

User Manual

Revision 1.000
English

PROFINET Master / CAN - Converter

(Order Code: HD67B73-A1)

for Website information:

<http://www.adfweb.com/?Product=HD67B73>

for Price information:

<http://www.adfweb.com/?Price=HD67B73-A1>

Benefits and Main Features:

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



For others PROFINET Master devices, see also the following links:

PROFINET Master from/to ...

- www.adfweb.com?Product=HD67B45
- www.adfweb.com?Product=HD67B70
- www.adfweb.com?Product=HD67B71
- www.adfweb.com?Product=HD67B72
- www.adfweb.com?Product=HD67B74
- www.adfweb.com?Product=HD67B75
- www.adfweb.com?Product=HD67B76
- www.adfweb.com?Product=HD67B77
- www.adfweb.com?Product=HD67B78
- www.adfweb.com?Product=HD67B79
- www.adfweb.com?Product=HD67B80
- www.adfweb.com?Product=HD67B81
- www.adfweb.com?Product=HD67B82
- www.adfweb.com?Product=HD67B84

- (OPC UA Server)
- (Serial)
- (Modbus Slave)
- (PROFIBUS Slave)
- (CANopen)
- (DeviceNet Slave)
- (Modbus TCP Slave)
- (SNMP Agent)
- (EtherNet/IP Slave)
- (KNX)
- (MQTT)
- (BACnet Slave)
- (IEC 61850 Server)
- (Ethernet)

Do you have an your customer protocol?

See the following links:

www.adfweb.com?Product=HD67003

Do you need to choose a device? do you want help?

Ask it to the following link:

www.adfweb.com?Cmd=helpme



User Manual

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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
1.000	13/03/2019	Ff	All	First release version

WARNING:

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ADFweb.com is not responsible for any error this manual may contain.

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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, 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 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 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:

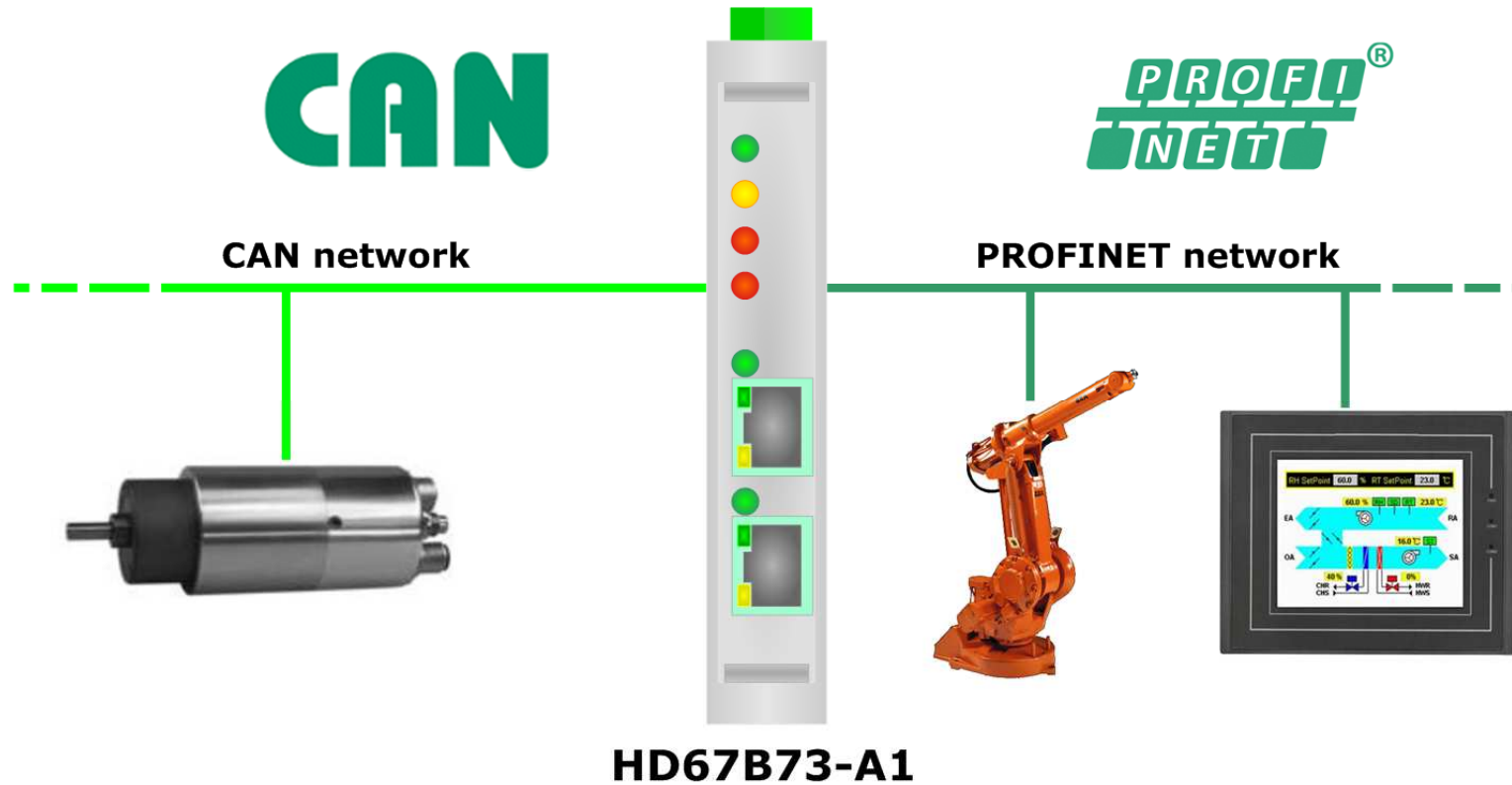


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

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:

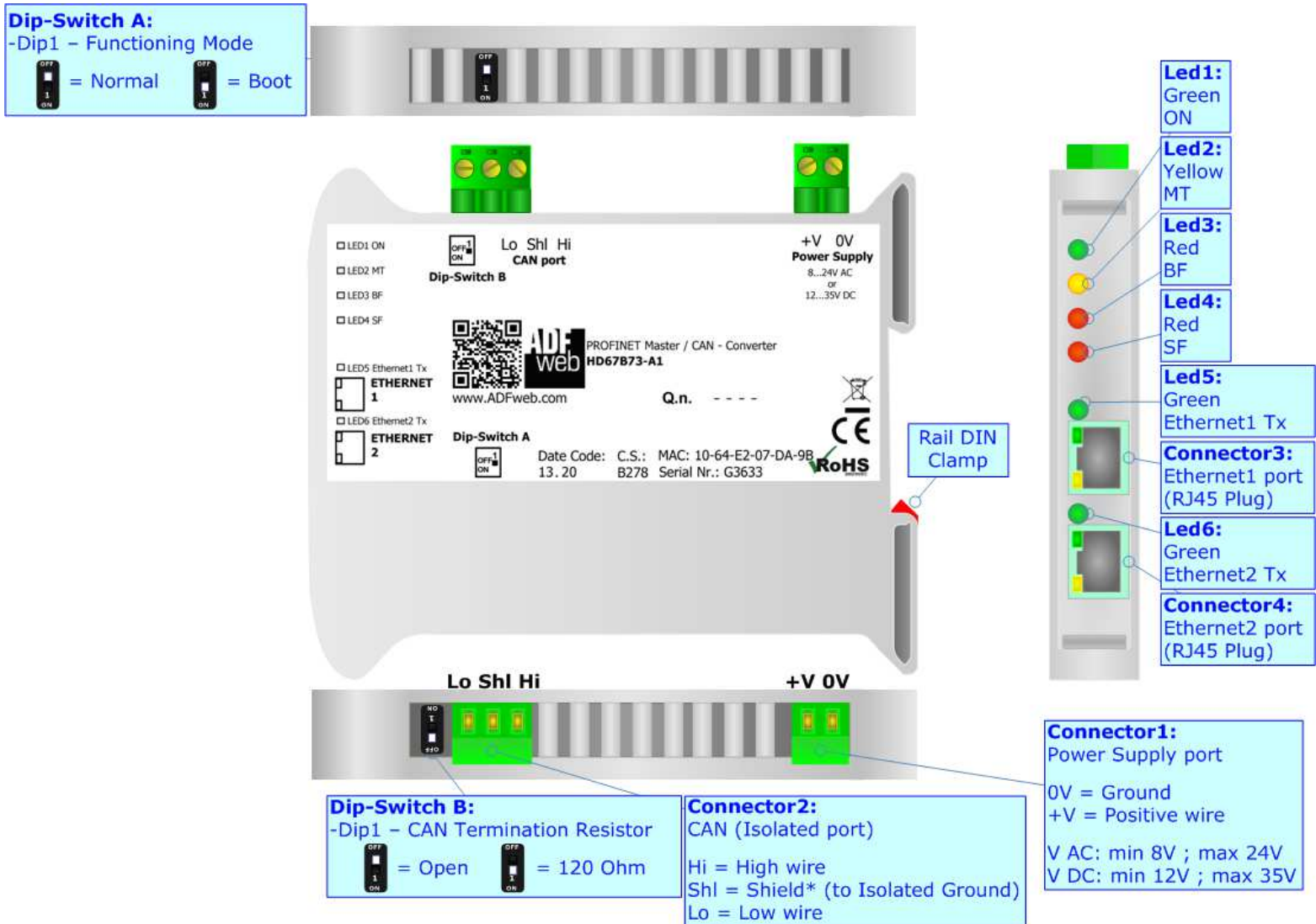


Figure 1: Connection scheme for HD67B73-A1

CHARACTERISTICS:

The HD67B73-A1 is a PROFINET Master / CAN converter.

It allows the following characteristics:

- Triple isolation between CAN - Power Supply, CAN - Ethernet, Ethernet - Power Supply;
- Up to 4096 bytes in reading and 4096 bytes in writing;
- Two-directional information between CAN 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 SW67B73 software on your PC in order to perform the following:

- Define the parameter of the PROFINET;
- Define the parameter of the CAN;
- Define the list of PROFINET slaves connected to the converter;
- Define the list of CAN messages in reception and transmission;
- Update the device.

POWER SUPPLY:

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

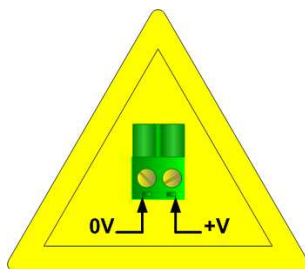
	VAC		VDC	
	Vmin	Vmax	Vmin	Vmax
HD67B73-A1	8V	24V	12V	35V

Consumption at 24V DC:

Device	W/VA
HD67B73-A1	4



Caution: Not reverse the polarity power



HD67B73-A1

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



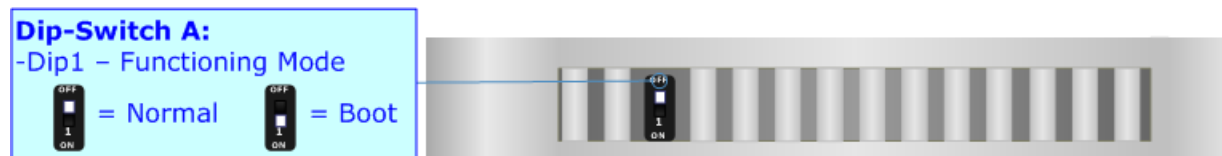
FUNCTION MODES:

The device has got two functions mode depending of the position of the 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).

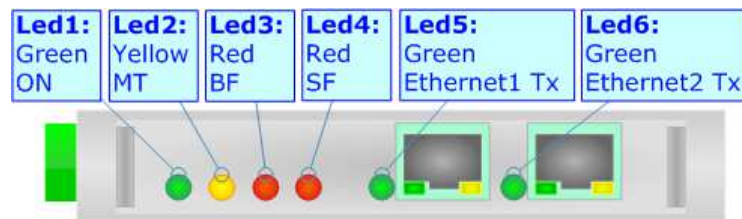
According to the functioning mode, the LEDs will have specifics functions (see 'LEDS' section).



