# User Manual

Revision 1.010
English

## Gateway / Adapter M-Bus to Ethernet

(Order Code: HD67030M-20, HD67030M-40, HD67030M-80, HD67030M-160, HD67030M-250)

for Website information:
www.adfweb.com?Product=HD67030

for Price information:
www.adfweb.com?Price=HD67030
www.adfweb.com?Price=HD67030-40
www.adfweb.com?Price=HD67030-80
www.adfweb.com?Price=HD67030-160
www.adfweb.com?Price=HD67030-250

### Benefits and Main Features:

- Very easy to configure
- Microprocessor for queue data control
- Electrical isolation
- Industrial temperature range:
  -30°C / 70°C (-22°F / 158°F)

*HD67030M-20*

*HD67030M-xxx*

Similiar Products

For others M-Bus products see also the following link:

**Converter M-Bus to**
www.adfweb.com?Product=HD67021 **(RS232)**
www.adfweb.com?Product=HD67022 **(RS485)**

**Analyzer / Scanner /Sniffer M-Bus**
www.adfweb.com?Product=HD67031

**Isolator/Repeater M-Bus**
www.adfweb.com?Product=HD67032M

**Gateway M-Bus / Modbus RTU**
www.adfweb.com?Product=HD67029M-232 **(on RS232)**
www.adfweb.com?Product=HD67029M-485 **(on RS485)**

**Gateway M-Bus / Modbus TCP**
www.adfweb.com?Product=HD67044

**Gateway M-Bus / CANopen**
www.adfweb.com?Product=HD67051-B2

**Gateway M-Bus / PROFIBUS**
www.adfweb.com?Product=HD67053M

**Gateway M-Bus Concentrator**
www.adfweb.com?Product=HD67054M

**Gateway M-Bus Slave / Modbus RTU master**
www.adfweb.com?Product=HD67059M-232

Do you have an your customer protocol?
www.adfweb.com?Product=HD67003

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

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.

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 |
|---|---|---|---|---|
| 1.002 | 25/03/2010 | Ft | All | Revision |
| 1.003 | 07/04/2011 | Fl | All | Revision |
| 1.004 | 28/04/2011 | Fl | All | Revision |
| 1.010 | 13/10/2011 | Fl | All | Software changed (v1.100) |

