User Manual

Revision 1.100
English

DeviceNet Slave / Modbus TCP Slave - Converter

(Order Code: HD67140-A1 – HD67140-B2)

For Website information:
www.adfweb.com?Product=HD67140

For Price information:
www.adfweb.com?Price=HD67140-A1
www.adfweb.com?Price=HD67140-B2

Benefits and Main Features:

- Electrical isolation
- Temperature range: -40°C/+85°C (-40°F/+185°F)

For other DeviceNet products see also the following link:

DeviceNet Slave from/to

www.adfweb.com?Product=HD67043	**(Ethernet)**
www.adfweb.com?Product=HD67058	**(M-Bus)**
www.adfweb.com?Product=HD67134	**(CANopen SDO Client)**
www.adfweb.com?Product=HD67136	**(CANopen SDO Server)**
www.adfweb.com?Product=HD67137	**(J1939)**
www.adfweb.com?Product=HD67138	**(Modbus Slave)**
www.adfweb.com?Product=HD67139	**(Modbus TCP Client)**
www.adfweb.com?Product=HD67141	**(Modbus Master)**
www.adfweb.com?Product=HD67235	**(CAN)**
www.adfweb.com?Product=HD67554	**(PROFIBUS)**

DeviceNet Master from/to PROFIBUS

www.adfweb.com?Product=HD67555

For other Modbus products see also the following link:

Modbus TCP Client from/to

www.adfweb.com?Product=HD67004	**(CANopen)**
www.adfweb.com?Product=HD67014	**(CAN)**

Modbus TCP Server from/to

www.adfweb.com?Product=HD67505	**(CANopen)**
www.adfweb.com?Product=HD67515	**(CAN)**

Do you have an your customer protocol? See the following link:
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

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.

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 update.

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.010	24/05/2011	Fl	All	Software changed (v1.000)
1.011	13/02/2013	Nt	All	Added new chapters
1.100	04/07/2025	Mdb	All	New design

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 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 SCHEME:

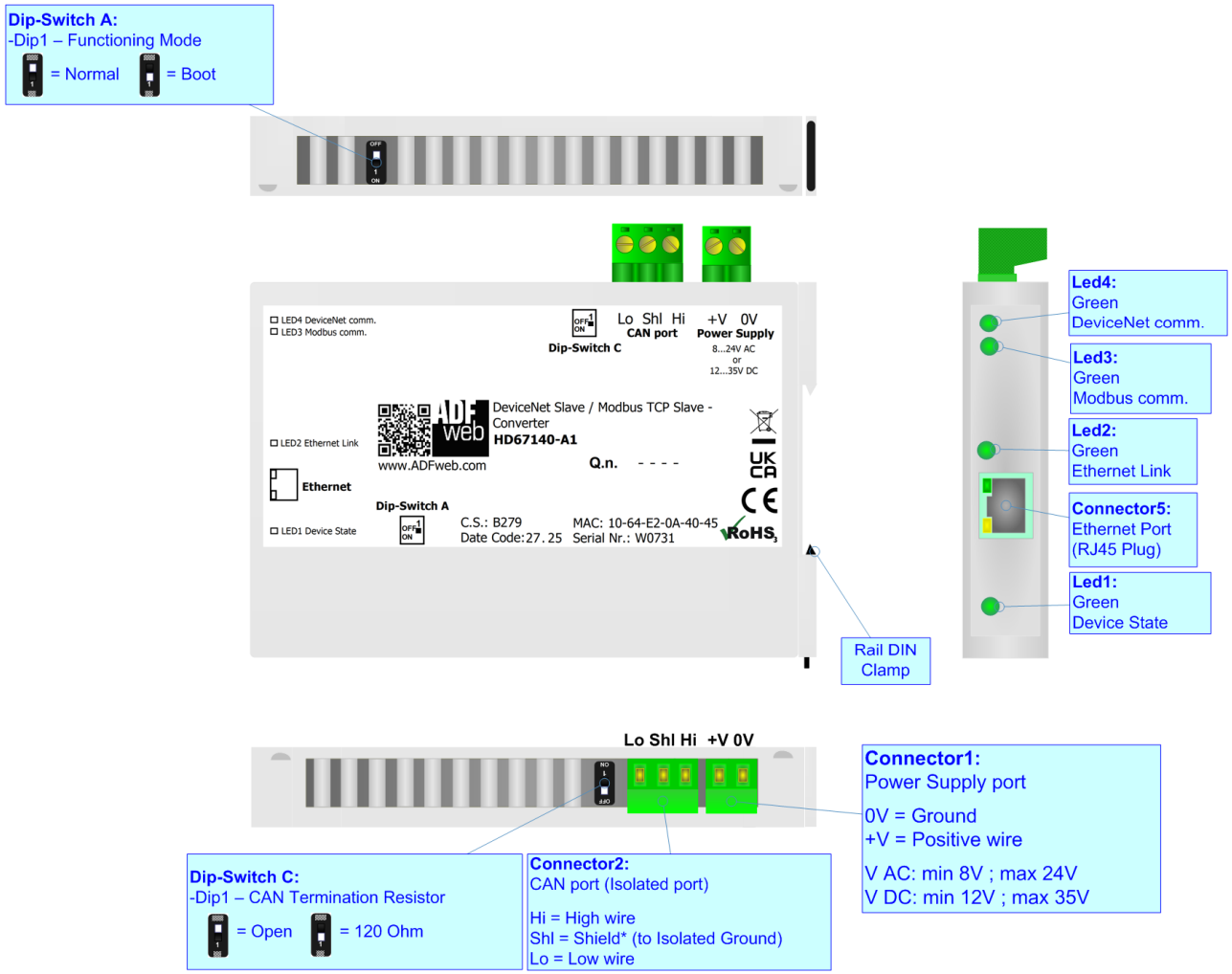


Figure 1a: Connection scheme for HD67140-A1

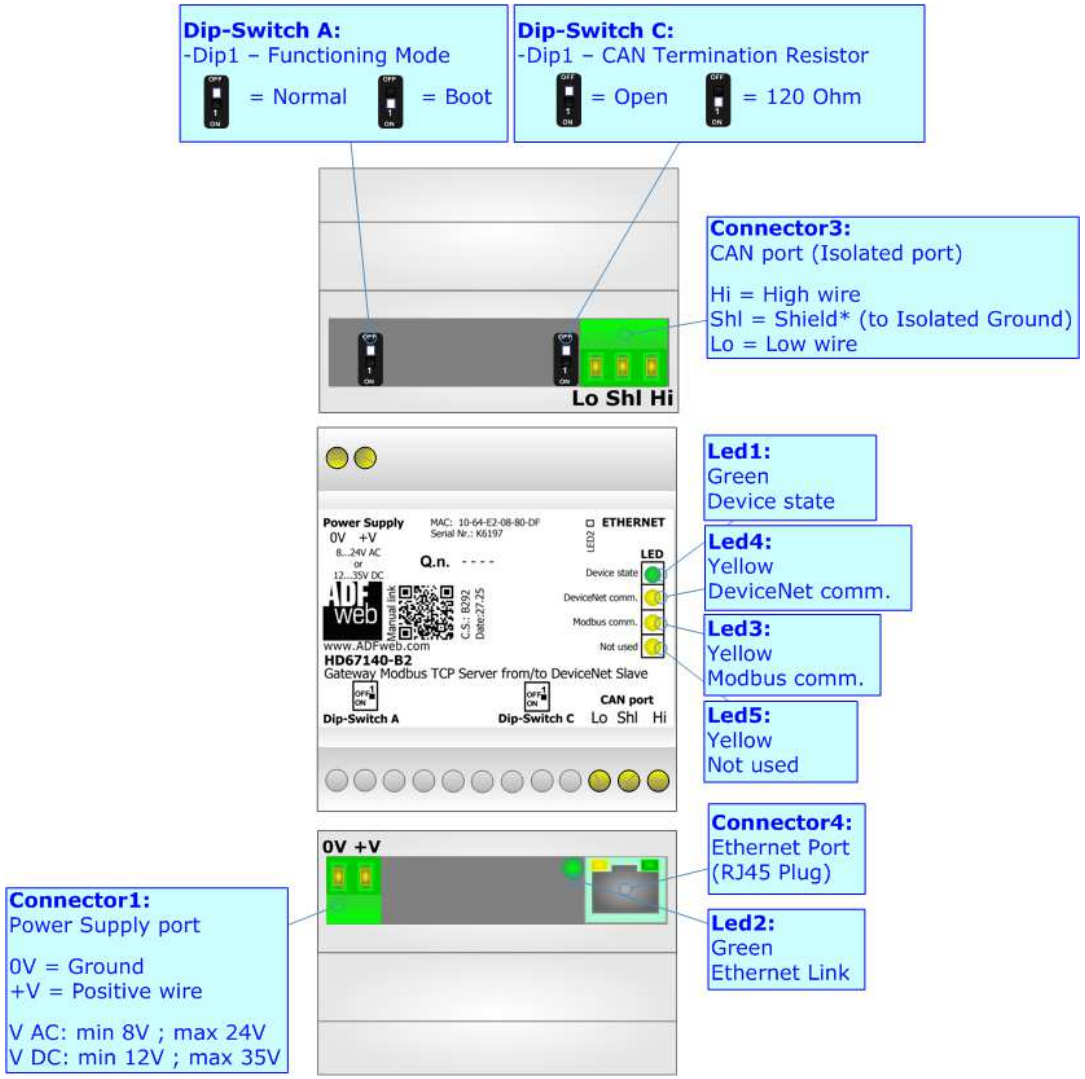


Figure 1b: Connection scheme for HD67140-B2

CHARACTERISTICS:

The HD67140-A1 is a DeviceNet Slave / Modbus TCP Slave Converter.

It has 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;
- 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 SW67140 software on your PC in order to perform the following:

- Define the parameters of Modbus TCP line;
- Define the parameters of DeviceNet line;
- Define the read/write registers;
- Update the device.

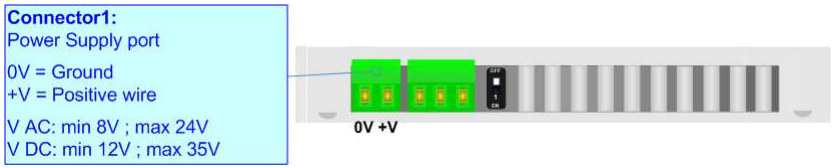
POWER SUPPLY:

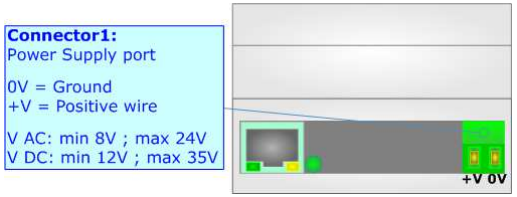
The devices can be powered at 8…24V AC and 12…35V DC. For more details see the two tables below.

