

# User Manual

Revision 1.001  
English

## J1939 / PROFIBUS Slave - Converter

(Order Code: HD67437)

For Website information:  
[www.adfweb.com?Product=HD67437](http://www.adfweb.com?Product=HD67437)

For Price information:  
[www.adfweb.com?Price=HD67437](http://www.adfweb.com?Price=HD67437)

### Benefits and Main Features:

- ✦ Very easy to configure
- ✦ Triple Electrical isolation
- ✦ Temperature range: -40°C/105°C (-40°F/221°F)



HD67437

For others Gateways / Bridges:

### CANopen to Modbus

See also the following links:  
[www.adfweb.com?Product=HD67001](http://www.adfweb.com?Product=HD67001) (Modbus RTU Master)  
[www.adfweb.com?Product=HD67502](http://www.adfweb.com?Product=HD67502) (Modbus RTU Slave)  
[www.adfweb.com?Product=HD67504](http://www.adfweb.com?Product=HD67504) (Modbus TCP Master)  
[www.adfweb.com?Product=HD67505](http://www.adfweb.com?Product=HD67505) (Modbus TCP Slave)

For others Gateways / Bridges:

For **CAN bus 2.0A** and/or **CAN bus 2.0B** to **Modbus**

See also the following links:  
[www.adfweb.com?Product=HD67011](http://www.adfweb.com?Product=HD67011) (Modbus RTU Slave)  
[www.adfweb.com?Product=HD67012](http://www.adfweb.com?Product=HD67012) (Modbus RTU Master)  
[www.adfweb.com?Product=HD67514](http://www.adfweb.com?Product=HD67514) (Modbus TCP Slave)  
[www.adfweb.com?Product=HD67515](http://www.adfweb.com?Product=HD67515) (Modbus TCP Master)

Do you have an your customer protocol?

See the following links:  
[www.adfweb.com?Product=HD67003](http://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](http://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/](http://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	17/11/2012	Ff	All	First release version
1.001	03/10/2014	Ff	All	Revision

**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, 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:

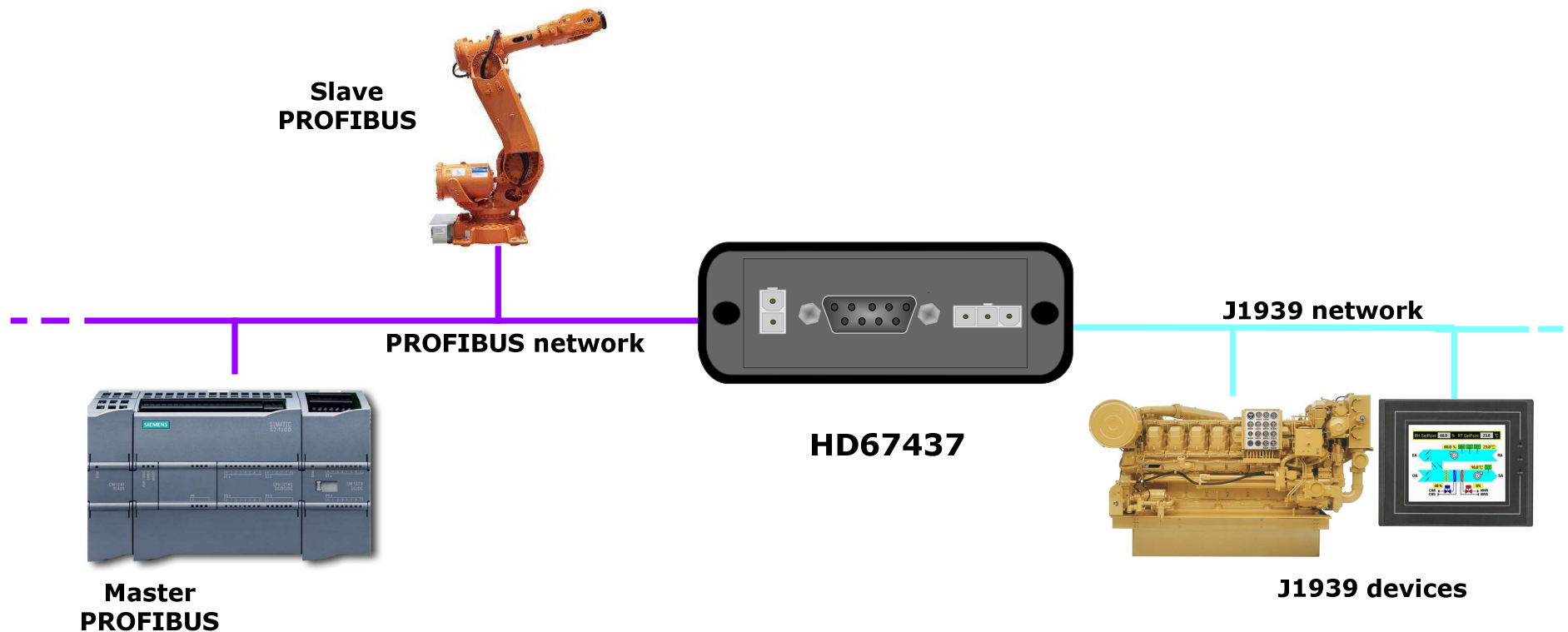


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

**CE CONFORMITY**

The declaration is made by our company. You can send an email to [support@adfweb.com](mailto:support@adfweb.com) or give us a call if you need it.

