User Manual

Revision 1.101
English

J1939 / CAN – Converter

(Order Code: HD67439)

For Website information:
www.adfweb.com?Product=HD67439

For Price information:
www.adfweb.com?Price=HD67439

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)

For others Gateways / Bridges:

J1939 to Modbus

See also the following links:
www.adfweb.com?Product=HD67212 (Modbus RTU)

CANopen to Modbus

See also the following links:
www.adfweb.com?Product=HD67001 (Modbus RTU Master)
www.adfweb.com?Product=HD67002 (Modbus RTU Slave)
www.adfweb.com?Product=HD67004 (Modbus TCP Master)
www.adfweb.com?Product=HD67005 (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=HD67014 (Modbus TCP Slave)
www.adfweb.com?Product=HD67015 (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	16/10/2014	Dp	All	First released version
1.100	15/06/2016	Ff	All	New hardware version
1.101	13/03/2017	Ff	All	Revision

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

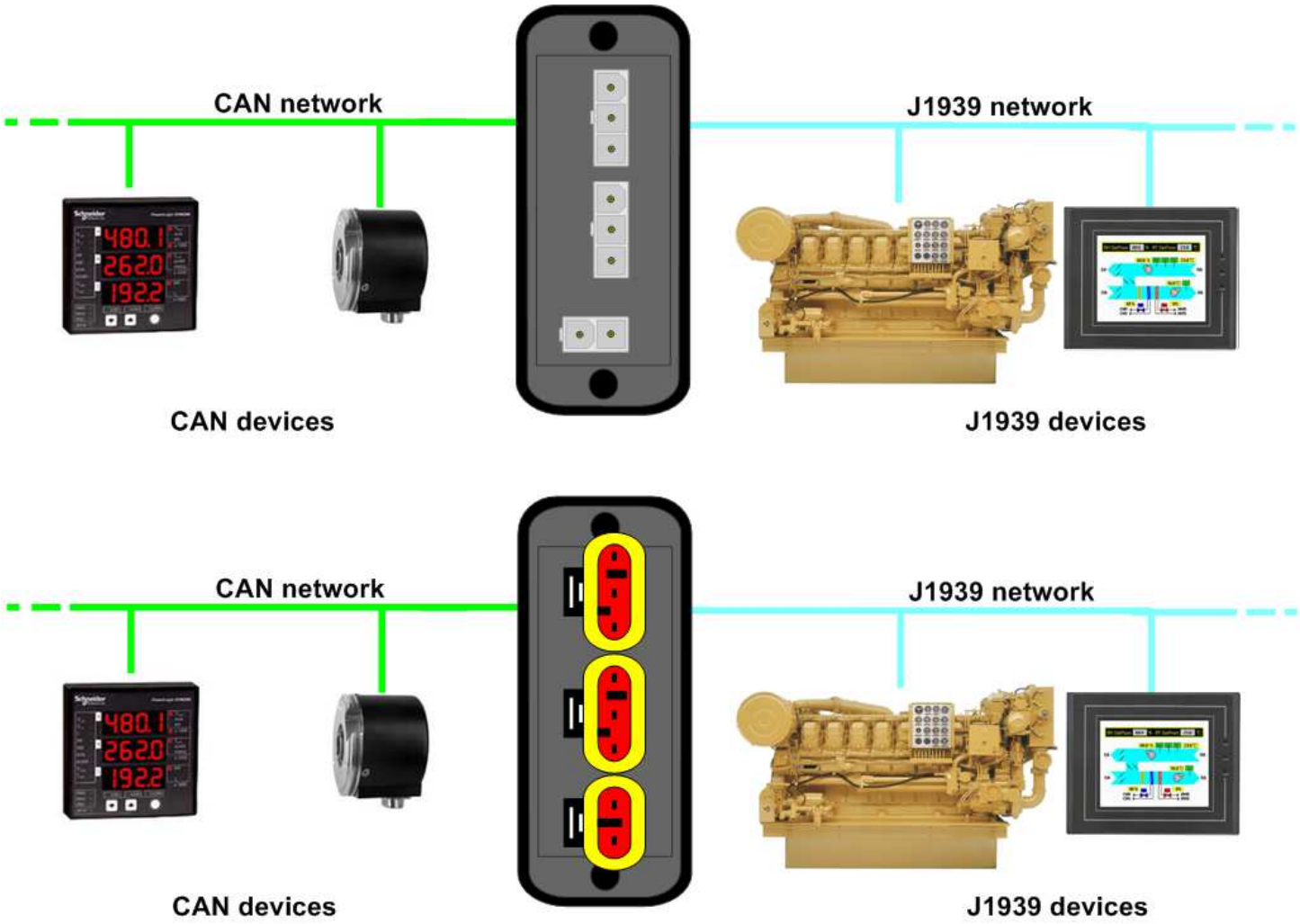
The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

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:



CONNECTION SCHEME:

Figure 1a: Connection scheme for HD67439-E4x-xxx

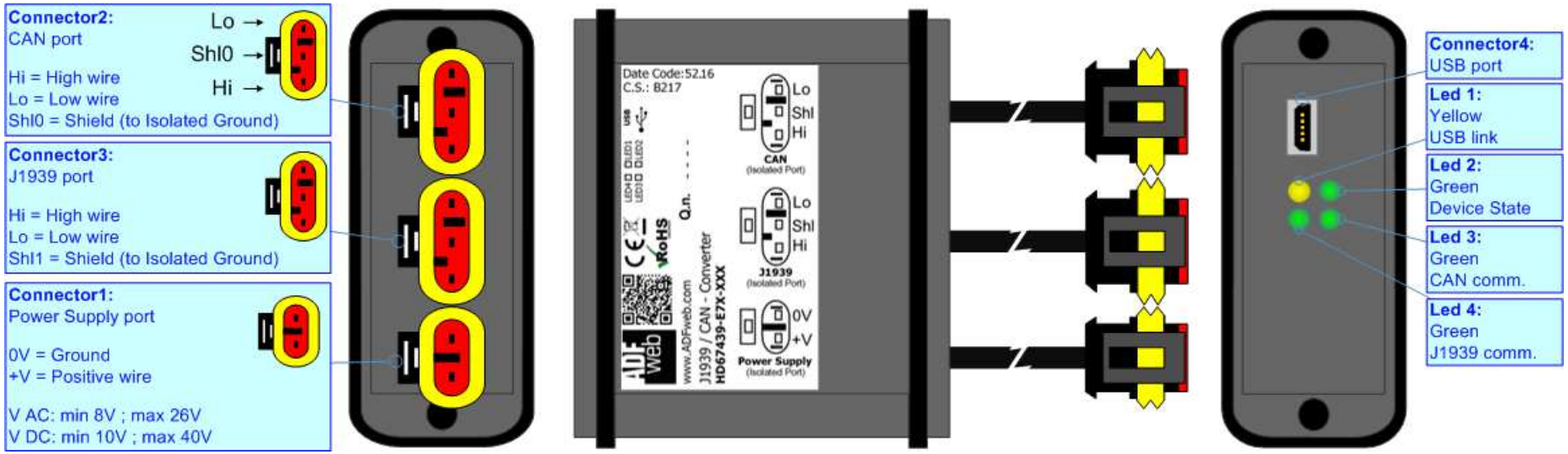


Figure 1b: Connection scheme for HD67439-E7x-xxx

CHARACTERISTICS:

The "**HD67439**" series are rugged devices used to interface J1939 devices with CAN devices.
With his particular enclosure, equipped with four fixing lugs, makes available the mounting of the device in any plane surface (horizontal, vertical, oblique).
It is possible to have the device varnished or totally resined and also in both cases with "Mini-Fit®" connectors or "AMP SuperSeal 1.5" connectors. If is resined, the enclosure, like the "AMP SuperSeal 1.5" connectors, is waterproof.

