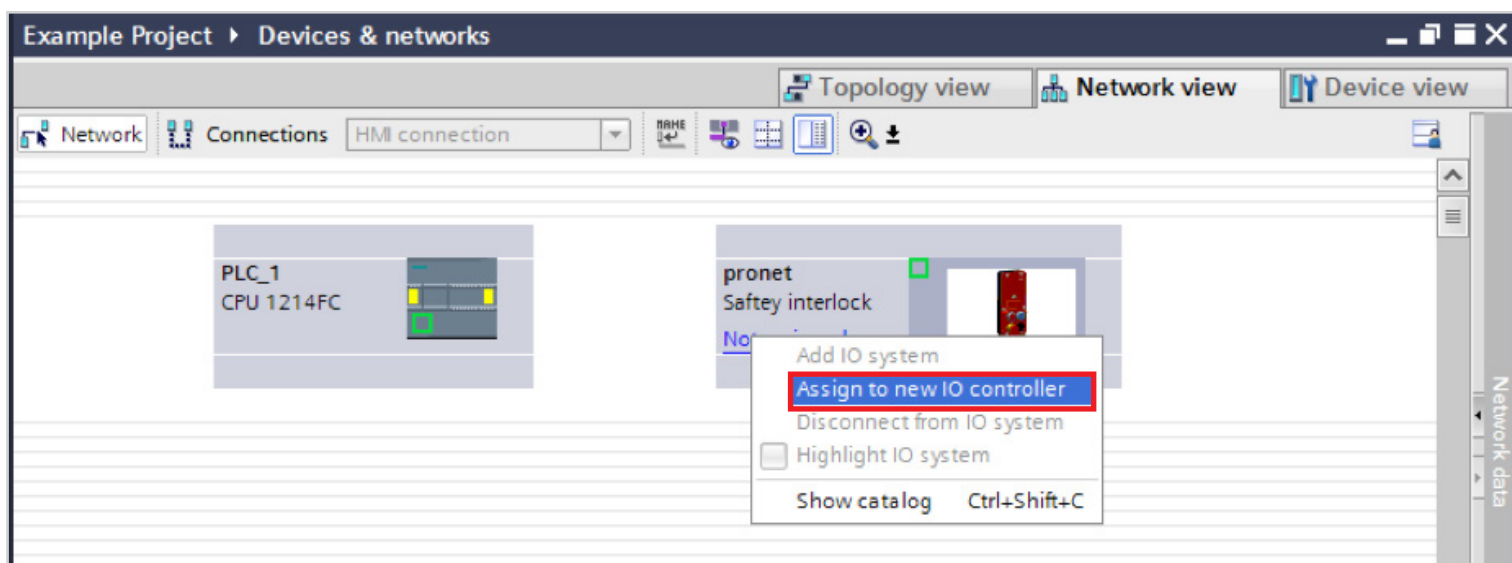


Figure 18: Connect ProNet unit to PLC in Network View – Assigning it to the PLC