	VAC ~		VDC ⎓	
	Vmin	**Vmax**	**Vmin**	**Vmax**
HD67140-A1	**8V**	**19V**	**8V**	**35V**
HD67140-B2				

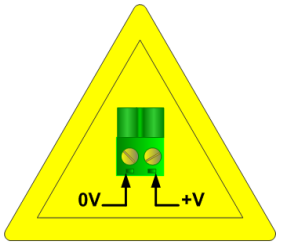
Consumption at 24V DC:

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

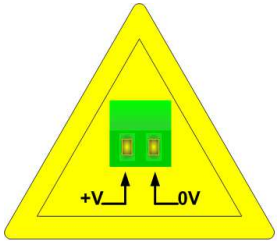




Caution: Not reverse the polarity power



HD67140-A1



HD67140-B2

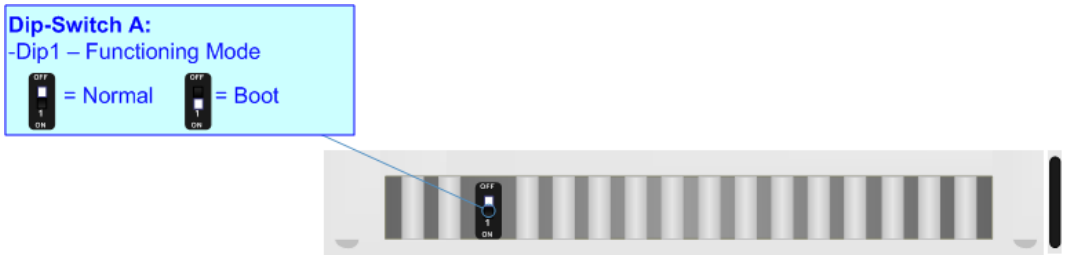
FUNCTION MODES:

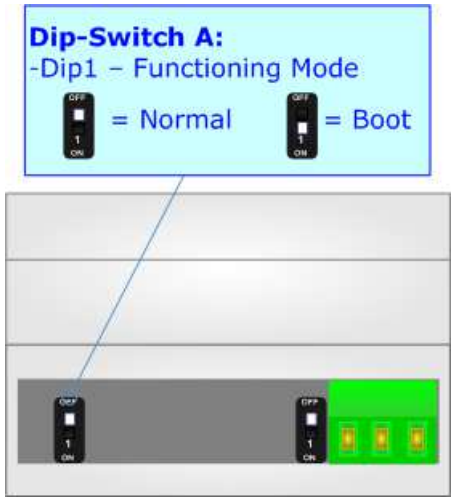
The device has got two functions mode depending of the position of the 'Dip1 of Dip-Switch A':

- The first, with 'Dip1 of Dip-Switch A' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip1 of Dip-Switch A' at "ON" position, is used for upload 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 specifics functions, see 'LEDS' section.

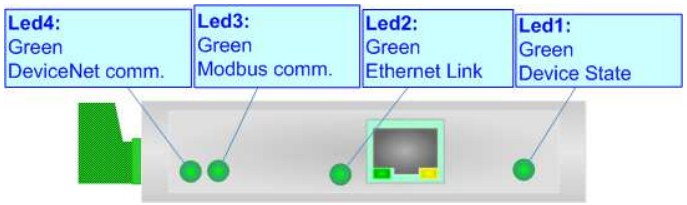


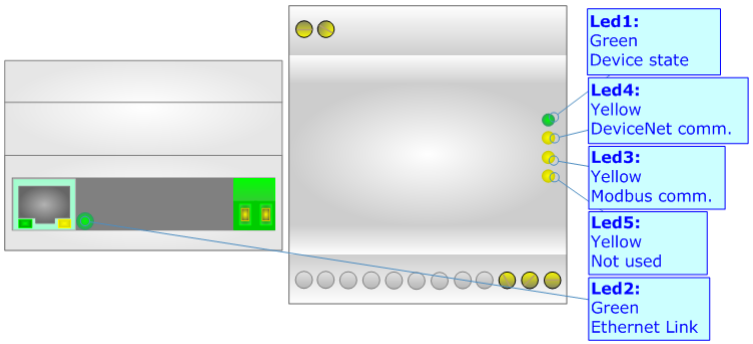


LEDS:

The device has got four (five for the HD67140-B2) LEDs, that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

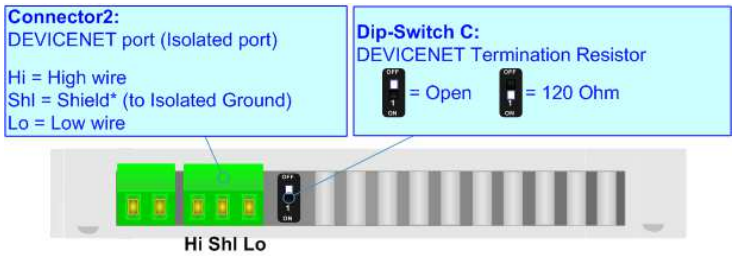
LED	Normal Mode	Boot Mode
1: Device State	Blinks slowly (~1Hz)	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
2: Ethernet Link	**ON:** Ethernet cable connected **OFF:** Ethernet cable disconnected	**ON:** Ethernet cable connected **OFF:** Ethernet cable disconnected
3: Modbus comm.	Blinks when a Modbus frame is recieved	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: DeviceNet comm.	Blinks when a DeviceNet frame is recieved	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
5: Not Used (only for HD67140-B2 version)	OFF	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress

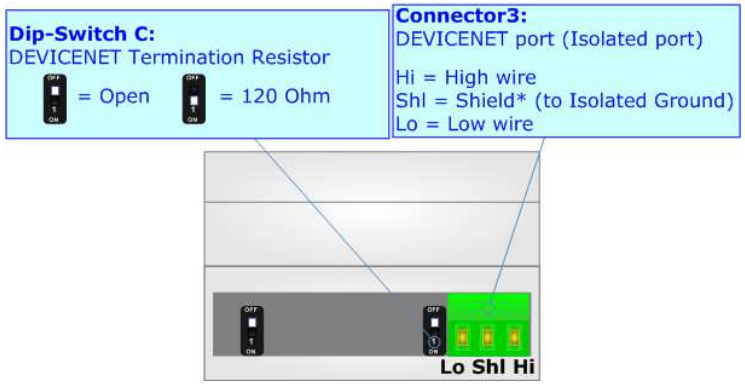




DEVICENET:

To terminate the DeviceNet line with a 120Ω resistor it is necessary that the Dip-Switch C is at ON position.





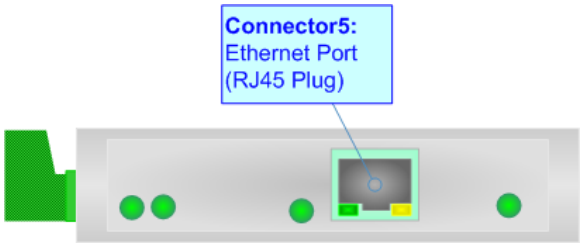
Cable characteristics:

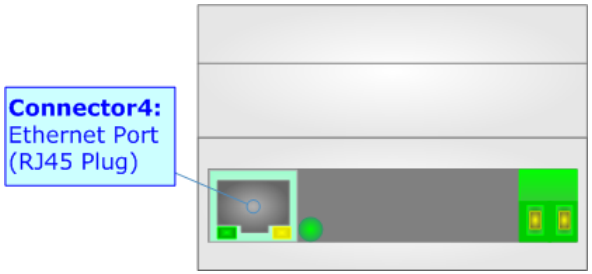
DC parameter:		Impedance	70 Ohm/m
AC parameters:		Impedance	120 Ohm/m
		Delay	5 ns/m

Length		**Baud Rate [bps]**	**Length MAX [m]**
		125 K	500
		250 K	250
		500 K	100

ETHERNET:

The Ethernet post is used for programming the device and for Modbus TCP communication.
The Ethernet connection must be made using Connector4 or Connector5 of HD67140-A1/B2 with at least Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform 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.





USE OF COMPOSITOR SW67140:

To configure the Converter, use the available software that runs with Windows called SW67140. 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 or 11; 32/64bit).

When launching the SW67140, the window below appears (Fig. 2).

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

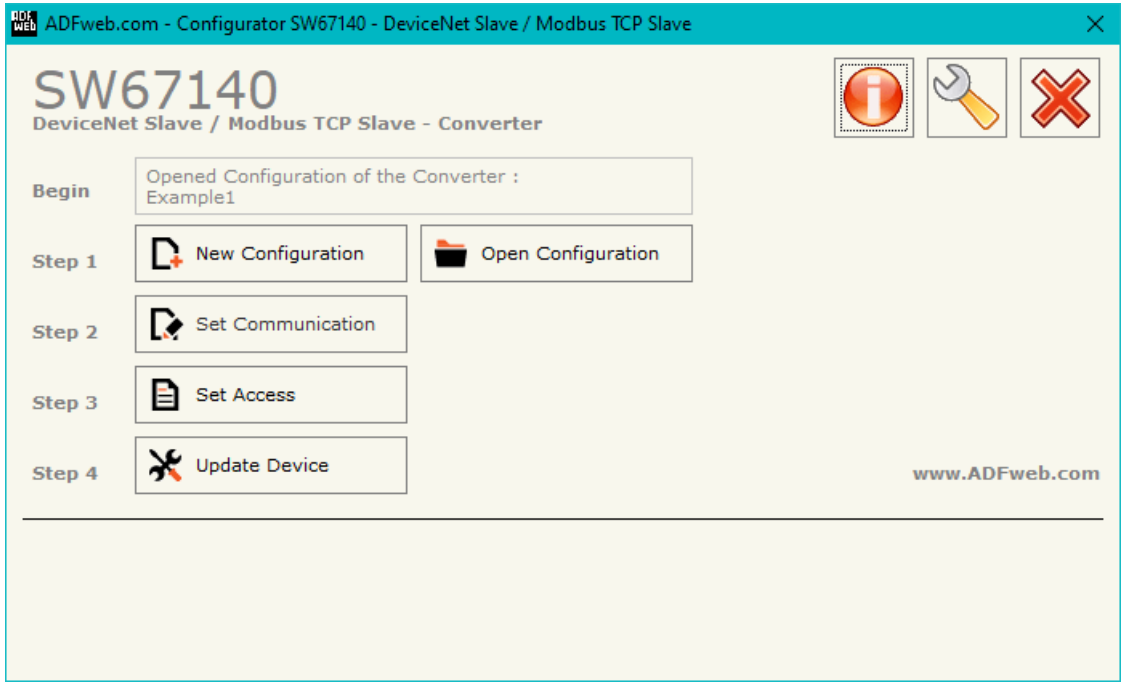
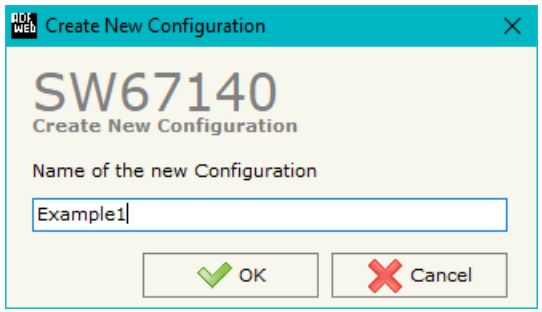