All the four series have these characteristics:

- Triple 4kV isolation between Power Supply / CAN / J1939;
- Varnished / Resined (optionally);
- Wide power supply input range: 8…26V AC | 10…40V DC;
- Mini-Fit® / AMP SuperSeal 1.5 connectors;
- Metal enclosure with fixing lugs;
- Possibility to use Metal hose clamps for fixing it without using lugs;
- Microprocessor for data control;
- Wide temperature range: -40°C / 105°C (-40°F / 221°F).

CONFIGURATION:

You need Compositor SW67439 software on your PC in order to perform the following:

- Define the readable J1939 frames from CAN;
- Define that writeable J1939 frames from CAN;
- Define the Receive CAN Frames;
- Define the Transmit CAN Frames;
- Update the device.

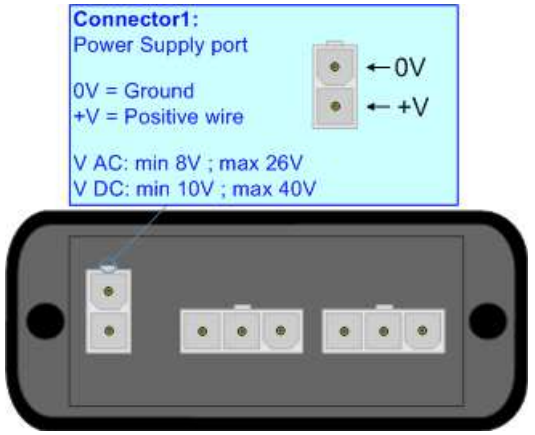
POWER SUPPLY:

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

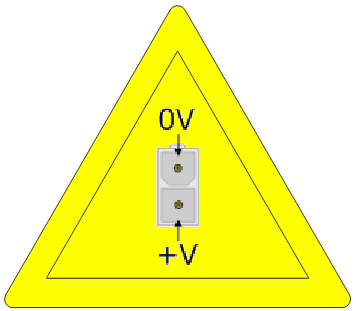
	VAC ~		VDC ⎓	
	Vmin	**Vmax**	**Vmin**	**Vmax**
HD67439-Exx-xxx	**8V**	**26V**	**10V**	**40V**

Consumption at 24V DC:

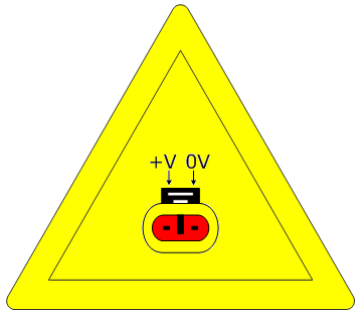
Device	W/VA
HD67439-Exx-xxx	4



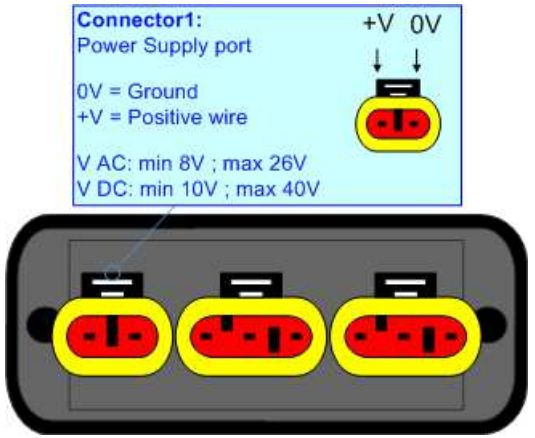
Caution: Not reverse the polarity power



HD67439-E4x-xxx



HD67439-E7x-xxx

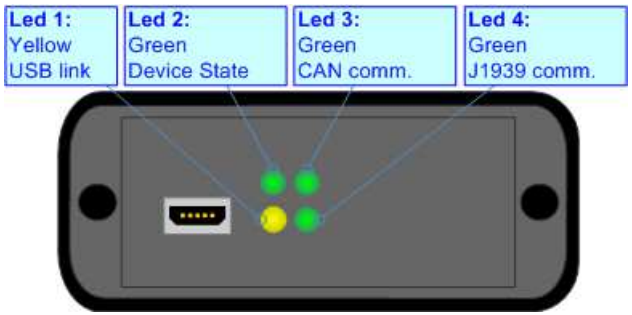


Note: It is possible to use also negative tensions. In this case the polarity must be inverted.

LEDS:

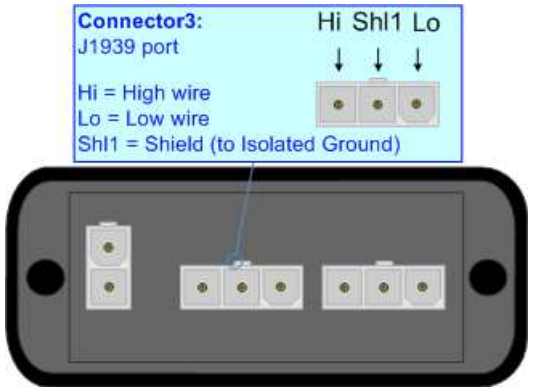
The device has got four LEDs that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

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:CAN communication (green)	Blinks when CAN frames are received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: J1939 communication (green)	Blinks when J1939 frames are received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress



J1939:

The connection of J1939 in the HD67439-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.



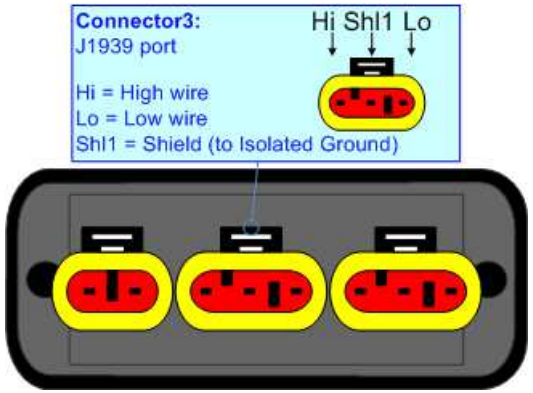
The connection of J1939 in the HD67439-E7x-xxx device must be made with a AMP SuperSeal 1.5 Male connector. The pinout of Female connector of the board is at right side of the page.

The termination of J1939 line, with a 120Ω resistor, in the HD67439-Exx-xxx is made internally of the device; when the order is performed. If the device have the J1939 terminated the code is the follow: HD67439-Exx-xYx; otherwise is this other: HD67439-Exx-xNx.

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

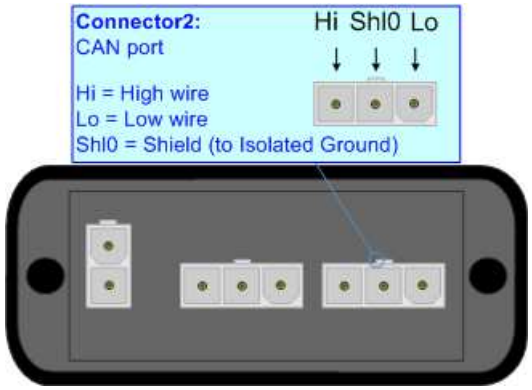


CAN:

The connection of CAN in the HD67439-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 HD67439-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 HD67439-Exx-xxx is made internally of the device; when the order is performed. If the device have the CAN terminated the code is the follow: HD67439-Exx-Yxx; otherwise is this other: HD67439-Exx-Nxx.