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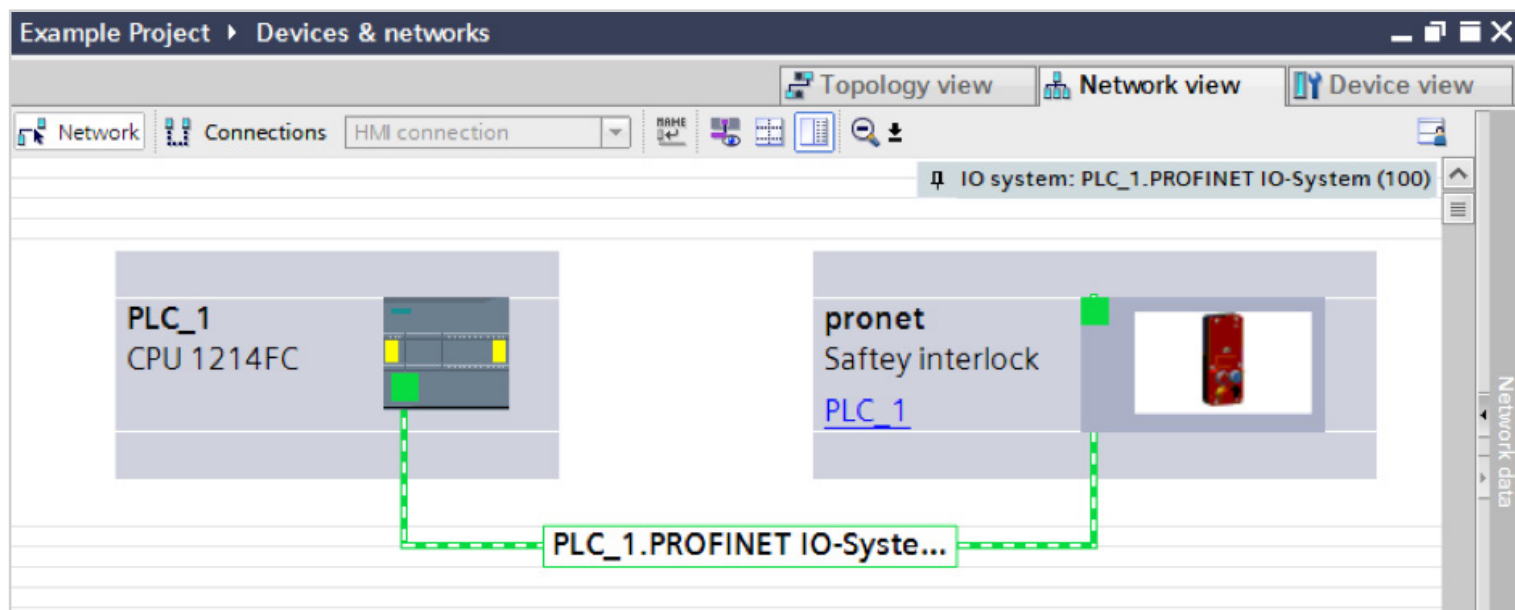


Figure 19: PROFINET link is shown between the PLC and *proNet* unit.

