User Manual

Revision 1.100
English

PROFINET / J1939 - Converter

(Order Code: HD67610-A1)

For Website information:
www.adfweb.com?Product=HD67610

For Price information:
www.adfweb.com?Price=HD67610-A1

Benefits and Main Features:

- Electrical isolation
- Two PROFINET ports
- Temperature range: -40°C/+85°C (-40°F/+185°F)

User manual

For other PROFINET products see also the following link:

Converter PROFINET to	
www.adfweb.com?Product=HD67078	**(M-bus)**
www.adfweb.com?Product=HD67090	**(M-bus Wireless)**
www.adfweb.com?Product=HD67178	**(SNMP Manager)**
www.adfweb.com?Product=HD67600	**(NMEA 2000)**
www.adfweb.com?Product=HD67601	**(Serial)**
www.adfweb.com?Product=HD67602	**(Modbus Master)**
www.adfweb.com?Product=HD67603	**(Modbus Slave)**
www.adfweb.com?Product=HD67604	**(PROFIBUS Master)**
www.adfweb.com?Product=HD67605	**(PROFIBUS Slave)**
www.adfweb.com?Product=HD67606	**(CAN)**
www.adfweb.com?Product=HD67607	**(CANopen)**
www.adfweb.com?Product=HD67608	**(DeviceNet Master)**
www.adfweb.com?Product=HD67609	**(DeviceNet Slave)**
www.adfweb.com?Product=HD67612	**(Modbus TCP Slave)**
www.adfweb.com?Product=HD67613	**(SNMP Agent)**
www.adfweb.com?Product=HD67614	**(DMX)**
www.adfweb.com?Product=HD67615	**(NMEA 0183)**
www.adfweb.com?Product=HD67633	**(S7comm)**
www.adfweb.com?Product=HD67659	**(EtherNet)**
www.adfweb.com?Product=HD67660	**(EtherNet/IP Slave)**
www.adfweb.com?Product=HD67661	**(EtherNet/IP Master)**
www.adfweb.com?Product=HD67679	**(BACnet Slave)**
www.adfweb.com?Product=HD67719	**(BACnet Master)**
www.adfweb.com?Product=HD67752	**(IEC 61850 Server)**
www.adfweb.com?Product=HD67778	**(IEC 61850 Client)**
www.adfweb.com?Product=HD67818	**(KNX)**
www.adfweb.com?Product=HD67848	**(DALI)**
www.adfweb.com?Product=HD67876	**(IO-Link Master)**
www.adfweb.com?Product=HD67912	**(HART)**
www.adfweb.com?Product=HD67952	**(MQTT)**
www.adfweb.com?Product=HD67984	**(IO-Link Slave)**
www.adfweb.com?Product=HD67B22	**(OPC UA Client)**
www.adfweb.com?Product=HD67B46	**(OPC UA Server)**
www.adfweb.com?Product=HD67C77	**(EnOcean)**
www.adfweb.com?Product=HD67D33	**(LoRaWAN)**
www.adfweb.com?Product=HD67E23	**(EtherCAT Slave)**
www.adfweb.com?Product=HD67E73	**(EtherCAT Master)**
www.adfweb.com?Product=HD67F33	**(LoRaWAN Gateway)**

INDEX:

UPDATED DOCUMENTATION:

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

- Updated
- Related to the product you own

To obtain the most recently updated document, note the "document code" that appears at the top right-hand corner of each page of this document.

With this "Document Code" go to web page www.adfweb.com/download/ and search for the corresponding code on the page. Click on the proper "Document Code" and download the updates.

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.001	29/07/2013	Fl	All	Revision
1.002	17/05/2024	Ln	All	Revision
1.100	25/07/2025	Mdb	All	New design

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SECURITY ALERT:

GENERAL INFORMATION

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

INTENDED USE

Machines and systems must be designed so the faulty 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

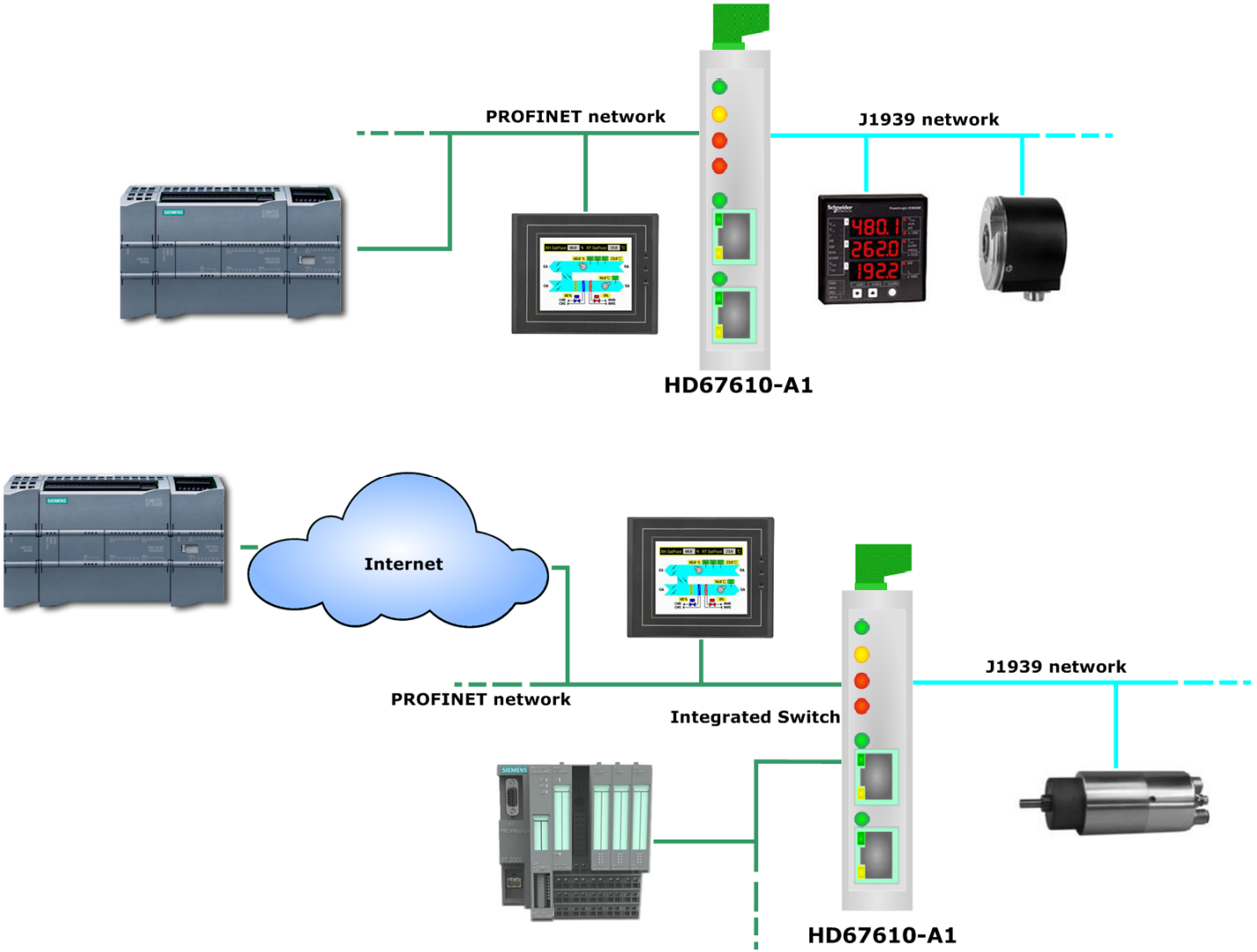
The device is state of the art and is safe. The instrument can represent a potential hazard if they are inappropriately installed and operated by personnel untrained. These instructions refer to residual risks with the following symbol:

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

CE CONFORMITY

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

EXAMPLE OF CONNECTION:



CONNECTION SCHEME:

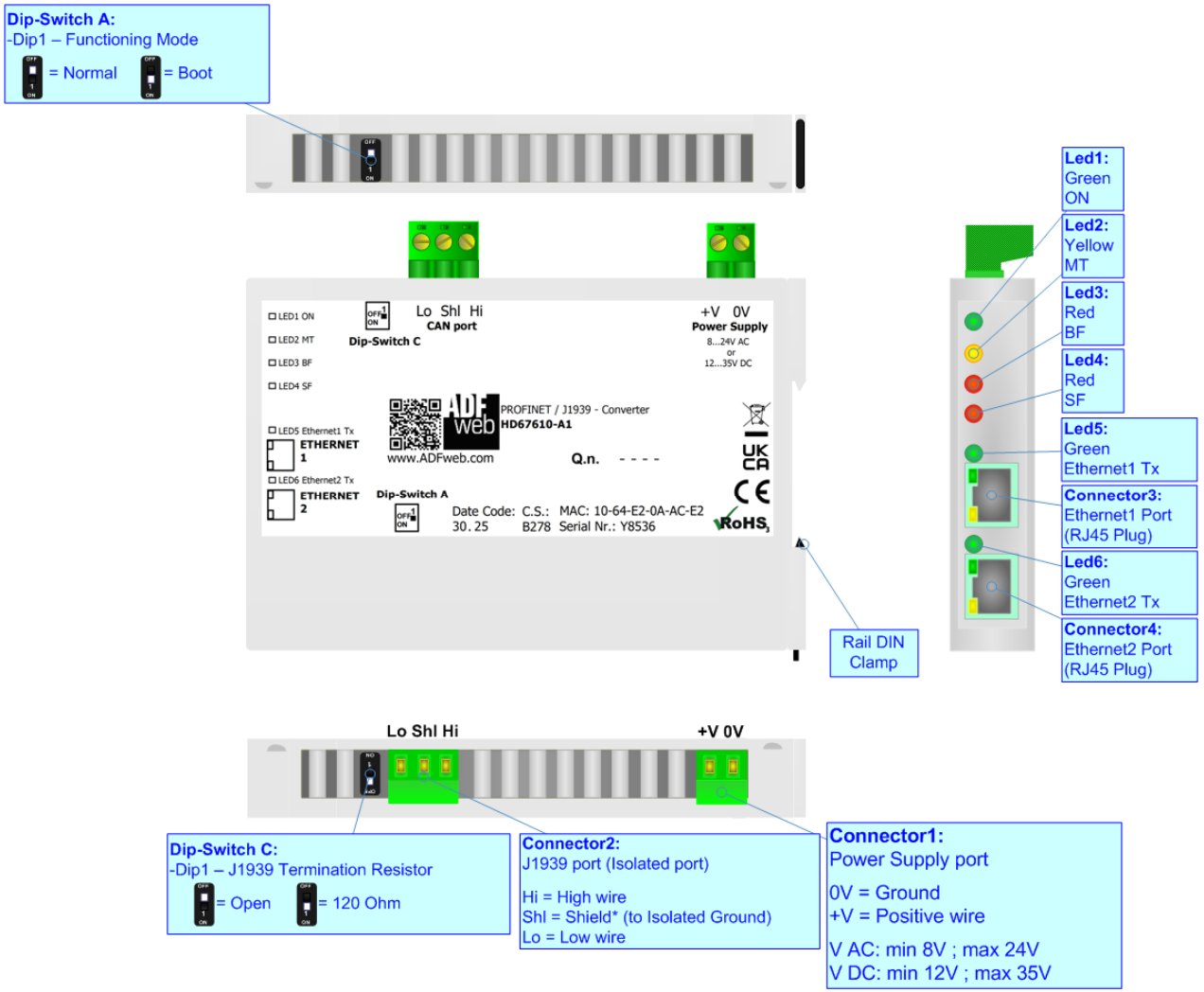


Figure 1: Connection scheme for HD67610-A1

CHARACTERISTICS:

The HD67610-A1 is a PROFINET / J1939 Converter.

It has the following characteristics:

- Up to 1439 bytes in reading and 1439 bytes in writing;
- Triple isolation between CAN - Power Supply, CAN - Ethernet, Power Supply - Ethernet.
- Two-directional information between J1939 bus and PROFINET bus;
- 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 SW67610 software on your PC in order to perform the following:

- Define the parameter of PROFINET line;
- Define the parameter of CAN line;
- Define the J1939 frames that the Converter can accept;
- Define the J1939 frames that the Converter sends trough the J1939 line;
- Update the device.

POWER SUPPLY:

The devices can be powered at 8…24V AC and 12…35V DC. For more details see the two tables below.

VAC ~		VDC ⎓	
Vmin	**Vmax**	**Vmin**	**Vmax**
8V	**24V**	**12V**	**35V**

Consumption at 24V DC:

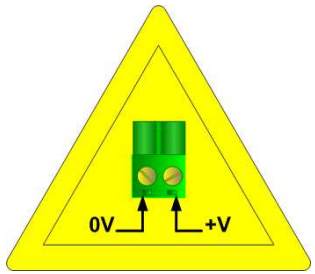
Device	Consumption [W/VA]
HD67610-A1	3.5

Caution: Not reverse the polarity power

Connector1:
Power Supply port

0V = Ground
+V = Positive wire

V AC: min 8V ; max 24V
V DC: min 12V ; max 35V



HD67610-A1

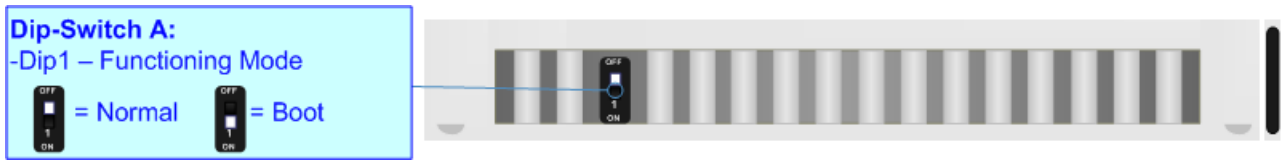
FUNCTION MODES:

The device has got two functions mode depending of the position of the Dip1 of 'Dip-Switch A':

- The first, with Dip1 in Off position (factory setting), is used for the normal working of the device.
- The second, with Dip1 in On position, is used for upload the Project/Firmware.