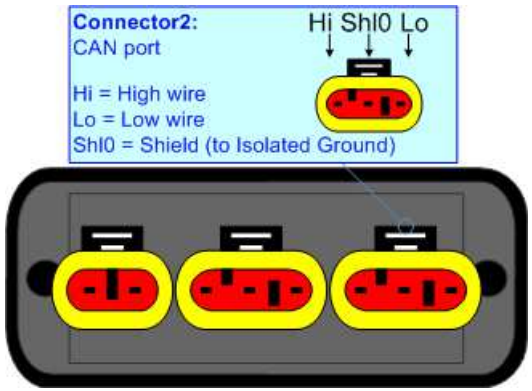


Cable characteristics:

DC parameter:		Impedance	70 Ohm/m

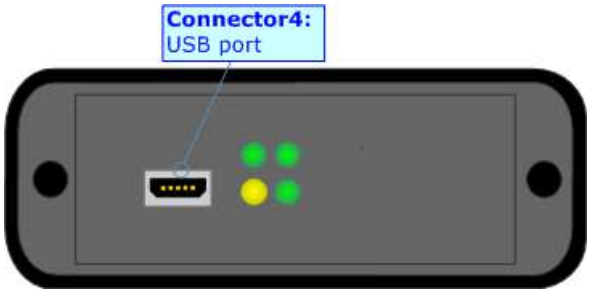
AC parameters:		Impedance	120 Ohm/m
		Delay	5 ns/m

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



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.



USE OF COMPOSITOR SW67439:

To configure the Converter, use the available software that runs with Windows called SW67439. 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 SW67439, the window below appears (Fig. 2).

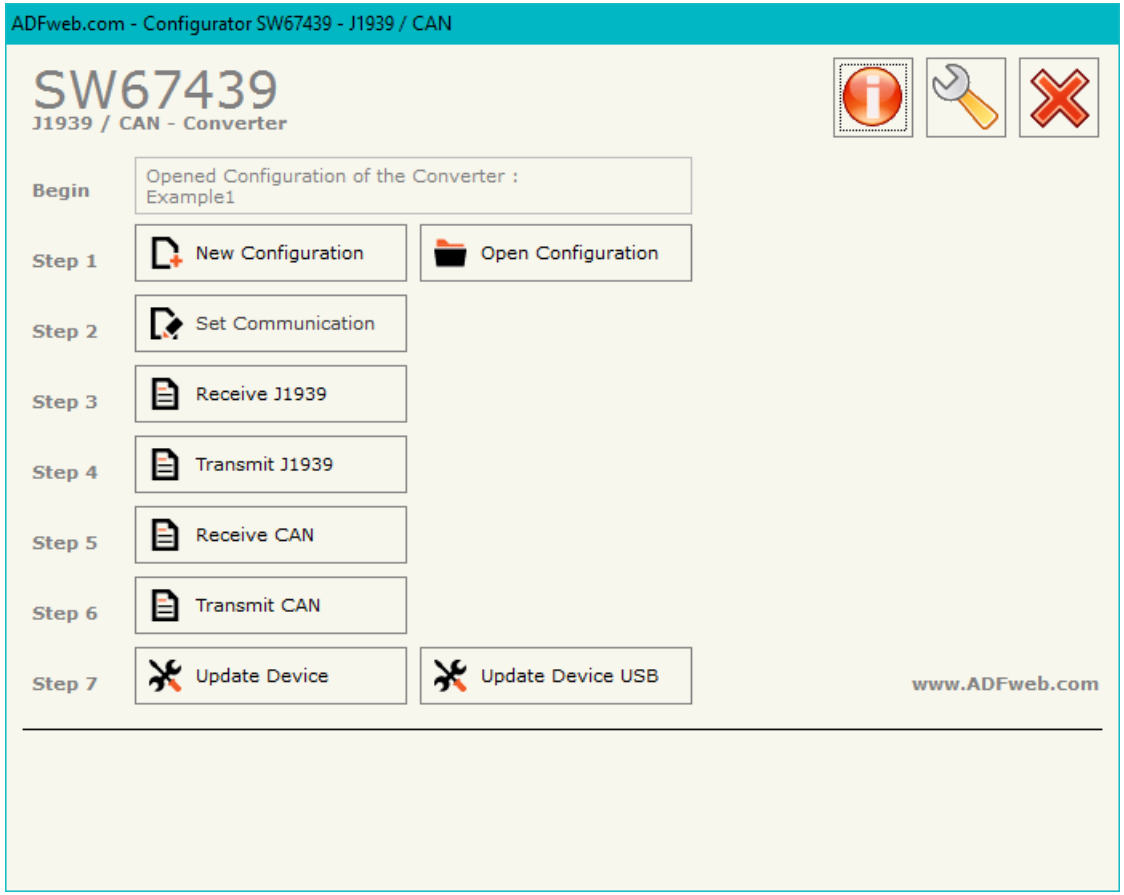
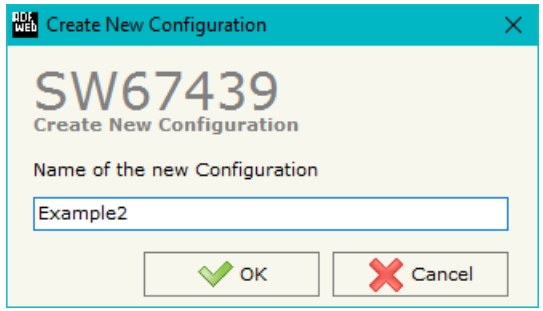


Figure 2: Main window for SW67439

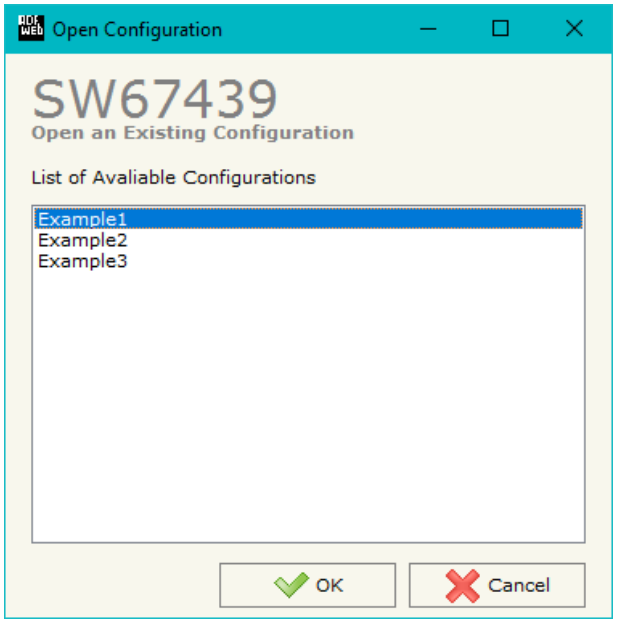
NEW CONFIGURATION / OPEN CONFIGURATION:

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



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

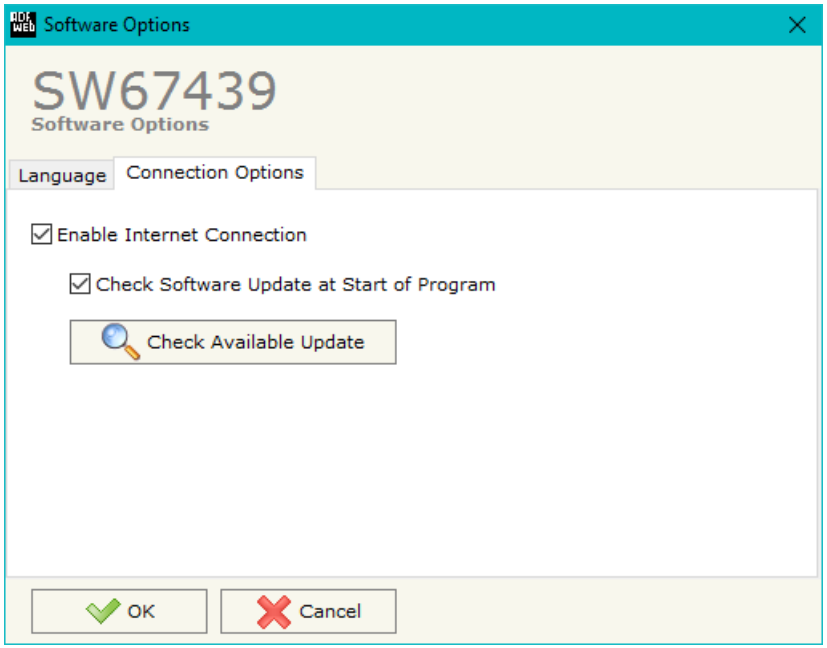
- To clone the configurations of a programmable "J1939 / CAN - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the 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 SW67439 checks automatically if there are updatings when it is launched.