## WARNING:

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

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**CONNECTION SCHEME:**

Order Code: **HD67030M-20**

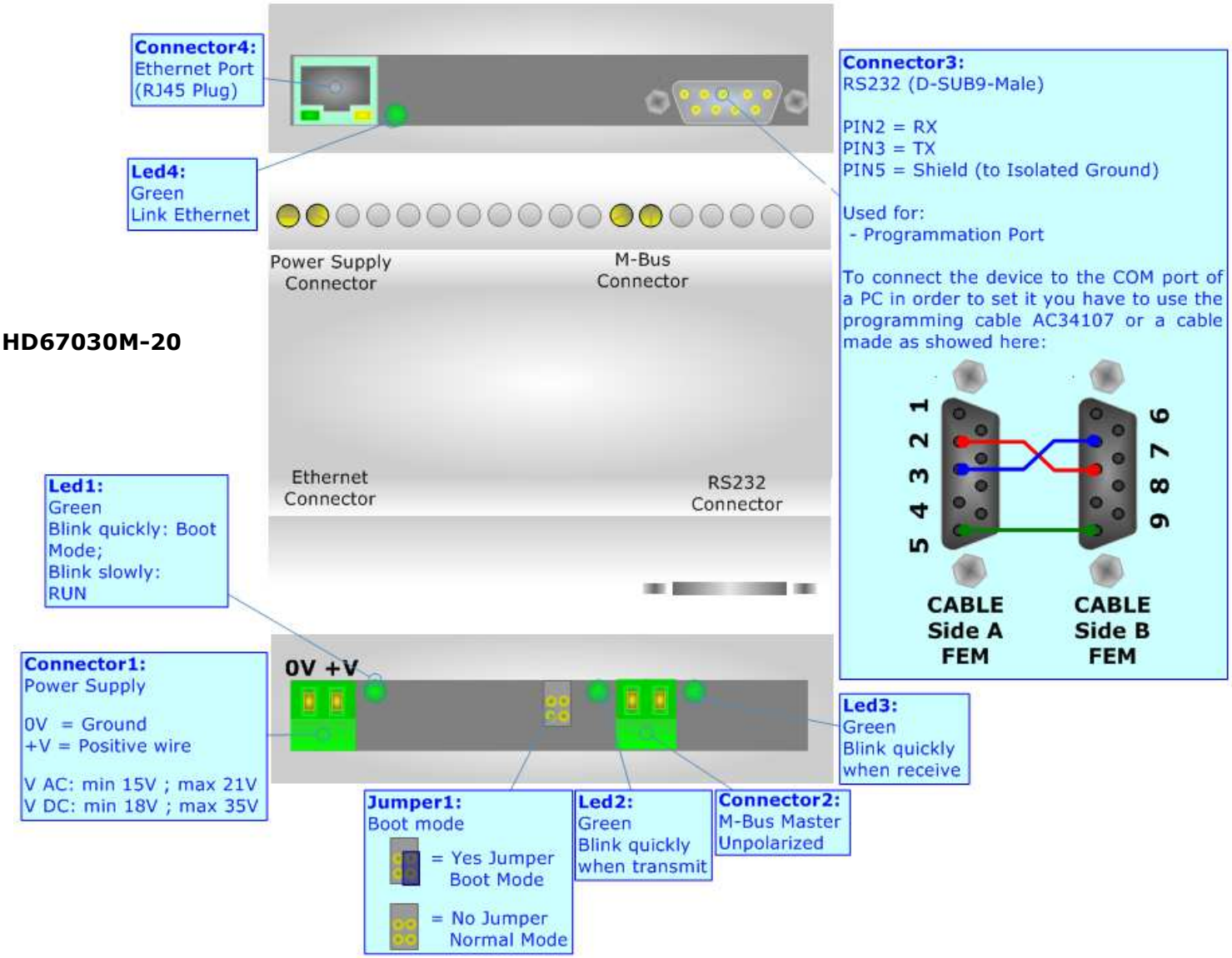



*Figure 1: Connection scheme for HD67030*

Order Code: **HD67030-40**
Order Code: **HD67030-80**
Order Code: **HD67030-160**
Order Code: **HD67030-250**

