

User Manual

Revision 1.001
English

NMEA 2000 / DeviceNet - Converter

(Order Code: HD67251-A1 - HD67251-A3 - HD67251-A4)

for Website information:

www.adfweb.com?Product=HD67251-A1
www.adfweb.com?Product=HD67251-A3
www.adfweb.com?Product=HD67251-A4

for Price information:

www.adfweb.com?Price=HD67251-A1
www.adfweb.com?Price=HD67251-A3
www.adfweb.com?Price=HD67251-A4

Benefits and Main Features:

- ▶ Very easy to configure
- ▶ Low cost
- ▶ Designed for serious use
- ▶ Industrial temperature range:
-40°C / 85°C (-40F / 185°F)



HD67251-A1

HD67251-A3

HD67251-A4

For others Gateways / Bridges:

NMEA 2000 to Modbus

See also the following links:

www.adfweb.com?Product=HD67222 (Modbus RTU)

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

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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.

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	12/07/2010	Dp	All	First release version
1.001	11/03/2013	Nt	All	Added new chapters

WARNING:

ADFweb.com reserves the right to change information in this manual about our product without warning.
ADFweb.com is not responsible for any error this manual may contain.

TRADEMARKS:

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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.

CONNECTION SCHEMES:

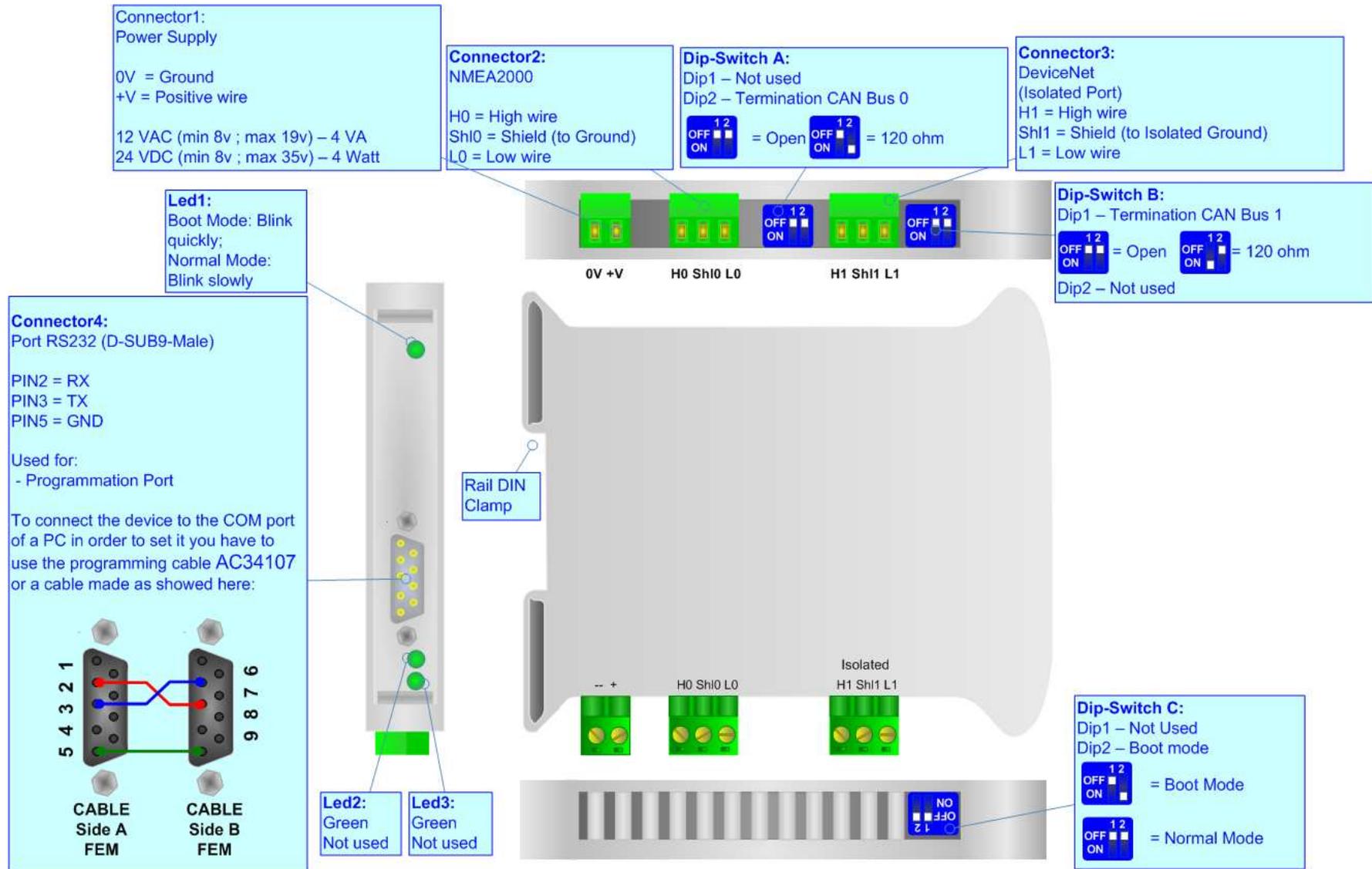


Figure 1: Connection scheme for HD67251-A1

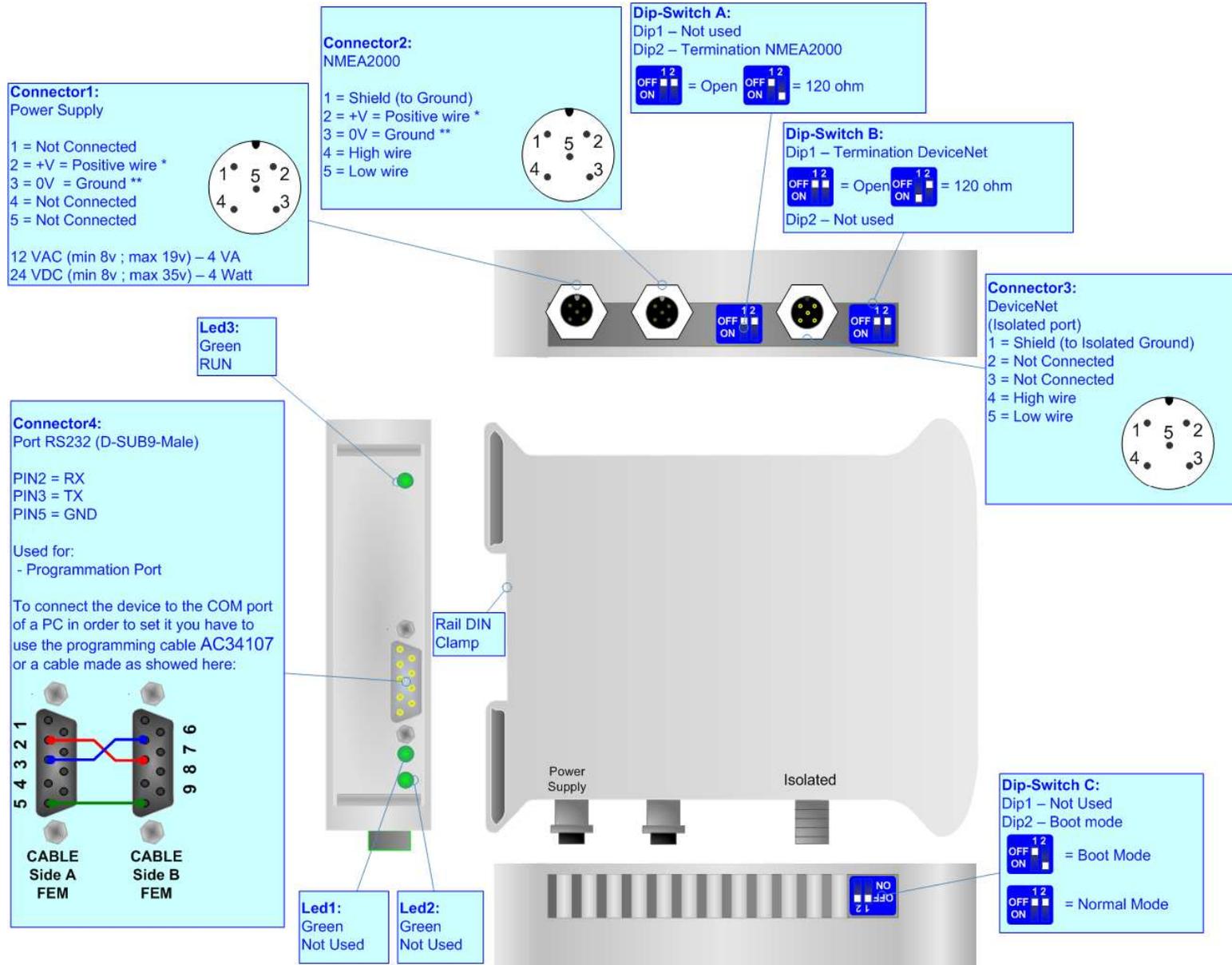


Figure 2: Connection scheme for HD67251-A3

