

# User Manual

Revision 1.011  
English

## DeviceNet Slave / Modbus TCP Slave - Converter

- ▶ Very easy to configure
- ▶ Low cost
- ▶ Rail mountable
- ▶ Wide supply input range
- ▶ Galvanic isolation between two buses
- ▶ Industrial temperature range:  
-40°C / 85°C (-40°F / 185°F)



**INDEX:**

	Page
INDEX	2
UPDATED DOCUMENTATION	2
REVISION LIST	2
WARNING	2
TRADEMARKS	2
SECURITY ALERT	3
CONNECTION SCHEME	4
INTRODUCTION	6
CHARACTERISTICS	6
CONFIGURATION	6
POWER SUPPLY	7
FUNCTION MODES	8
LEDS	9
USE OF COMPOSITOR SW67140	10
NEW PROJECT / OPEN PROJECT	10
SET COMMUNICATION	11
SET ACCESS	12
UPDATE DEVICE	14
CHARACTERISTICS OF THE CABLES	15
MECHANICAL DIMENSIONS	16
ORDER CODE	16
ACCESSORIES	16
DISCLAIMER	17
OTHER REGULATIONS AND STANDARDS	17
WARRANTIES AND TECHNICAL SUPPORT	18
RETURN POLICY	18
PRODUCTS AND RELATED DOCUMENTS	18

**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/](http://www.adfweb.com/download/) and search for the corresponding code on the page. Click on the proper "Document Code" and download the update.

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/](http://www.adfweb.com/download/)

**REVISION LIST:**

Revision	Date	Author	Chapter	Description
1.000	16/04/2010	Fl	All	First release version
1.010	24/05/2011	Fl	All	Software changed (v1.000)
1.011	13/02/2013	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:**

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 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.

