

# User Manual

Revision 1.001  
English

## M-Bus Master / USB - Converter

(Order Codes: HD67024-B2-20,  
HD67024-B2-40,  
HD67024-B2-80,  
HD67024-B2-160,  
HD67024-B2-250)

for Website information:

[www.adfweb.com?Product=HD67024](http://www.adfweb.com?Product=HD67024)

for Price information:

[www.adfweb.com?Price=HD67024-B2-20](http://www.adfweb.com?Price=HD67024-B2-20)  
[www.adfweb.com?Price=HD67024-B2-40](http://www.adfweb.com?Price=HD67024-B2-40)  
[www.adfweb.com?Price=HD67024-B2-80](http://www.adfweb.com?Price=HD67024-B2-80)  
[www.adfweb.com?Price=HD67024-B2-160](http://www.adfweb.com?Price=HD67024-B2-160)  
[www.adfweb.com?Price=HD67024-B2-250](http://www.adfweb.com?Price=HD67024-B2-250)

### Benefits and Main Features:

- ▶ Very easy to configure
- ▶ Microprocessor for queue data control
- ▶ Electrical isolation
- ▶ Industrial temperature range:  
-40°C / 70°C (-40°F / 158°F)



HD67024-B2-xxx

Similar Products →

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

**Converter M-Bus to**

- [www.adfweb.com?Product=HD67021](http://www.adfweb.com?Product=HD67021) **(RS232)**
- [www.adfweb.com?Product=HD67022](http://www.adfweb.com?Product=HD67022) **(RS485)**
- [www.adfweb.com?Product=HD67030](http://www.adfweb.com?Product=HD67030) **(Ethernet)**

**M-Bus Analyzer / Scanner / Sniffer**

[www.adfweb.com?Product=HD67031](http://www.adfweb.com?Product=HD67031)

**M-Bus - Repeater - Isolator**

[www.adfweb.com?Product=HD67032](http://www.adfweb.com?Product=HD67032)

**Converter M-Bus /**

- [www.adfweb.com?Product=HD67029M-232](http://www.adfweb.com?Product=HD67029M-232) **(Modbus on RS232)**
- [www.adfweb.com?Product=HD67029M-485](http://www.adfweb.com?Product=HD67029M-485) **(Modbus on RS485)**
- [www.adfweb.com?Product=HD67044M](http://www.adfweb.com?Product=HD67044M) **(Modbus TCP)**
- [www.adfweb.com?Product=HD67051-B2](http://www.adfweb.com?Product=HD67051-B2) **(CANopen)**
- [www.adfweb.com?Product=HD67053M](http://www.adfweb.com?Product=HD67053M) **(PROFIBUS)**
- [www.adfweb.com?Product=HD67058M](http://www.adfweb.com?Product=HD67058M) **(DeviceNet Slave)**

**M-Bus - Concentrator - Datalogger**

[www.adfweb.com?Product=HD67054M](http://www.adfweb.com?Product=HD67054M)

**M-Bus - Concentrator - Datalogger**

[www.adfweb.com?Product=HD67057-B2-xxx](http://www.adfweb.com?Product=HD67057-B2-xxx)

**M-Bus Slave / Modbus Master - Converter**

[www.adfweb.com?Product=HD67059M-232](http://www.adfweb.com?Product=HD67059M-232)

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	25/08/2011	Fl	All	First release version (1.000)
1.001	04/04/2013	Nt	All	Added new chapters

**WARNING:**

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

**TRADEMARKS:**

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**SECURITY ALERT:****GENERAL INFORMATION**

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device are required for each individual application, legal and safety regulation. 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 instrument can represent a potential hazard if they are inappropriately installed and operated by personnel untrained. These instructions refer to residual risks with the following symbol:

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

**CE CONFORMITY**

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

**CONNECTION SCHEMES:**

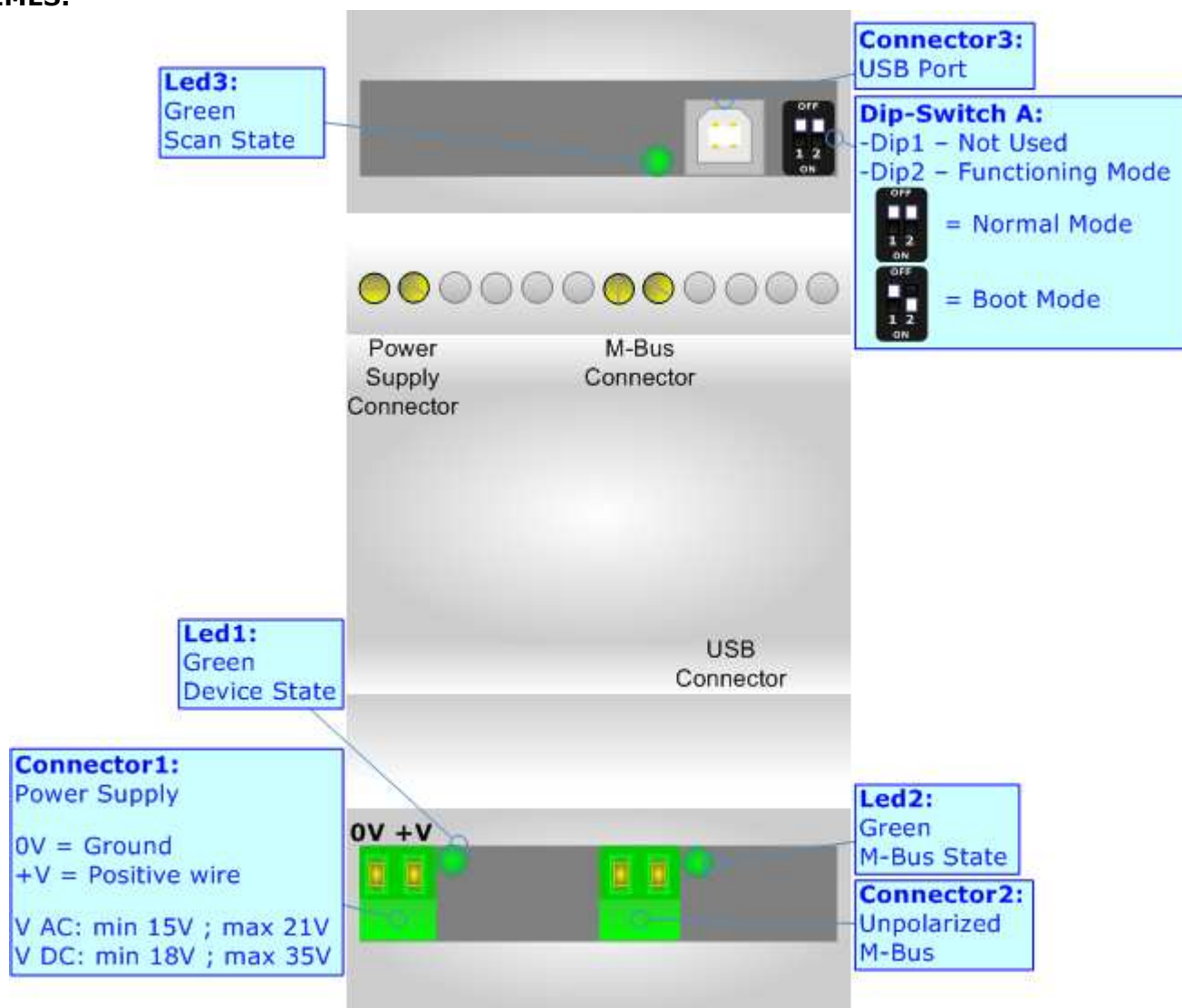


Figure 1: Connection scheme for HD67024-B2-xxx

**CHARACTERISTICS:**

The HD67024-B2-xxx is a M-Bus to USB Converter. The USB line is see like a Virtual COM Port (VCP).


The control by microprocessor with 32 bits makes it particularly suitable for supervisor software and the connection to a Personal Computer.


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

- Baud Rate and Parity changeable with software;
- Mountable on 35mm Rail DIN;
- Power Supply 15...21V AC or 18...35V DC;
- Temperature range -40°C to 70°C.