SET COMMUNICATION:

This section defines the fundamental communication parameters of two buses, J1939 and CAN.

By pressing the "**Set Communication**" button from the main window for SW67439 (Fig. 2) the window "Set Communication Setting" appears (Fig. 3).

The meaning of the fields of "J1939" are:

- In the field "**Baudrate**" the data rate of J1939 bus is defined;
- In the field "**TimeOut Data (s)**" a time is defined. When this time is expired, the data on CAN side will be set to '0xFF';
- If the field "**Enable Peer to Peer**" is checked, the gateway accepts all the IDs that have the PGNs inserted in the section "Receive J1939";
- In the field "**Device ID J1939**" the J1939 address for the converter is defined.

The meaning of the fields of "CAN" are:

- In the field "**Baudrate**" the data rate of CAN bus is defined.

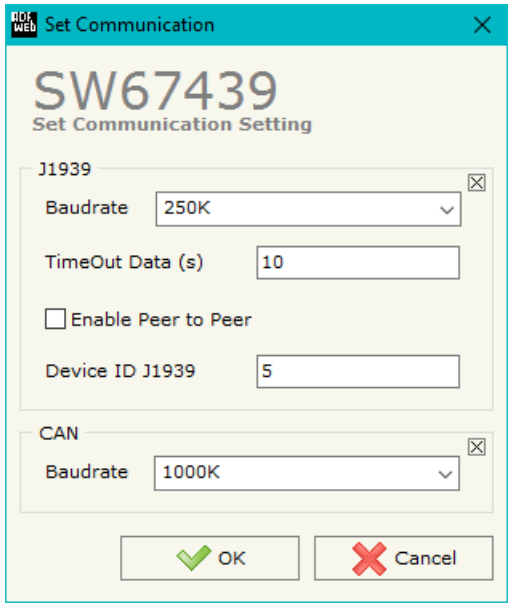


Figure 3: "Set Communication" window

RECEIVE J1939:

By pressing the "**Receive J1939**" button from the main window for SW67439 (Fig. 2) the window "Receive J1939 Frames" appears (Fig. 4). This section is used to define the J1939 messages accepted by the converter.

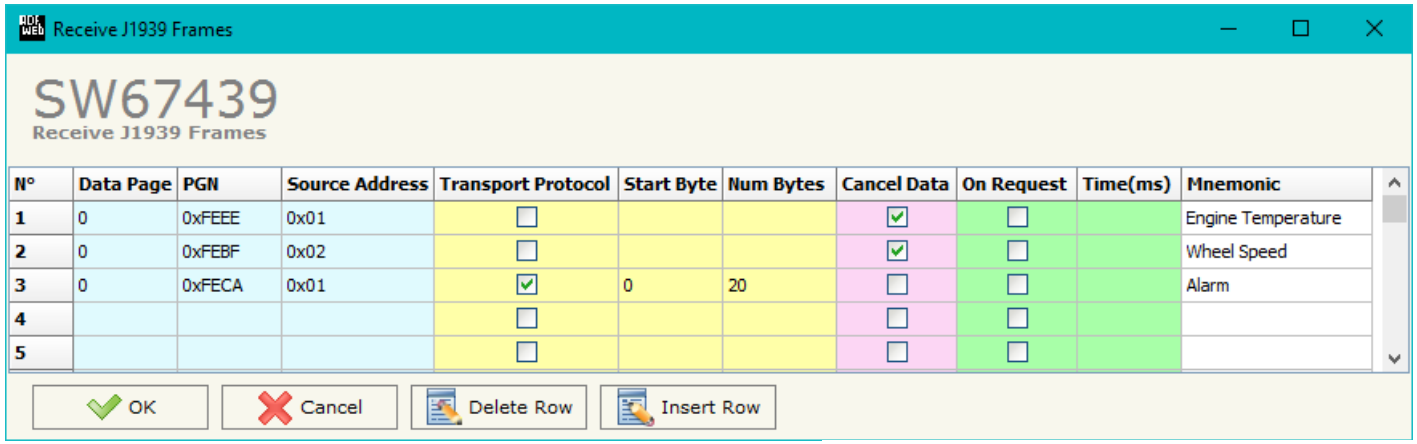


Figure 4: "Receive J1939 Frames" window

The means of the fields of the table are:

- In the field "**Data Page**" the data page of the J1939 message is defined. The value can be 0 or 1 (usually it is 0);
- In the field "**PGN**" the PGN of the J1939 message to be read from CAN is defined (in J1939 protocol the PGN is an 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 will use Transport Protocol functions (it is used to send more than 8 bytes);
- In the field "**Start Byte**" the starting byte to map on CAN side is defined. This field is enabled only when the field "Transport Protocol" is checked;
- In the field "**Num Bytes**" the number of consecutive bytes starting from the "Start Byte" is defined;
- If the field "**Cancel Data**" is checked, the Time Out on the data is Enable. When the data arrived from J1939 are older than the TimeOut (defined in the section "Set Communication"), the data bytes will be set to 0xFF value;
- If the field "**On Request**" is checked, the Remote Request frame is enable. The converter sends the Remote Request frame cyclically with an interval expressed in the "Time(ms)" fields.
- In the field "**Time(ms)**" the interval of the Remote Request is defined.
- In the field "**Mnemonic**" the description for the frame is defined.

TRANSMIT J1939:

By pressing the "**Transmit J1939**" button from the main window of SW67439 (Fig. 2) the window "Transmit J1939 Frames" appears (Fig. 5). This section is used to define the J1939 messages sent by the converter.