**EXAMPLE OF CONNECTION:**



**CONNECTION SCHEME:**

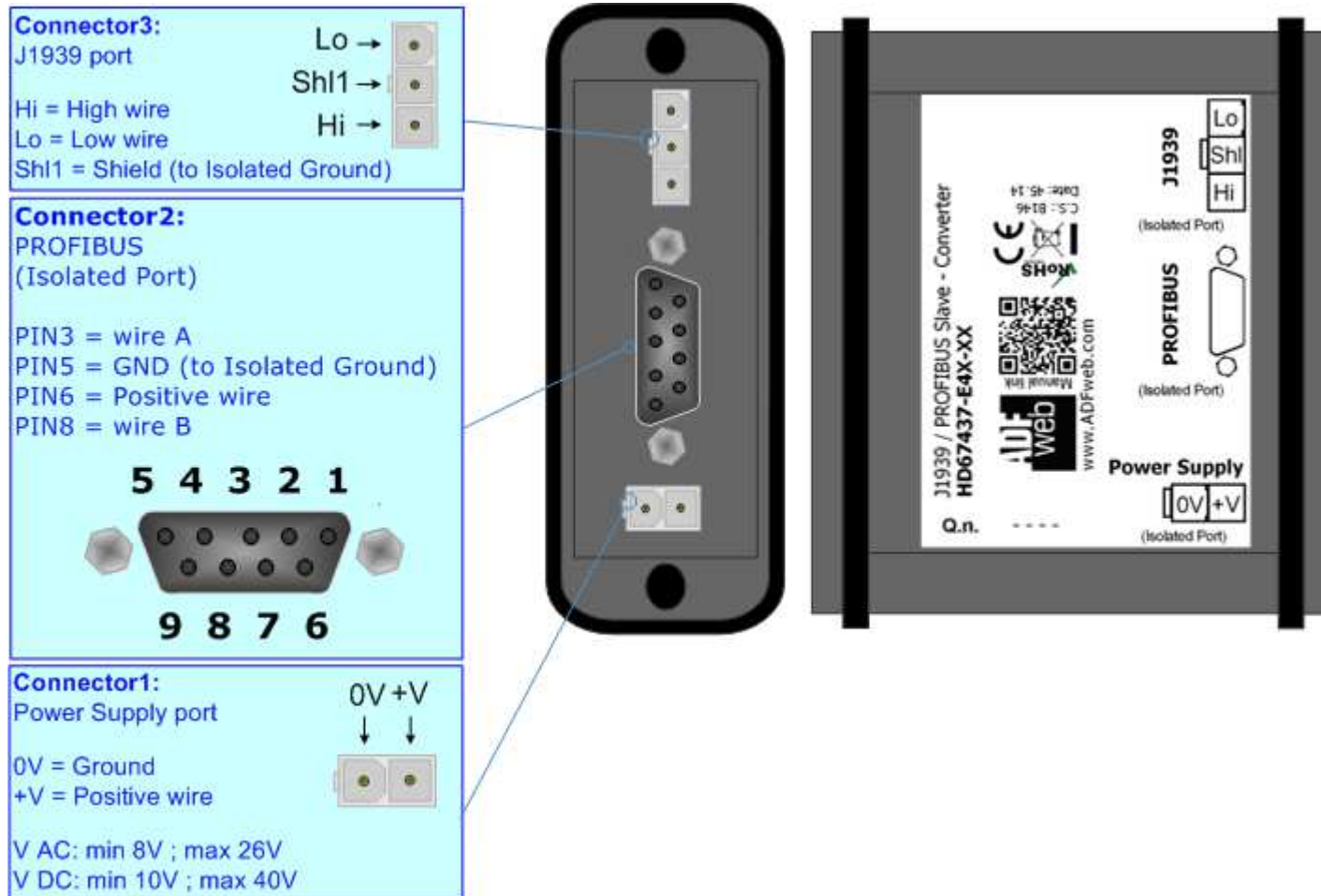


Figure 1-1: Connection scheme for HD67437-E4x-xx

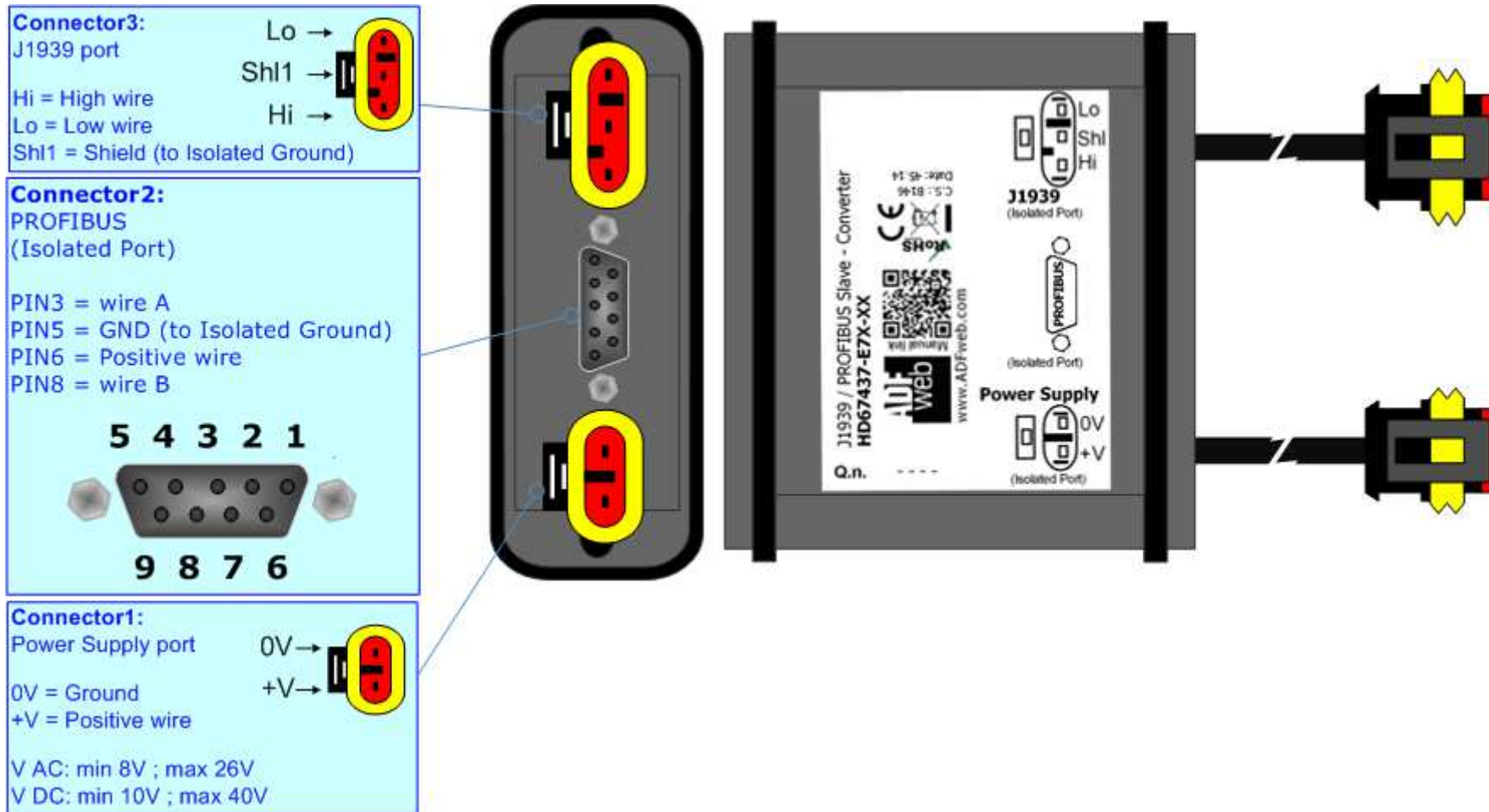


Figure 1-2: Connection scheme for HD67437-E7x-xx

**CHARACTERISTICS:**

The “**HD67437**” series are rugged devices used to interface J1939 devices with PROFIBUS Master.

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 (IP67).

The Configurable J1939 / PROFIBUS Slave - Converter allows the following characteristics:

- Triple 4kV isolation between Power Supply / PROFIBUS / 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 SW67437 software on your PC in order to perform the following:

- Define the parameter of the J1939;
- Define the parameter of the PROFIBUS;
- Receive J1939 frames;
- Transmit J1939 frames;
- Create a GSD File;
- Update the device.

**POWER SUPPLY:**

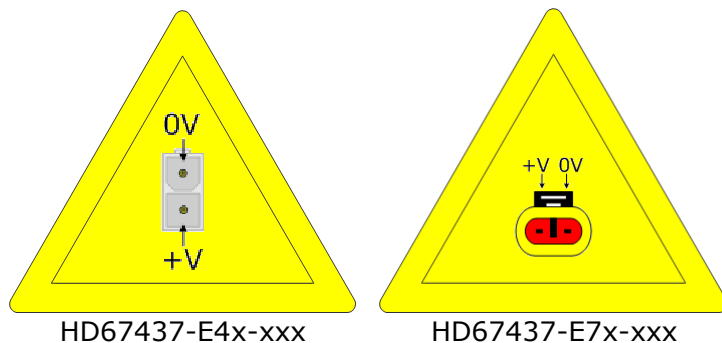
The devices can be powered between a wide range of tensions. For more details see the two tables below.

