

User Manual

Revision 1.001
English

PROFINET / EtherNet/IP Master - Converter

Benefits and Main Features:

- ✚ Triple electrical isolation
- ✚ Two Ethernet ports
- ✚ Temperature range: -40°C/+85°C (-40°F/+185°F)



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UPDATED DOCUMENTATION:

Dear customer, we thank you for your attention and remind you that you need to check that the following document is:

- ✚ Updated
- ✚ Related to the product you own

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.000	13/03/2018	Ff	All	First release version
1.001	10/12/2018	Ff	All	Revision

WARNING:

Pixsys SRL reserves the right to change information in this manual about our product without warning.

Pixsys SRL is not responsible for any error this manual may contain.

TRADEMARKS:

All trademarks mentioned in this document belong to their respective owners.

SECURITY ALERT:**GENERAL INFORMATION**

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device, legal and safety regulation are required for each individual application. The same applies also when using accessories.

INTENDED USE

Machines and systems must be designed so the fault conditions do not lead to a dangerous situation for the operator (i.e. independent limit switches, mechanical interlocks, etc.).

QUALIFIED PERSONNEL

The device can be used only by qualified personnel, strictly in accordance with the specifications.

Qualified personnel are persons who are familiar with the installation, assembly, commissioning and operation of this equipment and who have appropriate qualifications for their job.

RESIDUAL RISKS

The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

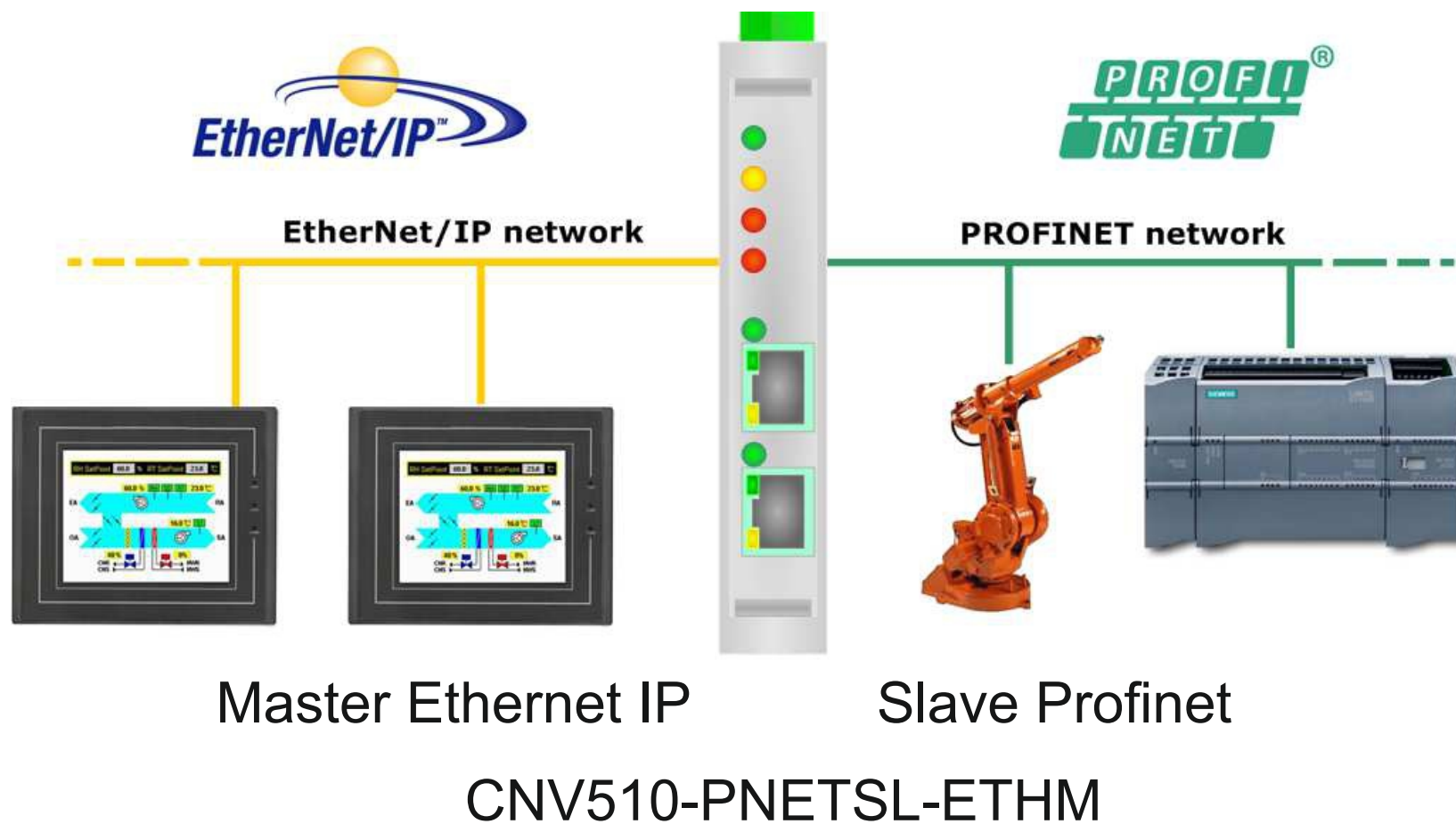


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

CE CONFORMITY

The declaration is made by our company. You can send an email to support@adfweb.com or give us a call if you need it.

EXAMPLE OF CONNECTION:



CONNECTION SCHEME:

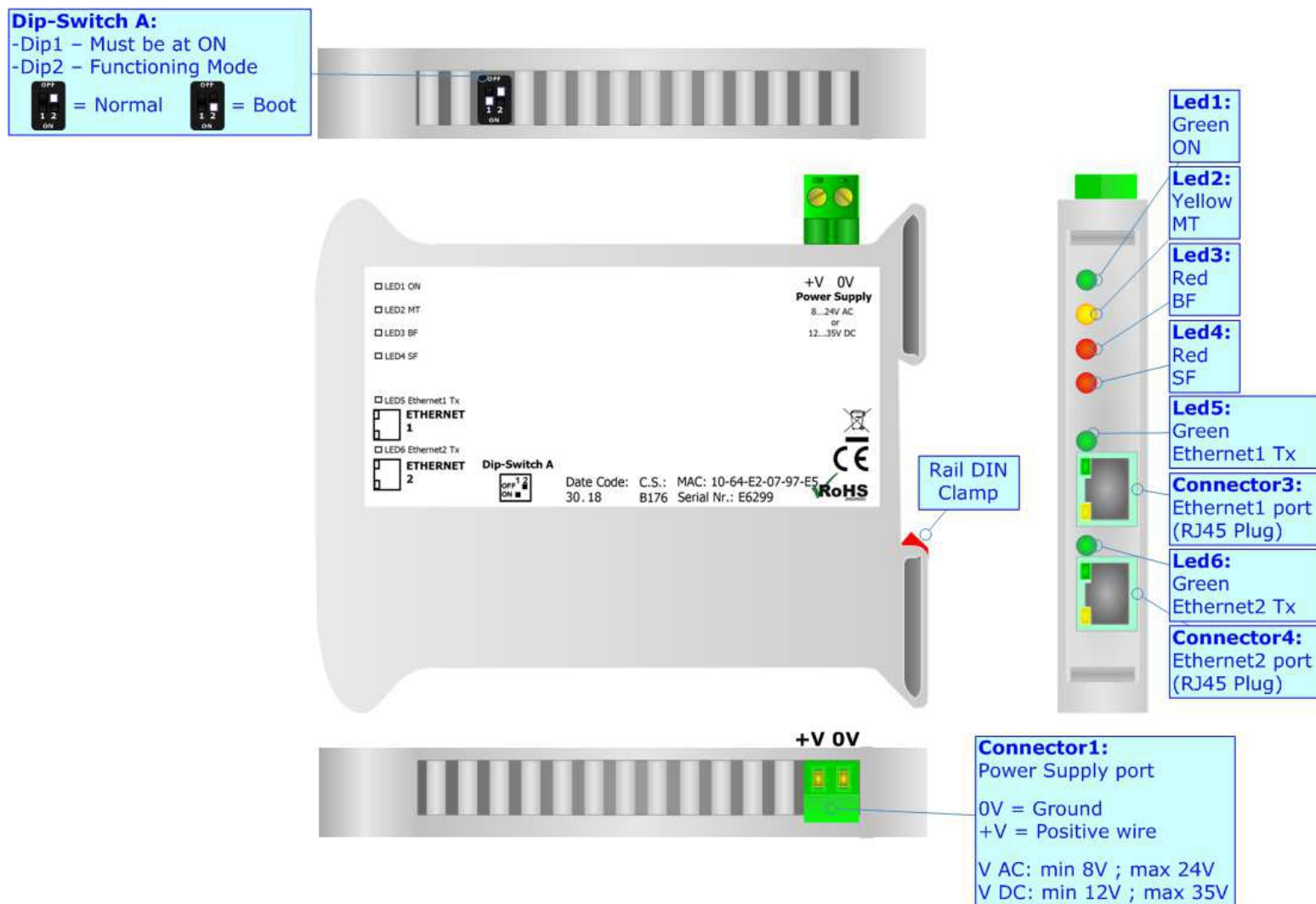


Figure 1: Connection scheme for CNV510-PNETSL-ETHM

CHARACTERISTICS:

The CNV510-PNETSL-ETHM is a PROFINET / EtherNet/IP Master Converter.

It allows the following characteristics:

- Up to 1440 bytes in reading and 1440 bytes in writing;
- Two-directional information between EtherNet/IP and PROFINET;
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 8...24V AC or 12...35V DC;
- Wide temperature range: -40°C / 85°C [-40°F / +185°F].



CONFIGURATION:

You need Compositor SW67661 software on your PC in order to perform the following:

- Define the parameter of the PROFINET;
- Define the parameter of the EtherNet/IP;
- Define the list of EtherNet/IP slaves connected to the converter;
- Update the device.

POWER SUPPLY:

The devices can be powered between a wide range of tensions. For more details see the two tables below.

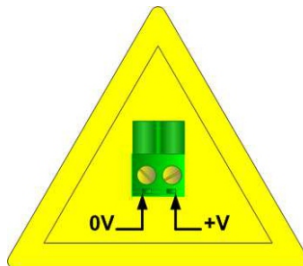
	VAC 		VDC 	
	Vmin	Vmax	Vmin	Vmax
CNV510-PNETSL-ETHM	8V	24V	12V	35V

Consumption at 24V DC:

Device	W/VA
CNV510-PNETSL-ETHM	4



Caution: Not reverse the polarity power



HD67661-A1

Connector1:
Power Supply port
0V = Ground
+V = Positive wire
V AC: min 8V ; max 24V
V DC: min 12V ; max 35V



FUNCTION MODES:

The device has got two functions mode depending of the position of the Dip2 of 'Dip-Switch B':

- The first, with Dip2 in Off position (factory setting), is used for the normal working of the device.
- The second, with Dip2 in On position, is used for upload the Project/Firmware.

For the operations to follow for the updating (see 'UPDATE DEVICE' section).

According to the functioning mode, the LEDs will have specifics functions (see 'LEDS' section).

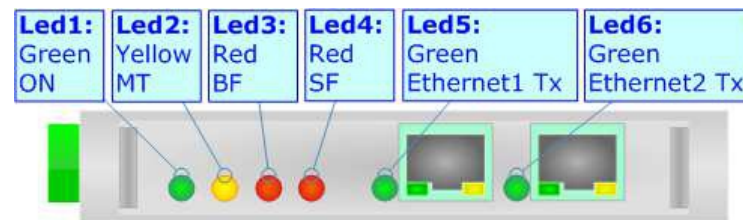
**Warning:**

Dip1 of 'Dip-Switch A' must be at ON position to work even if the Ethernet cable is not inserted.

LEDS:

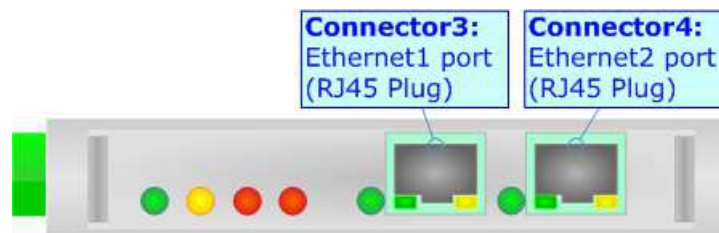
The device has got six LEDs that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

LED	Normal Mode	Boot Mode
1: ON [supply voltage] (green)	ON: Device powered OFF: Device not powered	ON: Device powered OFF: Device not powered
2: MT [maintenance display] (yellow)	ON: Device not able to communicate with at least one EtherNet/IP slave OFF: No maintenance are present	Blinks quickly: Boot state Blinks very slowly (~0.5Hz): update in progress
3: BF [bus fault] (red)	ON: The Ethernet connection is defective; the IP address exists several times in the network; the own NameOfStation exists several times in the network; no IP address has been set Flashing: At least one configured AR is no longer in the data exchange OFF: No errors are present	Blinks quickly: Boot state Blinks very slowly (~0.5Hz): update in progress
4: SF [group error] (red)	ON: At least one AR is not in the data exchange OFF: No errors are present	Blinks quickly: Boot state Blinks very slowly (~0.5Hz): update in progress
5: Ethernet1 Tx (green)	Blinks when is transmitting frames	Blinks quickly: Boot state Blinks very slowly (~0.5Hz): update in progress
6: Ethernet2 Tx (green)	Blinks when is transmitting frames	Blinks quickly: Boot state Blinks very slowly (~0.5Hz): update in progress



ETHERNET:

The Ethernet connection must be made using Connector3 or Connector4 of CNV510-PNETSL-ETHM with at least a Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform to the T568 norms relative to connections in cat.5 up to 100 Mbps. To connect the device to an Hub/Switch is recommended the use of a straight cable, to connect the device to a PC/PLC/other is recommended the use of a cross cable.



