User Manual

Revision 1.102
English

Gateway / Bridge
J1939 into Modbus RTU Slave

(Order Code: HD67212 – HD67212-M12)

for Website information:
www.adfweb.com?Product=HD67212M12

for Price information:
www.adfweb.com?Price=HD67212M12

Benefits and Main Features:

- Very easy to configure
- Low cost
- Modbus RTU on Serial RS232/485
- RS232/485 selection
- Galvanic isolation
- Industrial temperature range:
  -30°C / 70°C (-22°F / 158°F)

HD67212

HD67212-M12

Similiar Products

For others Gateways / Bridges:

J1939 to Modbus

See also the following links:
www.adfweb.com?Product=HD67215 (Modbus TCP)

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)

Benefit

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

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

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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.

To obtain the updated documentation for the product that you own, note the "Document Code" (Abbreviated written "Doc. Code" on the label on the product) and download the updated from our web site www.adfweb.com/download/

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.001	11/06/2008	Av	All	Software changed
1.002	03/10/2008	Fl	All	Software changed
1.003	08/10/2008	Fl	All	Change figure 1
1.100	20/11/2008	Fl	All	Type M12
1.101	19/01/2009	Fl	All	Revision
1.102	13/03/2009	Fl	All	Added new features

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CONNECTION SCHEME:

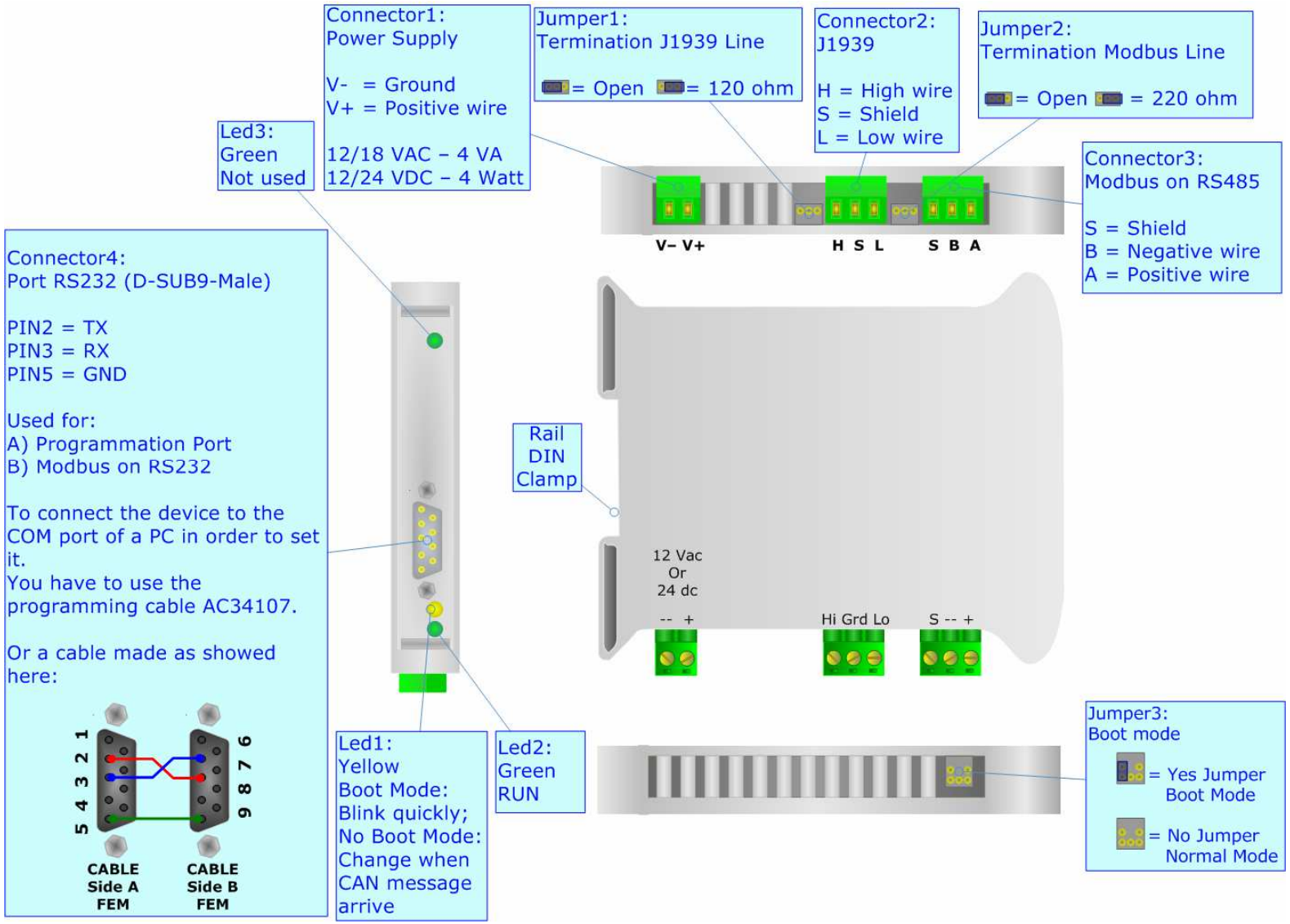

Figure 1: Connection scheme for HD67212

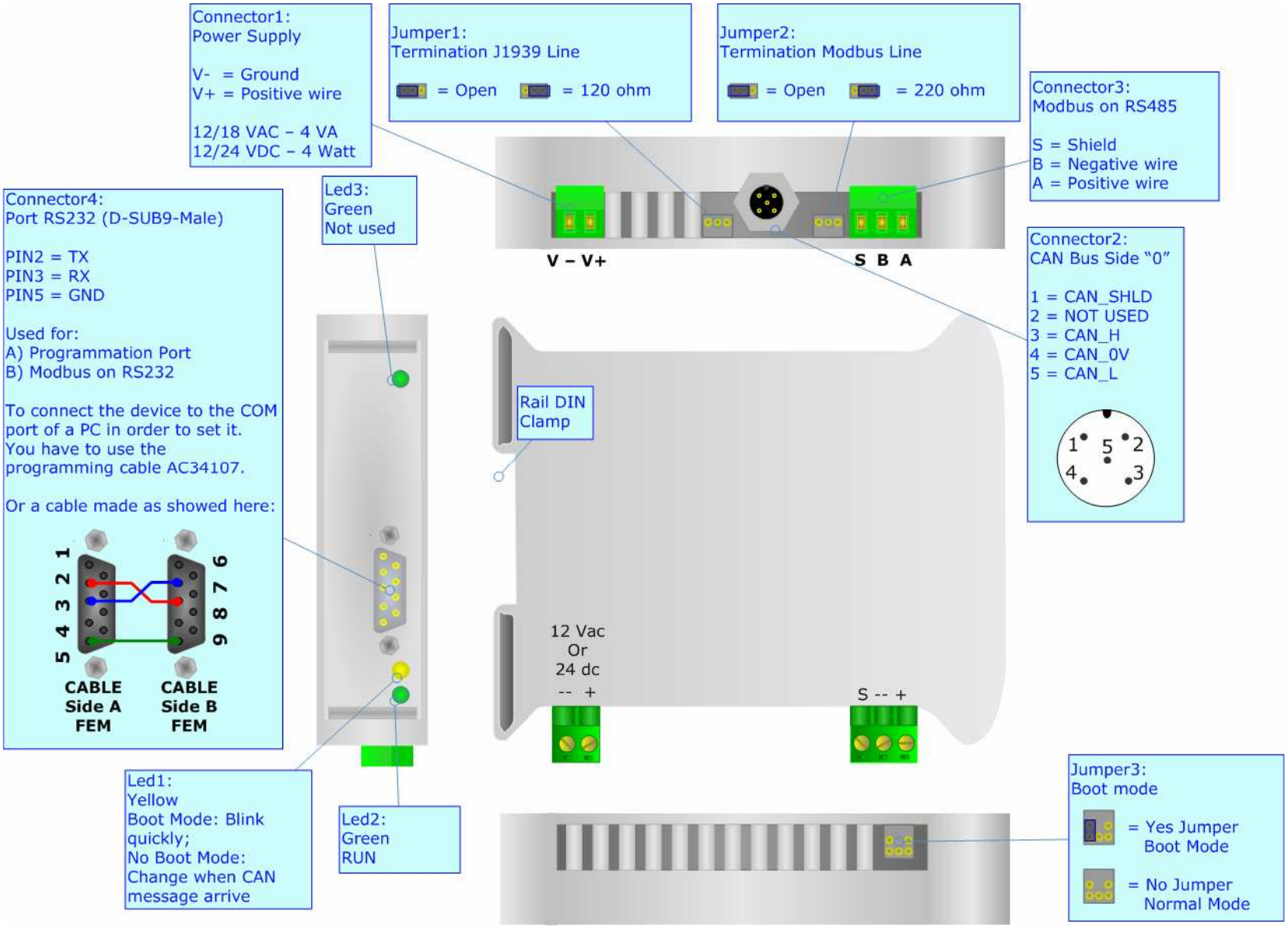

Figure 2: Connection scheme for HD67212-M12

CHARACTERISTICS:

The configurable J1939 into Modbus Slave gateway allow the following:

- Baud rate changeable with software;
- Mountable on Rail DIN;
- Power supply 12÷18 VAC or 12÷24 VDC;
- Temperature range from -30°C to 70°C.

CONFIGURATION:

The "Gateway J1939 to Modbus", allows a J1939 network to communicate with a Modbus network.

You need Compositor SW67212 software on your PC in order to perform the following:

- Define that the J1939 frame of the J1939 are reading from Modbus;
- Define that the J1939 frame of the J1939 are writing from Modbus.

USE OF COMPOSITOR SW67212:

To configure the Gateway, use the available software that runs with Windows, called SW67212. It is downloadable on the site www.adfweb.com and its operation is described in this document.

When launching the SW67212 the right window appears (Fig. 2).

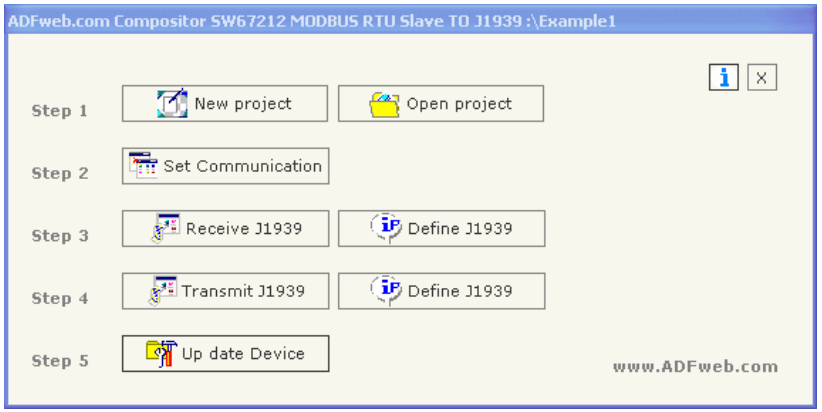

Figure 3: Main window for SW67212

NEW PROJECT / OPEN PROJECT:

The "New Project" button creates the folder which contains the entire device configuration.
A device configuration can also be imported and exported:

- To clone the configurations of a Programmable J1939 to Modbus Gateway in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button "Open Project";
- When a new project is created or an existent project is open, it will be possible to access the various configuration section of the software:

    - **Set Communication;**
    - **Receive J1939;**
