



192-300080
04.12.2023

AC20 Series

Profinet Onboard

Configuration and Programming with Siemens TIA Portal



ENGINEERING **YOUR** SUCCESS.

Non-warranty clause

We checked the contents of this publication for compliance with the associated hardware and software. We can, however, not exclude discrepancies and do therefore not accept any liability for the exact compliance. The information in this publication is regularly checked, necessary corrections will be part of the subsequent publications.

English Master created.

Production site:

Germany

Parker Hannifin Manufacturing Germany GmbH & Co. KG
Electric Motion & Pneumatic Division Europe [EMPD] Robert-
Bosch-Strasse 22
77656 Offenburg (Germany)
Tel.: + 49 (0781) 509-0
Internet: <https://www.parker.com/>

Certified according to ISO 9001:2015

Parker Hannifin Manufacturing Germany GmbH & Co KG - Sitz: Bielefeld - Amtsgericht: Bielefeld HRA 15699 Partner liable to
unlimited extent: Parker Hannifin GmbH, Sitz Bielefeld, Amtsgericht Bielefeld HRB 35489
Geschäftsführung der PARKER Hannifin GmbH: Dr.-Ing. Hans-Jürgen Haas, Kees Veraart, Chairman of the board: Dr.-Ing. Gerd Scheffel

Table of Contents

	Non-warranty clause	2
	Production site:	2
1	Introduction.....	4
1.1	About this document	4
1.2	Tools.....	4
1.3	Abstract	4
2	Setting up the AC20 Communication parameters.....	5
2.1	Config drive using Parker DSE Lite Application.....	6
2.2	Config drive using AC20 Webserver	7
3	Communication set between PLC and AC20 drive.	9
3.1	Add the AC20 slave into the Tia Portal project.....	10
3.2	Set the I/O mapping.	11
3.3	Set AC20 address and name to establish the connection.	11

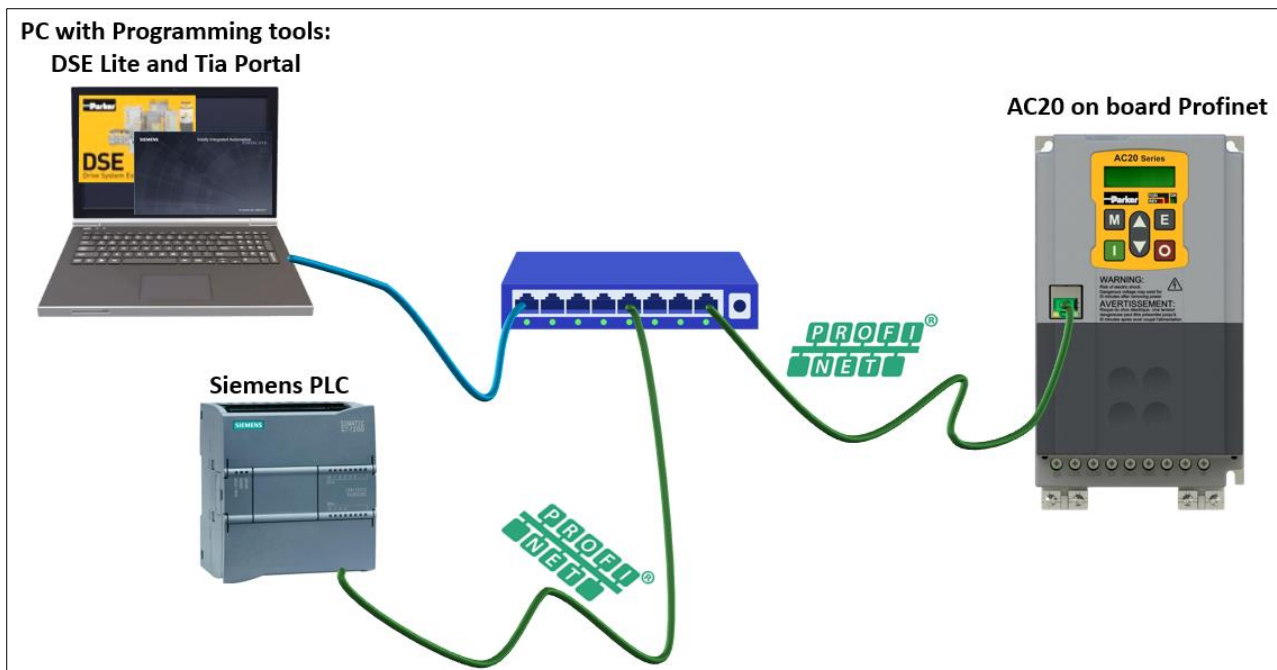
1 Introduction

1.1 About this document

This application note describes how to set up communication between AC20 driver and Siemens S7 Controllers through the Profinet IO Onboard communication.