LEDS:

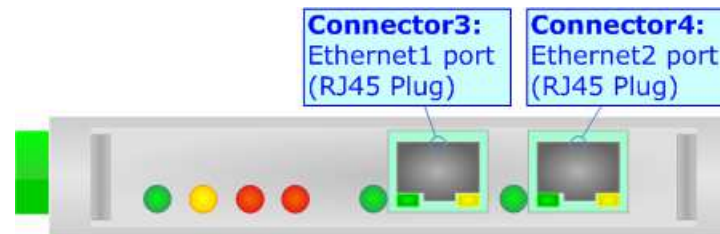
The device has got six LEDs that are used to give information of the functioning status. The various meanings of the LEDs are described in the table below.

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 are 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



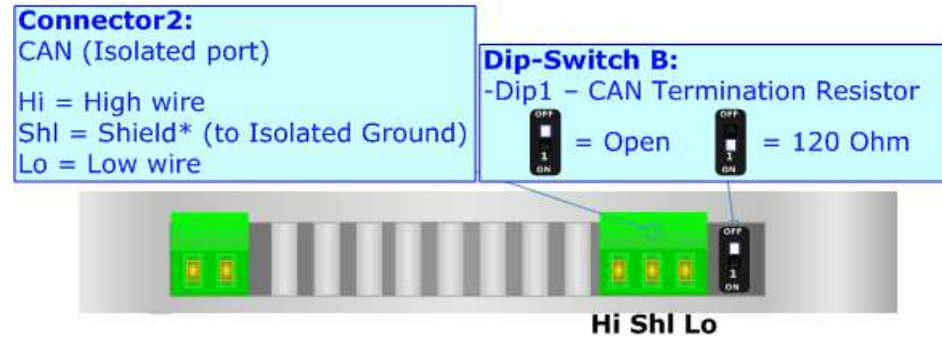
ETHERNET:

The Ethernet connection must be made using Connector3 or Connector4 of HD67B73-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.



CAN:

For terminate the CAN line with a 120Ω resistor it is necessary that the Dip1 of 'Dip-Switch B' 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 SW67B73:

To configure the Converter, use the available software that runs with Windows called SW67B73. 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; 32/64bit).

When launching the SW67B73, the window below appears (Fig. 2).

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

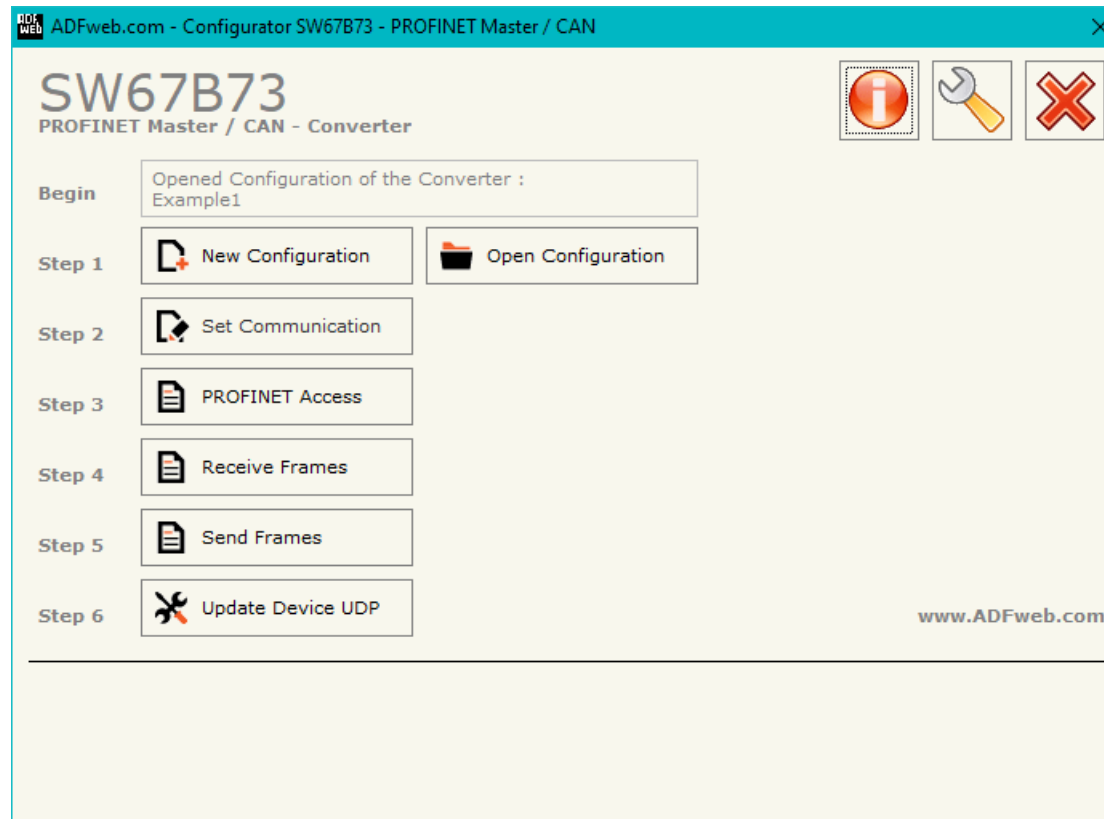
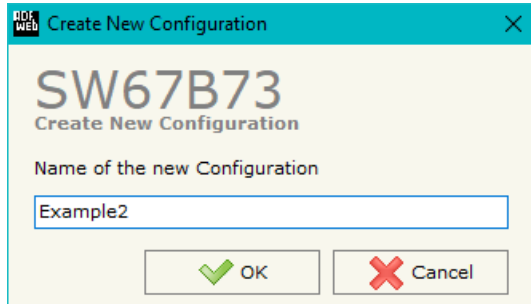