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

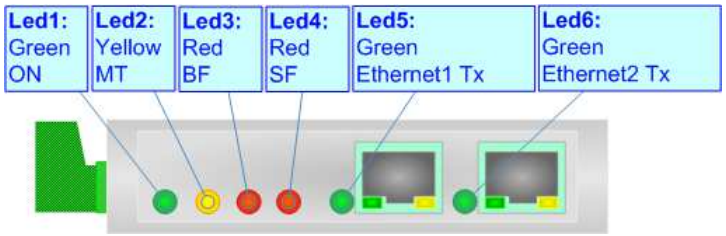
According to the functioning mode, the LEDs will have specifics functions (see 'LEDS' section).



LEDS:

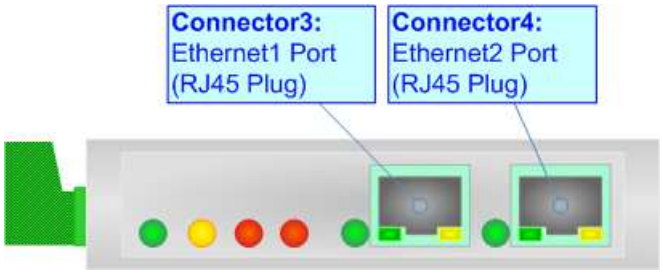
The device has got six LEDs that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

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:** Maintenance Problem is present **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 Ethernet frames	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
6: Ethernet2 Tx (green)	Blinks when is transmitting Ethernet frames	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress



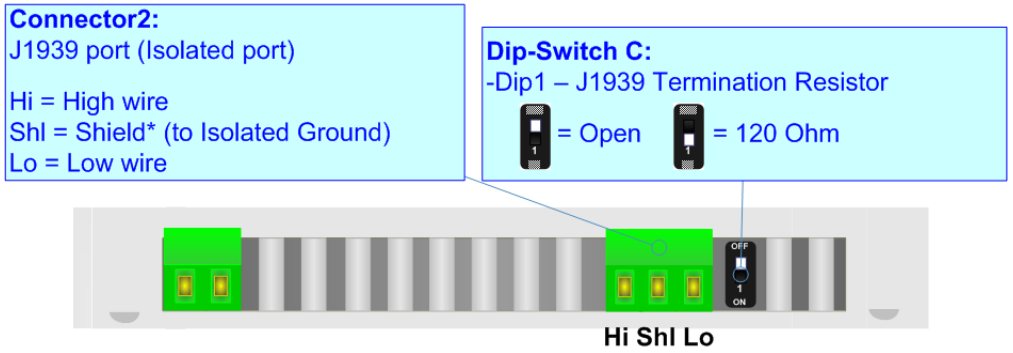
PROFINET:

The PROFINET connection must be made using Connector3 and/or Connector4 of HD67610-A1 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.



J1939:

For terminate the J1939 line with a 120Ω resistor it is necessary that the Dip1 of 'Dip-Switch C' is at ON position.



Cable characteristics:

DC parameter:		Impedance	70 Ohm/m
AC parameters:		Impedance	120 Ohm/m
		Delay	5 ns/m

Length		**Baud Rate [bps]**	**Length MAX [m]**
		10 K	5000
		20 K	2500
		50 K	1000
		100 K	650
		125 K	500
		250 K	250
		500 K	100
		800 K	50
		1000 K	25

USE OF COMPOSITOR SW67610:

To configure the Converter, use the available software that runs with Windows called SW67610. It is downloadable on the site www.adfweb.com 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 or 11; 32/64bit).

When launching the SW67610, the window below appears (Fig. 2).

Note:
It is necessary to have installed .Net Framework 4.

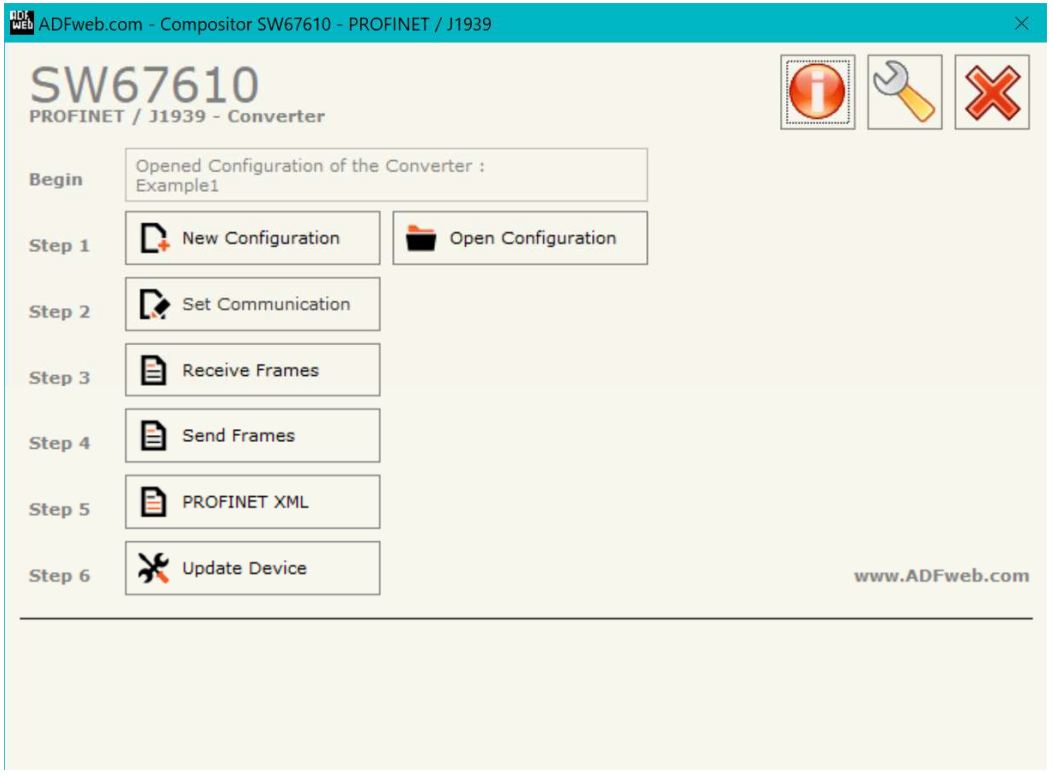
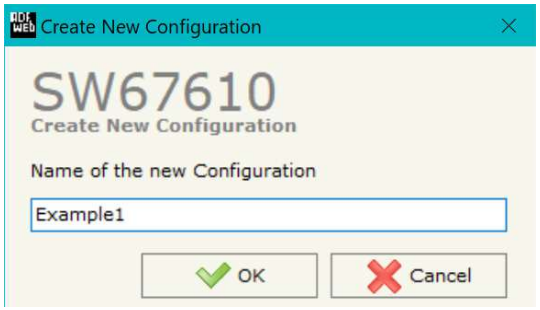