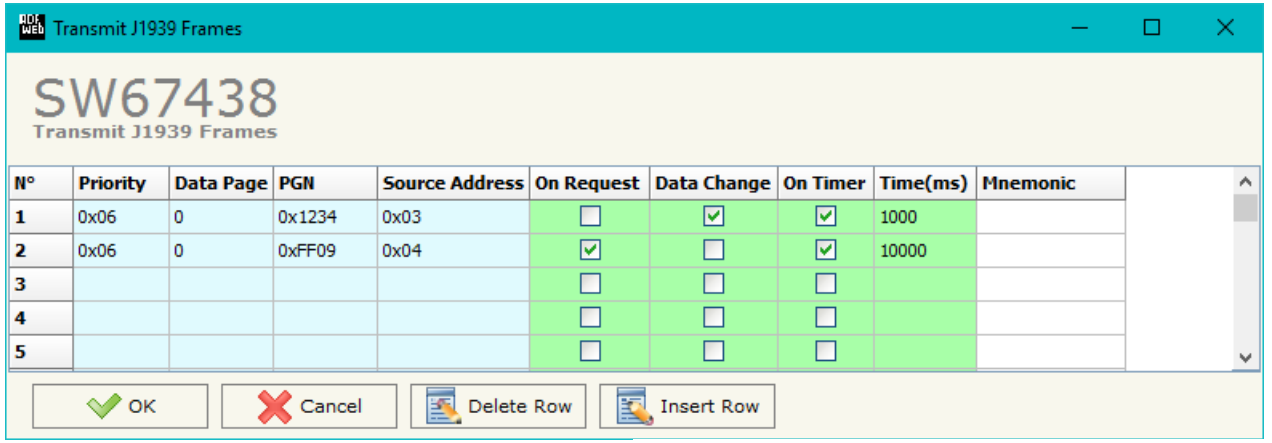


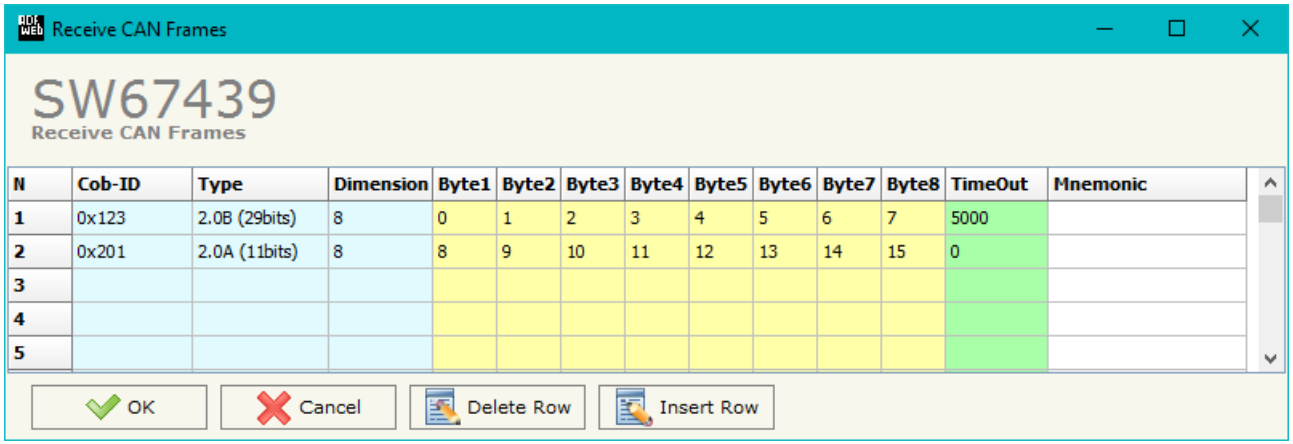
Figure 5: "Transmit J1939 Frames" window

The means of the fields of the table are:

- In the field "**Priority**" the priority of the J1939 message is defined. In J1939 protocol, the priority is a number between 0 and 7. 0 is the highest priority and 7 is the lowest;
- In the field "**Data Page**" the data page of the J1939 message is defined. The value can be 0 or 1 (usually it is 0);
- In the field "**PGN**" the PGN of the J1939 message to be written from CAN is defined (in J1939 protocol the PGN is an 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 J1939 frame is sent when a request frame arrives from J1939 network;
- If the field "**Data Change**" is checked, the J1939 frame is sent when a byte from CAN side changes value;
- If the field "**On Timer**" is checked, the J1939 frame is sent cyclically;
- In the field "**Time (ms)**" the delay (in milliseconds) with which sending the J1939 message is defined;
- In the field "**Mnemonic**" a description for the frame is defined.

RECEIVE CAN:

By pressing the "**Receive CAN**" button from the main window of SW67439 (Fig. 2) the window "Receive CAN Frames" appears (Fig. 6). This section is used to define the CAN messages accepted by the converter.



N	Cob-ID	Type	Dimension	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	TimeOut	Mnemonic
1	0x123	2.0B (29bits)	8	0	1	2	3	4	5	6	7	5000	
2	0x201	2.0A (11bits)	8	8	9	10	11	12	13	14	15	0	
3													
4													
5													

Figure 6: "Receive CAN Frames" window

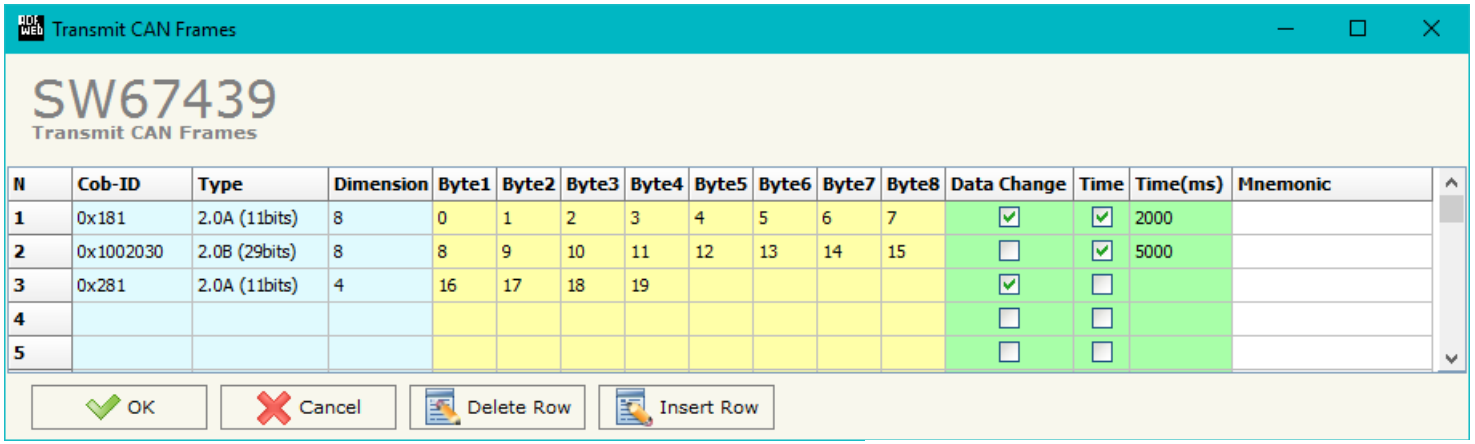
The means of the fields of the table are:

- In the field "**Cob-ID**" the COB-ID of the CAN frame is defined;
- In the field "**Type**" the type of CAN message received is defined ('2.0A (11bits)' or '2.0B (29bits)');
- In the field "**Dimension**" the number of bytes of the CAN frame (from 1 to 8) is defined;
- In the field "**Byte1**" the offset of the internal array where saving byte 1 of the CAN frame is defined;
- In the field "**Byte2**" the offset of the internal array where saving byte 2 of the CAN frame is defined;
- In the field "**Byte3**" the offset of the internal array where saving byte 3 of the CAN frame is defined;
- In the field "**Byte4**" the offset of the internal array where saving byte 4 of the CAN frame is defined;
- In the field "**Byte5**" the offset of the internal array where saving byte 5 of the CAN frame is defined;
- In the field "**Byte6**" the offset of the internal array where saving byte 6 of the CAN frame is defined;
- In the field "**Byte7**" the offset of the internal array where saving byte 7 of the CAN frame is defined;
- In the field "**Byte8**" the offset of the internal array where saving byte 8 of the CAN frame is defined;

- In the field "**TimeOut**" the time (in ms) of the timeout of the data is defined. If a CAN frame is not received in this time, all the data of the CAN frame will be set to zero. It is possible to disable this function by setting this field to '0';
- In the field "**Minemonic**" a brief description is defined.

TRANSMIT CAN:

By pressing the "**Transmit CAN**" button from the main window of SW67439 (Fig. 2) the window "Transmit CAN Frames" appears (Fig. 7). This section is used to define the CAN messages sent by the converter.



