![ADFweb logo]
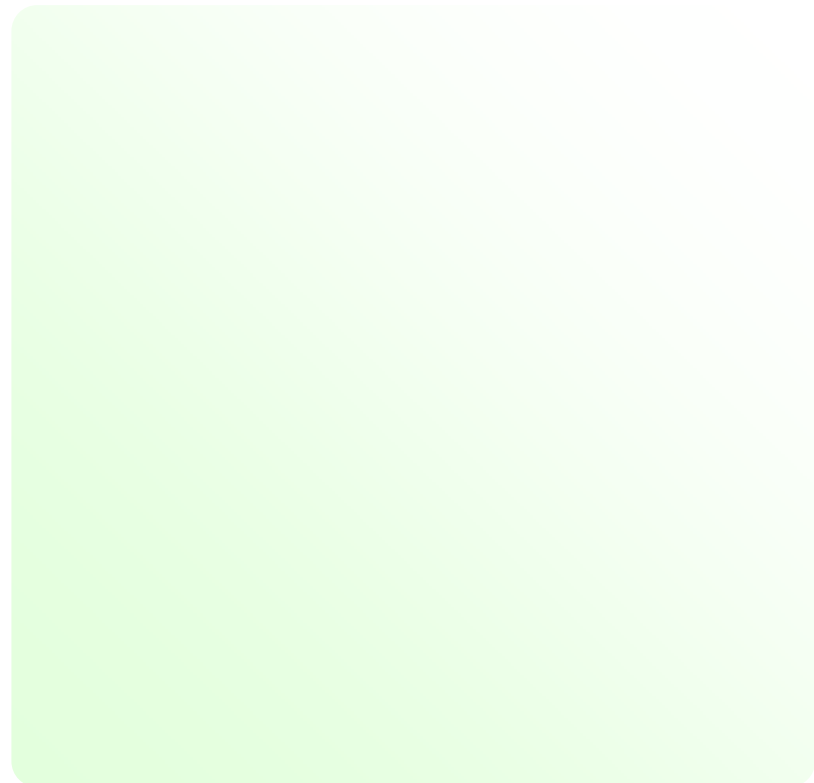**Industrial Electronic Devices**

User Manual
Revision 1.001
English

PROFINET / PROFIBUS Master - Converter
(Order Code: HD67604-A1)

Benefits and Main Features:

Very easy to configure

PROFIBUS up to 6Mbps

Two PROFINET ports

Industrial temperature range:
-40°C / +85°C (-40°F / +185°F)

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.

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To obtain the updated documentation for the product that you own, note the "Document Code" (Abbreviated written "Doc. Code" on the label on the product) and download the updated from our web site www.adfweb.com/download/

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.000	26/07/2012	Fl	All	First release version
1.001	09/01/2013	Nt	All	Added new chapters

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Industrial Electronic Devices

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   or give us a call if you need it.

EXAMPLE OF CONNECTION:
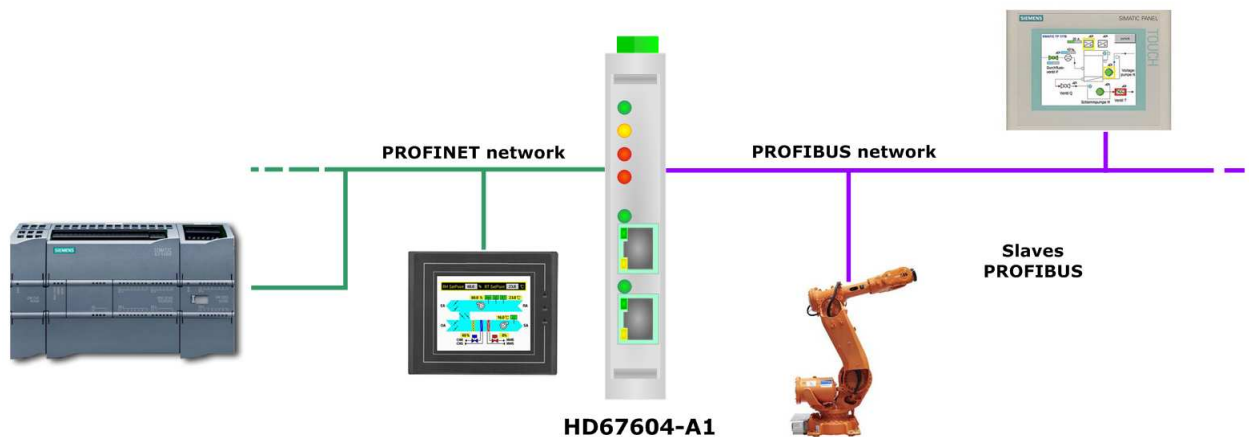
Used with only one PROFINET connection.

Used like switch, it allows to connect a second device to the network, without using an external switch; or to connect the device to an Access Point for connect them to a Wireless network (also internet).
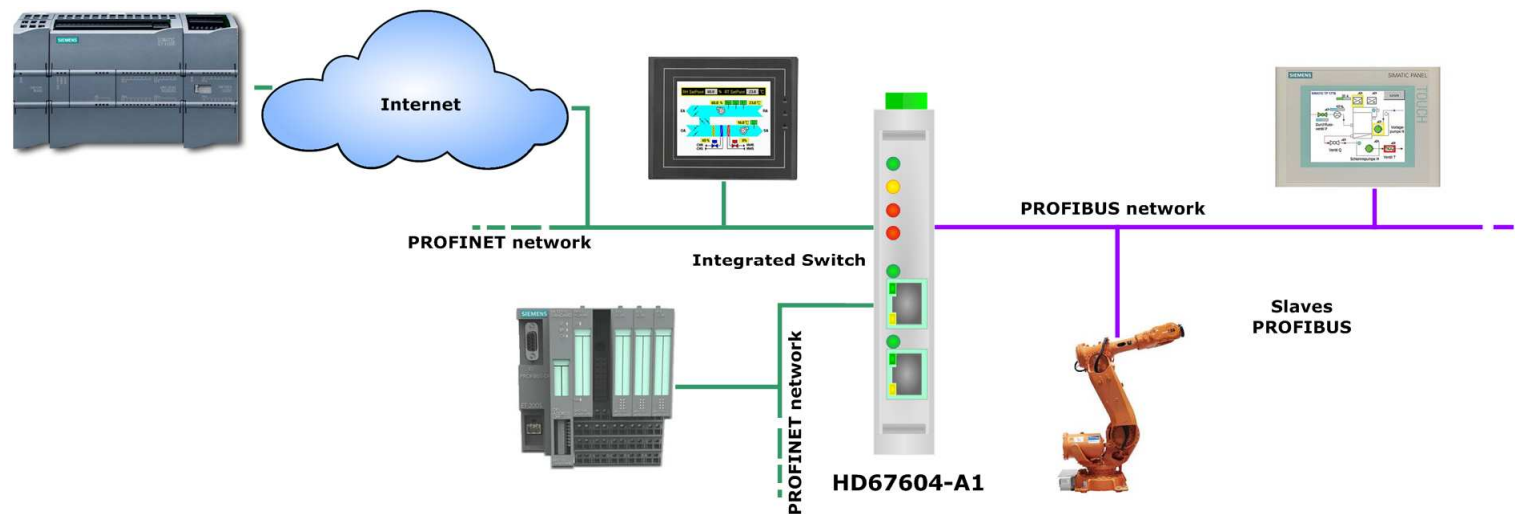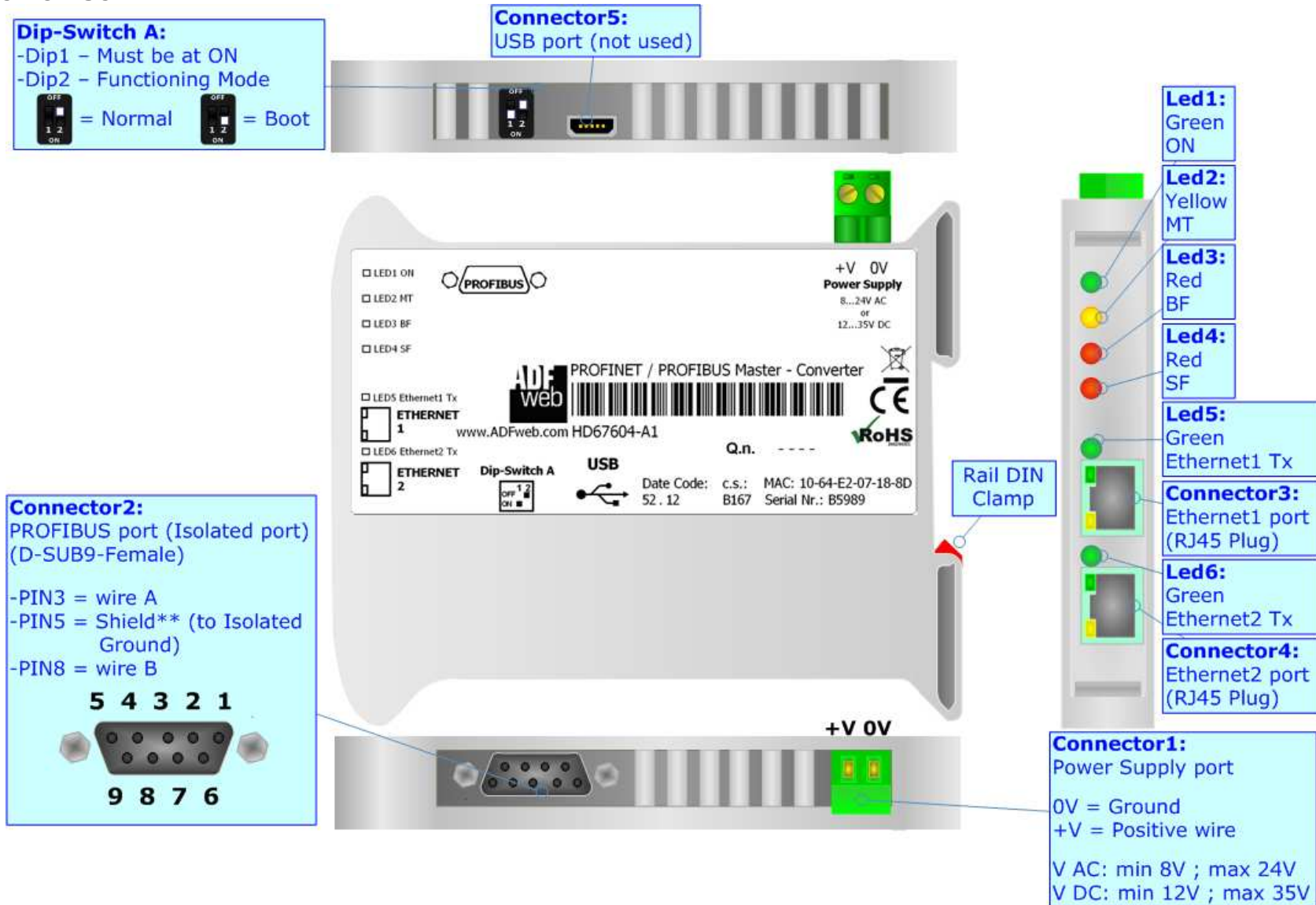
CONNECTION SCHEME:

Dip-Switch A:
-Dip1 – Must be at ON
-Dip2 – Functioning Mode
= Normal   = Boot

Connector5:
USB port (not used)

Led1:
Green
ON

Led2:
Yellow
MT

Led3:
Red
BF

Led4:
Red
SF

Led5:
Green
Ethernet1 Tx

Connector3:
Ethernet1 port
(RJ45 Plug)

Led6:
Green
Ethernet2 Tx

Connector4:
Ethernet2 port
(RJ45 Plug)

Connector2:
PROFIBUS port (Isolated port)
(D-SUB9-Female)

-PIN3 = wire A
-PIN5 = Shield** (to Isolated Ground)
-PIN8 = wire B

5 4 3 2 1

9 8 7 6

Rail DIN Clamp

Connector1:
Power Supply port

0V = Ground
+V = Positive wire

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

□ LED1 ON
□ LED2 MT
□ LED3 BF
□ LED4 SF
□ LED5 Ethernet1 Tx
□ LED6 Ethernet2 Tx

ETHERNET 1
ETHERNET 2
Dip-Switch A
USB

PROFIBUS

+V 0V
Power Supply
8...24V AC
or
12...35V DC

PROFINET / PROFIBUS Master - Converter
www.ADFweb.com HD67604-A1

Q.n. - - - -

Date Code: c.s.: MAC: 10-64-E2-07-18-8D
52 . 12 B167 Serial Nr.: B5989

+V 0V

Figure 1: Connection scheme for HD67604-A1

Industrial Electronic Devices

CHARACTERISTICS:

The configurable "PROFINET / PROFIBUS Master - Converter" allows the following characteristics:

- Triple isolation between PROFINET/PROFIBUS, PROFINET/Power Supply, PROFIBUS/Power Supply.
- Mountable on 35mm Rail DIN;
- Power Supply 8...24V AC or 12...35V DC;
- Temperature range -40°C to +85°C;
- Up to 1500 bytes from PROFINET to PROFIBUS (IN);
- Up to 1500 bytes from PROFIBUS (OUT) to PROFINET;
- Ethernet switch for enter/exit connection.

CONFIGURATION:

You need Compositor SW67604 software on your PC in order to perform the following:

- Define the parameter of the PROFIBUS;
- Define the parameter of the PROFINET;
- Define the PROFIBUS network.

POWER SUPPLY:

The devices can be powered between a wide range of tensions. For more details see the two tables below.
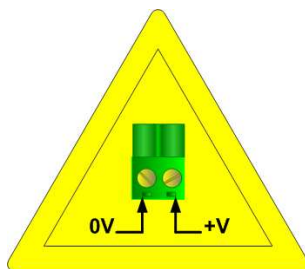
	VAC		VDC	
	Vmin	Vmax	Vmin	Vmax
HD67604-A1	**8V**	**24V**	**12V**	**35V**

Consumption at 24V DC:

Device	W/VA
HD67604-A1	4

⚠️ **Caution: Not reverse the polarity power**

HD67604-A1

Connector1:
Power Supply port

0V = Ground
+V = Positive wire

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

0V +V

FUNCTION MODES:

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

- 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 for working even if the Ethernet cable isn't 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.

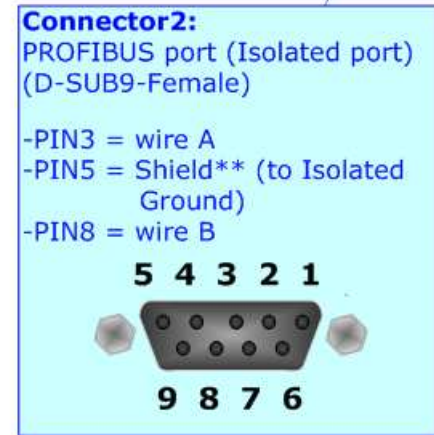| LED	Normal Mode	Boot Mode
1: ON [supply voltage] (green)	**ON:** Device powered **OFF:** Device not powered	**ON:** Device powered **OFF:** Device not powered
2: MT [maintenance display] (yellow)	**ON:** Device not able to communicate with at least one PROFIBUS Slave **OFF:** No maintenance are present	**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 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
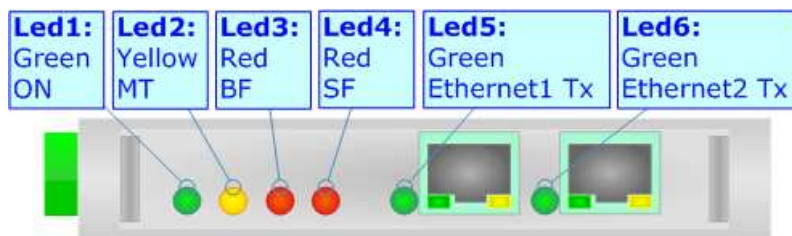
PROFIBUS:

The PROFIBUS uses a 9-pin D-SUB connector. The pin assignment is defined like in the right figure.

Here some codes of cables:

- Belden: p/n 183079A - Continuous Armor DataBus® ISA/SP-50 PROFIBUS Cable.

Connector2:
PROFIBUS port (Isolated port)
(D-SUB9-Female)

-PIN3 = wire A
-PIN5 = Shield** (to Isolated Ground)
-PIN8 = wire B

5 4 3 2 1

9 8 7 6

PROFINET:

The PROFINET connection must be made using Connector3 and/or Connector4 of HD67604-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.

Connector3:
Ethernet1 port
(RJ45 Plug)

Connector4:
Ethernet2 port
(RJ45 Plug)
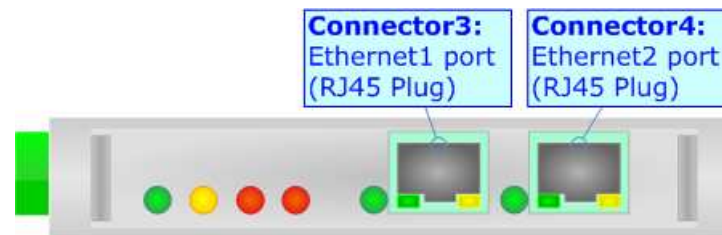
USB:

The USB connection, must be made with a USB cable with a USB Mini B plug.

Note:
    The USB port is not used in this moment.

USE OF CONFIGURATOR SW67604:

To configure the Converter, use the available software that runs with Windows, called SW67604. 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 (MS 2000, XP, Vista, Seven, 8; 32/64bit).

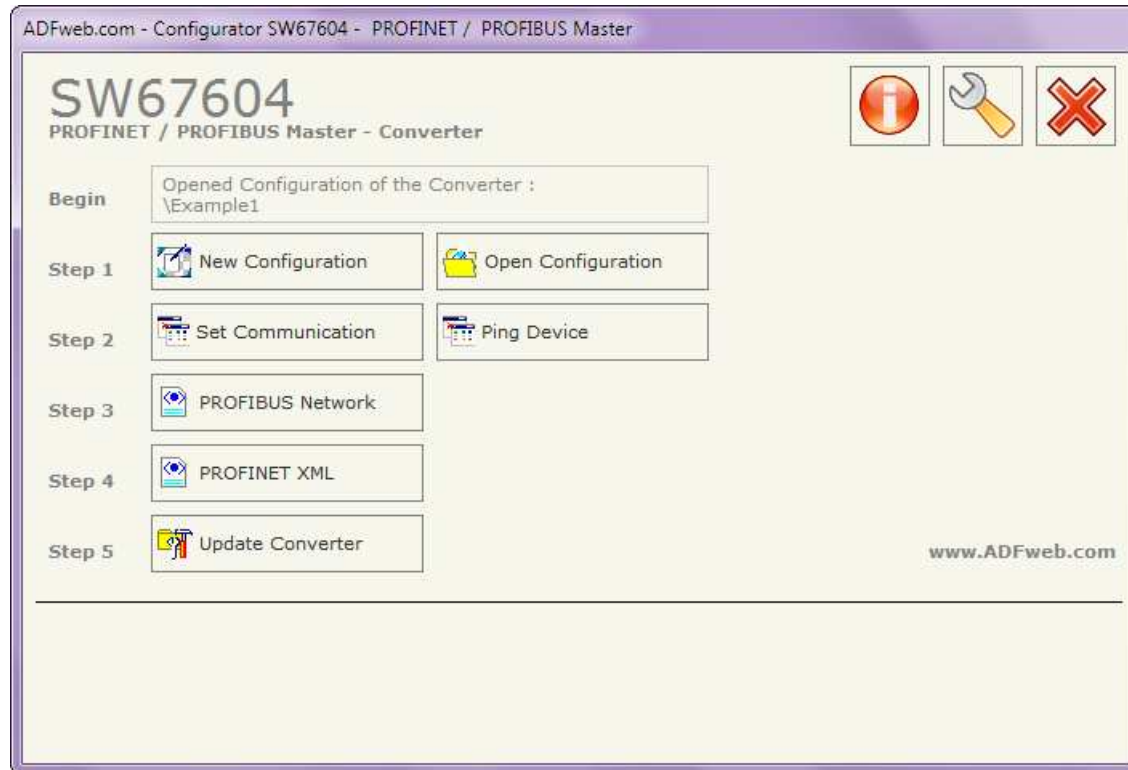When launching the SW67604 this window appears (Fig. 2).