Figure 2: Main window for SW67610

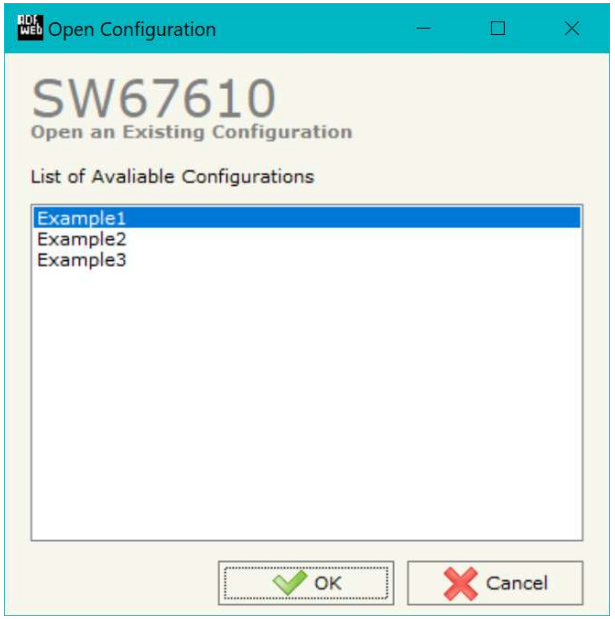
NEW CONFIGURATION / OPEN CONFIGURATION:

The "**New Configuration**" button creates the folder which contains the entire device's configuration.



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

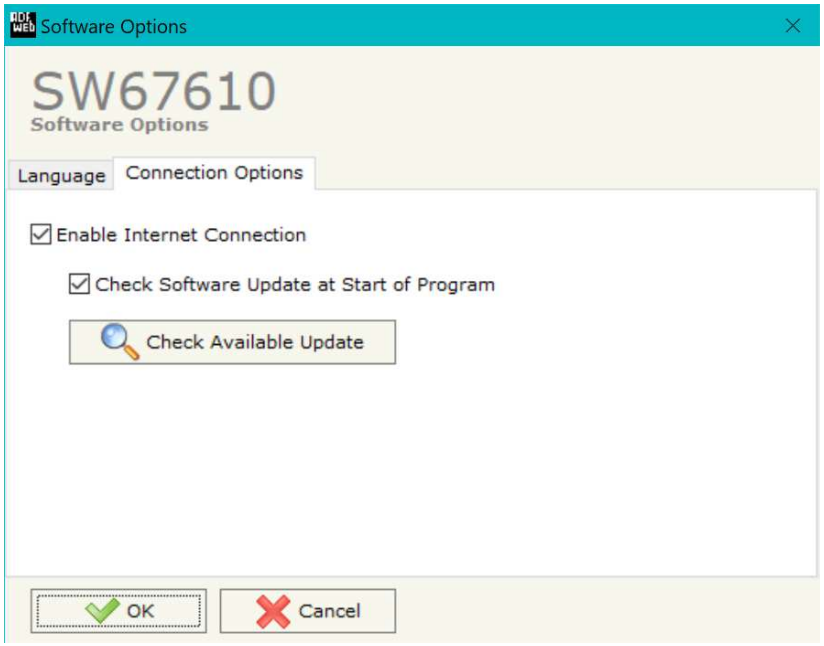
- To clone the configurations of a Programmable "PROFINET Slave / J1939 - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate 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 SW67610 check automatically if there are updatings when it is launched.

SET COMMUNICATION:

This section define the fundamental communication parameters of two buses, PROFINET and J1939.

By Pressing the "**Set Communication**" button from the main window for SW67610 (Fig. 2) the window "Set Communication" appears (Fig. 3).
The window is divided in two sections, one for the PROFINET and the other for the J1939.

The means of the fields for "PROFINET" are:

- In the fields "**IP ADDRESS**" insert the IP address that you want to give to the Converter;
- In the fields "**SUBNET Mask**" insert the SubNet Mask;
- In the fields "**GATEWAY**" insert the default gateway that you want to use. 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 "**PROFINET Name of Station**" is possible to assign a name to the PROFINET node.

The means of the fields for the "J1939" section are:

- In the "**Baudrate**" field the J1939 baudrate is defined;
- In the field "**TimeOut Data (s)**" insert a time; when this time is elapsed and the data isn't reliable, in the PROFINET data array you read "0". It is possible to use this function only for the "Receive Frames";
- If the field "**Enable Peer to Peer**" is checked, the gateway accepts all the ID that have the PGN inserted in the "Receive Frames" section.
- In the field "**Device ID**" the ID of J1939 side of the converter is defined;
- If the field "**Enable Not standard Cancel Data**" is checked, the reset value for the Timeout error is defined. If not enabled, the standard 0xFF (255) value is used.
- If the field "**Enable J1939 when PROFINET OK**" is checked, the J1939 communication will start only when the PROFINET side is connected.

Note:
The number of Input byte and Output byte of PROFINET is calculated automatically by the Compositor in relation of the J1939 frames defined.