USE OF COMPOSITOR SW67661:

To configure the Converter, use the software tools called SW67661.
and its operation is described in this document. (*This manual is referenced to the last version of the software present on our web site*). The software works with MSWindows (XP, Vista, Seven, 8, 10; 32/64bit).

When launching the SW67661, the window below appears (Fig. 2).

**Note:**

It is necessary to have installed .Net Framework 4.

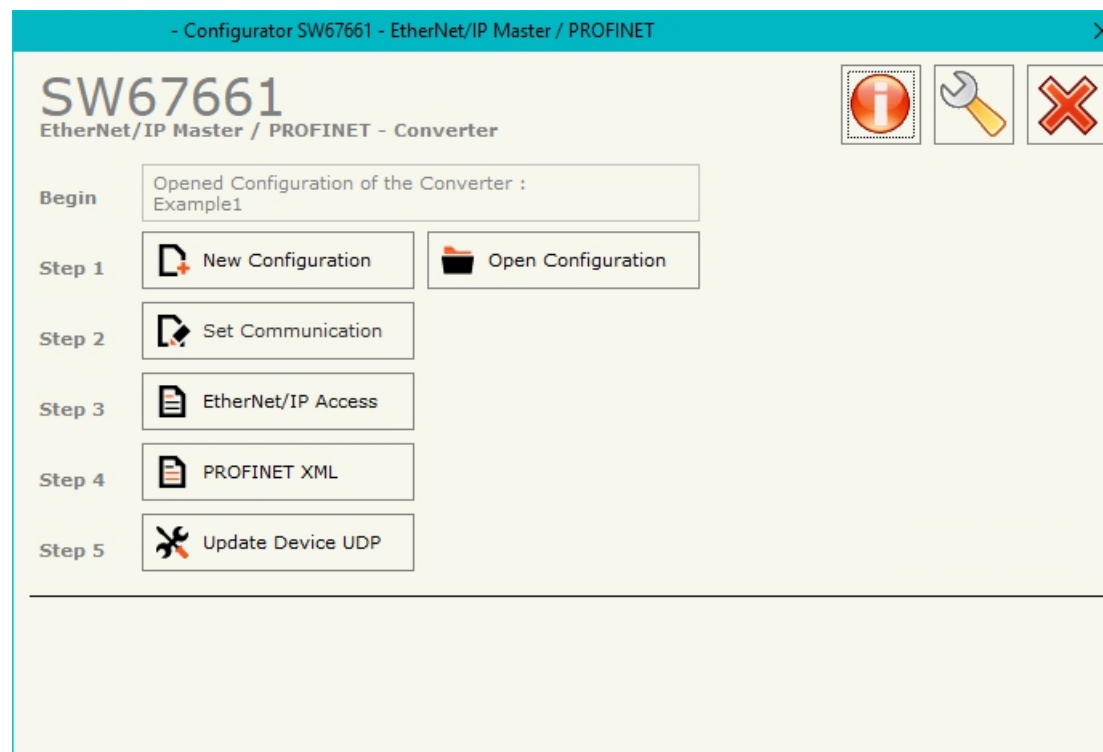


Figure 2: Main window for SW67661

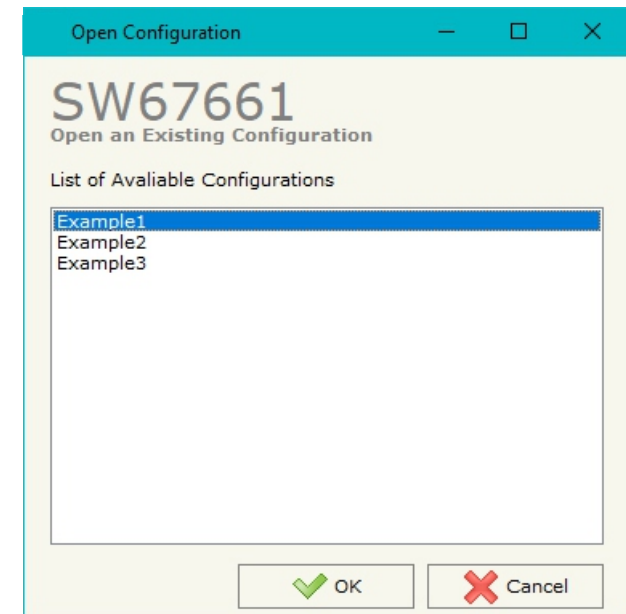
NEW CONFIGURATION / OPEN CONFIGURATION:

The “**New Configuration**” button creates the folder which contains the entire device’s configuration.




A device’s configuration can also be imported or exported:

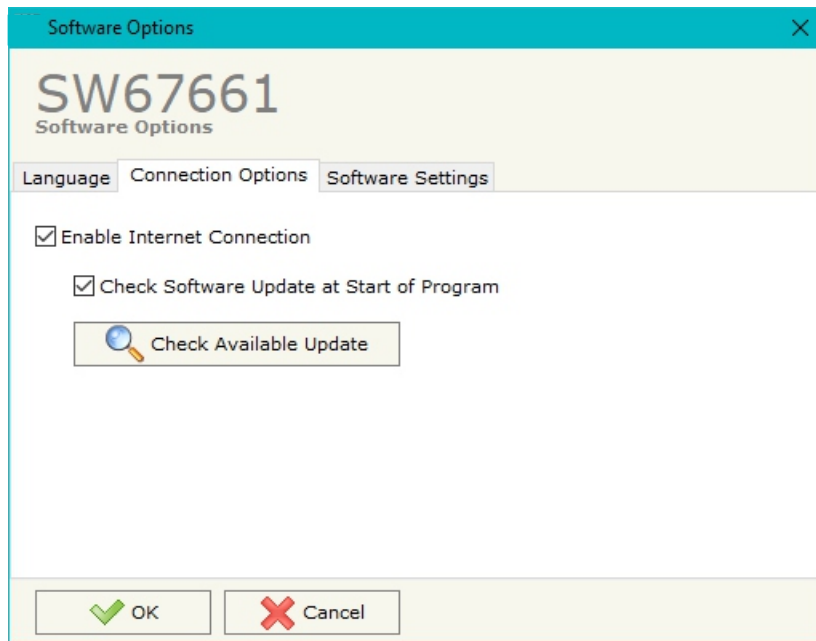
- To clone the configurations of a programmable “**PROFINET** / EtherNet/IP Master - Converter” in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button “**Open Configuration**”.