1.2 Tools

	Name	Firmware Version
Hardware	AC20 Drive	1.1.3
	Siemens S7-1212C	4.2
Software	Parker DSE Lite	3.12
	Siemens Tia Portal	15



1.3 Abstract

The parker AC20 drive can be easily integrated into a siemens S7 control architecture via the Profinet IO communication. The communication requires the configuration of **network parameters** and **data exchange** for both the AC20 and the S7 Controllers.

2 Setting up the AC20 Communication parameters

The configuration of the AC20 drive communication can be performed with AC20 keypad or Parker DSE Lite application or the AC20 Webserver.

Parameters listed in the tables below must be set to establish communication with master.

➤ Ethernet Parameters

Keypad Menu Path	DSE-Lite Function Block	Webserver

No.	Name	Value	Description
0640	ADDRESS METHOD (Method for assigning the IP address)	AUTOMATIC	Address assigned by DHCP server
		LINK LOCAL	Address assigned link-local by the inverter
		FIXED	Ip address must be set manually via parameters "0641", "0642", "0643".
0641	SET IP ADDRESS	0.0.0.0	IP address of the inverter
0642	SET SUBNET MASK	0.0.0.0	Subnet Mask of the inverter
0643	SET GATEWAY ADDR	0.0.0.0	Gateway address of the inverter

➤ Fieldbus Parameters

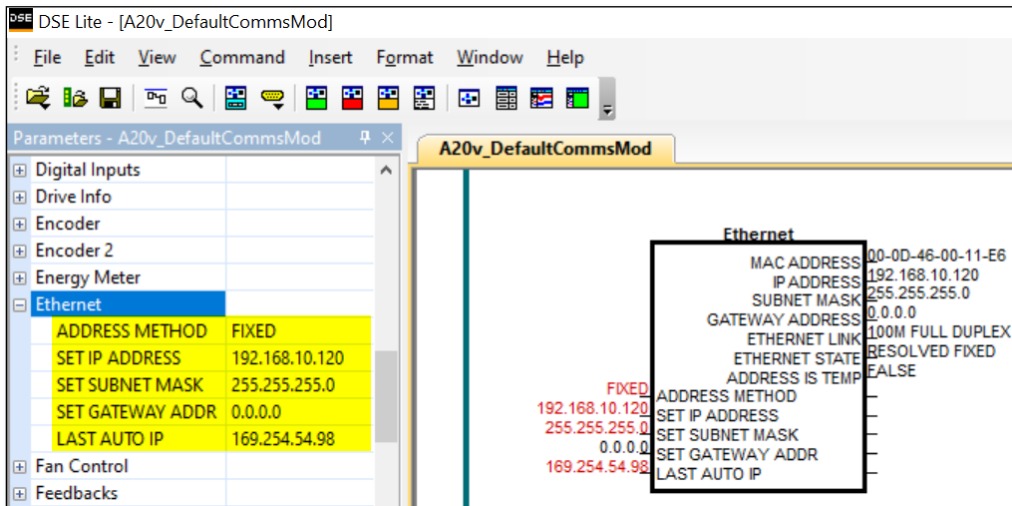
Keypad Menu Path	DSE-Lite Function Block	Webserver

No.	Name	Value	Description
0791	Fieldbus	PROFINET	Set the required on-board fieldbus to "Profinet"
0858	DO NOT CLEAR IP	FALSE	Profinet stack IP address handler
2565	MASTERMAPPING (Choose how the process data mapping is defined)	FALSE	The fieldbus mapping is used to set/configure the PDO mapping (see row below)
		TRUE	The profinet Master sets/configure the PDO mapping
0792	Fieldbus Input Mapping	TAG ID of the parameter	Defined the process data sent from PLC to the AC20, the parameters TAG ID to read from PLC are defined into the parameter range [0793 ... 0824]
0825	Fieldbus Output Mapping	TAG ID of the parameter	Defined the process data sent from AC20 to the PLC, the parameters TAG ID to write to the PLC are defined into the parameter range [0826 ... 0857]