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

- HD67024-B2-20 support up to 20 M-Bus devices;
- HD67024-B2-40 support up to 40 M-Bus devices;
- HD67024-B2-80 support up to 80 M-Bus devices;
- HD67024-B2-160 support up to 160 M-Bus devices;
- HD67024-B2-250 support up to 250 M-Bus devices.

 In the case of HD67024-B2-160 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 HD67024-B2-250 the device must be mounted on 35mm DIN rail which is horizontally mounted on a wall or cabinet back-plate. These units 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.

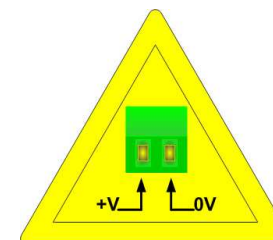
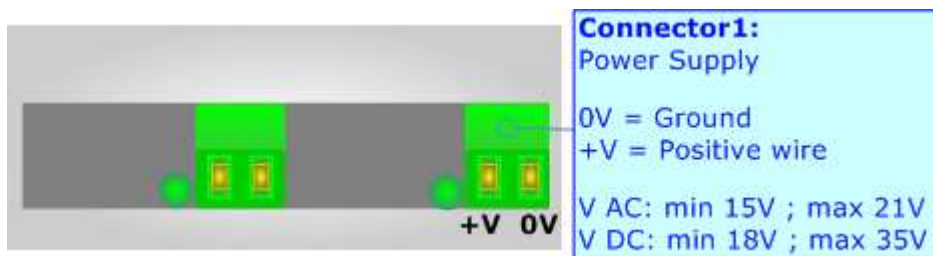
VAC		VDC	
Vmin	Vmax	Vmin	Vmax
15V	21V	18V	35V

Consumption at 24V DC:

Device	No Load [W/VA]	Full Load [W/VA]*
HD67024-B2-20	3.5	4
HD67024-B2-40		5
HD67024-B2-80		8
HD67024-B2-160		14
HD67024-B2-250		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**



HD67024-B2-xxx

**FUNCTION MODES:**

The device has got two functions mode depending of the position of the 'Dip.2 of Dip-Switch A':

- The first, with Dip2 at OFF position (factory setting), is used for the normal working of the device.
- The second, with Dip2 at ON position, is used for upload the Firmware/Project.

For the operations to follow for the updating (see 'USE SW67024 USB from/to M-BUS' section).

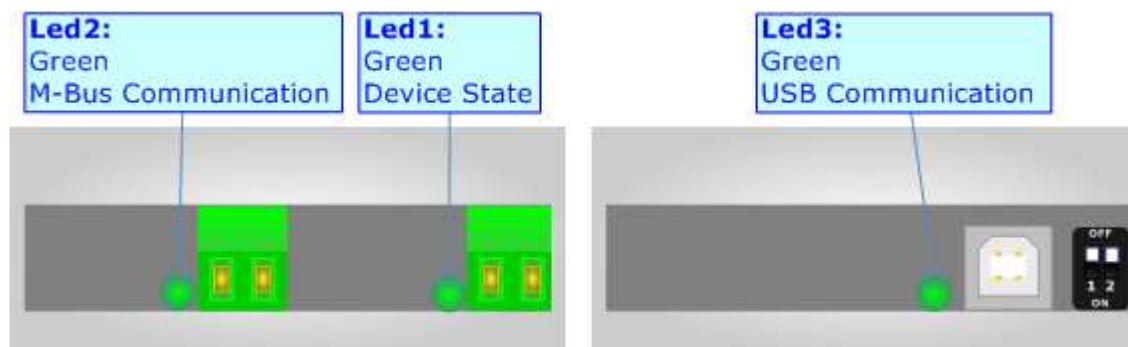
According to the functioning mode, the LEDs will have specifics functions (see 'LEDS' section).



