![ADFweb logo]
Industrial Electronic Devices

User Manual
Revision 1.100
English

CAN – Repeater – Extender bus line – (With filter data configurable)
(Order Code: HD67405)

For Website information:
www.adfweb.com?Product=HD67405

For Price information:
www.adfweb.com?Price=HD67405

Benefits and Main Features:

⊕ Very easy to configure

⊕ Wide supply input range

⊕ Electrical isolation

⊕ Industrial temperature range:

⊕ -40°C / 105°C (-40°F / 221°F)

User Manual

For other Repeaters:

CAN Repeaters

www.adfweb.com?Product=HD67117	(For CANopen)
www.adfweb.com?Product=HD67180	(For DeviceNet)
www.adfweb.com?Product=HD67181	(For CAN 2.0A & 2.0B)
www.adfweb.com?Product=HD67182	(For J1939)
www.adfweb.com?Product=HD67401	(For CAN 2.0A & 2.0B)
www.adfweb.com?Product=HD67402	(For CANopen)
www.adfweb.com?Product=HD67403	(For DeviceNet)
www.adfweb.com?Product=HD67404	(For J1939/NMEA2000)

Optic Fibres Repeaters

www.adfweb.com?Product=HD67117FSX	(For CANopen)
www.adfweb.com?Product=HD67180FSX	(For DeviceNet)
www.adfweb.com?Product=HD67181FSX	(For CAN 2.0A & 2.0B)
www.adfweb.com?Product=HD67182FSX	(For J1939)
www.adfweb.com?Product=HD67221FS	(Copper Bridge)

CAN Analyzer Hardware and Software

www.adfweb.com?Product=HD67316

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

Ask it to the following link:
www.adfweb.com?Cmd=helpme

ADF web

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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 updates.

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.000	30/08/2012	Fl	All	First release version
1.001	07/03/2013	Nt	All	Added new chapters
1.100	22/03/2017	Ff	All	New Hardware version

WARNING:

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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:
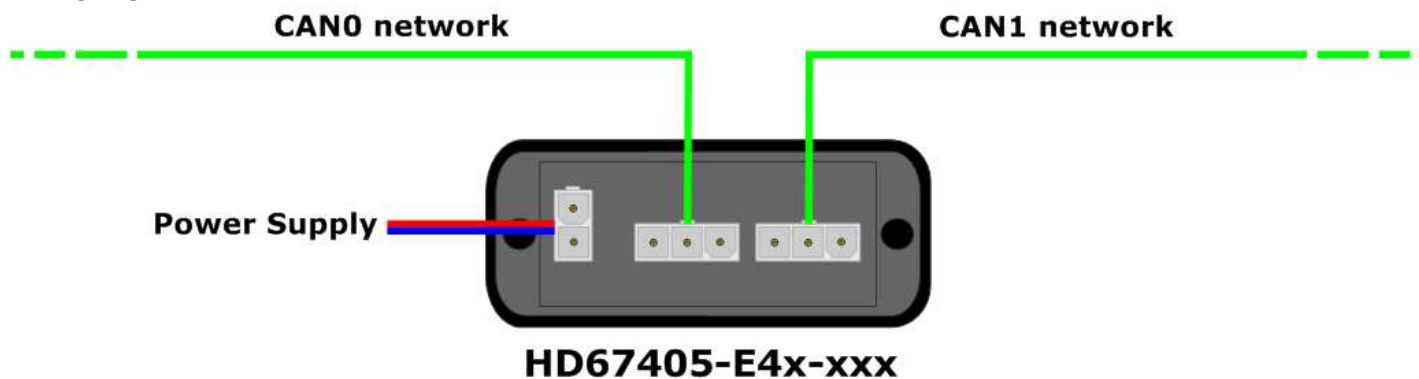
⚠️ This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.
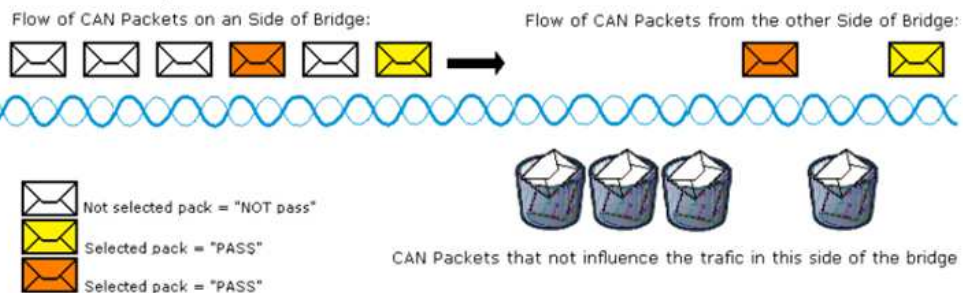
CE CONFORMITY
The declaration is made by our company. You can send an email to support@adfweb.com or give us a call if you need it.
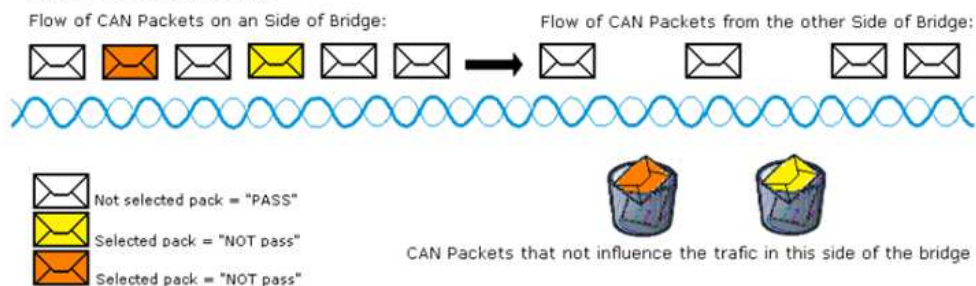