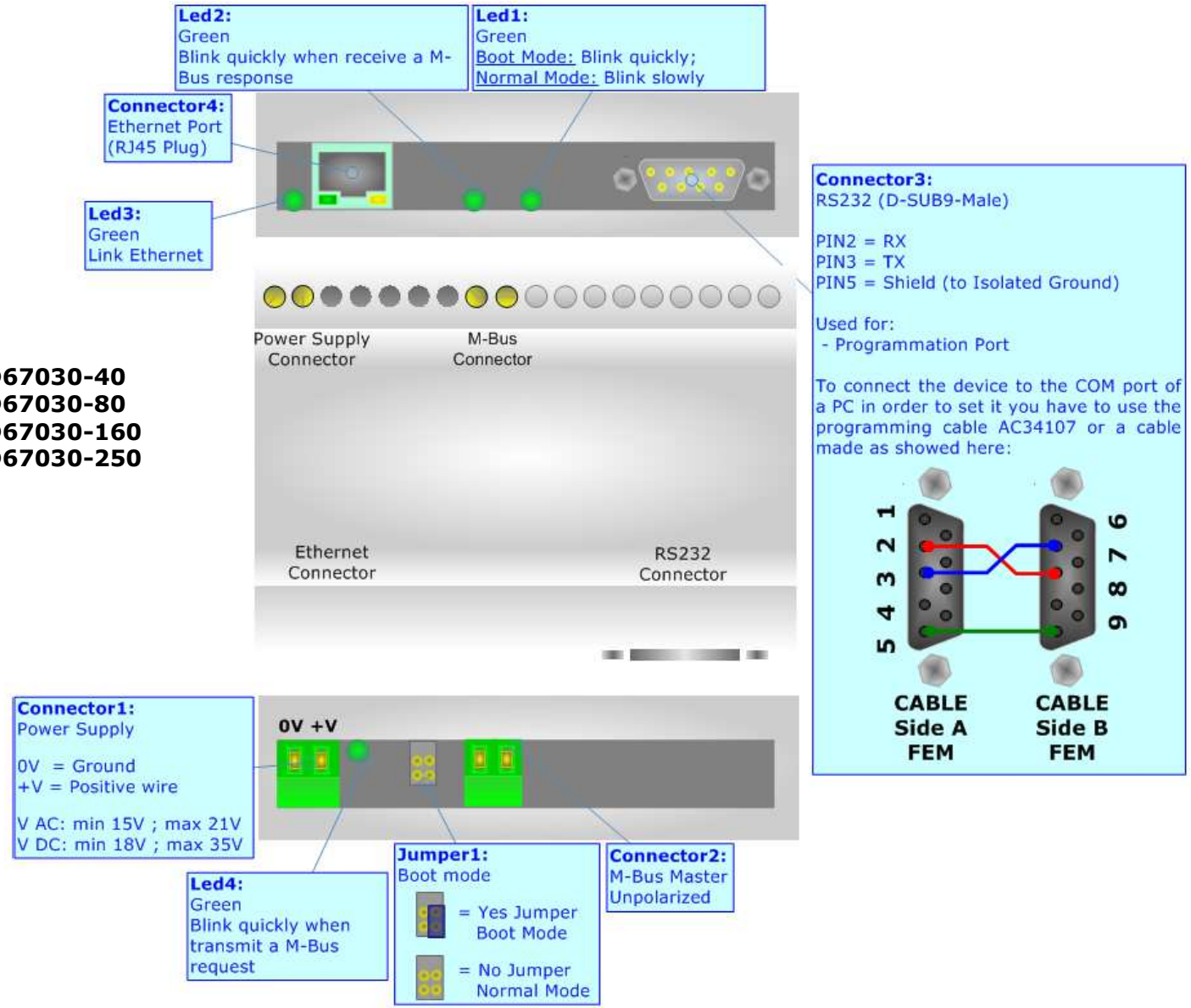



*Figure 2: Connection scheme for HD67030-xxx*

**CHARACTERISTICS:**

The HD67030M-xxx serie is an adapter M-Bus to Ethernet line.
The control by microprocessor with 32 bits makes it particularly suitable for supervisor software and the connection to a Personal Computer.
The product allows to use an existent M-Bus program or allows to create an own program. It is necessary only to write the M-Bus frames on Ethernet and then receive the reply. For information about M-Bus see the link: www.m-bus.com.

The M-Bus to Ethernet Gateway allows the following characteristics:

- Electrical isolation between Ethernet and M-Bus;
- Baud Rate and Parity changeable with software;
- Mountable on Rail DIN;
- Power Supply 15…21V AC or 18…35V DC;
- Temperature range -30°C to 70°C.

At the Adapters can be connected up to 250 standard M-Bus devices. This number depends of the code expressed by the xxx number:

- HD67030M-20 support up to 20 M-Bus devices;
- HD67030M-40 support up to 40 M-Bus devices;
- HD67030M-80 support up to 80 M-Bus devices;
- HD67030M-160 support up to 160 M-Bus devices;
- HD67030M-250 support up to 250 M-Bus devices.