**LEDS:**

The device has got three 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: Device State	Blink slowly	Blink quickly
2: M-Bus Communication	<b>Blink slowly:</b> No data is arriving to the port <b>Blink quickly:</b> Some data is arriving to the port	Blink quickly
3: USB Communication	<b>Blink slowly:</b> No data is arriving to the port <b>Blink quickly:</b> Some data is arriving to the port	Blink quickly





**SET COMMUNICATION PARAMETERS:**

Configurable Parameters:

- Baud Rate of USB from 300 to 115200 bps and M-Bus from 300 to 38400 bps;
- Parity of USB and M-Bus with None/Odd/Even.

Fixed Parameters:

- 1 Bit Start;
- 8 Bit Data;
- 1 Bit Stop.

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

**CONFIGURATION:**

You need "SW67024 USB from/to M-Bus" software on your PC in order to perform the following:

- Define the communication parameters of USB;
- Define the communication parameters of M-Bus;
- Update the Firmware.

### USE OF SW67024 USB FROM/TO M-BUS:

To configure the board, use the available software that runs with Windows, called SW67024.  
It is downloadable on the site [www.adfweb.com](http://www.adfweb.com) and its operation is described in this document.

When launching the SW67024 the right window appears (Fig. 2).

The Window is divided in three sections, one for the INIT COM, another for the DATA SERIALS and the other for the FIRMWARE.

In the field "**Com Port**" must be selected the COM Port of the PC where the serial cable is connected. When the "**Init**" button is pressed, it creates the connection between Personal Computer and HD67024-B2-xxx.

The means of the fields for DATA SERIALS are:

- In the field "**USB BaudRate**" the baudrate for the USB is defined;
- In the field " USB Parity" the parity for the USB is defined;
- In the field "**METER BUS BaudRate**" the baudrate for the M-Bus is defined;
- In the field "**METER BUS Parity**" the parity for the M-Bus is defined.

When the button "**Write Data**" is pressed the parameters are written into the HD67024-B2-xxx microprocessor.

When the button "**Read Data**" is pressed the parameters in the microprocessor are read and written in the fields under the button.

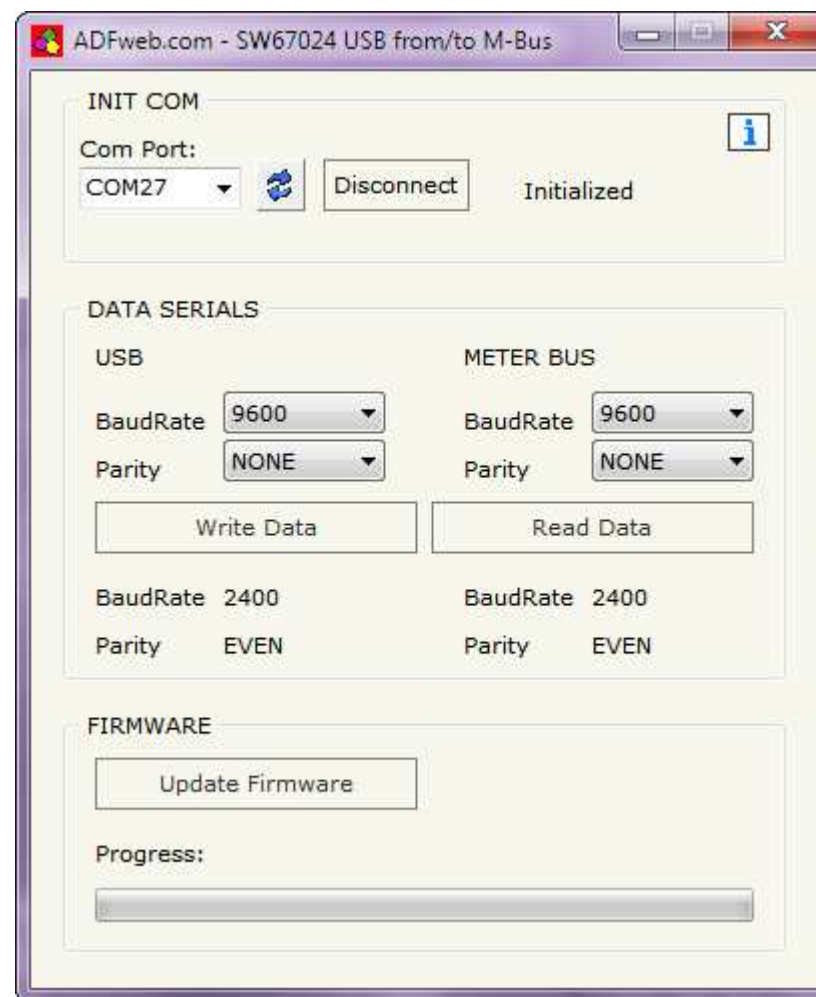


Figure 2: Main window for SW67024

The functions described above shall be made when the device is in Boot. For more details about Boot see "Connection Scheme" (Fig. 1).

