



PROFINET Commander User Manual

August 2023



PROFINET Commander User Manual V5.1.0.9

Table of Contents

PROFINET Commander	1
User Manual	1
1.0 Version History	3
2.0 Introduction	4
3.0 Installation	5
3.1 Software updates.....	5
4.0 Configuring the PROFINET IO Controller and the Network Overview	5
4.1 Select the IP Addresses.....	6
4.2 Configuration.....	7
4.2.1 Configure the PROFINET Commander IO Controller and network.....	7
4.2.2 Configuring the Device(s)	9
4.2.2.1 – Auto device configuration	10
4.2.2.2 – Manual device configuration	11
4.3 Download the PROFINET IO Device Names	14
5.0 Using PROFINET Commander	15
5.1 Starting PROFINET Commander	15
5.1.1 License Management.....	15
5.2 Opening the HW Configuration Export File.....	16
5.3 Configuration Display	17
5.4 Setting the Run Mode to Operate	18
5.5 Setting IO Device Outputs	19
5.5.1 Setting IO Display Format.....	20
5.7 Displaying Diagnostic Alarms	21
5.8 Reading Diagnostics	22
.....	22
5.9 Performing Read/Write Record Calls.....	23
5.10 PN Browser	26
5.11 Configure Controller	28
5.12 Options menu.....	28
6.0 FAQ / Troubleshooting.....	29
7.0 Further support	30

1.0 Version History

Version 5.1.0.9 (August 9, 2023)

Recommended to update

PN Stack update (better performance for XML parsing, communication)

Npcap update to 1.76 OEM (better performance)

New feature, Can adjust row height for device panel in options, column width still WIP and disabled

New feature, Can set for decimal input for R/W records dialog

New Mod Diff Block decrypt to alarms window

Fixed Network adapters to allow only valid cards and provide status / refresh option

Fixed Echo input/output

Fixed XML lockups

For auto update functions (bitwalk, increment, decrement, randomize) if the data is > 8 bytes, all bytes will be affected simultaneously

Fixed Diagnostic window if multiple issues are present

Other various fixes

Version 5.1.0.8 (August 19, 2022)

Windows 11 (32/64 bit) support added

WPCap has been replaced with Npcap - NOTE that WPCap will be removed with installer and NPcap loaded (silent install)

Minor fixes (GUI) for License manager, records

License status is now displayed in License management window

Fixed import of certain I-device configurations (Siemens 1200/1500)

Version 5.1.0.7 (Apr 4, 2022)

Updated PN Stack

Minor fixes to GUI

Version 5.1.0.6 (Mar 14, 2022)

New feature, license management (online / offline activation),

New feature, can download latest Manufacturer ID table from options

fixes to installer, minor fixes

Version 5.1.0.5 (Apr 10, 2021)

New feature - Echo inputs to outputs, see details in manual

New feature – VLAN tag can be removed from DCP Browser messages

Added new MAU types

Fixed submodule memory crash

Manual and installer update about Npcap (not supported yet)/ Wireshark

Updated License manager

Version 5.1.0.4 (Oct 31, 2019)

Fixed Input Data Element record

Fixed Column Display (Browser)

Fixed max IO submodule issue

Fixed fragmented record data if > 1400 bytes

Fixed adapter issue if >= 10 adapters in system

Version 5.1.0.3 (May 2, 2019)

New - PN Stack Update

Fixed AR breakdown after moderate TCP netload

Fixed output randomizer (support all bytes)

Added Reset to Factory mode details to manual

Fix for PDev Record

Fix for MRP Check

Version 5.1.0.2 (March 14, 2019)

New feature ModDiffBlock detection If a Moddiffblock is detected on device startup it will be shown in the alarms window. (This typically means a configuration issue/mismatch but could also mean the device is locked by another process) See troubleshooting section in manual for more details

New feature Support of all reset to factory modes (0,1,2,3,4,8 & 9), in addition to original factory reset (mode 0)

Updated record decoding and added new records. (MRP, MauType, Media, etc)

New PN Stack update

DCP error fixes and more name checks

Fixed column display issue

Fixed DCP browser to allow independent save of NIC info

Fixed records offset (padding) issue

New feature TIA V15.1 now supports Auto configuration of devices (if supported), see manual for details

Version 5.1.0.1 (January 3, 2019) – Also see notes under 5.1.0.0

Updated error handling for network adapters

More properties information now included with devices (update time, send clock, watchdog time, etc.)

Tooltip text update

Version 5.1.0.0 (December 7, 2018)

Listen up sergeant! This is a MAJOR Update - (and Private first class make sure to read the manual)

Updated PROFINET stack



Multithreaded functions added
 DCP browser no longer affects the IO cycle
 Adjustable IO display timer (default 32ms up to 1 second)
 Bugfix for offline mode crash
 Fixed GSD directory search for 32/64 bit
 More automatic output settings added (Decrement, Bitwalk, Randomize, All On/Off)
 Send feedback @ www.profinetcommander.com
Previous versions info – see readme.txt for detailed history breakdown
Legacy Versions – Prior versions are now considered legacy versions and it is recommended to update.

2.0 Introduction

With PROFINET Commander, users such as engineers, sales, maintenance personnel, integrators, and developers can test and build a PROFINET network and the IO Devices connected to it quickly and without PLC programming. PROFINET Commander runs as a PROFINET IO controller on a PC with an easy-to-use graphical user interface which displays the following information:

- Configuration information
- I/O data
- Parameters
- Diagnostics and alarms
- In addition the user can:
- Read inputs from the devices.
- Change the output data to the IO devices.
- Get alarms and diagnostics from the device(s) and network components (switch also PN IO device)
- Send read and write record calls to the IO devices.
- Browse the network, set names, IP addresses, flash LEDs and reset to factory settings

Users gain the ability to test and set up a PROFINET IO Device or system from their PC before putting it into production. For developers of PROFINET IO devices, the added benefit of using the tool is simple testing of their product for correct operation and diagnostic functionality prior to PROFINET certification testing and final product release.

The screenshot shows the ProfinetCommander application window. The interface includes a menu bar (File, Edit, Tools, Help), a toolbar with icons for Import, Browse, Read Diagnostic, R/W Data Record(s), and Configure Controller. A 'NIC Selection' dropdown is set to '2-Network adapter 'Intel(R) 82574L Gigabit Netwc'. Below this are 'Select Mode' buttons for 'Operate' (green) and 'Offline' (red), and status indicators for 'Device Diagnostic', 'Device Offline', 'Run', and 'Stop'.

The 'Navigation' pane on the left shows a tree structure under 'PN Driver_1':

- (01) Switch_1
 - (0) Switch_1
 - (02) ET 200SP
 - (0) ET 200SP
 - (1) IM 155-6 PN ST V1.0
 - (32768) PN-IO
 - (32769) Port 1
 - (32770) Port 2
 - (1) DI 8x24VDC HF V1.0_1
 - (1) DI 8x24VDC HF V1.0
 - (2) DQ 16x24VDC/0.5A ST V1.0_1
 - (1) DQ 16x24VDC/0.5A ST V1.0

The 'Devices' table shows the following data:

Device Name	Input	Status	Output	Status
switch-1				
et200sp	04	GOOD	0074	GOOD

The 'Properties' table shows the following data:

Property Name	Property Value
PROFINET Controller Name	pnxadrivervb10fd5
IP Address	172.16.1.253
Subnet Mask	255.255.0.0
Router	0.0.0.0

The 'Information and Alarms' log shows the following events:

- 12/05/14 13:05:15 Please select NIC to use from dropdown list
- 12/05/14 13:05:15 NIC - 1 Network adapter 'VMware Virtual Ethernet Adapter' on local host
- 12/05/14 13:05:15 NIC - 2 Network adapter 'Intel(R) 82574L Gigabit Network Connection' on local host
- 12/05/14 13:05:15 NIC - 3 Network adapter 'VMware Virtual Ethernet Adapter' on local host
- 12/05/14 13:05:15 NIC - 4 Network adapter 'Intel(R) 82579LM Gigabit Network Connection' on local host
- 12/05/14 13:05:23 Using card with MAC ID 00:19:99:D4:00:B9
- 12/05/14 13:05:23 File Import was successful, click operate to start controller
- 12/05/14 13:05:29 Controller is in OPERATE mode
- 12/05/14 13:05:33 Device 2 is online
- 12/05/14 13:05:34 Device 1 is online
- 12/05/14 13:06:26 Device 2, diagnostic at slot 1, subslot 1, Channel Diagnostic,
- 12/05/14 13:06:36 Channel Number 0, Error 17.0

Hardware and Software Requirements

The following items are required for the PROFINET Commander application to operate correctly

- PC with Ethernet port, dual core processor, 2GB ram
- Supported OS (Windows 7 Home Premium/Professional/Enterprise/Ultimate SP 1 (32 Bit), Windows 7 Home Premium/ Professional/Enterprise/Ultimate SP1 (64 Bit), Windows 8.1 Professional/Enterprise), both 32 / 64 bit, Windows 10 Home / Professional, both 32 and 64 bit., Windows 11 Home / Professional both 32 / 64 bit.
- TIA Portal V18 update 2 Professional or higher (trial version available online, does not require a separate license for configuration with PRO version), V17, V16, V15.1, V14 is also supported with limitations (bytes cannot be above 254 per subslot, may need to install a HSP, etc.)
 - TIA V18 can be obtained [here](#). Only the DVD1 Setup files are required (double-check this is the latest version prior to download and download updates)
 - Next download the latest update from [here](#).
- Npcap 1.76 OEM (bundled and loaded with installer if needed) or higher
- Visual C++ V2017 Redistributable (bundled and loaded with installer if needed)
- Visual C++ V2013 Redistributable (bundled and loaded with installer if needed)
- Visual C++ 2010 SP1 Redistributable (bundled and loaded with installer if needed)
- .NET 4.8 or higher (bundled and loaded with installer if needed)

3.0 Installation

For installation, make sure you have administrative rights on the PC. In some cases the installer will start another install (Ex Npcap, C++ runtimes). Make sure to complete the main installer once the other installers have finished.

3.1 Software updates



If your PC has an internet connection, you will be notified if there is a software update available which you can apply. You can also check manually by using the updater in the taskbar if needed or for other options right click on the updater.

4.0 Configuring the PROFINET IO Controller and the Network Overview

Warning: If you have an antivirus scanner / firewall / malware scanner installed on your PC, it may block the PN IO communications on the Ethernet port. In this case PROFINET Commander will not be able to communicate with the PNIO devices. You may need to disable the firewall or antivirus / malware scanner (or set exceptions of possible) to run PROFINET Commander. If this is not possible, another option is to run PROFINET Commander on another PC that does not have a firewall / antivirus / malware scanner.

Before using PROFINET Commander as an IO Controller, the following configuration steps must be performed:

- Select the IP addresses for the PROFINET Commander tool and the connected PROFINET IO devices.
- Use TIA Portal configuration tool to configure the PROFINET Commander controller and devices.
- Save and compile the controller configuration to create a configuration .XML file.
- Download the device names to the PROFINET IO devices (either in the configuration tool or in the PROFINET Commander DCP Browser).
- Import the configuration .XML into PROFINET Commander

4.1 Select the IP Addresses

Before starting the configuration process, you should select the IP addresses for the PROFINET Commander tool and the PROFINET IO devices that will be connected so that they are all on the same network and have the same subnet mask. For example:

	IP Address	Subnet Mask	Type
PROFINET Commander tool	192.168.0.60	255.255.255.0	PROFINET IO Controller
IODevice1	192.168.0.61	255.255.255.0	ET 200SP / IO Device
IODevice2	192.168.0.62	255.255.255.0	Network Switch / IO Device
PC IP address	192.168.0.254	255.255.255.0	PC IP / Different than PNC!