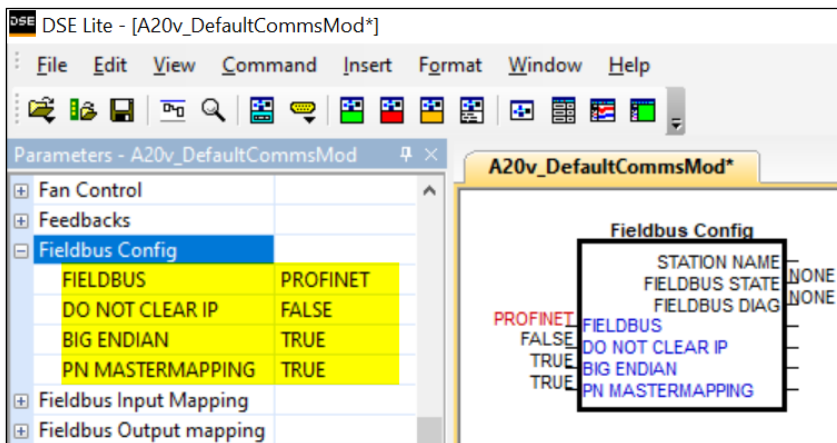
2.1 Config drive using Parker DSE Lite Application

Display your configuration page in DSE Lite, click the plus sign [+] at the left of function block “Ethernet” and “Fieldbus Config” to set the appropriate communication parameters or double click the function Blocks to open parameters tab in the configuration interface.

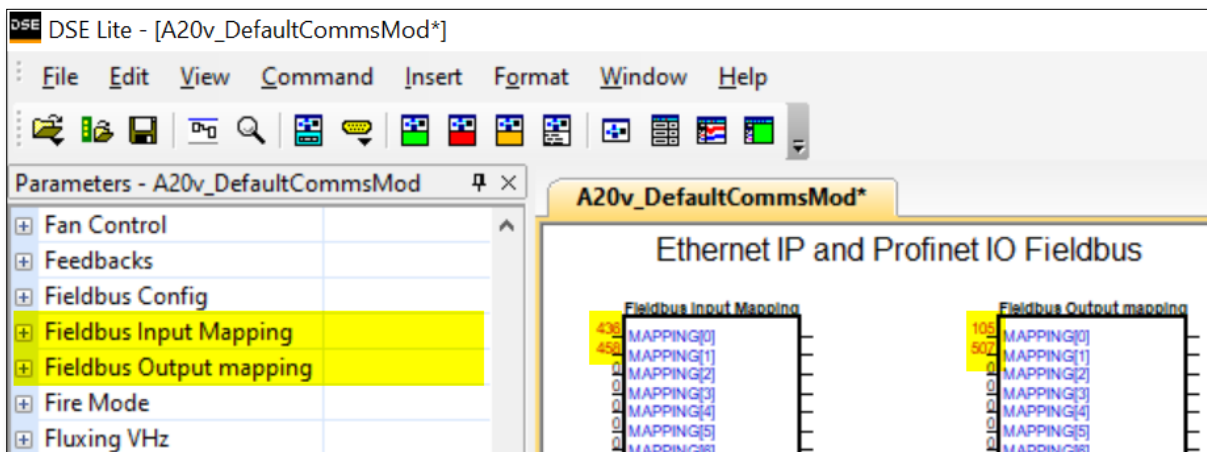
➤ Ethernet Config



➤ Fieldbus Config



Note: If Parameters “2565 MASTERMAPPING” is FALSE, use function block “Fieldbus Input mapping” and “Fieldbus Output Mapping” to map the process data. Add the parameters TAG ID into the tables.



2.2 Config drive using AC20 Webserver

Access the AC20 webserver by typing the IP-Address of the drive into a web browser. Switch the driver state from “Operational” to “Configuration” by clicking on stop button, then set the parameters.

➤ Ethernet Config

Parker

Summary | Parameters | Passwords

ENGINEER ▾ Home ► Engineer ► Communications ► Ethernet

Monitor

State: **Configuration**
Drive: **OK**

0640: Address Method	FIXED ▾
0641: Set IP Address	192.168.10.120
0642: Set Subnet Mask	255.255.255.0
0643: Set Gateway Addr	192.168.10.120
0645: Address Is Temp	☐

➤ Fieldbus Config

Parker

Summary | Parameters | Passwords

ENGINEER ▾ Home ► Engineer ► Communications ► Fieldbus

Monitor

State: **Configuration**
Drive: **OK**

0791: Fieldbus	PROFINET ▾
2565: PN MasterMapping	☒
2652: InMappingStatus +	
2685: OutMappingStatus +	
0858: Do Not Clear IP	☐
0859: Big Endian	☒

If Parameters “**2565 MASTERMAPPING**” is set to **FALSE**, use tables below to set the process data mapping. Add the parameters TAG ID into the tables.