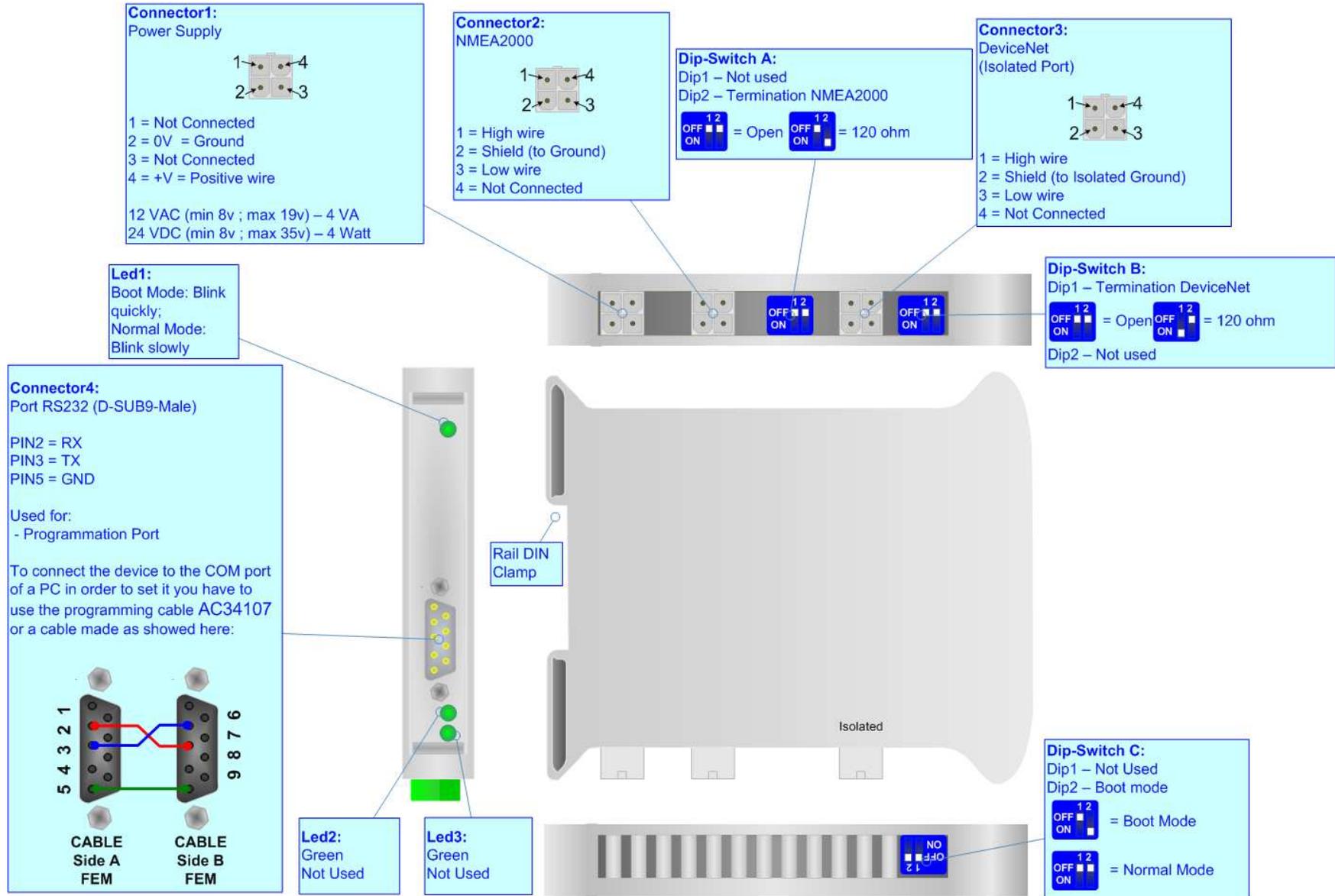


Figure 3: Connection scheme for HD67251-A4

CHARACTERISTICS:

The configurable DeviceNet to NMEA 2000 gateway allows the following characteristics:

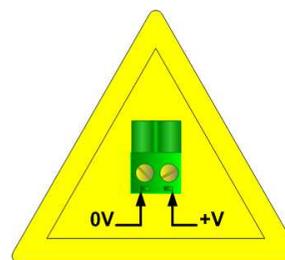
- Baud Rate changeable with software;
- Mountable on Rail DIN;
- Temperature range from -40°C to 85°C.

The “NMEA 2000 / DeviceNet - Converter” allows a NMEA 2000 network to communicate with a DeviceNet network.

POWER SUPPLY:

Recommended Power Supply	
VDC	VAC
24v	12v

Caution: Not reverse the polarity power .



HD67251

VDC		VAC	
Vmin	Vmax	Vmin	Vmax
8v	35v	8v	19v

CONFIGURATION:

You need Compositor SW67251 software on your PC in order to perform the following:

- Define the parameters of two buses;
- Define which NMEA 2000 frames are reading from the DeviceNet;