Figure 2: Main window for SW67604

NEW CONFIGURATION / OPEN CONFIGURATION:

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

A device configuration can also be imported or exported:

- ➧ To clone the configurations of a programmable "PROFINET / PROFIBUS 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**".

SET COMMUNICATION:

This section defines the fundamental communication parameter of two buses, PROFIBUS and PROFINET.

By pressing the "**Set Communication**" button from the main window for SW67604 (Fig. 2) the window "SET COMMUNICATION" appears (Fig. 3).

The window is divided in two sections, one for the PROFIBUS and the other for the PROFINET.

The means of the fields for "PROFIBUS" are:

- In the field "**ID Dev.**" the address of the PROFIBUS side is defined;
- In the field "**Baud rate**" the baud rate for the PROFIBUS side is defined;

The means of the fields for "PROFINET" are:

- In the fields "**IP**" 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.

Figure 3: "Set Communication" window

PROFIBUS NETWORK:

By pressing the "**PROFIBUS Network**" button from the main window for SW67604 (Fig. 2) the window "PROFIBUS Network Management" (Fig. 4) appears.

In this window is possible to:

- Modify the PROFIBUS Master Options ("**Master PROFIBUS Options**");
- Add a PROFIBUS Slave in the Network of the Master ("**Add Slave PROFIBUS**");
- Modify a PROFIBUS Slave in the Network ("**Modify Slave PROFIBUS**");
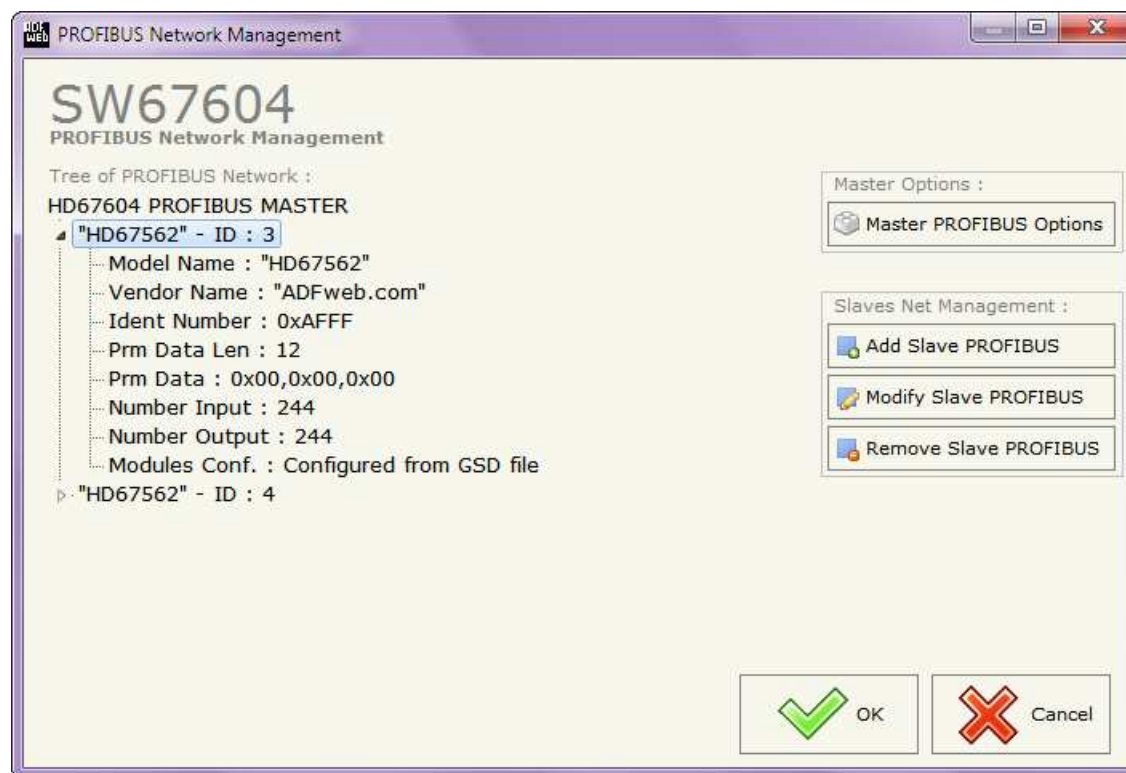- Remove a PROFIBUS Slave from the Network ("**Remove Slave PROFIBUS**").

Figure 4: "PROFIBUS Network" window

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MASTER PROFIBUS OPTIONS:

By pressing the "**Master PROFIBUS Options**" button from the "PROFIBUS Network" window (Fig. 4) the "PROFIBUS Master Options" window appears (Fig. 5).

In this window is possible to set the WatchDog Time for the PROFIBUS Slaves.

Figure 5: "PROFIBUS Master Options" window

Note:
  Fact1 and Fact2 could be write in decimal o hexadecimal (with prefix "0x" or "$") and the values must between 1 and 255

Warning:
The WatchDog time must be between 200 and 650250 milliseconds.

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PROFIBUS DEVICE:

By pressing the "**Add Slave PROFIBUS**" and "**Modify Slave PROFIBUS**" button (or double click above an existent PROFIBUS Slave) from the "PROFIBUS Network" window (Fig. 4) the "PROFIBUS Device" window appears (Fig. 6).

In this window is possible to:

- Set the PROFIBUS Slave ID ("**ID Slave PROFIBUS**");
- Select the Modules present in the PROFIBUS Slave from the Available Modules in GSD file ("**Module Selection**");
- Modify the User Parameters (if present) of the PROFIBUS device ("**User Parameters**");
- Modify the Parameters (if present) of the Module Selected ("**Module Parameters**");
- Watch Features and Baudrate supported from the PROFIBUS device ("**Capabilities**");
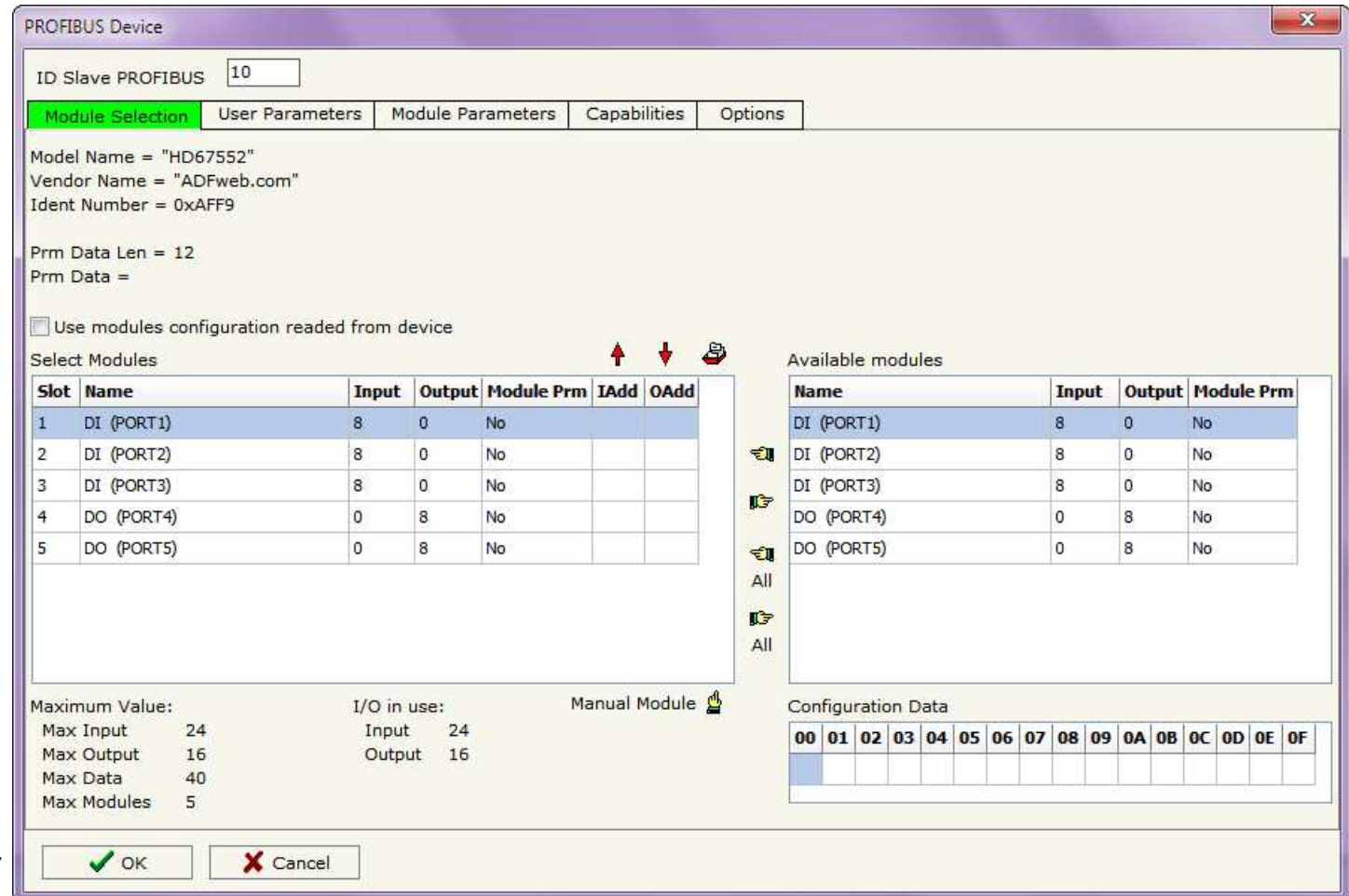- Select the Sync, Freeze and Reset of Data Options ("**Options**").

