User Manual

Revision 1.005
English

M-Bus - Repeater - Isolator

(Order Code: HD67032M, HD67032M-40, HD67032M-80, HD67032M-160, HD67032M-250)

for Website information:
www.adfweb.com?Product=HD67032M
www.adfweb.com?Product=HD67032M-40
www.adfweb.com?Product=HD67032M-80
www.adfweb.com?Product=HD67032M-160
www.adfweb.com?Product=HD67032M-250

for Price information:
www.adfweb.com?Price=HD67032M
www.adfweb.com?Price=HD67032M-40
www.adfweb.com?Price=HD67032M-80
www.adfweb.com?Price=HD67032M-160
www.adfweb.com?Price=HD67032M-250

Benefits and Main Features:

- Very easy to configure
- Electrical isolation of M-Bus branches
- Industrial temperature range: -40°C / 70°C (-40°F / 158°F)

User Manual

Other Products

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

Converter M-Bus /
www.adfweb.com?Product=HD67021 **(RS232)**
www.adfweb.com?Product=HD67022 **(RS485)**
www.adfweb.com?Product=HD67030 **(Ethernet)**

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

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

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

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

M-Bus Master / PROFIBUS DP Slave - Converter
www.adfweb.com?Product=HD67053M

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

M-Bus Slave / Modbus Master - Converter
www.adfweb.com?Product=HD67059M-232

Do you have an your customer protocol? Then go to:
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	08/04/2011	Fl	All	Revision
1.003	28/04/2011	Fl	All	Revision
1.004	04/04/2013	Fl	All	Revision
1.005	23/12/2013	Fl	All	Revision

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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, 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

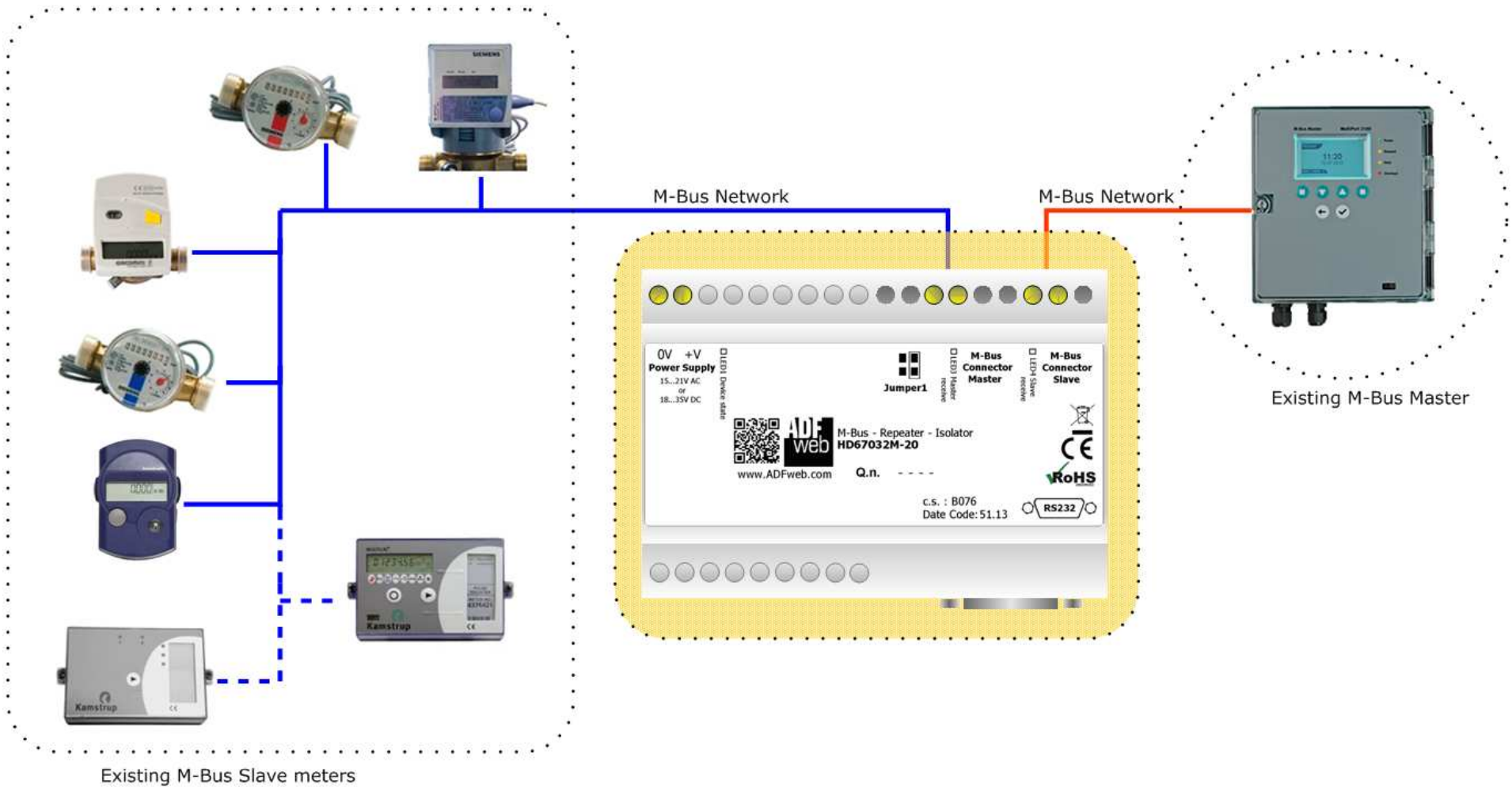
The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