- Define which NMEA 2000 frames are writing from the DeviceNet.

USE OF COMPOSITOR SW67251:

To configure the Gateway use the available software that runs with Windows, called SW67251. It is downloadable on the site www.adfweb.com and its operation is described in this document.

When launching SW67251 the window on the right appears (Fig. 2).

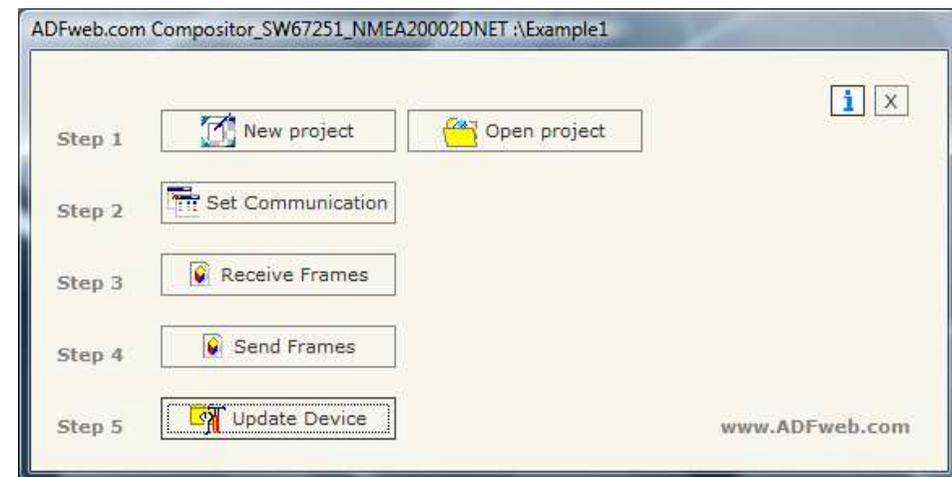


Figure 4: Main window for SW67251

NEW PROJECT / OPEN PROJECT:

The "New Project" button creates the folder which contains the entire device configuration. A device configuration can also be imported and exported:

- To clone the configurations of a Programmable DeviceNet to NMEA 2000 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 Project".

