

# User Manual

Revision 1.400

English

## Converter / Adapter Ethernet to RS232 / RS485

(Order Code: HD67038-2 HD67038-2-M  
HD67038-25 HD67038-25-M)

for Website information:

[www.adfweb.com?Product=HD67038-2](http://www.adfweb.com?Product=HD67038-2)  
[www.adfweb.com?Product=HD67038-2-M](http://www.adfweb.com?Product=HD67038-2-M)  
[www.adfweb.com?Product=HD67038-25](http://www.adfweb.com?Product=HD67038-25)  
[www.adfweb.com?Product=HD67038-25-M](http://www.adfweb.com?Product=HD67038-25-M)

for Price information:

[www.adfweb.com?Price=HD67038-2](http://www.adfweb.com?Price=HD67038-2)  
[www.adfweb.com?Price=HD67038-2-M](http://www.adfweb.com?Price=HD67038-2-M)  
[www.adfweb.com?Price=HD67038-25](http://www.adfweb.com?Price=HD67038-25)  
[www.adfweb.com?Price=HD67038-25-M](http://www.adfweb.com?Price=HD67038-25-M)

### Benefits and Main Features:

- ▶ Galvanic isolation between Ethernet and RS232
- ▶ Protocol independent
- ▶ Suitable for supervision software
- ▶ SCADA/HMI and the connection to a Personal Computer
- ▶ Automated control of the line directions.
- ▶ Easy to use software configuration.
- ▶ Temperature range -30°C to 70°C;



HD67038-2



HD67038-2-M



HD67038-25



HD67038-25-M

Similar Products

For others Converter / Adapter:

#### **RS232 / RS485**

See also the following link:  
[www.adfweb.com?Product=HD67118](http://www.adfweb.com?Product=HD67118)

#### **USB / RS485**

See also the following link:  
[www.adfweb.com?Product=HD67119](http://www.adfweb.com?Product=HD67119)

Do you have an your customer protocol?

See the following link:  
[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)

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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.

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/](http://www.adfweb.com/download/)

**REVISION LIST:**

Revision	Date	Author	Chapter	Description
1.000	20/10/2008	Fl	All	First release version
1.100	02/07/2009	Ml	All	Revision
1.200	06/07/2010	FT	All	Revision
1.300	31/03/2011	Dp	All	Revision
1.400	28/03/2012	Dp	All	Revision

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ADFweb.com is not responsible for any error this manual may contain.