	VAC		VDC	
	Vmin	Vmax	Vmin	Vmax
<b>HD67427-Exx-xxx</b>	<b>8V</b>	<b>26V</b>	<b>10V</b>	<b>40V</b>

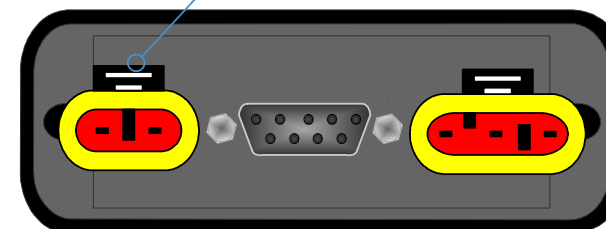
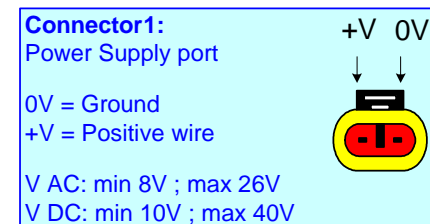
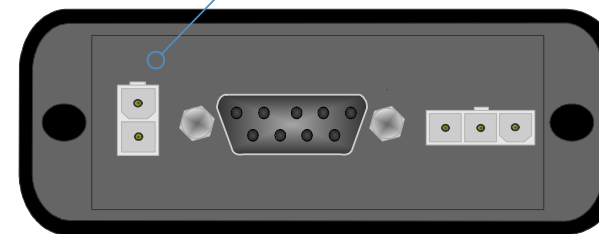
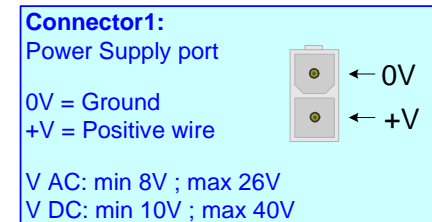
Consumption at 24V DC:

Device	W/VA
HD67437-Exx-xxx	4

**Caution: Not reverse the polarity power**



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



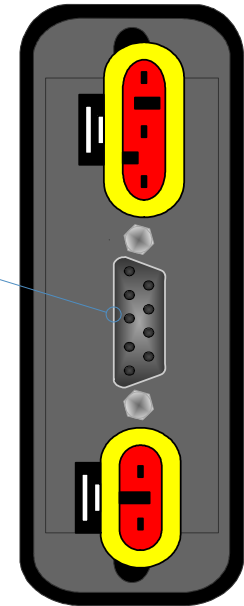


**PROFIBUS:**

The PROFIBUS uses a 9-pin D-SUB connector. The pin assignment is defined like in the right figure.

Here some codes of cables:

- Belden: p/n 183079A - Continuous Armor DataBus® ISA/SP-50 PROFIBUS Cable;



**J1939:**

The connection of J1939 in the HD67437-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 HD67437-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.

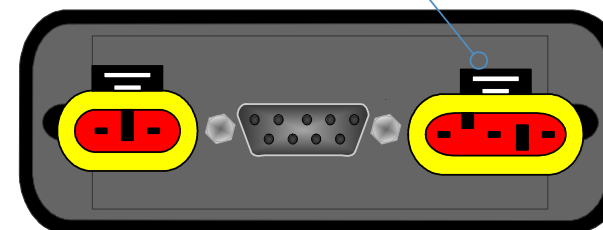
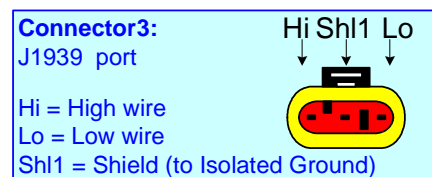
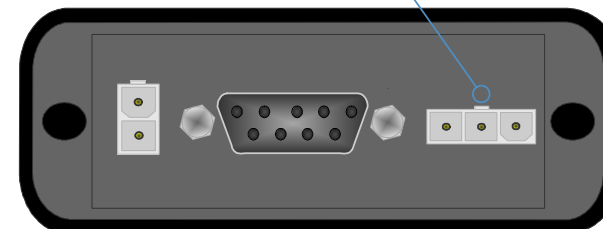
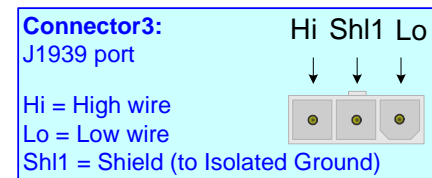
The termination of J1939 line, with a 120Ω resistor, in the HD67437-Exx-xxx is made internally of the device; when the order is performed. If the device have the J1939 terminated the code is the follow: HD67437-Exx-Yx; otherwise is this other: HD67437-Exx-Nx.

Cable characteristics:

<b>DC parameter:</b>	Impedance	70 Ohm/m
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<b>AC parameters:</b>	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



**USE OF COMPOSITOR SW67437:**

To configure the Converter, use the available software that runs with Windows called SW67437. It is downloadable on the site [www.adfweb.com](http://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; 32/64bit).

When launching the SW67437, the window below appears (Fig. 2).

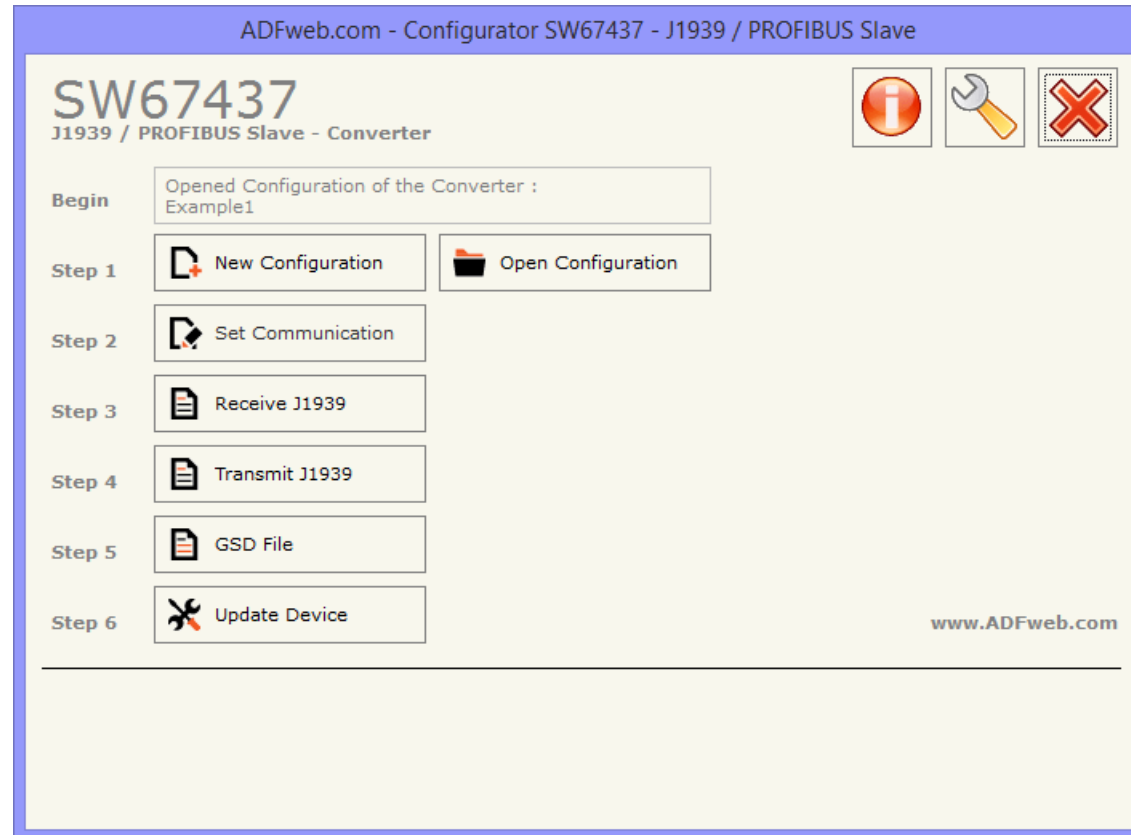
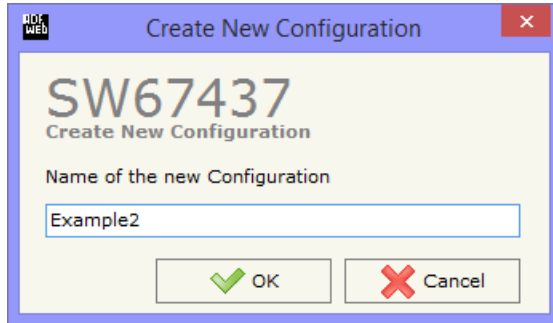