Figure 2: Main window for SW67B73

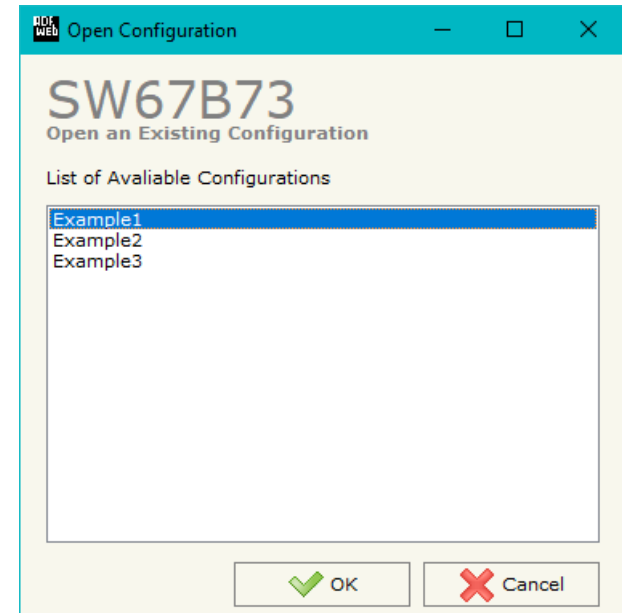
NEW CONFIGURATION / OPEN CONFIGURATION:

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




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

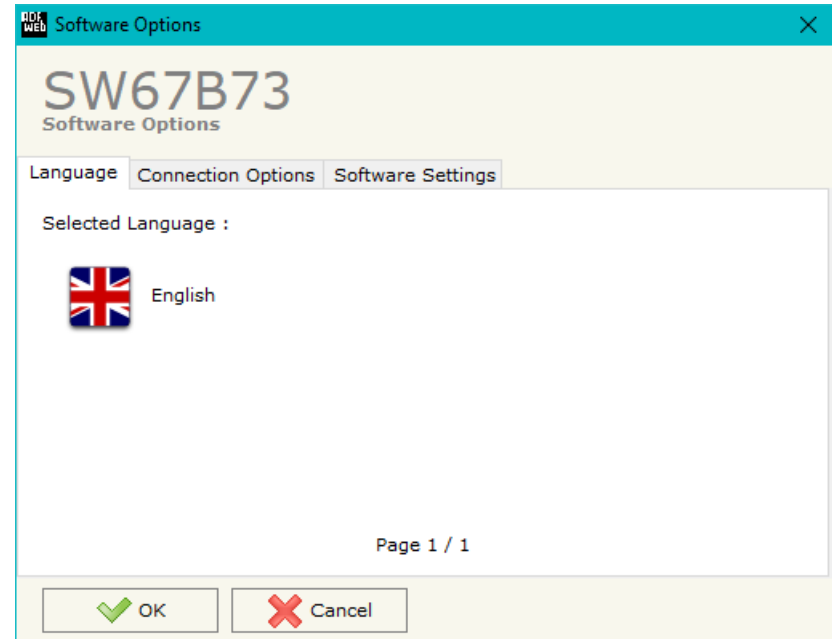
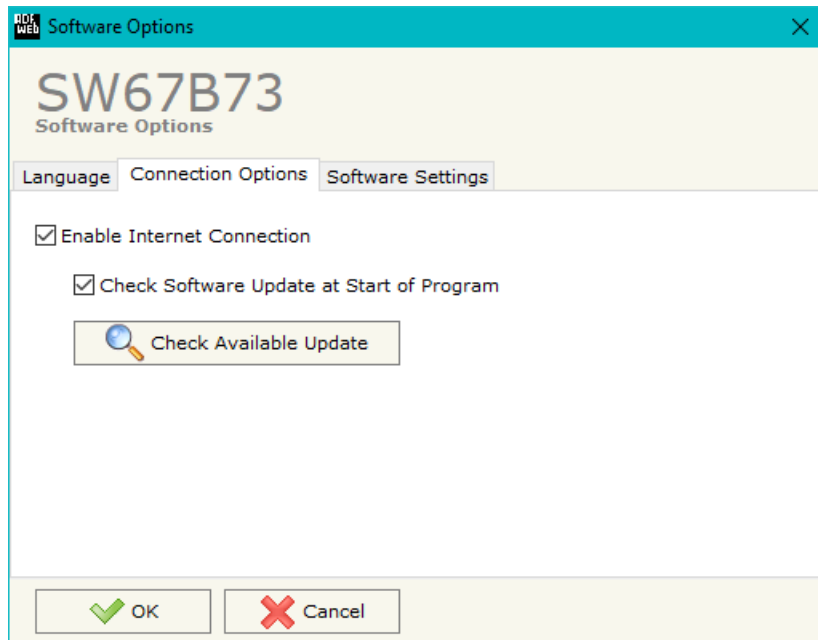
- To clone the configurations of a programmable “PROFINET Master / CAN - Converter” in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate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



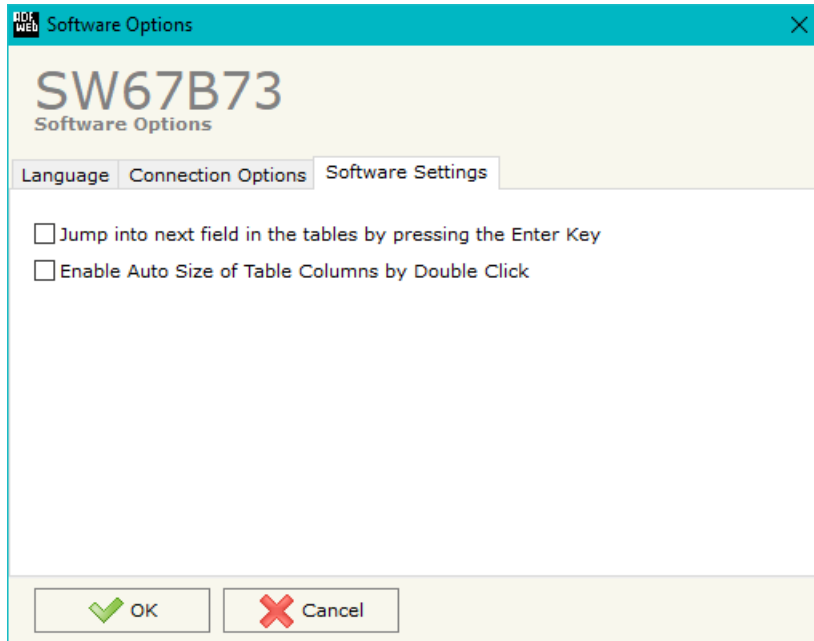
SOFTWARE OPTIONS:

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 SW67B73 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 define the fundamental communication parameters of two buses, PROFINET and CAN.