If the Ethernet port on your PC is connected to a corporate network, it would be advisable to keep the PROFINET network separate. Some options are:

1. Use the existing Ethernet port:
 - Disconnect the PC from the corporate network and connect it to the PROFINET network.
 - Run PROFINET Commander software.
 - When finished, connect the PC back to the corporate network.
2. Add a second Ethernet NIC (USB) to the PC:
 - Connect it to the PROFINET network
 - Run PROFINET Commander software.

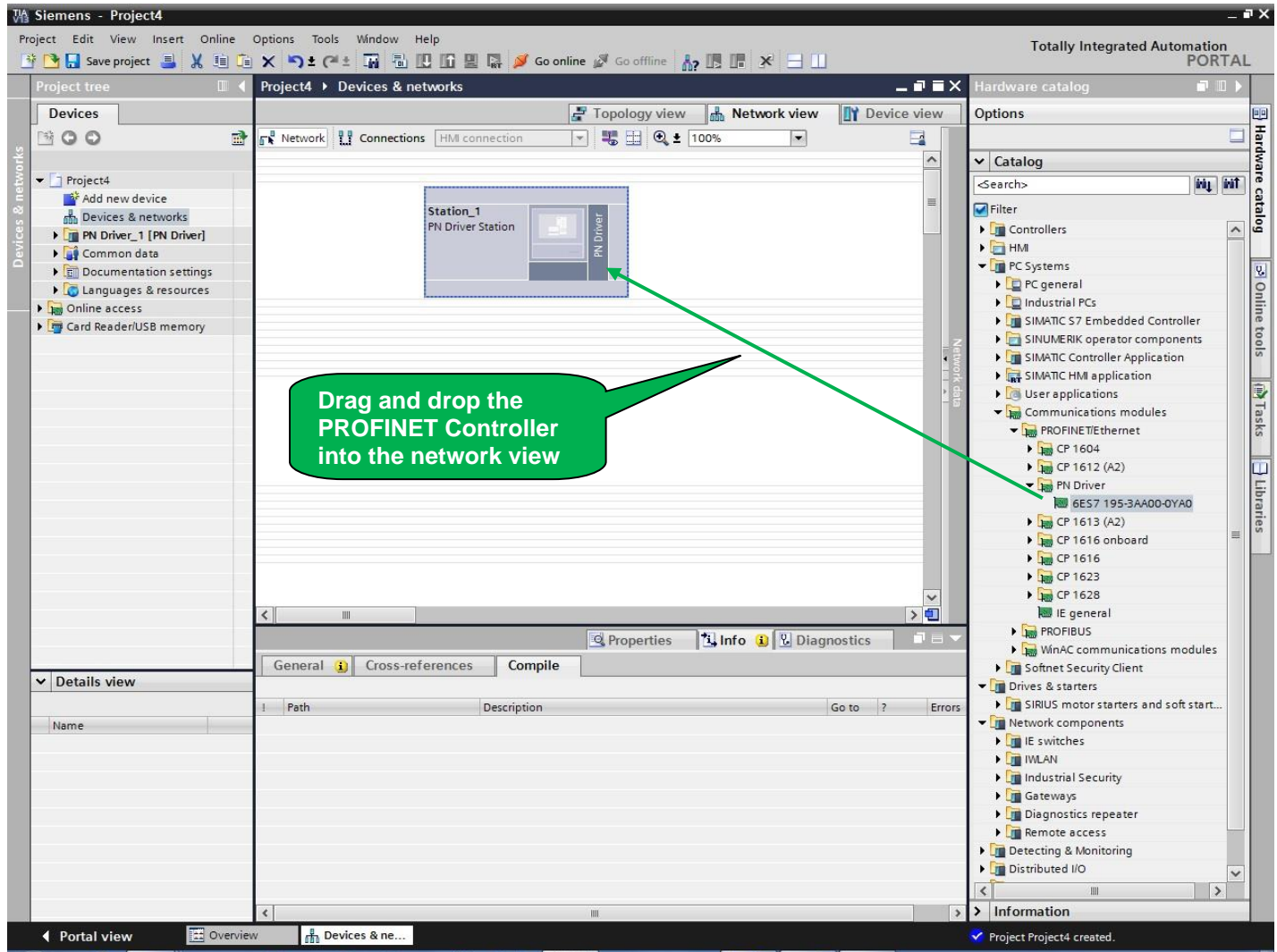
The setting of the IP address for the PROFINET Commander (PNC) controller is set in the TIA Portal software configuration and is **separate and different from the Windows IP address** (it also does not even need to be on the same subnet as the PC, but of course the PN IO devices will need to be on the same as PNC). If you already have IP settings on your adapter make sure that they do not conflict.

In some rare cases it may be necessary to adjust your network adapter settings and under properties of your adapter deselect all protocols so this does not interfere with the software temporarily.

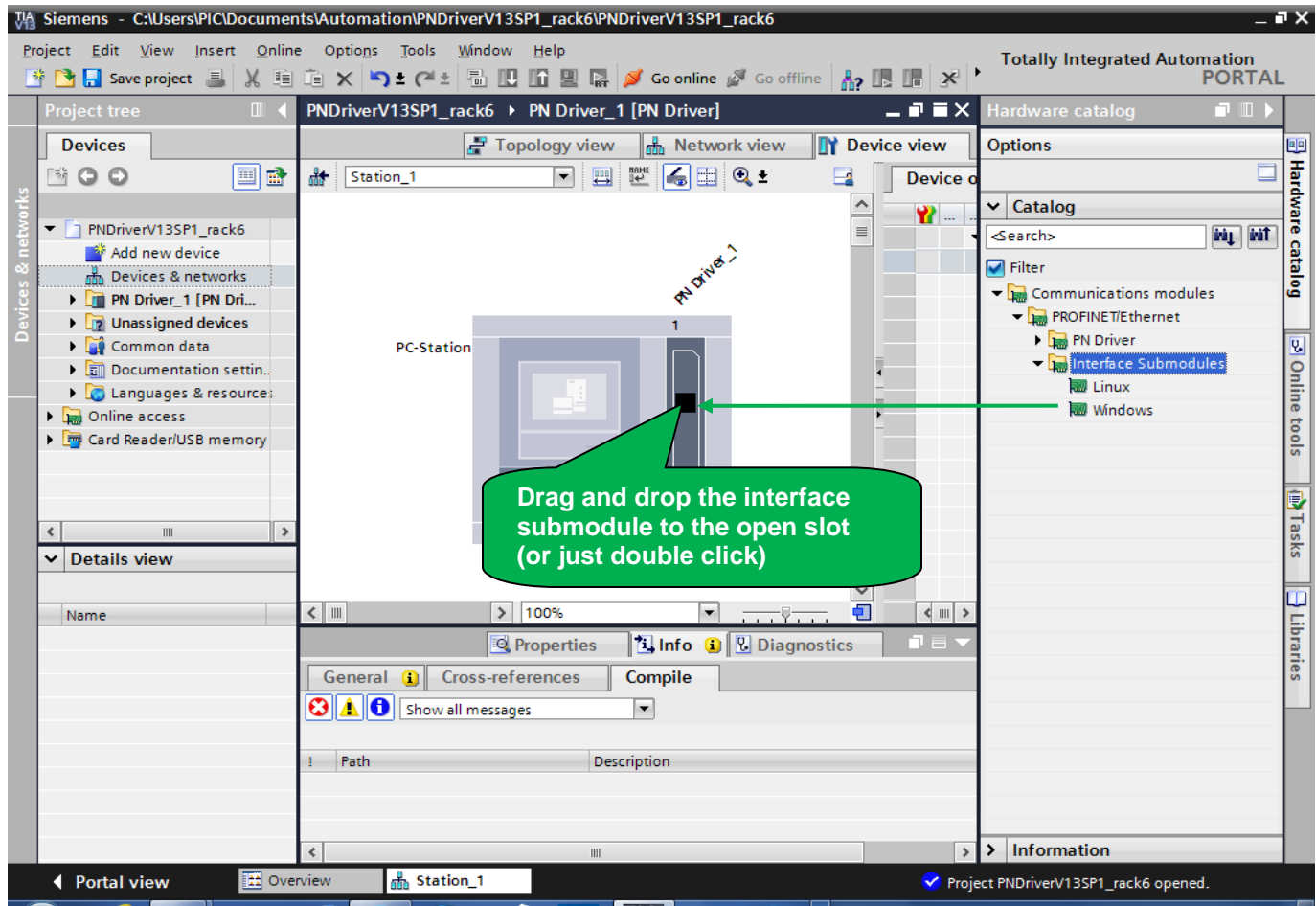
4.2 Configuration

4.2.1 Configure the PROFINET Commander IO Controller and network

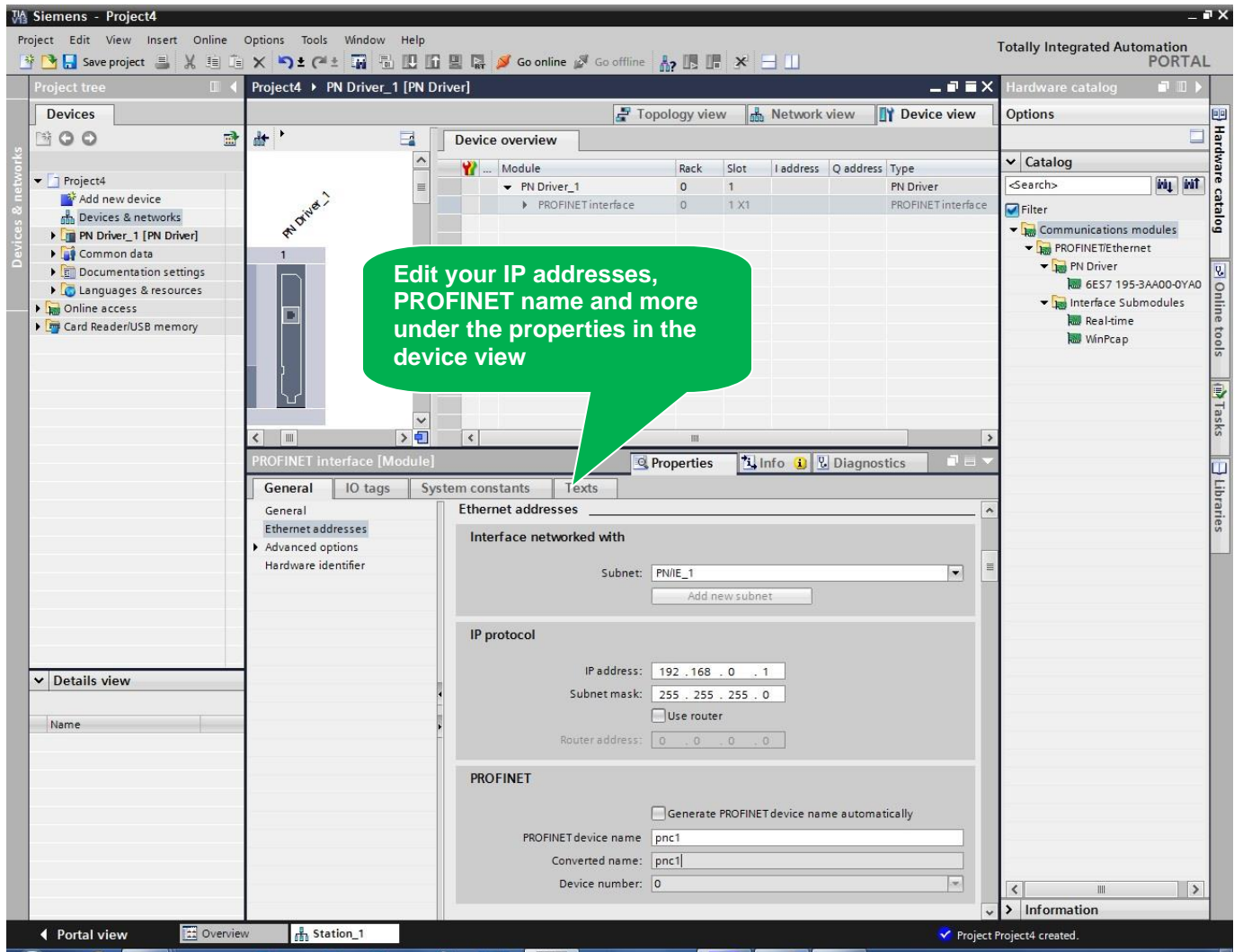
- Start TIA Portal.
Create a new project with Start->Create New Project->Create
- Click open the project view
- Double click on the left “devices and networks”
- Under the catalog on the right hand side select PC Systems\Communication modules\PROFINET\PN Driver\<part #> (ex: 6ES7 195-3AA00-0YA0) V2.2 , then drag and drop the object into the network view window.