Figure 2: Main window for SW67140

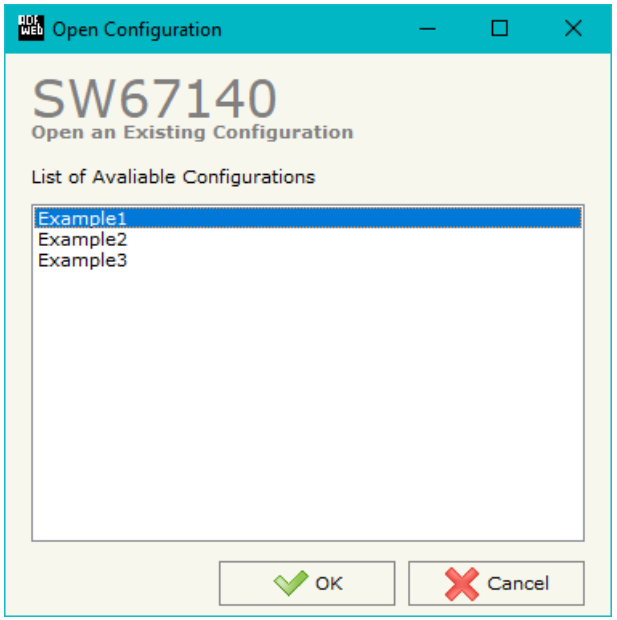
NEW CONFIGURATION / OPEN CONFIGURATION:

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



A device configuration can also be imported or exported:

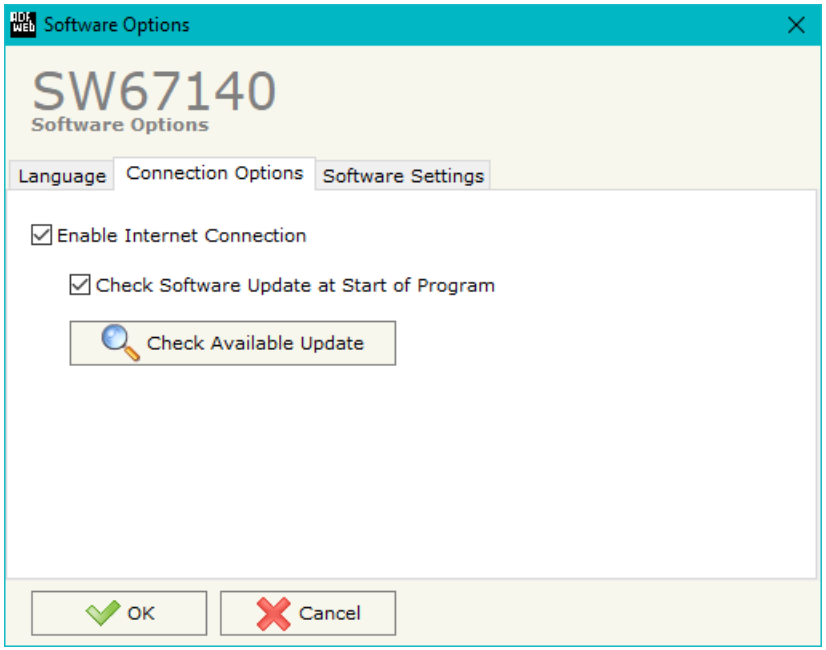
- To clone the configurations of a Programmable "DeviceNet Slave / Modbus TCP Slave - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button "**Open Configuration**".



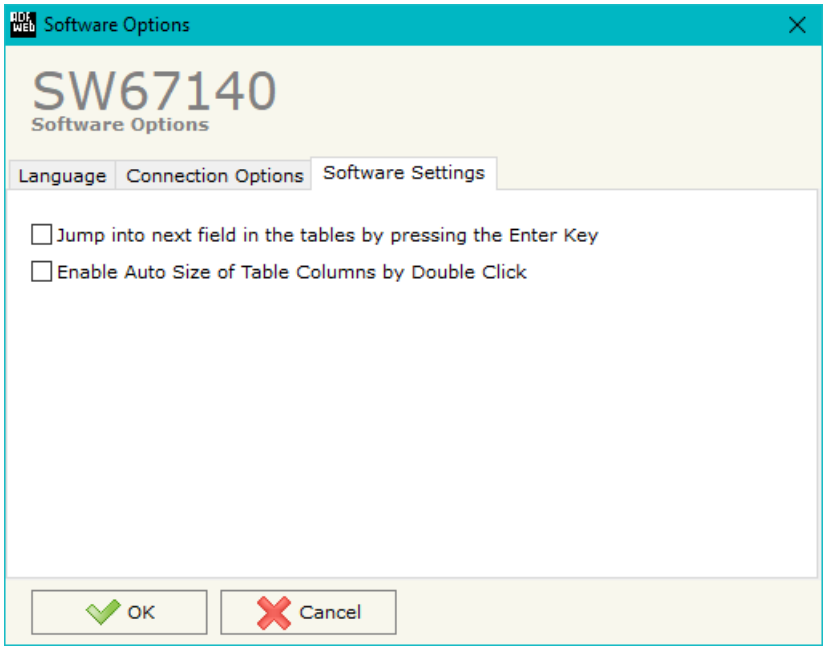
SOFTWARE OPTIONS:

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 SW67140 checks 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 defines the fundamental communication parameters of two Buses Modbus TCP and DeviceNet.