**CONNECTION SCHEME:**

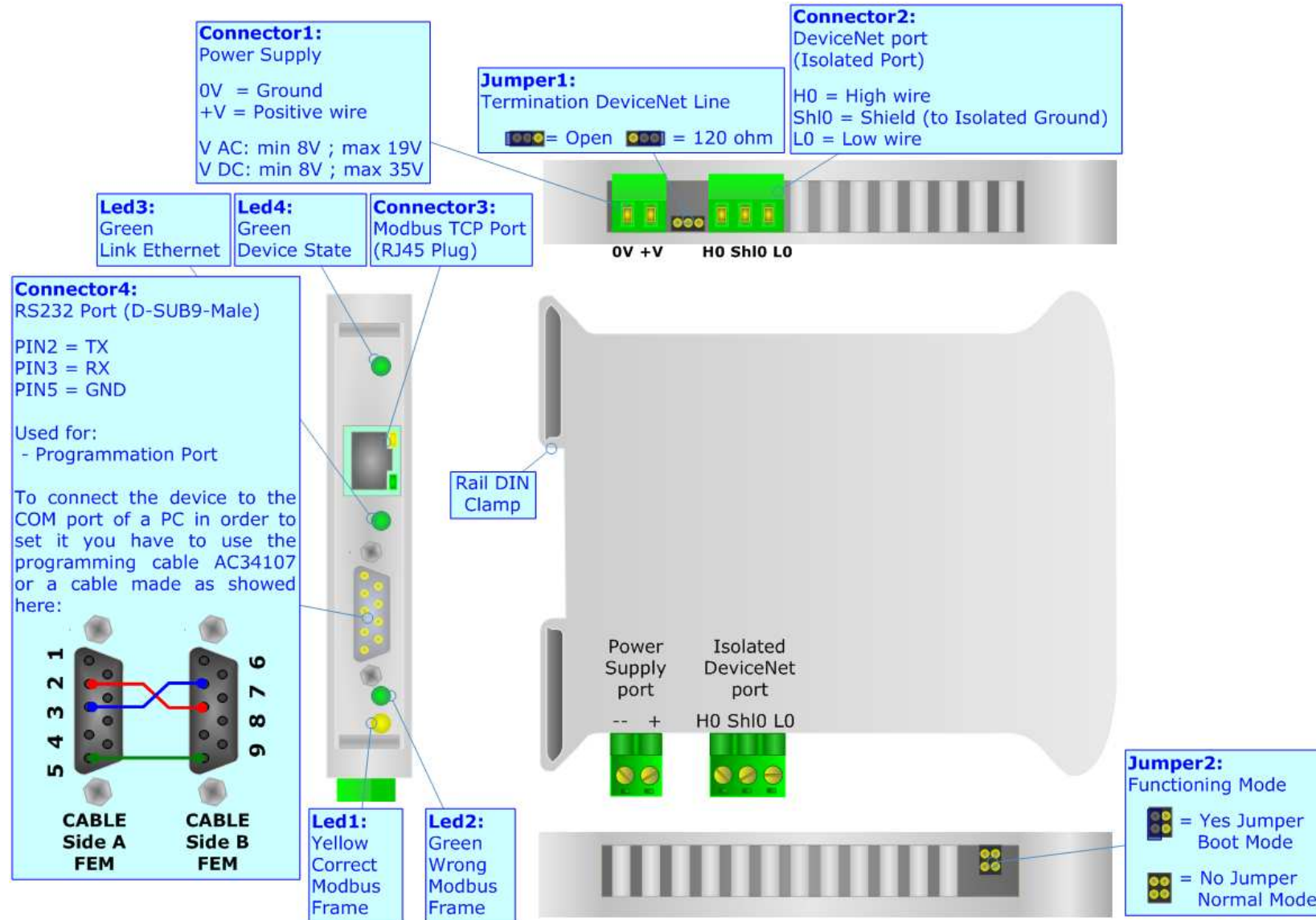


Figure 1: Connection scheme for HD67140-A1

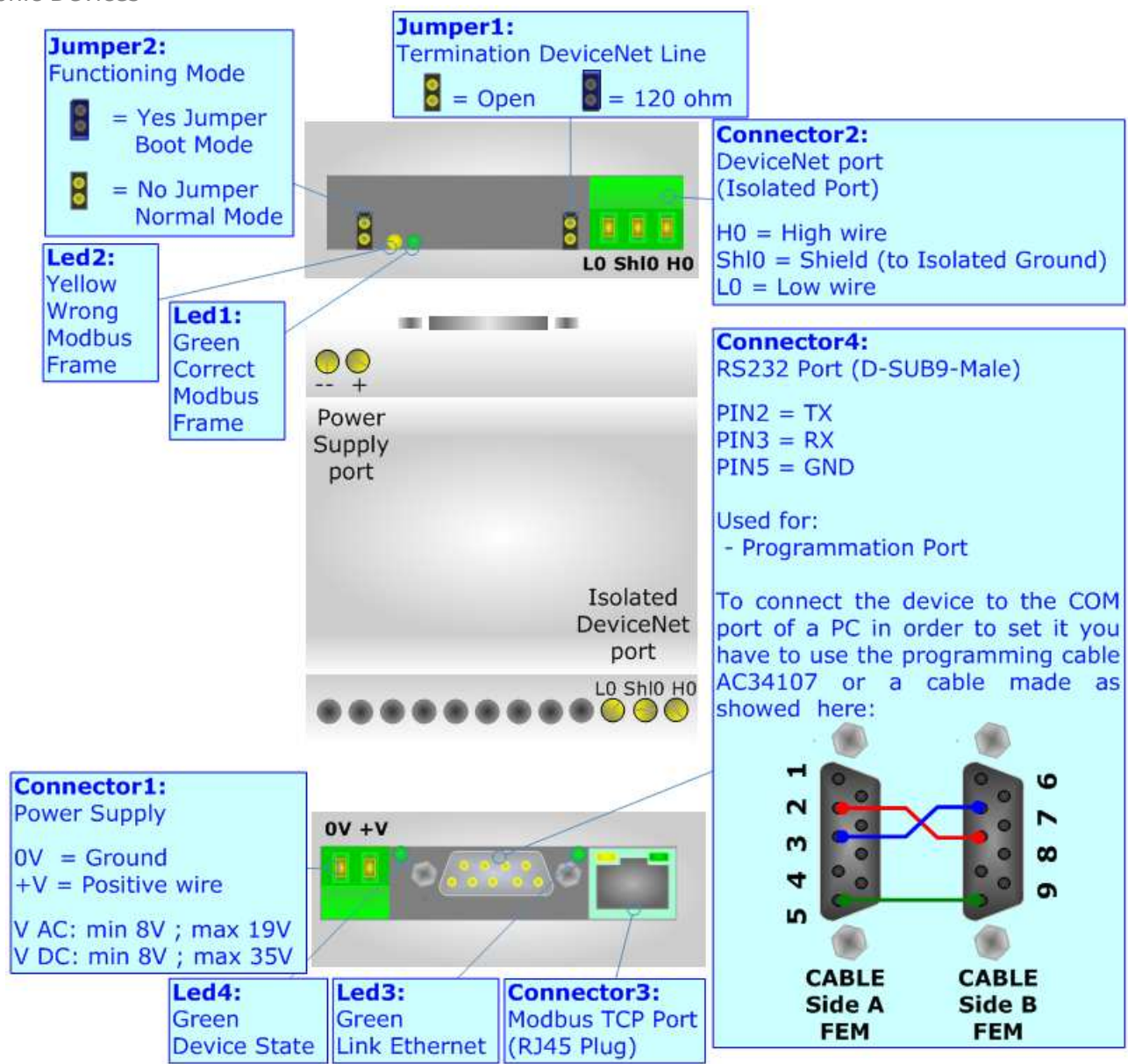


Figure 2: Connection scheme for HD67140-B2

**INTRODUCTION:**

The Converter "DeviceNet Slave / Modbus TCP Slave" is a powerful, flexible and economic instrument that can be used with systems based on Modbus TCP and DeviceNet.

**CHARACTERISTICS:**

The Modbus TCP Server (i.e. Slave) from/to DeviceNet Slave Gateway allows the following characteristics:

- Up to 455 bytes in reading and 455 bytes in writing on DeviceNet side;
- Two-directional information between Modbus and DeviceNet bus;
- Electrical isolation between two buses;
- Power supply of 8...19 VAC or 8...35 VDC;
- 35mm Rail DIN mounting;
- Temperature range -40°C to 85°C.

**CONFIGURATION:**

You need Compositor SW67140 software on your PC in order to perform the following:

- Define the parameters of Modbus TCP;