Figure 6: "PROFIBUS Device" window

Figure 6: "PROFIBUS Device" window

MODULE SELECTION:

The section "Module Selection" is used to select which Modules are present in the Slave (Fig. 7).

In this section is possible to:

➔ Check the list of the Modules selected ("Select Modules") (Fig. 7, point (1)) and the list of Modules Available in GSD file ("Available Modules") (Fig. 7, point (7));

➔ Add a Module from the list of GSD file (Fig. 7, point (6));

➔ Remove a Module from selected list (Fig. 7, point (5));

➔ Add all Modules present in the GSD file (Fig. 7, point (4));

➔ Remove all Modules from selected list (Fig. 7, point (3));

➔ Insert a Module not present in the GSD file ("**Manual Module**") (Fig. 7 point (2)). For more info see the section "Manual Module" below;

➔ Enable the read of configuration directly from the PROFIBUS Slave ("**Use module configuration readed from device**") (Fig 7, point (8)). If this option is enable the configuration of the modules is discorded and the device read the correct configuration directly to the PROFIBUS slave.
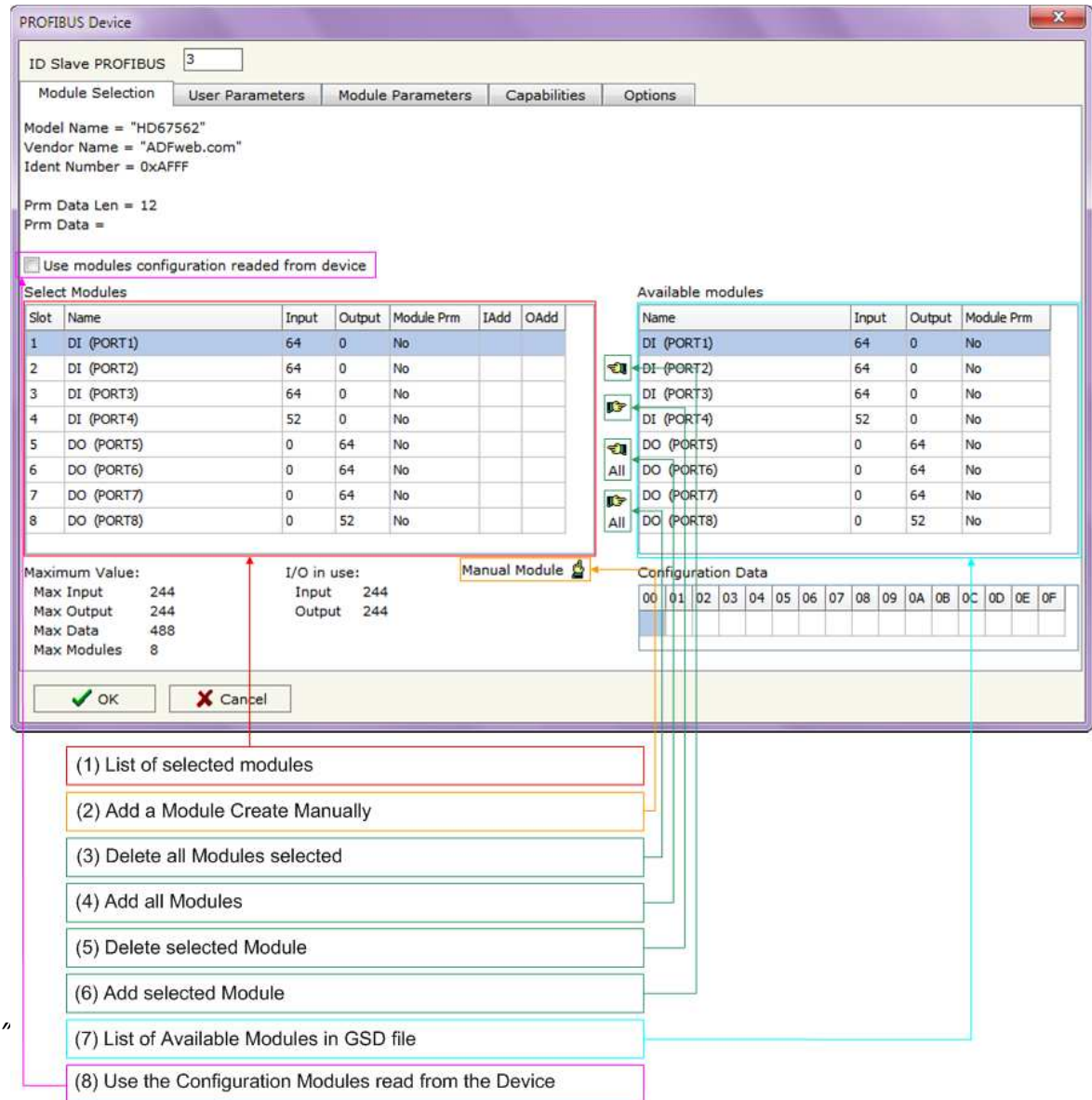
Figure 7: "PROFIBUS Device – Module Selection" window

PROFIBUS Device

ID Slave PROFIBUS 3

| Module Selection | User Parameters | Module Parameters | Capabilities | Options |

Model Name = "HD67562"
Vendor Name = "ADFweb.com"
Ident Number = 0xAFFF

Prm Data Len = 12
Prm Data =

☐ Use modules configuration readed from device

Select Modules

Slot	Name	Input	Output	Module Prm	IAdd	OAdd
1	DI (PORT1)	64	0	No		
2	DI (PORT2)	64	0	No		
3	DI (PORT3)	64	0	No		
4	DI (PORT4)	52	0	No		
5	DO (PORT5)	0	64	No		
6	DO (PORT6)	0	64	No		
7	DO (PORT7)	0	64	No		
8	DO (PORT8)	0	52	No		

Available modules

Name	Input	Output	Module Prm
DI (PORT1)	64	0	No
DI (PORT2)	64	0	No
DI (PORT3)	64	0	No
DI (PORT4)	52	0	No
DO (PORT5)	0	64	No
DO (PORT6)	0	64	No
DO (PORT7)	0	64	No
DO (PORT8)	0	52	No

Maximum Value:
Max Input   244
Max Output   244
Max Data   488
Max Modules 8

I/O in use:
Input   244
Output   244

Manual Module

Configuration Data

00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F

✔ OK   ✗ Cancel

(1) List of selected modules

(2) Add a Module Create Manually

(3) Delete all Modules selected

(4) Add all Modules

(5) Delete selected Module

(6) Add selected Module

(7) List of Available Modules in GSD file

(8) Use the Configuration Modules read from the Device

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By pressing the "**Manual Module**" button from the "PROFIBUS Device" window (Fig. 6) the "Add Module Manually" window appears (Fig. 8).

In this window is possible to add a Module manually, i.e. writing the configuration of the module (in hexadecimal).

The means of the fields are:

➤ In the field "**Description of Module**" a name of the Module is defined;
➤ In the field "**Insert the Configuration of Module (HEX)**" the configuration of the module is defined. The configuration must be write in hexadecimal mode (without prefix "0x" o "$").

To modify a Module inserted manually, is neccessary to do a double click on the module to change in the "Select Module" list (Fig. 7, point (1)). It is possible to change only the module inserted manually.

Note:
    The Values inserted in the table must between 00 and FF
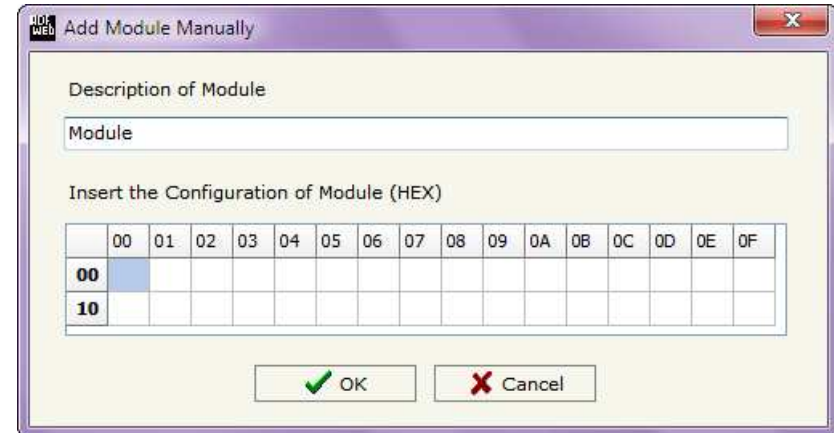
Figure 8: "Add/Modify Module Manually" window

USER PARAMETERS:

The section "User Parameters" is used to modify the parameters of the PROFIBUS slave (Fig. 9).