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**CONNECTION SCHEME:**

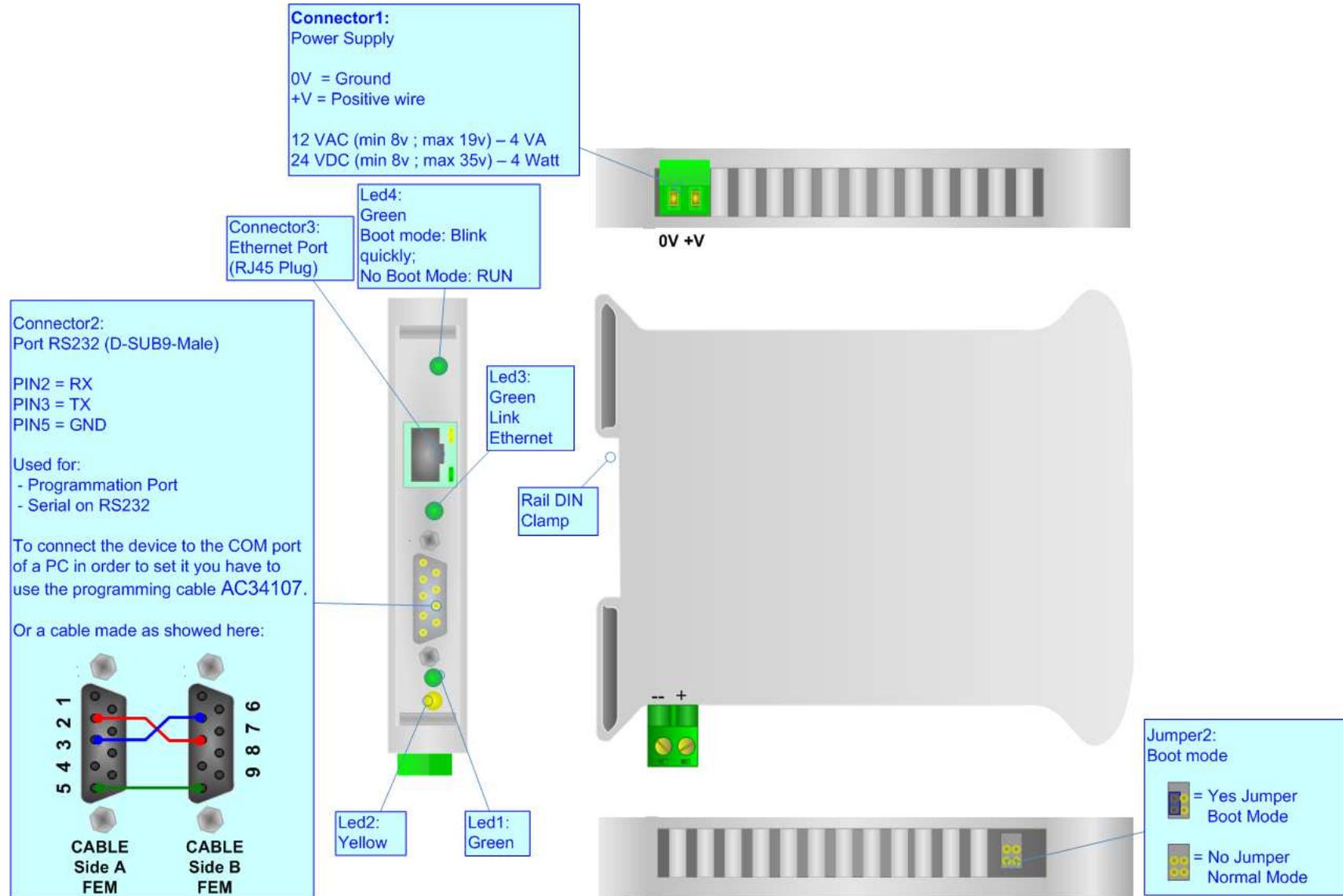


Figure 1: Connection scheme for HD67038-2

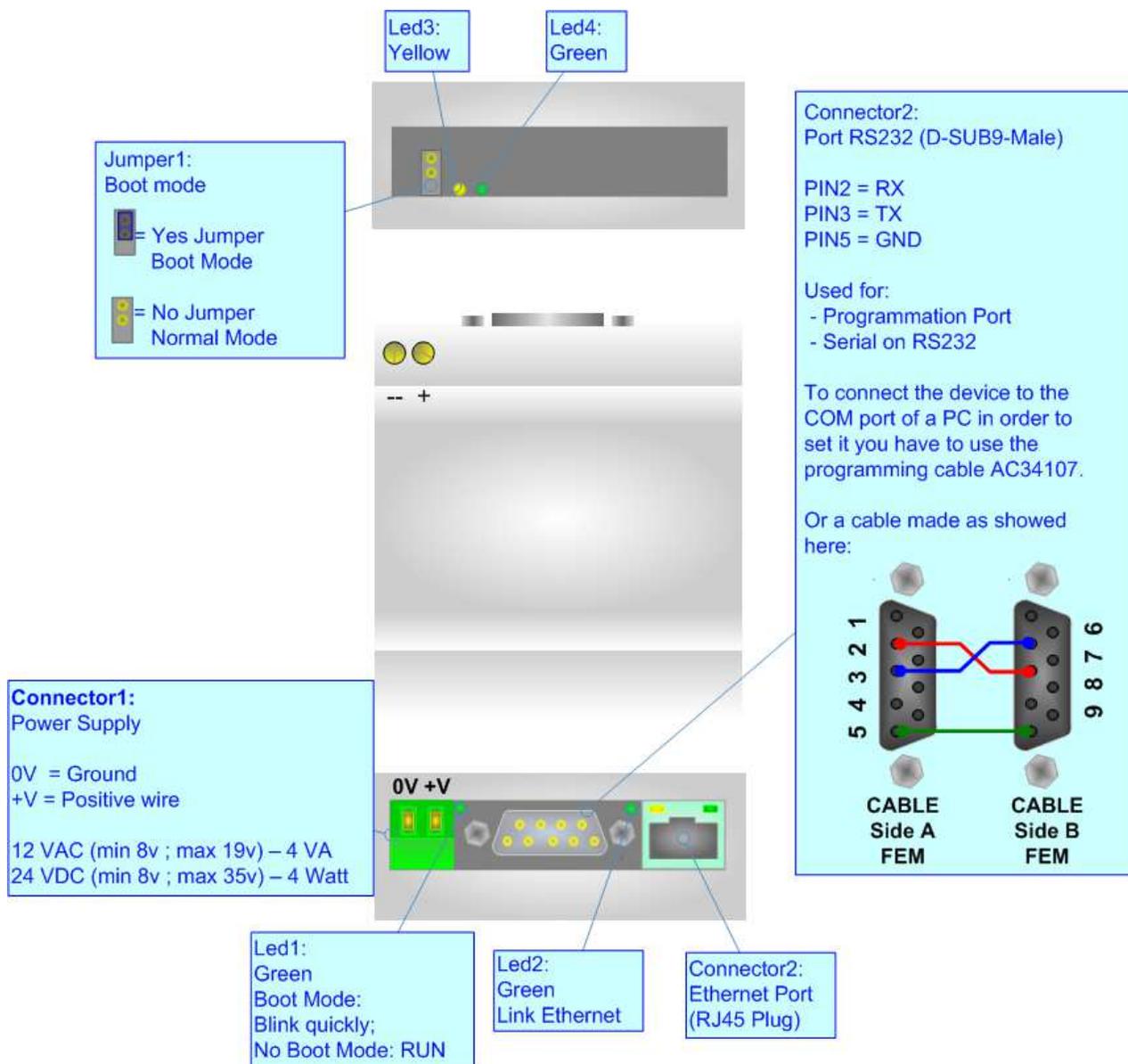


Figure 2: Connection scheme for HD67038-2-M

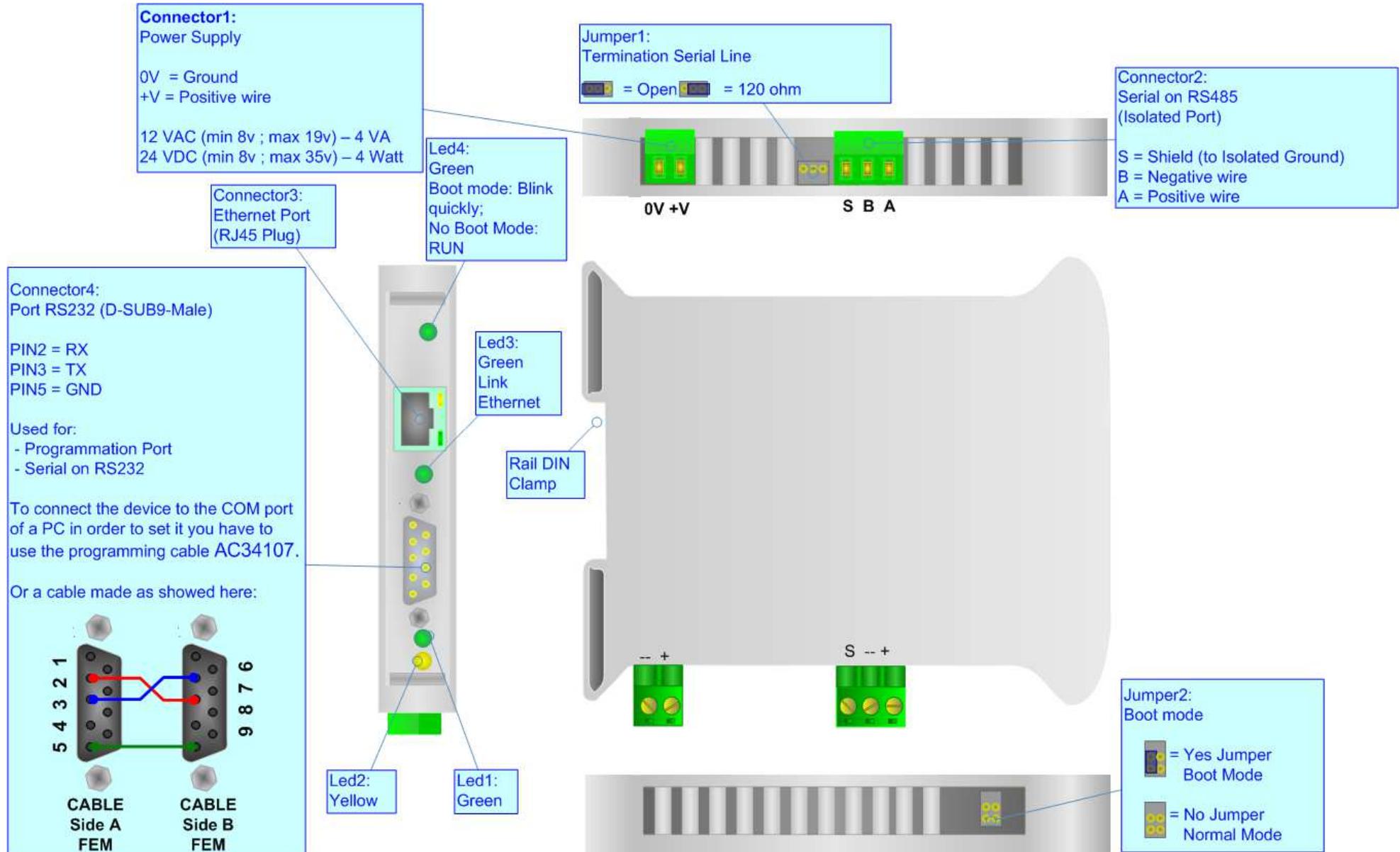


Figure 3: Connection scheme for HD67038-25

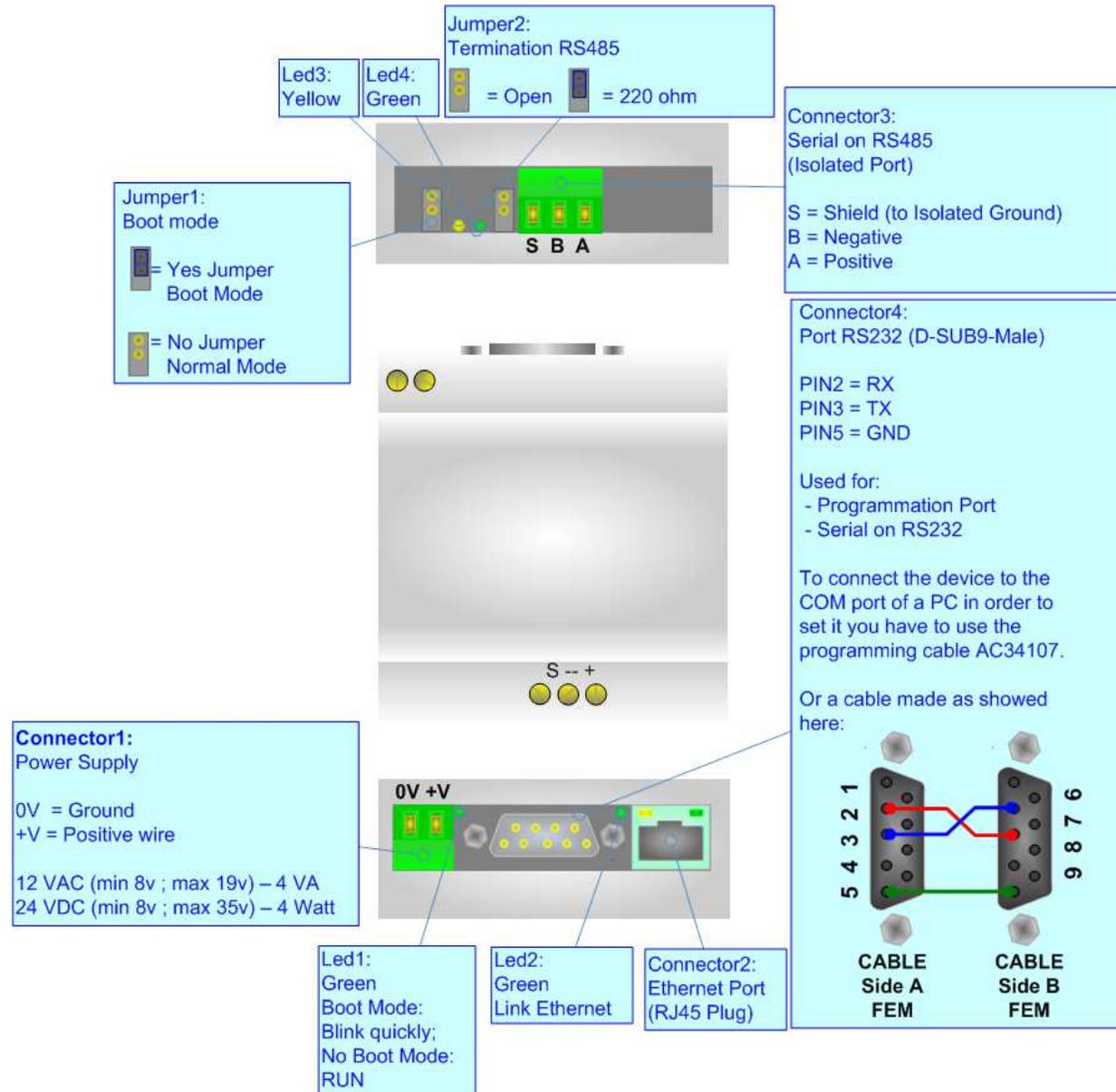


Figure 4: Connection scheme for HD67038-25-M

**CHARACTERISTICS:**

Ethernet to RS232/RS485 is a professional device for using COM port through Ethernet line.  
The Converter allows the following characteristics:

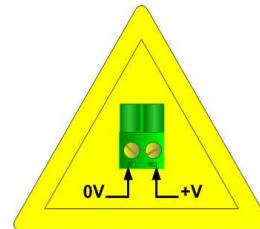
- Galvanic isolation between Ethernet and RS232 / RS485;
- Rail DIN mountable;
- Auto-sensing Ethernet 10/100;
- Baud Rate and Parity changeable with software;
- Possible Baud Rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps;
- Fixed Stop bit (1);
- Temperature range -30°C to 70°C;
- EMS EN 61000-6-2.