- Define the parameters of DeviceNet;
- Define the read/write registers;
- Update the Firmware and/or the Project.

**POWER SUPPLY:**

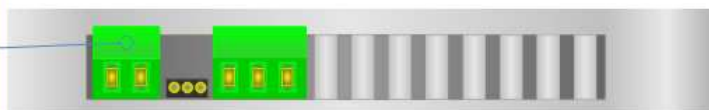
The devices can be powered between a wide range of tensions. For more details see the two tables below.

	VAC		VDC	
	Vmin	Vmax	Vmin	Vmax
<b>HD67140-A1</b>	<b>8V</b>	<b>19V</b>	<b>8V</b>	<b>35V</b>
<b>HD67140-B2</b>				

Consumption at 24V DC:

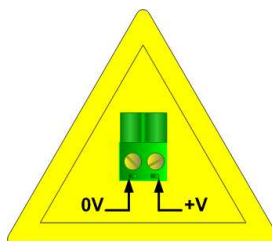
Device	Consumption [W/VA]
HD67140-A1	4
HD67140-B2	

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

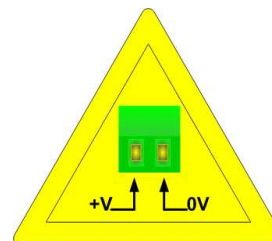


**Connector1:**  
Power Supply  
0V = Ground  
+V = Positive wire  
V AC: min 8V ; max 19V  
V DC: min 8V ; max 35V

**Caution: Not reverse the polarity power**



HD67140-A1



HD67140-B2

**FUNCTION MODES:**

The devices have got two functions mode depending of the position of the 'Jumper2':