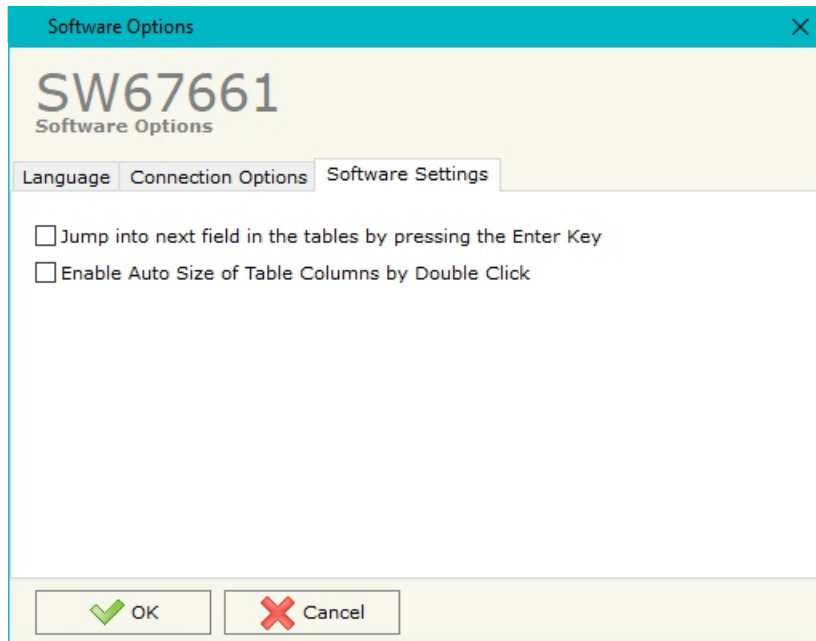
SOFTWARE OPTIONS:

By pressing the “**Settings**” () button there is the possibility to change the language of the software and check the updatings for the compositor.

In the section “Language” it is possible to change the language of the software.



In the section “Connection Options”, it is possible to check if there are some updatings of the software compositor in ADFweb.com website. Checking the option “**Check Software Update at Start of Program**”, the SW67661 check automatically if there are updatings when it is launched.



In the section "Software Settings", it is possible to enable/disable some keyboard's commands for an easier navigation inside the tables contained in the different sections of the software.

SET COMMUNICATION:

This section defines the fundamental communication parameters of two buses, PROFINET and EtherNet/IP.

By Pressing the "**Set Communication**" button from the main window for SW67661 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The means of the fields for "PROFINET" are:

- In the fields "**IP ADDRESS**" the IP address for PROFINET side of the converter is defined;
- In the fields "**SUBNET Mask**" the SubNet Mask for PROFINET side of the converter is defined;
- In the fields "**GATEWAY**" the default gateway of the net is defined. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net;
- In the field "**Port**" the port used for PROFINET communication is defined. The port has a fixed value of 34964.
- In the field "**Name of Station**" the name of the PROFINET node is defined.

The means of the fields for "EtherNet/IP Master" are:

- In the fields "**IP ADDRESS**" the IP address for EtherNet/IP side of the converter is defined;
- In the fields "**SUBNET Mask**" the SubNet Mask for EtherNet/IP side of the converter is defined;
- In the fields "**GATEWAY**" the default gateway of the net is defined. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net;
- In the field "**Port**" the port used for EtherNet/IP communication is defined. The port has a fixed value of 44818.

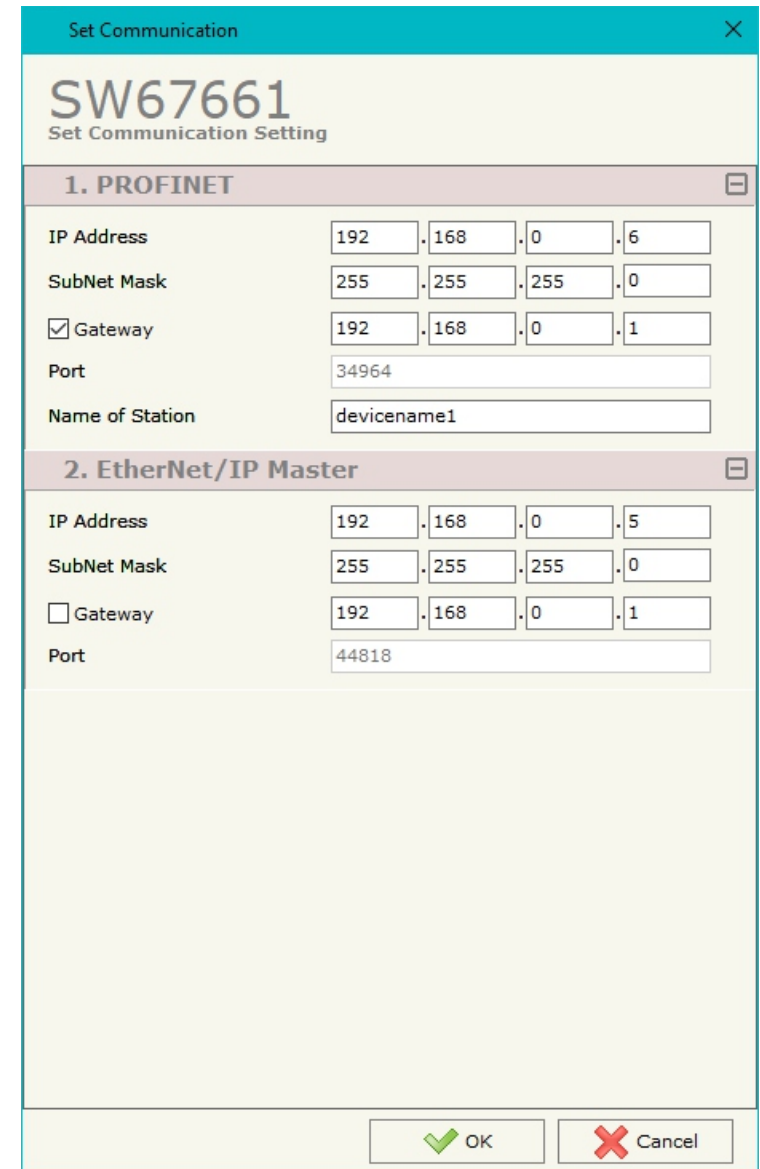
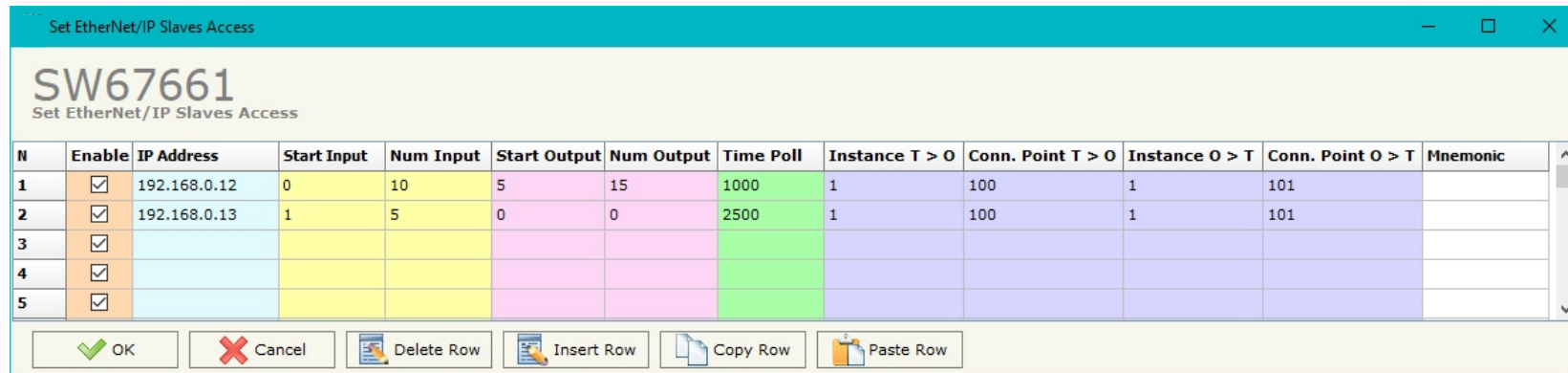


