

User Manual

Revision 1.010
English

NMEA 2000 / PROFIBUS Slave - Converter

(Order Code: HD67252-A1)

for Website information:

www.adfweb.com?Product=HD67252

for Price information:

www.adfweb.com?Price=HD67252-A1

Benefits and Main Features:

- ✦ Very easy to configure
- ✦ Electrical isolation
- ✦ Temperature range: -40°C/85°C (-40°F/185°F)



For others Gateways / Bridges:

CANopen to Modbus

See also the following links:

- www.adfweb.com?Product=HD67001 (Modbus RTU Master)
- www.adfweb.com?Product=HD67502 (Modbus RTU Slave)
- www.adfweb.com?Product=HD67004 (Modbus TCP Master)
- www.adfweb.com?Product=HD67505 (Modbus TCP Slave)

For others Gateways / Bridges:

For **CAN bus 2.0A** and/or **CAN bus 2.0B** to **Modbus**

See also the following links:

- www.adfweb.com?Product=HD67011 (Modbus RTU Slave)
- www.adfweb.com?Product=HD67012 (Modbus RTU Master)
- www.adfweb.com?Product=HD67514 (Modbus TCP Slave)
- www.adfweb.com?Product=HD67515 (Modbus TCP Master)

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	12/07/2010	Dp	All	First release version
1.001	08/03/2013	Nt	All	Added new chapters
1.010	19/12/2016	Ff	All	Added new chapters

WARNING:

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ADFweb.com 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 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:

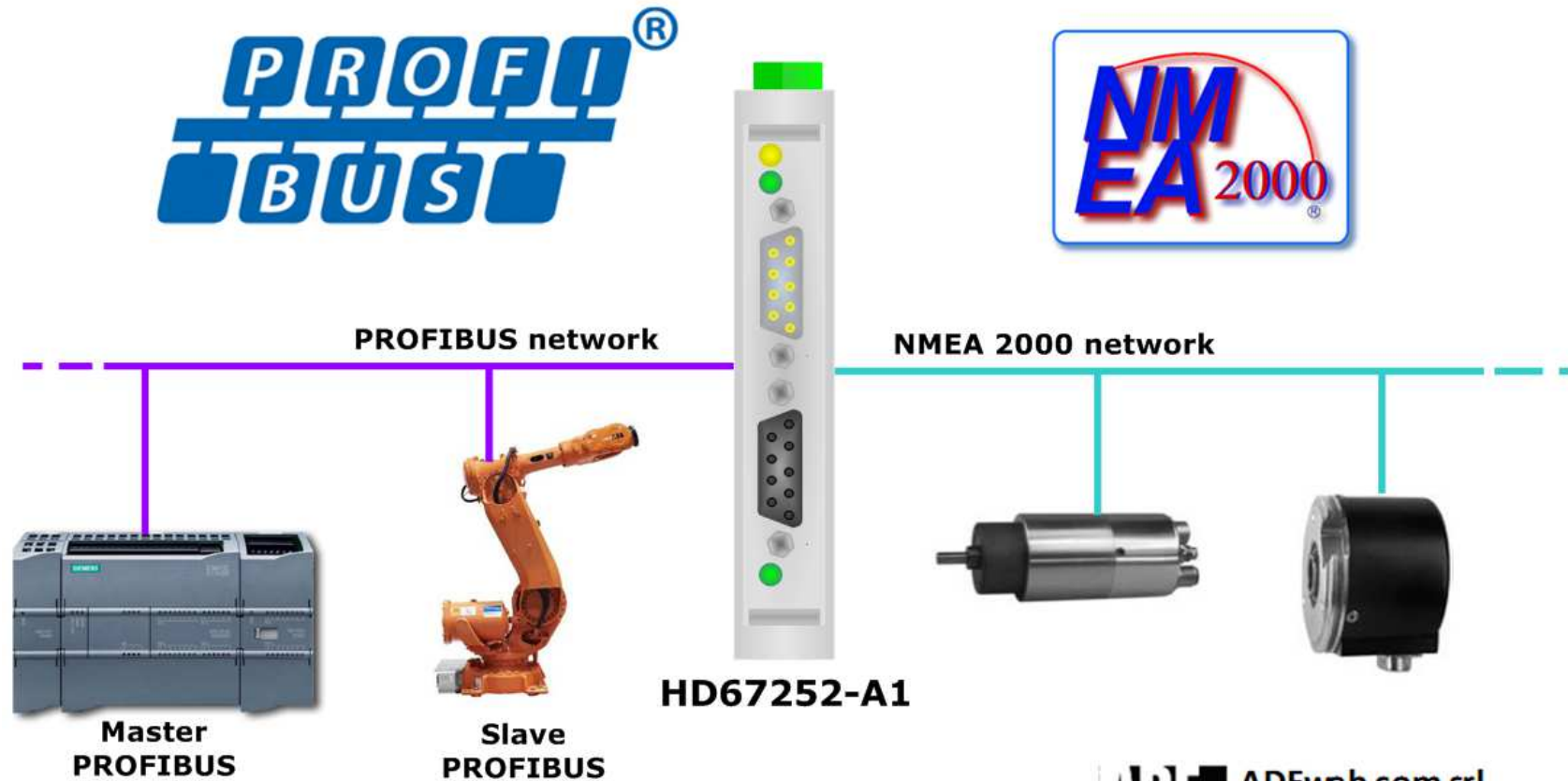


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

CE CONFORMITY

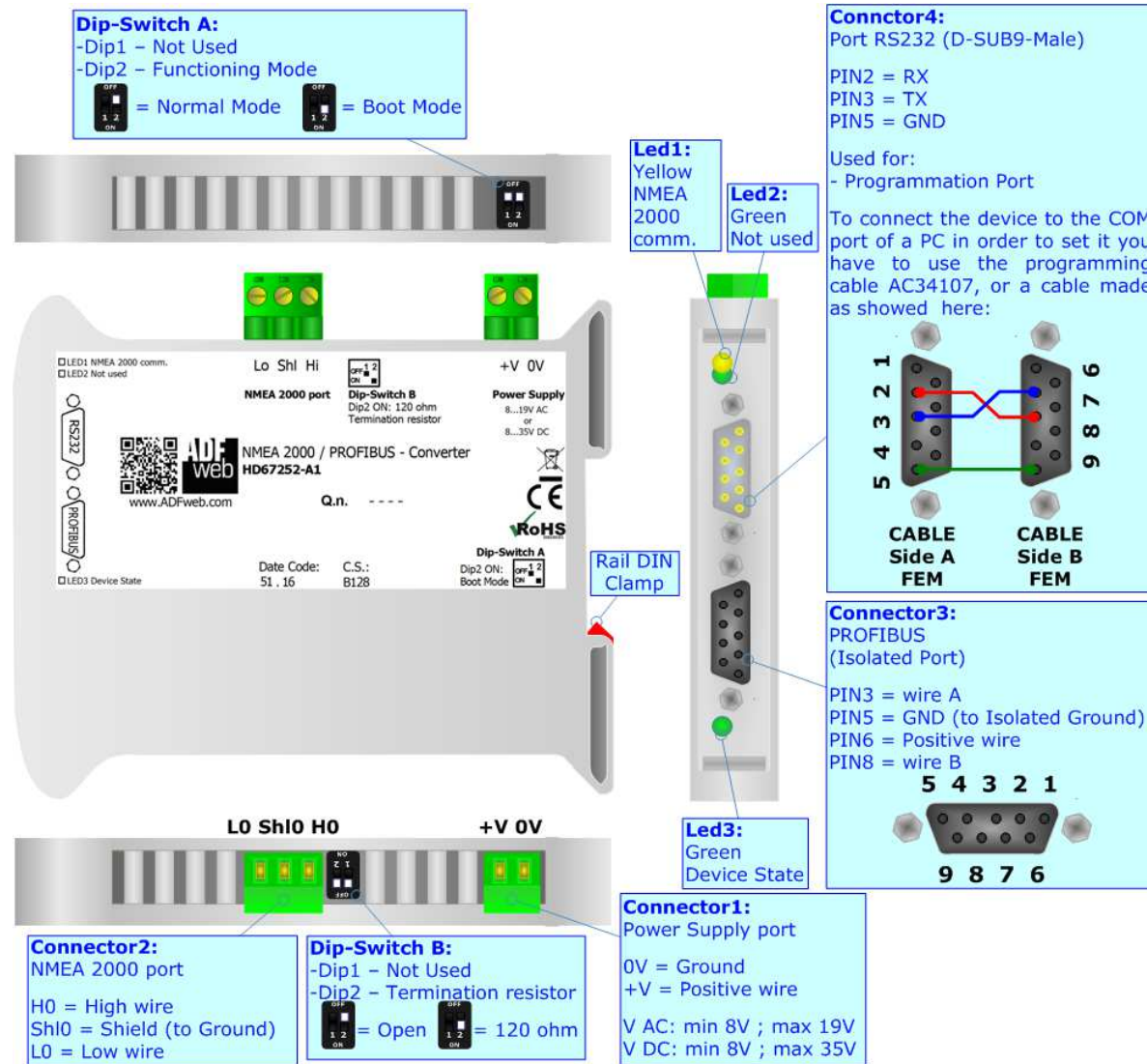
The declaration is made by our company. You can send an email to support@adfweb.com or give us a call if you need it.

EXAMPLE OF CONNECTION:



ADFweb ADFweb.com srl
 tel. +39 - 0438.30.91.31
www.adfweb.com
info@adfweb.com

CONNECTION SCHEME:



CHARACTERISTICS:

The HD67252 is a NMEA 2000 / PROFIBUS Slave - Converter.