In the case of HD67030M-160 the device must be mounted on 35mm DIN rail which is horizontally mounted on a wall or cabinet back-plate. To avoid obstructions to the airflow around the unit it is recommended to not cover the paths of air.

In the case of HD67030M-250 the device must be mounted on 35mm DIN rail which is horizontally mounted on a wall or cabinet back-plate. This unit have a fan in the top of the enclosure. To avoid obstructions to the airflow around the unit it is recommended to not cover the paths of air. Take care to not cover the fan. It is recommended to put the device into a ventilated cabinet.

**POWER SUPPLY:**

The devices can be powered at 15…21V AC and 18…35V DC. The consumption depends to the code of the device. For more details see the two tables below.

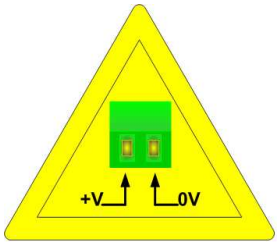
| VAC ~ | | VDC ⎓ | |
|---|---|---|---|
| **Vmin** | **Vmax** | **Vmin** | **Vmax** |
| **15V** | **21V** | **18V** | **35V** |

Consumption at 24V DC:

| Device | No Load [W/VA] | Full Load [W/VA]* |
|---|---|---|
| HD67030M-20 | 3.5 | 4 |
| HD67030M-40 | | 5 |
| HD67030M-80 | | 8 |
| HD67030M-160 | | 14 |
| HD67030M-250 | | 30 |

* This value is with all the Slave M-Bus devices of the code (20, 40, 80, 160, 250) connected to the line

**Caution: Not reverse the polarity power**




HD67030M-xxx

**SET COMMUNICATION PARAMETERS:**

Configurable Parameters:
- Baud Rate;
- Parity.

Fixed Parameters:
- 1 Bit Start;
- 8 Bit Data;
- 1 Bit Stop.

The Baud Rate and the Parity of M-Bus are configurable with the software.

**CONFIGURATION:**

You need SW67030 Ethernet to Meter-Bus software on your PC in order to perform the following:

- Define the communication parameters of the Ethernet;
- Define the communication parameters of the Meter-Bus;
- Update the Firmware.

**FUNCTION MODES:**

For the device HD67030M-xxx it is possible to update the microprocessor program. Therefore there are two functions to select from the boot jumper:
- NORMAL MODE (factory setting, without BOOT jumper): with this setting the HD67030M-xxx is able to function as an adapter M-Bus to Ethernet;
- BOOT MODE (with BOOT jumper): the boot mode is activated when the HD67030M-xxx is turned on. Eventual program updates are available on the site www.adfweb.com

When the run LED blinks at frequency of about 1 second, the device functions in Normal Mode, otherwise if the run LED blinks more quickly the device is in Boot Mode.

**USE OF SW67030 ETHERNET TO METER-BUS:**

To configure the board, use the available software that runs with Windows, called SW67030. It is downloadable on the site www.adfweb.com and its operation is described in this document.

When launching the SW67030 the right window appears (Fig. 3).

The window is divided in three section, one for the INIT COM, another for the SERIAL ETHERNET DATA and the other for the FIRMWARE.

In the field "**Com Port**" must be selected the Com Port for the PC where the serial cable is connected. When the "**Init**" button is pressed, it creates the connection between Personal Computer and HD67030.

The means of the field for SERIAL ETHERNET DATA are:

- In the field "**BaudRate**", the baudrate for the M-Bus is defined;
- In the field "**Parity**", the parity for the M-Bus is defined;
- In the field "**IP address**" insert the IP address;
- In the field "**SubNet Mask**" insert the SubNet Mask;
- In the field "**Gateway**" insert the IP address used for going out of the net. For enable it the you must check the field "Gateway";
- In the field "**Port**" insert the number of port;
- In the field "**Protocol Type**" it is possible to select if uses TCP or UDP messages.