When a new project is created or an existent project is open, it will be possible to access the various configuration sections of the software:

- **"Set Communication";**
- **"Receive Frames";**
- **"Send Frame".**

SET COMMUNICATION:

This section defines the fundamental communication parameters of two Buses, DeviceNet and NMEA 2000.

By pressing the "Set Communication" button from the main window for SW67251 (Fig. 4) the window "Set Communication" appears (Fig. 5).

This window is divided in two parts: the first is used to configure the NMEA 2000 network and the second for the DeviceNet network:

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

- In the field "Baud rate" the velocity of the NMEA 2000 bus is defined;
- If the field "Send Frame on Data Change" is checked, the frames are sent when the data are changed; otherwise if the field "Send Frame Every xx ms" is checked you have to insert a value in the field and then the frames defined in the "Send Frames" table are sent every xx ms;
- In the field "TimeOut Data" insert a time; when this time is elapsed and the data isn't reliable, in the register you can read "FFFF";
- 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.

The means of the fields for "DeviceNet" are:

- In the field "ID Dev." the address of the Gateway is defined;
- In the field "Baud rate" the velocity of the DeviceNet bus is defined.

The screenshot shows a dialog box titled "SET COMMUNICATION". It is divided into two main sections: "NMEA2000" and "DeviceNet".

NMEA2000 Section:

- Baud rate:** A dropdown menu set to "250K".
- CAN Type:** Two radio buttons: "CAN 2.0A 11Bit" (unselected) and "CAN 2.0B 29Bit" (selected).
- Send Data:** Two radio buttons: "Send Frame on Data Change" (unselected) and "Send Frame Every" (selected). The "Send Frame Every" option has a text input field containing "125" and a unit label "ms".
- TimeOut DATA:** A text input field containing "10" and a unit label "s".
- Peer to Peer:** A checkbox labeled "Enable Peer to Peer" which is currently unchecked.

DeviceNet Section:

- ID Dev.:** A text input field containing "12".
- Baud rate:** A dropdown menu set to "500K".

At the bottom of the dialog, there are two buttons: "OK" (with a green checkmark icon) and "Cancel" (with a red X icon).

Figure 5: "Set Communication" window

RECEIVE FRAMES:

By pressing the "Receive Frames" button from the main window for SW67251 (Fig. 4) the "Receive Frames" window appears (Fig. 6).

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 NMEA 2000 to DeviceNet (it is an identifier);
- In the field "Source Address" insert the address of the device that sends the frame;
- If the field "Multi PAKet" is checked, the Transport Protocol is enabled for the frame otherwise is disable;
- If the field "Fast Packet" is checked the frame could use the Fast Packet Protocol functions;
- In the field "StartByte" insert the Start Byte of the Transport Protocol. Insert a value only if the Multi Frame is enabled;
- In the field "N° Byte" insert the number of bytes that composed the Transport Protocol. Insert a value only if the Multi Frame is enabled;
- If the field "Cancel Data" is checked, the data in the frame will be erased after the expiration of the "TimeOut Data";
- In the field "Mnemonic" the description for the frame is defined.