They have the following characteristics:

- Triple isolation between NMEA 2000 - Power Supply, NMEA 2000 - PROFIBUS, PROFIBUS - Power Supply;
- Two-directional information between PROFIBUS bus and NMEA 2000 bus;
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 8...19V AC or 8...35V DC;
- Wide temperature range: -40°C / 85°C [-40°F / +185°F].



CONFIGURATION:

You need Compositor SW67252 software on your PC in order to perform the following:

- Define the parameter of the NMEA 2000;
- Define the parameter of the PROFIBUS;
- Receive NMEA 2000 frames;
- Transmit NMEA 2000 frames;
- Create a GSD File;
- Update the device.

POWER SUPPLY:

The devices can be powered at 8...19V AC and 8...35V DC. For more details see the two tables below.

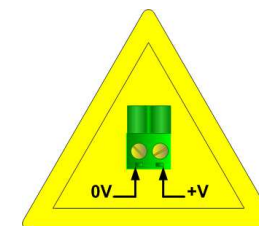
VAC 		VDC 	
Vmin	Vmax	Vmin	Vmax
8V	19V	8V	35V

Consumption at 24V DC:

Device	Consumption [W/VA]
HD67252-A1	3.5

Caution: Do not reverse the polarity power

Connector1:
Power Supply port
0V = Ground
+V = Positive wire
V AC: min 8V ; max 19V
V DC: min 8V ; max 35V



HD67252-A1

FUNCTION MODES:

The device has got two function modes depending on the position of the 'Dip2 of Dip-Switch A':

- The first, with 'Dip2 of Dip-Switch A' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip2 of Dip-Switch A' at "ON" position, is used for uploading the Project and/or Firmware.

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

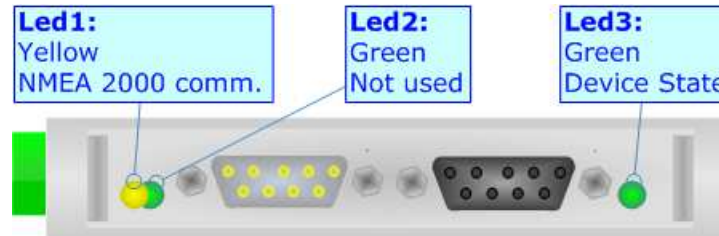
According to the functioning mode, the LEDs will have specific functions, see 'LEDS' section.



LEDS:

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

LED	Normal Mode	Boot Mode
1: NMEA 2000 comm.	Blinks when a NMEA 2000 frame is received	OFF
2: Not used	OFF	OFF
3: Device state	Blinks slowly (~1Hz)	Blinks quickly



NMEA 2000:

To terminate the NMEA 2000 line with a 120Ω resistor it is necessary that the Dip2 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

Here some codes of cable:

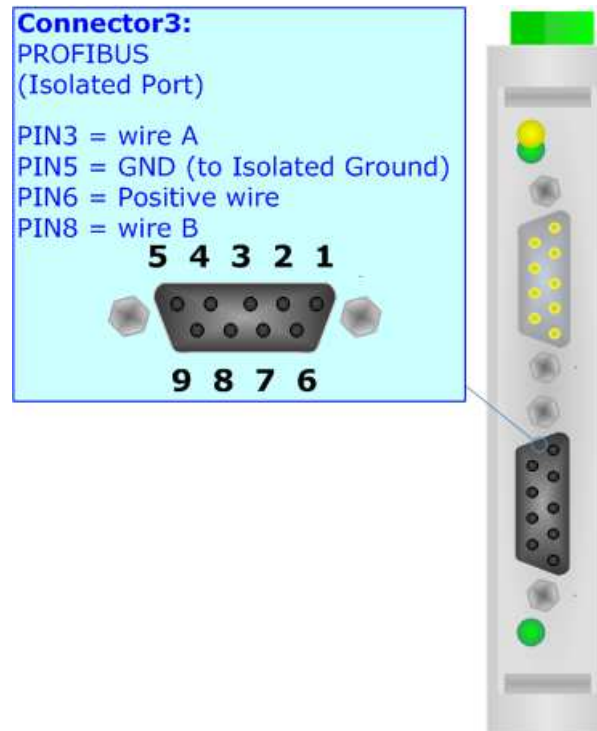
- Belden: p/n 3105A - 1x 22WG stranded twisted pairs conductor + foil shield + braid shield.

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:

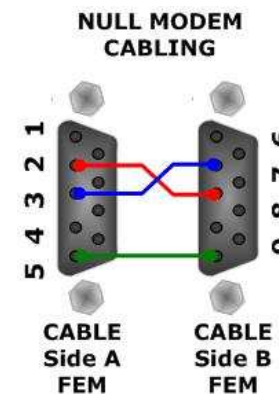
- Belden: p/n 183079A - Continuous Armor DataBus® ISA/SP-50 PROFIBUS Cable;



RS232:

The connection from RS232 socket to a serial port (example one from a personal computer) must be made with a Null Modem cable (a serial cable where the pins 2 and 3 are crossed). It is recommended that the RS232C Cable not exceed 15 meters.