In this section there are:

→ The List of all Parameters available for the PROFIBUS device ("User Parameters") (Fig. 9, point (1));

→ The Configuration of all parameters in RAW ("Parameters in RAW (Hex)") (Fig. 9, point(2));

→ The "**Use Parameter Inserted Manually**", enable this option is possible to insert manually the parameters of Device and also of the Modules. Using the "**Modify User Parameters Manually**" button is possible to insert/modify the parametrization of the device (and/or modules). For more info see below. (Fig. 9, point(3));

→ The admited value for the selected parameter. It is possible to select the value desired and confirm it with the "**Apply**" button. If no value appears in this table, the "Min Value" and "Max Value" are the limit of the parameter. (Fig. 9, point(4));

→ The "**Apply**" button is used to confirm the new value of the parameter, the "**Default**" button is used to load the factory value for the parameter. In "**New Value**" edit box it is possible to set the new value. (Fig. 9, point(5)).
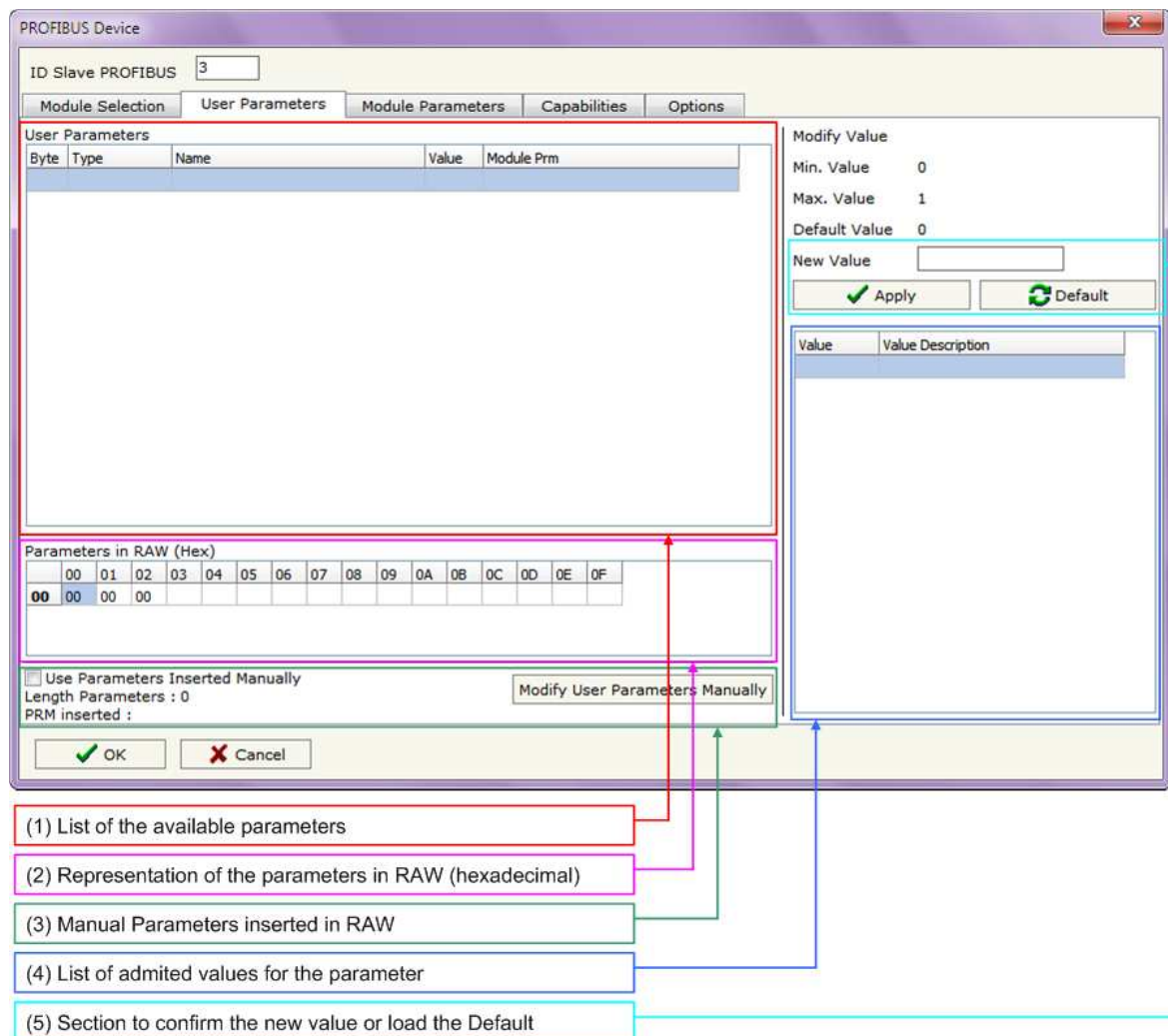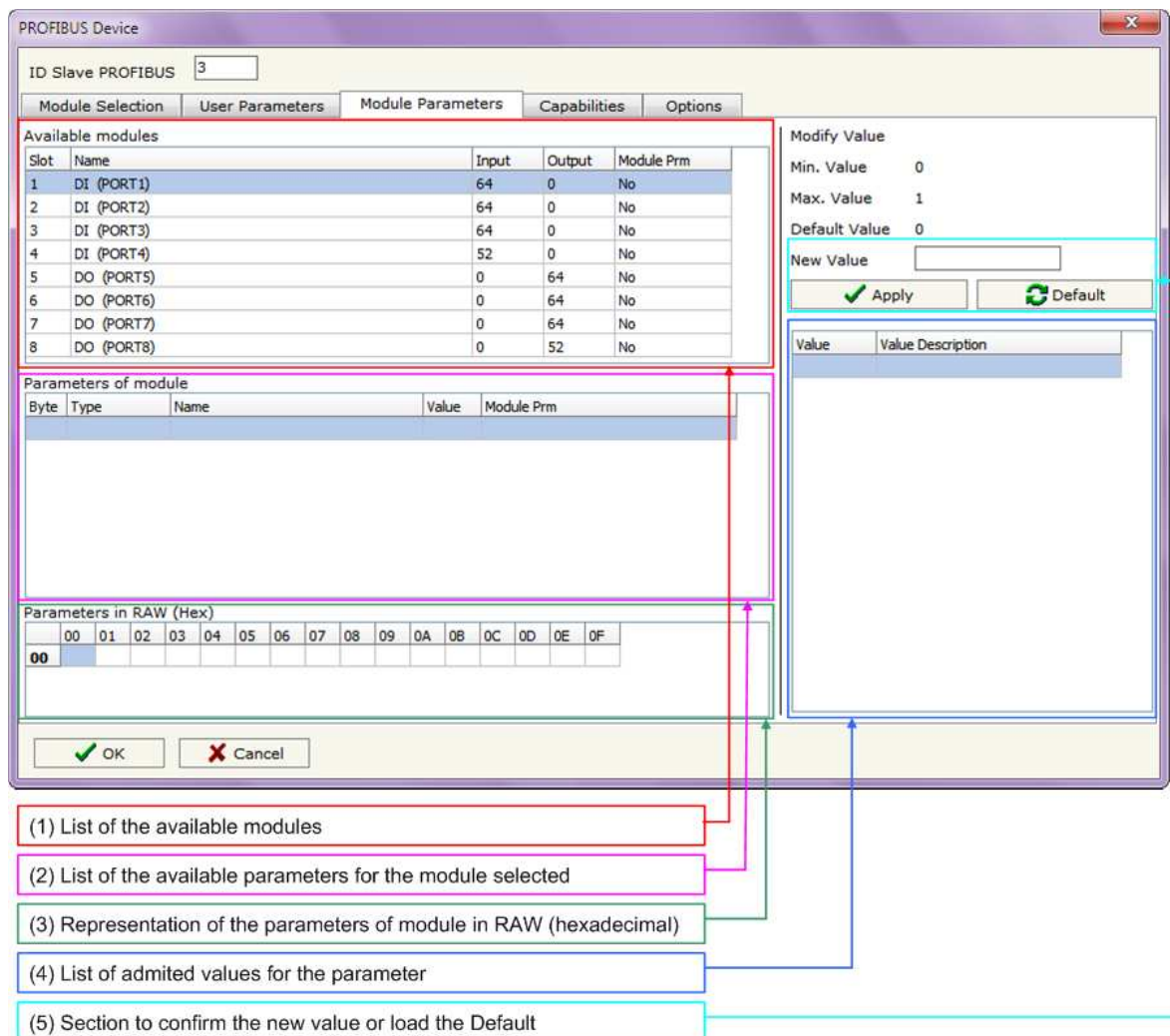

Figure 9: "PROFIBUS Device – User Parameters" window

By pressing the "**Modify User Parameters Manually**" button from the "PROFIBUS Device" window (Fig. 6) the "Add Module Manually" window appears (Fig. 10).

In this window is possible to add/modify the User and/or Modules Parameters manually, i.e. writing the configuration of the parameters (in hexadecimal).

The means of the fields are:

- In the field "**Insert the number of User Parameter**" the number of byte for the parameter have to be inserted;
- In the field "**Insert the Configuration of Module (HEX)**" the configuration of the User and/or Modules Parameters is defined. The configuration must be write in hexadecimal mode (without prefix "0x" o "$").

Note:
The Values inserted in the table must between 00 and FF
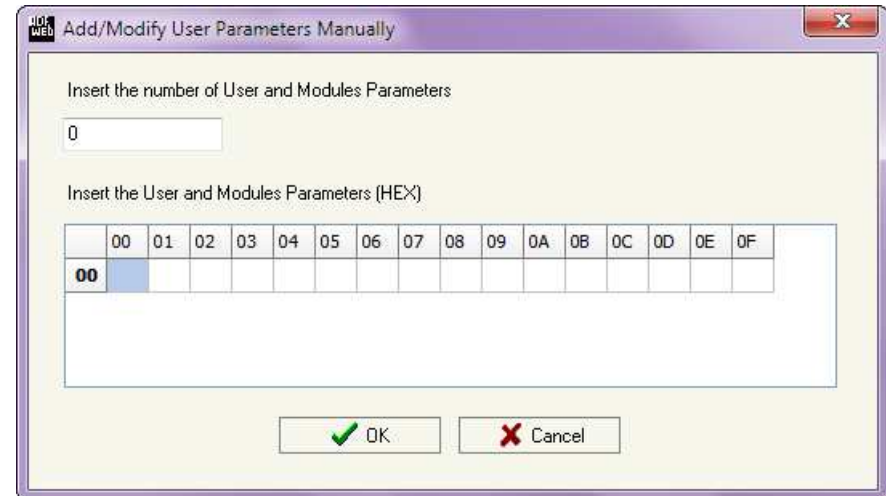
Figure 10: "Add/Modify User Parameters Manually" window

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MODULE PARAMETERS:

The section "Module Parameters" is used to modify the parameters of the Modules (Fig. 11).