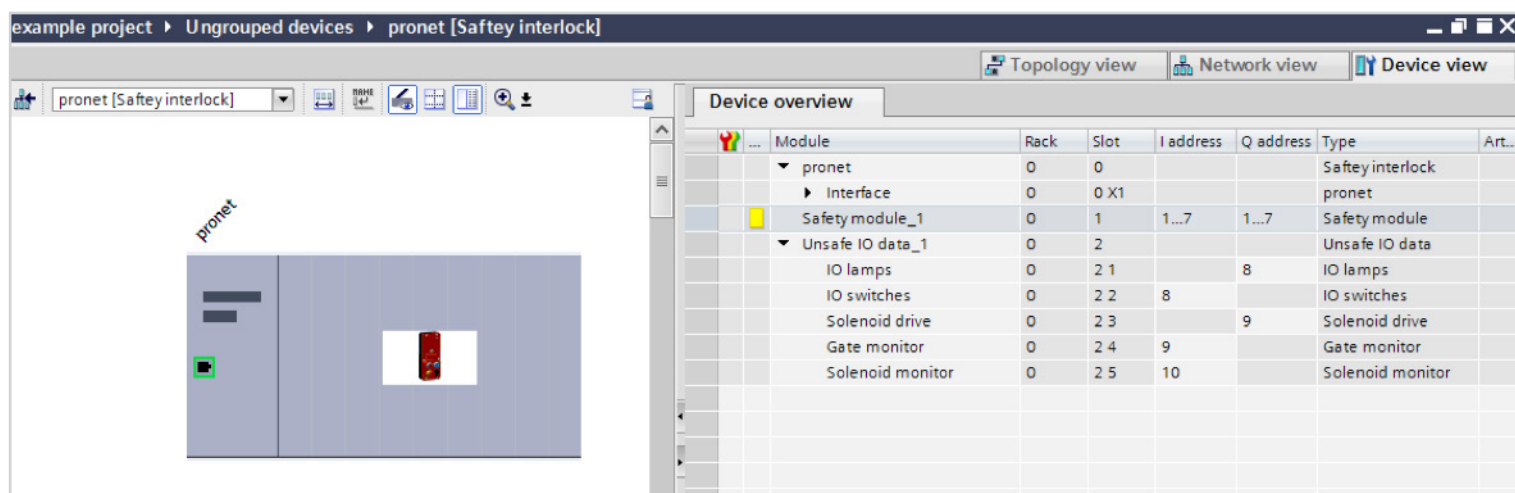