N	Cob-ID	Type	Dimension	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	Data Change	Time	Time(ms)	Mnemonic
1	0x181	2.0A (11bits)	8	0	1	2	3	4	5	6	7	☑	☑	2000	
2	0x1002030	2.0B (29bits)	8	8	9	10	11	12	13	14	15	☐	☑	5000	
3	0x281	2.0A (11bits)	4	16	17	18	19					☑	☐		
4												☐	☐		
5												☐	☐		

Figure 9: "Transmit CAN Frames" window

The means of the fields of the table are:

- In the field "**Cob-ID**" the COB-ID of the CAN frame is defined;
- In the field "**Type**" the type of CAN message sent is defined ('2.0A (11bits)' or '2.0B (29bits)');
- In the field "**Dimension**" the number of bytes of the CAN frame (from 1 to 8) is defined;
- In the field "**Byte1**" the offset of the internal array where taking byte 1 of the CAN frame is defined;
- In the field "**Byte2**" the offset of the internal array where taking byte 2 of the CAN frame is defined;
- In the field "**Byte3**" the offset of the internal array where taking byte 3 of the CAN frame is defined;
- In the field "**Byte4**" the offset of the internal array where taking byte 4 of the CAN frame is defined;
- In the field "**Byte5**" the offset of the internal array where taking byte 5 of the CAN frame is defined;
- In the field "**Byte6**" the offset of the internal array where taking byte 6 of the CAN frame is defined;
- In the field "**Byte7**" the offset of the internal array where taking byte 7 of the CAN frame is defined;
- In the field "**Byte8**" the offset of the internal array where taking byte 8 of the CAN frame is defined;
- If the field "**Data Change**" is checked, the CAN frame is sent when a data byte from J1939 side changes value;

- If the field "**Time**" is checked, the CAN frame is sent cyclically;
- In the field "**Time(ms)**" the delay (in ms) between two CAN frames is defined (if the option "**Time**" is checked);
- In the field "**Mnemonic**" a brief description is defined.

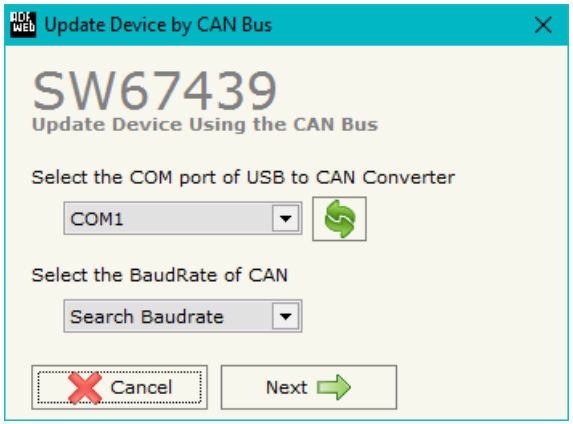
UPDATE DEVICE (ONLY FOR THE HARDWARE WITHOUT USB PORT):

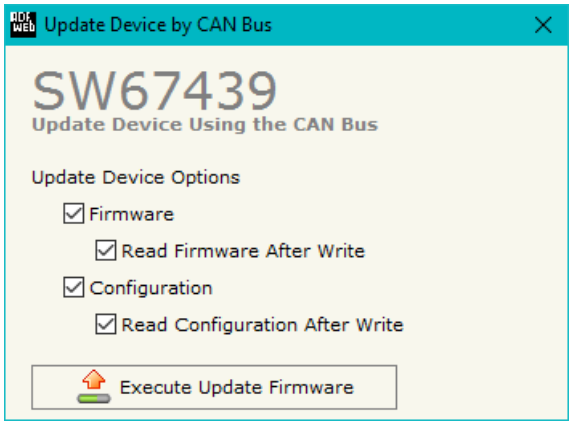
By pressing the "**Update Device**" button it is possible to load the created Configuration into the device; and also the Firmware, if is necessary.

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 HD67439;
- 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.





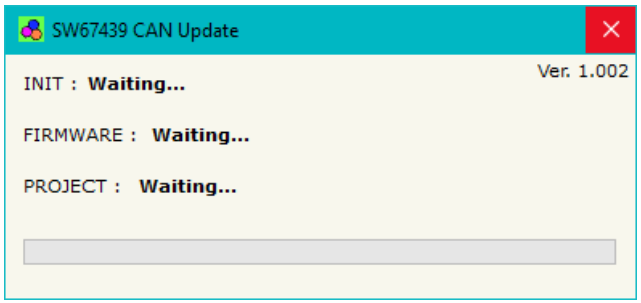


Figure 10: "Update Device" windows

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.

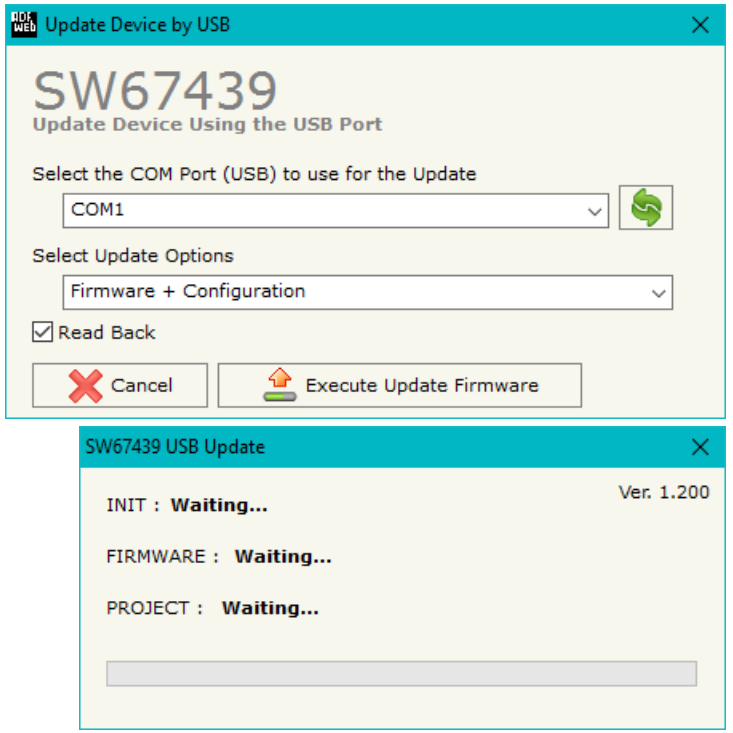


Figure 11: "Update Device" windows

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 HD67439 device.

Note:
When you receive the device, for the first time, you have to update also the Firmware in the HD67439 device.