    - **Transmit J1939.**

GENERAL PARAMETER:

This section defines the fundamental communication parameters of two Buses, J1939 and Modbus**.**

By pressing the "Set communication" button from the main window for SW67212 (Fig. 3) the window "Set Communication" appears (Fig. 4):

- In the fields "Baud Rate" the velocity of the two buses are defined;
- In the field "Time out Data" insert a time, when this time is elapsed the data isn't reliable, and in the Modbus register you can read "FFFF";
- The field "Modbus register" insert a number of register, in this register you can visualize if the data is reliable, if 1 the data is ok, if 0 the data is oldest of the time inserted in the time out data;
- If the field "Peer to Peer" is checked the gateway accept any ID that have the PGN inserted in the section "Receive J1939";
- If the field "Enable write J1939 on request" is checked, the field "Write J1939 frame" in "Transmit J1939 frame info" is enabled. If this field is not checked, the device send a J1939 frame for every written register. Otherwise it is possible to select when to send the J1939 frame;
- If the field "Enable Remote Request" is checked it is possible to use the "Remote Request". To use this, is necessary to insert in the four fields under the four Modbus Registers.
- In the field "parity", the serial parity is defined;
- "Timeout" is the maximum time that the device attends for the answer from the Slave interrogated;
- The Gateway has two alternative outlets from the Modbus side: RS485 or RS232. Select the desired choice;
- In the field "Dev ID" the Modbus address is defined.