The serial port is used for programming the device.



USE OF COMPOSITOR SW67252:

To configure the Converter, use the available software that runs with Windows called SW67252. 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 SW67252, the window below appears (Fig. 2).

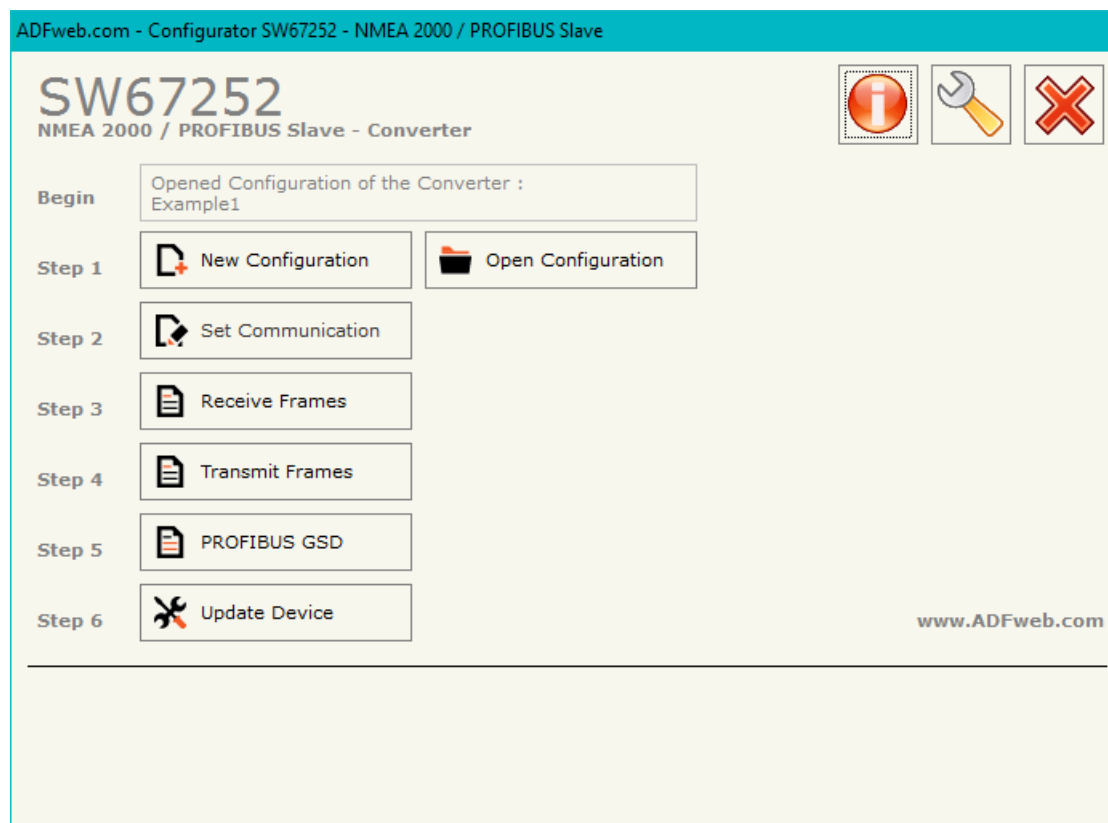
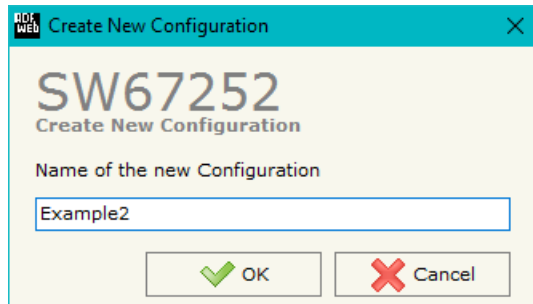


Figure 2: Main window for SW67252

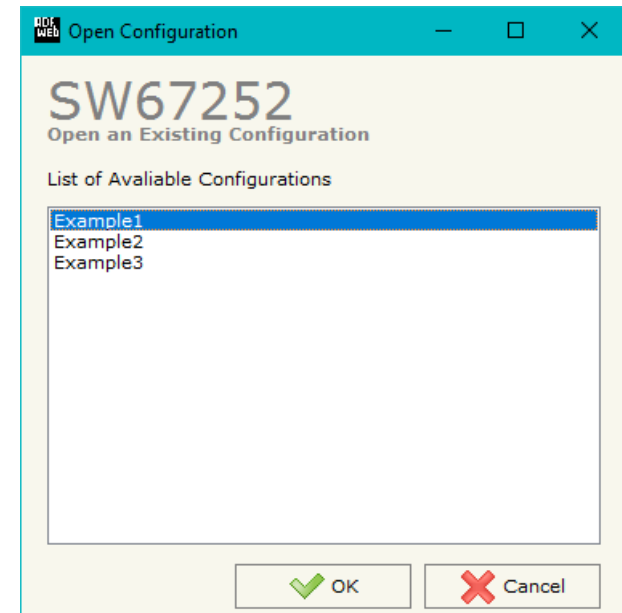
NEW CONFIGURATION / OPEN CONFIGURATION:

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




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

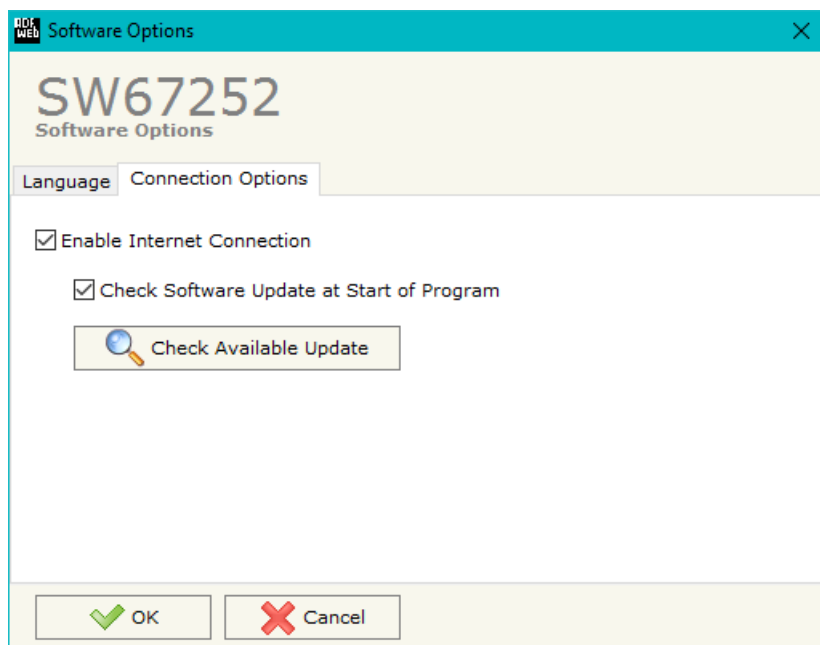
- To clone the configurations of a programmable “NMEA 2000 / PROFIBUS - Converter” in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate 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 SW67252 checks automatically if there are updatings when it is launched.

SET COMMUNICATION:

This section defines the fundamental communication parameter of two Buses, NMEA 2000 and PROFIBUS.

By Pressing the **"Set Communication"** button from the main window for SW67252 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The window is divided in two sections, one for the NMEA 2000 and the other for the PROFIBUS.

The means of the fields for "NMEA 2000" are:

- In the field **"Baud Rate"** the data rate of the NMEA 2000 bus is defined;
- In the field **"TimeOut Data (s)"** a time is defined; when this time is elapsed and the data isn't reliable, on PROFIBUS side the data will be set to 0xFF;
- 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 **"ID Device"** the ID of the NMEA 2000 side is defined.

The means of the fields for "PROFIBUS Slave" are:

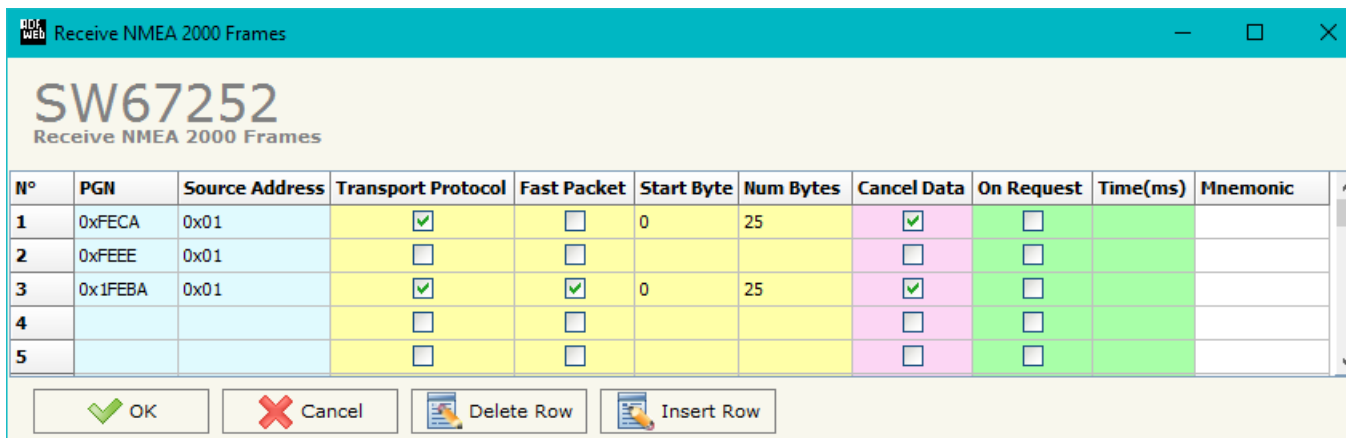
- In the field **"ID Device"** the address for the PROFIBUS side is defined;
- In the field **"Baudrate"** the data rate of the PROFIBUS side is defined (fixed to 'Auto Baudrate');
- If the field **"Module for each NMEA 2000 Frame"** is checked, when the "GSD File" is created, every NMEA 2000 frame will be inserted in a different Module, otherwise, if this field is not checked, a Module will contain up to 64 byte.