- The first, without Jumper, is used for the normal working of the device.
- The second, with Jumper, is used for upload the 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 three green LEDs, and one yellow LED, 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: Correct Modbus Frame	Change state when receive a correct Modbus Frame	Off
2: Wrong Modbus Frame	Change state when receive a wrong Modbus Frame	Off
3: Link Ethernet	<b>On:</b> Ethernet cable connected <b>Off:</b> Ethernet cable disconnected	<b>On:</b> Ethernet cable connected <b>Off:</b> Ethernet cable disconnected
4: Device State	Slow flashing	Fast flashing



### USE OF COMPOSITOR SW67140:

To configure the Gateway, use the available software that runs with Windows, called SW67140. It is downloadable on the site [www.adfweb.com](http://www.adfweb.com) and its operation is described in this document.

When launching the SW67140 the right window appears (Fig. 3).

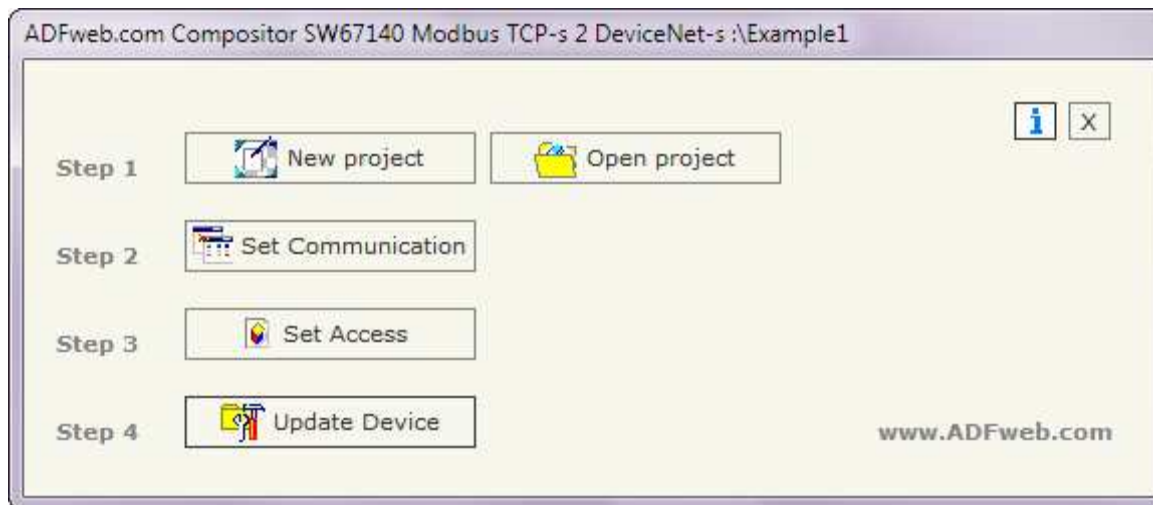


Figure 3: Main window for SW67140

### NEW PROJECT / OPEN PROJECT:

The "**New Project**" 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 Modbus TCP Server to DeviceNet Slave Gateway 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**".

**SET COMMUNICATION:**

This section defines the fundamental communication parameters of two Buses Modbus and DeviceNet.

By pressing the **"Set Communication"** button from the main window for SW67140 (Fig. 3) the "SET COMMUNICATION" window appears (Fig. 4).

This window is divided in two sections, one for the Modbus TCP and the other for the DeviceNet.

The means of the fields for "Ethernet" are:

- In the field **"IP Address"** insert the IP address;
- In the field **"Subnet Mask"** insert the Subnet Mask;
- If the field **"Gateway"** is checked in the fields under it is possible to insert the IP address used for going out to the net;
- In the field **"Port"** insert the number of the port;

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

- In the **"ID Dev."** field the Gateway address of the DeviceNet is defined.
- In the **"Baud rate"** field the DeviceNet baud rate is defined;
- In the field **"Number Byte IN"** the number of byte from the DeviceNet to the gateway is defined (at maximum it is possible to use 455 byte, 0 means that isn't used);
- In the field **"Number Byte OUT"** the number of byte from the gateway to the DeviceNet is defined (at maximum it is possible to use 455 byte, 0 means that isn't used).