When the button "**Write Data**" is pressed the parameters are written into the HD67030M-xxx Microprocessor.
When the Button "**Read Data**" is pressed the parameters in the Microprocessor are read and written in the fields.

The functions described above shall be made when the device in Boot. For more details about Boot see "Connection Scheme" (Fig. 1 and Fig. 2).
If it is necessary to update the firmware the button "Update Firmware" must be pressed.

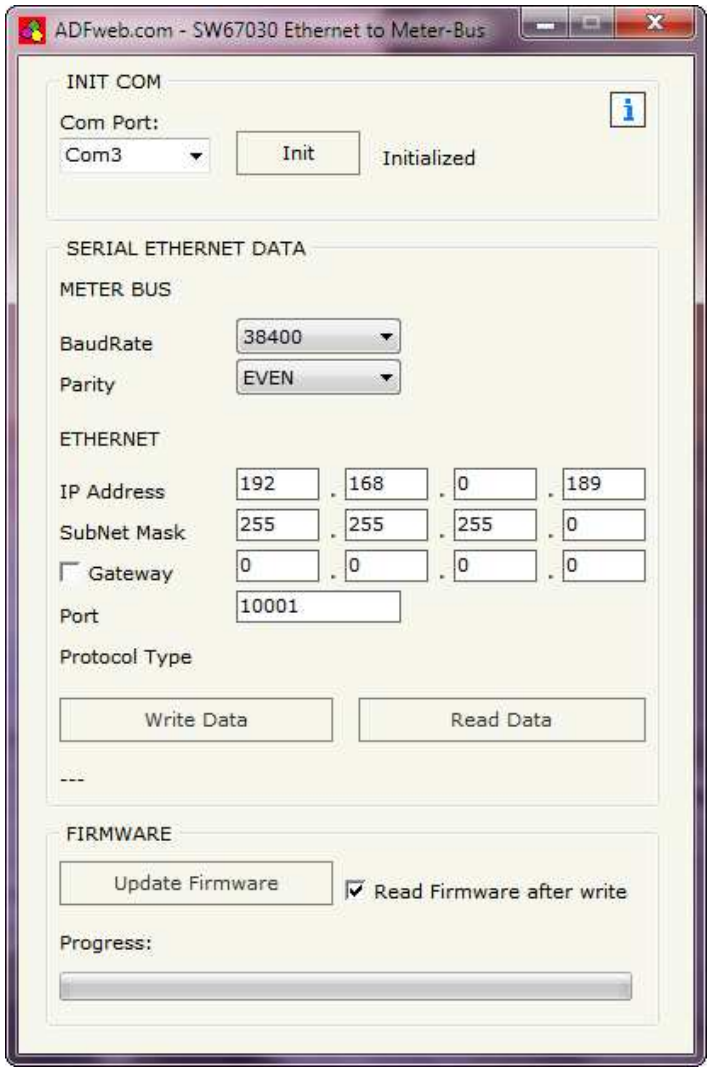
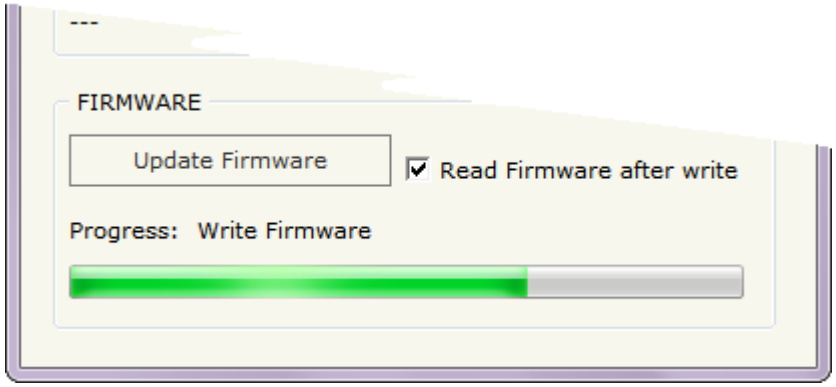