In this section there are:

+ The List of all Module selected in the GSD file ("Available modules") (Fig. 11, point (1));

+ The List of all Parameters available for the Module selected ("Parameters of module") (Fig. 11, point (2));

+ The Configuration of all parameters in RAW for the Module selected ("Parameters in RAW (Hex)") (Fig. 11, point(3));

+ The admited value for the selected parameter. It is possible to select the value desired and confirm it with the "**Apply**" button. If no value appears in this table, the "Min Value" and "Max Value" are the limit of the parameter. (Fig. 11, point(4));

+ The "**Apply**" button is used to confirm the new value of the parameter, the "**Default**" button is used to load the factory value for the parameter. In "**New Value**" edit box it is possible to set the new value. (Fig. 11, point(5));

Figure 11: "PROFIBUS Device – Module Parameters" window

CAPABILITIES:

The section "Capabilities" is used only to show which features/baudrates available in the PROFIBUS device. The Green Icon indicate that capability/baudrate is available, the Red Icon indicate no compatibilities with that capability/baudrate (Fig. 12).
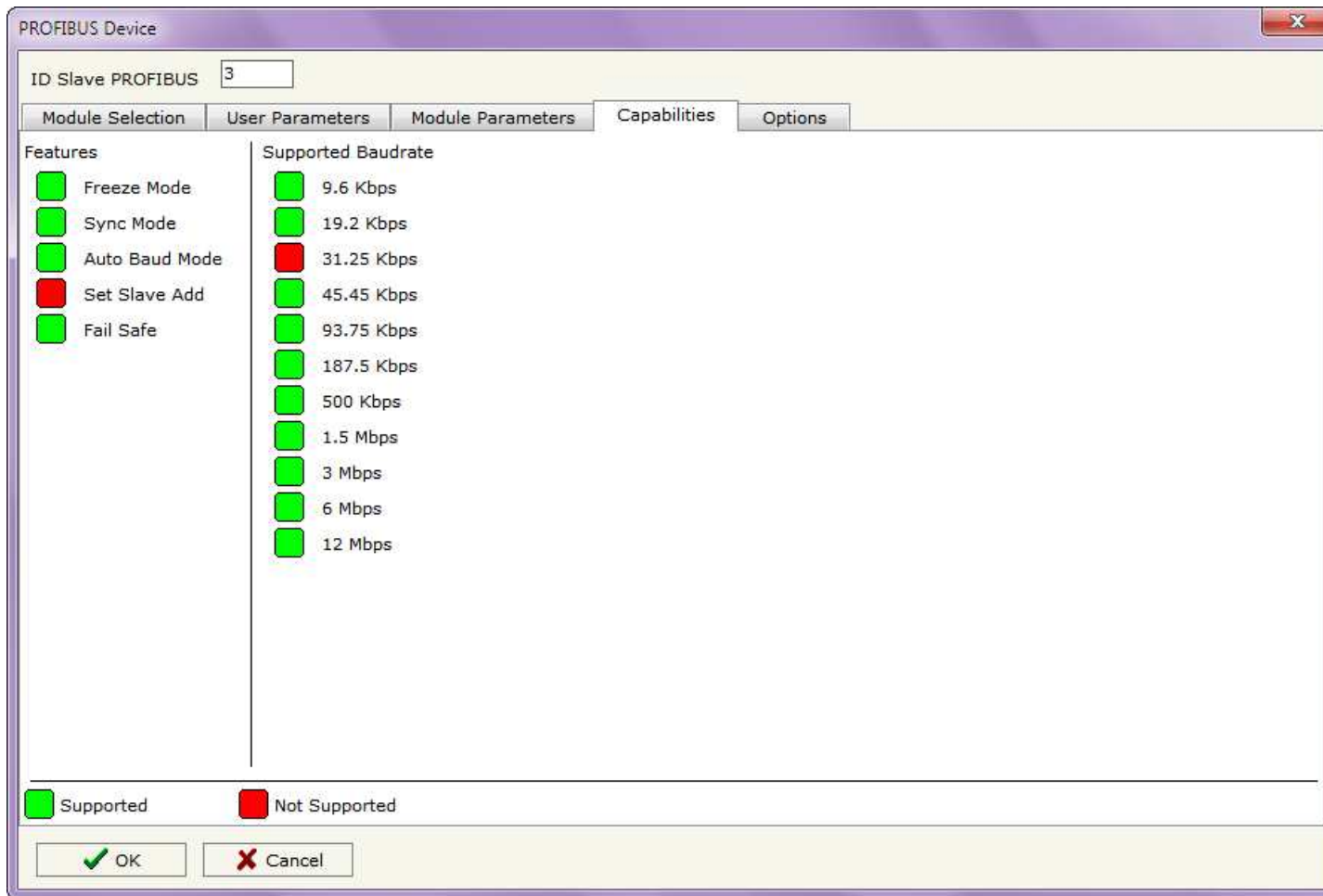
Figure 12: "PROFIBUS Device – Capabilities" window

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OPTIONS:

The section "Options" is used to enable some option for each PROFIBUS device (Fig. 13).

The means of the fields are:

- In the field "**Enable Sync**" the PROFIBUS Sync command is enable. This option is enable only if the "Sync Mode" is supported by the device (see Capabilities section to check it);

- In the field "**Enable Freeze**" the PROFIBUS Freeze command is enable. This option is enable only if the "Freeze Mode" is supported by the device (see Capabilities section to check it);

- In the field "**Reset data if PROFIBUS master loses communication from the slave**" is possible to select to cancel the data of the slave if the Master lost the connection with the device;

- In the field "**Reset data if PROFINET master doesn't poll the slave in ... milliseconds**" is possible to select to cancel the data sended to the slave PROFIBUS if the Converter don't receive a PROFINET frame within the time expressed in the field.
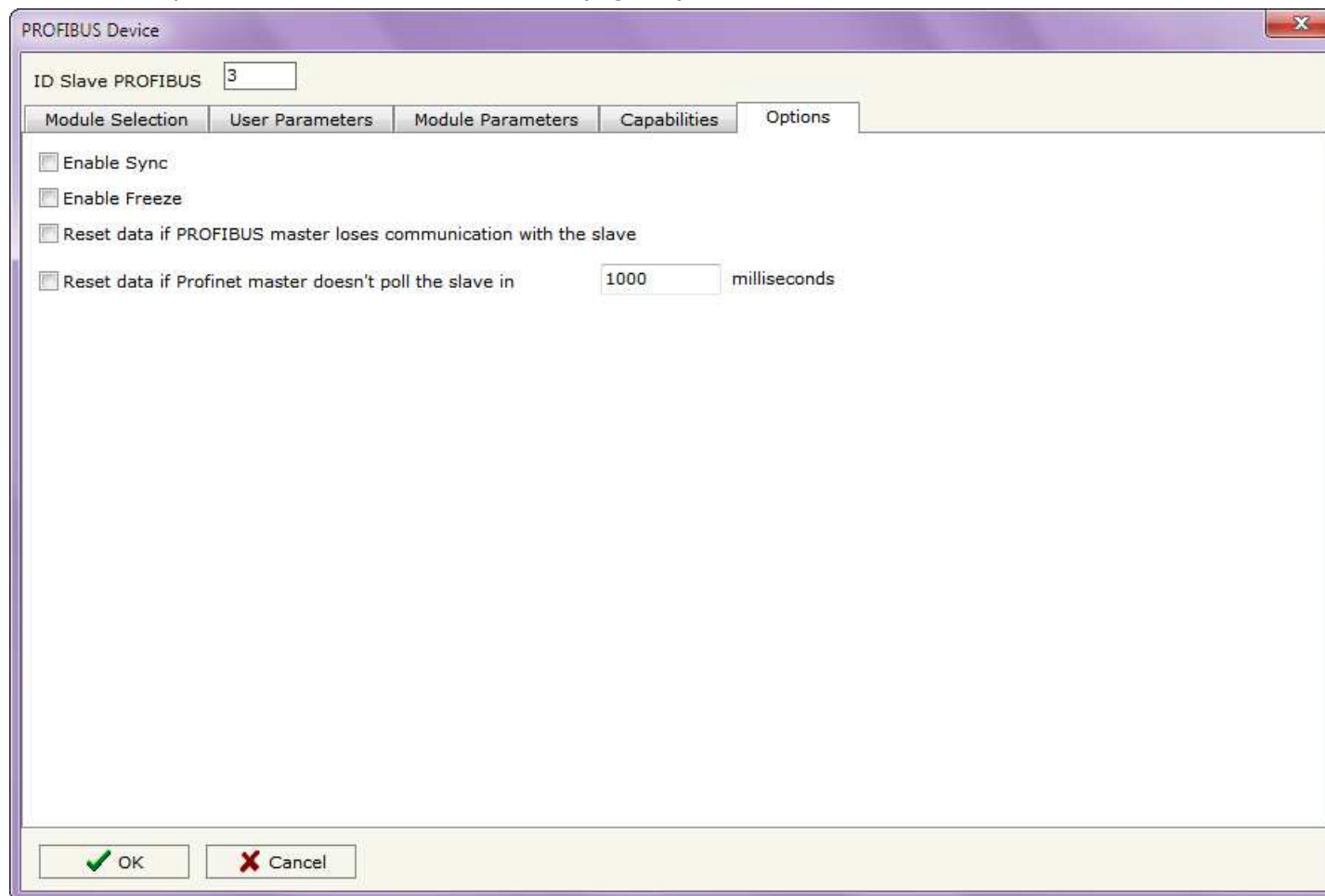
Figure 13: "PROFIBUS Device – Options" window

UPDATE DEVICE:

By pressing the "**Update Converter**" button it is possible to load the created Configuration into the device; and also the Firmware, if is necessary.

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' at ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP "**192.168.2.205**";
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- 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' at OFF position;
- Turn on the device.