The screenshot shows a dialog box titled "SET COMMUNICATION". It has two main sections: "Ethernet" and "DeviceNet".

**Ethernet section:**

- IP Address:** 192 . 168 . 0 . 10
- Subnet Mask:** 255 . 255 . 255 . 0
- Gateway:**  Gateway. IP Address: 192 . 168 . 0 . 1
- Port:** 502

**DeviceNet section:**

- ID Dev.:** 20
- Baud rate:** 500K
- Number Byte IN:** 455
- Number Byte OUT:** 455

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

Figure 4: "Set Communication" window

**SET ACCESS:**

By pressing the "Set Access" button from the main window for SW67140 (Fig. 3) the window "Set Access" appears (Fig. 5).

This window is divided in two parts, the "DeviceNet IN --> Modbus Read" and the "Modbus Write --> DeviceNet OUT". The first part "DeviceNet IN --> Modbus Read" allows a master Modbus to read the data which come from the DeviceNet. The second part "Modbus Write --> DeviceNet OUT" allows a master Modbus to write the data which are readable from a Master DeviceNet.

**DeviceNet IN --> Modbus Read**

The means of the fields are:

- In the field "Address Register" the address of the register to be read from Modbus TCP Client is defined;
- In the field "Address DeviceNet High" the number of DeviceNet byte which compose the Modbus register High is defined. If the value is 0 means that isn't used;
- In the field "Address DeviceNet Low" the number of DeviceNet byte which compose the Modbus register Low is defined. If the value is 0 means that isn't used;
- In the field "Mnemonic" the description for the request is defined.