The screenshot shows a software window titled "Set Communication" for device "SW67252". The window is split into two main sections. The top section, "NMEA 2000", contains a "Baudrate" dropdown menu set to "250K", a "TimeOut Data (s)" text input field with the value "5", an unchecked checkbox for "Enable Peer to Peer", and an "ID Device" text input field with the value "16". The bottom section, "PROFIBUS Slave", contains an "ID Device" text input field with the value "12", a "Baudrate" dropdown menu set to "Auto Baudrate", and a checked checkbox for "Module for each NMEA 2000 Frame". At the bottom of the window, there are two buttons: "OK" with a green checkmark icon and "Cancel" with a red X icon.

Figure 3: "Set Communication" window

RECEIVE FRAMES:

By pressing the **Receive Frames** button from the main window for SW67252 (Fig. 2) the "Receive NMEA 2000 Frames" window appears (Fig. 4). The NMEA 2000 frames inserted in this table contains the Output data of PROFIBUS. These frames are accepted by the gateway.



N°	PGN	Source Address	Transport Protocol	Fast Packet	Start Byte	Num Bytes	Cancel Data	On Request	Time(ms)	Mnemonic
1	0xFECA	0x01	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	25	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2	0xFEEE	0x01	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		
3	0x1FEBA	0x01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0	25	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4			<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		
5			<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		

Figure 4: "Receive NMEA 2000 Frames" window

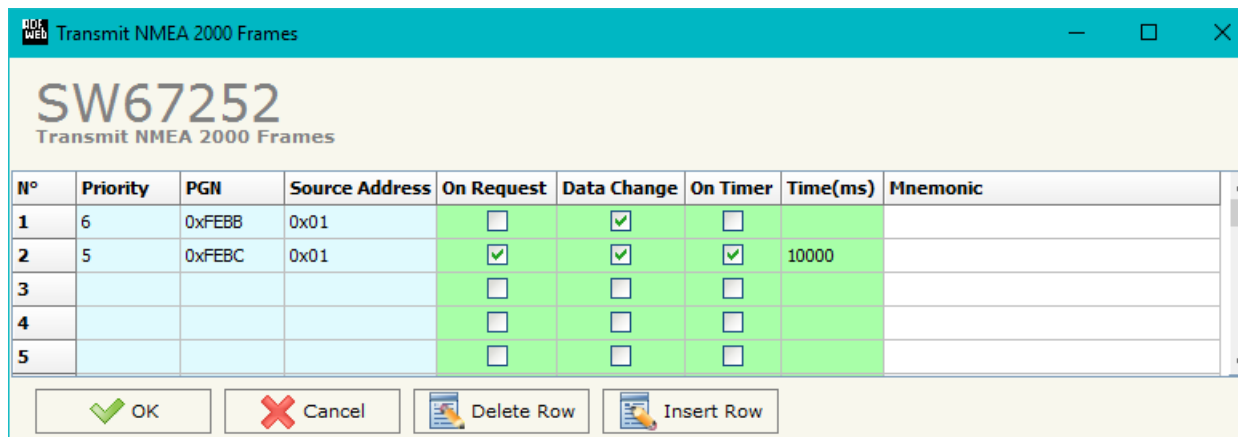
The data of the columns have the following meanings:

- In the field **PGN** the PGN of the data to be read from PROFIBUS is defined (it is a message identifier);
- In the field **Source Address** the address of the device that sends the frame is defined;
- If the field **Transport Protocol** is checked, the frame uses Transport Protocol functions;
- If the field **Fast Packet** is checked, the frame uses Fast Packet functions;
- In the field **Start Byte** the starting byte to start to save is defined. This field is valid only when the field "Transport Protocol" is checked;
- In the field **Num Byte** the number of consecutive bytes starting from "Start Byte" is defined;
- If the field **Cancel Data** is checked, the data in the frame will be erased after the expiration of the **TimeOut Data (s)** defined in "Set Communication" section;
- If the field **On Request** is checked, the converter sends the request for the PGN. This feature is used for PGNs transmitted on request;
- In the field **Time(ms)** the delay between two requests is defined;
- In the field **Mnemonic** a brief description is defined.

TRANSMIT FRAMES:

By pressing the **Transmit Frames** button from the main window for SW67252 (Fig. 2) the "Transmit NMEA 2000 frames" window appears (Fig. 5).