- e) Next, double click on the PN Controller object in the network view to open the device view
- f) Under communication modules\PROFINET\Interface Submodules double click the Windows object to add the network interface of the controller.



- g) Double-click on the interface module and then in the bottom window select Ethernet addresses. Click Add new subnet. Then set the IP Address for the controller in the configuration. Then uncheck the generate name automatically box and set the PROFINET name to pnc1



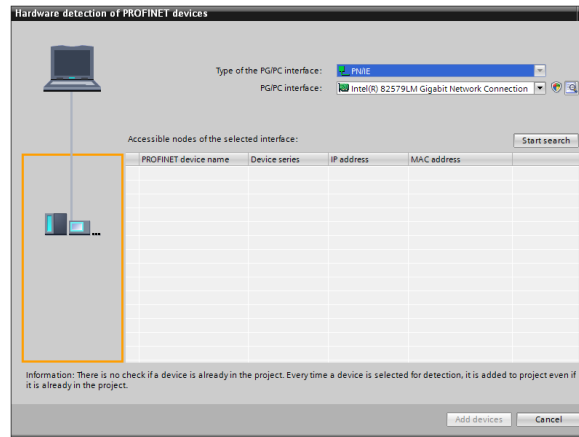
- h) Click on the network view tab again or double-click on devices and networks.
- i) Install necessary PROFINET GSD files by clicking Options->Manage general station description files (GSD). Ensure the file(s) installed correctly. Make sure you include the .bmp file in the same folder if you wish to have a graphical picture of the device. The catalog will update after installing the files and they will be stored under the "Other field devices" category in the network view.

4.2.2 Configuring the Device(s)

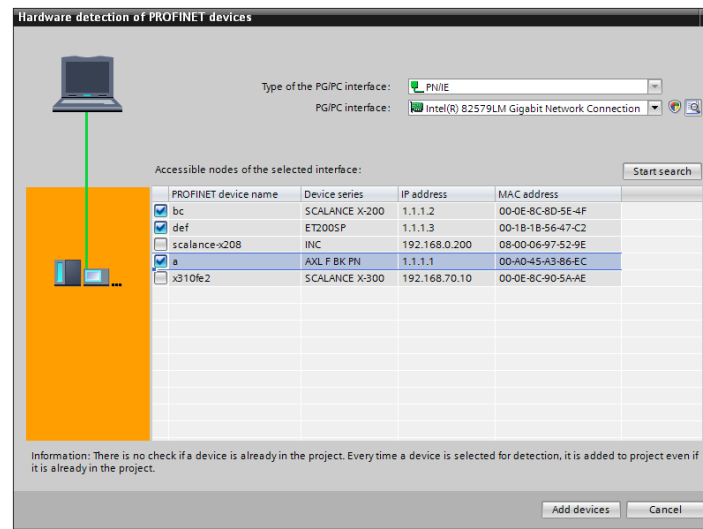
The TIA Portal engineering tool supports two ways of device configuration depending on the device(s), either by auto or manual configuration. Fixed or block devices with real modules / submodules can typically be done with the method of choice, and the easiest is auto configuration. Some devices like proxies or gateways with 'virtual or dynamic modules' may dynamically set the configuration at start time, and legacy devices may also not be auto configurable.

4.2.2.1 – Auto device configuration

1. Prior to starting auto configuration make sure the correct GSD file for the device(s) has been installed (see section 'i')
2. Go into the network view in the project you created with the controller
3. Next click online-> Hardware detection -> PROFINET Devices from network
4. In the next window select the correct network interface on your PC and click 'Start search'



5. The devices should now appear in the window. Select the device(s) you want to add and click add devices.

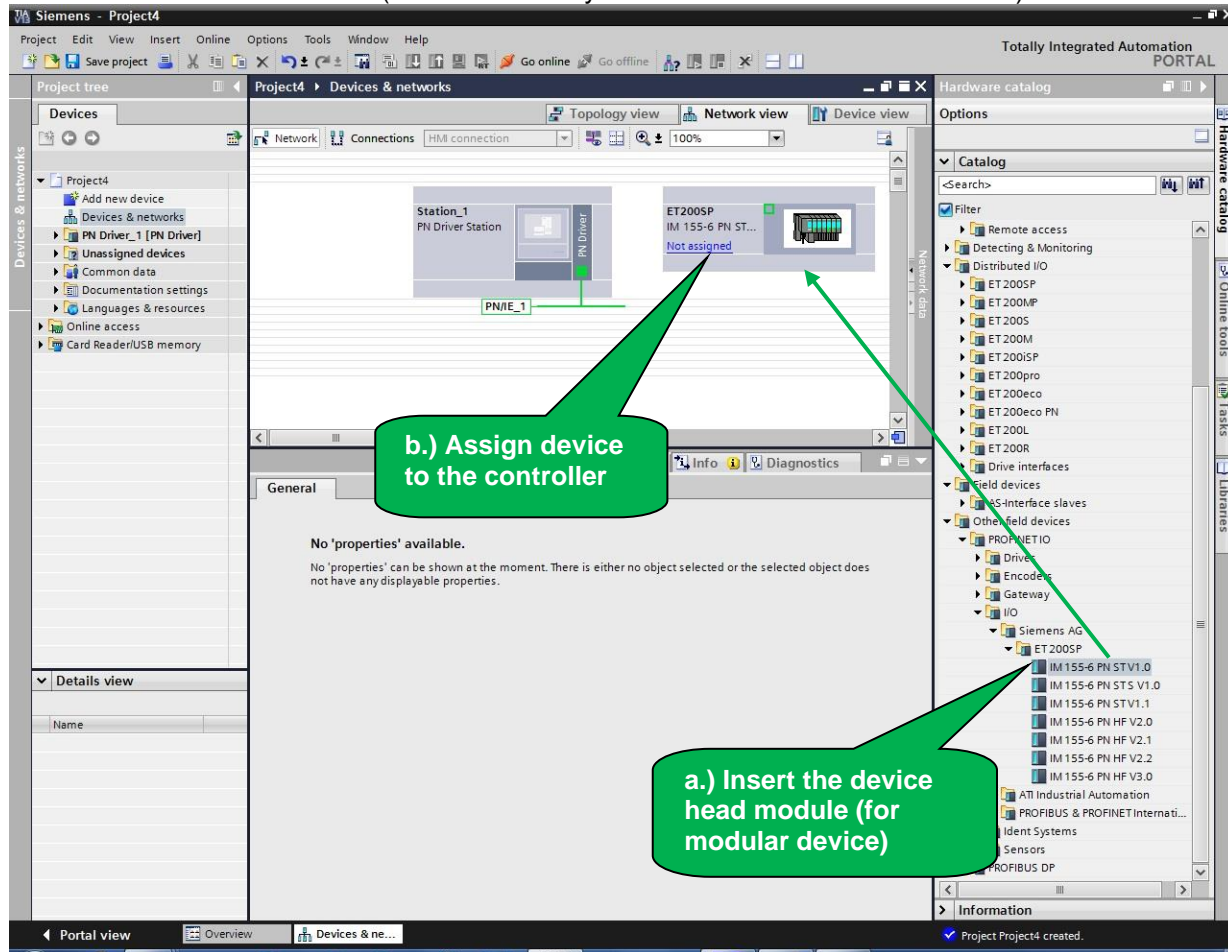


6. After a few moments the engineering tool will scan and attempt to add the devices to the project including their head module and IO modules. The tool will inform whether it was successful or not (if a problem occurs see the output log on the issue) In case of a problem device, we suggest a manual setup (see section 4.2.2.2).
7. Once device information is read it will now show up to the network view. Make sure all the modules have been setup and parameterized correctly in the device view. Some devices need a parameter set, or there may be optional parameters like diagnostics, substitute values, etc.
8. Next, continue to item 'j' right after the manual device configuration section (Back in the network view,...)

4.2.2.2 – Manual device configuration

Example Device configuration: Manual configuration of ET 200SP module

1. Drag and drop device from catalog under Other field devices->I/O->Siemens AG->ET 200SP->IM 155-6 PN ST V1.0 (GSD was already installed as mentioned in section 'i')



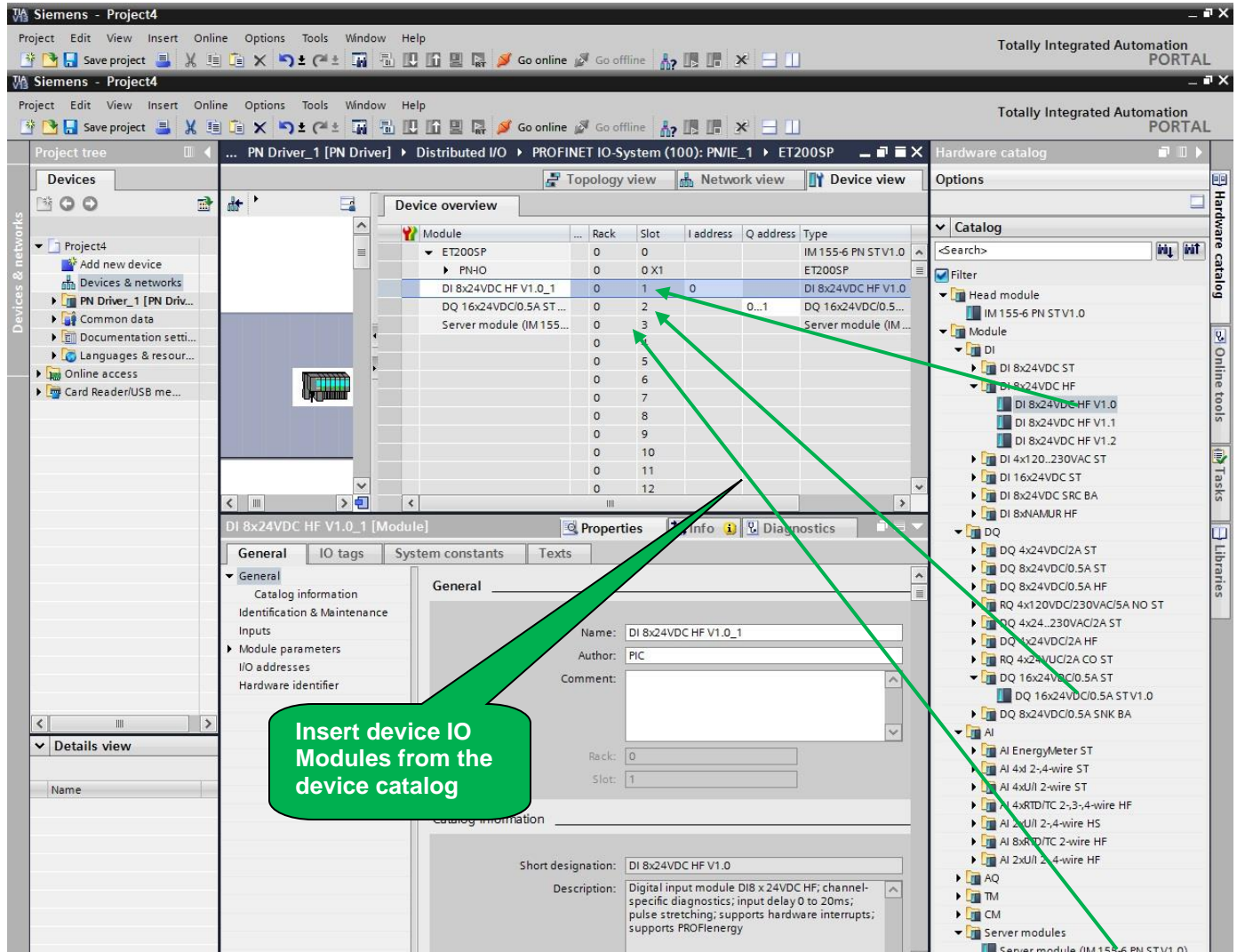
2. Click "not assigned" on the device picture and assign to the controller by selecting the controller name and network name, once connected there should be a dashed green line between controller and device.
3. Double click on the device to enter device view and configure the IP address (if needed) and device name (under properties->Ethernet addresses) and modules (in this case we have a modular device). We have an input module, an output module and server module to configure in our sample.