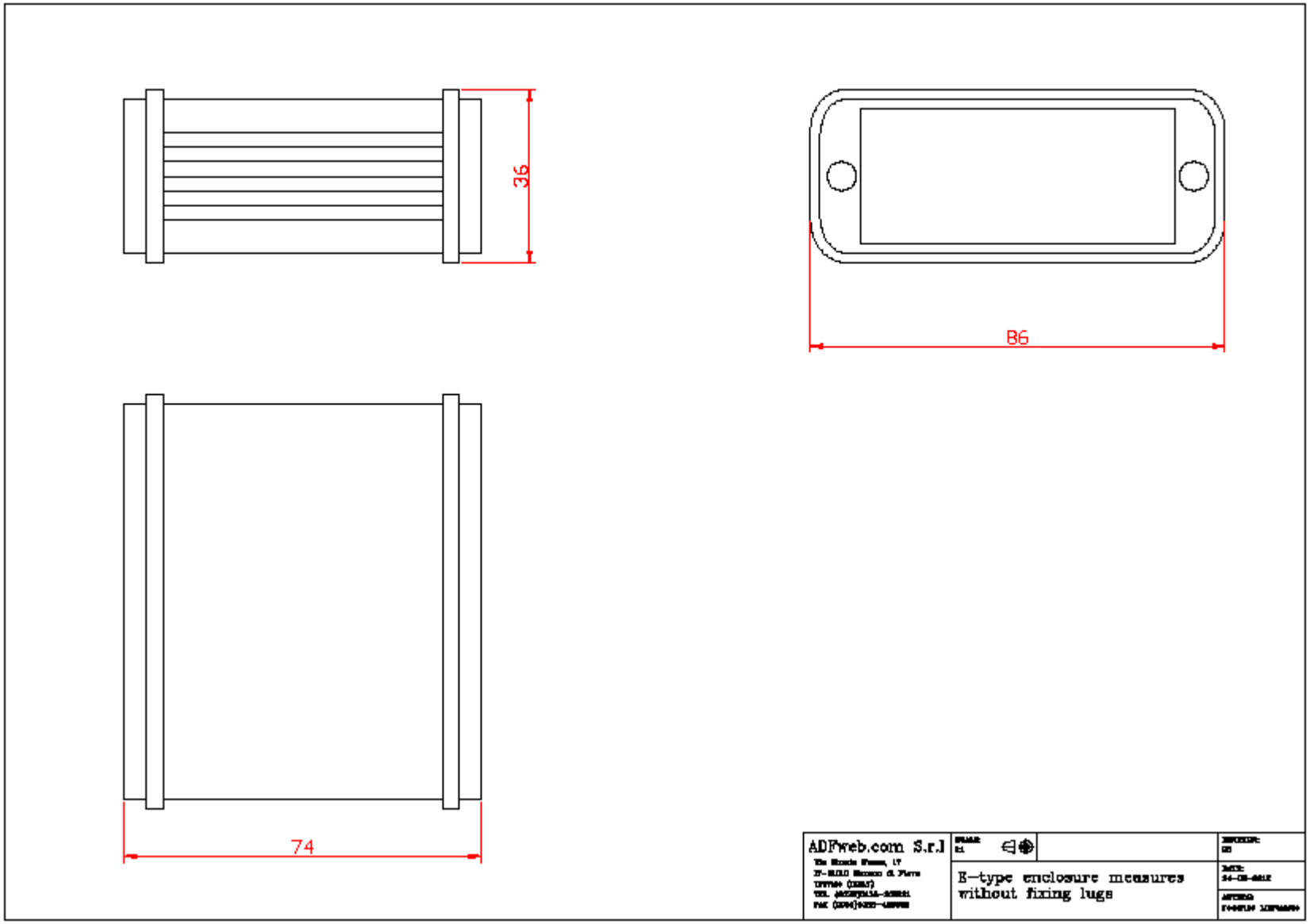
Warning:
If the Fig. 12 appears when you try to do the Update, before require assistance, try these points:

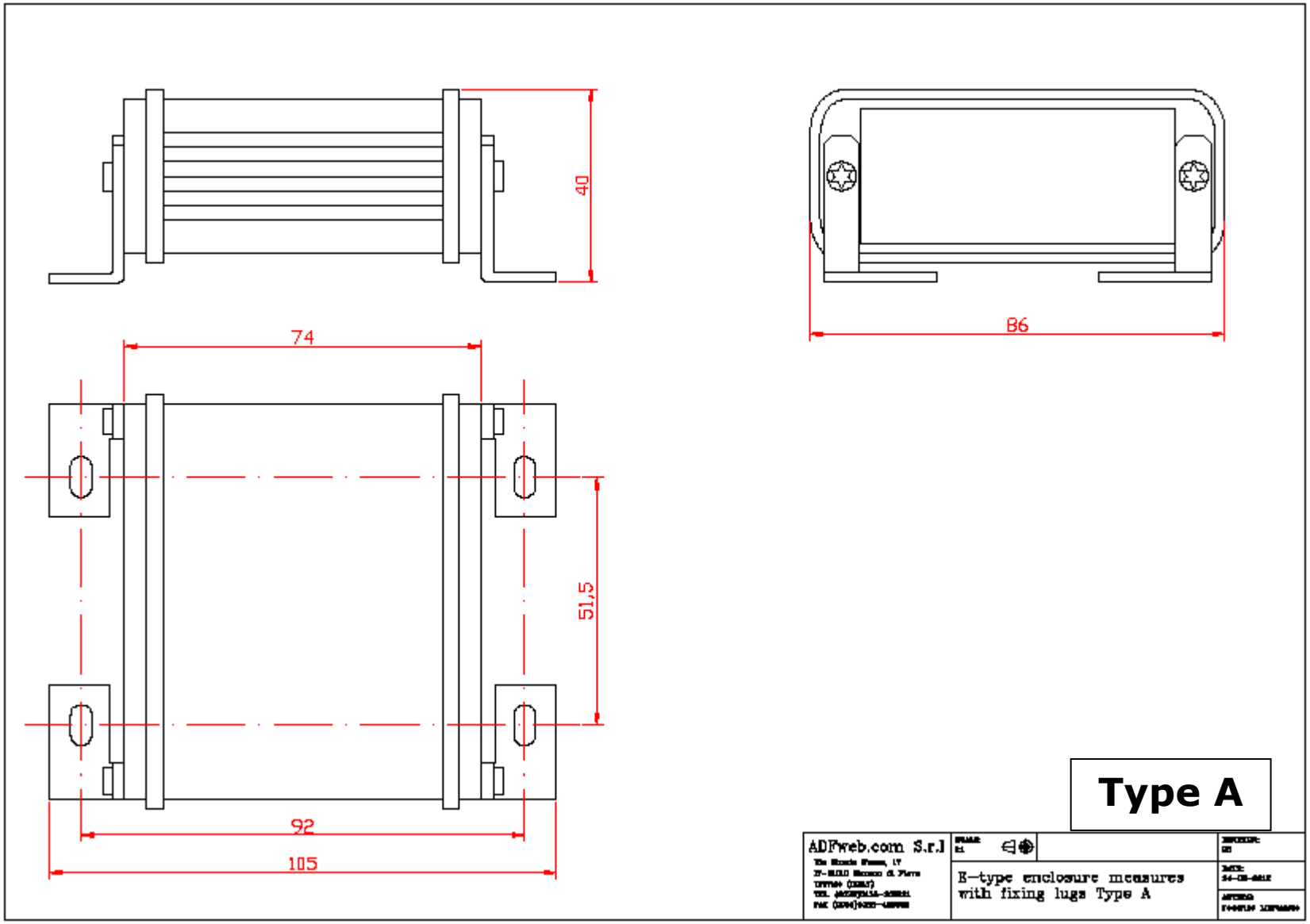
- Check if the serial COM port selected is the correct one;
- Check if the AC67400 is connected between the PC and the device;
- Check if the USB cable is connected between the PC and the device;
- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- If you 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.