The NMEA 2000 frames inserted in this table contains the Input data of PROFIBUS. These frames are sent by the gateway.



N°	Priority	PGN	Source Address	On Request	Data Change	On Timer	Time(ms)	Mnemonic
1	6	0xFEBC	0x01	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2	5	0xFEBC	0x01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10000	
3				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Figure 5: "Send NMEA 2000 Frames" window

The data of the columns have the following meanings:

- In the field **Priority** the priority of the frame is defined. Number "0" is the highest priority and "7" is the lowest;
- In the field **PGN** the PGN of the data to be written from PROFIBUS is defined (it is a message identifier);
- In the field **Source Address** the address of the device that sends the frame is defined;
- If the field **On Request** is checked, the PGN is transmitted when a NMEA 2000 request for this PGN is received;
- If the field **Data Change** is checked, the PGN is transmitted when the data from PROFIBUS changes;
- If the field **On Timer** is checked, the PGN is transmitted cyclically;
- In the field **Time(ms)** the delay used for the "On Timer" mode is defined;
- In the field **Mnemonic** a brief description is defined.

GSD FILE:

By pressing the "**GSD File**" button from the main window for SW67252 (Fig. 2), it is possible to save the GSD file for the PROFIBUS side.

**Note:**

When you import the .gsd file on your Master PROFIBUS, you will have to add all the modules that are present inside it.

UPDATE DEVICE:

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

In order to load the parameters or update the firmware in the Converter, follow these instructions:

- Turn OFF the Device;
- Connect the Null Modem Cable form your PC to the Converter;
- Put Dip2 of Dip-Switch A at "ON" position (see "FUNCTION MODES" section);
- Select the **COM port** and press the **Connect** button;
- Turn ON the device;
- Check the Device State LED. It must blink quickly (see "LEDS" section);
- 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;
- Disconnect the RS232 cable;
- Turn ON the device.

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

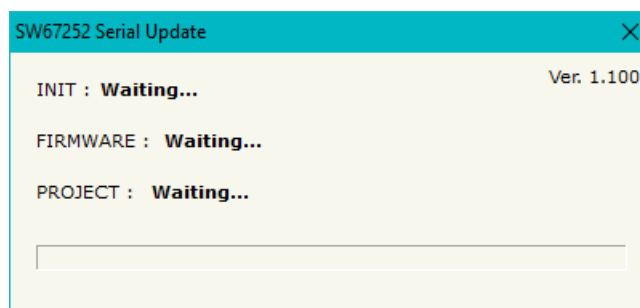
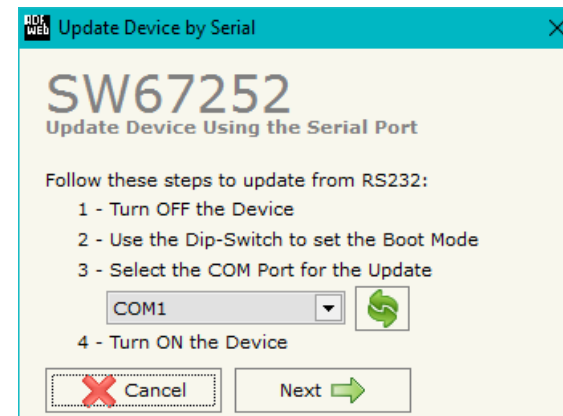





Figure 6: "Update Device" windows

 **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 HD67252 device.

 **Note:**
When you receive the device, for the first time, you have to update also the Firmware in the HD67252 device.

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

- Check if the serial COM port selected is the correct one;
- Check if the serial is connected between the PC and the device;
- Try to repeat the operations for the updating;
- If you are using a dongle try with a native COM port or change the dongle;
- 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 or 10, make sure that you have the Administrator Rights;
- Pay attention to Firewall lock.