4. Drag and drop the modules under the module folder from the hardware catalog to match the device.

Slot 1 contains a 8DI HF V1.0 module -> select from Modules-> DI->DI 8x24VDC HF

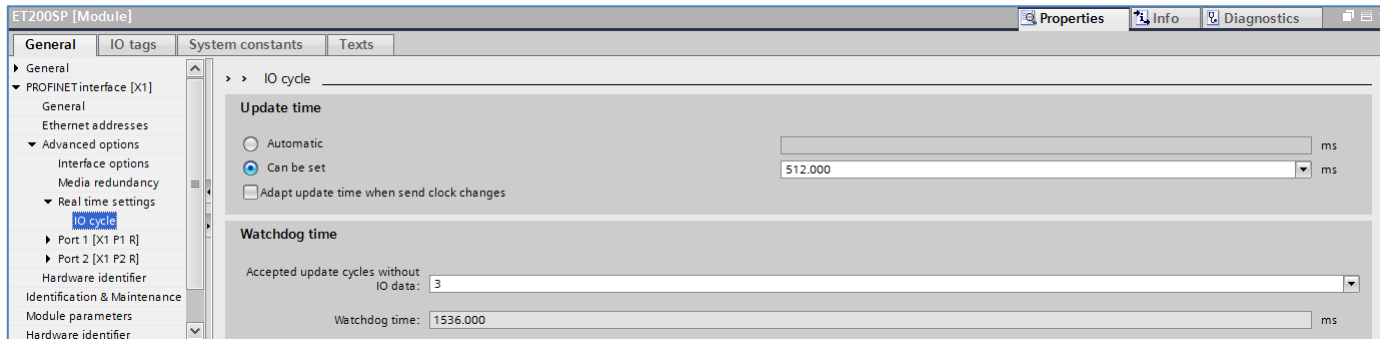
Slot 2 contains a 16DQ ST V1.0 module -> select from Modules->DQ->DQ 16x24VDC/0.5A STV1.0

Slot 3 contains a server module -> select from Modules->Server Modules->Server module (0 bytes)



5. Make sure to set any needed parameters for the modules under properties->module parameters (such as power settings, diagnostics, etc.) For our particular setup we need to enable "New Potential Group" parameter (under module parameters) on the DI module Potential group setting in order for the device to work.
- j) Back in the network view, make sure that the devices are attached to the controller by left clicking on "not assigned" on the device and select the controller. Also double-check that all the modules have been setup and parameterized correctly in the device view.
 - k) Click each PROFINET IO Device in the network (or device) view and go to properties->Ethernet addresses to display its properties and set the Device Name. All PN devices must have a unique device name. The device name must match the name in the physical device. Downloading a name to an IO device is described later.
 - l) Note: when the IO controller starts communication with the IO device, it will find the device by name and then automatically set the IP address to this configured value using PROFINET DCP (Discovery and Configuration Protocol), unless you disable automatic name setting via the controller. (some devices may also support DHCP)

- m) A note on Update times – by default the minimum PROFINET update time for PROFINET Commander is 32 ms on Windows systems even though some IO devices might be able to go faster. In most cases the update time should work at 32 ms, but in case of heavy system loading / running with a VM / or many devices there could be an interruption of the IO tasks causing the device to display IO device offline / online continuously in the alarm display. The update time can be adjusted if necessary up to 512 ms for each device under the properties of the device and advanced options -> real time settings -> IO Cycle. Set to “Can be set” and at the specified rate. Also note the IO display update rate setting in the PROFINET commander options screen (described later in the options section) should match or be higher than the fastest device update time.



- n) Make sure to use correct device GSD files and the proper FW, SW revisions if needed for head modules and modules, (some devices are not backwards compatible or can use substitute modules, check with vendor).
- o) Save and compile the project HW configuration by selecting the Controller from the network view as shown. (If there are errors, check the error log and troubleshooting section.) This will create a project configuration XML file which will be used for import into PROFINET Commander. If you double click on the generated file from the log window it will open the file location automatically. You can then copy the configuration file to a location on your PC which is easy to find (ex: desktop or documents folder)

Compile

Select controller

Double click here to open configuration file location

!	Path	Description	Go to	?	Errors	Warnings	Time
!	PN Driver_1				0	1	3:19:16 PM
!	Hardware configuration				0	1	3:19:16 PM
!	Station_1				0	1	3:19:16 PM
!	PC-Station				0	1	3:19:16 PM
!	PN Driver_1				0	1	3:19:16 PM
!	PROFINET inte...				0	1	3:19:16 PM
!		The device replacement without exchangeable medium functio...		?	0	1	3:19:16 PM
i		Configuration XML file has been generated under C:\Users\IPICL...			0	0	3:19:16 PM
!		Compiling completed (errors: 0; warnings: 1)			0	1	3:19:16 PM

4.3 Download the PROFINET IO Device Names

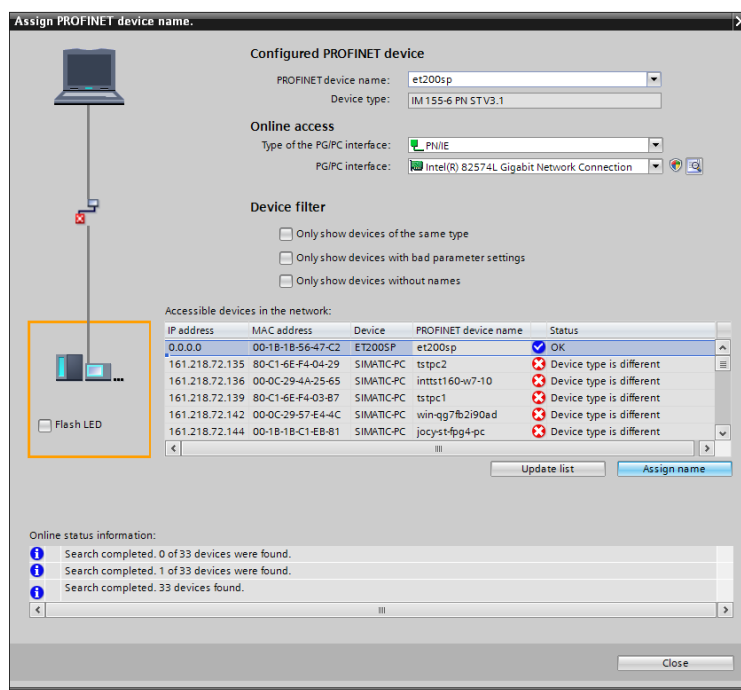
For PROFINET communication to start properly, devices **must** have the **configured device name written to them**.

To assign PROFINET IO device names, the PC and the IO devices must be physically connected to the PROFINET (Ethernet) network and powered on, in PROFINET mode (some devices may have to be set via webpage, settings, etc). If you can see them when browsing in the PN Browser you're good to go. In some cases, you might have to set the IP address initially with PN Browser to get into a webpage / configuration option, etc.

There are two main ways to set the device name(s). By either using the configuration tool or the PNBrowser dialog in PROFINET Commander.

1. TIA Portal (see help for assigning PROFINET device names) , right click on the network in your project and select "Assign device name"


In the device name dialog select the device you wish to assign the name to with the top dropdown button. Then set the online access up to PN/IE and correct network card. Next click 'update list' and uncheck all the device filters. Once you are used to the filters you can re-enable them. Find the device in the list you wish to set the name and highlight, then look at device type, click flash LED or check the MAC ID compared to the device housing. Once you have confirmed the right device, click the assign name button to write the name to the device. Now the device will retain the name even after a power cycle.



2. Use PROFINET Commander PN Browser (see [section 5.10](#))

5.0 Using PROFINET Commander

5.1 Starting PROFINET Commander

Start PROFINET Commander either from the Windows Desktop icon  or by selecting **Start->Programs-> PROFINET Commander->PROFINET Commander**.

The software is licensed per PC and comes in “unlicensed mode”. In this mode, only the PN Browser will be fully operational while other screens are in demo mode. A video is available on YouTube showing all features. To unlock all features please purchase a copy. The license is for one PC but may be transferred if necessary to another machine.

PROFINET Commander can be ordered at the www.PROFINET Commander.com web site.

5.1.1 License Management

Once purchased Open the license manager from **Tools->License Management** in PROFINET Commander.

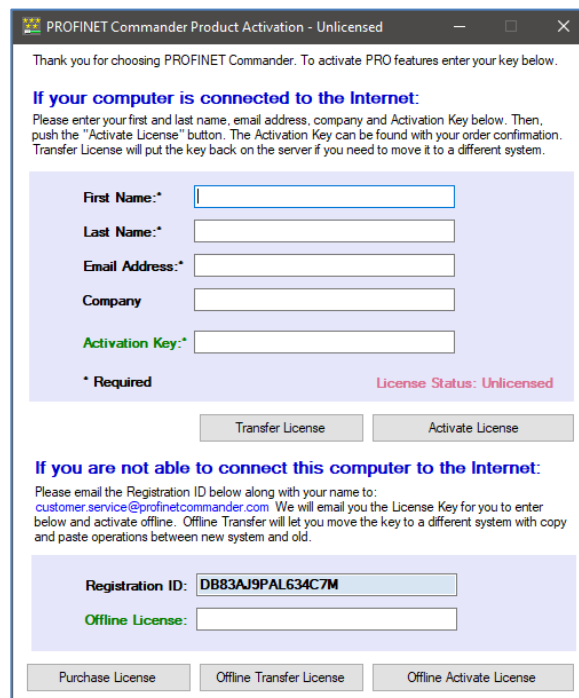
You have two ways to license PROFINET Commander.

- 1.) Online Activation – upon purchase of the software you will receive an activation key. If your PROFINET Commander PC is directly connected to the Internet you can activate the software online. Simply enter your name, email, company, and activation key and hit the “Activate License” button.
- 2.) Offline Registration – if it is not possible to put the PC online, then you will need to copy the Registration ID from the dialog box and paste into an email, along with your business card information, to customer.service@PROFINET Commander.com to get a license key. After the license key is emailed to you, enter the information in the “Offline License Key” field and select “Offline Activate License”. Note that Offline registrations will have the corresponding online Accounts disabled, so you can use offline transfer to move the license or contact support to destroy the license if you want to use online activation / transfers again.

Once the license is valid using either method, the license dialog will automatically close, and the main dialog will show ‘licensed’. If you get an error, make sure you are using the correct input and button.