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EXAMPLE OF CONNECTION:

CONNECTION SCHEME:

Figure 1a: Connection scheme for HD67405-E4x-xxx

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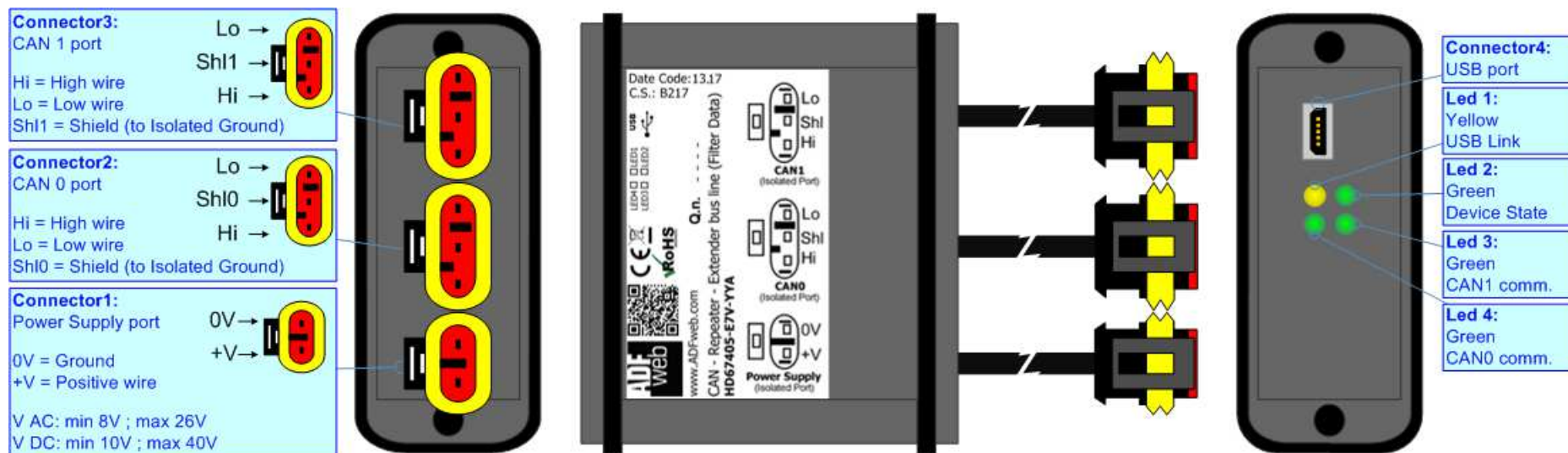
Figure 1b: Connection scheme for HD67405-E7x-xxx

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CHARACTERISTICS:

The "CAN – Repeater – Extender bus line (With filter data configurable)" has the following characteristics:

- Two-directional information between CAN networks;
- Metal Enclosure with four fixing lugs;
- Triple isolation between CAN0 - Power supply; between CAN0 – CAN1 and between CAN1 – Power supply;
- Varnished and optionally resined;
- Temperature range -40°C / +105°C.

The Repeater can be configured with a maximum of 2048 CAN bus frames from CAN0 to CAN1 and 2048 CAN bus frames from CAN1 to CAN0.

CONFIGURATION:

The "CAN – Repeater – Extender bus line (With filter data configurable)" allows to filter the packets, extend, and isolate a CAN bus line.

You need Compositor SW67405 software on your PC in order to perform the following:

- Define the parameters of two buses;
- Define which CAN frames pass from "CAN0" to "CAN1";
- Define which CAN frames pass from "CAN1" to "CAN0";
- Update the device.