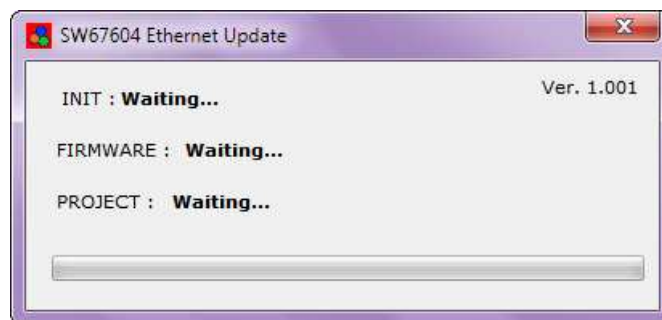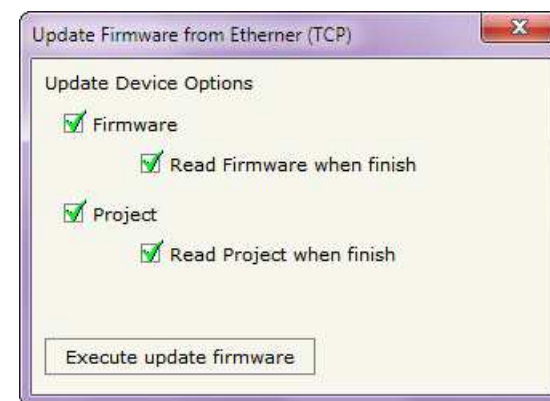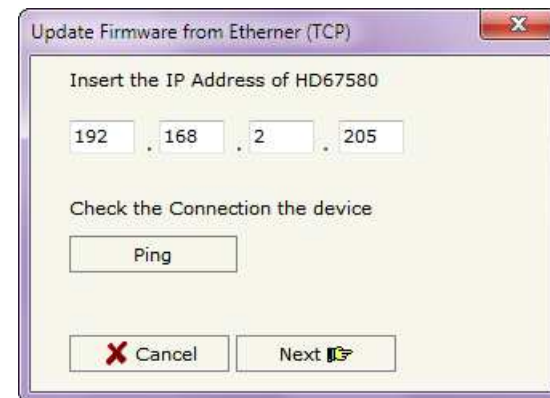At this point the configuration/firmware on the device is correctly updated.

Figure 14: "Update device" windows

Industrial Electronic Devices

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;
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- 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 update.

Note:
When you install a new version of the software it is better if the first time you do the update of the Firmware in the HD67604-A1 device.

Note:
When you receive the device, for the first time, you have to update also the Firmware in the HD67604-A1 device.

Warning:
If the Fig. 15 appears when you try to do the Update before require assistance try these points:

- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven or Vista or 8, make sure that you have the administrator privileges;
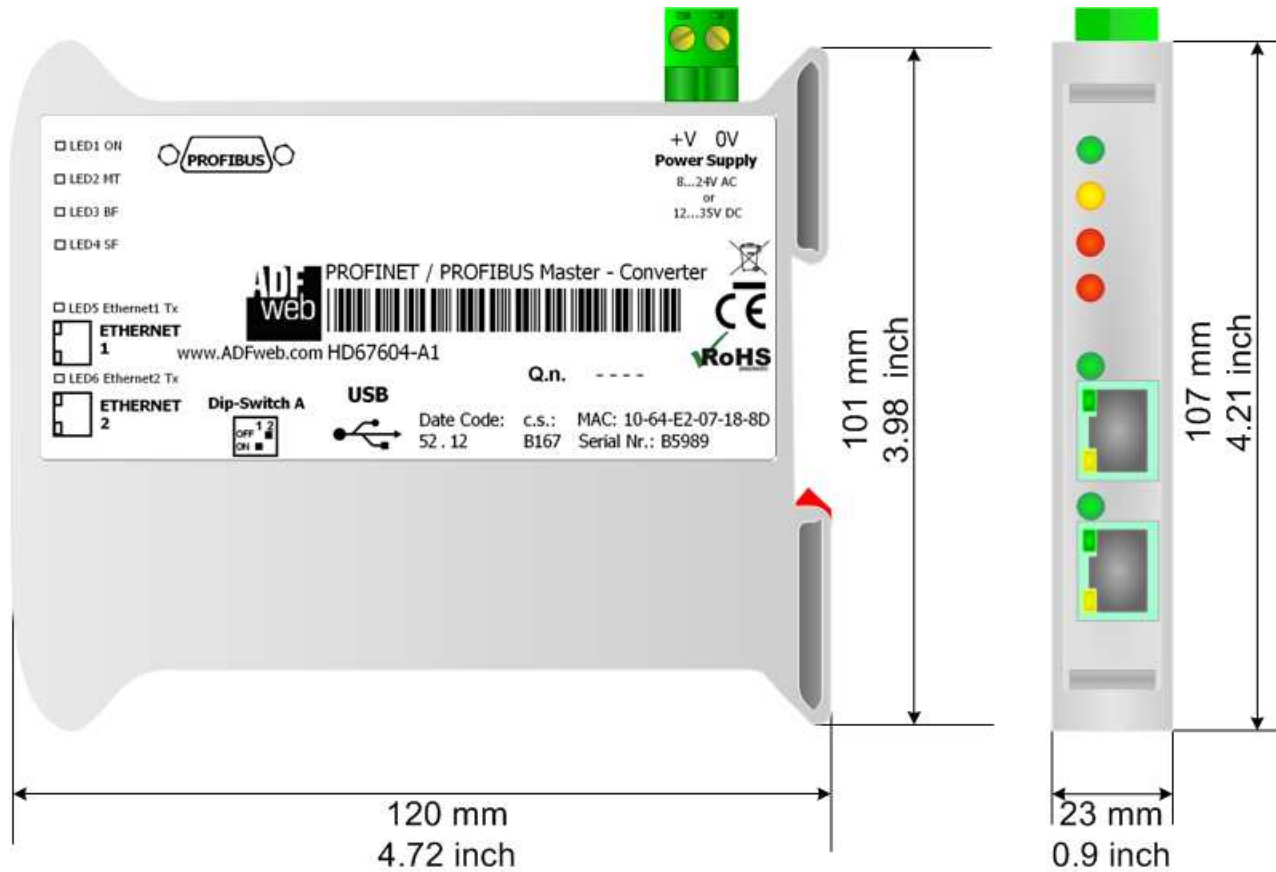- Take attention at Firewall lock;
- Check the LAN settings.

In the case of HD67604-A1 you have to use the software "SW67604": www.adfweb.com\download\filefold\SW67604.zip.

Figure 15: "Protection" window

MECHANICAL DIMENSIONS:

Figure 16: Mechanical dimensions scheme for HD67604-A1

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ORDERING INFORMATIONS:

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

HD67604 – A 1

Connectors Type
1: Removable 5mm Screw Terminal

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

Device Family
HD67604: PROFINET / PROFIBUS Master - Converter
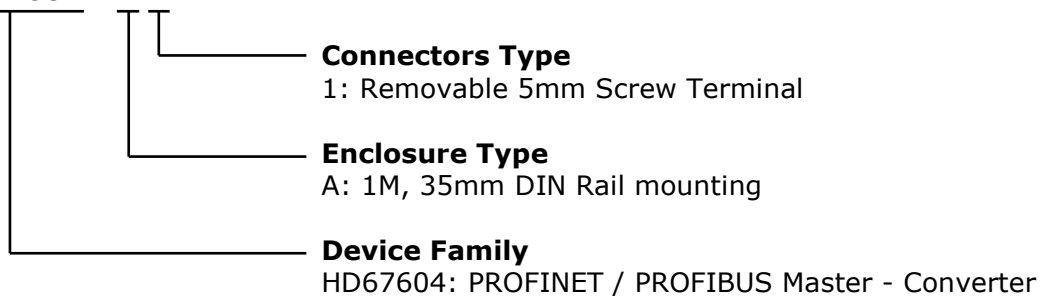
Order Code: **HD670604-A1**   -   PROFINET / PROFIBUS Master - Converter

**ACCESSORIES:**

Order Code: **AC34001**   -   35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V AC

Order Code: **AC34002**   -   35mm Rail DIN - Power Supply 110V AC 50/60Hz – 12 V AC
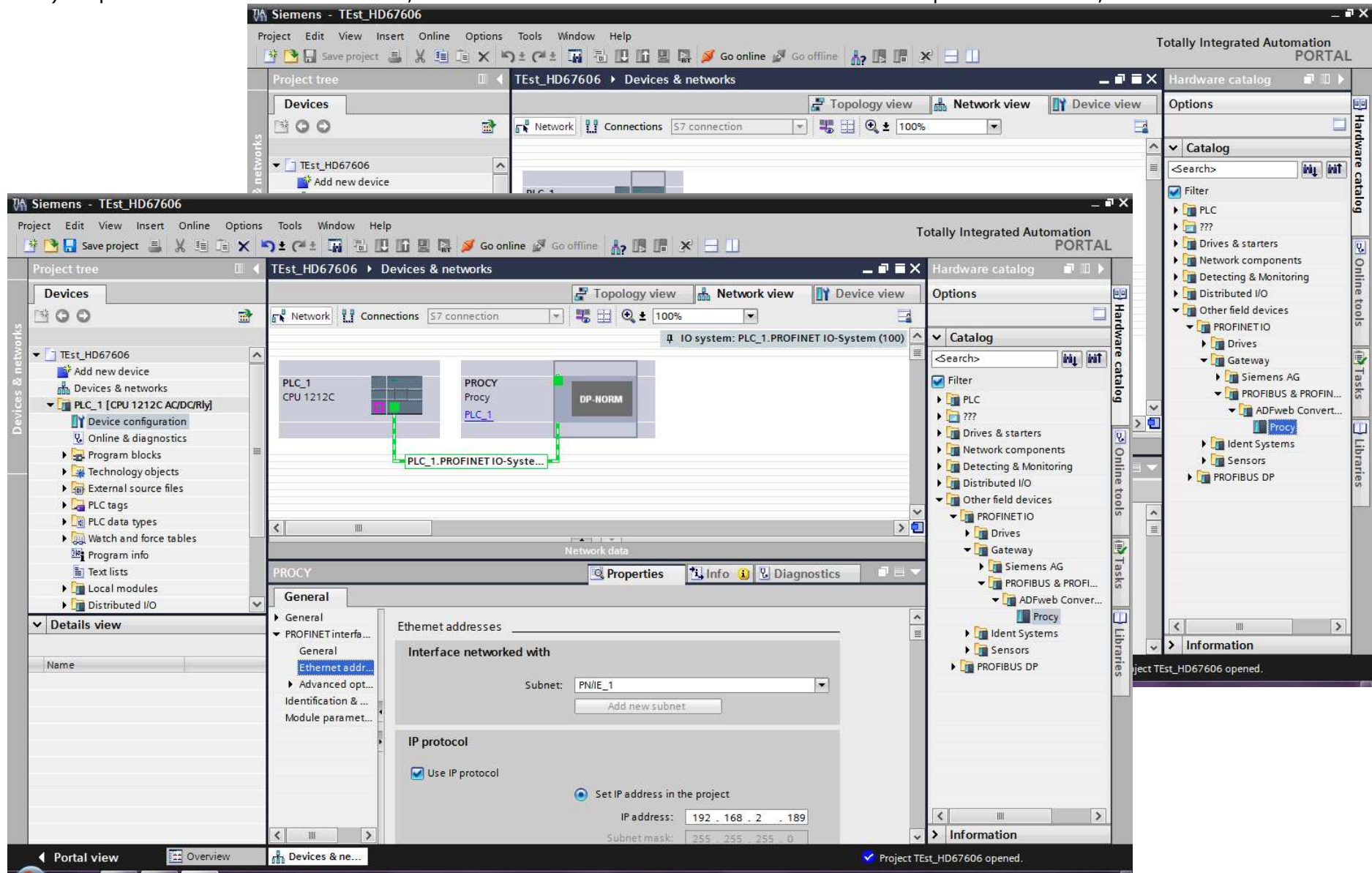
PLC CONFIGURATION:

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:
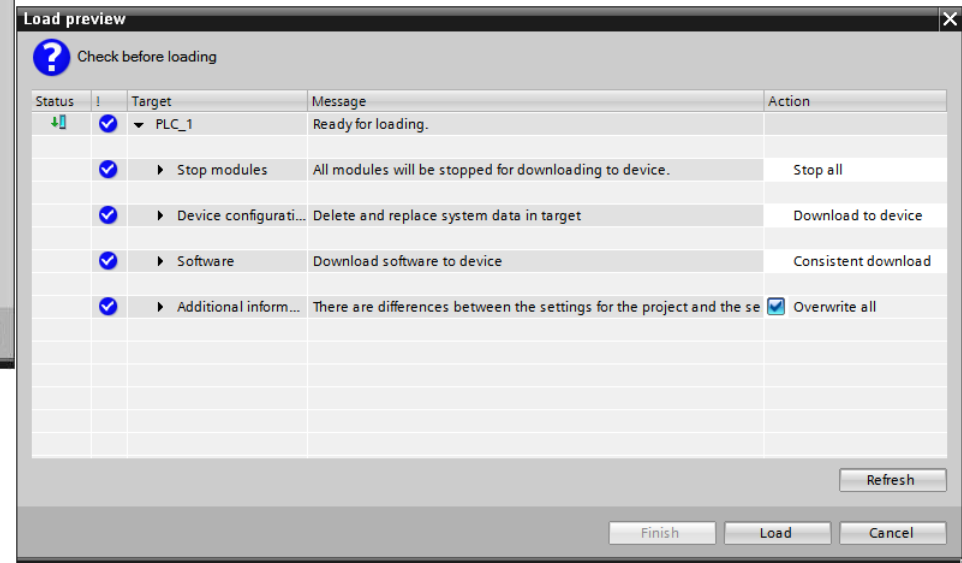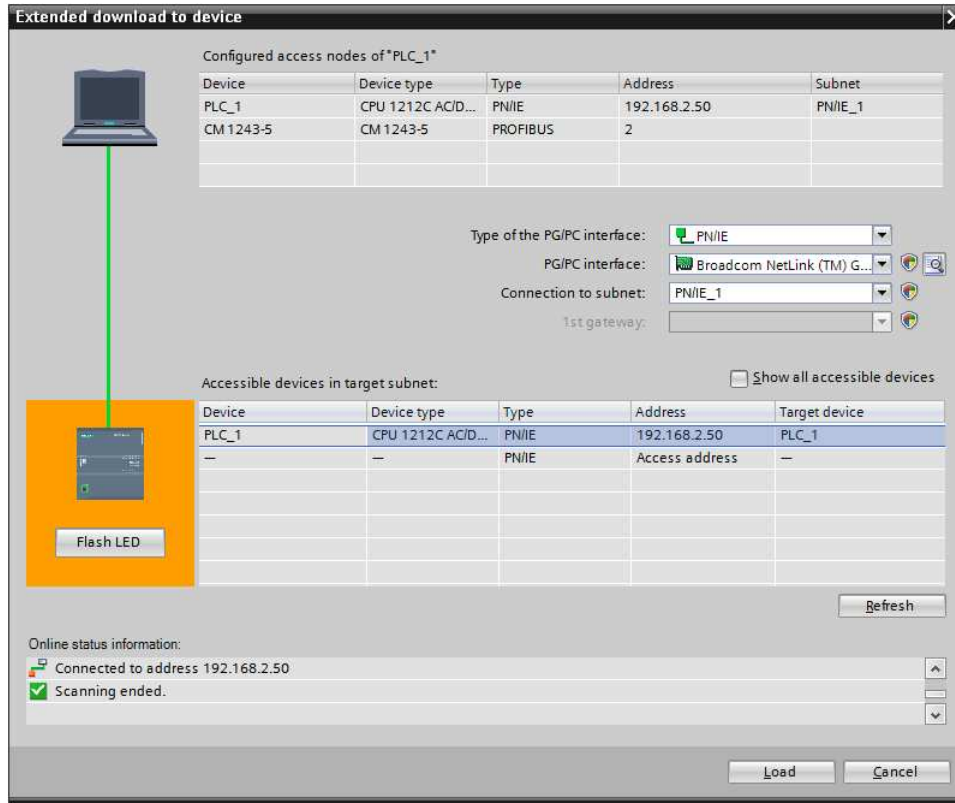
1) Install the description file of the module.

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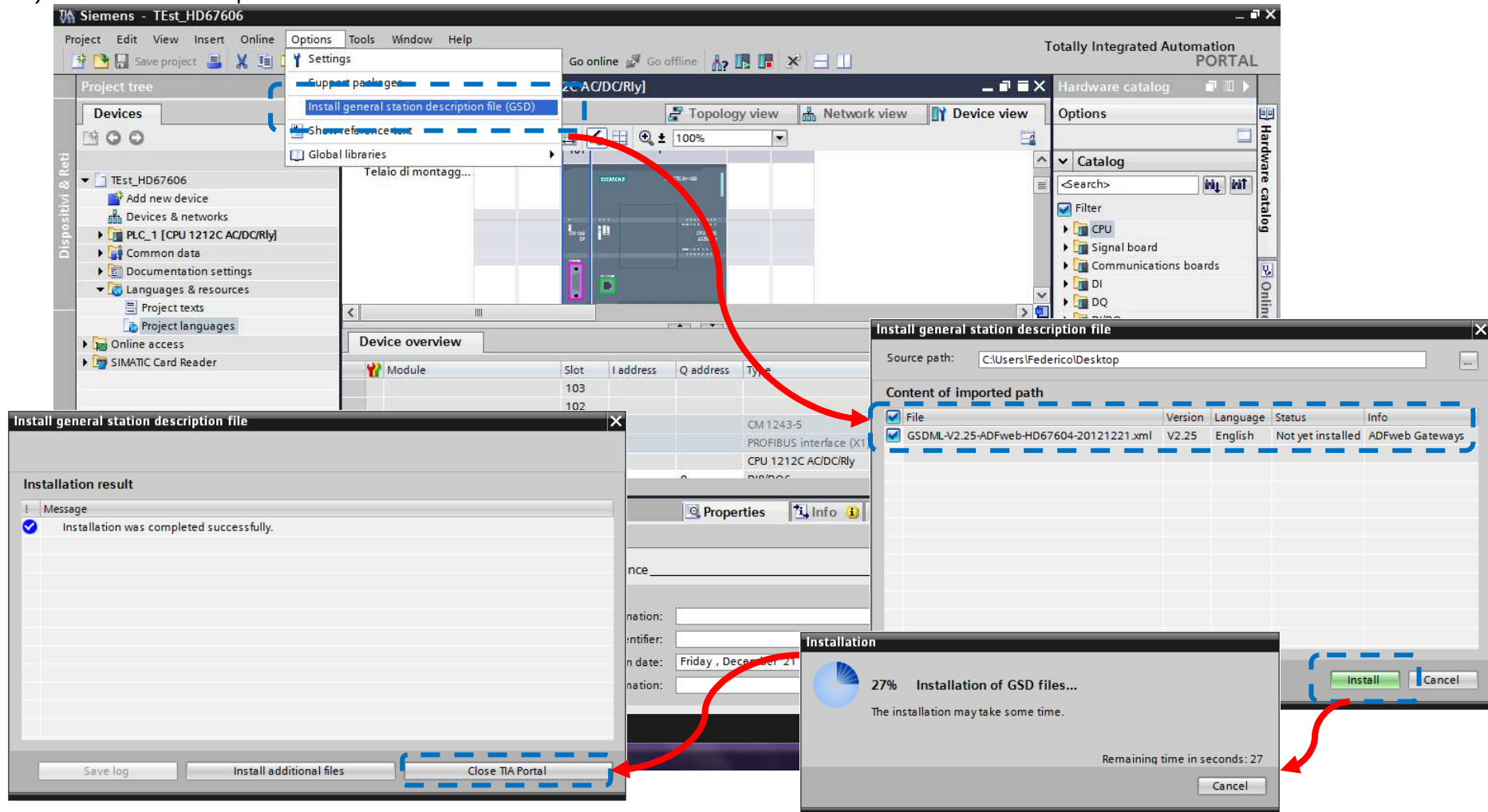
2) Import the module in the network; connect the device to the PLC network and edit the parameters of IP, station name etc.

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.

Industrial Electronic Devices

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:

➥ 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.
➥ 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.

PRODUCTS AND RELATED DOCUMENTS:

Part	Description	URL
HD67181	CAN bus Repeater	www.adfweb.com?product=HD67181
HD67316	CAN bus Analyzer	www.adfweb.com?product=HD67316