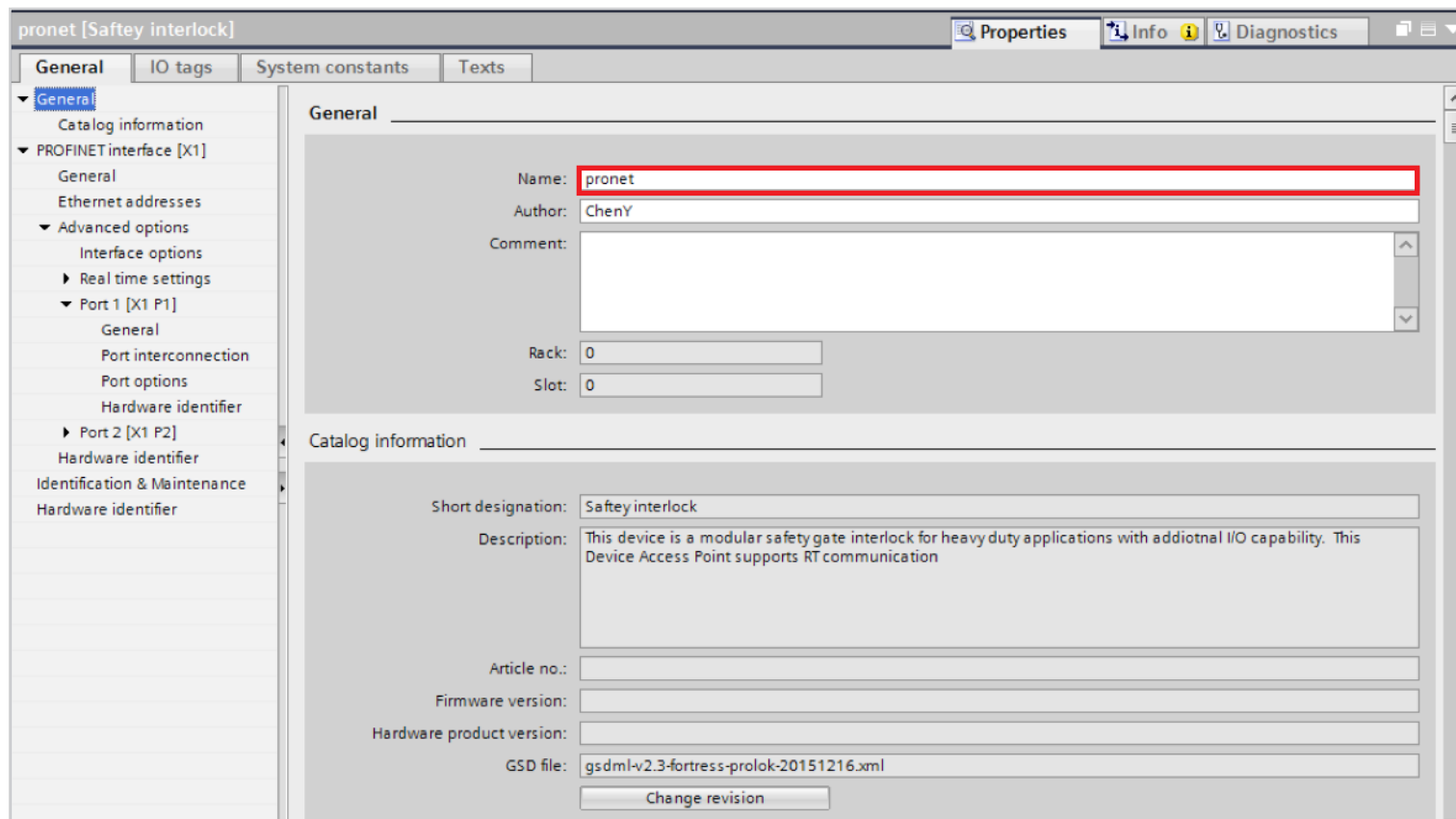