- “Input mapping +” table

Parker

Summary | Parameters | Passwords

ENGINEER ▾ Home ► Engineer ► Communications ► Fieldbus

Monitor

State: **Configuration**
Drive: **OK**

0791: Fieldbus	PROFINET ▾
2565: PN MasterMapping	☐
0792: Input Mapping -	
000:	0436 Comms Command
001:	0458 Comms Setpoint
002:	0000
003:	0000
004:	0000

- "Out Mapping +" table

Parker

Summary | Parameters | Passwords

ENGINEER ▾

Home ► Engineer ► Communications ► Fieldbus

0791: Fieldbus PROFINET ▾

2565: PN MasterMapping ☐

0792: Input Mapping +

0825: Out Mapping -

State: Configuration

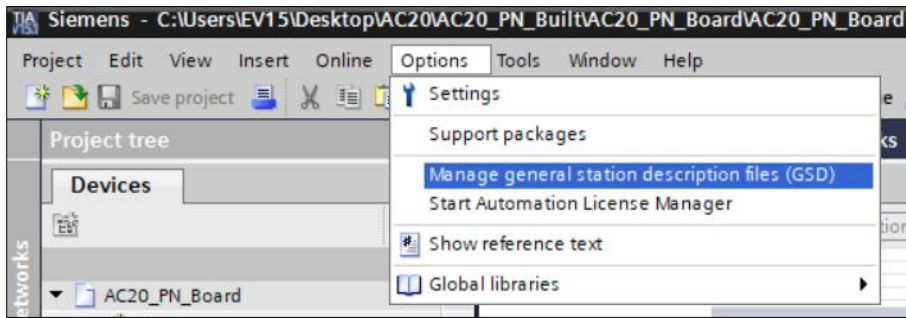
Drive: OK

000:	0105 Speed Percent
001:	0507 Status Word
002:	0000
003:	0000

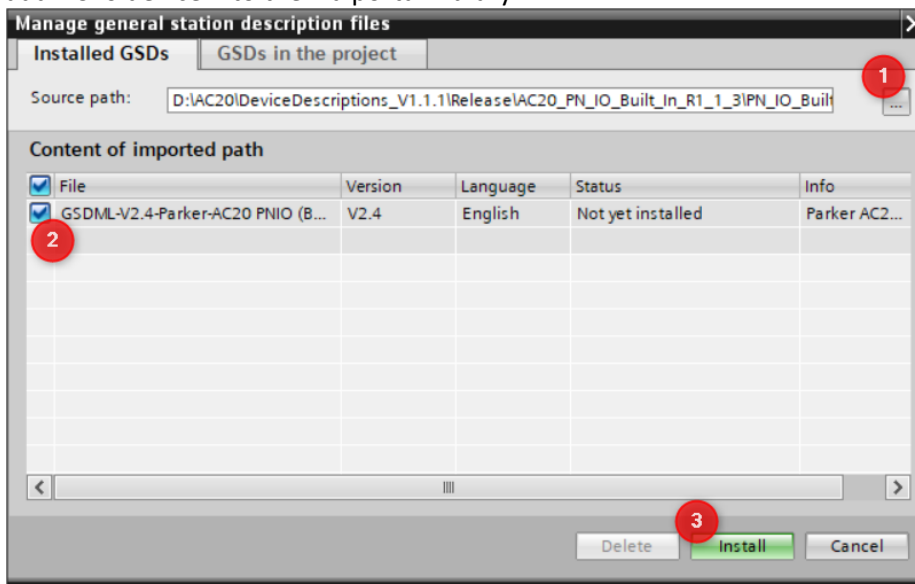
3 Communication set between PLC and AC20 drive.

Download the Profinet GSDML File from Parker website and install into Tia Portal project.

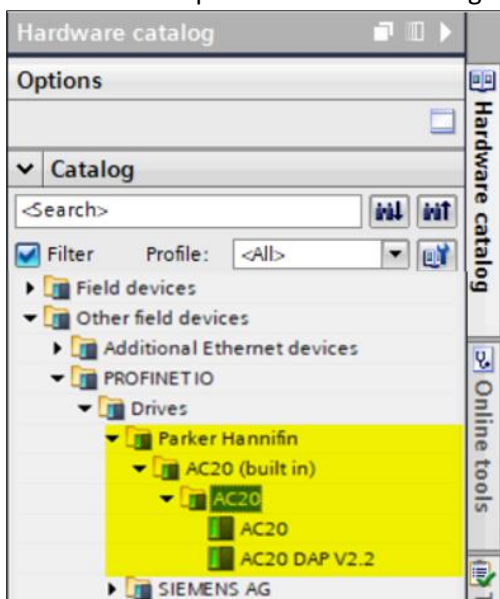
Open “Manage general station description files (GSD)” Tab.



Click on the three dots, select the folder where the AC20 GSDML is stored, select the file and click on install to add AC20 device into the Tia portal Library.