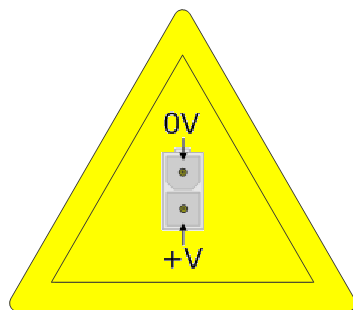Industrial Electronic Devices

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**
HD67405-Exx-xxx	**8V**	**26V**	**10V**	**40V**

Consumption at 24V DC:

Device	W/VA
HD67405-Exx-xxx	4

⚠ **Caution: Not reverse the polarity power**

HD67405-E4x-xxx   HD67405-E7x-xxx

Connector1:
Power Supply port
0V = Ground
+V = Positive wire
← 0V
← +V
V AC: min 8V ; max 26V
V DC: min 10V ; max 40V

Connector1:
Power Supply port
0V = Ground
+V = Positive wire
+V 0V
V AC: min 8V ; max 26V
V DC: min 10V ; max 40V
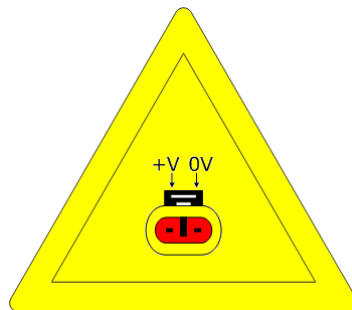
✎ Note: It is possible to use also negative tensions. In this case the polarity must be inverted.

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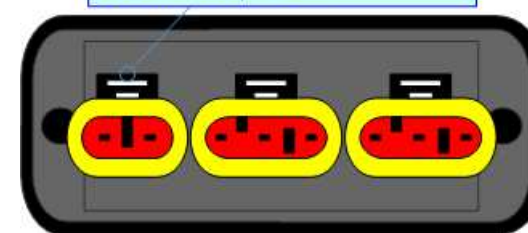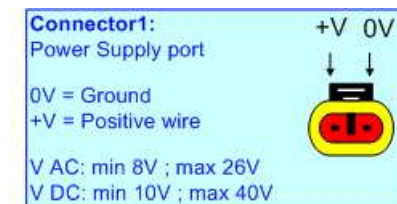
LEDS:

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

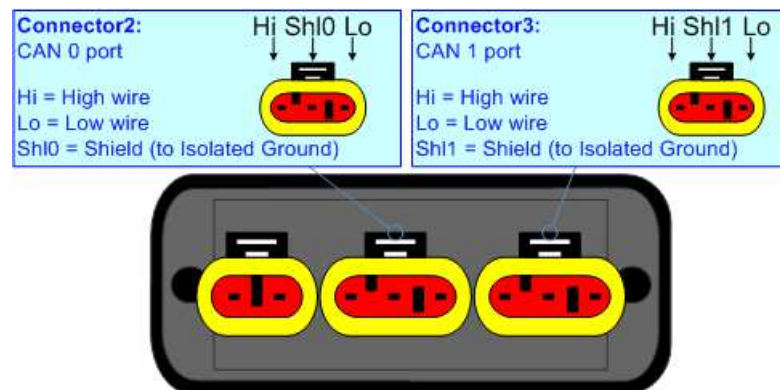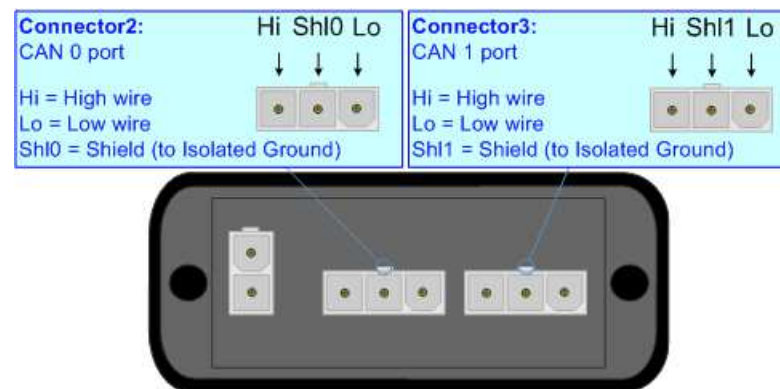| LED	Normal Mode	Boot Mode
1: USB link (yellow)	**ON**: USB cable inserted **OFF**: USB cable not inserted	**ON**: USB cable inserted **OFF**: USB cable not inserted
2: Device state (green)	Blinks slowly (~1Hz)	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
3:CAN1 communication (green)	Blinks when CAN frames are received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: CAN0 communication (green)	Blinks when CAN frames are received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress

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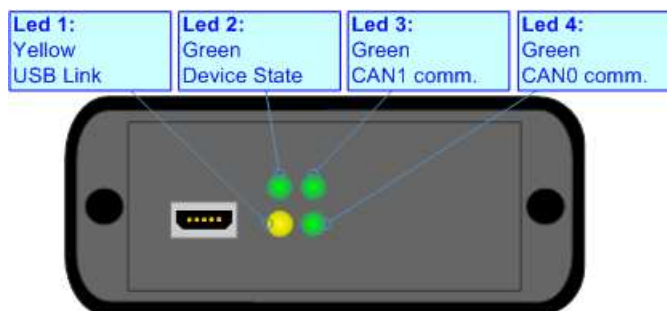
CAN:

The connection of CAN in the HD67405-E4x-xxx device must be made with a 3way MiniFit Female connector. The pinout of Male Mini-Fit connector of the board is at right side of the page.

The connection of CAN in the HD67405-E7x-xxx device must be made with a AMP SuperSeal 1.5 Male connector. The pinout of Female connector of the board is at right side of the page.

The termination of CAN line, with a 120Ω resistor, in the HD67405-Exx-xxx is made internally of the device; when the order is performed.


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

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USB:

The USB port is used to start the converter in Boot Mode and to program the converter. It is necessary to use a Micro USB type B cable.

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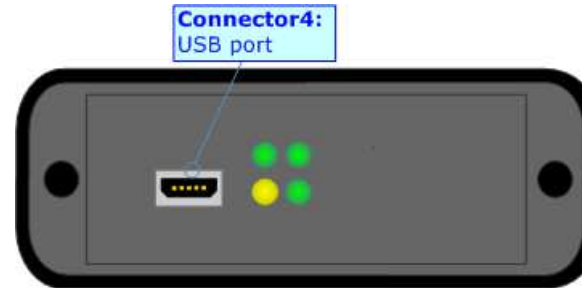
USE OF COMPOSITOR SW67405:

To configure the Converter, use the available software that runs with Windows called SW67405. 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 SW67405, the window below appears (Fig. 2).
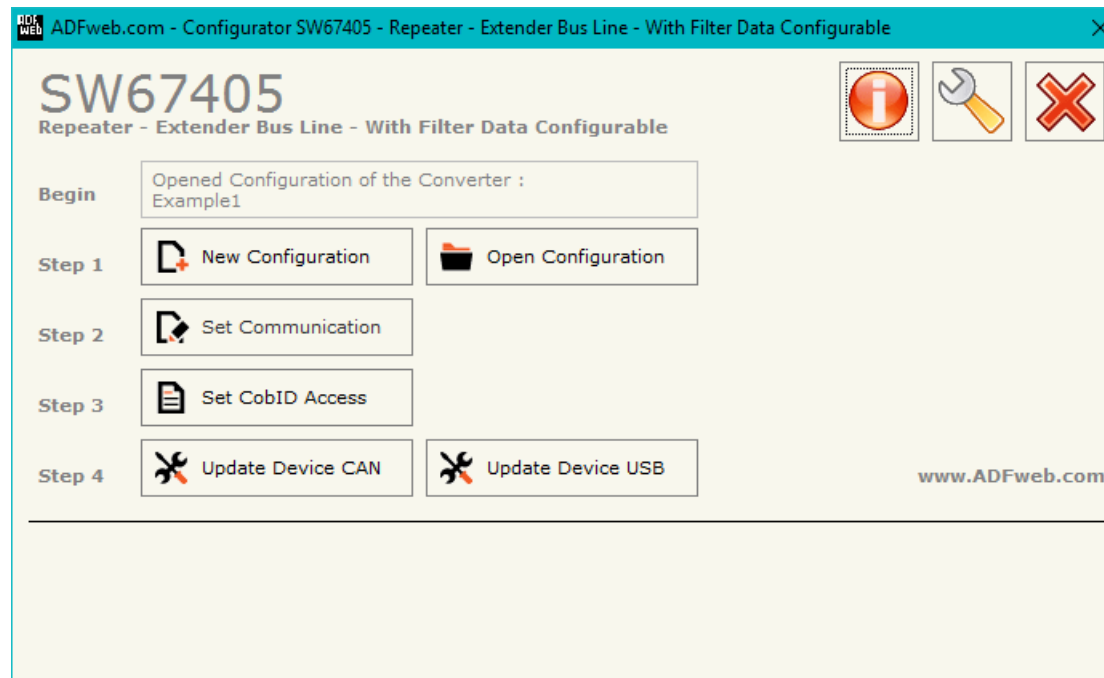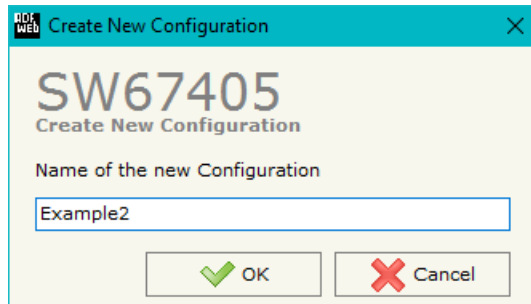
Note:
It is necessary to have installed .Net Framework 4.