Figure 20: non-safety IO addresses and safety IO addresses are assigned to the unit

proNet - PROFINET / PROFIsafe communication module Configuration Instructions

Device overview								
	...	Module	Rack	Slot	I address	Q address	Type	Art...
		pronet	0	0			Safety interlock	
		Interface	0	0 X1			pronet	
		Safety module_1	0	1	1...7	1...7	Safety module	
		Unsafe IO data_1	0	2			Unsafe IO data	
		IO lamps	0	2 1		8	IO lamps	
		IO switches	0	2 2	8		IO switches	
		Solenoid drive	0	2 3		9	Solenoid drive	
		Gate monitor	0	2 4	9		Gate monitor	
		Solenoid monitor	0	2 5	10		Solenoid monitor	

Figure 21: Click on the unit to view the setting page of proNet



pronet [Safety interlock] Properties Info Diagnostics

General IO tags System constants Texts

General

Name: **pronet**

Author: ChenY

Comment:

Rack: 0

Slot: 0

Catalog information

Short designation: Safety interlock

Description: This device is a modular safety gate interlock for heavy duty applications with addiotnal I/O capability. This Device Access Point supports RT communication

Article no.:

Firmware version:

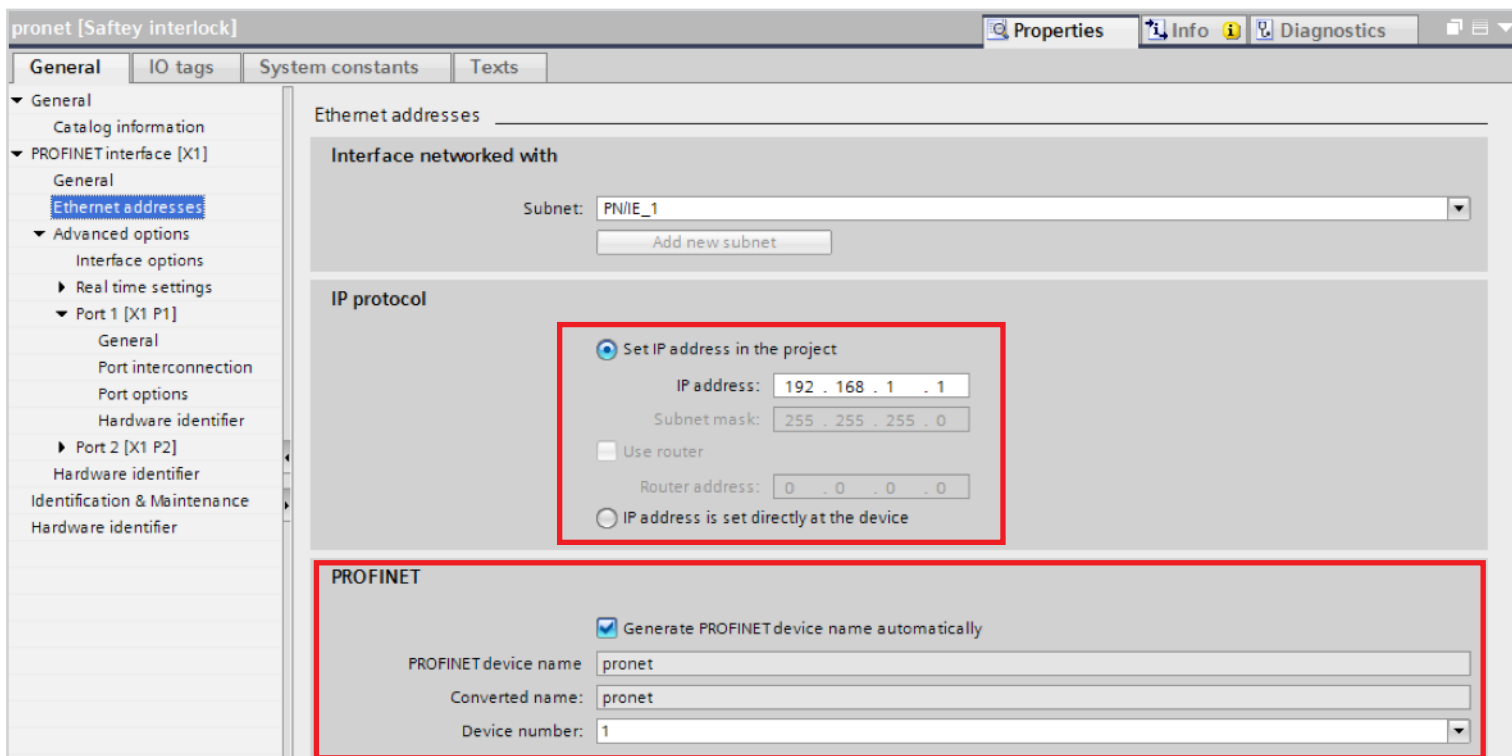
Hardware product version:

GSD file: gsdml-v2.3-fortress-prolok-20151216.xml

Change revision

Figure 22: Set the device name of the proNet unit

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pronet [Safety interlock] Properties Info Diagnostics

General IO tags System constants Texts

General

Catalog information

PROFINET interface [X1]

General

Ethernet addresses

Advanced options

Interface options

Real time settings

Port 1 [X1 P1]

General

Port interconnection

Port options

Hardware identifier

Port 2 [X1 P2]

Hardware identifier

Identification & Maintenance

Hardware identifier

Ethernet addresses

Interface networked with

Subnet: PNIE_1

Add new subnet

IP protocol

Set IP address in the project

IP address: 192 . 168 . 1 . 1

Subnet mask: 255 . 255 . 255 . 0

Use router

Router address: 0 . 0 . 0 . 0

IP address is set directly at the device

PROFINET

Generate PROFINET device name automatically

PROFINET device name: pronet

Converted name: pronet

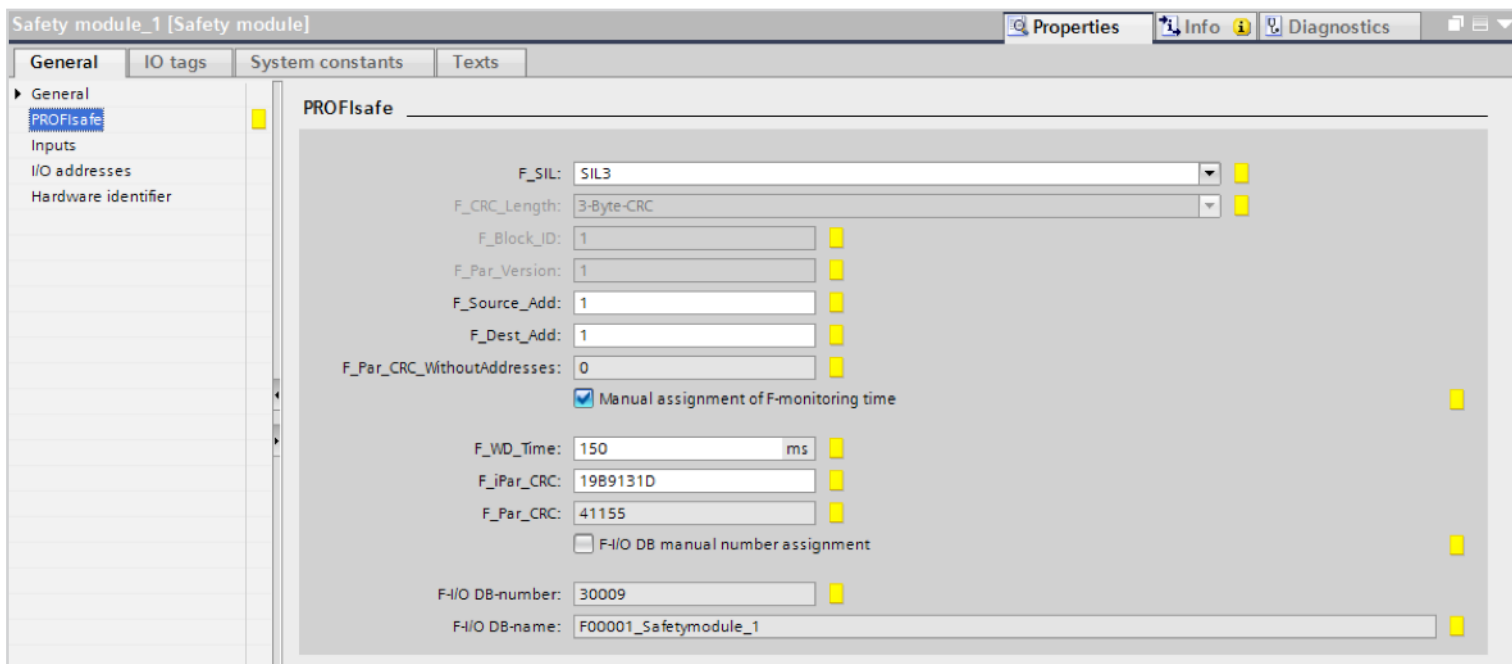
Device number: 1

Figure 23: Set the IP address of the *proNet* unit in the program, the device name can also be set up under the page

Device overview								
	...	Module	Rack	Slot	I address	Q address	Type	Art...
		▼ pronet	0	0			Safety interlock	
		▶ Interface	0	0 X1			pronet	
		Safety module_1	0	1	1...7	1...7	Safety module	
		▼ Unsafe IO data_1	0	2			Unsafe IO data	
		IO lamps	0	2 1		8	IO lamps	
		IO switches	0	2 2	8		IO switches	
		Solenoid drive	0	2 3		9	Solenoid drive	
		Gate monitor	0	2 4	9		Gate monitor	
		Solenoid monitor	0	2 5	10		Solenoid monitor	

Figure 24: Right-click on the safety module and select properties to access to the properties page of safety module