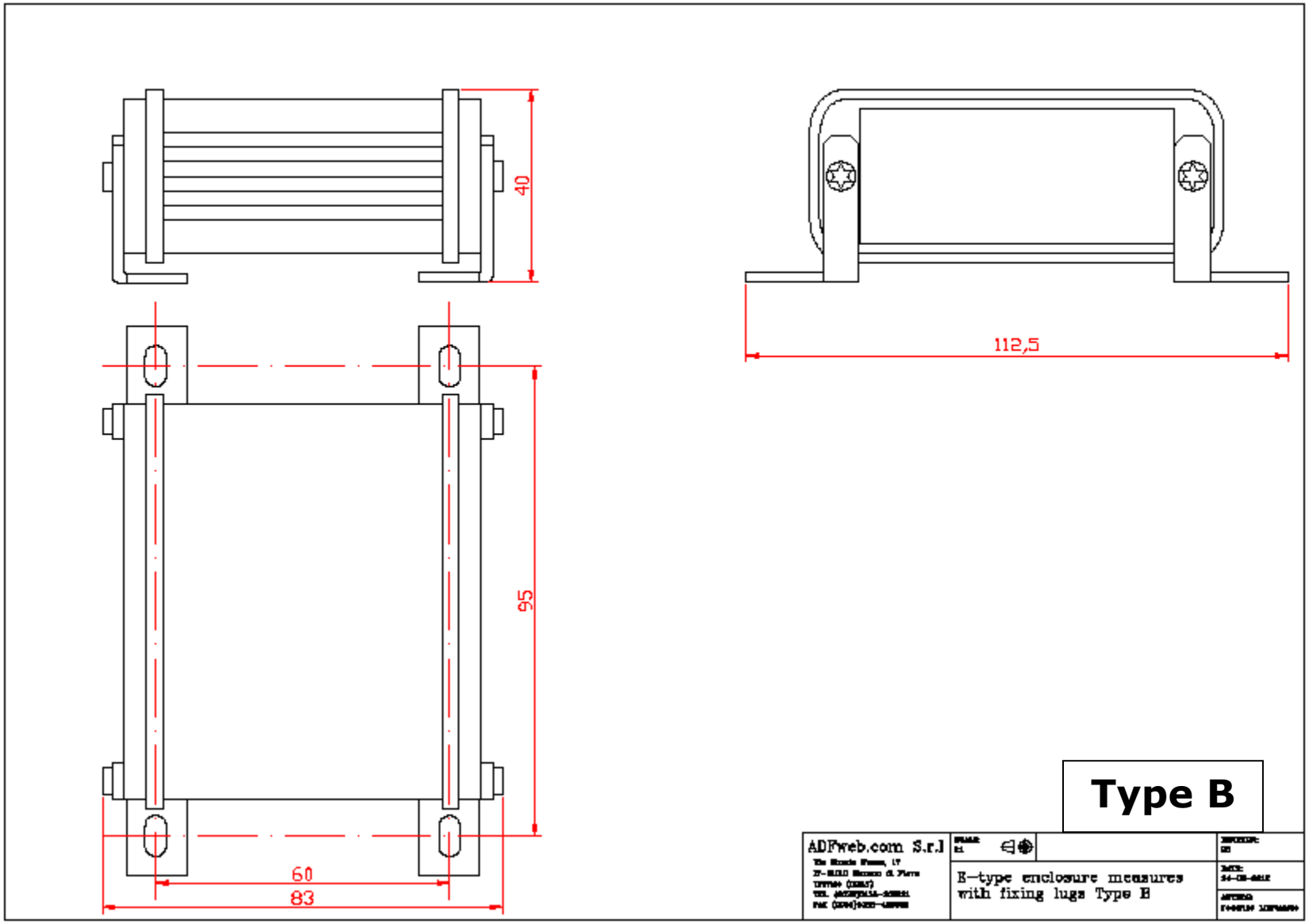
Figure 12: "Protection" window

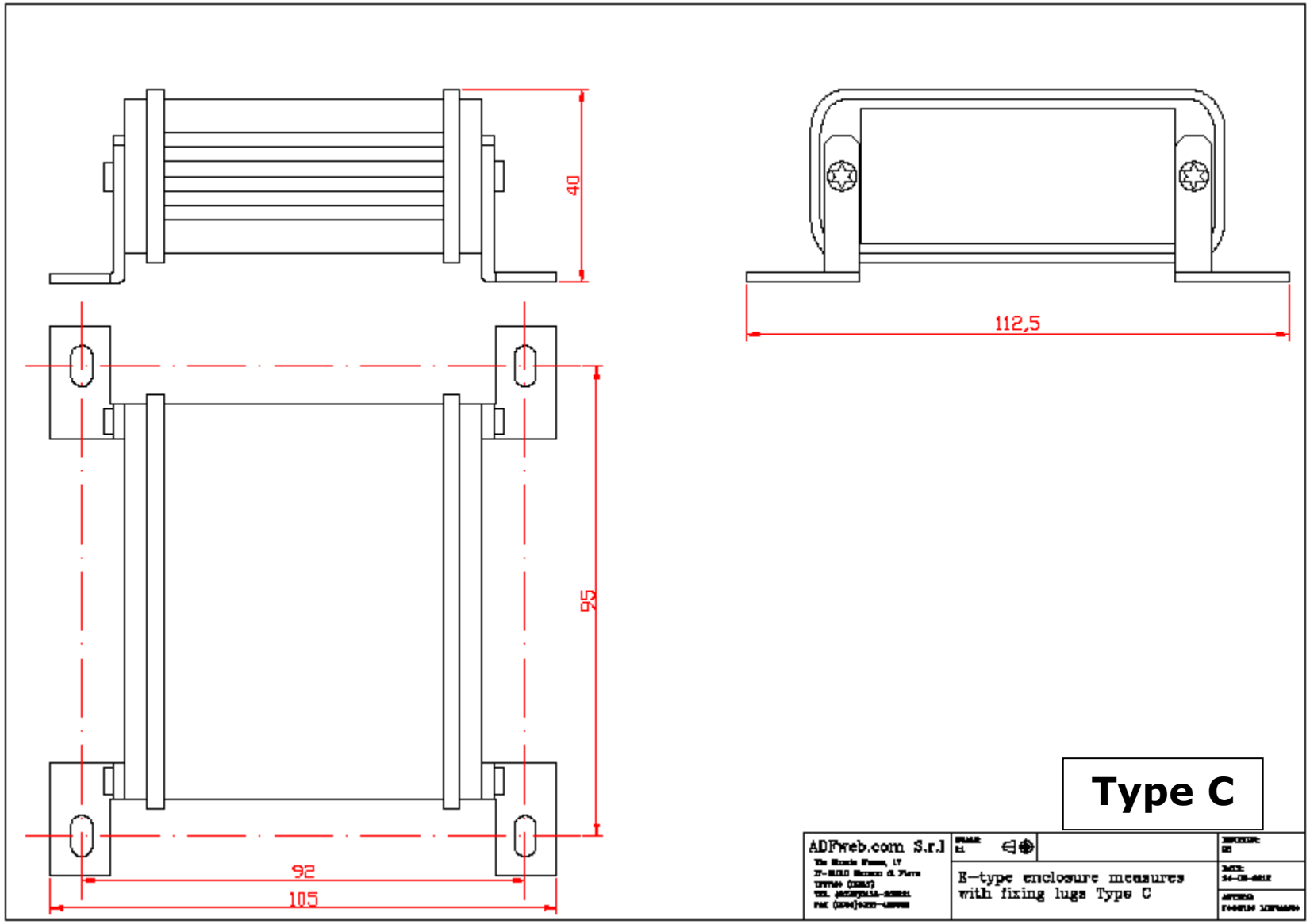
In the case of HD67439 you have to use the software "SW67439": www.adfweb.com\download\filefold\SW67439.zip.

MECHANICAL DIMENSIONS:




40
86
74
51,5
92
105
Type A
ADFweb.com S.r.l
E-type enclosure measures
with fixing lugs Type A


40
112,5
95
60
83
Type B
ADFweb.com S.r.l
E-type enclosure measures
with fixing lugs Type B


40
112,5
95
92
105
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:

HD67439 – E y z – s d f

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

J1939 Termination
Y: Terminated with 120Ω
N: Not terminated

CAN 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
HD67439 = J1939 / CAN - Converter

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

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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