By Pressing the **"Set Communication"** button from the main window for SW67B73 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The means of the fields for "PROFINET Master" 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 **"Name of Station"** the name of the PROFINET node is defined.

The means of the fields for "CAN" are:

- In the field **"Baudrate"** the data rate used for CAN communication is defined.

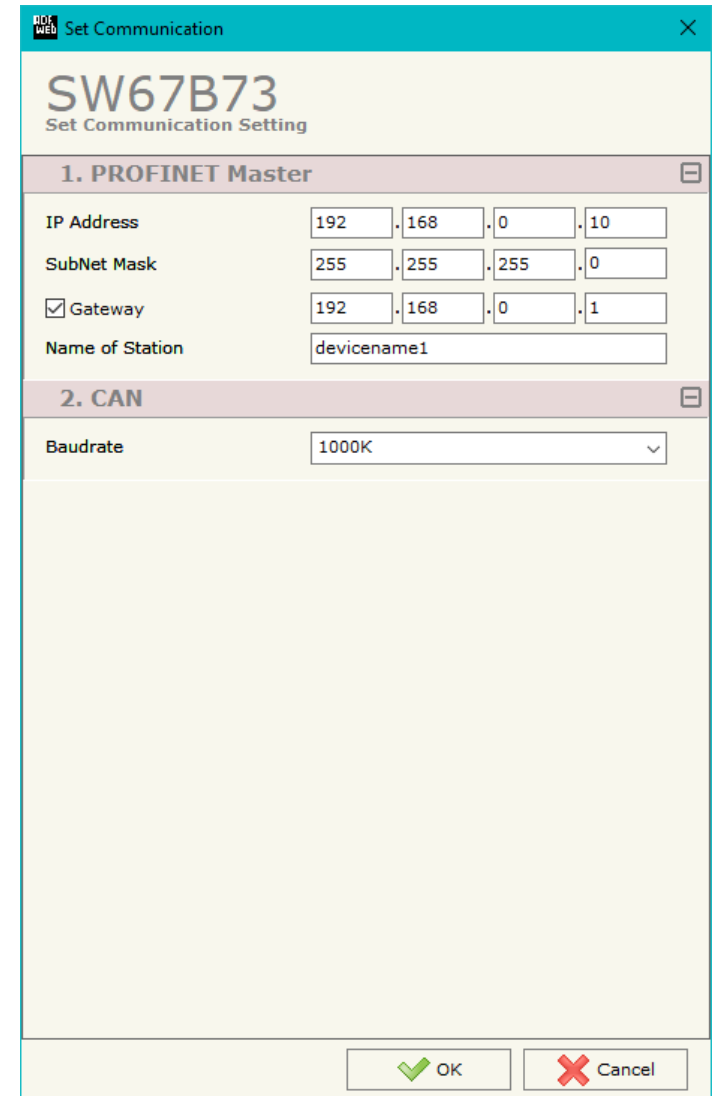


Figure 3: "Set Communication" window

PROFINET ACCESS:

By Pressing the “**PROFINET Access**” button from the main window for SW67B73 (Fig. 2) the window “Definition of PROFINET Devices Present in Network” appears (Fig. 4).

This section is used to define the list of the PROFINET slaves to read/write with the PROFINET Master. It is possible to add the PROFINET slaves from the hardware catalog. If a new device will be connected, it is possible to instal the GSDML file.