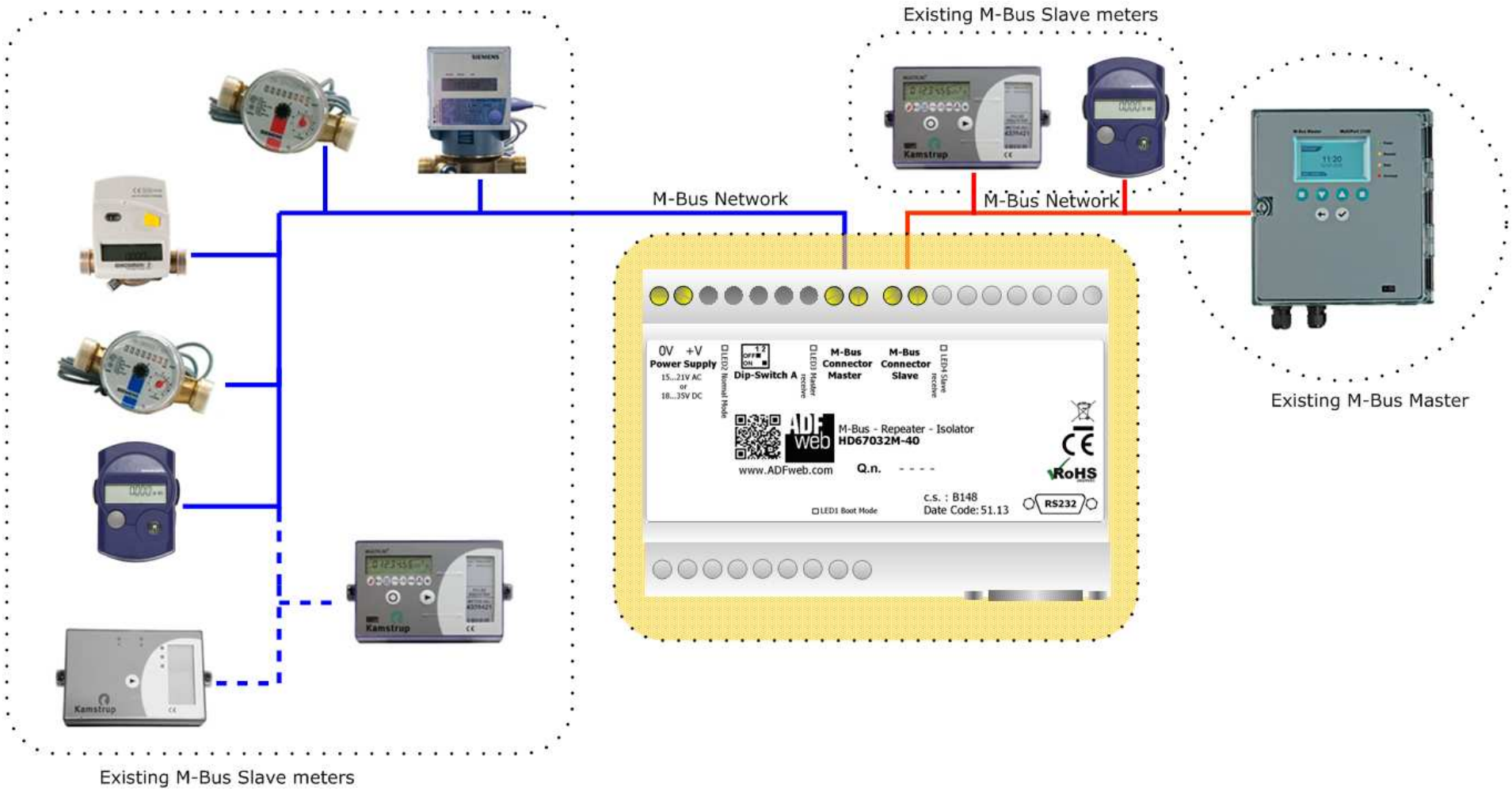
This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