If it is necessary to update the firmware the button "**Update Firmware**" must be pressed.

In order to update the firmware in the board, or change the Data Serials parameters follow these instructions:

- Turn off the device;
- Insert the Boot Jumper (see the Fig. 1 for more info);
- Turn on the device;
- Press the "**Update Firmware**" button to start the upload;
- When the Progress say "Update Done" turn off the device;
- Disconnect 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 HD67024-B2-xxx device.



**Warning:**

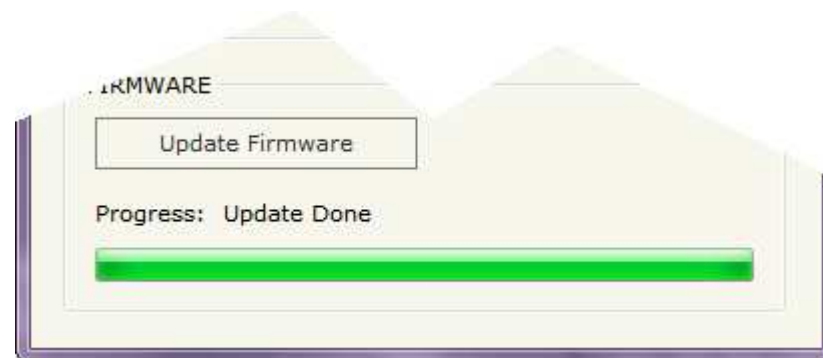
When you try to do the Update but this is unsuccessful, before require assistance try these points:

- Check if the COM port selected is the correct one;
- 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.



**Note:**

In the case of HD67024-B2-xxx you have to use the software "SW67024": [www.adfweb.com/download/filefold/SW67024.zip](http://www.adfweb.com/download/filefold/SW67024.zip).