*Fig. 3: Main window for SW67030*

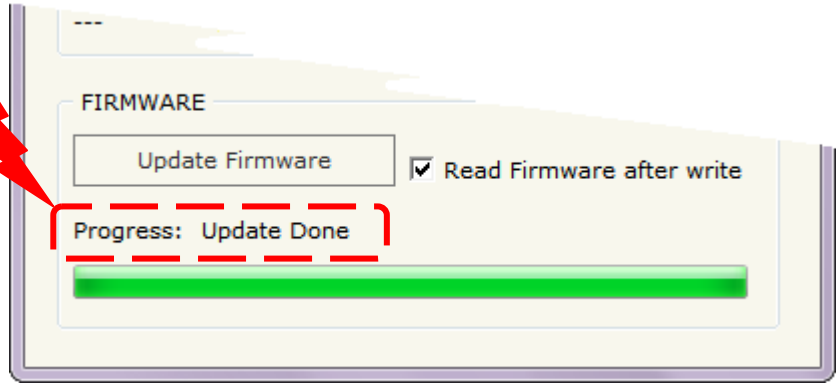
In order to update the firmware in the board, follow these instructions:

- Turn off the device;
- Insert the Boot Jumper (see the Fig. 1 and Fig. 2 for more info);
- Turn on the device;
- Press the "**Update Firmware**" button to start the upload;
- When the progress is "Update Done" turn off the device;
- Disconnected the Boot jumper;
- Turn on the Device.

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




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 HD67030M-xxx device.




Warning:
If you aren't able to complete 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.

In the case of HD67030M-20, HD67030M-40, HD67030M-80, HD67030M-160, HD67030M-250 you have to use the software "SW67030": www.adfweb.com/download/filefold/SW67030.zip.

**CHARACTERISTICS OF THE CABLES:**

**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.

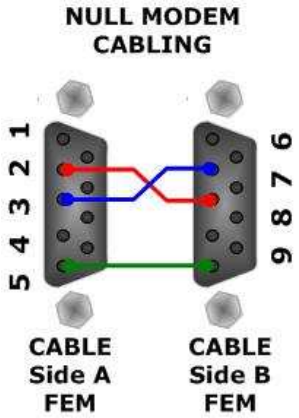



*Figure 4: Null modem cabling*

**M-BUS:**

A two wire standard telephone cable (JYStY N*2*0.8 mm) is used as the transmission medium for the M-Bus. The maximum distance between a slave and the repeater is 350m; this length corresponds to a cable resistance of up 29Ω. This distance applies for the standard configuration having Baud rates between 300 and 9600 Baud, and a maximum of 250 slaves. The maximum distance can be increased by limiting the Baud rate and using fewer slaves, but the bus voltage in the space state must at no point in a segment fall below 12V, because of the remote powering of the slaves. In the standard configuration the total cable length should not exceed 1000m, in order to meet the requirement of a maximum cable capacitance of 180nF. (*Taken from M-Bus specifics*)