By pressing the "**Set Communication**" button from the main window for SW67140 (Fig. 2) the "Set communication" window appears (Fig. 3).

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

The means of the fields for "Modbus TCP Slave" 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 Slave" section are:

- In the "**ID Device**" field the Gateway address of the DeviceNet is defined.
- In the "**Baudrate**" 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).

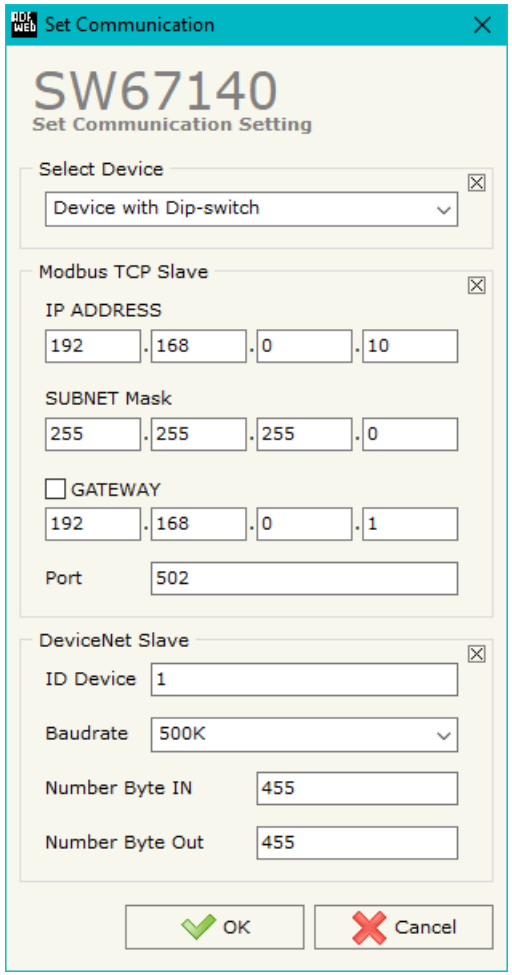


Figure 3: "Set Communication" window

SET ACCESS:

By pressing the "**Set Access**" button from the main window for SW67140 (Fig. 2) the window "Set Access" appears (Fig. 4).

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.

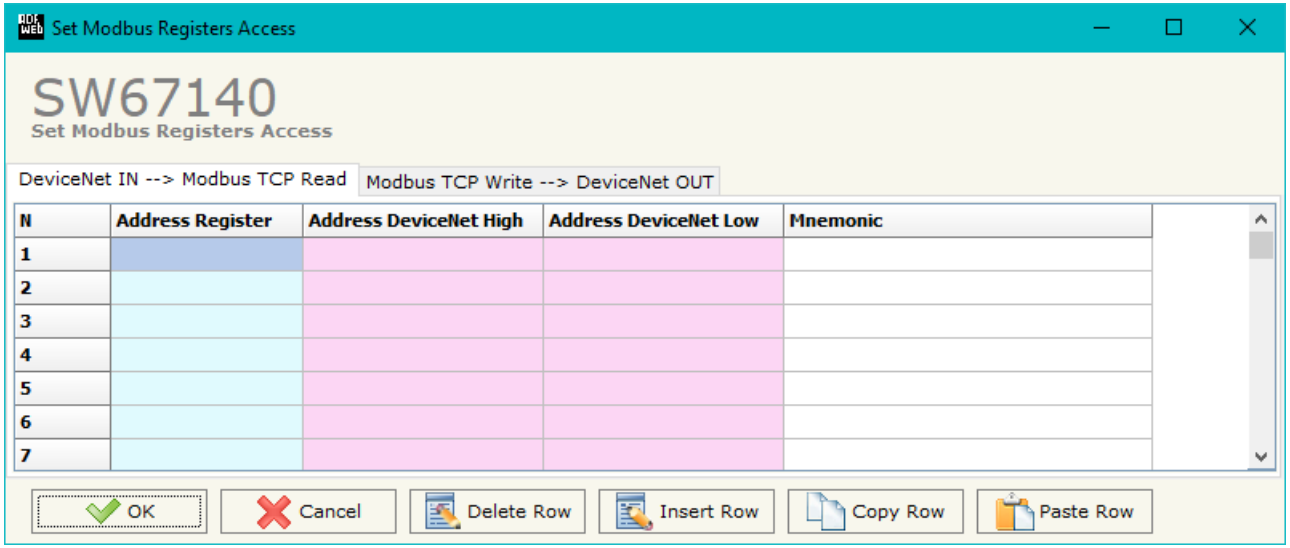


Figure 4a: "Set Access" window

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.