Figure 2: Main window for SW67437

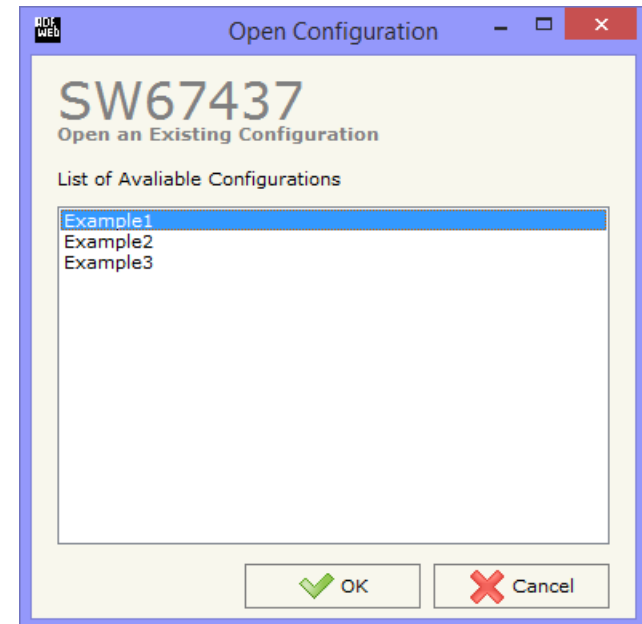
**NEW CONFIGURATION / OPEN CONFIGURATION:**

The “**New Configuration**” button creates the folder which contains the entire device’s configuration.




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

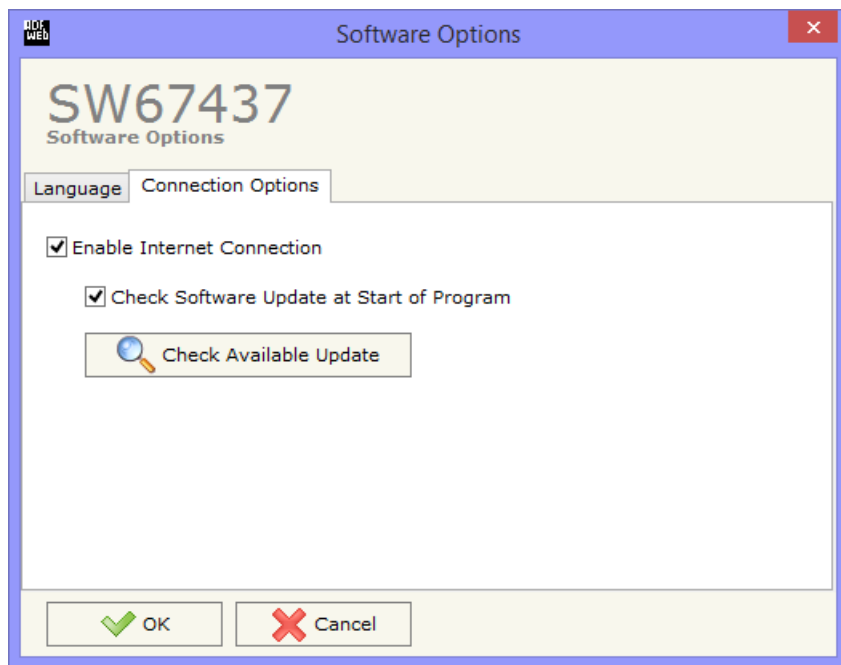
- To clone the configurations of a programmable “J1939 / PROFIBUS Slave - Converter” in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate 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 SW67437 checks automatically if there are updatings when it is launched.

## SET COMMUNICATION:

This section defines the fundamental communication parameter of two Buses, J1939 and PROFIBUS.

By Pressing the **"Set Communication"** button from the main window for SW67437 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The window is divided in two sections, one for the J1939 and the other for the PROFIBUS.

The means of the fields for "J1939" are:

- In the field **"Baud Rate"** the velocity of the J1939 bus is defined;
- In the field **"TimeOut Data"** insert a time; when this time is elapsed and the data isn't reliable, in the register you can read "FFFF". It is possible to use this function only for the "Receive Frames";
- If the field **"Enable Peer to Peer"** is checked, the gateway accepts all the ID that have the PGN inserted in the "Receive Frames" section;
- If the field **"Filter FECA"** is checked when the FECA PGN arrives the gateway puts the values in Standby. If the time, expressed in milliseconds and written at the right side of "Filter FECA", is elapsed and there aren't arrived the frames of Transport Protocol the gateway put the data of FECA into PROFIBUS array. Otherwise if the Transport Protocol arrives before the time is elapsed the gateway put his data into PROFIBUS array discarding the data of FECA. When this field is checked the values aren't updated when the FECA frame arrive but there is an offset of xx ms. You can use this function if there is only one J1939 device in the network;
- In the field **"Device ID J1939"** the ID of the J1939 side is defined.

The means of the fields for "PROFIBUS" are:

- In the field **"ID Device"** the address for the PROFIBUS side is defined;
- If the field **"Module for every J1939 Frame"** is checked, when you create the "GSD File" every J1939 Frame is inserted in a Module, otherwise if this field is not checked a Module contains up to 64 byte;
- If the field **"Send J1939 Frames with PROFIBUS"** is checked, is possible to send the J1939 frames asynchronously by using PROFIBUS data (see "SEND J1939 FRAMES WITH PROFIBUS" section on page 20).

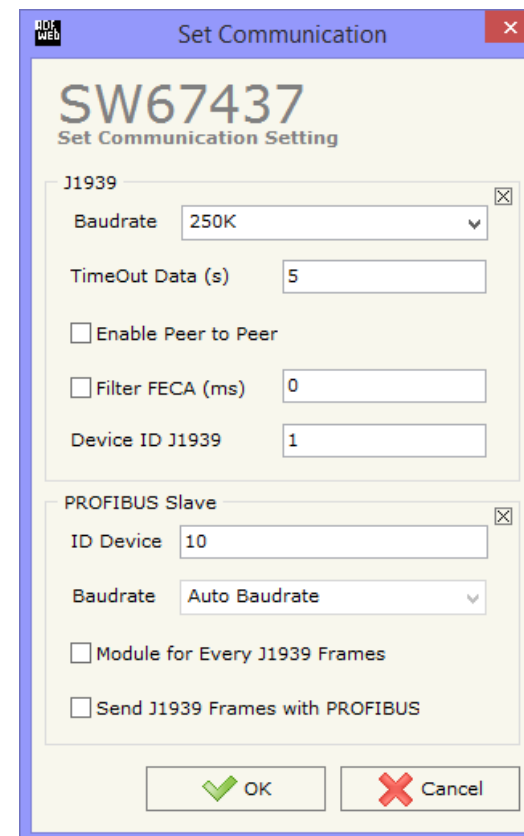


Figure 3: "Set Communication" window

**RECEIVE J1939:**

By pressing the "Receive J1939" button from the main window for SW67437 (Fig. 2) the "Receive J1939 Frames" window appears (Fig. 4). The J1939 frames inserted in this table contains the Output data of PROFIBUS. These frames are accepted by the gateway.