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PROFIsafe

F_SIL: SIL3

F_CRC_Length: 3-Byte-CRC

F_Block_ID: 1

F_Par_Version: 1

F_Source_Add: 1

F_Dest_Add: 1

F_Par_CRC_WithoutAddresses: 0

☒ Manual assignment of F-monitoring time

F_WD_Time: 150 ms

F_iPar_CRC: 19B9131D

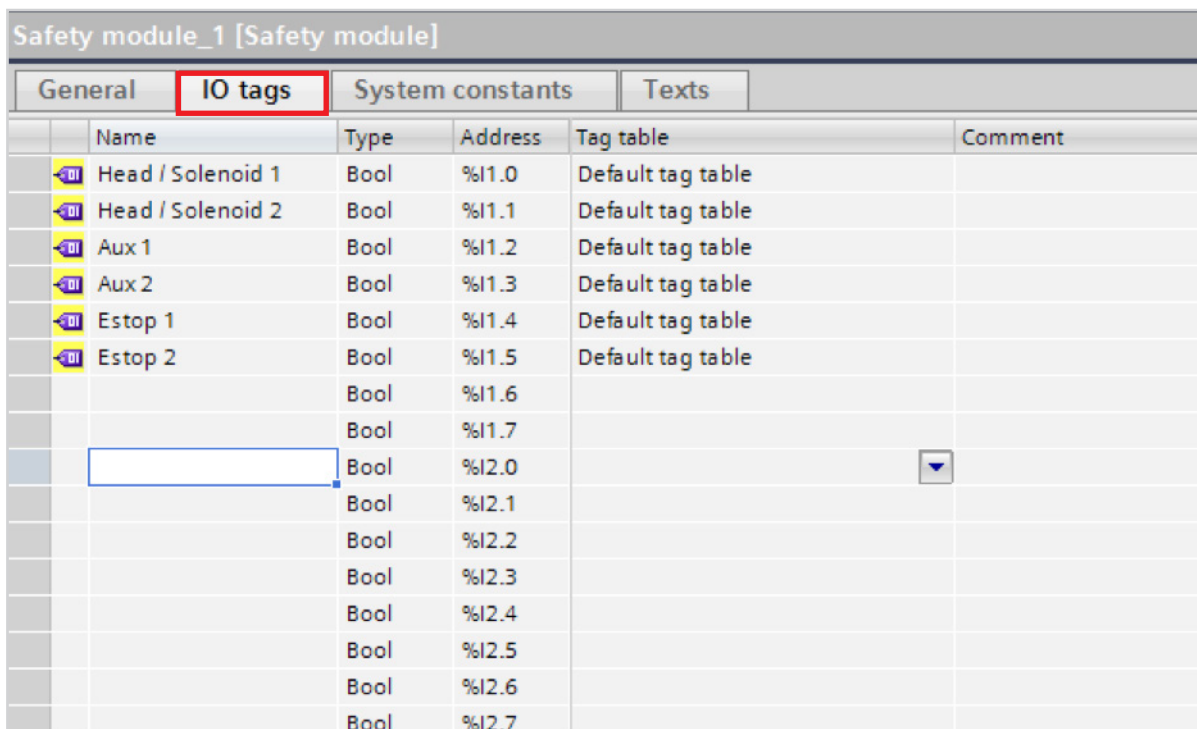
F_Par_CRC: 41155

☐ F-I/O DB manual number assignment

F-I/O DB-number: 30009

F-I/O DB-name: F00001_Safetymodule_1

Figure 25: The PROFIsafe setting including F-Address can be changed under this page. The values and settings shown in this example are for the purpose of demonstration only. It is customer's responsibility to make sure the setting of PROFIsafe unit is correct based on customer's risk assessment and applications. No responsibility is accepted if the information in this document is misused.



Safety module_1 [Safety module]					
General		IO tags	System constants	Texts	
	Name	Type	Address	Tag table	Comment
	Head / Solenoid 1	Bool	%I1.0	Default tag table	
	Head / Solenoid 2	Bool	%I1.1	Default tag table	
	Aux 1	Bool	%I1.2	Default tag table	
	Aux 2	Bool	%I1.3	Default tag table	
	Estop 1	Bool	%I1.4	Default tag table	
	Estop 2	Bool	%I1.5	Default tag table	
		Bool	%I1.6		
		Bool	%I1.7		
		Bool	%I2.0		
		Bool	%I2.1		
		Bool	%I2.2		
		Bool	%I2.3		
		Bool	%I2.4		
		Bool	%I2.5		
		Bool	%I2.6		
		Bool	%I2.7		

Figure 26: Click on "IO tags" to create the tags for the safety IO

proNet - PROFINET / PROFIsafe communication module Configuration Instructions

Device overview							
...	Module	Rack	Slot	I address	Q address	Type	Art...
	▼ pronet	0	0			Safety interlock	
	▶ Interface	0	0 X1			pronet	
	Safety module_1	0	1	1...7	1...7	Safety module	
	▼ Unsafe IO data_1	0	2			Unsafe IO data	
	IO lamps	0	2 1		8	IO lamps	
	IO switches	0	2 2	8		IO switches	
	Solenoid drive	0	2 3		9	Solenoid drive	
	Gate monitor	0	2 4	9		Gate monitor	
	Solenoid monitor	0	2 5	10		Solenoid monitor	