In addition, the license manager provides the ability to transfer the license to move to a different PC

- 1.) Online transfer – Puts the license back on the license server. Then you can install PROFINET Commander on a different PC and then Activate your license again on that PC using your activation key. Both PCs need Internet access.
- 2.) Offline Transfer Utility – The Offline Transfer utility allows the user to transfer the license between machines offline. To transfer the license from one machine to another, run the Transfer utility on both machines. Assume you want to transfer the license from machine A to B, the steps are described below.
 - a. Install the software and run the Transfer utility on machine B (new PC). The dialog box provides a Registration ID.
 - b. Run the Transfer utility on machine A (old/existing PC). Then, enter the Registration ID provided by machine B. In this step, the utility generates the License Key that encodes the current license status and destroys the Key on the machine.
 - c. On machine B, enter the offline License Key provided by machine A and register. The license transfer is complete.



PROFINET Commander Product Activation - Unlicensed

Thank you for choosing PROFINET Commander. To activate PRO features enter your key below.

If your computer is connected to the Internet:

Please enter your first and last name, email address, company and Activation Key below. Then, push the "Activate License" button. The Activation Key can be found with your order confirmation. Transfer License will put the key back on the server if you need to move it to a different system.

First Name:*

Last Name:*

Email Address:*

Company

Activation Key:*

* Required License Status: Unlicensed

Transfer License Activate License

If you are not able to connect this computer to the Internet:

Please email the Registration ID below along with your name to: customer.service@profinetcommander.com. We will email you the License Key for you to enter below and activate offline. Offline Transfer will let you move the key to a different system with copy and paste operations between new system and old.

Registration ID: DB83AJ9PAL634C7M

Offline License:

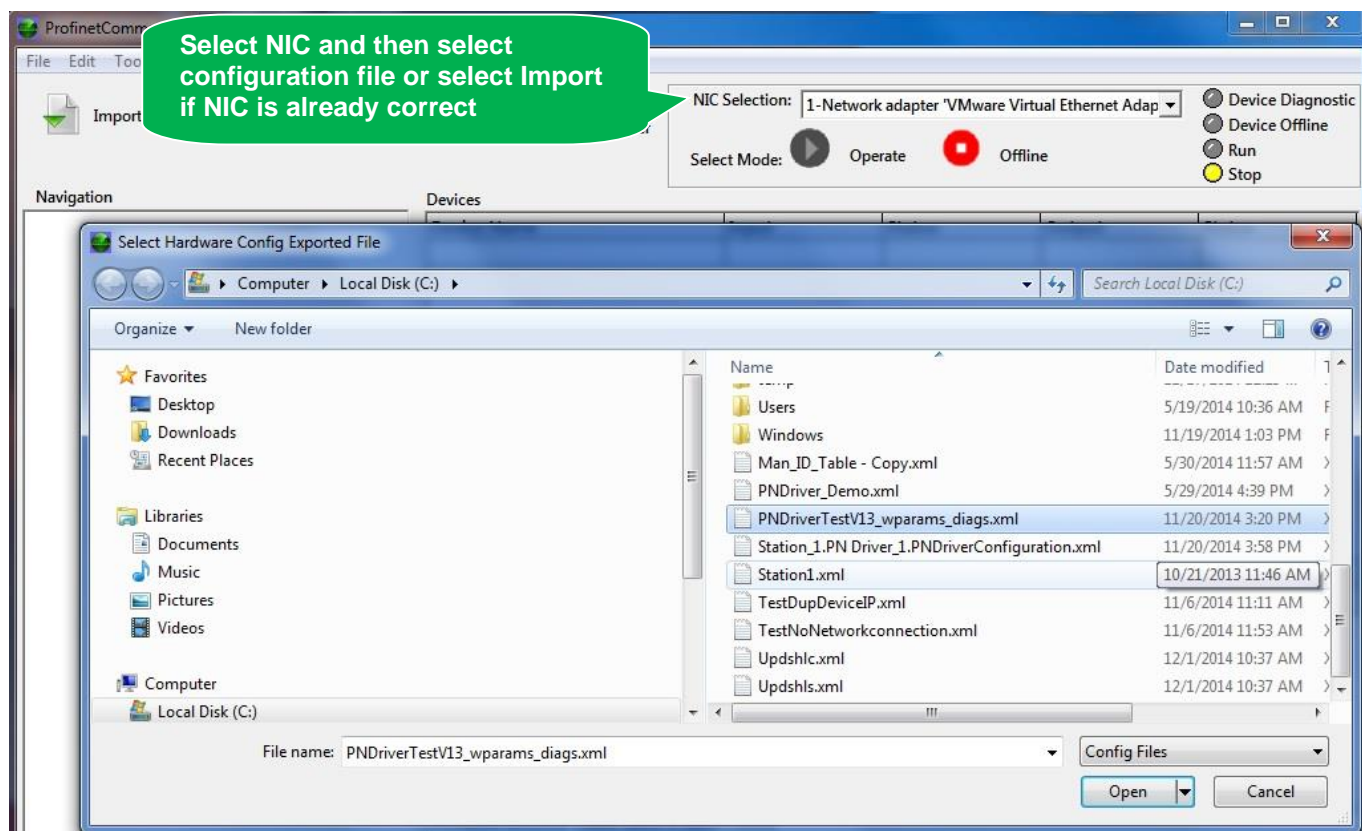
Purchase License Offline Transfer License Offline Activate License

The license utilities may also be accessed via the app shortcuts PROFINET Commander -> License Utilities from the desktop.

5.2 Opening the HW Configuration Export File



Select the Import button or File->Import function and then use the dialog to find and open the HW Configuration export file that was previously generated in TIA for the IO Controller in Section 4.2 (step o). Or select the correct NIC and file if using multiple NICs on the machine.



5.3 Configuration Display

With a valid import configuration file, PROFINET Commander reads the hardware configuration and displays the configuration in a tree view in the Configuration window. The tree can be expanded to show all the configured items (e.g., PN Controller, PNIO devices, I/O modules, PROFINET/PROFIBUS proxies, PROFIBUS slaves). When a tree item is selected, its properties and I/O data are displayed as shown below.

The screenshot shows the ProfinetCommander application window. The title bar reads "ProfinetCommander - C:\PNDriverTestV13_wparams_diags.xml". The menu bar includes File, Edit, Tools, and Help. The toolbar contains icons for Import, Browse, and Read Diagnostic. The main interface is divided into several sections:

- Navigation:** A tree view on the left showing the configuration hierarchy. A callout "Configuration Window" points to this area. The tree structure is as follows:
 - PN Driver_1
 - (01) Switch_1
 - (0) Switch_1
 - (02) ET200SP
 - (0) ET200SP
 - (1) IM 155-6 PN ST V1.0
 - (32768) PN-IO
 - (32769) Port 1
 - (32770) Port 2
 - (1) DI 8x24VDC HF V1.0_1
 - (1) DI 8x24VDC HF V1.0
 - (2) DQ 16x24VDC/0.5A ST V1.0_1
 - (1) DQ 16x24VDC/0.5A ST V1.0

- Device Number from Config:** A callout points to the "Device Number" column in the Devices table.
- Devices Window:** A callout points to the "Devices" table.
- Network card selection:** A callout points to the "NIC Selection" dropdown menu.
- Properties Window:** A callout points to the "Properties" table.
- Alarms Window:** A callout points to the "Information and Alarms" log.

Devices Table:

Device Name	Input	Status	Output	Status
switch-1				
et200sp	04	GOOD	0074	GOOD

Properties Table:

Property Name	Property Value
PROFINET Controller Name	pnxadrivervb10fd5
IP Address	172.16.1.253
Subnet Mask	255.255.0.0
Router	0.0.0.0

Information and Alarms Log:

- 12/05/14 13:05:15 Please select NIC to use from dropdown list
- 12/05/14 13:05:15 NIC - 1 Network adapter 'VMware Virtual Ethernet Adapter' on local host
- 12/05/14 13:05:15 NIC - 2 Network adapter 'Intel(R) 82574L Gigabit Network Connection' on local host
- 12/05/14 13:05:15 NIC - 3 Network adapter 'VMware Virtual Ethernet Adapter' on local host
- 12/05/14 13:05:15 NIC - 4 Network adapter 'Intel(R) 82579LM Gigabit Network Connection' on local host
- 12/05/14 13:05:23 Using card with MAC ID 00:19:99:D4:00:B9
- 12/05/14 13:05:23 File Import was successful, click operate to start controller
- 12/05/14 13:05:29 Controller is in OPERATE mode
- 12/05/14 13:05:33 Device 2 is online
- 12/05/14 13:05:34 Device 1 is online
- 12/05/14 13:06:26 Device 2, diagnostic at slot 1, subslot 1, Channel Diagnostic, Channel Number 0, Error 17.0

5.4 Setting the Run Mode to Operate

After clicking the “Operate” button, PROFINET Commander functions as a PNIO controller and establishes communication with the PNIO devices. The Alarms window logs each device as it comes online. The I/O data and status is displayed in the Devices window. Note that the I/O data for all the modules under the selected tree item is displayed. When in Operate or Clear mode, the I/O data and status, and the alarms, are updated based on the IO display update (can be adjusted in options), the default is 32ms. You can change the display format for the I/O using the radio buttons. An IO Status of “GOOD” indicates the module is good. If the status is “BAD” then check the configuration of the modules online versus offline. Also check to make sure you are using the correct GSD file for the device. One other thing to check is that you selected the right NIC to use with the software. Note that some modules can be operating correctly while others might be marked “BAD” in some cases (module not plugged in a slot, diagnostics present, mismatched module). The data will not be marked “GOOD” until a successful setup and connection with the controller (after IO comes online and modules are correct and functioning).

The screenshot shows the ProfinetCommander software interface. The title bar reads "ProfinetCommander - C:\PNDriverTestV13_wpparams_diags.xml". The menu bar includes File, Edit, Tools, and Help. The toolbar contains buttons for Import, Browse, Read Diagnostic, I/O Data Record(s), and Configure Controller. The "NIC Selection" dropdown is set to "2-Network adapter 'Intel(R) 82574L Gigabit Netwc...". The "Run Mode" section shows a green "Operate" button and a red "Offline" button. The "Navigation" tree on the left shows a hierarchy starting with "PN Driver_1", followed by "(01) Switch_1", "(0) Switch_1", "(02) ET200SP", and "(0) ET200SP". Under "(0) ET200SP", there are four modules: "(1) IM 155-6 PN ST V1.0", "(32768) PN-IO", "(32769) Port 1", and "(32770) Port 2". The "Devices" table displays I/O data and status for these modules. The "Properties" table shows controller details. The "Information and Alarms" window at the bottom shows a log of events, including the controller entering operate mode and devices coming online.

NIC Selection and import

Set Run Mode to Operate

I/O Data and Status are Displayed

Double-click cell to Change Output Value

Controller goes to Operate Mode and Devices come online

Device Name	Input	Status	Output	Status
switch-1				
et200sp	04	GOOD	0074	GOOD

Property Name	Property Value
PROFINET Controller Name	pnxadrivervb10fd5
IP Address	172.16.1.253
Subnet Mask	255.255.0.0
Router	0.0.0.0

Information and Alarms

12/05/14 13:05:15 Please select NIC to use from dropdown list
12/05/14 13:05:15 NIC - 1 Network adapter 'VMware Virtual Ethernet Adapter' on local host
12/05/14 13:05:15 NIC - 2 Network adapter 'Intel(R) 82574L Gigabit Network Connection' on local host
12/05/14 13:05:15 NIC - 3 Network adapter 'VMware Virtual Ethernet Adapter' on local host
12/05/14 13:05:15 NIC - 4 Network adapter 'Intel(R) 82579LM Gigabit Network Connection' on local host
12/05/14 13:05:23 Using card with MAC ID 00:19:99:D4:00:B9
12/05/14 13:05:23 File Import was successful, click operate to start controller
12/05/14 13:05:29 Controller is in OPERATE mode
12/05/14 13:05:33 Device 2 is online
12/05/14 13:05:34 Device 1 is online
12/05/14 13:06:26 Device 2, diagnostic at slot 1, subslot 1, Channel Diagnostic,
Channel Number 0, Error 17.0

5.5 Setting IO Device Outputs

As shown in the previous figure, double-click a cell in the Output column of the Devices window to change the output. Note that a particular output can be selected from the tree view if there are multiple output modules. The following dialog will appear. Enter a value in the edit window to send constant output values to the IO device. Select other auto output modes (increment to count up, decrement for count down, randomize for random number generation, bit walk through each bit, all outputs on or all outputs off, echo for echo of input to an output) to make the output change from its current value each IO display rate cycle. The IO display update rate can be adjusted on the options screen from 32ms to 1 second and this is independent of the PROFINET IO device cycle. (Typically the device update cycle should be faster or equal to the display rate) Note that there may be multiple output values in the display separated by spaces. Each one can be edited for the Manual mode (leave the spaces between entries). If auto modes are selected all of the outputs will be automatically cycled if the data is greater than 8 bytes for Increment, Decrement, BitWalkUp.