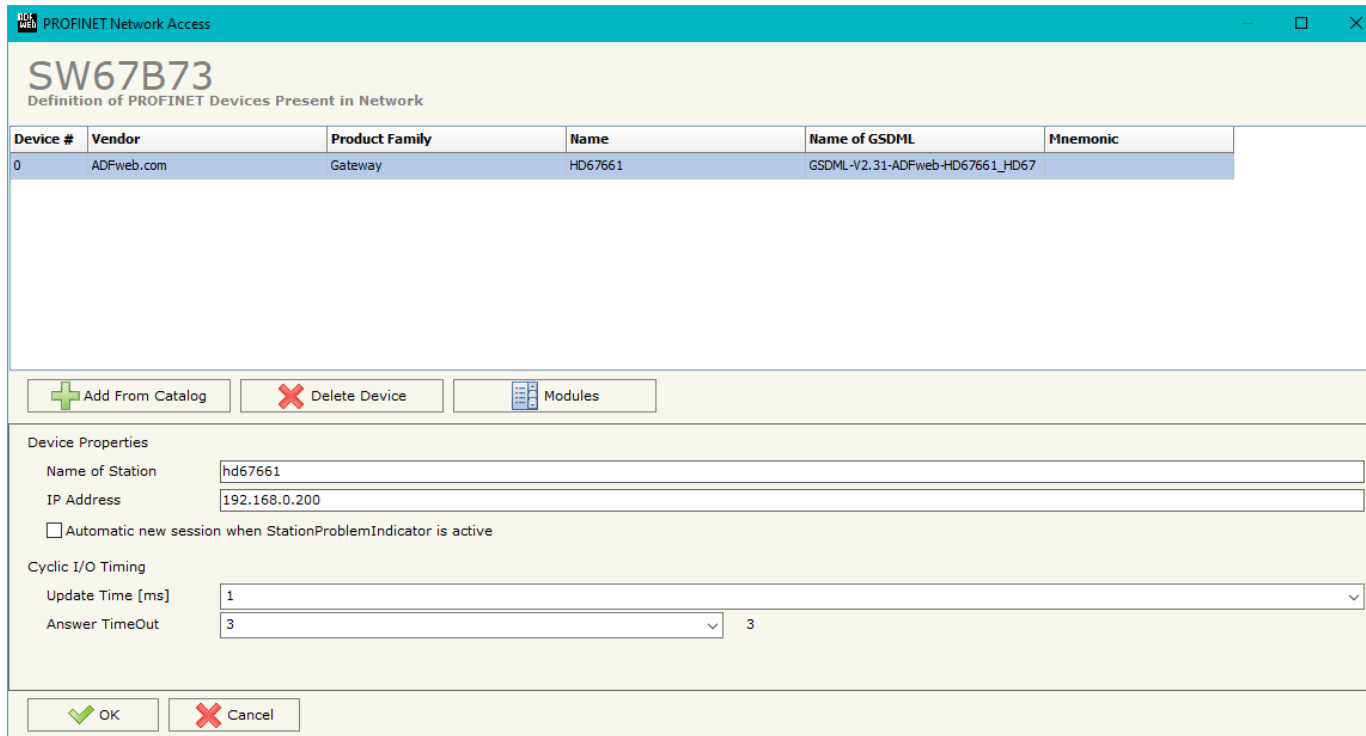



Figure 4: “Definition of PROFINET Devices Present in Network” window

The means of the fields below are:

- In the field "**Name of Station**" is checked, the name of the PROFINET slave is defined;
- In the field "**IP Address**" the IP Address of the PROFINET slave is defined;
- If the field "**Automatic new session when StationProblemIndicator is Active**" is checked, the converter opens a new communication session when an error is present in the slave station;
- In the field "**Update Time [ms]**" the delay used for IO communication is defined;
- In the field "**Answer TimeOut**" the allowed number of cycles without response from the slave is defined.

 Warning: The data from/to the slaves are mapped consecutively into the IN/OUT PROFINET arrays, following the order with which they are defined.

By clicking on “**Modules**” button, it is possible to import the modules for the selected PROFINET slave device. The window “Definition Module and/or Submodules of PROFINET Device” appears (Fig. 5). In the main table it is possible to import the Modules of the PROFINET device in use. In the properties below, it is possible to set the parameters of the slave. These options depends on the slave in use, refer to the manual of the PROFINET device.

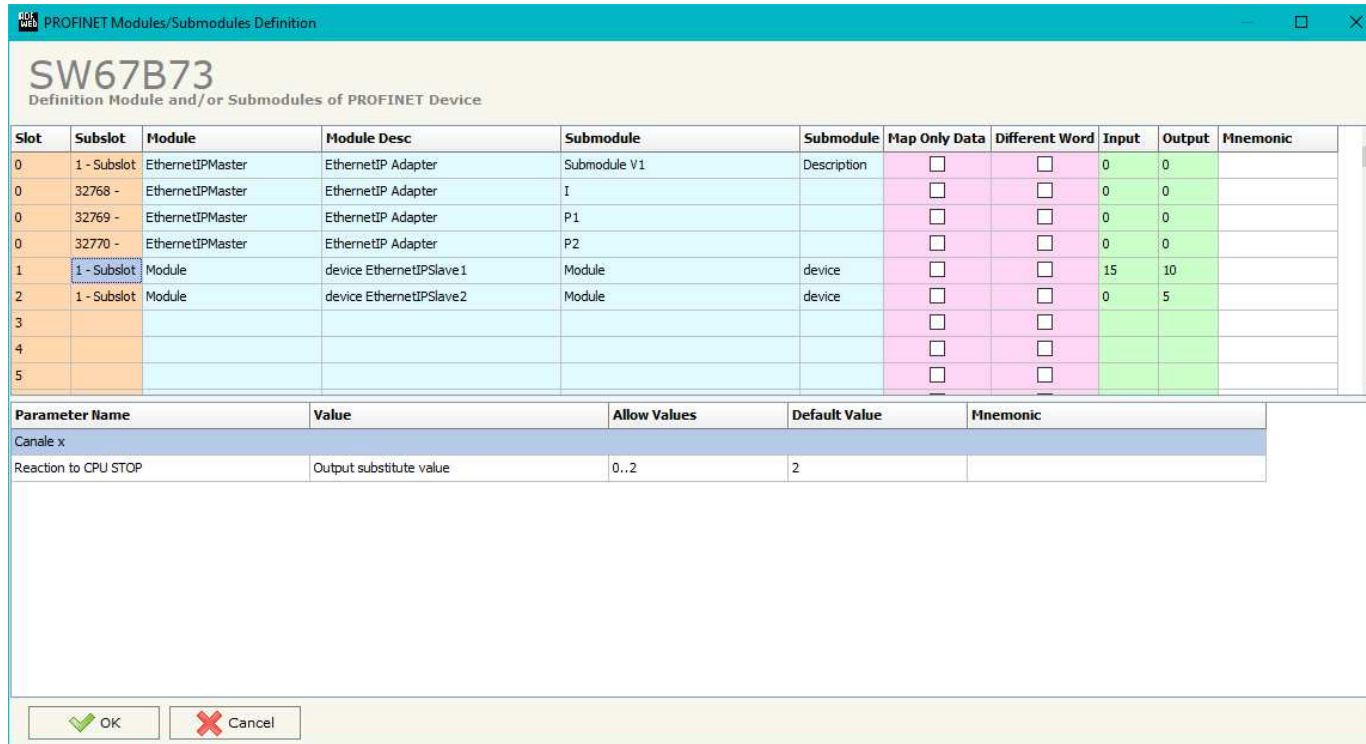


Figure 5: “Definition Module and/or Submodules of PROFINET Device” window

The means of the checkboxes inside the table are:

- If the field “**Map Only Data**” is checked, only the data of the modules are mapped into the CAN map. Otherwise, for each module there will be the status of IN and OUT areas too (1 byte);
- If the field “**Different Word**” is checked, the data of the different modules are mapped in different and consecutive words.

RECEIVE FRAMES:

By pressing the "Receive Frames" button from the main window for SW67B73 (Fig. 2) the "Receive CAN Frames" window appears (Fig. 6). The COB inserted in this table contains the Output data of PROFINET. These frames are accepted by the converter.