**POWER SUPPLY:**

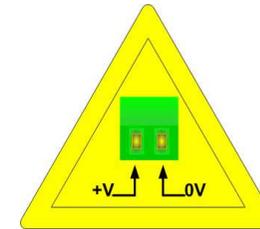
Recommended Power Supply	
VDC	VAC
24v	12v

VDC		VAC	
Vmin	Vmax	Vmin	Vmax
8v	35v	8v	19v

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



HD67038-2  
HD67038-25



HD67038-2-M  
HD67038-25-M

## CONFIGURATION:

This device allows the following configurations:

- Remote COM Port;
- Tunnel Point to Point ( Ethernet bridge for a serial line);
- Tunnel Point to Multipoint.

## USE OF COMPOSITOR SW67038:

To configure the Converter use the available software that runs with Windows, called SW67038. It is downloadable on the site [www.adfweb.com](http://www.adfweb.com) and its operation is described in this document.

When launching the SW67038 the right window appears (Fig. 5).

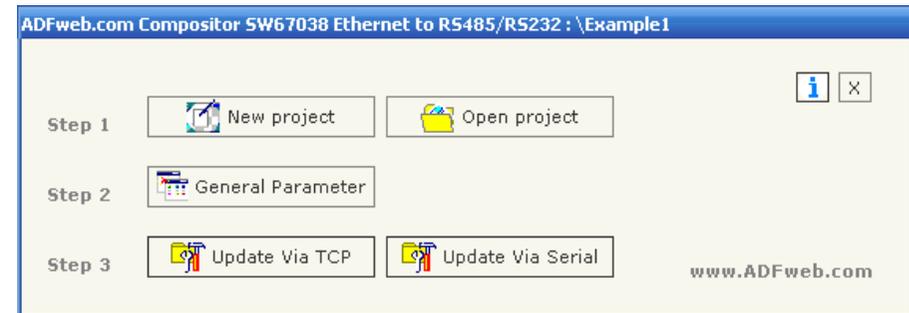


Figure 5: Main window for SW67038

**GENERAL PARAMETER:**

By Pressing the "General Parameter" button from the main window for SW67038 (Fig. 5), the window "General Parameter" appears.

This window is divided in three sections: in the first you can select the Operating Modality, the second is used to configure the Ethernet and the last to configure the Serial line.

In the section "Operating Modality" it is possible to select the function mode of the Converter from these options:

- **Remote COM Port;**
- **Tunnel Point to Point;**
- **Tunnel Point to Multipoint.**

These operating modalities are described in the following pages.

### OPERATING MODALITY: REMOTE COM PORT

It consists of a configuration in which the device is generally controlled by a PC that is connected using the TCP protocol line on the 10001 port. It writes bytes that automatically are sent on the serial line and each byte read from the serial port is transmitted through the line to the connected PC.

The means of the fields for "Ethernet Configuration" are:

- In the field "IP Address" the IP address of the Converter is defined;
- In the field "SubNet Mask" the Subnet Mask of the Converter is defined;
- In the field "Port" the Port of the Converter is defined;
- If the field "Use Gateway" is checked, in the field below it is possible to insert the IP Address of the gateway used for going out to the net in the field under;
- In the field "Socket Disconnect TimeOut (S)" enter a time in seconds. If no data pass through the socket for the seconds defined, the socket disconnects.

The means of the fields for "Serial Configuration" are:

- If you are using HD67038-2 or HD67038-2-M Converter, the field "RS232" must be checked; instead if you are using HD67038-25 or HD67038-25-M Converter, if the field "RS485" is checked the serial line in use is the RS485 otherwise is the RS232;
- In the field "BaudRate" the velocity of the serial line in use is defined;
- In the field "Parity" the parity of the serial line in use is defined.
- If select the "Enable Change baudrate on the fly" is possible to change the baudrate and parity from the Ethernet (see Change Baudrate and Parity On The Fly chapter for more info).
- In the field "Port" the port to change baudrate and parity is defined.

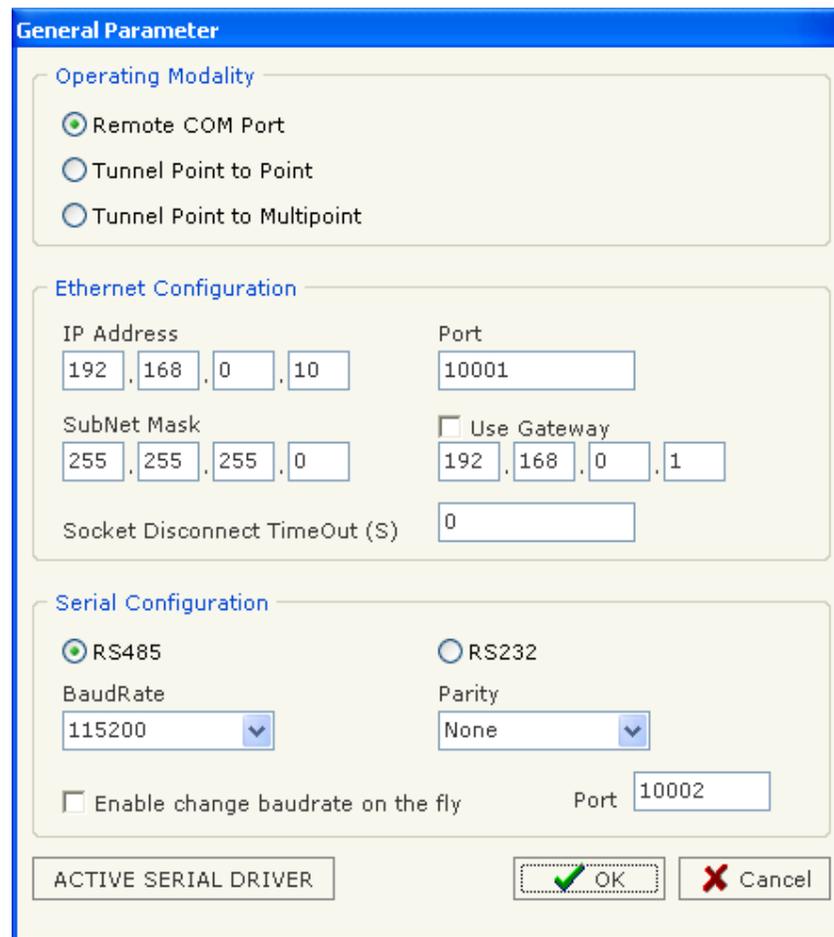


Figure 6: "General Parameter" window (Remote COM Port)

The button "ACTIVE SERIAL DRIVER" is used to activate the "Serial to Ethernet Connector". For more details go to page 17.

### OPERATING MODALITY: TUNNEL POINT TO POINT

A mode that allows for the extension of a serial line using a Ethernet Network. The two devices in this mode must be configured in a coherent way between each one, or in such a way that both read the IP address of the other one.

It is necessary to insert the IP address of the remote device in addition to the set-up of the device's line.

The means of the fields for "Ethernet Configuration" are:

- In the field "IP Address" the IP address of the Converter is defined;
- In the field "SubNet Mask" the Subnet Mask of the Converter is defined;
- In the field "Port" the Port of the Converter is defined;
- In the field "Remote IP" the IP of the second device connected to the same line is defined;
- In the fields "TCP" and "UDP" the protocol of the communication is defined;
- In the field "Force socket TCP open" is defined if the socket TCP try to connect to start up;
- If the field "Use Gateway" is checked, in the field below it is possible to insert the IP Address of the gateway used for going out to the net in the field under;

The means of the fields for "Serial Configuration" are:

- If you are using HD67038-2 or HD67038-2-M Converter, the field "RS232" must be checked; instead if you are using HD67038-25 or HD67038-25-M Converter, if the field "RS485" is checked the serial line in use is the RS485 otherwise is the RS232;
- In the field "BaudRate" the velocity of the serial line in use is defined;
- In the field "Parity" the parity of the serial line in use is defined.