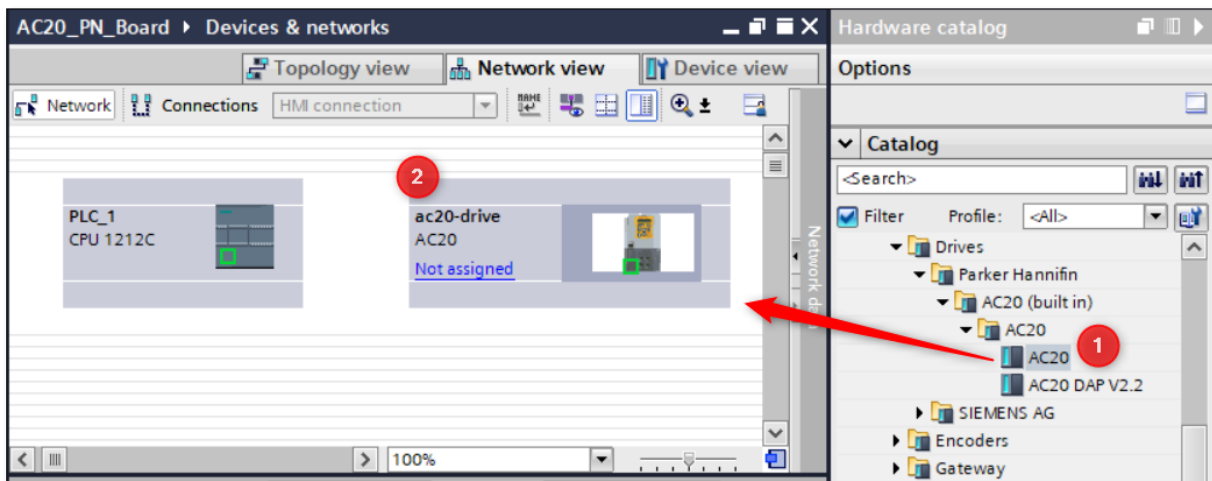


Overview of Tia portal hardware catalog with AC20 device.