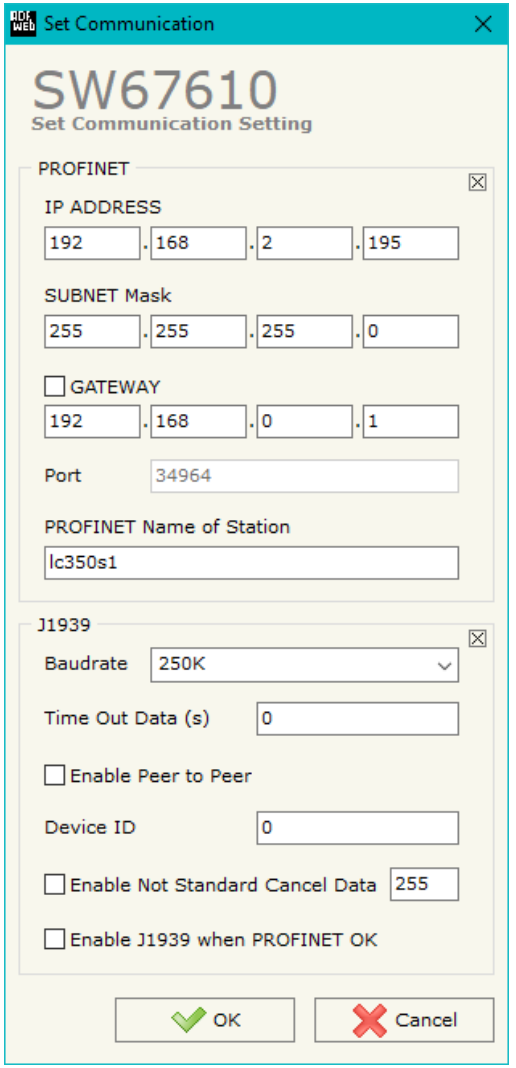


Figure 3: "Set Communication" window

RECEIVE FRAMES:

By pressing the "**Receive Frames**" button from the main window for SW67610 (Fig. 2) the "Receive J1939 Frames" window appears (Fig. 4). The J1939 frames inserted in this table contains the Output data of PROFINET. These frames are accepted by the gateway.

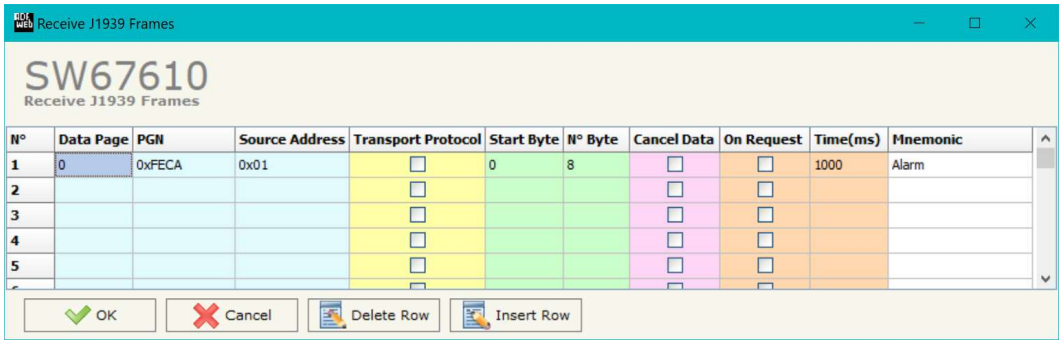


Figure 4: "Receive J1939 Frames" window

The data of the columns have the following meanings:

- In the field "**Data Page**" insert the Data Page, the value is 0 or 1 (usually is 0);
- In the field "**PGN**" insert the PGN of the data you would like to read from PROFINET to J1939 (it is an identifier);
- In the field "**Source Address**" insert the address of the device that sends the frame;
- If the field "**Transport Protocol**" is checked the frame use transport protocol functions;
- In the field "**Start Byte**" insert the byte which you would start read, this field is enable only when the field Transport Protocol is checked;
- In the field "**N° Byte**" insert the number of byte you would read, for example your start byte is 20 an N°byte is 10, you can read the byte from 20 to 30;
- If the field "**Cancel Data**" is checked, the data in the frame will be erased after the expiration of the "**TimeOut Data**" defined in "Set Communication" section;
- If the field "**On Request**" is checked, the converter will send the request for the selected PGN;
- In the field "**Time (ms)**" the delay between the J1939 requests is defined;
- In the field "**Mnemonic**" it is possible to insert a brief description.

SEND FRAMES:

By pressing the "**Send Frames**" button from the main window for SW67610 (Fig. 2) the "Transmit J1939 frames" window appears (Fig. 5). The J1939 frames inserted in this table contains the Input data of PROFINET. These frames are sent by the gateway.

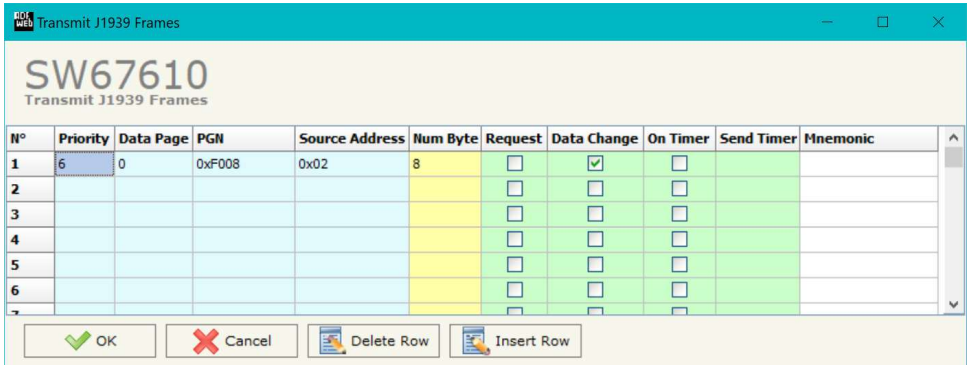


Figure 5: "Transmit J1939 Frames" window

The data of the columns have the following meanings:

- In the field "**Priority**" insert the priority of the Frame: in J1939 protocol it is a number among 0,1,2,3,4,5,6,7. The number "0" is the highest priority and "7" is the lowest;
- In the field "**Data Page**" insert the data page, the value is 0 or 1 (usually is 0);
- In the field "**PGN**" insert the PGN of the data you would like to write from PROFINET to J1939 (in J1939 protocol the PGN is an identifier);
- In the field "**Source Address**" insert the address of the device that sends the frame;
- In the field "**Num Byte**" the number of byte of the frame is defined, this field is enable only when the field Transport Protocol is checked;
- If the field "**Request**" is checked, the J1939 message is sent when a J1939 request is received;
- If the field "**Data Change**" is checked, the J1939 frame is sent when the data from PROFINET change;
- If the field "**On Timer**" is checked, the J1939 message is sent cyclically with the delay defined in the field "**Send Timer**";
- In the field "**Mnemonic**" it is possible to insert a brief description.

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 Dip1 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 Dip1 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.