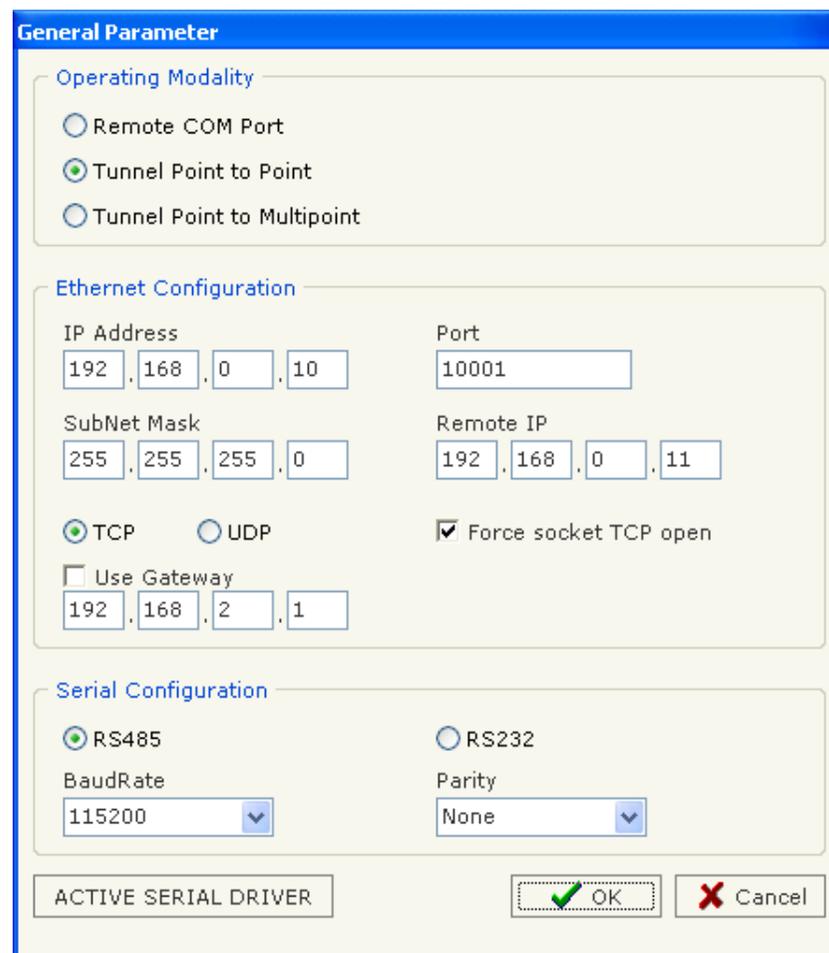


Figure 7: "General Parameter" window (Tunnel Point to Point)

The button "ACTIVE SERIAL DRIVER" is used to activate the "Serial to Ethernet Connector". For more details go to page 17.

### OPERATING MODALITY: TUNNEL POINT TO MULTIPOINT WITH BROADCAST (MASTER SIDE)

This mode allows a serial line to be extended into sections, using a LAN line, where the device is on the side of the one that controls the line as Master and the others that are on the client's side.

To configure a device as Master the field "Master Side" of "Operating Modality" section must be checked.

In the case of the master, it isn't necessary to provide any other IP address because the packets are sent in broadcast.

The means of the fields for "Ethernet Configuration" are:

- Select the "Work with Broadcast", in this way the master sends the messages in Broadcast;
- In the field "IP Address" the IP address of the Converter is defined;
- In the field "SubNet Mask" the Subnet Mask of the Converter is defined;
- In the field "Port" the Port of the Converter is defined.

The means of the fields for "Serial Configuration" are:

- If you are using HD67038-2 or HD67038-2-M Converter, the field "RS232" must be checked; instead if you are using HD67038-25 or HD67038-25-M Converter, if the field "RS485" is checked the serial line in use is the RS485 otherwise is the RS232;
- In the field "BaudRate" the velocity of the serial line in use is defined;
- In the field "Parity" the parity of the serial line in use is defined.

The button "ACTIVE SERIAL DRIVER" is used to activate the "Serial to Ethernet Connector". For more details go to page 17.

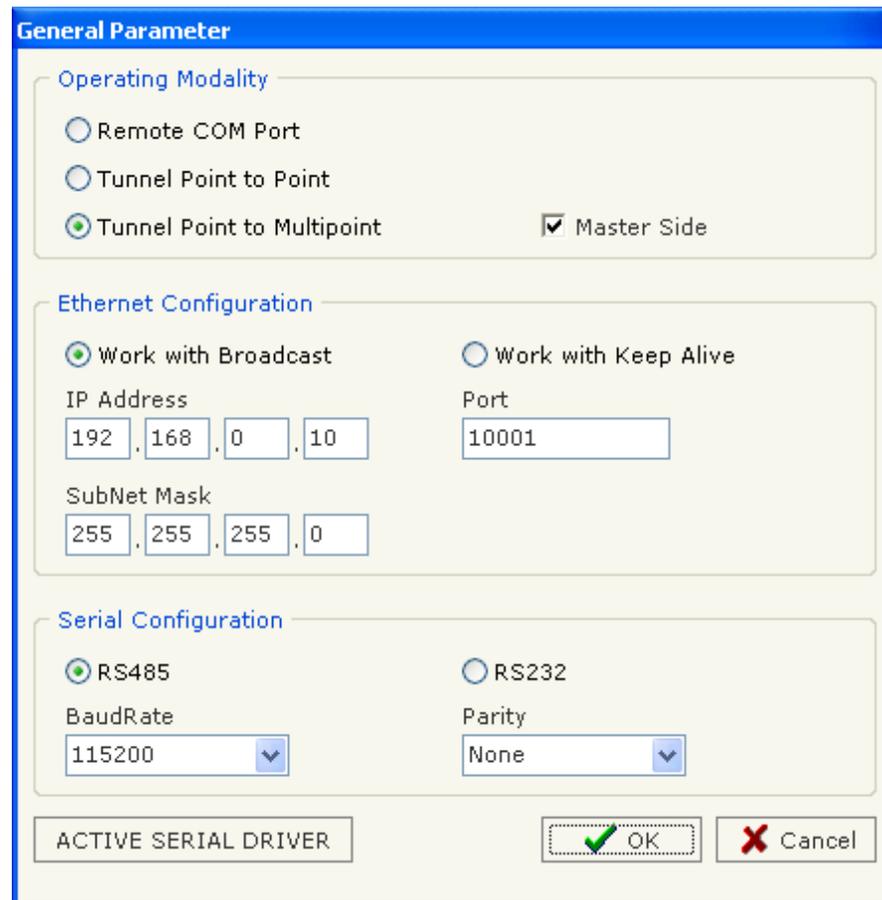


Figure 8: "General Parameter" window (Tunnel Point to Multipoint Master Side)

### OPERATING MODALITY: TUNNEL POINT TO MULTIPOINT WITH BROADCAST (SLAVE SIDE)

To configure a device as Slave the field "Master Side" of "Operating Modality" section must not be checked.

In the case of the slave it is necessary to provide the IP address of the Master Converter.

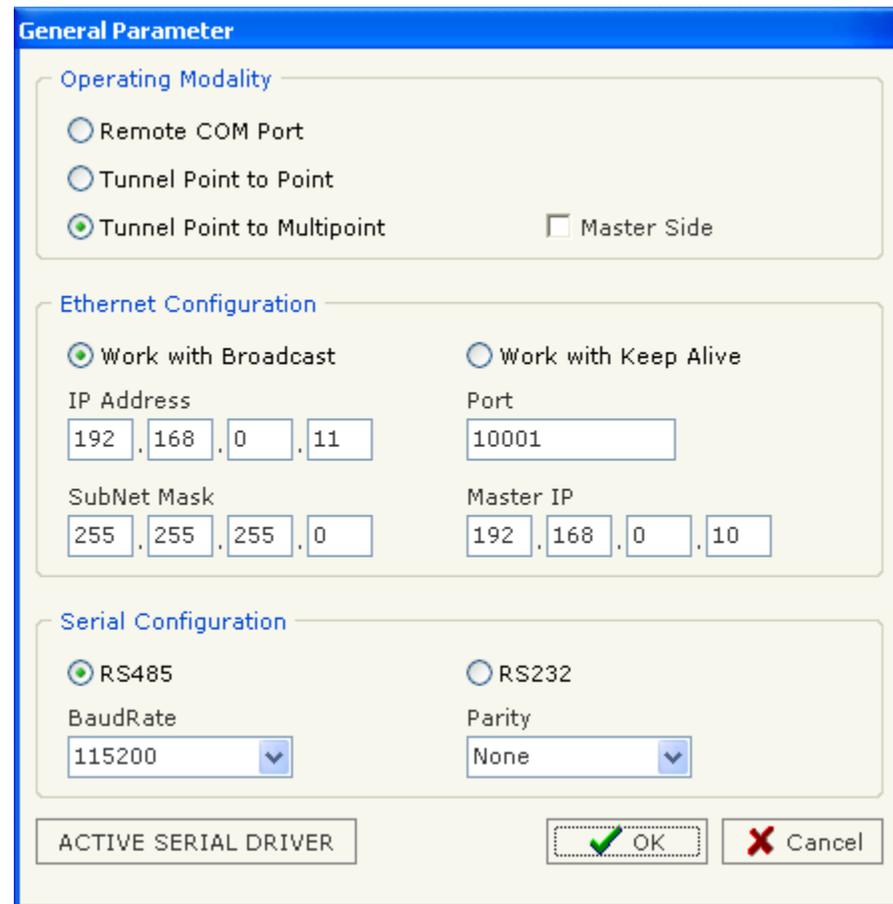
The means of the fields for "Ethernet Configuration" are:

- Select the "Work with Broadcast", in this way the master sends the messages in Broadcast;
- In the field "IP Address" the IP address of the Converter is defined;
- In the field "SubNet Mask" the Subnet Mask of the Converter is defined;
- In the field "Port" the Port of the Converter is defined;
- In the field "Master IP" the IP address of the Master Converter is defined.