Figure 3: "Set Communication" window

ETHERNET/IP ACCESS:

By Pressing the "**EtherNet/IP Access**" button from the main window for SW67661 (Fig. 2) the window "Set EtherNet/IP Slaves Access" appears (Fig. 4).

This section is used to define the list of the EtherNet/IP slaves to read/write with the PROFINET Master.



N	Enable	IP Address	Start Input	Num Input	Start Output	Num Output	Time Poll	Instance T > O	Conn. Point T > O	Instance O > T	Conn. Point O > T	Mnemonic
1	<input checked="" type="checkbox"/>	192.168.0.12	0	10	5	15	1000	1	100	1	101	
2	<input checked="" type="checkbox"/>	192.168.0.13	1	5	0	0	2500	1	100	1	101	
3	<input checked="" type="checkbox"/>											
4	<input checked="" type="checkbox"/>											
5	<input checked="" type="checkbox"/>											

Figure 4: "Set EtherNet/IP Slaves Access" window

The means of the fields are:

- If the field "**Enable**" is checked, the polling to the EtherNet/IP slave is enabled;
- In the field "**IP Address**" the IP Address of the EtherNet/IP slave is defined;
- In the field "**Start Input**" the starting Input byte of the EtherNet/IP slave to map on PROFINET side is defined;
- In the field "**Num Input**" the number of consecutive Input byte to map on PROFINET side is defined;
- In the field "**Start Output**" the starting Output byte of the EtherNet/IP slave to write from PROFINET side is defined;
- In the field "**Num Output**" the number of consecutive Output byte to write from PROFINET side is defined;
- In the field "**Time Poll**" the polling time in ms is defined;
- In the field "**Instance T > O**" the instance of the assembly for the Target to Originator data direction is defined;
- In the field "**Conn. Point T > O**" the connection point of the assembly for the Target to Originator data direction is defined;
- In the field "**Instance O > T**" the instance of the assembly for the Originator to Target data direction is defined;
- In the field "**Conn. Point O > T**" the connection point of the assembly for the Originator to Target data direction is defined;
- In the field "**Mnemonic**" a brief description is defined.

PROFINET XML:

By pressing the "**PROFINET XML**" button it is possible to save the GSDML file for the PROFINET side.

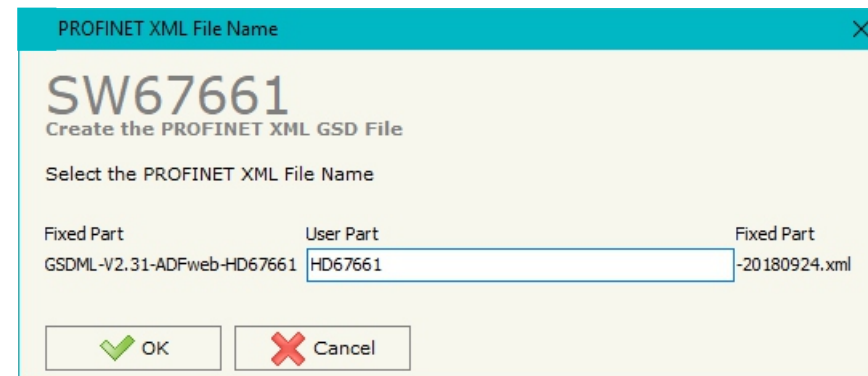


Figure 5: "PROFINET XML" window

UPDATE DEVICE:

By pressing the **"Update Device"** button, it is possible to load the created Configuration into the device; and also the Firmware, if necessary. This by using the Ethernet port.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn OFF the Device;
- Put Dip2 of 'Dip-Switch A' in ON position;
- Turn ON the device
- Connect the Ethernet cable;
- Insert the IP **"192.168.2.205"**;
- Select which operations you want to do;
- Press the **"Execute update firmware"** button to start the upload;
- When all the operations are "OK" turn OFF the Device;
- Put Dip2 of 'Dip-Switch A' in OFF position;
- Turn ON the device.

If you know the actual IP address of the device, you have to use this procedure:

- Turn ON the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Select which operations you want to do;
- Press the **"Execute update firmware"** button to start the upload;
- When all the operations are "OK" the device automatically goes at Normal Mode.

At this point the configuration/firmware on the device is correctly updated.