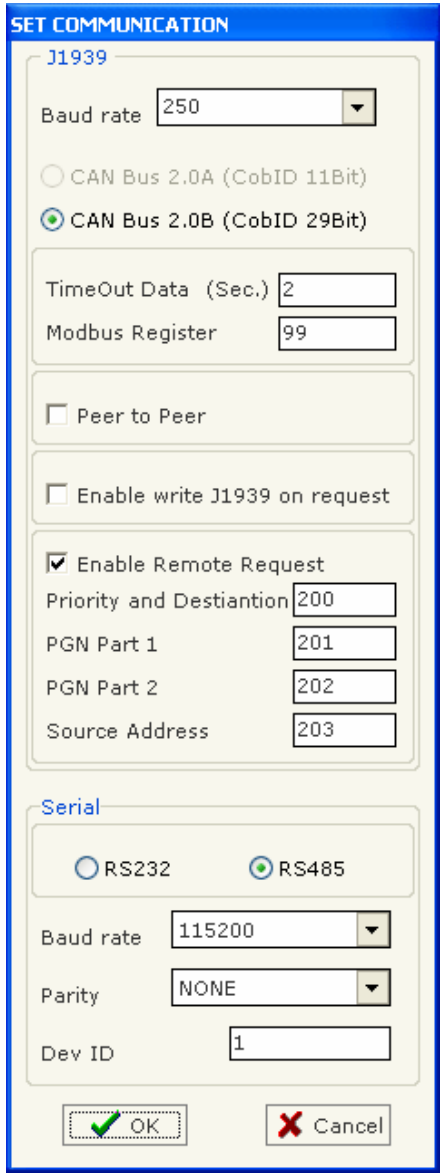

Figure 4: "Set Communication" window

RECEIVE J1939:

By pressing the "Receive J1939" button from the main window for SW67212 (Fig. 3) the window "Receive J1939 frame" appears (Fig. 5):

In the right scenario:

- In the field "PGN" insert the PGN of the data you would to read from modbus to J1939. (in the J1939 protocol the PGN is an identifier);
- In the field "ID Device", insert the ID of J1939 device that transmit the frame;
- If the field "Delete" is checked and the Modbus Register in the section "Set communication" is 0 the gateway when the data is oldest of the time inserted in the "time out data" you visualize "FFFF" in the Modbus registers of this PGN.

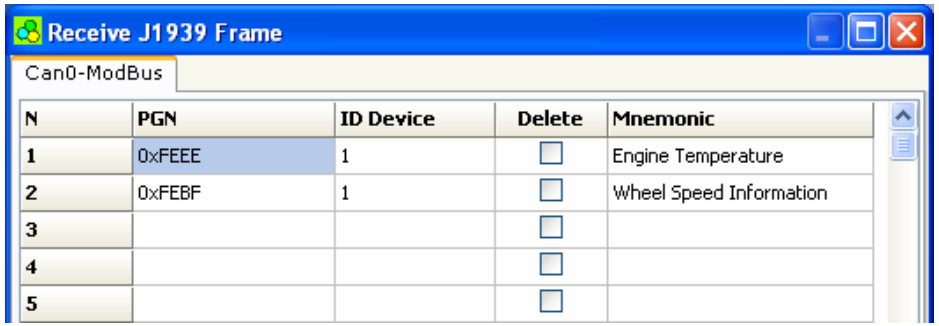

Figure 5: "Receive J1939 frame" window

DEFINE RECEIVE J1939

By pressing the "Define J1939" button from the main window for SW67212 (Fig. 3) the window "Receive J1939 frame info" appears (Fig. 6):

- In the field "PGN" there are PGN who you insert in the list;
- In the field "MODBUS" there are the modbus words;
- In the field "Index MODBUS" there is the address who contain the Modbus word;
- In the field "Selecet Frame Byte" you select the position of the byte.