The means of the fields for "Serial Configuration" are:

- If you are using HD67038-2 or HD67038-2-M Converter, the field "RS232" must be checked; instead if you are using HD67038-25 or HD67038-25-M Converter, if the field "RS485" is checked the serial line in use is the RS485 otherwise is the RS232;
- In the field "BaudRate" the velocity of the serial line in use is defined;
- In the field "Parity" the parity of the serial line in use is defined.

The button "ACTIVE SERIAL DRIVER" is used to activate the "Serial to Ethernet Connector". For more details go to page 17.



The screenshot shows the 'General Parameter' window with the following settings:

- Operating Modality:**
  - Remote COM Port
  - Tunnel Point to Point
  - Tunnel Point to Multipoint  Master Side
- Ethernet Configuration:**
  - Work with Broadcast  Work with Keep Alive
  - IP Address: 192, 168, 0, 11
  - Port: 10001
  - SubNet Mask: 255, 255, 255, 0
  - Master IP: 192, 168, 0, 10
- Serial Configuration:**
  - RS485  RS232
  - BaudRate: 115200
  - Parity: None

Buttons at the bottom: ACTIVE SERIAL DRIVER, OK, Cancel.

Figure 9: "General Parameter" window (Tunnel Point to Multipoint Slave Side)

### OPERATING MODALITY: TUNNEL POINT TO MULTIPOINT WITH KEEP ALIVE (MASTER SIDE)

This mode allows a serial line to be extended into sections, using a LAN line, where the device is on the side of the one that controls the line as Master and the others that are on the client's side.

To configure a device as Master the field "Master Side" of "Operating Modality" section must be checked.

In the case of the master receive the messages of "Keep Alive" from the slaves presents in the network and send the data to that devices.

The means of the fields for "Ethernet Configuration" are:

- Select the "Work with Keep Alive", in this way the master sends the messages to all the devices that send the "Keep Alive" messages;
- In the field "IP Address" the IP address of the Converter is defined;
- In the field "SubNet Mask" the Subnet Mask of the Converter is defined;
- In the field "Port" the Port of the Converter is defined.
- In the field "TimeOut Keep Alive (S)" the maximum time Master device waits to consider a slave no more available.
- In the field "Keep Alive Port" the Port of Keep Alive is defined.
- If the field "Use Gateway" is checked, in the field below it is possible to insert the IP Address of the gateway used for going out to the net in the field under;

The means of the fields for "Serial Configuration" are:

- If you are using HD67038-2 or HD67038-2-M Converter, the field "RS232" must be checked; instead if you are using HD67038-25 or HD67038-25-M Converter, if the field "RS485" is checked the serial line in use is the RS485 otherwise is the RS232;
- In the field "BaudRate" the velocity of the serial line in use is defined;
- In the field "Parity" the parity of the serial line in use is defined.

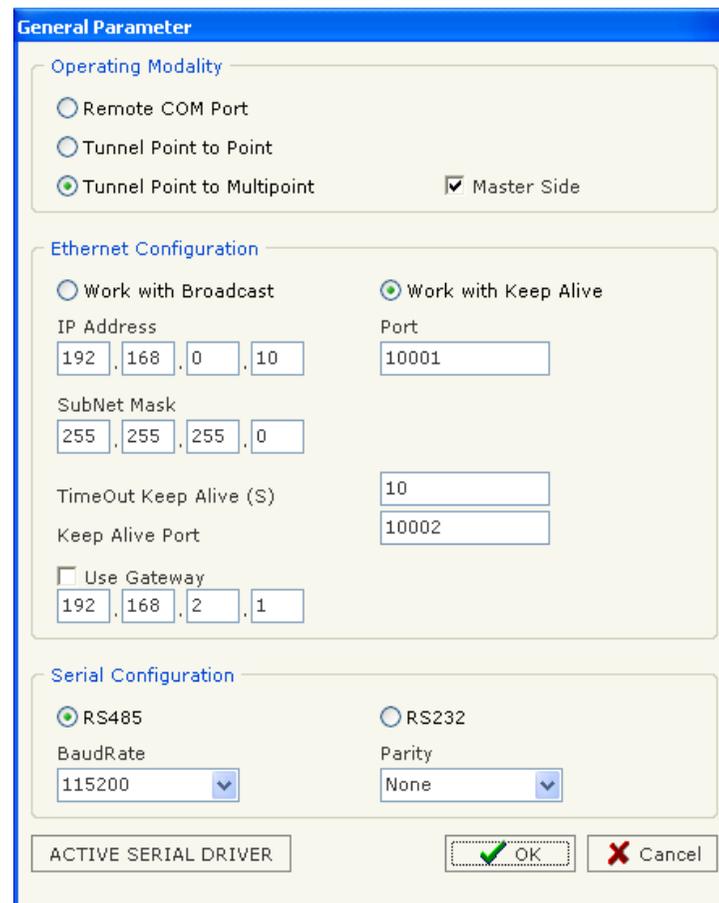


Figure 10: "General Parameter" window (Tunnel Point to Multipoint Master Side)

The button "ACTIVE SERIAL DRIVER" is used to activate the "Serial to Ethernet Connector". For more details go to page 17.

### OPERATING MODALITY: TUNNEL POINT TO MULTIPOINT WITH KEEP ALIVE (SLAVE SIDE)

To configure a device as Slave the field "Master Side" of "Operating Modality" section must not be checked.

In the case of the slave it is necessary to provide the IP address of the Master Converter.

The means of the fields for "Ethernet Configuration" are:

- Select the "Work with Keep Alive", in this way the master sends the messages to all the devices that send the "Keep Alive" messages;
- Select the "Work with Broadcast", in this way the master sends the messages in Broadcast;
- In the field "IP Address" the IP address of the Converter is defined;
- In the field "SubNet Mask" the Subnet Mask of the Converter is defined;
- In the field "Port" the Port of the Converter is defined;
- In the field "Master IP" the IP address of the Master Converter is defined;
- In the field "Keep Alice every (S)" the Time beetwen the "Keep Alive" messages is defined;
- In the field "Keep Alive Port" the Port of Keep Alive is defined;
- If the field "Use Gateway" is checked, in the field below it is possible to insert the IP Address of the gateway used for going out to the net in the field under;

The means of the fields for "Serial Configuration" are:

- If you are using HD67038-2 or HD67038-2-M Converter, the field "RS232" must be checked; instead if you are using HD67038-25 or HD67038-25-M Converter, if the field "RS485" is checked the serial line in use is the RS485 otherwise is the RS232;
- In the field "BaudRate" the velocity of the serial line in use is defined;
- In the field "Parity" the parity of the serial line in use is defined.