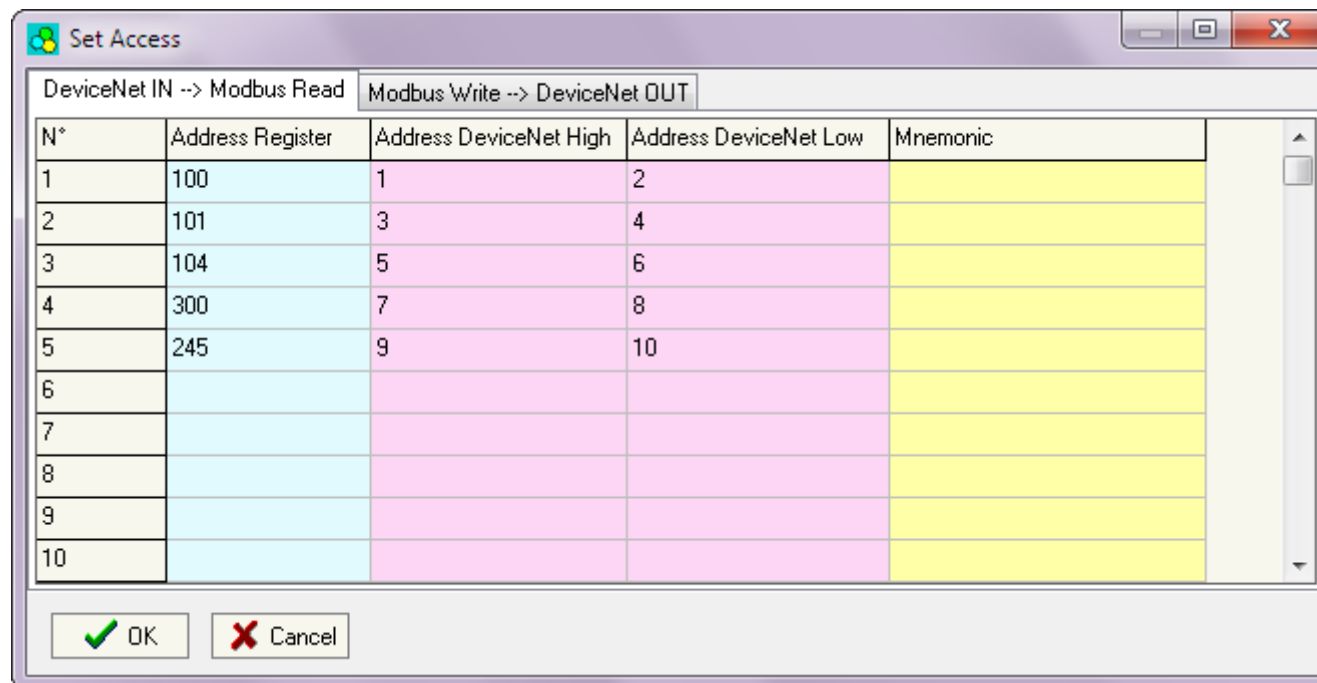


Figure 5: "Set Access" window

### Modbus Write -->DeviceNet OUT

The means of the fields are:

- In the field "**Address Register**" the address of the register to be write from Modbus TCP Client is defined;
- In the field "**Address DeviceNet High**" the position where the data High of Modbus register will be saved in the DeviceNet array is defined. If the value is 0 means that isn't used;
- In the field "**Address DeviceNet Low**" the position where the data Low of Modbus register will be saved in the DeviceNet array is defined. If the value is 0 means that isn't used;
- In the field "**Mnemonic**" the description for the request is defined.