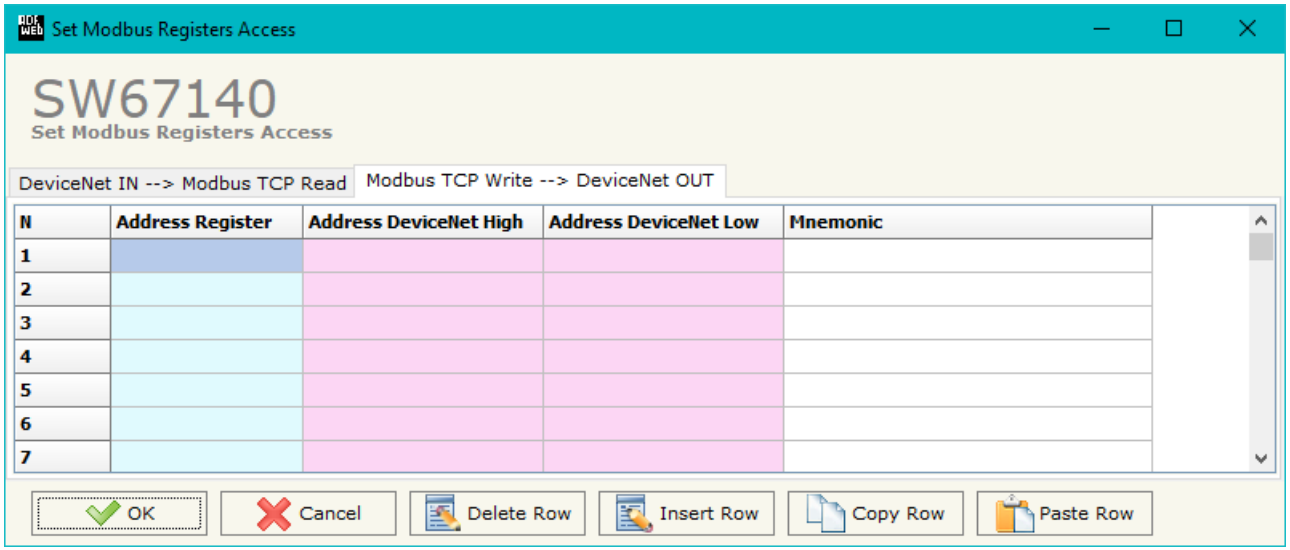


Figure 4b: "Set Access" window

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.

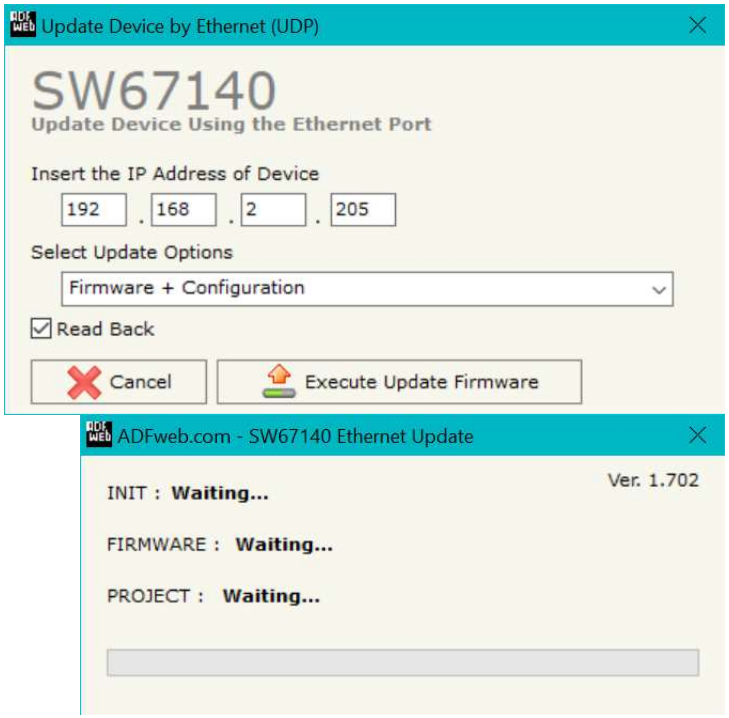


Figure 5: "Update device" windows

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.

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67140 device.

Warning:
If Fig. 6 appears when you try to do the Update try these points before seeking assistance:

- 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, 10 or 11 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 or 11 you have to launch the "Command Prompt" with Administrator Rights;
- Pay attention at Firewall lock.

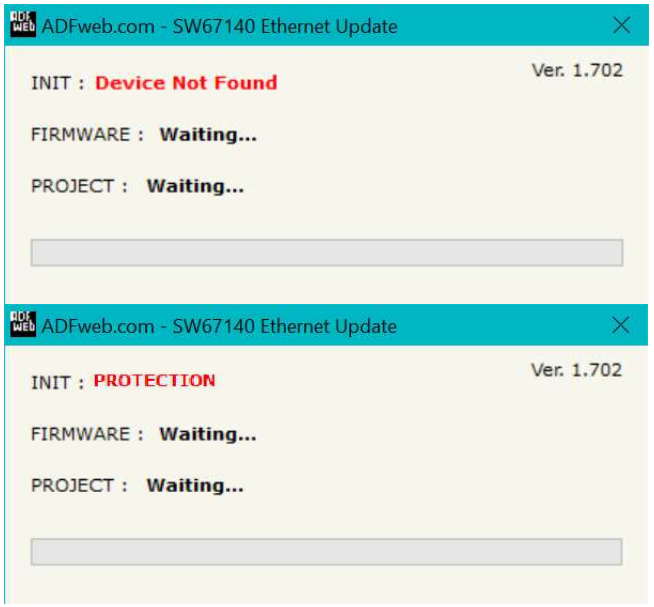


Figure 6: "Error" window

Warning:
In the case of HD67140 you have to use the software "HD67140": www.adfweb.com\download\filefold\SW67140.zip.