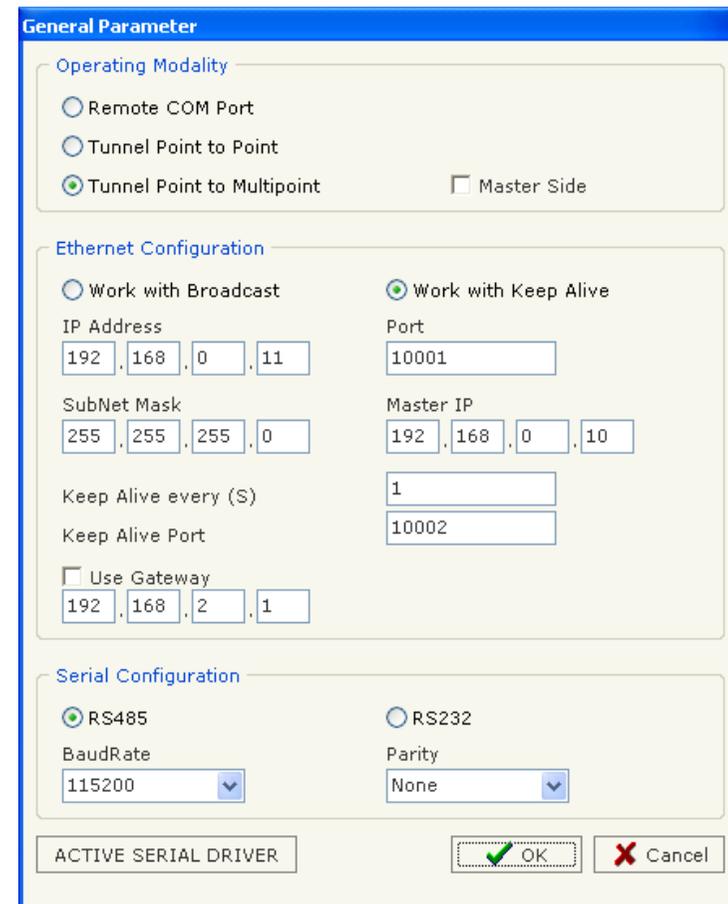


Figure 11: "General Parameter" window (Tunnel Point to Multipoint Slave Side)

The button "ACTIVE SERIAL DRIVER" is used to activate the "Serial to Ethernet Connector". For more details go to page 17.

**UPDATE VIA TCP:**

Section "Update Via TCP" (Fig. 10):

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

- Connect the Ethernet cable to the gateway;
- Insert the IP address of the Converter;
- Press the "Ping" button for check the connection of the Converter;
- Press the "Next" button;
- Select the operations you want to do. You can select only "Firmware", only "Project" or both of them;
- Press the "Execute update firmware" button to start the upload.

When all the operations are "OK" the configuration/firmware on the device is correctly updated.

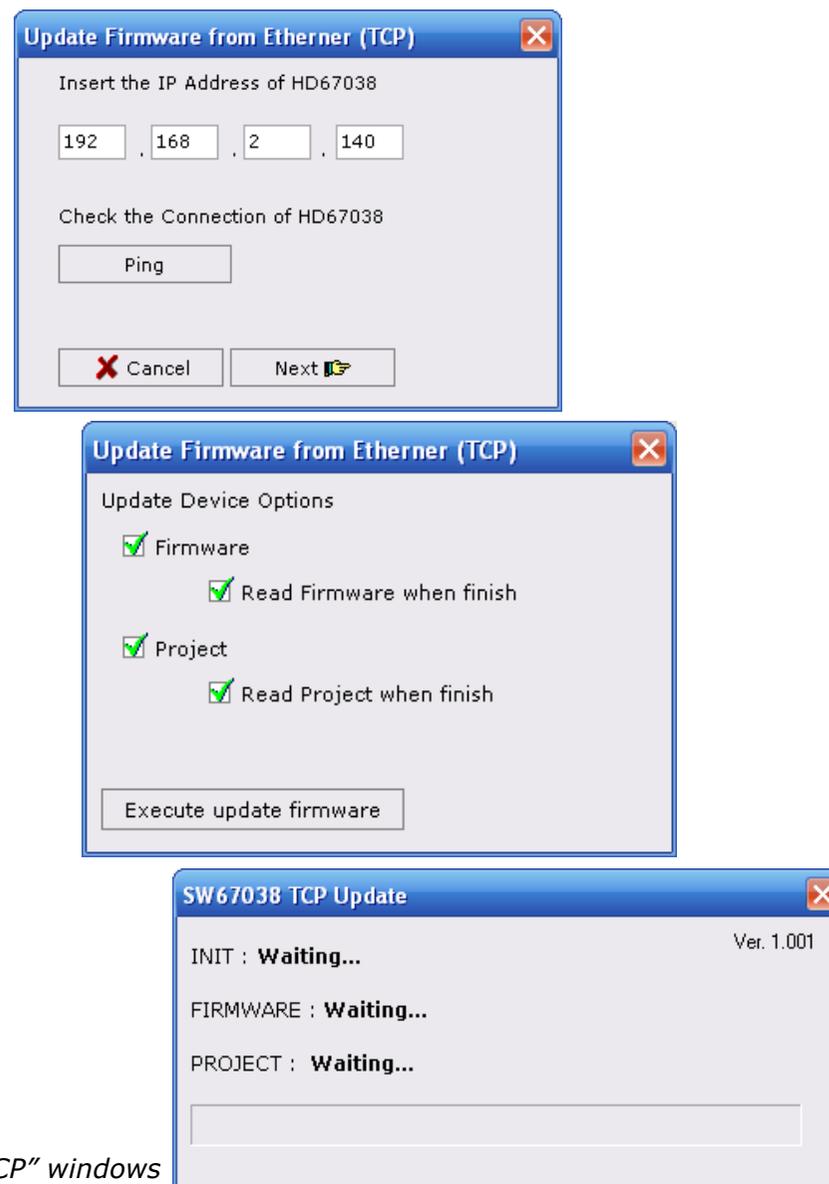


Figure 12: "Update Via TCP" windows

**UPDATE VIA SERIAL:**

Section "Update Via Serial" (Fig. 11):

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 (For more info see the "Connection scheme" of the Converter);
- Turn ON the device;
- Check the "BOOT Led". It must blink quickly (more info see the "Connection scheme" of the Converter);
- Select the COM port and press the "Connect" button;
- Press the "Next" button;
- Select the operations you want to do. You can select only "Firmware", only "Project" or both of them;
- Press the "Execute update firmware" button to start the upload;
- When all the operations are "OK" turn OFF the device;
- Disconnect the Boot Jumper;
- Turn ON the device.