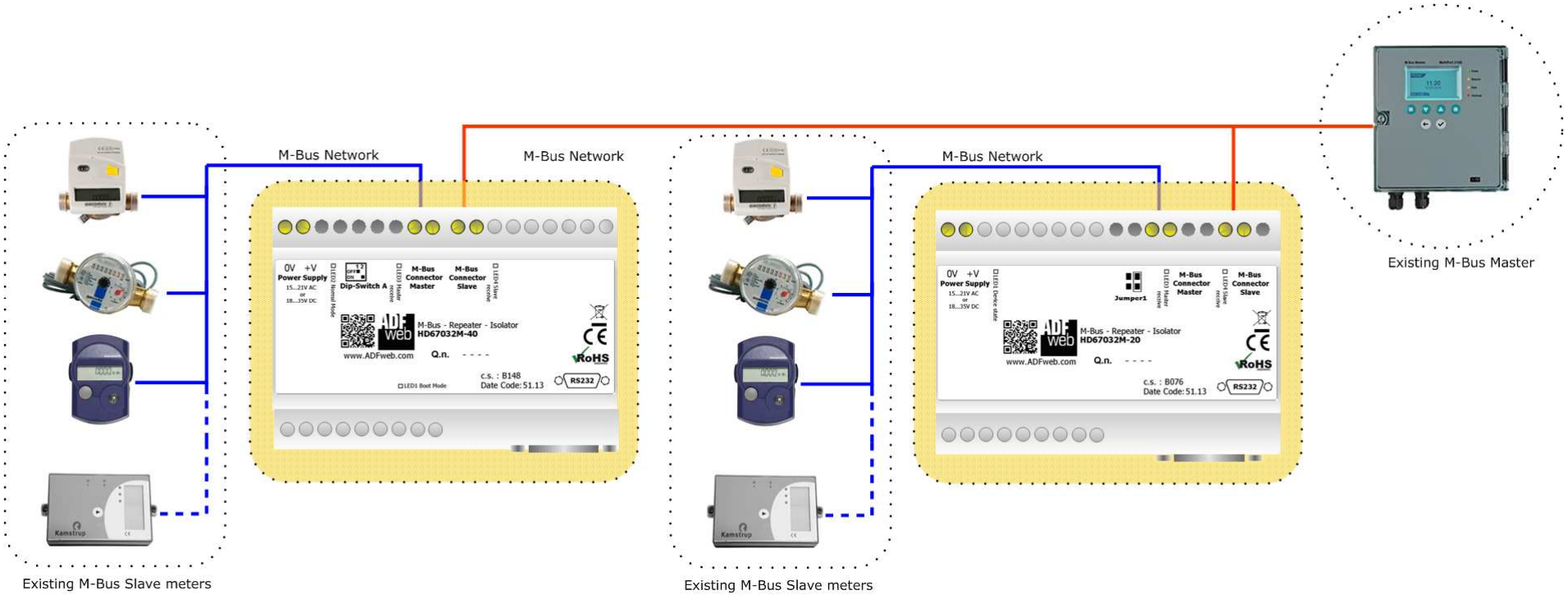
CE CONFORMITY

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

EXAMPLES OF CONNECTION:




Existing M-Bus Slave meters
M-Bus Network
M-Bus Network
Existing M-Bus Master
0V +V
Power Supply
15...21V AC
or
18...35V DC
Dip-Switch A
M-Bus
Connector
Master
M-Bus
Connector
Slave
M-Bus - Repeater - Isolator
HD67032M-40
www.ADFweb.com
Q.n.
c.s. : B148
Date Code: 51.13
RS232
LED1 Boot Mode
Existing M-Bus Slave meters