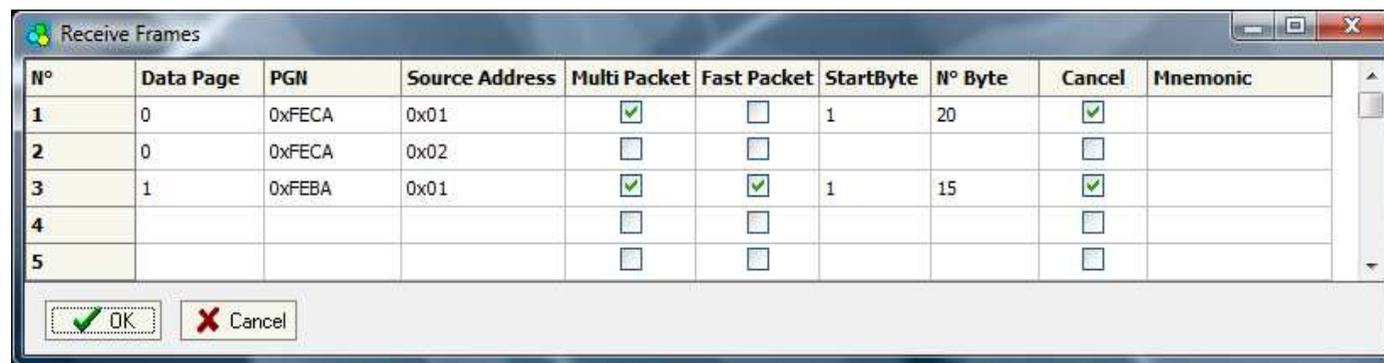


Figure 6: "Receive Frames" window

SEND FRAMES:

By pressing the "Send Frames" button from the main window of SW67251 (Fig. 4) the "Send Frames" window appears (Fig. 7).

The data of the columns have the following meanings:

- In the field "Priority" insert the priority of the Frame: in NMEA 2000 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;
- In the field "PGN" insert the PGN of the data you would like to write from DeviceNET to NMEA 2000 (in NMEA 2000 protocol the PGN is an identifier);
- In the field "Source Address" insert the address of the device that sends the frame;
- In the field "Mnemonic" the description for the frame is defined.

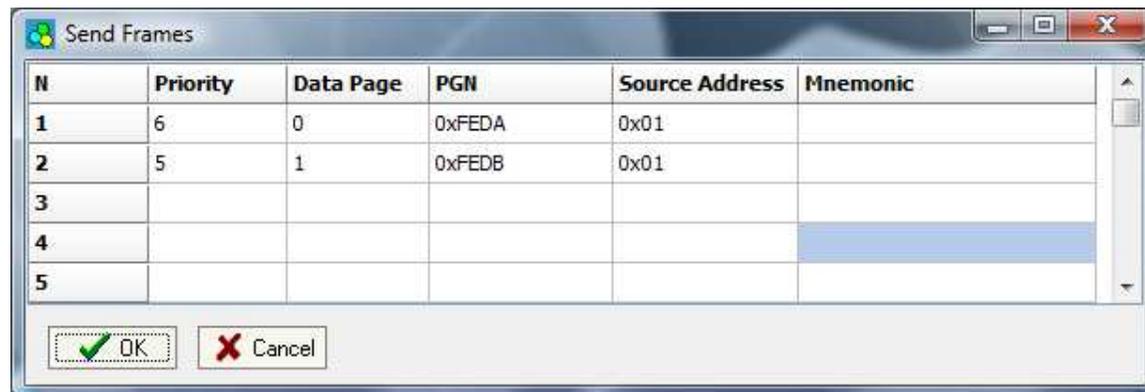


Figure 7: "Send Frames" window

UPDATE DEVICE:

Section "Update Via Serial" (Fig. 6):

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

- Turn off the device;
- Connect the Null Modem cable from your PC to the gateway;
- Insert the Boot Jumper (see the Fig. 1 for more info);
- Turn on the device;
- Check the "BOOT Led". It must to blink quickly (See the Fig. 1 for more info);
- Select COM port and press the "Connect" button;
- Press the "Next" button;
- Select operations you want to do. Can select only Firmware or only Project or both;
- Press the "Execute update firmware" to start the upload;
- When all the operations are "OK" turn off the device;
- Disconnect the Boot jumper;
- Turn on the device.