For example:

Click on the PGN, insert the valid address in the field Index MODBUS, select the byte position(B1 in high MODBUS byte and B2 in low MODBUS byte), click the "New" button, in the field MODBUS appears the names of modbus words (The fist word is name IND MB 0, second IND MB 1, third Ind MB 2, fourth Ind MB 3).

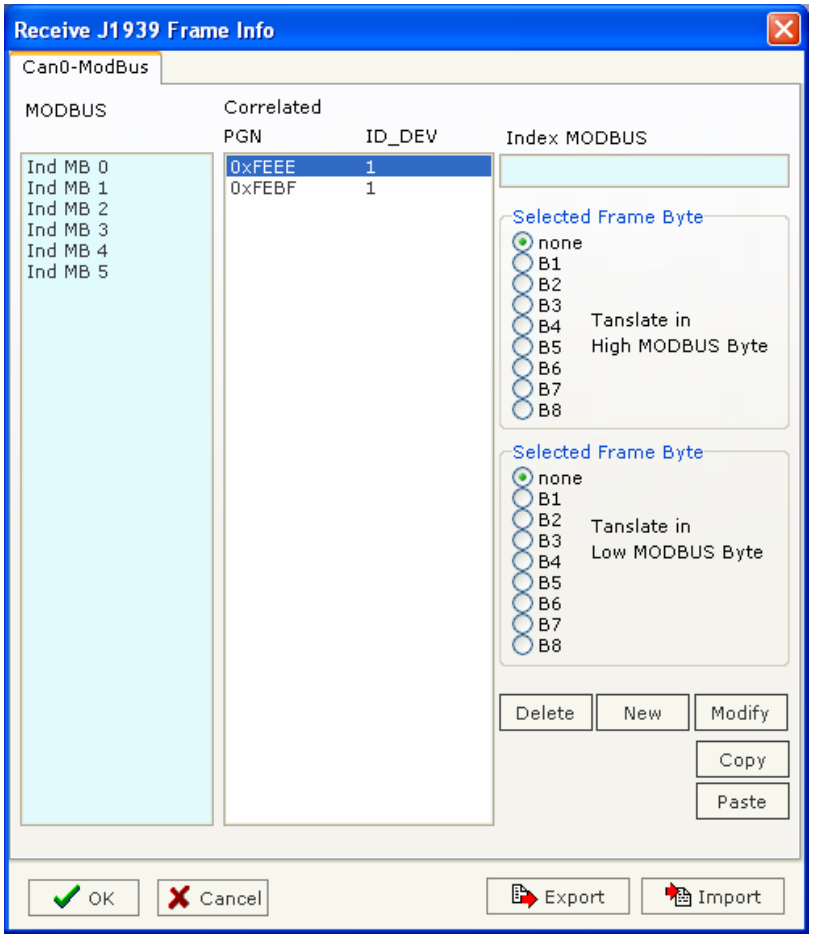

Figure 6: "Receive J1939 frame info" window

TRANSMIT J1939

By pressing the "Receive J1939" button from the main window of SW67212 the window "Receive J1939 frame" appears (Fig. 7):

In the right scenario:

- In the field "Priority" insert the priority of the frame, in J1939 protocol 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, in the J1939 protocol is 0 or 1;
- In the field "PGN" insert the PGN of the data you would to write from modbus to J1939. (in the J1939 protocol the PGN is an identifier);
- In the field "ID device" you insert the ID of device that send the frame.