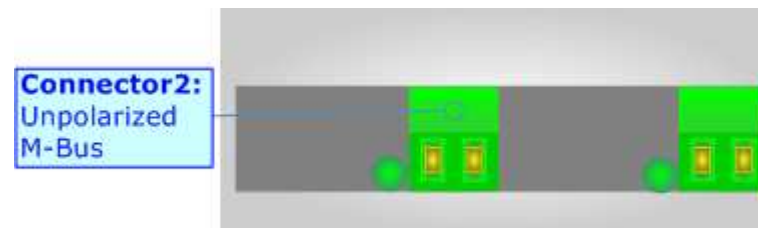


**CHARACTERISTICS OF THE CABLES:****USB:**

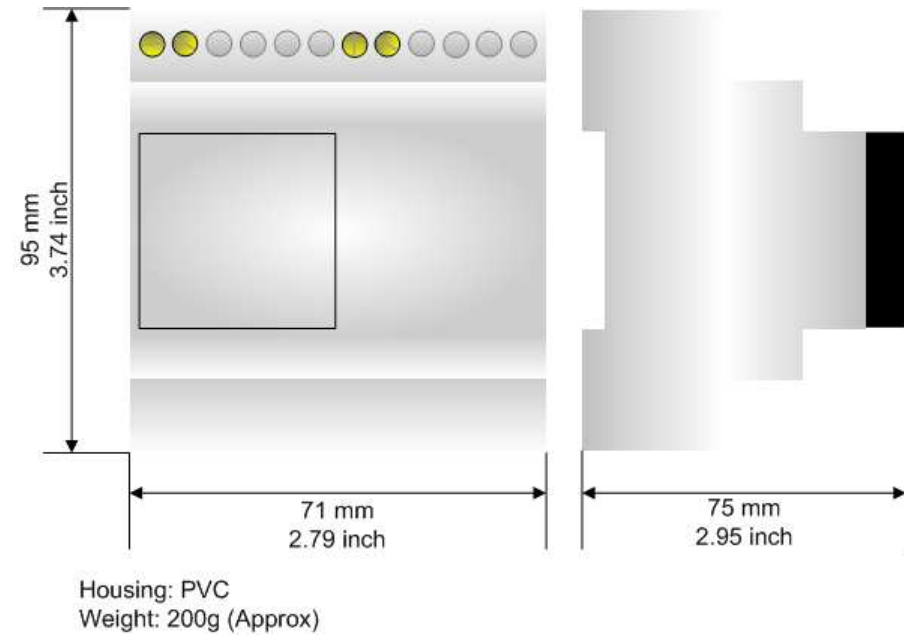
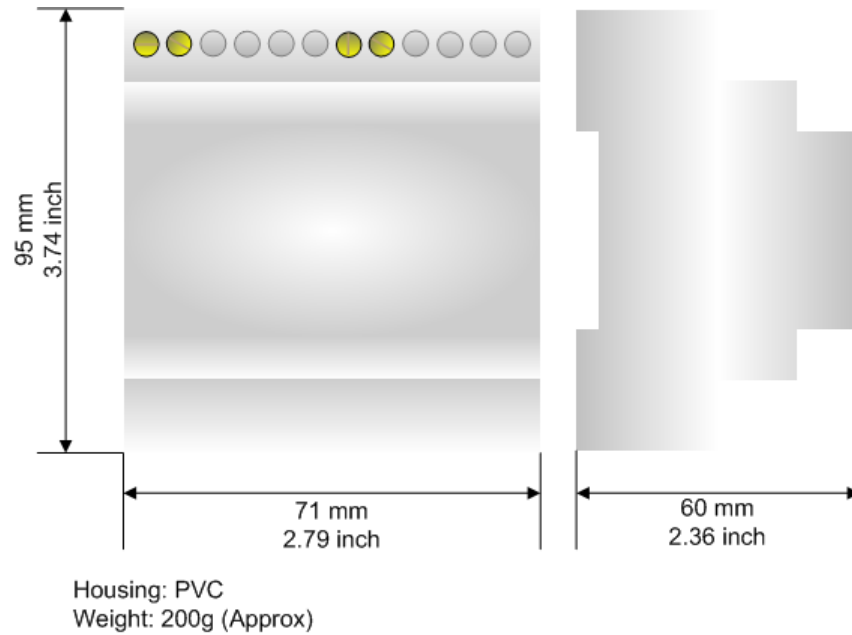
The USB connector (Connector3) is a Type-B Female. So the cable must be a Type-B Male.

**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 to  $29\Omega$ . 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:**



**ORDER CODES:**

- Order Code: **HD67024-B2-20** - M-Bus Master / USB – Converter (up to 20 slaves connected to M-Bus)
- Order Code: **HD67024-B2-40** - M-Bus Master / USB – Converter (up to 40 slaves connected to M-Bus)
- Order Code: **HD67024-B2-80** - M-Bus Master / USB – Converter (up to 80 slaves connected to M-Bus)
- Order Code: **HD67024-B2-160** - M-Bus Master / USB – Converter (up to 160 slaves connected to M-Bus)
- Order Code: **HD67024-B2-250** - M-Bus Master / USB – Converter (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

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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 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

**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
HD67648	Ethernet / Serial - Converter	<a href="http://www.adfweb.com?product=HD67648">www.adfweb.com?product=HD67648</a>
HD67119	USB / RS485 - Converter	<a href="http://www.adfweb.com?product=HD67119">www.adfweb.com?product=HD67119</a>
HD67507	Modbus TCP Slave /Modbus Master - Converter	<a href="http://www.adfweb.com?product=HD67507">www.adfweb.com?product=HD67507</a>
HD67510	Modbus Slave /Modbus TCP Master - Converter	<a href="http://www.adfweb.com?product=HD67510">www.adfweb.com?product=HD67510</a>