Figure 2: Main window for SW67405

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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 "CAN – Repeater – Extender bus line (With filter data configurable)" 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**".

Industrial Electronic Devices
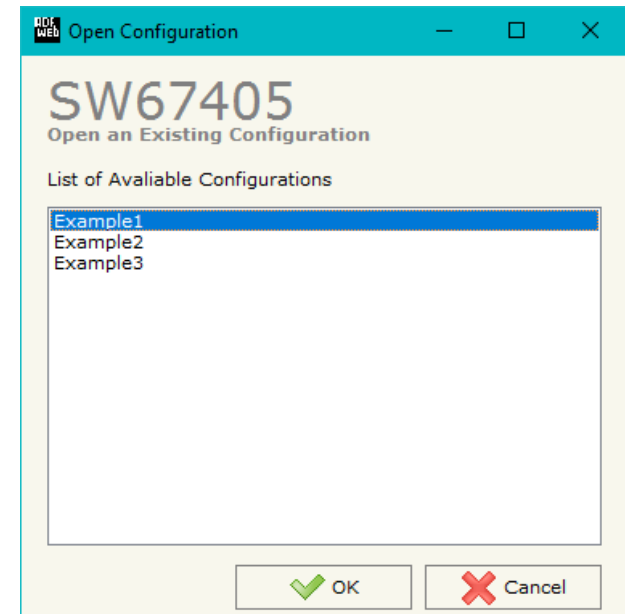
SOFTWARE OPTIONS:

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.
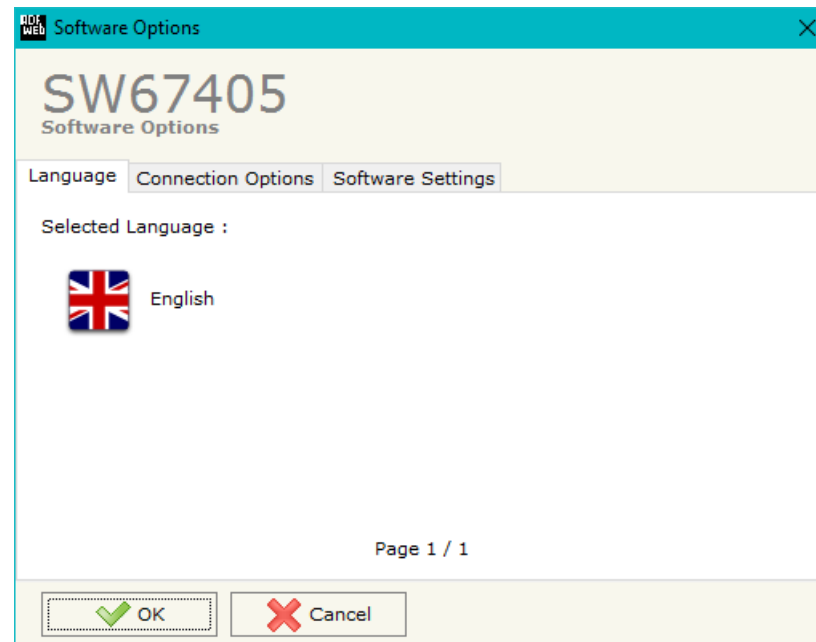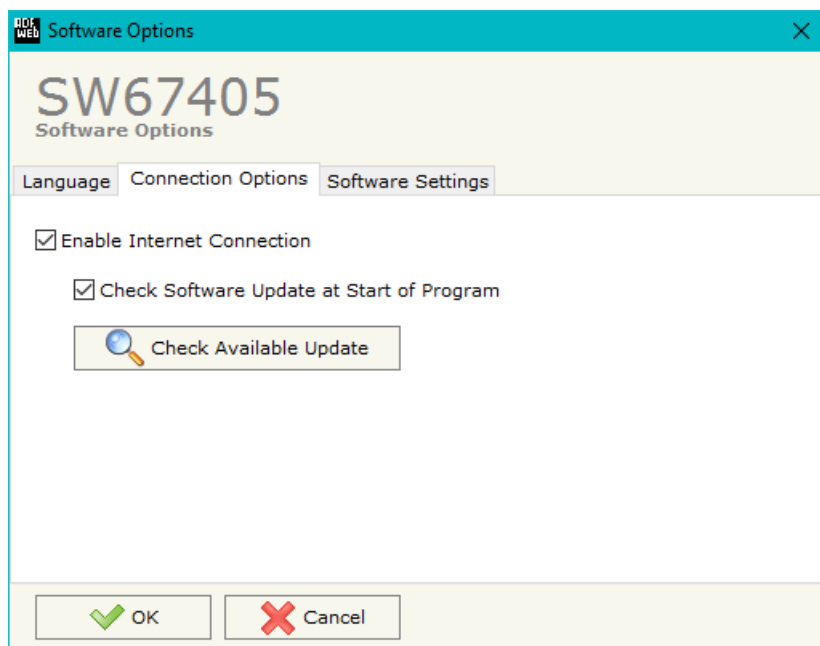
In the section "Connection Options", it is possible to check if there are some updatings of the software compositor in ADFweb.com website.
Checking the option "**Check Software Update at Start of Program**", the SW67405 check automatically if there are updatings when it is launched.
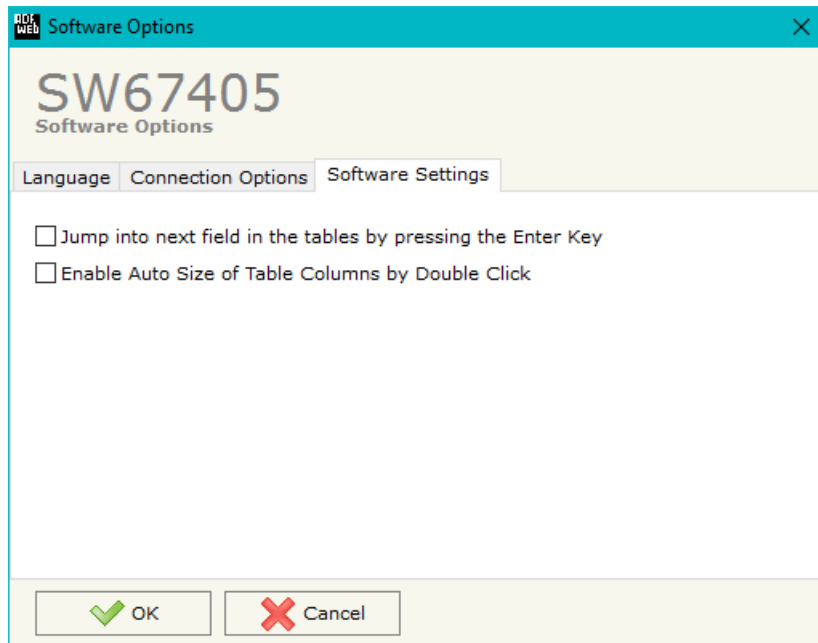
In the section "Software Settings", it is possible to enable/disable some keyboard's commands for an easier navigation inside the tables contained in the different sections of the software.

Software Options

SW67405
Software Options

Language | Connection Options | Software Settings

☐ Jump into next field in the tables by pressing the Enter Key

☐ Enable Auto Size of Table Columns by Double Click

✓ OK   ✗ Cancel

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SET COMMUNICATION:

This section define the fundamental communication parameters of converter.

By Pressing the "**Set Communication**" button from the main window for SW67405 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The means of the fields for "CANs" are:

➔ In the field "**Baudrate CAN 0**" the data rate of the CAN0 port is defined;
➔ In the field "**Baudrate CAN 1**" the data rate of the CAN1 port is defined;
➔ If the field "**Positive Implementation**" is checked, only the CobIDs that are written in the "Set CobID Access" table passes in the other CAN bus; otherwise if the field isn't checked, all the CobID written in the table are blocked by the HD67405.
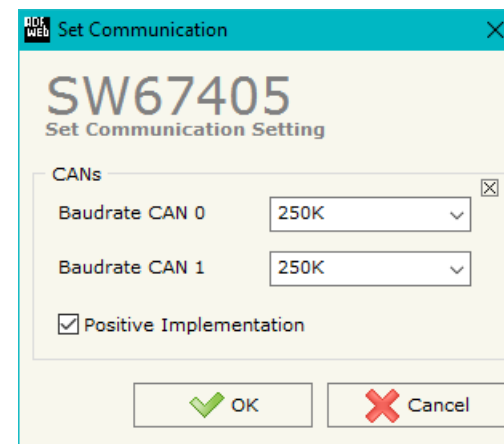
Figure 3: "Set Communication" window

SET COBID ACCESS:

The following parameters can be defined:

➔ Which CAN frames of the "Device 0" pass into "Device 1";

➔ Which CAN frames of the "Device 1" pass into "Device 0".