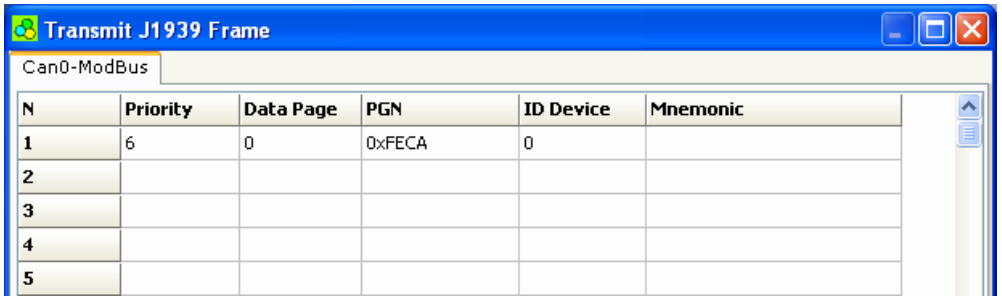

Figure 7: "Transmit J1939 frame" window

DEFINE TRNASMIT J1939

By pressing the "Define J1939" button from the main window for SW67212 (Fig. 3) the window "Transmit J1939 Frame Info" appears (Fig. 8):

- In the field "PGN" there are PGN who you insert in the list of transmit J1939;
- In the field "MODBUS" there are the modbus words.
- In the field "Index MODBUS" there is the address who contain the Modbus word;
- In the field "Selecet Frame Byte" you select the position of the byte;
- With the field "Write J1939 Frame" it is possible to decide when to send the J1939 frame. If a modbus word has written "False "in this field, the J1939 frame is not sent immediately but it is sent when another word have this field "True". It is possible to have this function only if the field "Enable write J1939 on request" in the "Set Communication" window is checked.

For example:

Click on the PGN, insert the valid address in the field Index MODBUS, select the byte position(B1 in high MODBUS byte and B2 in low MODBUS byte), click the "New" button, in the field MODBUS appears the names of modbus words (The fist word is name IND MB 0, second IND MB 1, third Ind MB 2, fourth Ind MB 3).

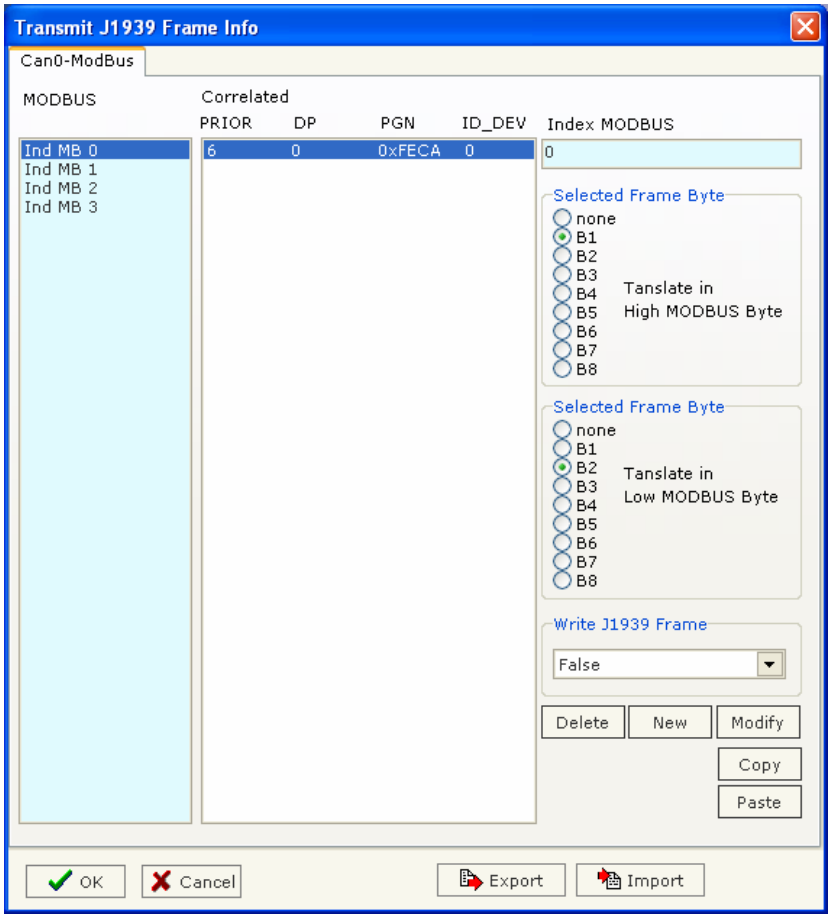

Figure 8: "Transmit J1939 frame info" window

REMOTE REQUEST

In the "Priority and Destination" Register you have to indicate the Priority of the request in the high byte of the register (usually this value is equal to 6) and the Address of the Destination Device in the low byte of register.
In the "PGN Part 1" you have to indicate the first two byte of the PGN while in the "PGN Part 2" Register you have to indicate, in the high byte of register, the third byte of the PGN.
In the "Source Address" Register you have to indicate the Source Address of the request in the high part of the register.