N	Enable	CobID	Type	Dimension	TimeOut	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	Mnemonic
1	<input checked="" type="checkbox"/>	0x100	2.0A (11 bits)	8	1000	0	1	2	3	4	5	6	7	
2	<input checked="" type="checkbox"/>	0x12345678	2.0B (29 bits)	8	0	8	9	10	11	12	13	14	15	
3	<input checked="" type="checkbox"/>													
4	<input checked="" type="checkbox"/>													
5	<input checked="" type="checkbox"/>													

Figure 6: "Receive CAN Frames Set Access" window

The data of the columns have the following meanings:

- If the field "Enable" is checked, the CAN frame is enabled;
- In the field "Cob-ID" the COB of the CAN frame is defined;
- In the field "Type" the type of CAN packet use for the Cob-ID is defined (2.0A (11 bits) or 2.0B (29 bits));
- In the field "Dimension" the number of byte of the COB (from 1 to 8) is defined;
- The field "TimeOut" is used for put at zero the data into PROFINET if the CAN frame doesn't arrive with a frequency less than the time expressed in the field. If the value in the field is '0', it means that you don't want to use this;
- In the field "Byte1" insert the address of the PROFINET where saving 1st byte of the CAN message;
- In the field "Byte2" insert the address of the PROFINET where saving 2nd byte of the CAN message;
- In the field "Byte3" insert the address of the PROFINET where saving 3rd byte of the CAN message;
- In the field "Byte4" insert the address of the PROFINET where saving 4th byte of the CAN message;
- In the field "Byte5" insert the address of the PROFINET where saving 5th byte of the CAN message;
- In the field "Byte6" insert the address of the PROFINET where saving 6th byte of the CAN message;

- In the field "**Byte7**" insert the address of the PROFINET where saving 7th byte of the CAN message;
- In the field "**Byte8**" insert the address of the PROFINET where saving 8th byte of the CAN message;
- In the field "**Mnemonic**" a brief description is defined.

SEND FRAMES:

By pressing the **Send Frames** button from the main window for SW67B73 (Fig. 2) the "Send CAN frames" window appears (Fig. 7). The COB inserted in this table contains the Input data of PROFINET. These frames are sent by the converter.

N	Enable	CobID	Type	Dimension	OnChange	OnCMD	OnTimer	Time	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	Mnemonic
1	<input checked="" type="checkbox"/>	0x300	2.0A (11 bits)	8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1000	0	1	2	3	4	5	6	7	
2	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
3	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
4	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
5	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										

Figure 7: "Transmit CAN Frames Set Access" window

The data of the columns have the following meanings:

- If the field **Enable** is checked, the CAN frame is enabled;
- In the field **Cob-ID** the COB of the CAN frame is defined;
- In the field **Type** the type of CAN packet use for this Cob-ID is defined (2.0A (11 bits) or 2.0B (29 bits));
- In the field **Dimension** the number of byte of the COB (from 1 to 8) is defined;
- If the field **OnChange** is checked, the frame is sent when the data from PROFINET change;
- If the field **OnCMD** is checked, the frame is sent when a PROFINET message is received;
- If the field **OnTimer** is checked, the frame is sent cyclically with the delay defined in the field **Time** (expressed in ms);
- In the field **Byte1** insert the address of the PROFINET where taking 1st byte of the CAN message;
- In the field **Byte2** insert the address of the PROFINET where taking 2nd byte of the CAN message;
- In the field **Byte3** insert the address of the PROFINET where taking 3rd byte of the CAN message;
- In the field **Byte4** insert the address of the PROFINET where taking 4th byte of the CAN message;
- In the field **Byte5** insert the address of the PROFINET where taking 5th byte of the CAN message;
- In the field **Byte6** insert the address of the PROFINET where taking 6th byte of the CAN message;

- In the field "**Byte7**" insert the address of the PROFINET where taking 7th byte of the CAN message;
- In the field "**Byte8**" insert the address of the PROFINET where taking 8th byte of the CAN message;
- 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.

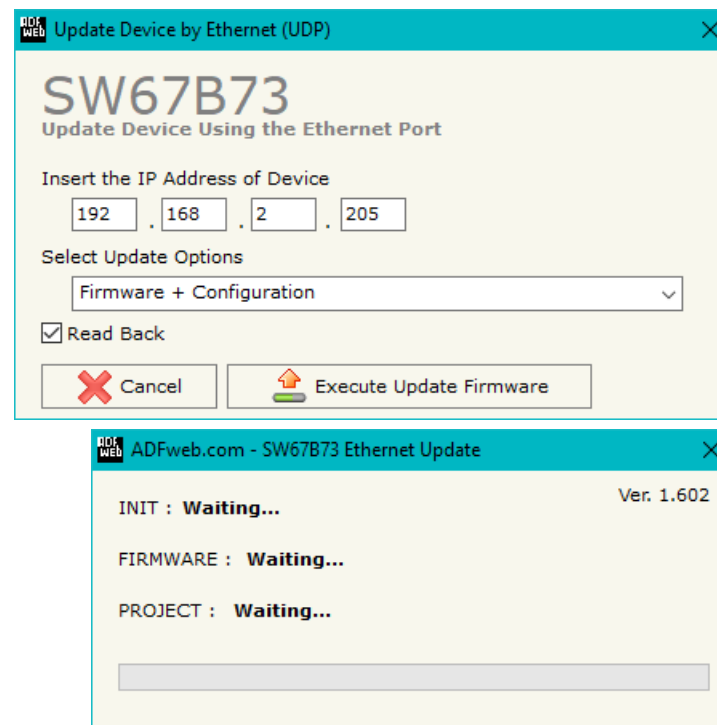


Figure 8: “Update device” windows



Note:

When you receive the device, for the first time, you also have to update the Firmware in the HD67B73 device.