If the "Positive Implementation" parameter is set, it is possible to change the CobID of the frame when it passes from one Device to the other. In order to do this it is necessary to insert the new CobID in the "Modify CobID" column.
The dimension of data and its value do not change when it passes over the Repeater.
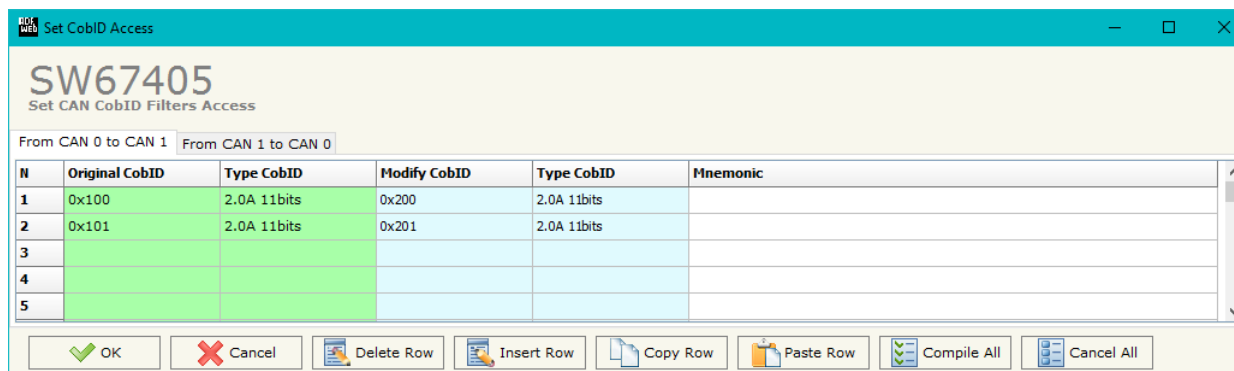

Figure 4: "Set CobID Access" window

The data of the columns have the following meaning:

➔ In the field "**Original CobID**" the CobID that can pass in the other CAN network (if Positive Implementation is not checked the indicated CobID cannot pass to other CAN Network) is defined;

➔ In the field "**CobID Type**" the type of CobID (CAN 2.0A 11 bits or CAN 2.0B 29 bits) is defined;

➔ In the field "**Modify CobID**" the new CobID of the frame that passes in the other CAN network (only if "Positive Implementation" is checked) is defined;

➔ In the field "**CobID Type**" the type of the new CobID (CAN 2.0A 11 bits or CAN 2.0B 29 bits) is defined;

➔ In the field "**Mnemonic**" a description of the CAN frame is defined.

UPDATE DEVICE (ONLY FOR THE HARDWARE WITHOUT USB PORT):

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:

- Connect the AC67400 to the PC;
- Connect the CAN port of AC67400 to a CAN port of HD67405;
- Turn ON the device;
- Select the "**COM port**";
- Select the "**Baudrate**";
- 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 AC67400;
- Turn ON the device.

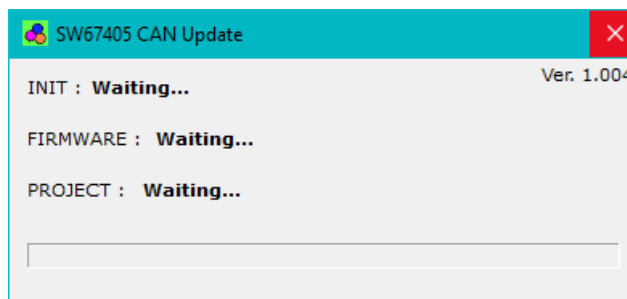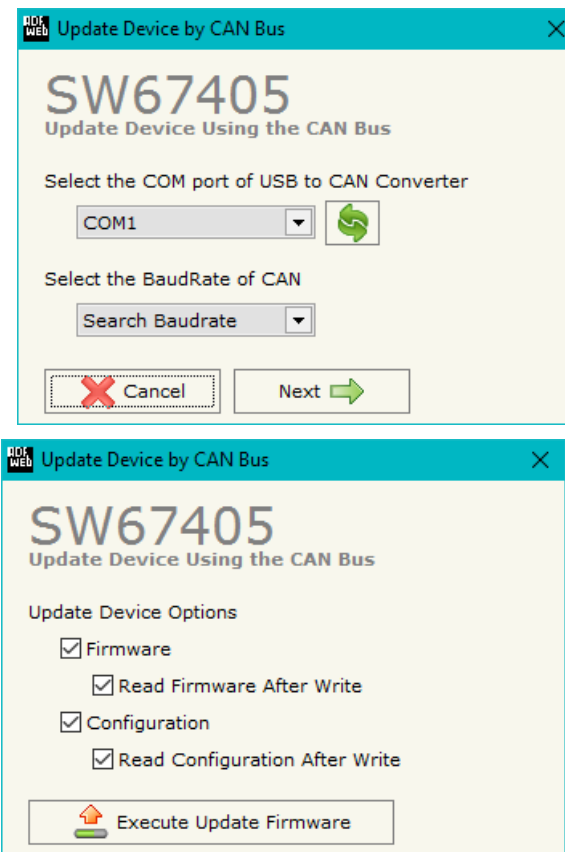At this point the configuration/firmware on the device is correctly update.