Only when you write the "Souce Address" register the request will be send to the J1939 network.

For example if you want to request the PGN 0x00FEE5 at device with address 5 you have to write:
1st reg = 0x0605
2nd reg = 0xE5FE
3rd reg = 0x0000
4th reg = 0x0100

UPDATE DEVICE:

Section "UP date Device".

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

- Turn off the device;
- Connect the Null Modem Cable from your PC to the Gateway;
- Insert the Boot Jumper (See the Fig. 1 for more info);
- Turn on the Device;
- Check the Boot Led. It must blink quickly (See the Fig. 1 for more info)
- Select COM port and press "Execute update firmware" to start the upload;
- When all the operation are "OK" turn off the Device;
- Disconnect the Boot Jumper;
- Disconnect the RS232 cable;
- Turn on the device.

At this point the configuration/firmware on the Device is correctly updated.

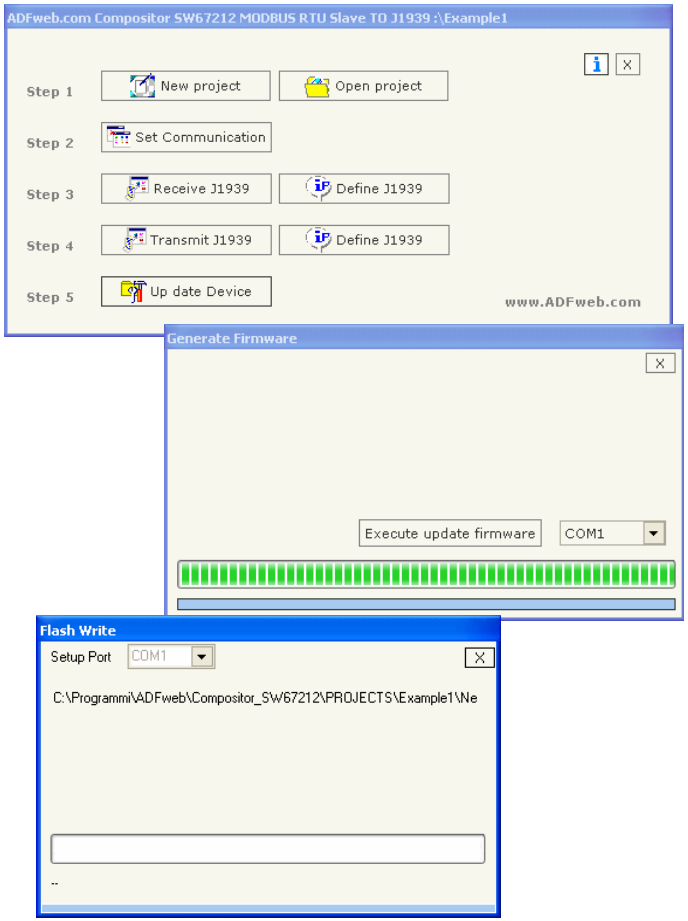

Figure 9: Update device procedure

CHARACTERISTICS OF THE CABLES:

The connection from RS232 socket to a serial port (example one from a personal computer), must be made with a Null Modem cable (a serial cable where the pins 2 and 3 are crossed).
It is recommended that the RS232C Cable not exceed 15 meters.