The data of the columns have the following meanings:

- In the field "Data Page" insert the Data Page, the value is 0 or 1 (usually is 0);
- In the field "PGN" insert the PGN of the data you would like to read from PROFIBUS to J1939 (it is an identifier);
- In the field "Source Address" insert the address of the device that sends the frame;
- If the field "Transport Protocol" is checked the frame use transport protocol functions;
- In the field "Start Byte" insert the byte which you would start read, this field is enable only when the field Transport Protocol is checked;
- In the field "N° Byte" insert the number of byte you would read, for example your start byte is 20 an N°byte is 10, you can read the byte from 20 to 30;
- If the field "Cancel Data" is checked, the data in the frame will be erased after the expiration of the "TimeOut Data" defined in "Set Communication" section;
- If the field "On Request" is checked, the PGN is received when the J1939 Request is sent: this option is used if the PGN can be only sent on request by the J1939 devices;
- In the field "Time(ms)" the delay between two J1939 requests is defined;
- In the field "Mnemonic" it is possible to insert a brief description.

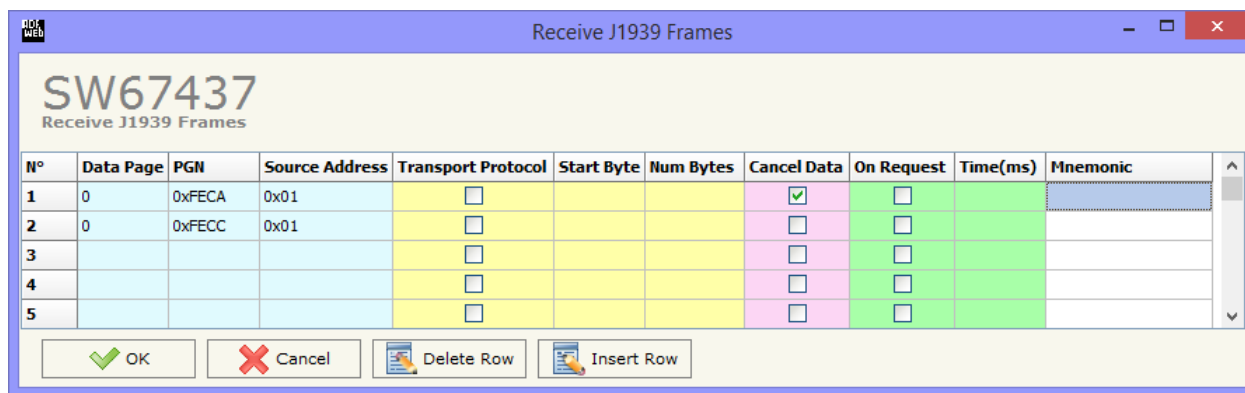


Figure 4: "Receive J1939 Frames" window

### SEND J1939:

By pressing the "Send J1939" button from the main window for SW67437 (Fig. 2) the "Send J1939 frames" window appears (Fig. 5). The J1939 frames inserted in this table contains the Input data of PROFIBUS. These frames are sent by the gateway.

The data of the columns have the following meanings:

- In the field "Priority" insert the priority of the Frame: in J1939 protocol it is a number among 0,1,2,3,4,5,6,7. The number "0" is the highest priority and "7" is the lowest;
- In the field "Data Page" insert the data page, the value is 0 or 1 (usually is 0);
- In the field "PGN" insert the PGN of the data you would like to write from PROFIBUS to J1939 (in J1939 protocol the PGN is an identifier);
- In the field "Source Address" insert the address of the device that sends the frame;
- If the option "On Request" is checked, the PGN is transmitted when a J1939 request is sent (On Request);
- If the option "Data Change" is checked, the PGN is transmitted when the data of the PGN changes;
- If the option "On Timer" is checked, the PGN is transmitted cyclically;
- In the field "Time(ms)" insert the interval used for the "On Timer" mode. The time is in milliseconds;
- In the field "Mnemonic" it is possible to insert a brief description.

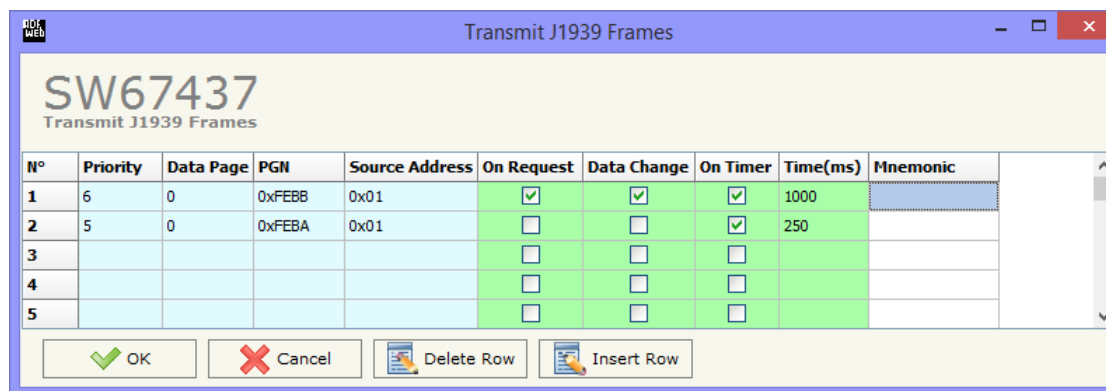


Figure 5: "Send J1939 Frames" window



**GSD FILE:**

By pressing the "**GSD File**" button it is possible to save the GSD file for the PROFIBUS side.  
With this feature you can save the configuration of the gateway of the PROFIBUS side.

**Note:**

When you import the .gsd file on your Master PROFIBUS you have to add all the modules that are present inside it.

### UPDATE DEVICE:

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 CANopen port of HD67437;
- Feed the HD67437;
- Turn on the device;
- Select the **"COM port"** and press the **"Connect"** button;
- 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.