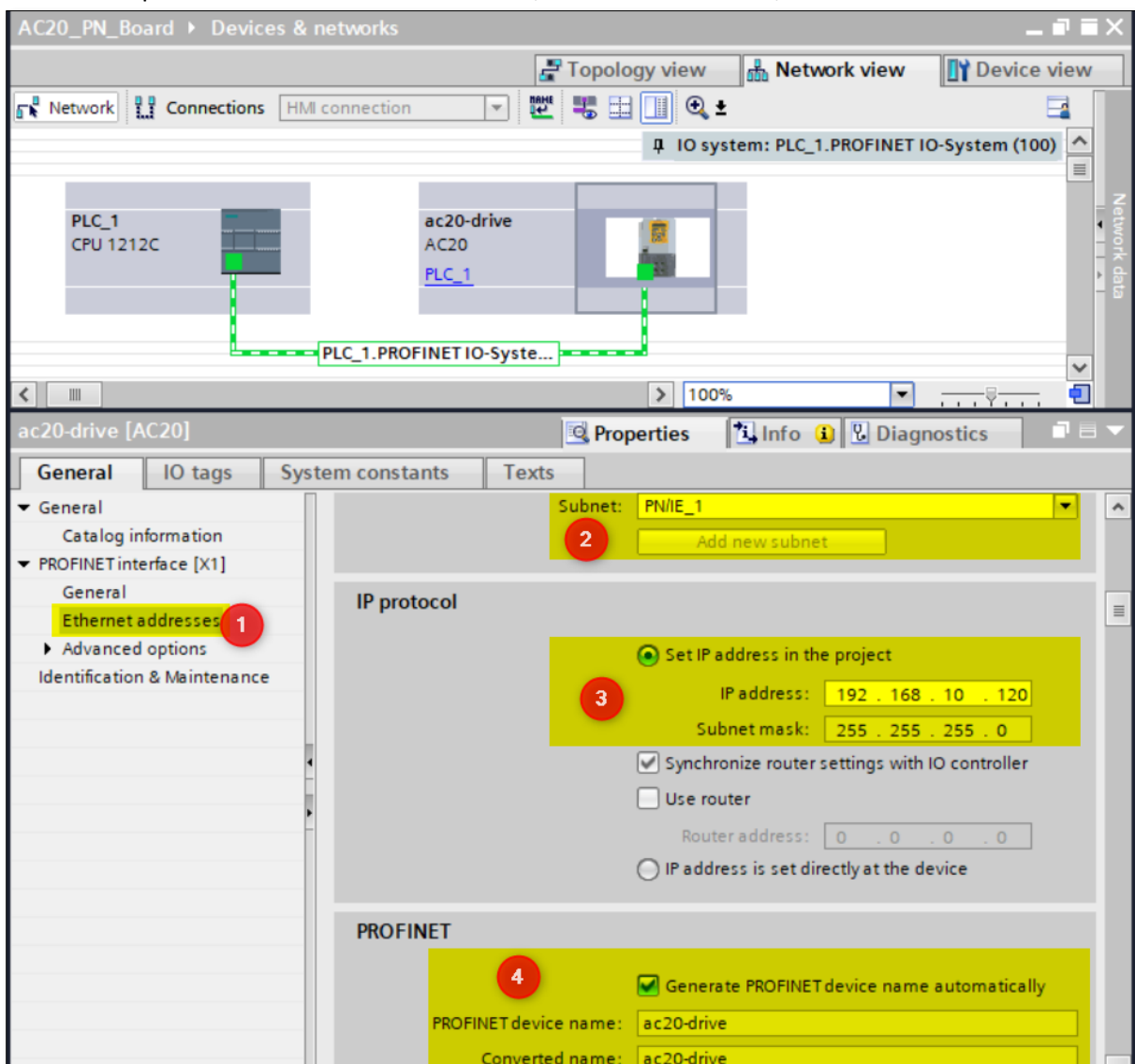


3.1 Add the AC20 slave into the Tia Portal project.

Drag and drop the AC20 from “Hardware catalog” to “Network view”.



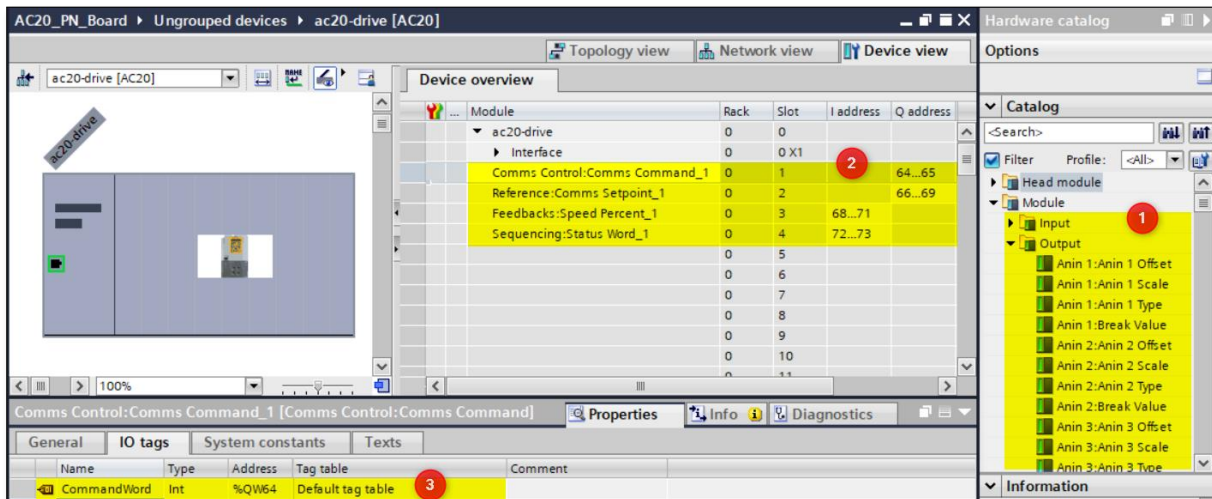
Click on “Properties” then set network interface, define **station name**, **IP Address** and **subnet mask**.



3.2 Set the I/O mapping.

To set the AC20 I/O mapping, drag and drop the appropriate input and output modules from Hardware catalog to the AC20 Slot, each module represents an AC20 parameter.

Note: when the parameter “2565 MASTERMAPPING” is set to “FALSE”, AC20 driver mapping table should be copied in order into the AC20 slot on Tia Portal.



Make sure the PC, PLC and AC20 Profinet are physically connected.