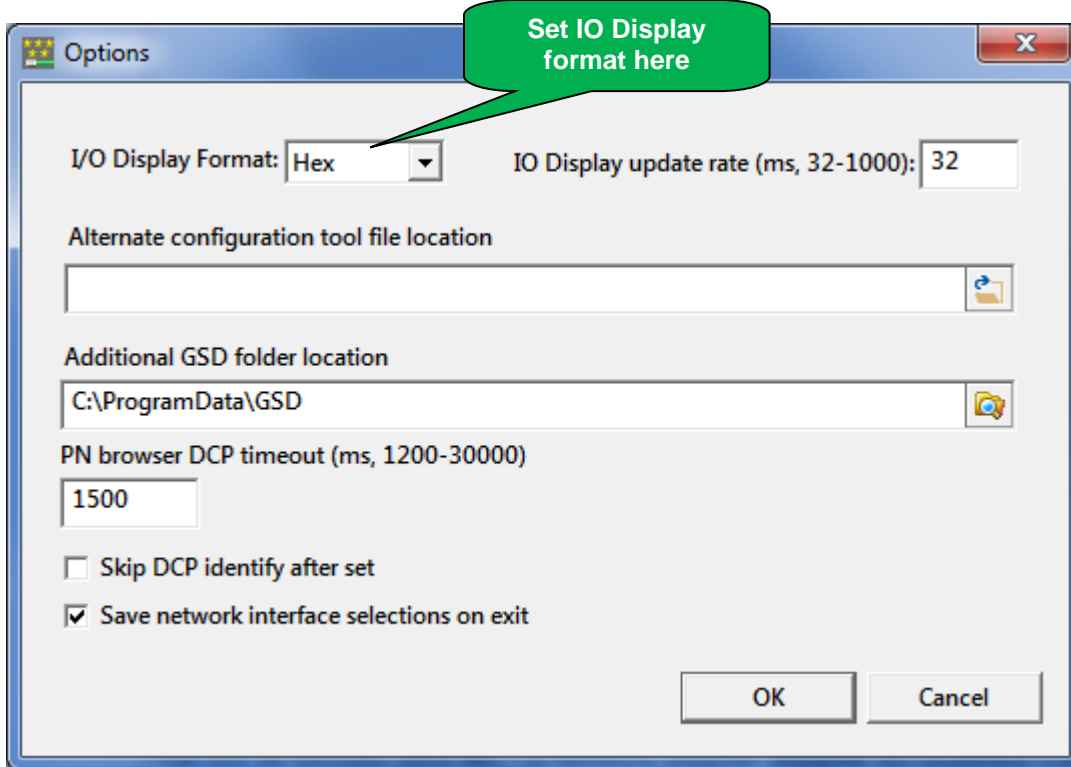
Notes about Echo Input to Output –

Each input or output is assigned an IO address when configuring the device(s) in TIA Portal. You can choose what Input address (I) to send to the Output (Q). For example, we could send the input starting with address 0 to the output starting with address 0. The data would fit as it is 2 words (4 bytes). If the data will not fit, it will be truncated. For example, if we write the Input address 0 to Output address 4 only the first two bytes will be sent and the last two bytes will be truncated. Inputs from a device can also be sent to outputs on a different device by selecting the different device's output.

Device overview							
Module	...	Rack	Slot	I address	Q address	Type	Article number
axl-fbk-pn		0	0			AXL F BK PN TPS	2403869
Interface		0	0 X1			AXL-F-BK-PN-TPS	
AXL F AI2 AO2 1H_1		0	1	0...3	0...3	AXL F AI2 AO2 1H	2702072
AXL F DI16/1 DO16/1 2H_1		0	2	4...5	4...5	AXL F DI16/1 DO16...	2702106
		0	3				
		0	4				

5.5.1 Setting IO Display Format

Change the I/O display format between Hex (default), Binary or Decimal by clicking on the desired format in the options menu under Tools->Options.



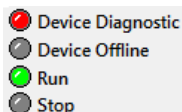
5.7 Displaying Diagnostic Alarms

When a diagnostic alarm is received from a PNIO Device, it is displayed in the Alarms window as shown below. Examples of the diagnostic errors that can be reported are:

- Power supply voltage missing
- Wire break
- Shorted output

A diagnostic message contains a numeric error code without any textual explanation. The text for each error code may be available in the GSD (General Station Description) file for each PROFINET device. This file is supplied by the device manufacturer and is imported into the configuration tool. At startup, PROFINET Commander reads the GSD files for all the devices to get text for the diagnostic error codes. The text for the diagnostic error is also displayed if it is available. If not, consult the manufacturer's documentation.

There will also be an indication of "device diagnostic" or "device offline" if a device has a diagnostic or isn't coming up properly.



Device Diagnostic means the device is running with the controller, but has signaled an issue.

Device offline means the device has not started communicating with the controller.

Run means the controller is running.

Stop means the controller is in stop mode.

The screenshot shows the ProfinetCommander software interface. The top menu bar includes File, Edit, Tools, and Help. Below the menu is a toolbar with icons for Import, Browse, Read Diagnostic, R/W Data Record(s), and Configure Controller. The main window is divided into several sections:

- Navigation:** A tree view showing the project structure: PN Driver_1, (01) Switch_1, and (02) ET200SP.
- Devices:** A table showing the status of connected devices.
- Properties:** A table showing the configuration properties for the selected device.
- Alarms:** A list of diagnostic alarms with timestamps and error details.

Devices Table:

Device Name	Input	Status	Output	Status
switch-1				
et200sp	00	GOOD	0000	GOOD

Properties Table:

Property Name	Property Value
PROFINET Controller Name	pnxadrivervb10fd5
IP Address	172.16.1.253
Subnet Mask	255.255.0.0
Router	0.0.0.0

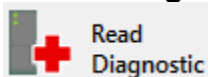
Alarms List:

- 02/11/15 15:03:03 NIC - 3 Network adapter 'Intel(R) 82579LM Gigabit Network Connection' on local host
- 02/11/15 15:02:33 Using card with MAC ID 00:19:99:D4:00:B9
- 02/11/15 15:12:33 File Import was successful, click operate to start controller
- 02/11/15 15:12:33 Controller is in OPERATE mode
- 02/11/15 15:12:41 Device 2 is online
- 02/11/15 15:12:43 Device 1 is online
- 02/11/15 15:12:47 Device 2, diagnostic at slot 1, subslot 1, Channel Diagnostic, Channel Number: 0, Error: 17 (Sensor or load voltage missing)
- 02/11/15 15:12:47 Device 2, diagnostic at slot 0, subslot 1, Manufacturer Specific Diagnostic, 00 01 00 00
- 02/11/15 15:12:47 Device 2, diagnostic at slot 2, subslot 1, Channel Diagnostic, Channel Number: 32768, Error: 17 (Sensor or load voltage missing)

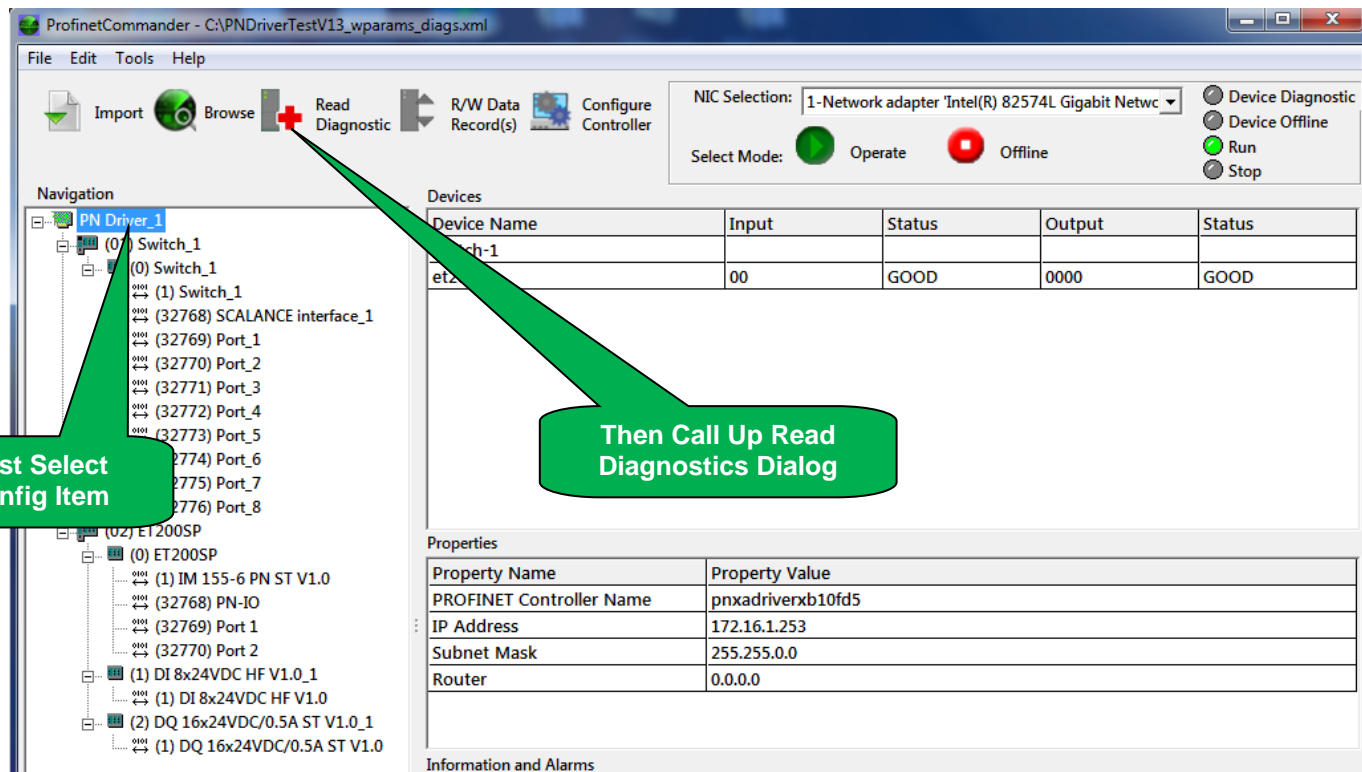
Diagnostic Alarm: A green callout box points to the alarm entry: "02/11/15 15:12:47 Device 2, diagnostic at slot 1, subslot 1, Channel Diagnostic, Channel Number: 0, Error: 17 (Sensor or load voltage missing)".

Error Text from GSD File (if it exists): A green callout box points to the error code "Error: 17" in the alarm entry.