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

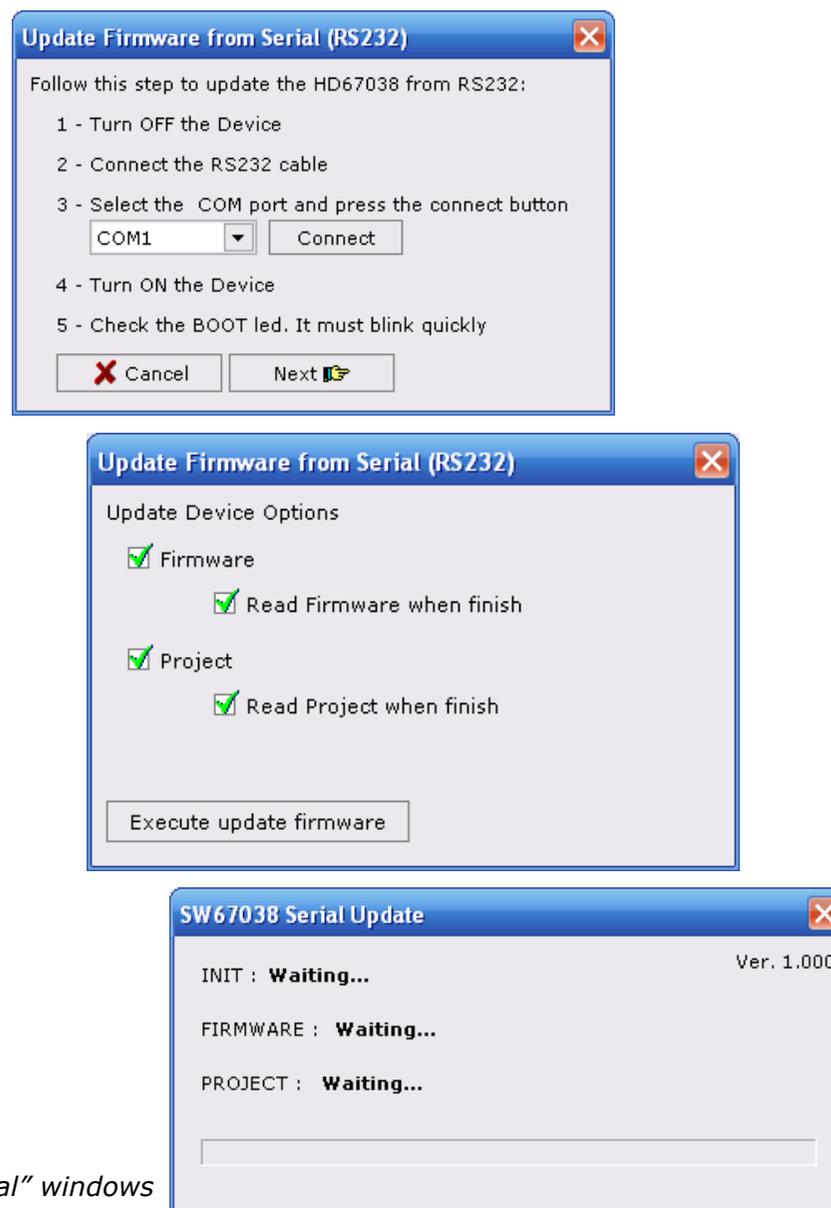


Figure 13: "Update Via Serial" windows

**SOME EXAMPLES:**

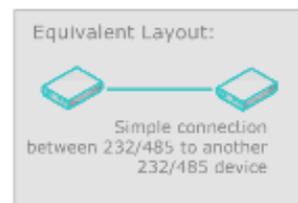
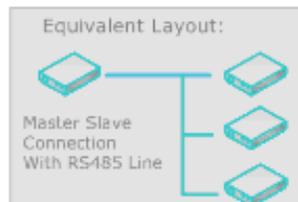
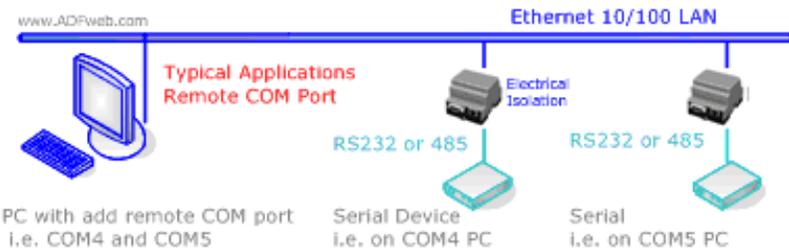
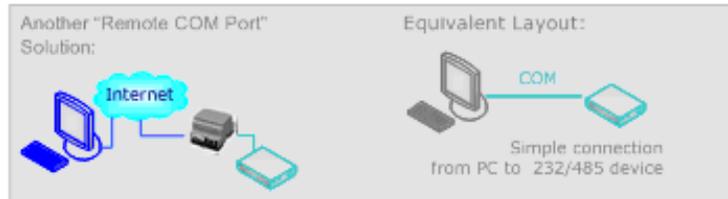


Figure 14: Some examples

**CHARACTERISTICS OF THE CABLES:**

**ETHERNET:**

The connection with the Ethernet socket must be done with a Ethernet Cable with a RJ45 Plug.

**RS232:**

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.

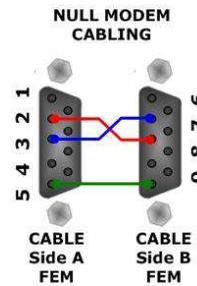


Figure 15: Null modem cabling

**RS485:**

The connection with the RS485 socket must be done with a twisted and shielded cable.

**ACTIVE SERIAL DRIVER:**

Before pressing the "Active Serial Driver" button from the "General Parameter" window it is necessary to download the "Serial to Ethernet Connector" software from the following link: [www.adfweb.com/download/filefold/serial\\_ethernet\\_connector.zip](http://www.adfweb.com/download/filefold/serial_ethernet_connector.zip). After the installation of the software you have to enter in the SW67038, go into the "General Parameter" section and press the "ACTIVE SERIAL DRIVER" button. At this point it is possible to configure the virtual COM port following these steps:

Go in the "Type" Section.

- Step 1** – Active the Advanced Mode;
- Step 2** – Active the Client Mode;
- Step 3** – Select the COM port to use with the device. It is better if you use a COM port that does not exist in your system;
- Step 4** – Insert the IP Address and the Port of the Device and then press the "ADD" button;
- Step 5** – Check that the IP and the Port are correct.

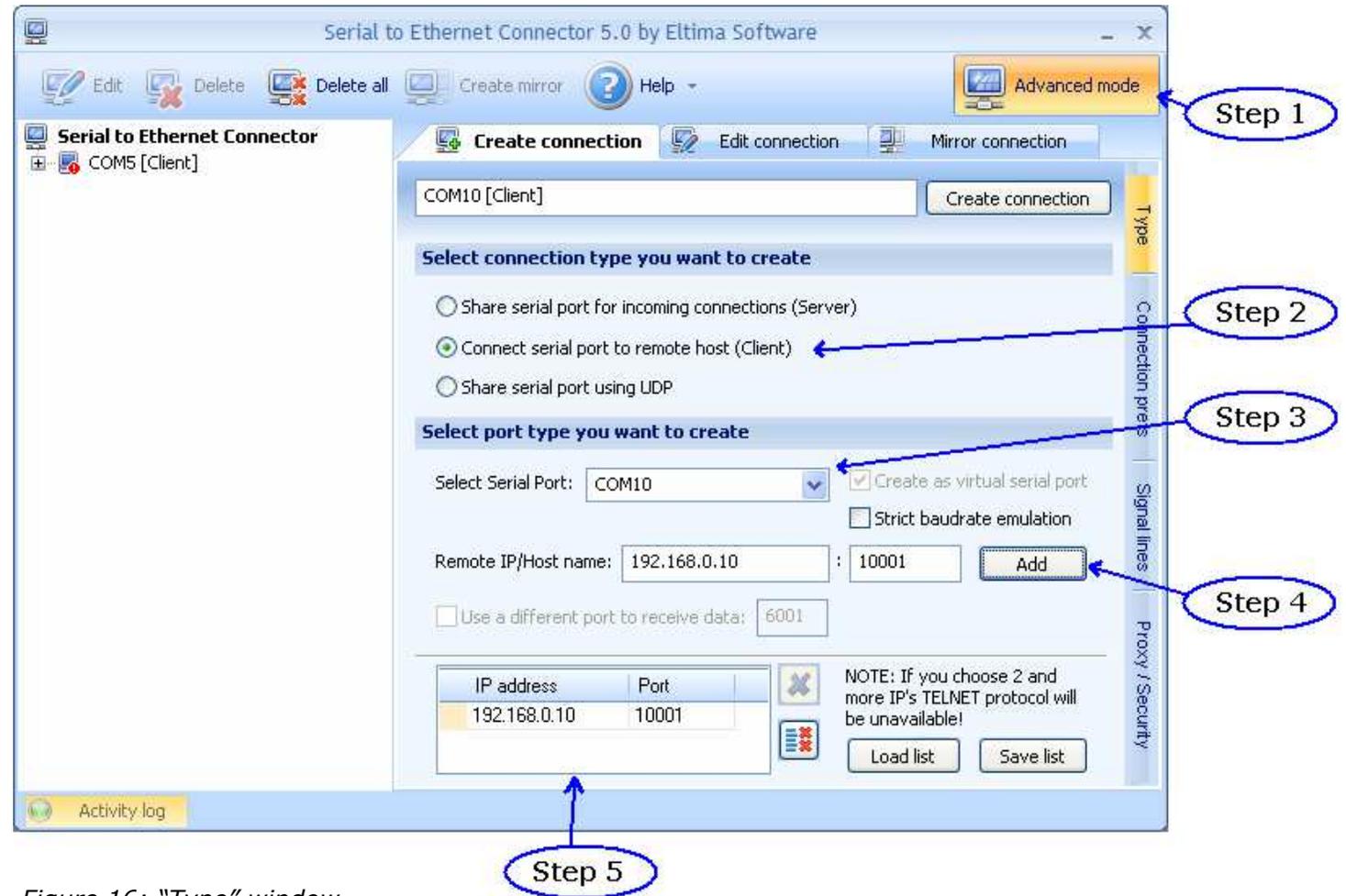


Figure 16: "Type" window

Go in the "Connection prefs" Section.

- Step 1** – Select the RAW protocol;
- Step 2** – Select the "Send Keep alive" option;
- Step 3** – Confirm the parameters and create the Virtual COM port.