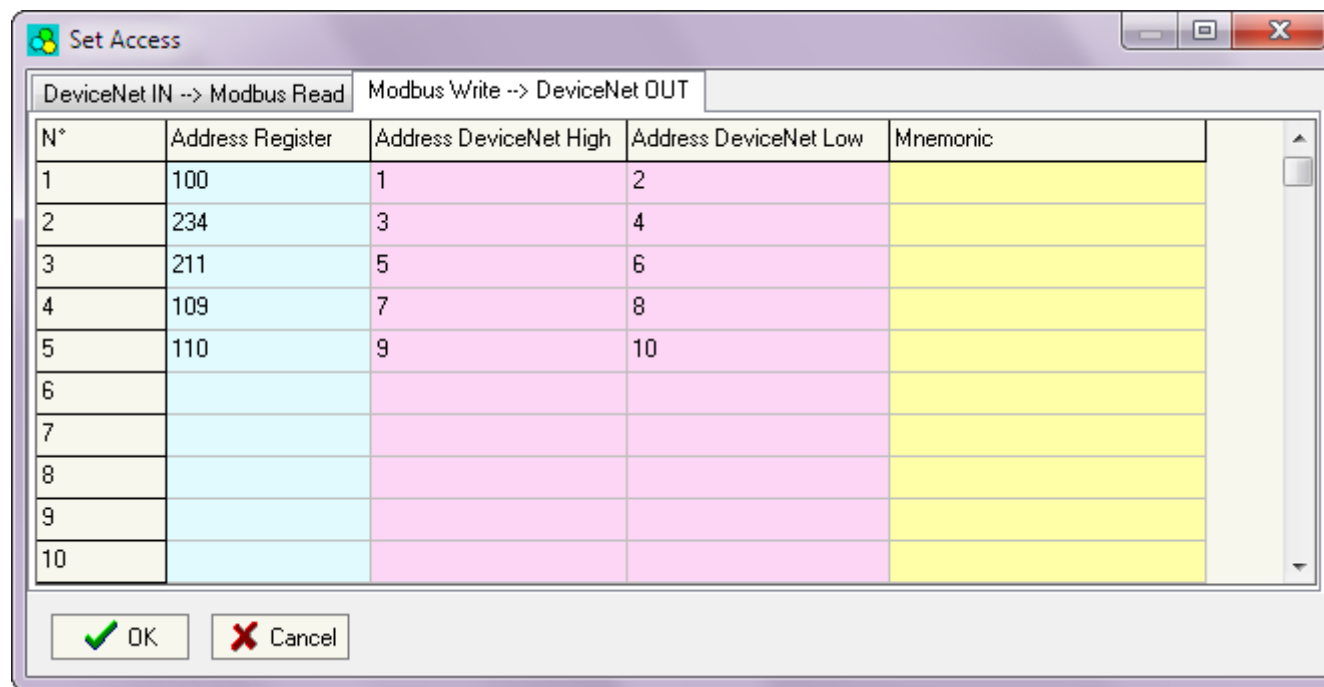


Figure 6: "Set Access" window

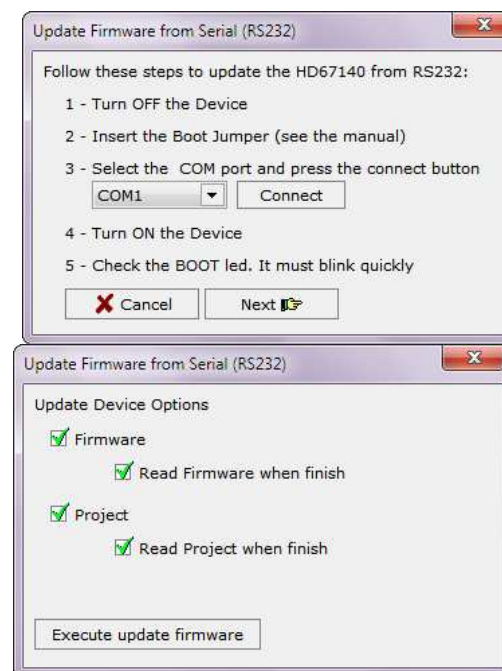
## UPDATE DEVICE:

By pressing the **"Update Device"** button from the main window for SW67140 (Fig. 3) the window "Update Firmware from Serial (RS232)" appears (Fig. 7).

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

- Turn off the Device;
- Connect the Null Modem Cable from your PC to the Gateway;
- Insert the Boot Jumper (For more info see Fig. 1 or Fig. 2);
- Select the COM port and press the **"Connect"** button;
- Turn on the device;
- Check the BOOT Led. It must blink quickly (For more info see Fig. 1 or Fig. 2);
- 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;
- Disconnect the Boot jumper;
- Disconnect the RS232 Cable;
- Turn on the device.

Figure 7: "Update Device" windows



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

### Note:

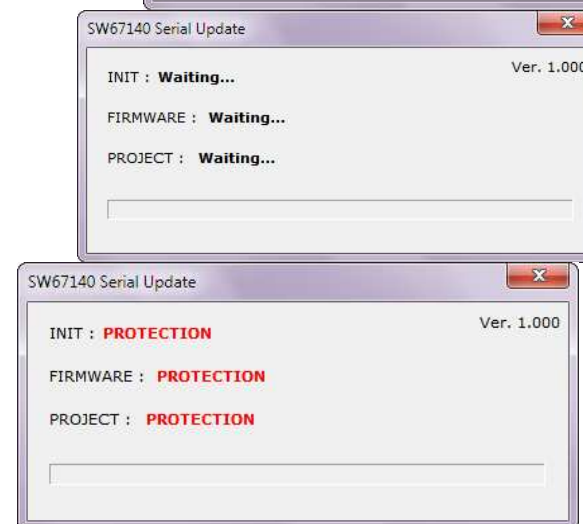
When you install a new version of the software it is better if the first time you do the update of the Firmware in the HD67140-xx device.

### Warning:

If the Fig. 8 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.

Figure 8: "Protection" window



**CHARACTERISTICS OF THE CABLES:**

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.