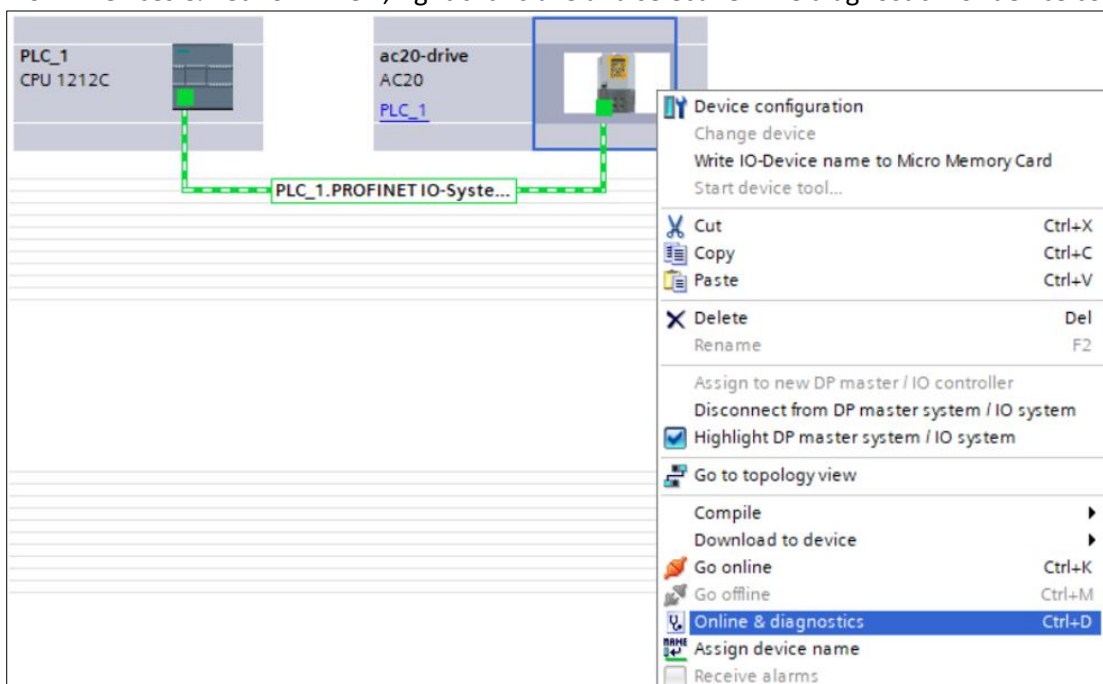
Compile and download project into the PLC.

3.3 Set AC20 address and name to establish the connection.

Go online with PLC.



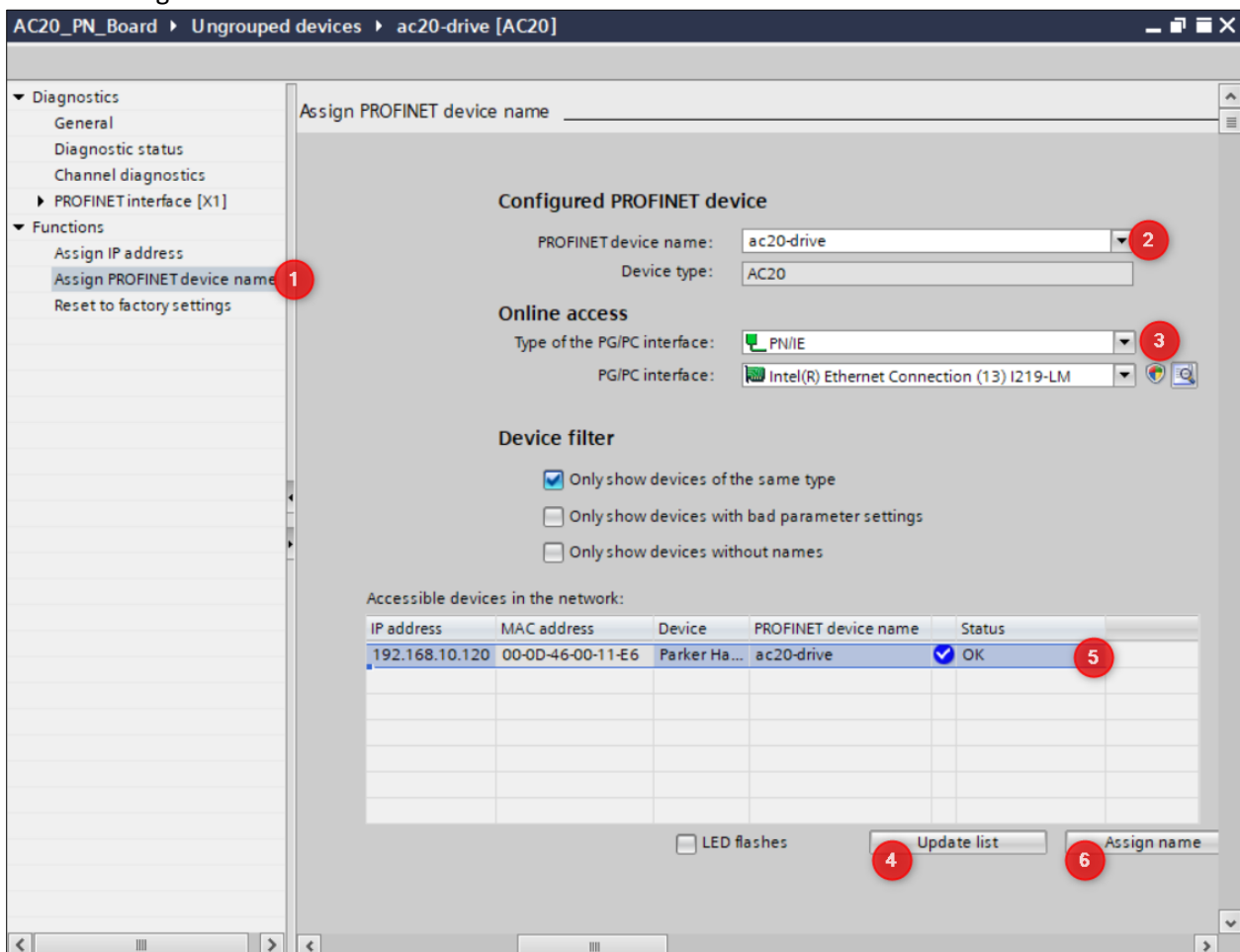
From “Devices & network” view, right click slave and select “Online diagnostic” for device configuration.