**MECHANICAL DIMENSIONS:**

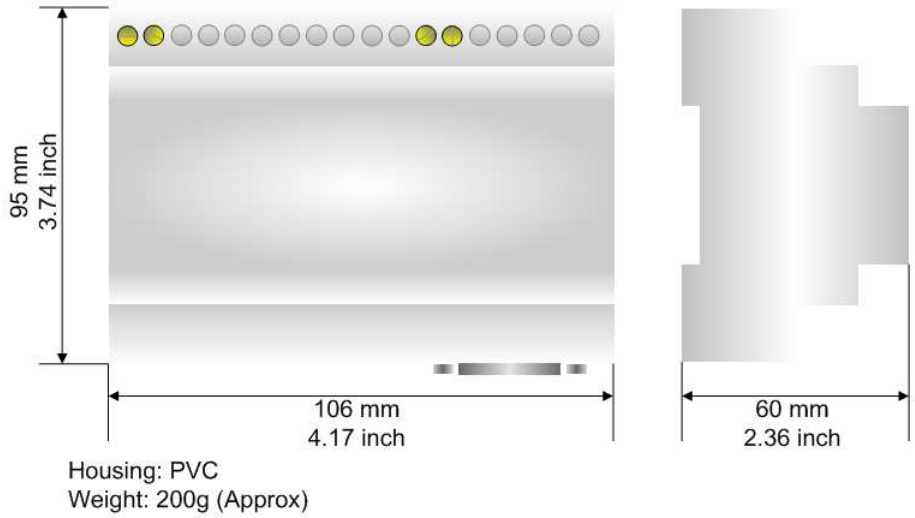



*Figure 5: Mechanical dimensions scheme for HD67030M-20*

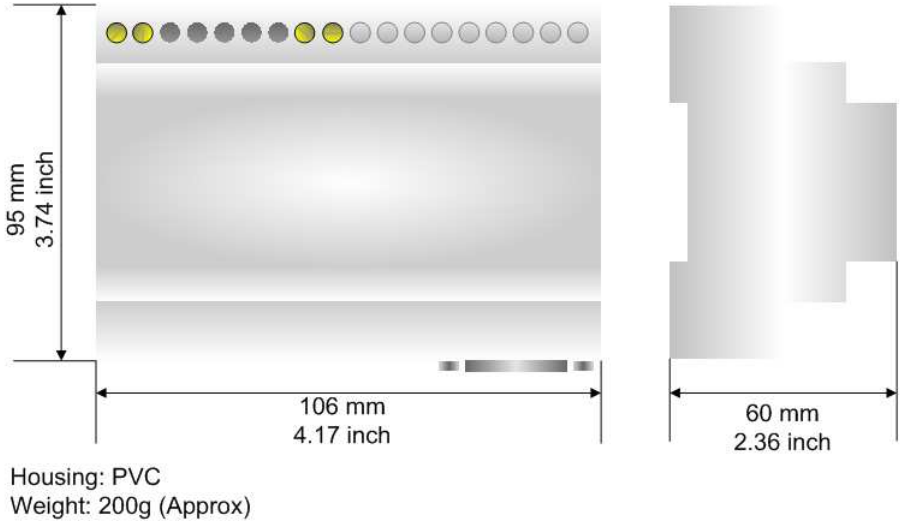



*Figure 6: Mechanical dimensions scheme for HD67030M-40, HD67030M-80*

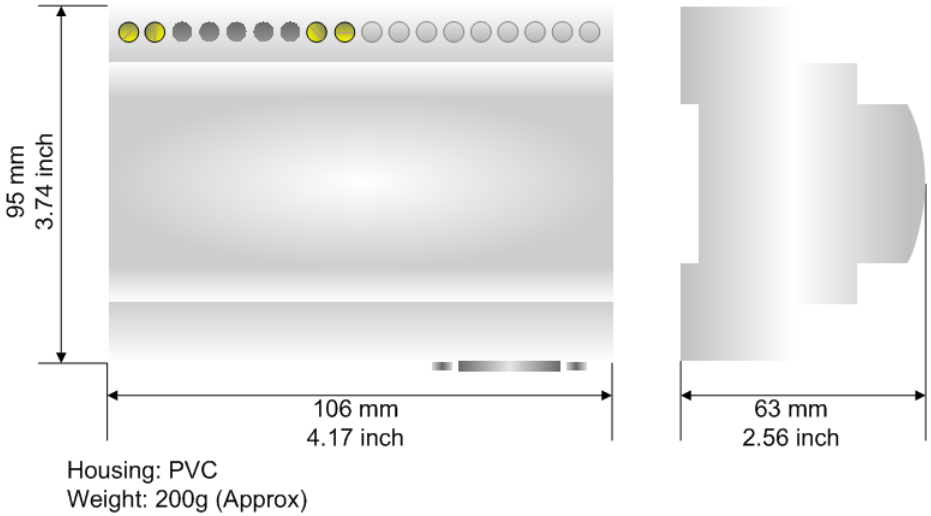



*Figure 7: Mechanical dimensions scheme for HD67030M-160*

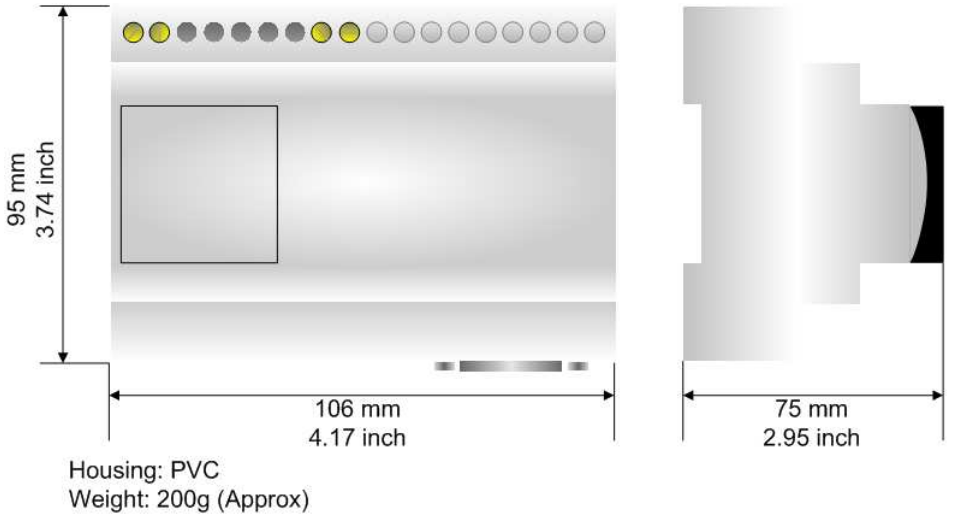



*Figure 8: Mechanical dimensions scheme for HD67030M-250*

**ORDER CODES:**

Order Code: **HD67030M-20** **-** Adapter – M-Bus from/to Ethernet (up to 20 slaves connected to M-Bus)

Order Code: **HD67030M-40** **-** Adapter – M-Bus from/to Ethernet (up to 40 slaves connected to M-Bus)

Order Code: **HD67030M-80** **-** Adapter – M-Bus from/to Ethernet (up to 80 slaves connected to M-Bus)

Order Code: **HD67030M-160** **-** Adapter – M-Bus from/to Ethernet (up to 160 slaves connected to M-Bus)

Order Code: **HD67030M-250** **-** Adapter – M-Bus from/to Ethernet (up to 250 slaves connected to M-Bus)

**ACCESSORIES:**

Order Code: **APW020** - Power Supply for M-Bus Master device that supports up to 20 Slaves

Order Code: **APW040** - Power Supply for M-Bus Master device that supports up to 40 Slaves

Order Code: **APW080** - Power Supply for M-Bus Master device that supports up to 80 Slaves

Order Code: **APW160** - Power Supply for M-Bus Master device that supports up to 160 Slaves

Order Code: **APW250** - Power Supply for M-Bus Master device that supports up to 250 Slaves

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

## 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 |
|---|---|---|
| HD67120 | Converter Ethernet to RS232/RS485 | www.adfweb.com?product=HD67120 |
| HD67119 | Converter USB 2.0 to RS485 Isolated | www.adfweb.com?product=HD67119 |
| HD67507 | Gateway Modbus TCP Server to RTU Master | www.adfweb.com?product=HD67507 |
| HD67510 | Gateway Modbus TCP Client to RTU Slave | www.adfweb.com?product=HD67510 |