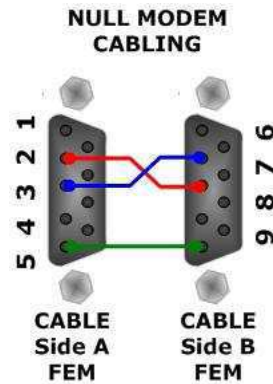
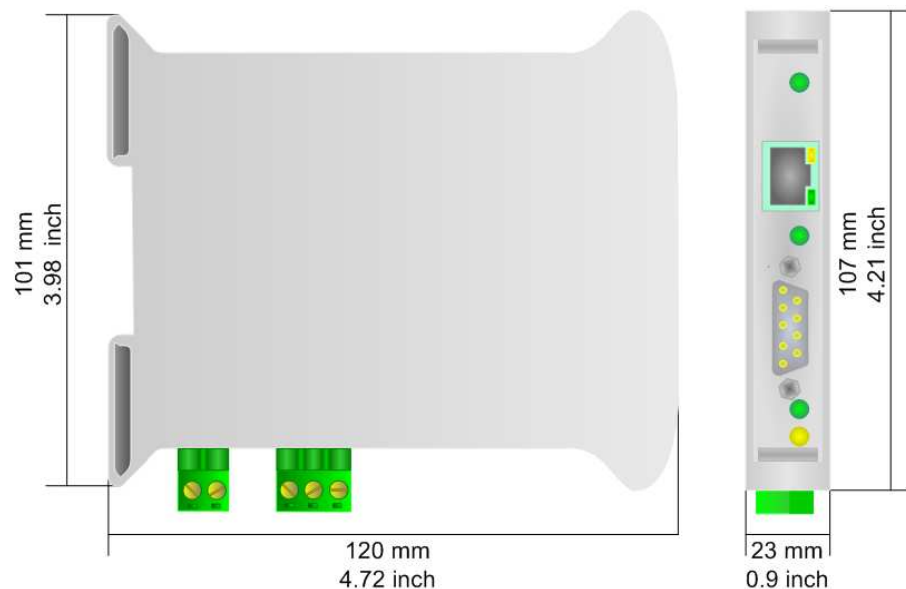


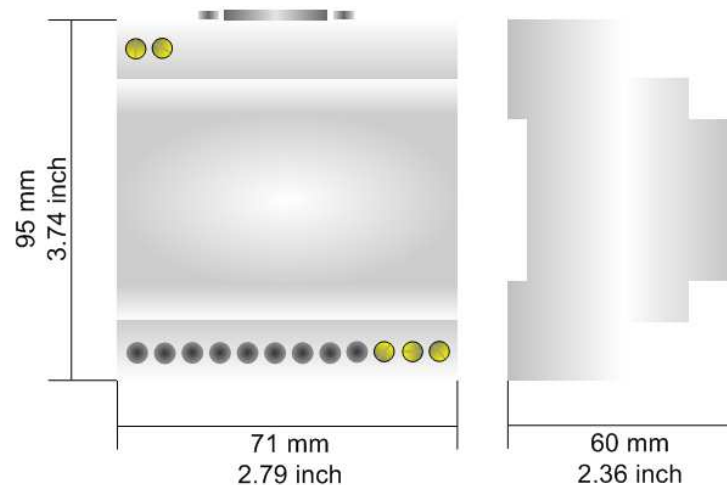
Figure 9: Null modem cabling

**MECHANICAL DIMENSIONS:**



Housing: PVC  
Weight: 200g (Approx)

Figure 10: Mechanical dimensions scheme for HD67140-A1



Housing: PVC  
Weight: 200g (Approx)

Figure 11: Mechanical dimensions scheme for HD67140-B2

**ORDER CODE:**

Order Code: **HD67140-A1-** DeviceNet Slave / Modbus TCP Slave - Converter

Order Code: **HD67140-B2-** DeviceNet Slave / Modbus TCP Slave - 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



## DISCLAIMER

All technical content within this document can be modified without notice. The content of the document content is a recurring audit. For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com S.r.l. shall not be liable for consequences of improper use.

## OTHER REGULATIONS AND STANDARDS

### WEEE INFORMATION



Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).

This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and human health, which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

### RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE



The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

### CE MARKING



The product conforms with the essential requirements of the applicable EC directives.

**WARRANTIES AND TECHNICAL SUPPORT:**

For fast and easy technical support for your ADFweb.com srl products, consult our internet support at [www.adfweb.com](http://www.adfweb.com). Otherwise contact us at the address [support@adfweb.com](mailto: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](http://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).
- 3) 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
HD67117	CAN Repeater/Isolator	<a href="http://www.adfweb.com?Product=HD67117">www.adfweb.com?Product=HD67117</a>
HD67221	Translate CAN bus Gateway	<a href="http://www.adfweb.com?Product=HD67221">www.adfweb.com?Product=HD67221</a>
HD67316	CAN, CANopen, J1939, DeviceNet, NMEA2000 Analyzer	<a href="http://www.adfweb.com?Product=HD67316">www.adfweb.com?Product=HD67316</a>