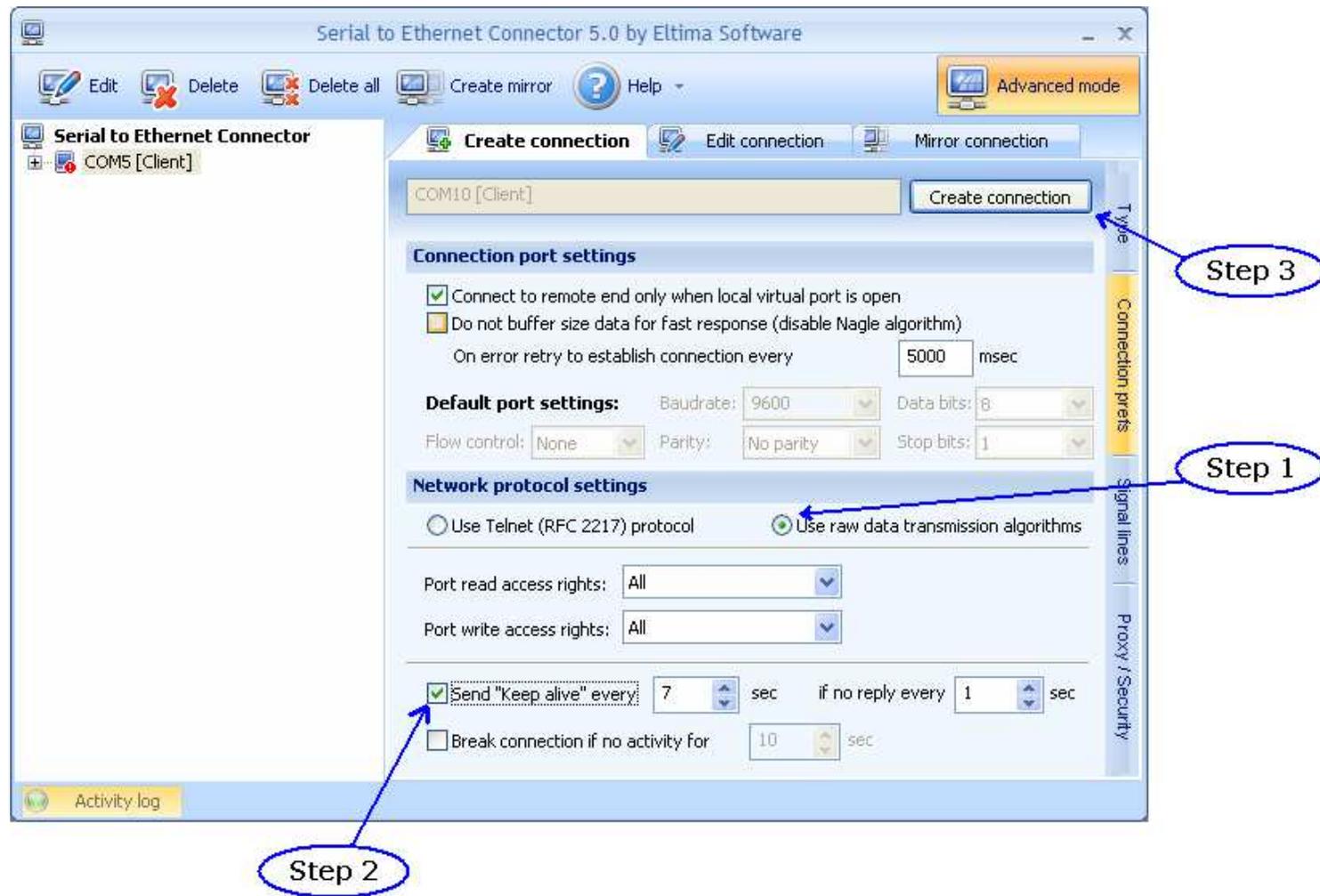


Figure 17: "Connection prefs" window

**CHANGE BAUDRATE AND PARITY ON THE FLY:**

Enable the option "Enable change baudrate on the fly" in the modality "Remote COM Port" is possible to change the baudrate and the parity of the serial port by sending a TCp frame into the post selected "Port". The new baudrate and parity is saved in RAM so when you turn off the device you lost these parameter and the device start always with the default value.

You can use this modality only in the "Remote COM port" modality.

The packet to send for change these parameters is:

BAUD=<baud value>;PARITY=<parity value>;

The admitted value for Baudrate are;

1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200

The Admitted value for Parity are:

N (= None)

O (= Odd)

E (= Even)

Example.

To set the Baudrate at 115200 and Odd parity you have to send,

In ASCII:

BAUD=115200;PARITY=0;

In exadecimal:

[42][41][55][44][3D][31][31][35][32][30][30][3B][50][41][52][49][54][59][3D][4F][3B]

**MECHANICAL DIMENSIONS:**

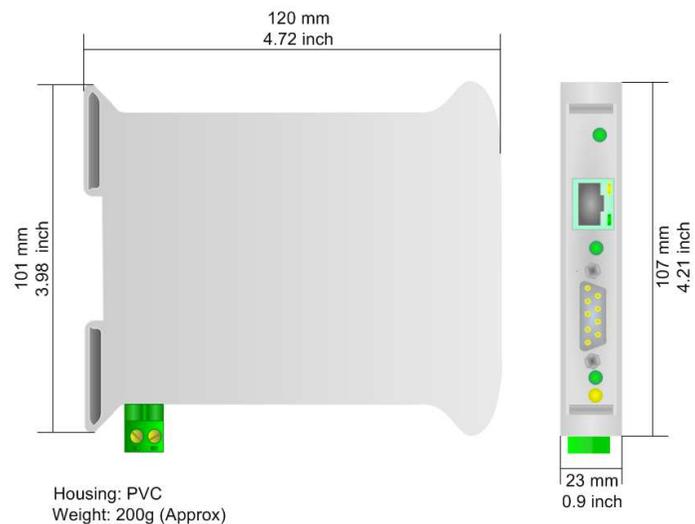


Figure 18: Mechanical dimensions scheme for HD67038-2

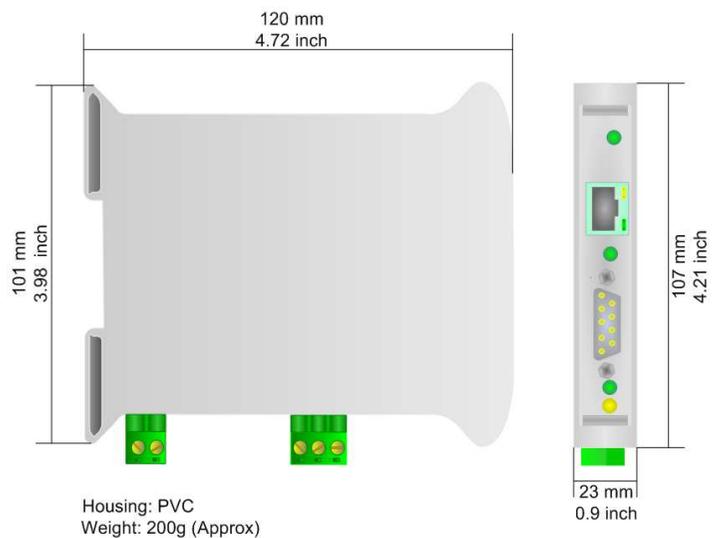


Figure 20: Mechanical dimensions scheme for HD67038-25

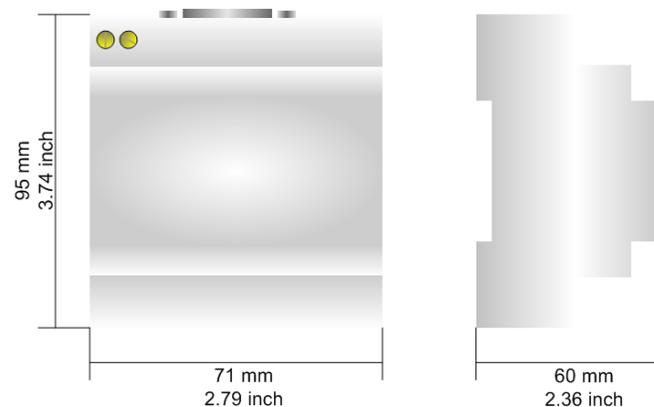


Figure 19: Mechanical dimensions scheme for HD67038-2-M

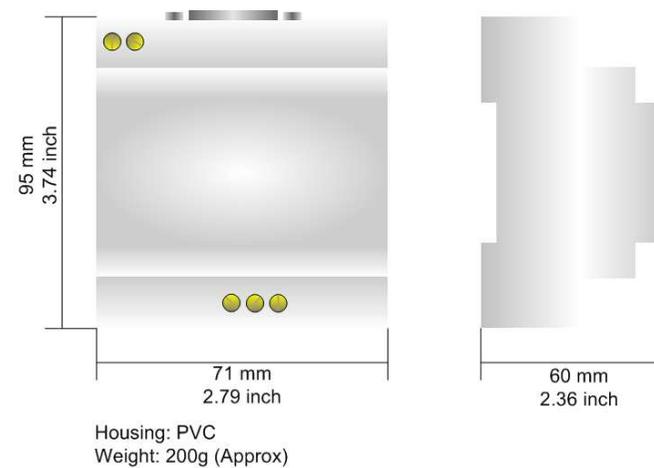


Figure 21: Mechanical dimensions scheme for HD67038-25-M

**ORDER CODE:**

- Order Code: **HD67038-2** - Converter – Ethernet to RS232
- Order Code: **HD67038-2-M** - Converter – Ethernet to RS232 (Different enclosure)
- Order Code: **HD67038-25** - Converter – Ethernet to RS232 / RS485
- Order Code: **HD67038-25-M** - Converter – Ethernet to RS232 / RS485 (Different enclosure)

**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: **AC34104** - European Input - Power Supply 230V AC 50Hz – 12 V DC

**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

**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](http://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
HD67118	Converter RS232 to RS485 Isolated	<a href="http://www.adfweb.com?Product=HD67118">www.adfweb.com?Product=HD67118</a>
HD67119	Converter USB 2.0 to RS485 Isolated	<a href="http://www.adfweb.com?Product=HD67119">www.adfweb.com?Product=HD67119</a>
HD67507	Gateway Modbus TCP Server to RTU Master	<a href="http://www.adfweb.com?Product=HD67507">www.adfweb.com?Product=HD67507</a>
HD67510	Gateway Modbus TCP Client to RTU Slave	<a href="http://www.adfweb.com?Product=HD67510">www.adfweb.com?Product=HD67510</a>