MECHANICAL DIMENSIONS:

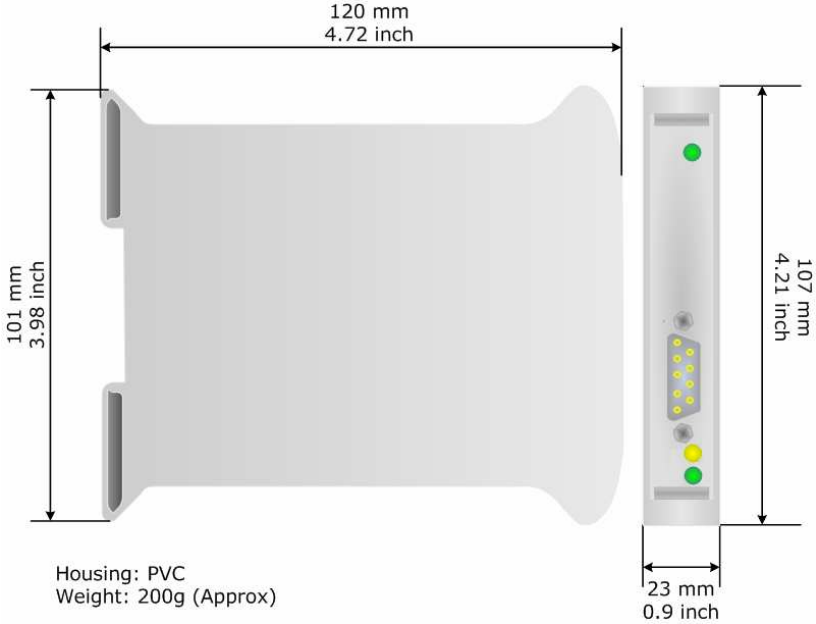

Figure 10: Mechanical dimensions scheme for HD67212

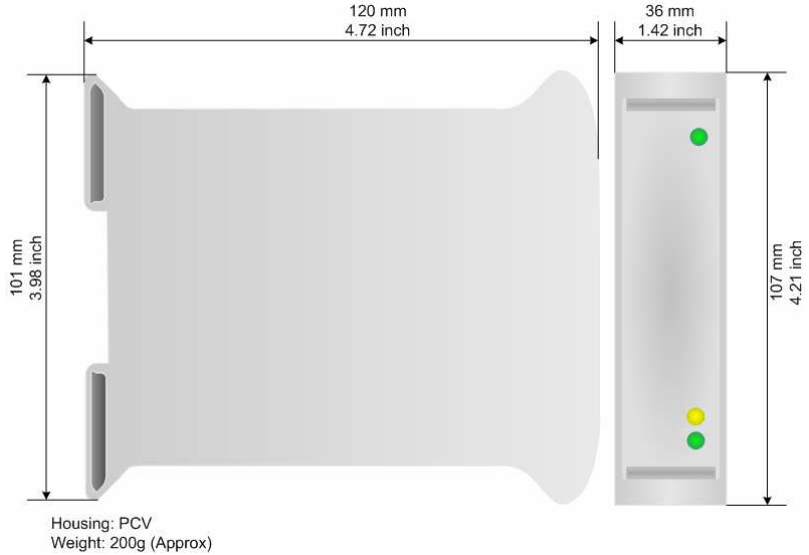

Figure 11: Mechanical dimensions scheme for HD67212-M12

ORDER CODES:

Order Code: **HD67212** **-** Gateway – J1939 into Modbus RTU Slave (J1939 connector: Terminal block)

Order Code: **HD67212-M12** **-** Gateway – J1939 into Modbus RTU Slave (J1939 connector: M12)

ACCESSORIES:

Order Code: **AC34107** **-** Null Modem Cable Fem/Fem DSub 9 Pin 1,5 m

Order Code: **AC34114** - Null Modem Cable Fem/Fem DSub 9 Pin 5 m

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

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).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks.
If the product is no longer under warranty, you will receive a repair estimate.

PRODUCTS AND RELATED DOCUMENTS:

Part	Description	URL
HD67121	Gateway CANopen / Canopen	www.adfweb.com?product=HD67121
HD67002	Gateway CANopen / Modbus - RTU	www.adfweb.com?product=HD67002
HD67004 HD67005	Gateway CANopen / Modbus – Ethernet TCP	www.adfweb.com?product=HD67004
HD67134	Gateway CANopen / DeviceNet	www.adfweb.com?product=HD67134
HD67117	CAN bus Repeater	www.adfweb.com?product=HD67117
HD67216	CAN bus Analyzer	www.adfweb.com?product=HD67216