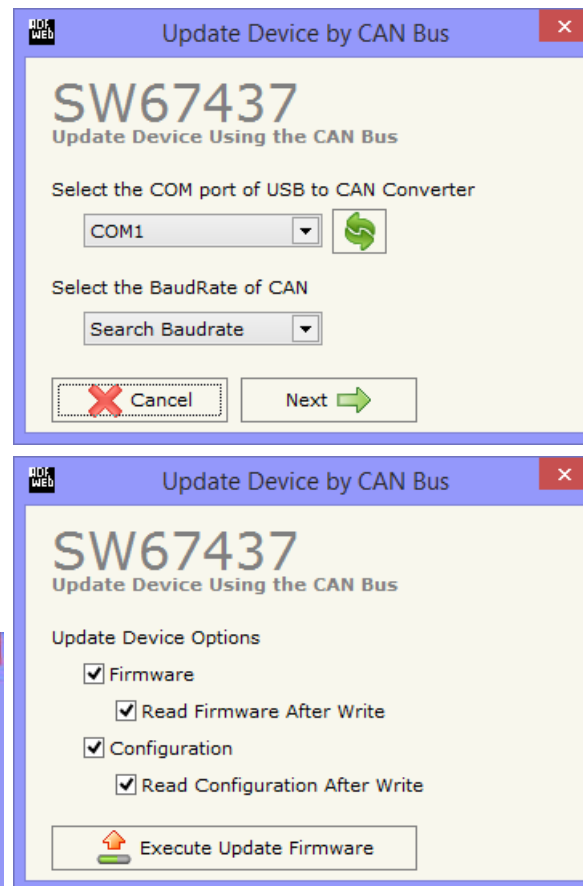





Figure 6: "Update Device" windows

 **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 HD67437 device.

 **Note:**  
When you receive the device, for the first time, you have to update also the Firmware in the HD67437 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 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;
- 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, make sure that you have the administrator privileges;
- Take attention at Firewall lock.

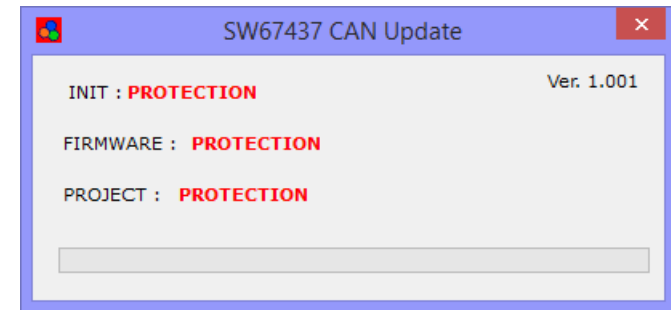



Figure 7: "Protection" window

 In the case of HD67437 you have to use the software "SW67437": [www.adfweb.com/download/filefold/SW67437.zip](http://www.adfweb.com/download/filefold/SW67437.zip).

## SEND J1939 FRAMES WITH PROFIBUS:

By checking the field "Send J1939 Frames with PROFIBUS" at "Set Communication" section is possible to send the J1939 frames asynchronously.

In the PROFIBUS array, at the end of the standard J1939 data (8 for each frame) there are other bytes in function of the number of J1939 frames defined in the tables. Each byte can control up to 8 J1939 frames, so if you have defined 14 frames, there are 2 bytes.

Example of PROFIBUS IN array (data that a master PROFIBUS receive)

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 8	Byte 9	Byte 10	
ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	ZZ	SS	SS	SS	SS	SS	SS	SS	SS	SS	SO

Example of PROFIBUS OUT array (data that a master PROFIBUS send)

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 8	Byte 9	Byte 10	
XX	XX	XX	XX	XX	XX	XX	XX	YY	YY	YY	YY	YY	YY	YY	YY	YY	COM

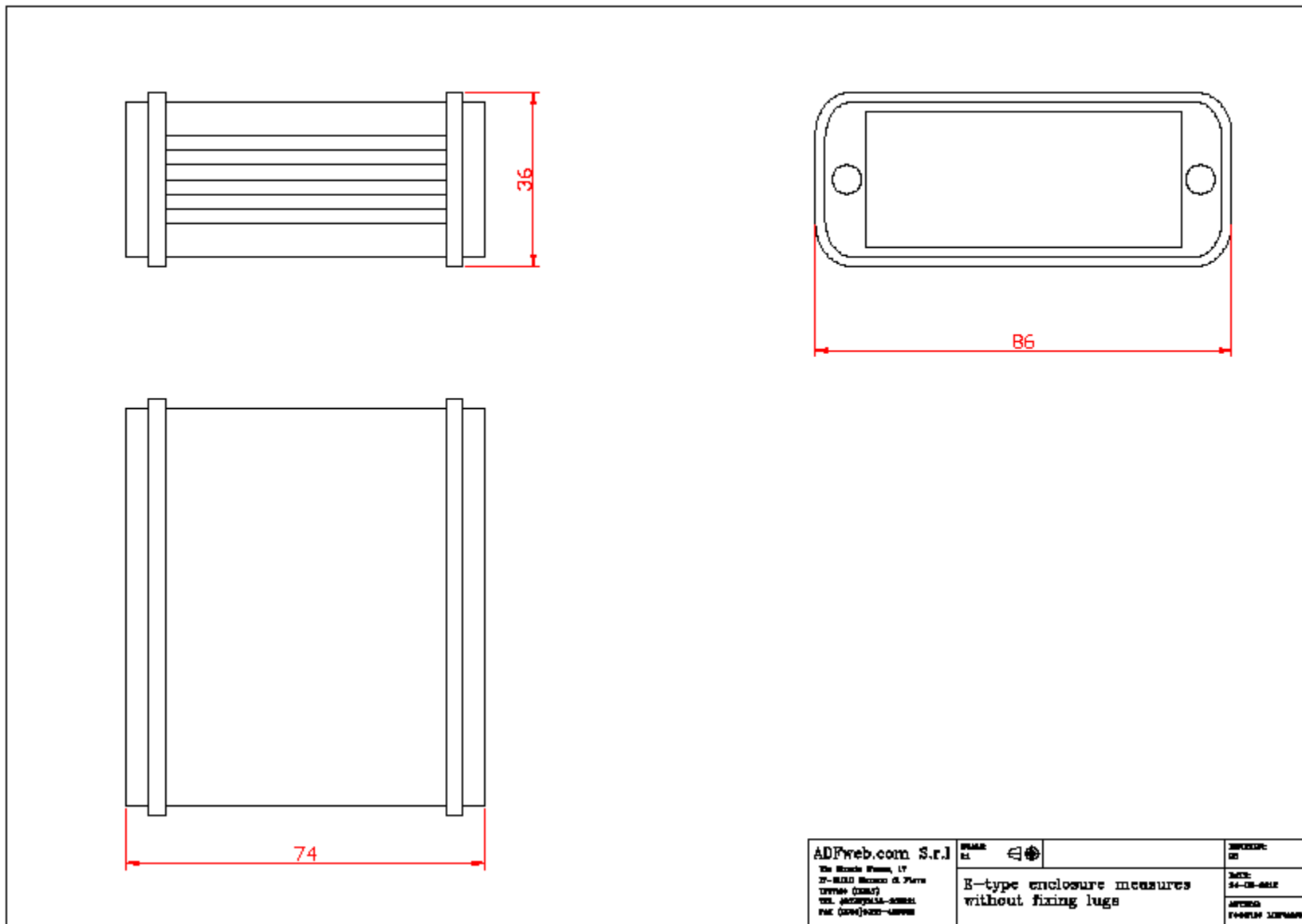
When the Converter starts the SO is at 0. The PROFIBUS master has to write in the COM byte the value '1' if want that the Converter sends the first J1939 frame with the data expressed at 'xx' fields; value '2' if want that the Converter sends the second J1939 frame with the data expressed at 'yy' fields or value '3' if want that the Converter sends the both J1939 frames. After the converter have send the J1939 frame in the network, it puts the SO to the value of COM. After that, for send again J1939 frames the Master PROFIBUS has to put the corresponding bit of the frame that want to send again to '0' at COM byte, wait that the corresponding bit of SO byte becomes '0' and write again the COM bit at '1'.