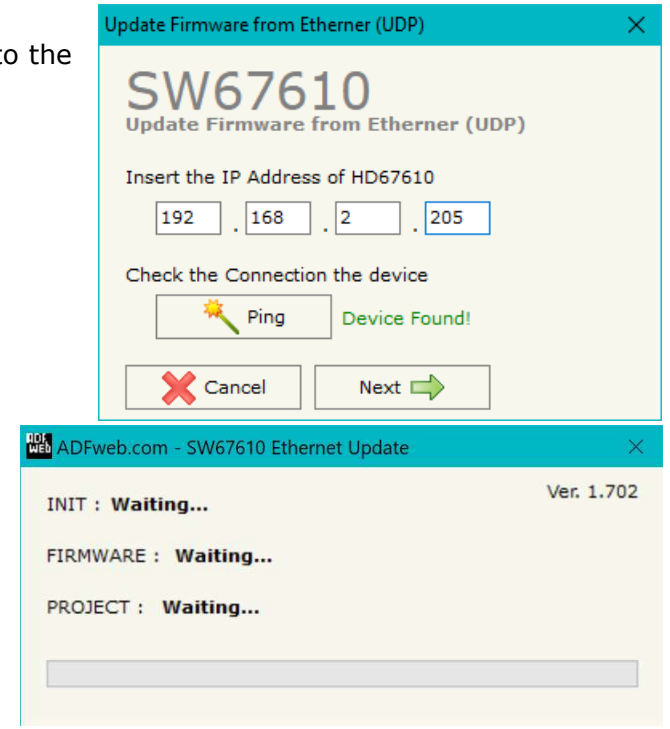


Figure 6: "Update device" windows

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67610 device.

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

- 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, 10 or 11 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, 10 or 11 you have to launch the "Command Prompt" with Administrator Rights;
- Pay attention at Firewall lock.

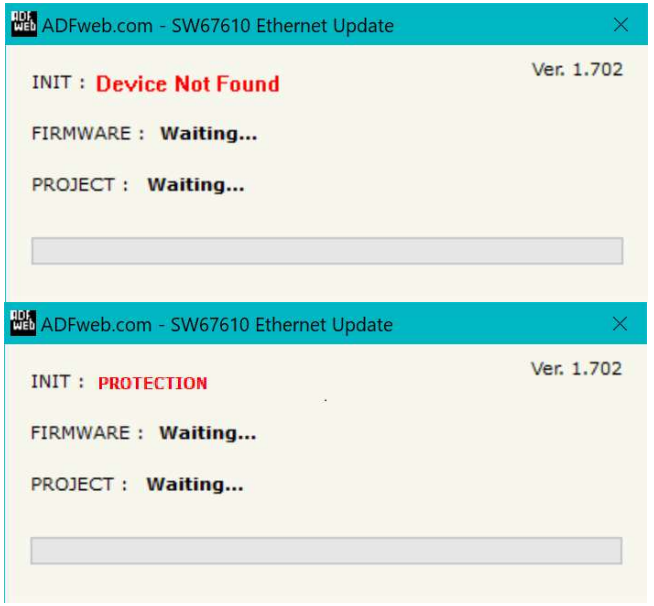


Figure 7: "Error" window

Warning:
In the case of HD67610 you have to use the software "SW67610": www.adfweb.com\download\filefold\SW67610.zip.

MECHANICAL DIMENSIONS:

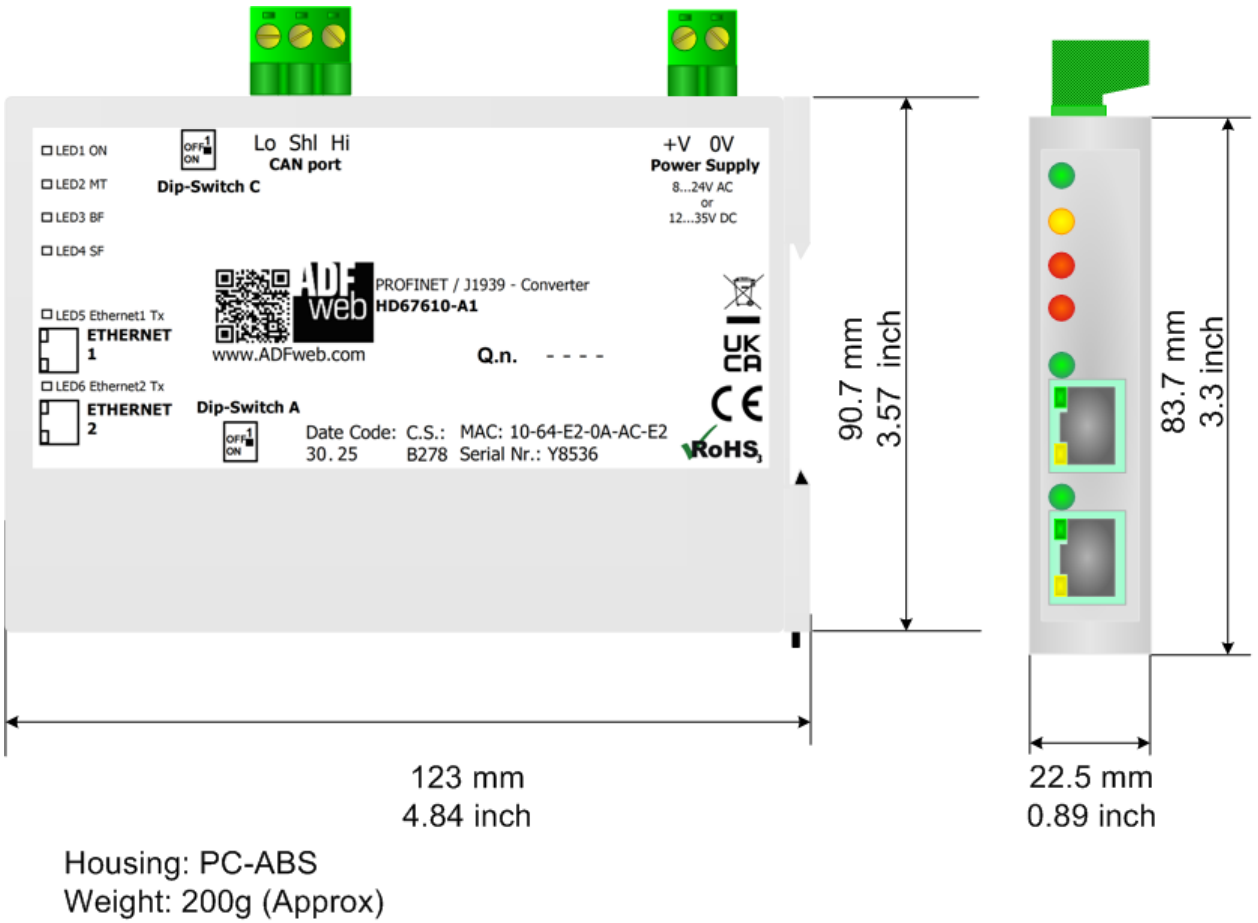


Figure 8: Mechanical dimensions scheme for HD67610-A1

ORDERING INFORMATIONS:

The ordering part number is formed by a valid combination of the following:

HD67610 – A 1

Connectors Type
1: Removable 5mm Screw Terminal

Enclosure Type
A: 1M, 35mm DIN Rail mounting

Device Family
HD67610: PROFINET / J1939 - Converter

Order Code: **HD67610-A1** **-** PROFINET / J1939 - Converter

ACCESSORIES:

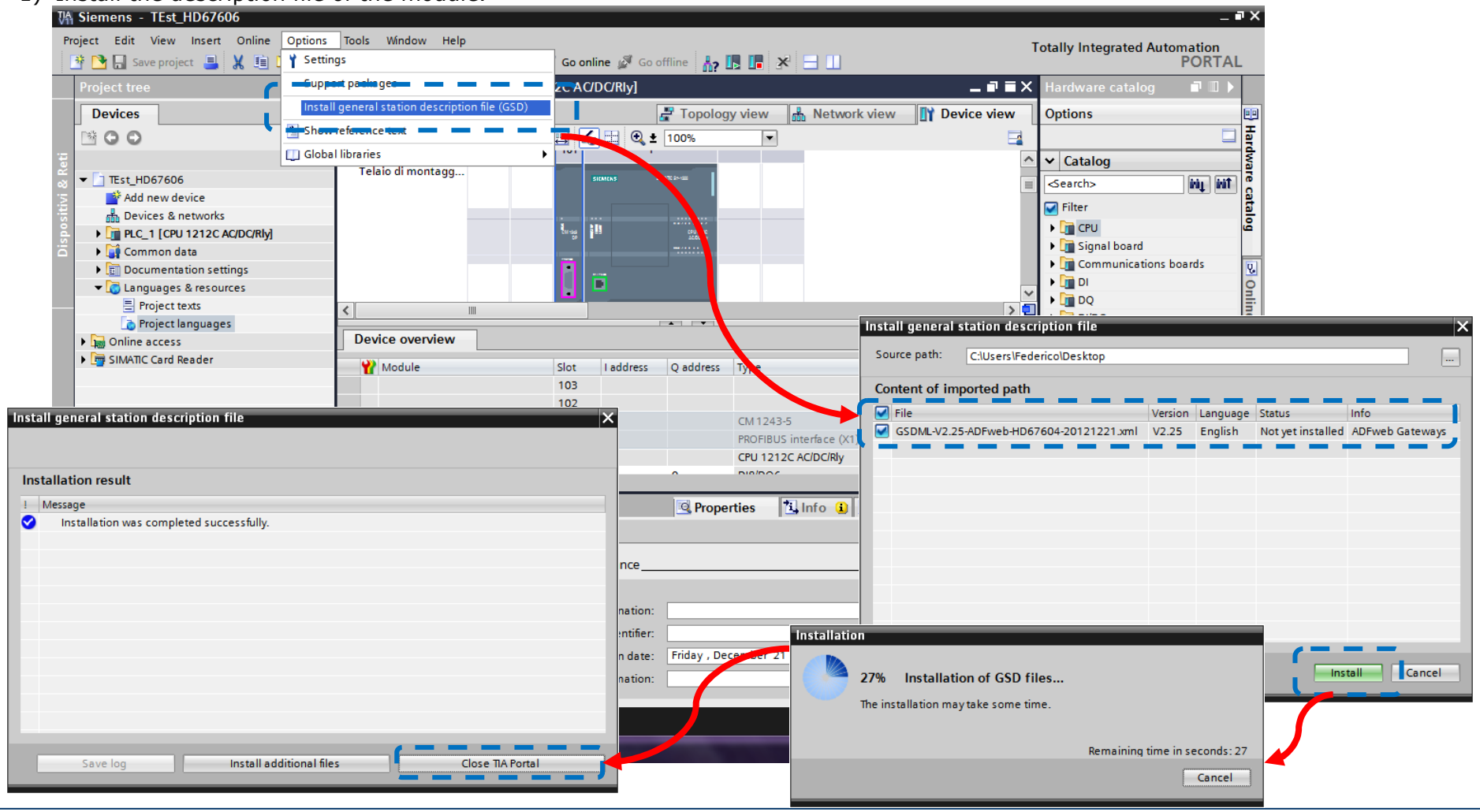
Order Code: **AC34011** **-** 35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V DC

Order Code: **AC34012** **-** 35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 24 V DC

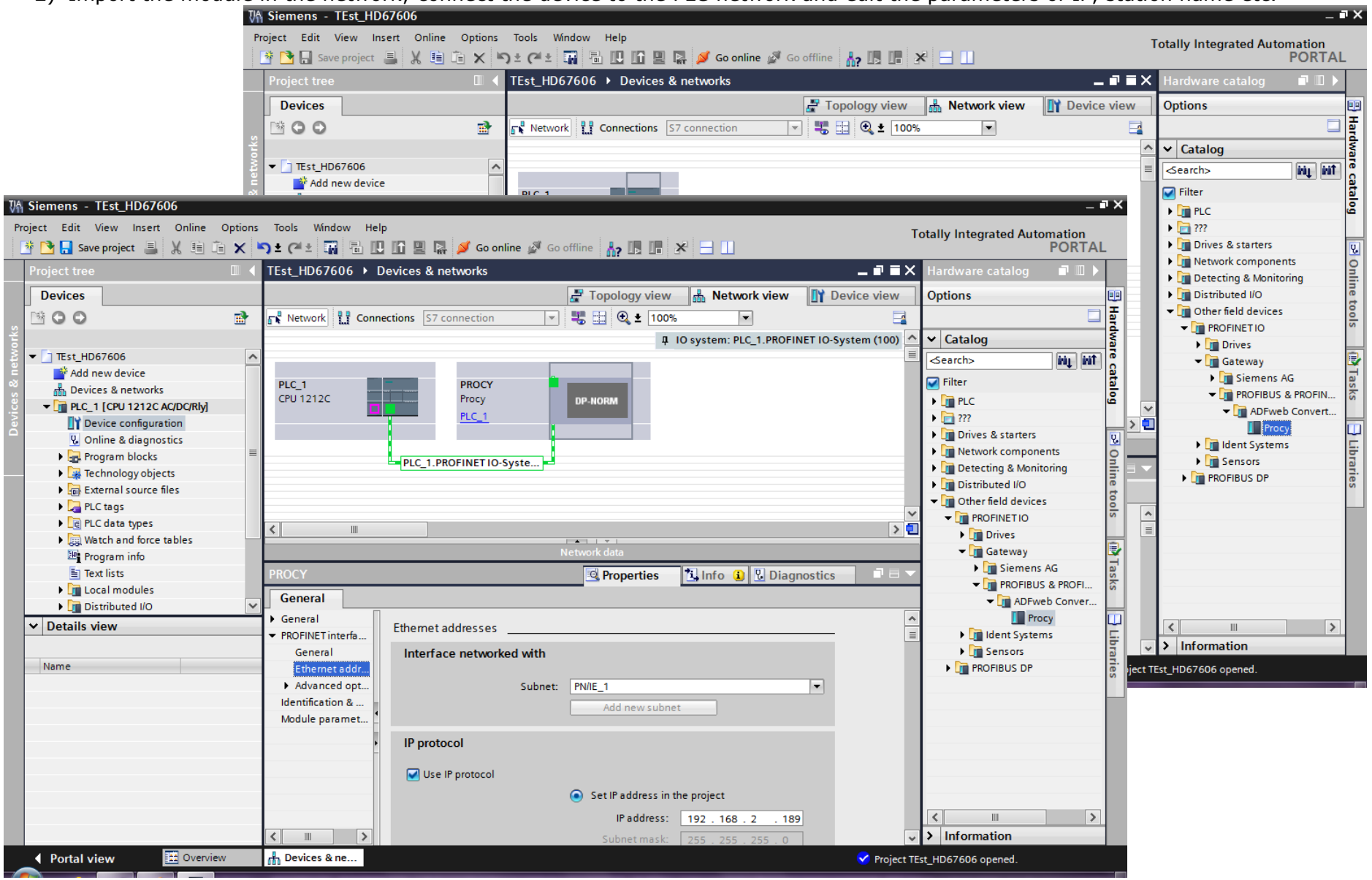
PLC CONFIGURATION:

The configuration and commissioning of the PROFINET Converter as described on the following pages was accomplished with the help of the TIA Portal V11-software of Siemens. In case of using a control system from another supplier please attend to the associated documentation. These are the steps to follow:

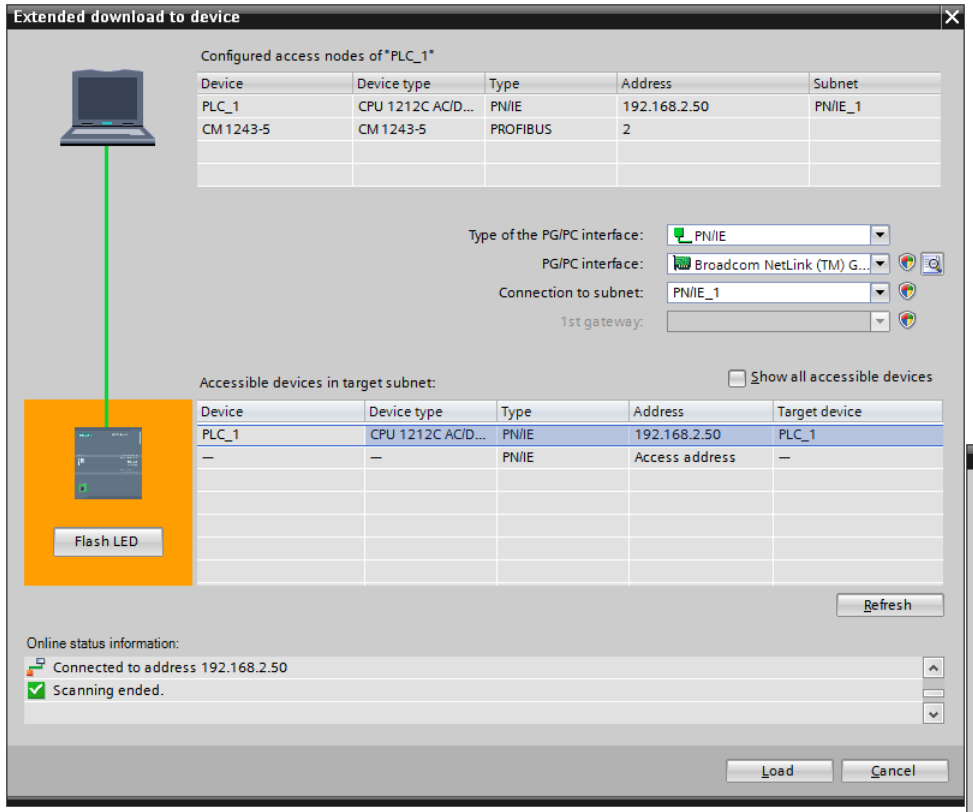
1) Install the description file of the module.

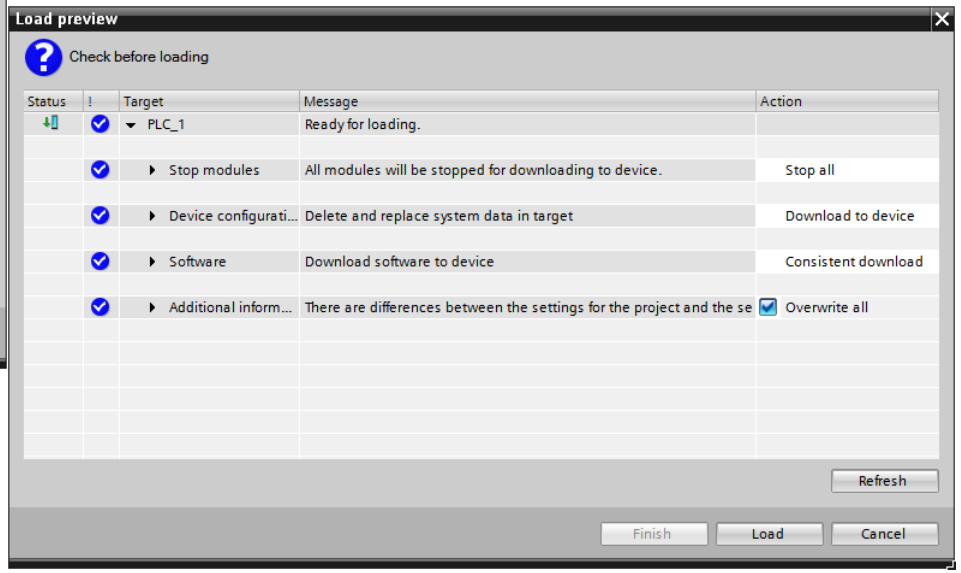


2) Import the module in the network; connect the device to the PLC network and edit the parameters of IP, station name etc.



3) Load the configuration into the PLC.





DISCLAIMER

All technical content within this document can be modified without notice. The content of the document content is a recurring audit.
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. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com 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 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.

WARRANTIES AND TECHNICAL SUPPORT:

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at www.adfweb.com.
Otherwise contact us at the address support@adfweb.com

RETURN POLICY:

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

1) Obtain a Product Return Number (PRN) from our internet support at www.adfweb.com. Together with the request, you need to provide detailed information about the problem.
2) Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks. If the product is no longer under warranty, you will receive a repair estimate.

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