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

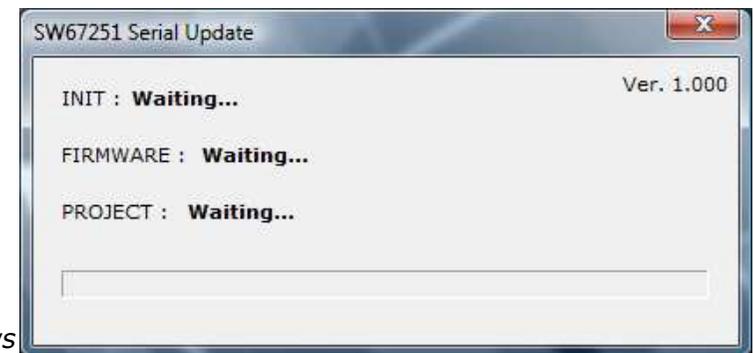
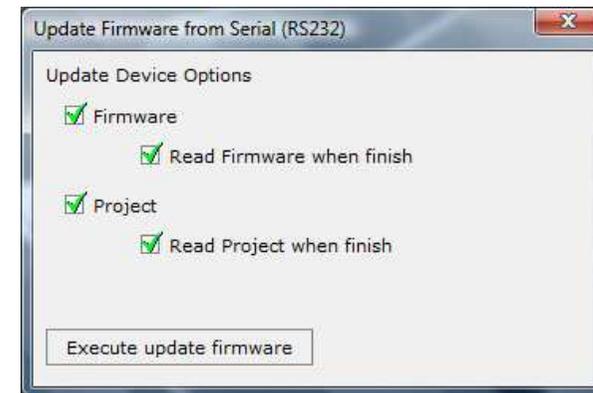


Figure 8: "Update Device" windows

CHARACTERISTICS OF THE CABLES:

The connection from RS232C 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.

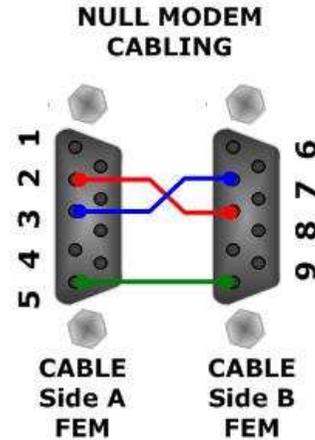


Figure 9: Null modem cabling

MECHANICAL DIMENSIONS:

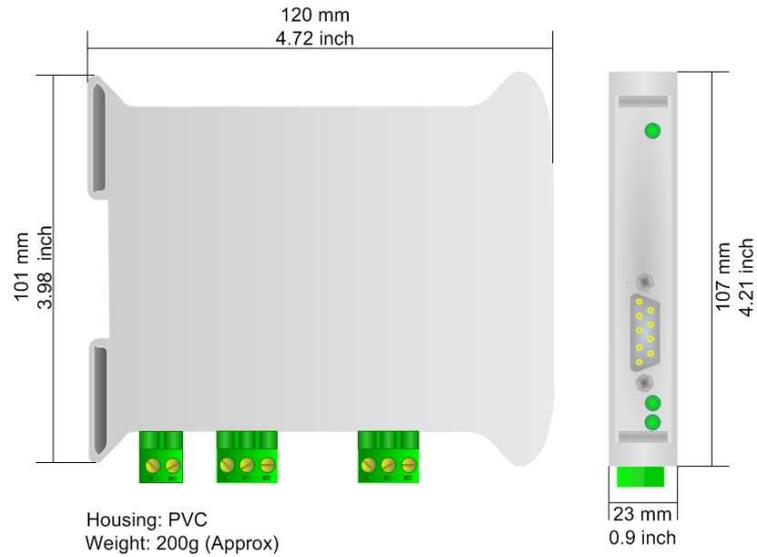


Figure 10: Mechanical dimensions scheme HD67251-A1

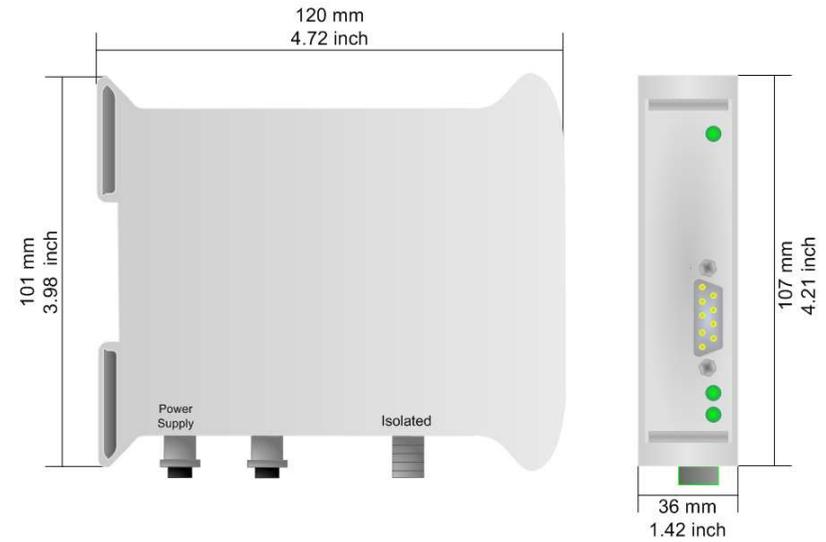


Figure 11: Mechanical dimensions scheme HD67251-A3

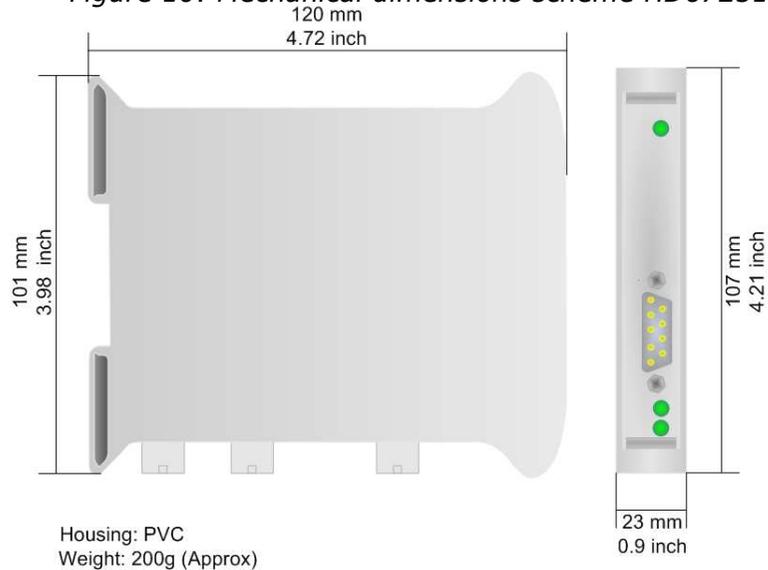


Figure 12: Mechanical dimensions scheme HD67251-A4

ORDER CODE:

Order Code: **HD67251-A1** - NMEA 2000 / DeviceNet - Converter

Order Code: **HD67251-A3** - NMEA 2000 / DeviceNet - Converter

Order Code: **HD67251-A4** - NMEA 2000 / DeviceNet - Converter

ACCESSORIES:

Order Code: **AC34107** - Null Modem Cable Fem/Fem DSub 9 Pin 1,5 m

Order Code: **AC34114** - Null Modem Cable Fem/Fem DSub 9 Pin 5 m

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

Order Code: **AC34002** - Rail DIN - Power Supply 110V AC 50/60Hz - 12 V AC

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 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.

PRODUCTS AND RELATED DOCUMENTS:

Part	Description	URL
HD67121	Gateway CANopen / Canopen	www.adfweb.com?product=HD67121
HD67502	Gateway CANopen / Modbus - RTU	www.adfweb.com?product=HD67502
HD67505	Gateway CANopen / Modbus - Ethernet TCP	www.adfweb.com?product=HD67505
HD67134	Gateway CANopen / DeviceNet	www.adfweb.com?product=HD67134
HD67117	CAN bus Repeater	www.adfweb.com?product=HD67117
HD67216	CAN bus Analyzer	www.adfweb.com?product=HD67216