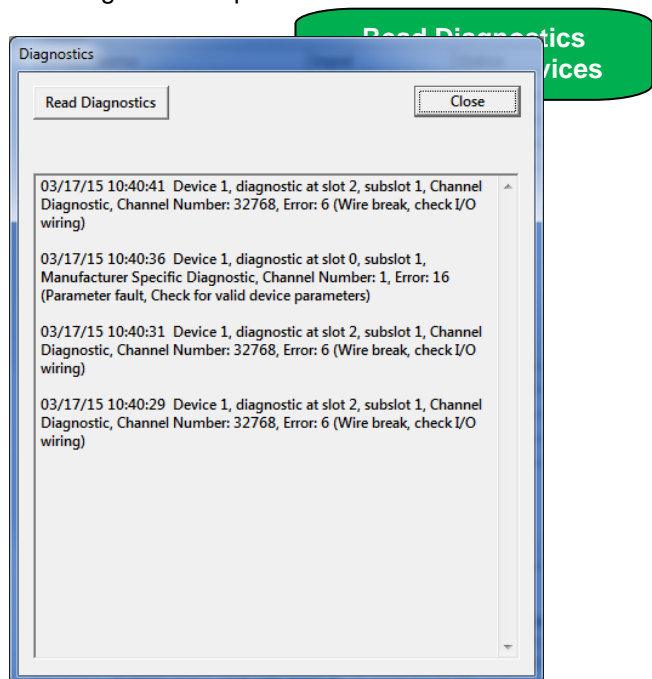
5.8 Reading Diagnostics



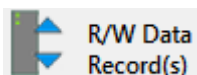
A diagnostic alarm is sent from the IO device to the controller when an error occurs. Once the controller acknowledges the alarm, it is not sent again. The diagnostic information is stored in the IO device and can still be read until the error goes away. To read the diagnostic errors stored in the IO devices, first select a Configuration tree item. The diagnostics for all of the devices under the tree item selected will be read. Then select the “Read Diagnostics” button.



The Diagnostic dialog shown below appears. Select the “Read Diagnostics” button in this dialog each time you want to read the diagnostics. The diagnostics have time stamps and are listed in reverse order, with the latest message at the top. A blank line is inserted each time “Read Diagnostics” is selected.



5.9 Performing Read/Write Record Calls



Read Record and Write Record calls can be sent to the IO Devices. The Read/Write calls and their associated contents are described in the PROFINET IO Application Layer Protocol specification or vendor tools. After setting the run mode to Operate, select a device or I/O module in the Configuration window for which the read/write call will be performed. The “Read/Write Record” button will be enabled only for the devices and modules that are appropriate. Then select the “Read/Write Record” button. The location of the read / write call is important. Ex: head module vs ports, vs modules / submodules. Depending on what record should be read or written to, click on the appropriate location in the device prior to clicking the button.

ProfinetCommander - C:\PNDriverTestV13_wparams_diags.xml

File Edit Tools Help

Import Browse Read Diagnostic R/W Data Record(s) Configure Controller

NIC Selection: 1-Network adapter Intel(R) 82574L Gigabit Netwc

Select Mode: Operate Offline

Device Diagnostic Device Offline Run Stop

Navigation

- PN Driver_1
 - (01) Switch_1
 - (0) Switch_1
 - SCALANCE interface_1
 - Port_1
 - Port_2
 - Port_3
 - Port_4
 - Port_5
 - Port_6
 - Port_7
 - Port_8

First Select Config Item

Click Read/Write Data Record

Device Name	Input	Status	Output	Status
Switch_1				
Switch_1				
SCALANCE interface_1				
Port_1				
Port_2				
Port_3				
Port_4				
Port_5				
Port_6				
Port_7				
Port_8				

Properties

Property Name	Property Value
Module Name	Switch_1
Slot Number	0
Module Logical Address	259

Information and Alarms

The Read/Write Record dialog shown below appears. The “Address” fields and the Input/Output buttons are filled in with the information from the device selected in the previous step. To do a read record, enter the “Index” of the call to be made (in hexadecimal) or use the dropdown menu and then select the “Read Record” button. Most PN related records are already in the drop-down list. It is also possible to read manufacturer specific records (if supported).

In the example the index 0xF820 specifies the call “AR Data”. The data returned from the IO device will then be displayed in three windows. The data bytes are displayed in hexadecimal format in the window “Read Data (hex)” and the character equivalents are displayed in the window “Read Data (chars)” - if any of the data is readable text, it will show up in this window. Many of the read record responses are decoded by the software and show up in the window “Read Data Description”.

If there is an error returned by the read record call, it is displayed in the “Read Data Description” window. For example, if a particular index was not implemented in an IO device, the response would be “Feature not supported” or “Invalid Index”.

Sometimes a read record call is successful but a data length of zero is returned. For example, if a read diagnostics call is made and there are none to report, the message “Zero length data returned” is displayed.

The screenshot shows the 'Read/Write Record' dialog box. At the top, the 'Address (decimal)' field contains '277' and the 'Index (hex)' dropdown is set to 'F820 ARData'. The 'Read Record' button is highlighted. Below this, the 'Read Data (hex)' window displays a grid of hexadecimal data bytes. To its right, the 'Read Data (chars)' window shows the ASCII equivalent of the data, including the text 'pnxadriv' and 'erxb10fd'. At the bottom, the 'Read Data Description' window provides a detailed textual description of the data, including block type, length, version, and various identifiers. The dialog also includes fields for 'Write Data (hex)' and 'Write Length (decimal)' at the bottom, along with 'Input' and 'Output' radio buttons and a 'Write Record' button.

First Enter the Index for the Read Record call

Then Select the Read Record button

Hexadecimal Data Bytes returned

Text Version of Data

Data Description Decoded by Software

The read and write record indices are documented in tables in the PROFINET IO Application Layer Protocol Spec. The table titles are:

- Index (user specific)
- Index (subslot specific)
- Index (slot specific)
- Index (AR specific)
- Index (API specific)

The user (vendor/manufacture) specific index range is 0 – 0x7FFF. For example, the index 1 (check GSD) is typically used for parameterization data that is sent to the device during startup using write record calls

The other index tables have pre-defined codes for record calls. A few examples are:

- 0x800C: Diagnosis, Maintenance, Qualified and Status for one subslot
- 0x8028: Read acyclic input object – read device input acyclically, select correct input before reading
- 0x8029: Read acyclic output object – read device output acyclically, select correct output before reading
- 0xC00C: Diagnosis, Maintenance, Qualified and Status for one slot
- 0xE00C: Diagnosis, Maintenance, Qualified and Status for one AR (whole device, all slots/subslots)
- 0xAFF0: Identification and Maintenance Data 0 (I&M0) – Model #, Serial #, FW & HW revisions
- 0xAFF1: Identification and Maintenance Data 1 (I&M1) – Device function and location
- 0xAFF2: Identification and Maintenance Data 2 (I&M2) – Installation Date
- 0xAFF3: Identification and Maintenance Data 3 (I&M3) – Additional Information (who to contact, support)
- 0xE000: ExpectedIdentificationData for one AR – Configuration data
- 0xE001: ReadIdentificationData for one AR – actual device modules (should match expected)
- 0xE002: ModuleDiffBlock for one AR – if modules are different between real/expected it will be shown here (see more in troubleshooting section)
- 0xF820: ARData for one API – PROFINET Application relation data
- 0xF830: Logbook Data – information about any PROFINET related errors (watchdog timeout, etc.)
- 0xF841: PDRealData – select a Ethernet port on the device before reading this, returns port specific information such as port info and peer information (neighbors connected and port status)

If data is displayed in the “Read Data (hex)” window but is not interpreted by the software in the “Read Data Description” window, then you will have to decode it yourself. The read data always begins with a two-byte “Block Type” field. In the example the block type 0x0010 is for a Diagnosis Data block. In the PNIO spec there is a table entitled “BlockType” which lists the code for each block type. From there you would have to find the description of the block and its contents in the spec.

In order to perform a write record call, enter the Index and the Write Data. Then select the “Write Record” button. The software will calculate the number of bytes of data and put the value in the “Write Length” field. In the example below the index 1 is defined in the GSD file for three bytes of parameterization data. Other examples might be to write I&M data with the fields, PROFIdrive parameters, or other records which are supported by the device.

Example 1: (Writing vendor / manufacturer specific parameter data to device Index 1, 3 bytes parameter data

Address (decimal) ☐ Input ☐ Output

277

0001 Index (hex) Write Record

Plant Designation (I&M1):

Location identifier (I&M1):

Installation Date (I&M2): 2016-10-13 10:33

Additional Information (I&M3):

Signature (I&M4):

Write Manual Data (hex) Write Length (decimal):

01 A0 C1

First Enter the Index for the Write Record call

Third click the Write Record button

Second Enter the Data

Example 2: (Writing Identification and Maintenance information – I&M 1-3)

Note that each I&M record set **needs to be written separately**. For example, Select I&M1, then fill out info, click write record button. Select I&M2, fill out info, then click write record button and so on.

First Enter the Data

Input

AFF1 I&M1 (Function and Location (writable)) Index (hex) Write Record

Function (I&M1): Chiller Machine / chills drinks_

Location Identifier (I&M1): My plant and location_

Installation Date (I&M2): 2016-10-13 12:53

Additional Information (I&M3): This information is for maintenance or support

Signature (I&M4): This is signed and installed by me_

Write Manual Data (hex) Write Length (decimal):

Third click the Write Record button

Second select I&M record number from the dropdown (here I&M1 – device function and location)

5.10 PN Browser



The PN Browser (PROFINET browser) can be used to scan the PROFINET network for devices and get their DCP (Discovery and basic Configuration Protocol) information. Set device names, set IP address, flash LEDs, reset a device or devices to factory settings and copy and paste the DCP data. It will also allow setting temporary IP addresses and names vs a permanent setting (which must be maintained after power cycle on the device).

PN Browser

DCP Identify All

NIC Selection 1-Network adapter 'Intel(R) 82574L Gigabit Network C

PROFINET Device List

MAC Addr	Device Name	Device Type	IP Address	Subnet Mask	Router	VendorID (h...	DeviceID ...	Manufacturer
00:1B:3E:BF:16	switch-1	SCALANCE X-200	172.16.0.1	255.255.0.0	172.16.0.1	002a	0a01	SIEMENS AG
00:A0:45:38:A4:EC	axl-pn-bk-me	AXL BK PN-ME	172.16.0.3	255.255.0.0	172.16.0.3	00b0	1000	Phoenix Contact
00:1B:54:AB:78	et200sp	IM155-6	172.16.0.2	255.255.0.0	172.16.0.2	002a	0313	SIEMENS AG
00:02:A2:26:7A:73	nt100reps	Default.Station.Type	172.16.0.4	255.255.0.0	172.16.0.4	01...	010b	Hilscher Gesells
00:19:99:D4:00:B9	pic-hdev-pc	SIMATIC-PC	169.254.74.22	255.255.0.0	0.0.0.0	002a	...	SIEMENS AG

DCP Set Name et200sp ☐ Write Device Name Temporary

DCP Set IP Params

172 . 16 . 0 . 2	IP Address
255 . 255 . 0 . 0	Subnet Mask
172 . 16 . 0 . 2	Router

☐ Write IP Settings Temporary

DCP Get Info Start LED Flash DCP Reset to Factory

Information Window

02/11/15 16:15:26 There were 3 NICs Found
 02/11/15 16:15:26 Please select NIC to use from dropdown list
 02/11/15 16:15:26 NIC - 1 Network adapter 'Intel(R) 82574L Gigabit Network Connection' on local host
 02/11/15 16:15:26 NIC - 2 Network adapter 'VMware Virtual Ethernet Adapter' on local host
 02/11/15 16:15:26 NIC - 3 Network adapter 'Intel(R) 82579LM Gigabit Network Connection' on local host
 02/11/15 16:15:26 Select correct NIC and click DCP Identify All button to continue
 02/11/15 16:17:46 Checking network for devices...
 02/11/15 16:17:46 Listening on adapter..
 02/11/15 16:17:46 Found 5 PN devices

Second, use DCP identify all to get the PROFINET device list and info

First, Select NIC for PN Browser, Independent of Main window

Device Info – Doubleclick to copy data to function section or select device

DCP Functions

Information Window

PN Browser functions:

First select NIC and then click DCP Identify All to scan the system and build the PROFINET device list.