MECHANICAL DIMENSIONS:

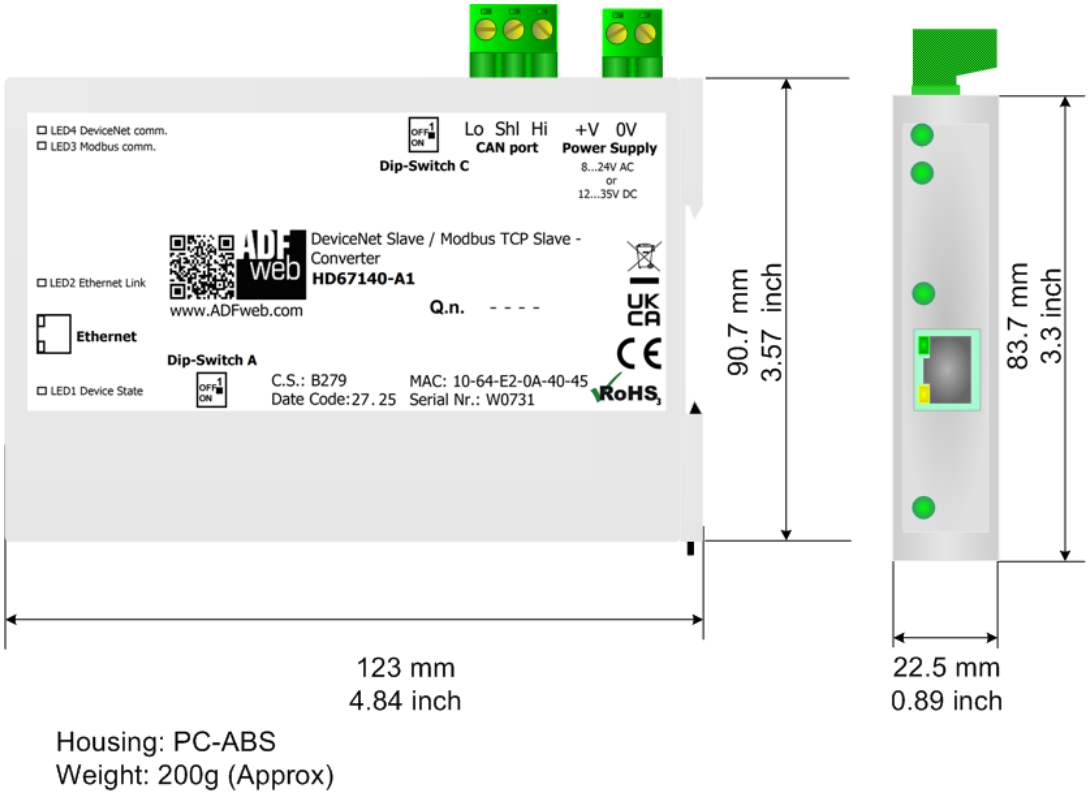
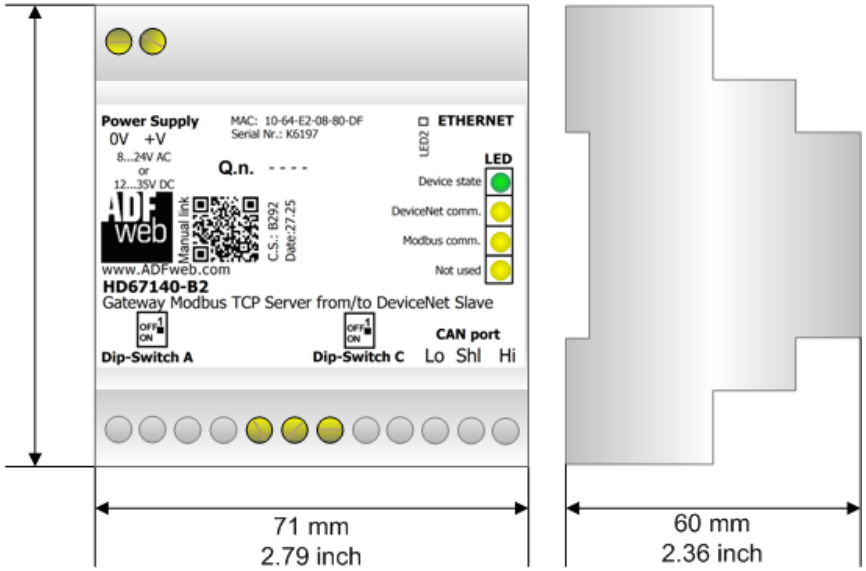


Figure 7a: Mechanical dimensions scheme for HD67140-A1



Housing: PVC
Weight: 200g (Approx)

Figure 7b: Mechanical dimensions scheme for HD67140-B2

ORDERING INFORMATIONS:

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

HD67140 - x x

Connectors Type
1: Removable 5mm Screw Terminal
2: Fixed 5mm Screw Terminal

Enclosure Type
A: 1M, 35mm DIN Rail mounting
B: 4M, 35mm DIN Rail mounting

Device Family
HD67140: DeviceNet Slave / Modbus TCP Slave - Converter

Order Code: **HD67140-A1** - DeviceNet Slave / Modbus TCP Slave - Converter (Housing type: A, Terminal Blocks Connectors)

Order Code: **HD67140-B2** - DeviceNet Slave / Modbus TCP Slave - Converter (Housing type: B, Terminal Blocks Connectors)

ACCESSORIES:

Order Code: **AC34011** - 35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V DC

Order Code: **AC34012** - 35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 24 V DC

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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).
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.