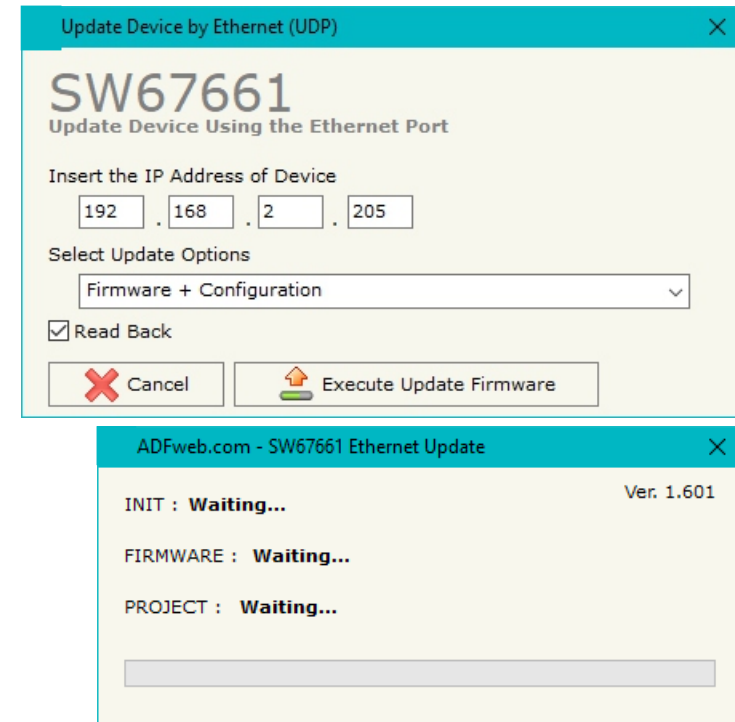


Figure 6: "Update device" windows

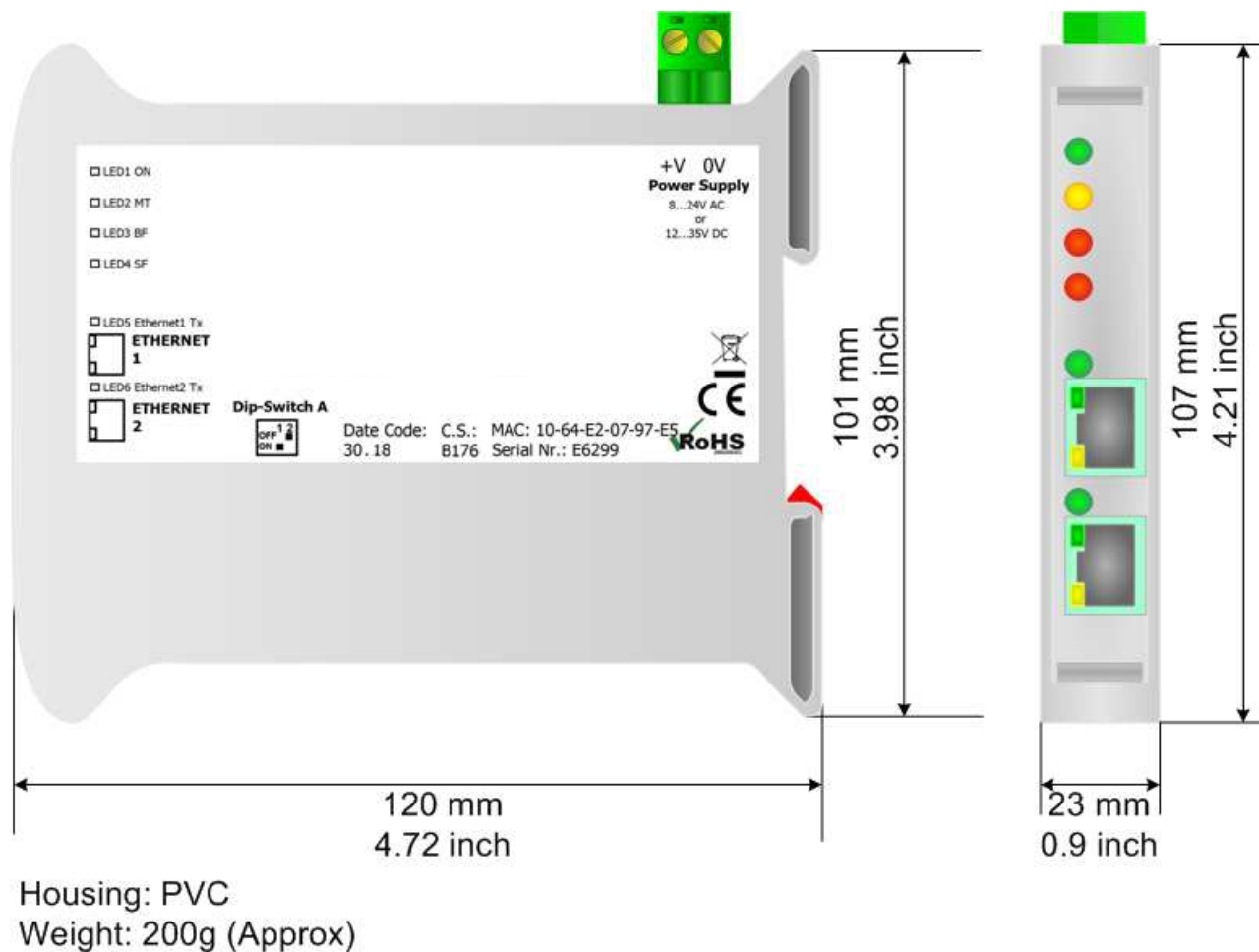
MECHANICAL DIMENSIONS:


Figure 8: Mechanical dimensions scheme for CNV510-PNETSL-ETHM


Note:

When you receive the device, for the first time, you also have to update the Firmware in the CNV510 device.


Warning:

If Fig. 7 appears when you try to do the Update, try these points before seeking assistance:

- Check if the serial COM port selected is the correct one;
- Check if the serial cable is connected between the PC and the device;
- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- Check the LAN settings;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven, Vista, 8 or 10 make sure that you have the administrator privileges;
- In case you have to program more than one device, using the "UDP Update", you have to cancel the ARP table every time you connect a new device on Ethernet. For do this you have to launch the "Command Prompt" and write the command "arp -d". Pay attention that with Windows Vista, Seven, 8 or 10 you have to launch the "Command Prompt" with Administrator Rights;
- Pay attention at Firewall lock.

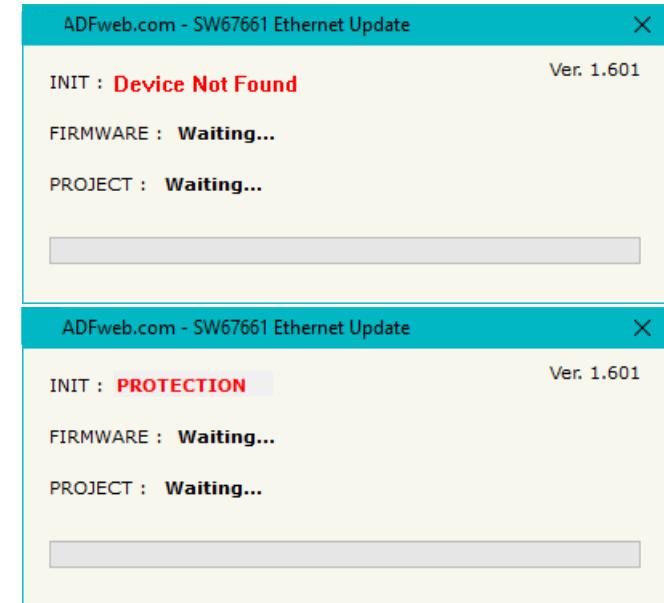


Figure 7: "Error" window


Warning:

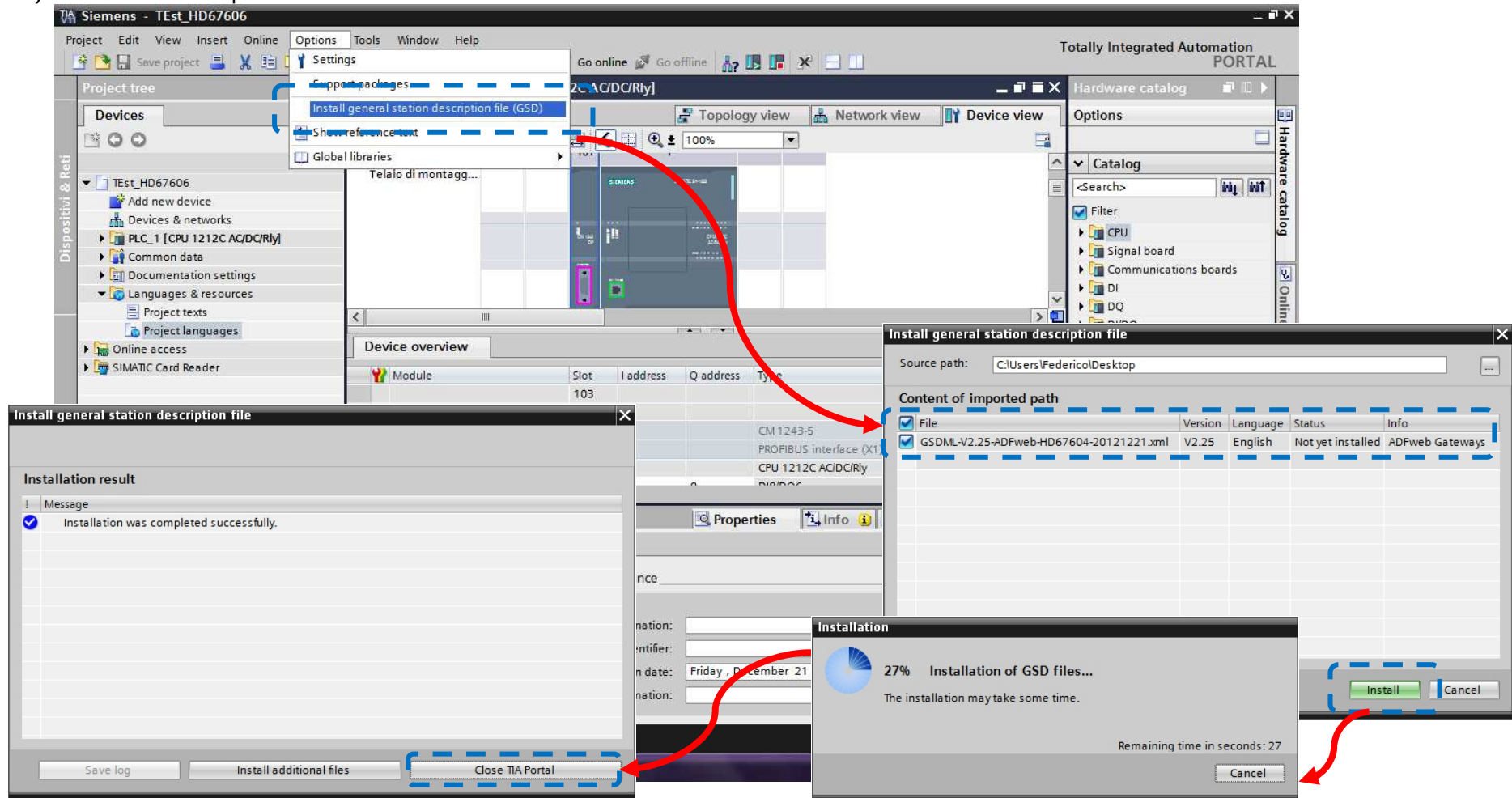
In the case of HD67661 you have to use the software "SW67661": www.adfweb.com/download/filefold/SW67661.zip.

PLC CONFIGURATION:

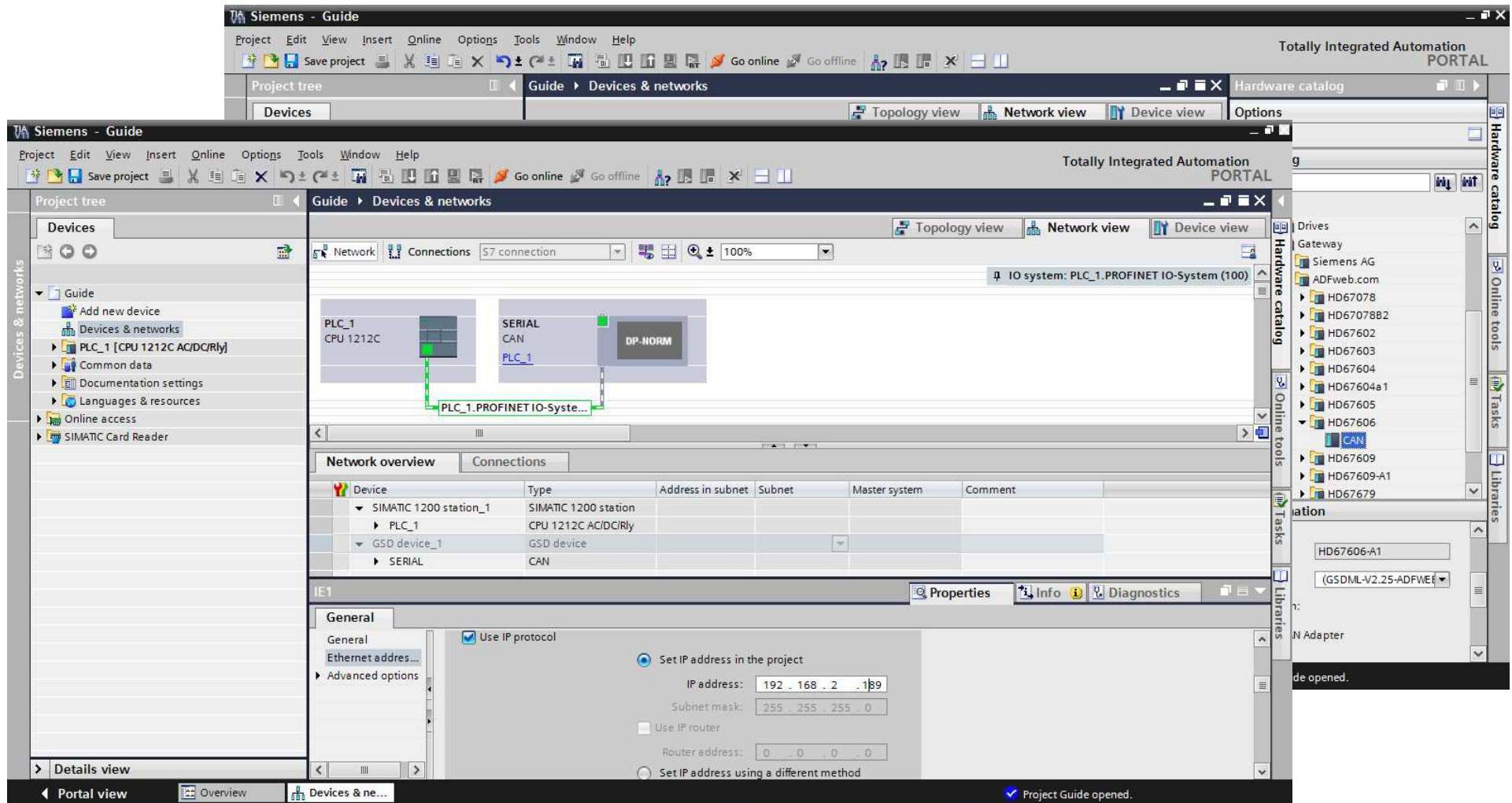
The configuration and commissioning of the PROFINET Converter as described on the following pages was accomplished with the help of the TIA Portal software by Siemens. In the case of using a control system from another supplier, refer to attend to the associated documentation.