Double click on a device to move info to the function section for easy editing if needed.

DCP Identify All – Get all devices info and build device list. You can copy -> Paste from the device list into Excel or other programs if you wish to save the device information.

DCP Identify Specific – Search for a device with a particular name (or alias name).

DCP Set Name – Set the name on the device either permanent (default) or temporary. Permanent will be retained after a device power cycle while temporary will not.

DCP Set IP Params – Set the IP on the device either permanent (default) or temporary.

DCP Get info – Get single device info or refresh

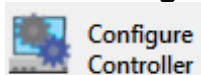
Start LED flash – Flash device LEDs if supported

DCP Factory Reset / Reset to Factory – Reset device to factory settings based on Mode (Mode 0 / default clears all)

Factory Reset Modes –

Mode 1	Reset Application data	Resets I&M data, SNMP writeable OIDs, and manufacturer specific record data objects
Mode 2	Reset Communication parameter	Resets name of station "", IP to 0.0.0.0, DHCP (if available), all PDev parameters (topology, etc.), and SNMP writeable OIDs
Mode 3	Reset Engineering parameter	Performs a Mode 1,2 reset + clears any engineering data (ex: configuration/parameters)
Mode 4	Reset All stored data	Performs a Mode 1, 2, & 3 reset
Mode 8	Reset device	Performs a Mode 4 reset to all interfaces in case the device has multiple interfaces
Mode 9	Reset and Restore Data	Same as mode 8 + resets installed software images back to factory default
Mode 0 Factory Reset (default)	Factory Reset	Performs mode 1/2 reset

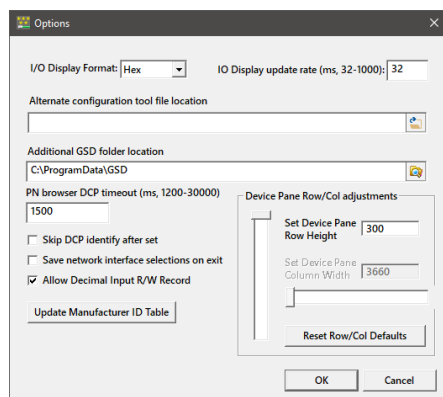
5.11 Configure Controller



If the TIA Portal software is loaded on the same machine as PROFINET Commander this button or menu item can be used to open the configuration tool. If the tool is not found, you can try using the alternate configuration tool file location option from the options menu.

5.12 Options menu

The options menu lets you adjust some of the PROFINET Commander settings. Note that the tool needs admin rights for settings to work (default).



IO Display Format - IO Display format can be changed between Hex (default), Decimal and Binary.

Alternate Configuration Tool File Location – Alternate location to look for TIA Portal configuration tool, or different tool.

Additional GSD Folder Location – Tool will scan for GSD files in the TIA Portal default folder and PROFINET Commander folder. If you have a different location, place it here.

PN Browser DCP Timeout (ms, 1200 -30000) – This is the time the PN Browser will listen for a DCP response when using DCP commands like set name, identify, set ip, etc. Default is 1500 ms.

Skip DCP Identify after set – Normally the configuration tool will refresh the PN device list after a set or reset. If you want to skip this (faster) then enable this setting.

Save Network interface selections on exit – The main commander and PN Browser NIC selections can be saved on exit and are independent of each other.

Allow Decimal Input R/W Record – If this is selected then Decimal input can be used for reading and writing of records in the R/W Dialog.

Update Manufacturer ID Table – This will attempt to download the latest manufacturer ID table used by the DCP browser if you have a valid Internet connection, otherwise you can download manually and copy to the main app folder from the https://www.profibus.com/IM/Man_ID_Table.xml website.

Device Pane Row Adjustment – Rows can be adjusted if the data is too big and does not fit in the rows

IO Display Update Rate -

The IO display update rate for the IO display pane can be adjusted between 32ms and 1 second for reading / writing the IO. This is independent of the PROFINET IO device update times and should be equal or slower than your PROFINET device(s). If set at fast update rates it is possible there may be some screen flicker due to the continuous updates of IO data. The display can be slowed down to remove the flickering if needed.

6.0 FAQ / Troubleshooting

As we get common questions, we will offer a FAQ and troubleshooting tips here:

TIA Configuration Software lists a “Compile Error” without any details – This usually means that the XML File in use by PROFINET Commander can't be overwritten. If you are compiling, shut down PROFINET Commander prior to compile or copy the XML file to a different location each time (ex: Desktop)

When importing the XML file I get the error ‘invalid configuration’ or ‘invalid file argument’

This means that your TIA Portal configuration is invalid or you are using the wrong file type. Typical reasons include not putting the device in the configuration and attaching to the controller, only the controller, Linux instead of Windows config, wrong controller version, etc. Or another reason might be that you are importing the wrong file (for example a device GSDML file) instead of an actual configuration file. If you still have trouble after checking these items see the manual for a configuration example or contact support.

PROFINET Commander won't start or immediately closes – Double-check the dependencies from the installation section. Double-check for a valid license or if another window appears (license window). Make sure you have selected the right network interface for the communications. Note Wireless and loopback adapters will not work.

Device isn't coming up (always offline) - Make sure you have set the controller to operate mode. Check that the name has been set and you can see the device with the PN browser. Note that the configuration tool “display” name and device name may not match. You can see what the actual name should be by clicking on the device in commander and viewing its properties or looking in the engineering tool at the PROFINET device name setting in the devices properties. Try to set the update time to the slowest value in the engineering tool (512ms). Also ensure that there is no firewall/antivirus/malware scanner on the PC which could block the communications (port 34964 and Ethertype 0x8892 should be possible). Usually Windows Firewall is OK, but if there is another firewall it should be disabled or an exception set. Check that you have selected the right network interface for communications.

Device always shows a diagnostic or error – See if alarms window shows any information. Check that you have configured the device and modules properly with the correct fw and revision. Highlight the device and under read/write record read the diagnostics (0xF80C) to determine the error (or see alarm info). Also, you can see the module diff block record (0xE002) to determine what modules might not be configured properly.

Device keeps going online then offline continuously – check the update time set on the device(s). As Windows is not a real time OS, some other tasks could interrupt PROFINET communications at fast update times. Set the device(s) to 512 ms and try again as a test, and then you can adjust down incrementally to see what works best on your system to a minimum of 32 ms. You can also try to figure out what tasks are running simultaneously and close other programs you don't need to see if that helps.

Diagnostic LED in commander never turns off – this can happen if there was a preexisting diagnostic prior to the startup on a device and is a known issue. Fix the diagnostic issue on the device and then stop and start the controller again to clear it. We are planning a fix in a future version.

The diagnostic alarms from the device(s) are only showing a number, no text - This can happen if the GSD files cannot be found on your system in the TIA GSD, PROFINET Commander GSD or user supplied (in options) folders. Make sure the GSDs for the devices are located on your system and you are running the software with Admin rights. Also make sure the GSD file name conventions are correct as it helps the tool find the correct GSDs.

The device keeps sending a remote mismatch error and clearing the error and it's right beside the PC -

If you have configured a topology-based system for diagnostics testing or device replacement the device is signaling an error because the PC is likely sending multiple LLDP messages (like Windows LLDP + PROFINET info) and confusing the interface. Be sure to disable other LLDP protocols under your network adapter settings. LLDP is already built into the PROFINET Commander driver.

Do I need a separate license for TIA Portal configuration tool? – No, PROFINET Commander only needs one license because it uses the PN Driver object in TIA Portal. This is considered a “PC Station” and does not require an additional license for TIA. TIA requires a license if programming Siemens PLC's (like S7 1500, 1200, 300 / 400, etc.).

Will PROFINET Commander work while plugged into a switch monitor (mirror) port?

No, connecting to a monitoring port on a switch causes duplicate frames to be sent to the driver and this can cause communication issues. A switch port monitor is not supported at the same time. Disable any monitor ports on the switch prior to running PROFINET Commander.

When starting the controller (online/run) I get ModDiffBlock was detected?

A ModDiffBlock can mean multiple things. A mismatch between the actual device configuration and the offline configuration (fw rev not matching, missing modules / submodules, wrong modules / submodules) **and/or** that the device is locked by another controller / process **and/or** that there could be an active (in place) diagnostic. Select the device in question and enter the R/W Record dialog. Read record 0xE002 (Module Diff block for one AR) to see what modules / submodules have the issue and then correct the underlying problem. A substitute module/submodule is usually OK (probably a firmware difference, check the GSD file and versions) and the device will continue normal operation even with the ModDiffBlock; however, a wrong or missing (unplugged) module will not work until corrected. Check your configuration if a wrong module and change the device configuration or check real hardware if a module is missing, not plugged in. If a diagnostic is detected you can read diagnostics to attempt to get more info or check the alarms/info pane from the main window display. If the device is locked by another controller it means that no more than one controller has access to the device at a time, check shared device settings if trying to setup 'shared device' in the device configuration. Note that sometimes a ModDiffBlock may be incorrectly signaled with a device under development if the modules are not plugged into the device firmware / stack correctly. Or sometimes this may happen with gateways / proxies if they are using virtual modules or are not ready for startup.

The software keeps stating “not a valid adapter” or similar?

Make sure to select a valid adapter prior to importing and starting the controller or browsing the network. If network adapters have changed in the meantime restart the software and try again. If you are using a USB adapter this may require restarting the Npcap service. Start a command prompt with admin rights and type net stop npcap then hit enter. Then once the service stops type net start npcap and enter again. Then restart PROFINET commander and try again. Make sure the adapter in question works with Wireshark as well. (also check the next tip if still not working)

How to get the latest software updates? – To use the automatic update feature a license and Internet connection is required. The software will check the server at startup if an update exists and notify the user if so with a dialog. Another way to get the update is to manually download the latest (free) version from the website. Install the latest free version and the license will be detected and all updates activated.

Oops, I loaded the latest PROFINET Commander version 5.1.0.8 or higher with Npcap, which deleted WinPcap, but need compatibility on the same system with some older software based on WinPcap -

In this case you can go under the application directory (usually C:\Program Files (x86)\PROFINET Commander) and Redistributable folder. In this folder you will find Version 5.1.0.7 which is the last version supporting WinPcap. Simply install this and run the uninstall for PNC and Npcap during the process, then the installer will ask you to install WinPcap and you'll be good to go.

Can PROFINET Commander run on a virtual machine?

Yes, PROFINET commander can run on a VM, however you must be careful and ensure the VM has enough resources. In addition since the VM is running Windows inside another Windows and both are not real time OS's, you may need to adjust the update time(s) of the device(s).

7.0 Further support

If you need further information, have questions, or need technical support on PROFINET Networking Technology or PROFINET Commander please visit the PROFINET Commander website at <http://www.profinetcommander.com>, E-mail pic.industry@siemens.com or call +1-423-262-2576 and ask to speak with someone from the PROFI Interface Center.

We can assist with most questions relating to PROFINET Commander and the configuration or inquiries about PROFINET Networking technology or development. If you have product specific questions related to a particular vendor's product then contact their hotline or technical support personnel. We do not provide product GSD files and these would need to be obtained from the vendor.

Finally, we also offer training classes in conjunction with PI North America. The classes are vendor neutral, and technology focused with a lot of hands on with real world experience and examples rolled in. During the class we also use the PROFINET Commander PRO version for learning labs.

<https://us.profinet.com/training/profinet-courses/>