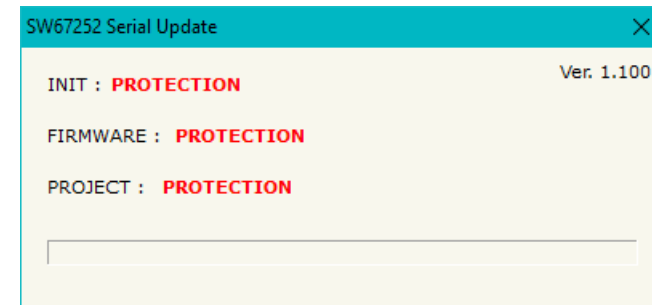
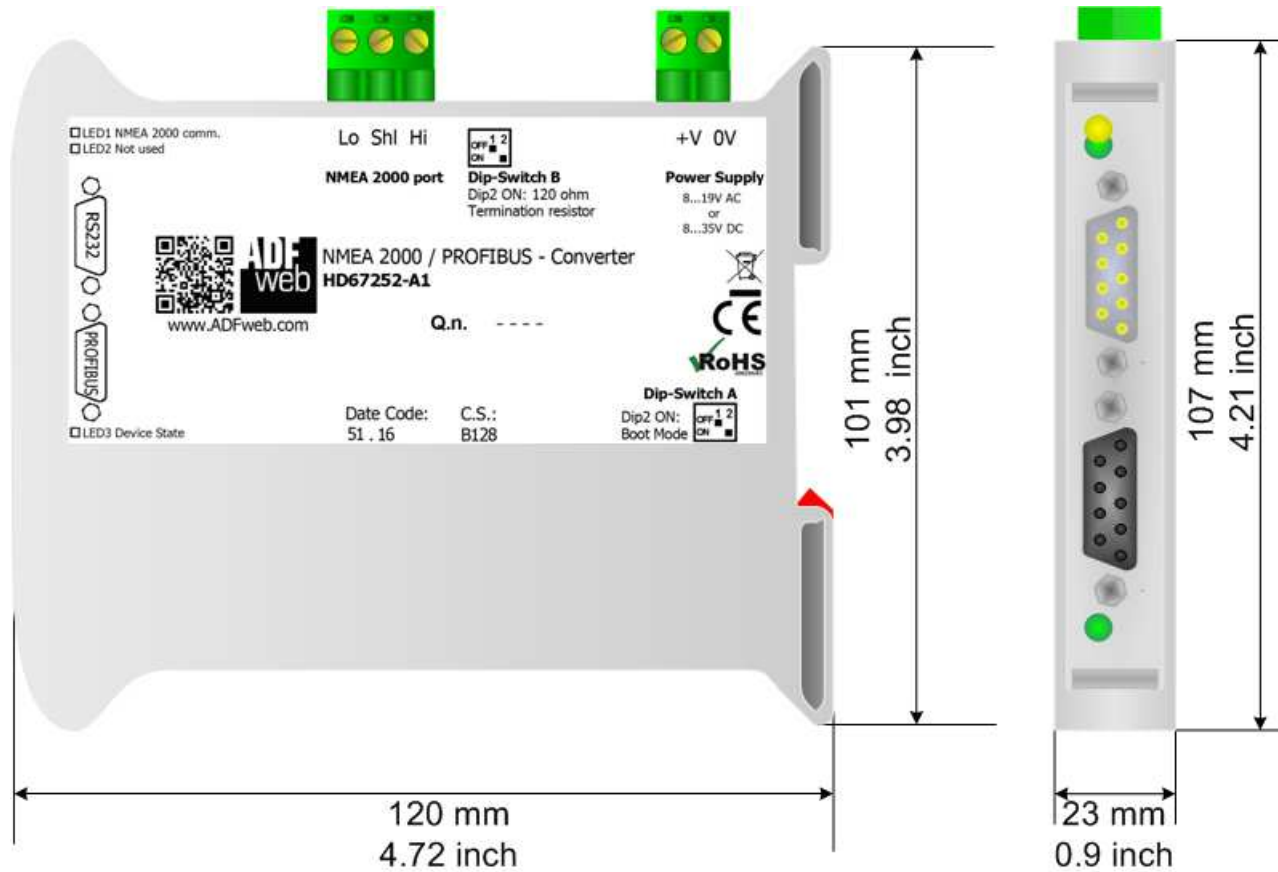


Figure 7: "Protection" window

 You have to use the software "SW67252": www.adfweb.com/download/filefold/SW67252.zip.

MECHANICAL DIMENSIONS:



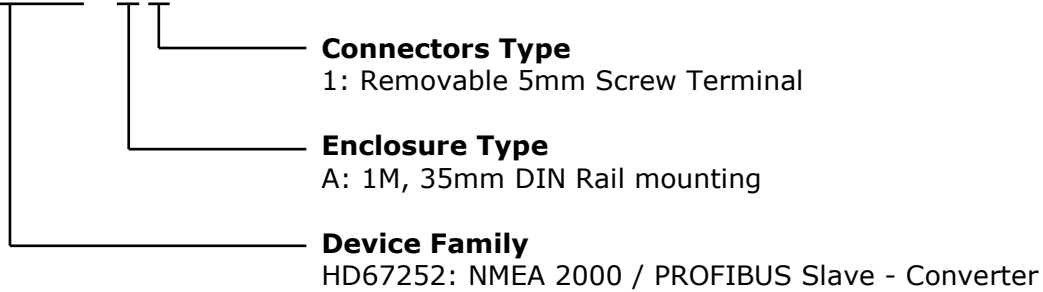
Housing: PVC
Weight: 200g (Approx)

Figure 8: Mechanical dimensions scheme for HD67252-A1

ORDERING INFORMATIONS:

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

HD67252 - A 1



Order Code: **HD67252-A1** - NMEA 2000 / PROFIBUS Slave - 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

DISCLAIMER:

All technical content within this document can be modified without notice. The content of the document is a 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. 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 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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