Warning:

If Fig. 9 appears when you try to do the Update try these points before seeking assistance:

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

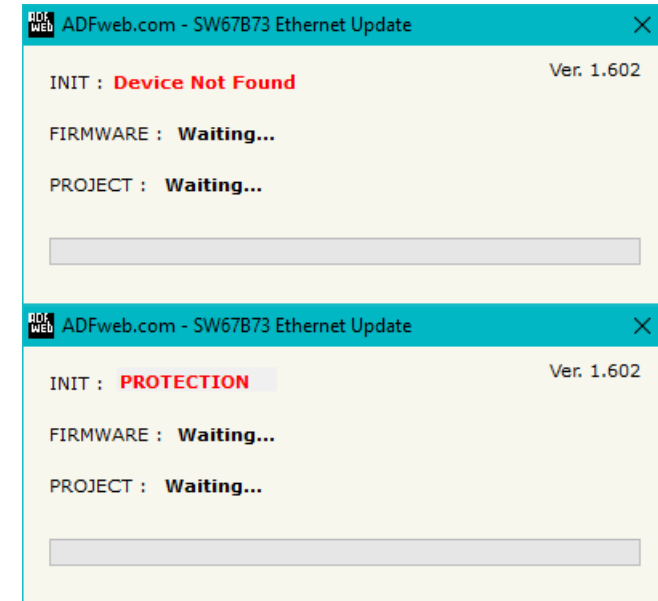


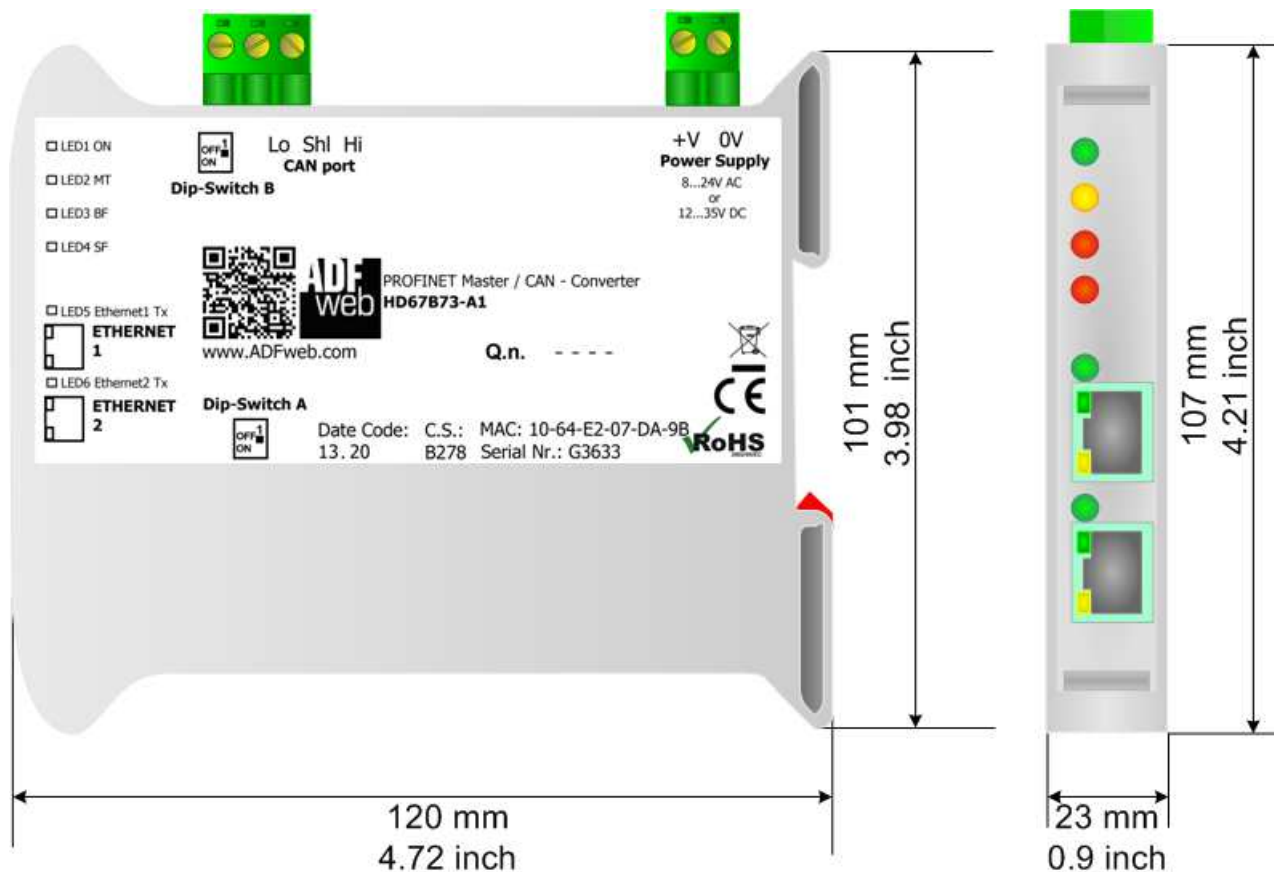
Figure 9: "Error" window



Warning:

In the case of HD67B73 you have to use the software "SW67B73": www.adfweb.com/download/filefold/SW67B73.zip.

MECHANICAL DIMENSIONS:



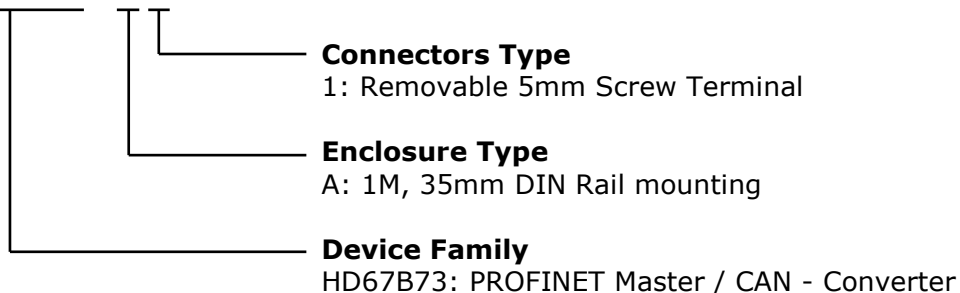
Housing: PVC
Weight: 200g (Approx)

Figure 10: Mechanical dimensions scheme for HD67B73-A1

ORDERING INFORMATIONS:

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

HD67B73 - A 1



Order Code: **HD67B73-A1** - PROFINET Master / CAN - Converter

ACCESSORIES:

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

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

DISCLAIMER:

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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.

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.



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