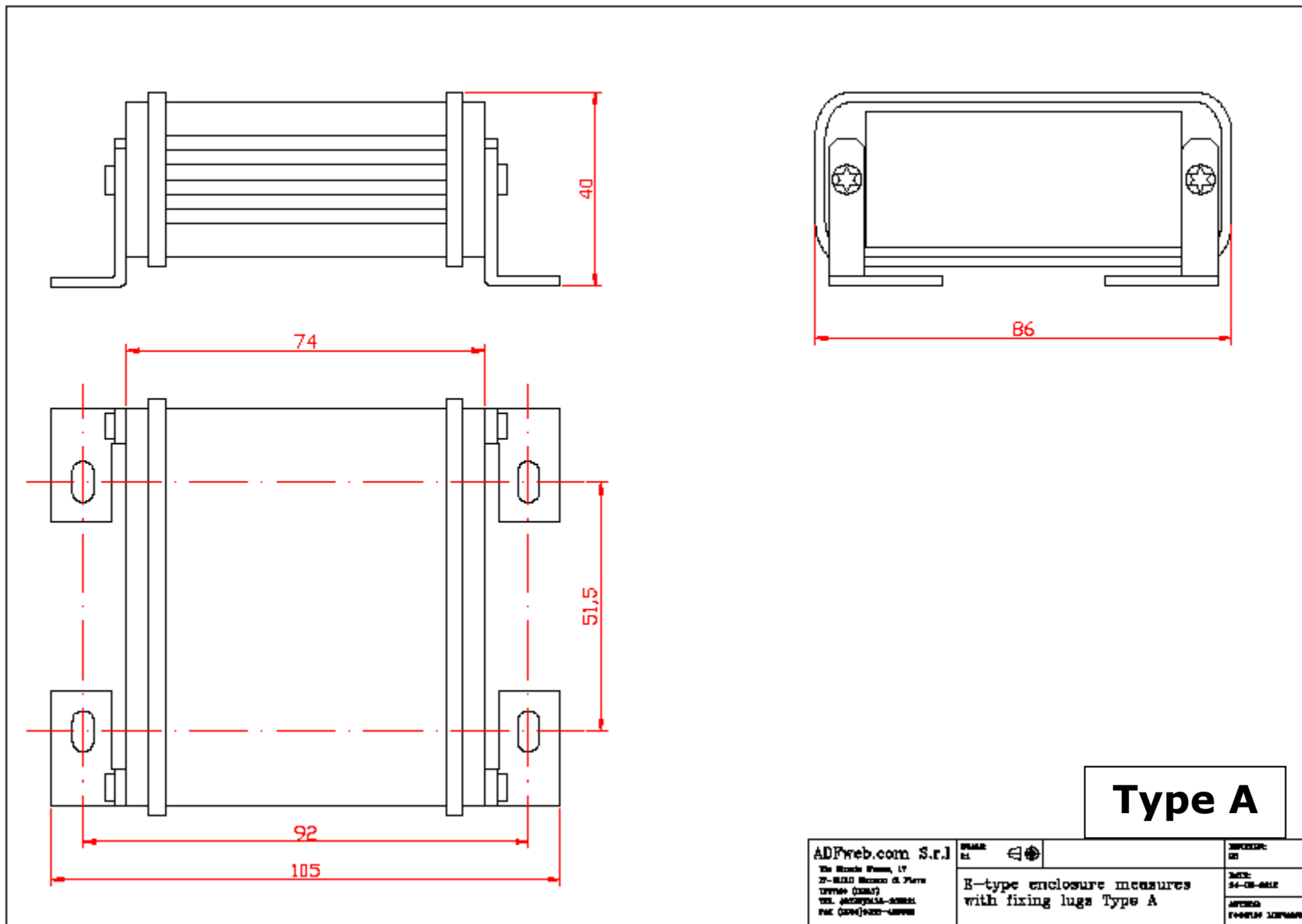


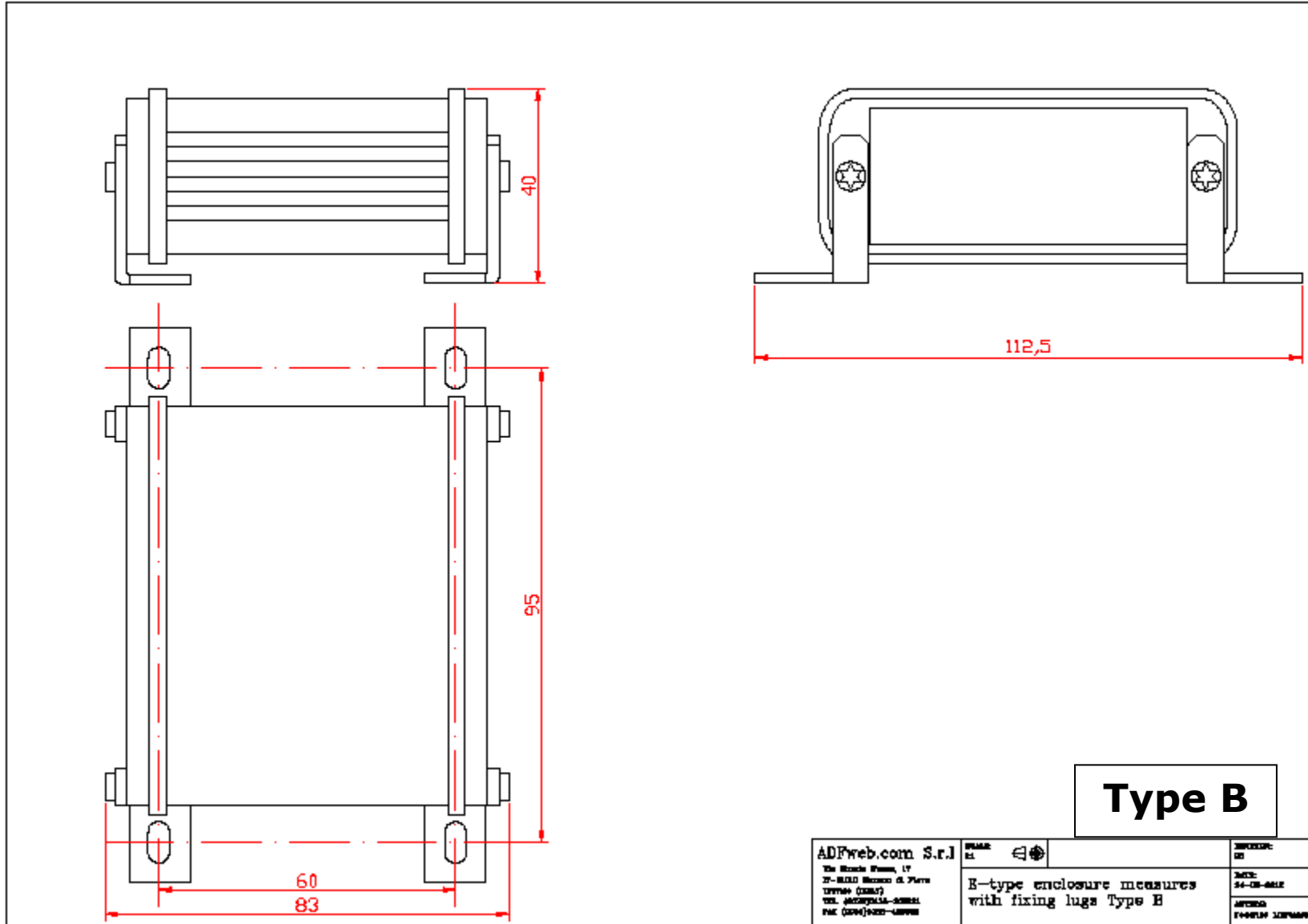
### Note:

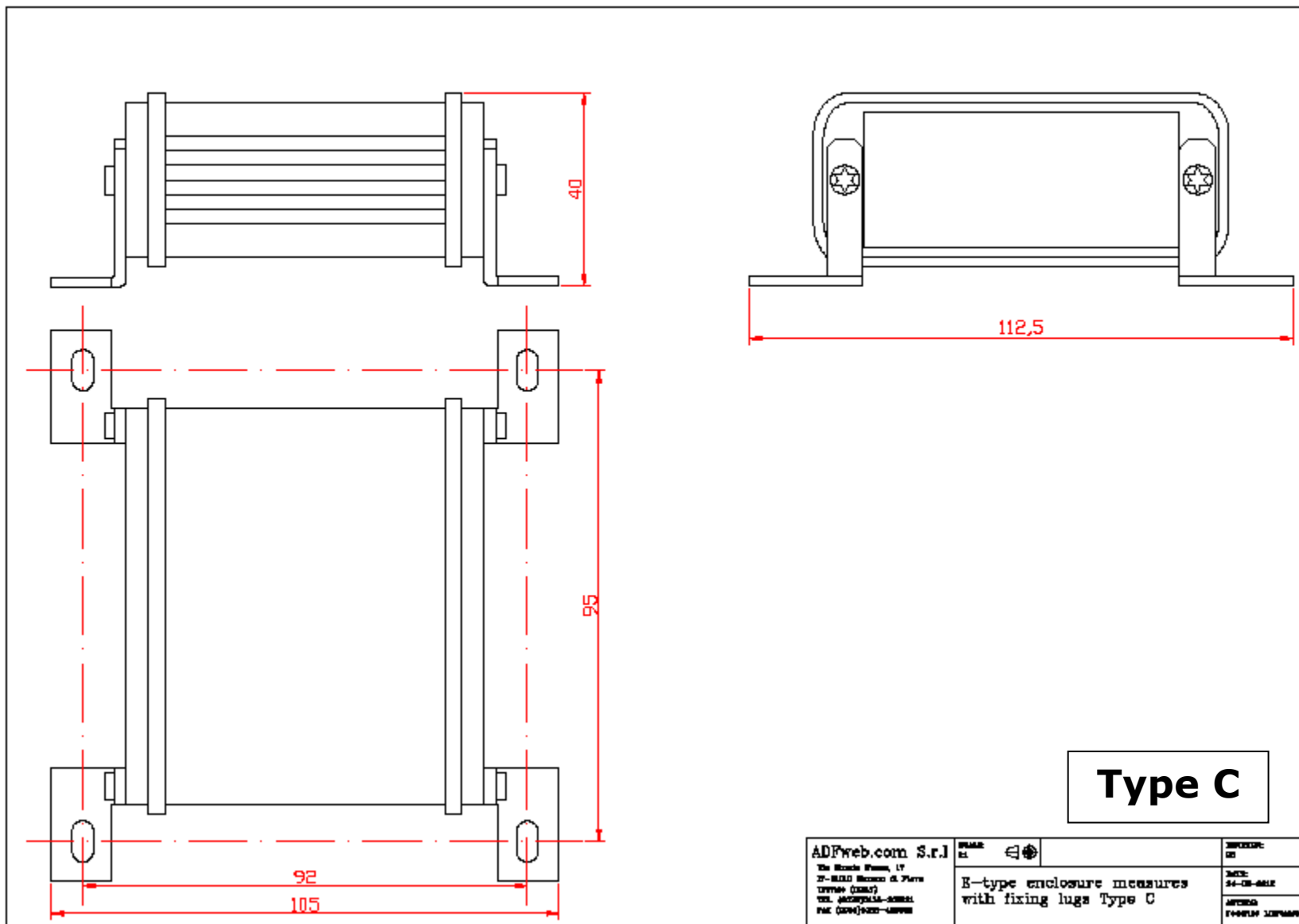
If is selected the field "Module for every J1939 Frame" at "Set Communication" the bytes for control this functionality (SO and COM) are on a separate module. In the above scenario, are created 2 modules of 8 bytes and one of 1 byte for the receive and 2 modules of 8 bytes and one of 1 byte for the transmit.

**MECHANICAL DIMENSIONS:**







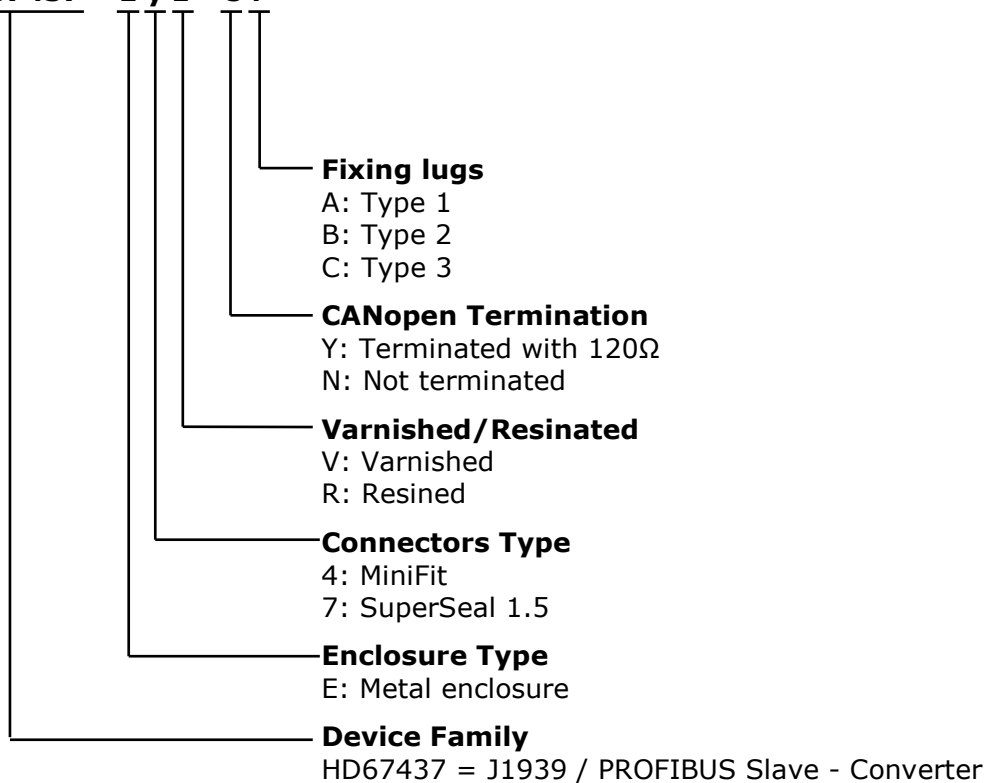




**ORDERING INFORMATION:**

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

**HD67437 - E y z - s f**



**ACCESSORIES:**

- Order Code: **AC67400** - CAN interface to configure devices
- Order Code: **AC34001** - Rail DIN - Power Supply 220/240V AC 50/60Hz - 12 V AC
- Order Code: **AC34002** - Rail DIN - Power Supply 110V AC 50/60Hz - 12 V AC

**DISCLAIMER:**

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**OTHER REGULATIONS AND STANDARDS:****WEEE INFORMATION**

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

— This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and 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](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:

- 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.
- 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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