These are the steps to follow:

- 1) Install the description file of the module.



2) Import the module in the network; connect the device to the PLC network and edit the parameters of IP, station name etc.



The screenshot displays the Siemens SIMATIC Manager software interface, specifically the 'Siemens - Guide' window. The interface is divided into several panes:

- Project tree (left):** Shows the project structure, including 'Guide', 'Devices & networks', and 'PLC_1 [CPU 1212C AC/DC/Rly]'.
- Guide > Devices & networks (top center):** Displays a network diagram showing a 'PLC_1 CPU 1212C' connected to a 'SERIAL CAN' interface, which is then connected to a 'DP-NORM' interface. A 'PLC_1.PROFINET IO-System' is also shown.
- Network overview (bottom center):** A table listing the devices in the network.
- Properties (bottom right):** A pane for configuring the selected device, showing the 'General' tab with 'Use IP protocol' checked and 'Set IP address in the project' selected. The IP address is set to 192.168.2.189.
- Hardware catalog (right):** A pane showing the available hardware components, including 'Drives', 'Gateway', and 'Siemens AG'.

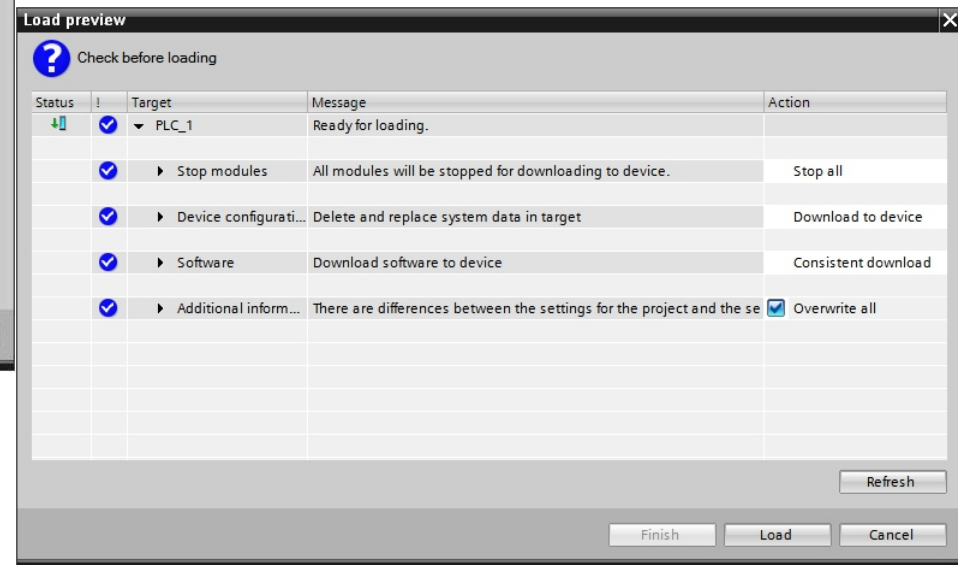
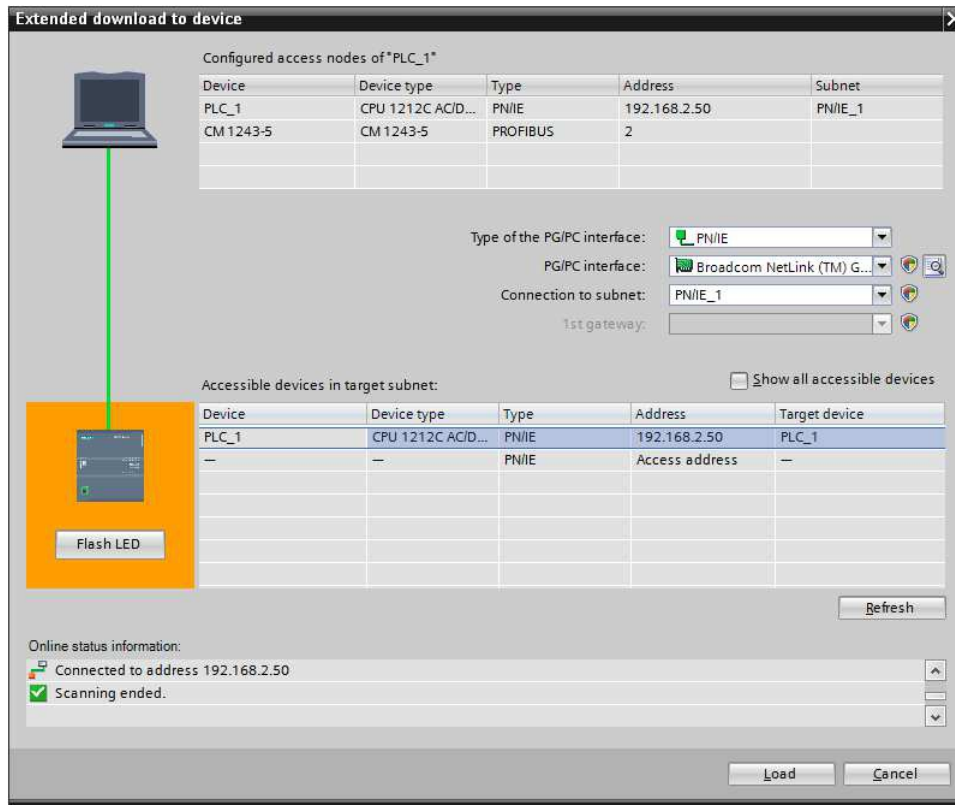
The 'Network overview' table is as follows:

Device	Type	Address in subnet	Subnet	Master system	Comment
▼ SIMATIC 1200 station_1	SIMATIC 1200 station				
▶ PLC_1	CPU 1212C AC/DC/Rly				
▼ GSD device_1	GSD device				
▶ SERIAL	CAN				

The 'Properties' pane shows the following configuration:

- General**
 - ☒ Use IP protocol
 - ☒ Set IP address in the project
 - IP address: 192.168.2.189
 - Subnet mask: 255.255.255.0
 - ☐ Use IP router
 - Router address: 0.0.0.0
 - ☐ Set IP address using a different method

3) Load the configuration into the PLC.



DISCLAIMER:

All technical content within this document can be modified without notice. The content of the document is under continual renewal. For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. Pixsys S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. Pixsys S.r.l. shall not be liable for consequences of improper use.

OTHER REGULATIONS AND STANDARDS:**WEEE INFORMATION**

Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).

This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and impact of human health which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE

The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

CE MARKING

The product conforms with the essential requirements of the applicable EC directives.