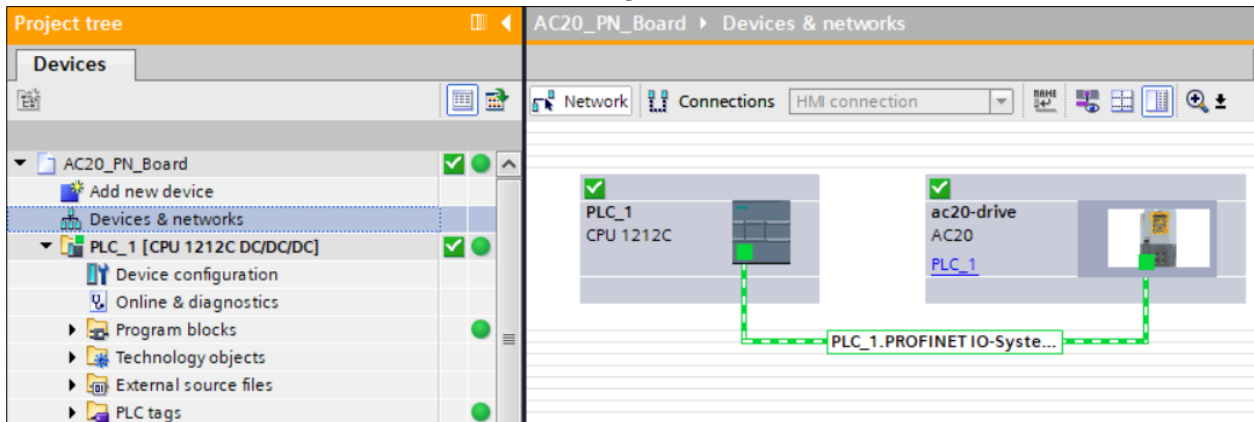
From “online & diagnostics” view click on “Assign Ip Address”, click “Accessible devices” to search slave online according to his mac Address then click on “Assign Ip Address” to set Ip address of the physical slave.



Select “Assign PROFINET device name” to open the view, click on “update list” to search slave online, then click on “Assign name” to set slave name.



After completing the operation above, the communication should be established between PLC and AC20 slave, the view below shows the communication diagnostic.



✓ DSE Lite Online Monitor

DSE Monitor List	
Parameter	Value
Comms Control::COMMS COMMAND	0x0C0F
Feedbacks::SPEED PERCENT	15.07 %
Reference::COMMS SETPOINT	15 %
Sequencing::STATUS WORD	0x4237

✓ Tia Portal Online Monitor

AC20_PN_Board > PLC_1 [CPU 1212C DC/DC/DC] > Program blocks > AC20_FC [FC10]

Block interface

No condition defined.

IF... CASE... FOR... WHILE... TO DO... DO... (*...*) REGION

Block title:

Network 1:

Comment

```

1 //Read from AC20 Drive
2 #RD_StatusWord := "StatusWord";
3 #RD_SpeedFdk := DWORD_TO_REAL(DINT_TO_BCD32("SpeedFeedback"));
4 //Write to AC20 Drive
5 "CommandWord" := "WR_ControlCMD";
6 "SpeedSetpoint" := DWORD_TO_DINT(REAL_TO_DWORD("WR_SpeedSetpoint"));

```

#RD_StatusWord		16951
#RD_SpeedFdk		24.73824
"CommandWord"	%QW64	3087
"WR_ControlCMD"	%MW74	3087
"SpeedSetpoint"	%QD66	1_103_626_240
DWORD_TO_DINT		1_103_626_240
REAL_TO_DWORD		16#41C8_0000
"WR_SpeedSetpoint"	%MD76	25.0

Network 2:

100%

www.parker.com



European Headquarters
La Tuilière 6, 1163 Etoy,
Switzerland
Tel: +41 21 821 85 00

Your authorized Distributor