Figure 5: "Update Device" windows

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UPDATE DEVICE USB:

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

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

- Connect the USB cable from your PC to the Converter;
- Select the "**COM port**";
- Select which operations you want to do.
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK", disconnect the USB cable;

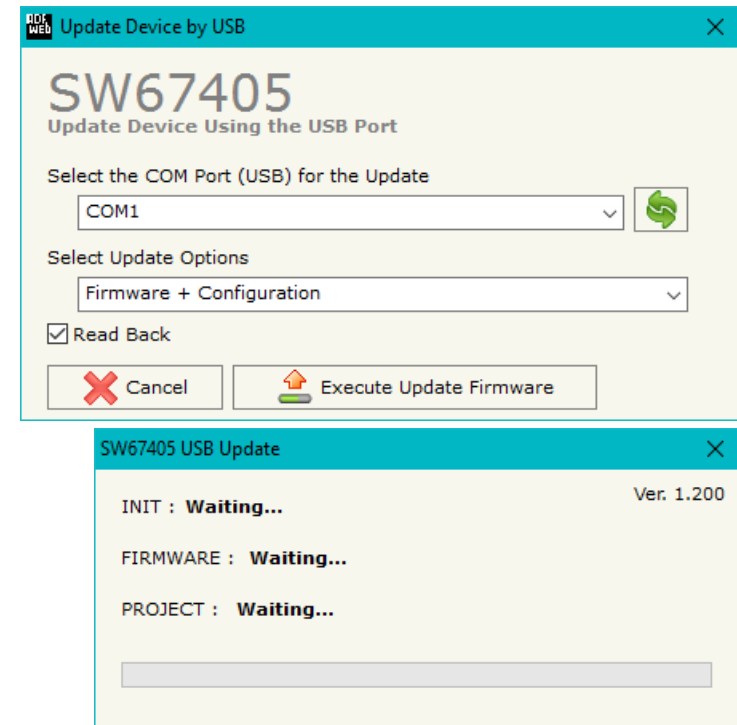At this point the configuration/firmware on the device is correctly update.

Figure 6: "Update Device" windows

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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 HD67405 device.

Note:
When you receive the device, for the first time, you have to update also the Firmware in the HD67405 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 AC67400 is connected between the PC and the device;
➔ Check if the USB 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;
➔ 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 privileges;
➔ Pay attention to Firewall lock.

Figure 7: "Protection" window

In the case of HD67405 you have to use the software "SW67405": www.adfweb.com\download\filefold\SW67405.zip.

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MECHANICAL DIMENSIONS:

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E-type enclosure measures without fixing lugs

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Type A

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E-type enclosure measures
with fixing lugs Type A

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Type B

ADFweb.com S.r.l

E-type enclosure measures
with fixing lugs Type B

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Type C

ADFweb.com S.r.l

E-type enclosure measures
with fixing lugs Type C

ORDERING INFORMATIONS:

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

HD67405 – E y z – s d f

Fixing lugs
A: Type 1
B: Type 2
C: Type 3
D: without fixing lugs

CAN0 Termination
Y: Terminated with 120Ω
N: Not terminated

CAN1 Termination
Y: Terminated with 120Ω
N: Not terminated

Varnished/Resinated
V: Varnished
R: Resined

Connectors Type
4: MiniFit
7: SuperSeal 1.5

Enclosure Type
E: Metal enclosure

Device Family
HD67405 = CAN – Repeater – Extender bus line (With filter data configurable)

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ACCESSORIES:

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

Order Code: **AC67402**   -   Cable Super Seal 1.5 MALE 2-pole - 1.0 Meter

Order Code: **AC67402-3** -   Cable Super Seal 1.5 MALE 2-pole - 3.0 Meters

Order Code: **AC67403**   -   Cable Super Seal 1.5 MALE 3-pole - 1.0 Meter

Order Code: **AC67403-3** -   Cable Super Seal 1.5 MALE 3-pole - 3.0 Meters

Order Code: **AC67410**   -   Accessory Automotive Devices - Support for rail DIN

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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.