Figure 27: Click on Unsafe IO data to view the properties page of Unsafe IO

Unsafe IO data_1 [Unsafe IO data]					
General IO tags System constants Texts					
Name	Type	Address	Tag table	Comment	
Gate Monitor	Bool	%I9.0	Default tag table		
Red Lamp	Bool	%Q8.0	Default tag table		
Green Lamp	Bool	%Q8.1	Default tag table		
Yellow Lamp	Bool	%Q8.2	Default tag table		
	Bool	%Q8.3			
	Bool	%Q8.4			
	Bool	%Q8.5			
	Bool	%Q8.6			
	Bool	%Q8.7			
Solenoid Drive	Bool	%Q9.0	Default tag table		
Solenoid Monitor	Bool	%I10.0	Default tag table		
Red push button	Bool	%I8.0	Default tag table		
Green push button	Bool	%I8.1	Default tag table		
Yellow push button	Bool	%I8.2	Default tag table		
	Bool	%I8.3			
	Bool	%I8.4			
	Bool	%I8.5			
	Bool	%I8.6			

Figure 28: Click on "IO tags" to create the tags for Non Safety IO.

proNet - PROFINET / PROFIsafe communication module Configuration Instructions

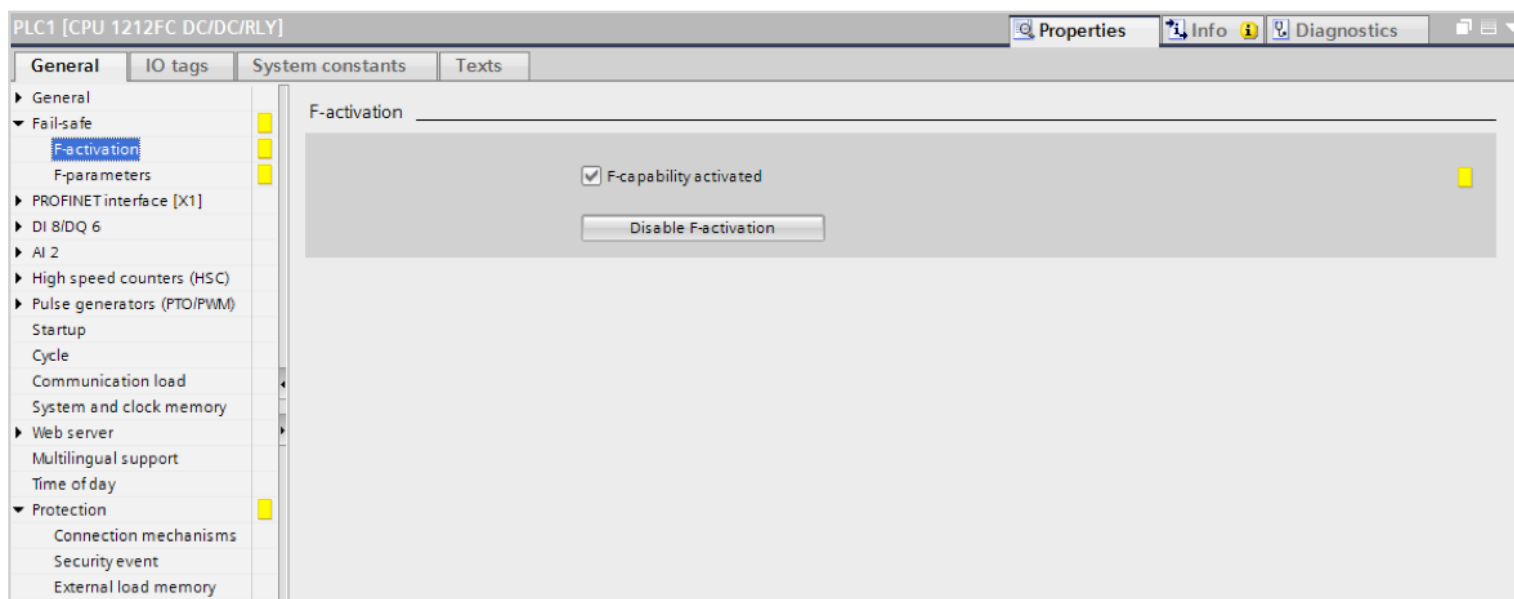


Figure 29: Make sure F-Capability enabled on the PLC. The safety parameters should be configured based on the customer's application and according to their individual risk assessment. The values and settings shown in this example are for the purpose of demonstration only. No responsibility is taken if the information in this document is misused.

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