M-Bus Network
M-Bus Network
M-Bus Network
Existing M-Bus Master
Existing M-Bus Slave meters
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Power Supply
Dip-Switch A
M-Bus Connector Master
M-Bus Connector Slave
M-Bus - Repeater - Isolator
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www.ADFweb.com
Q.n.
c.s. : B148
Date Code: 51.13
RS232
Jumper1
HD67032M-20
c.s. : B076
Date Code: 51.13

CONNECTION SCHEME:

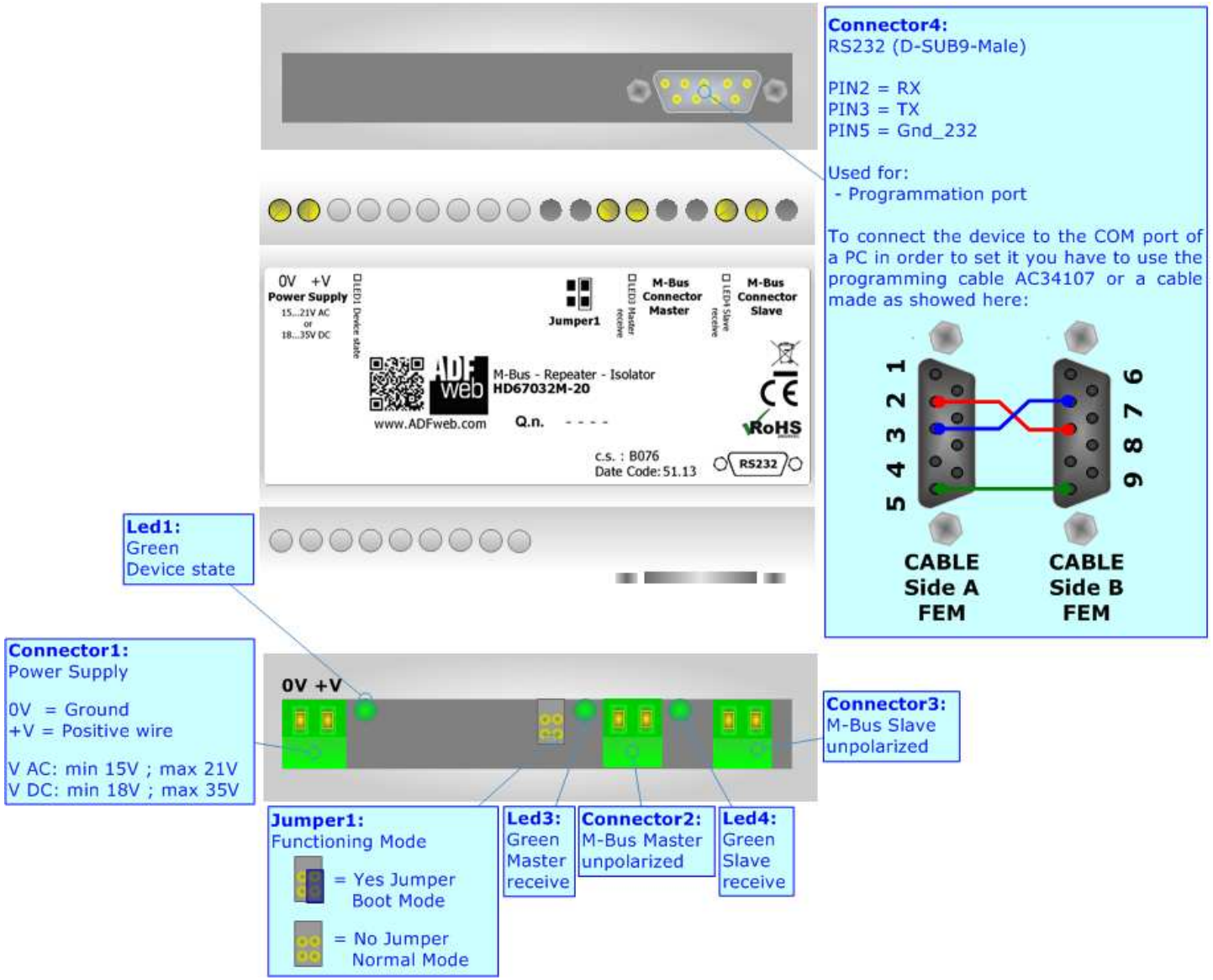


Figure 1a: Connection scheme for HD67032M-20

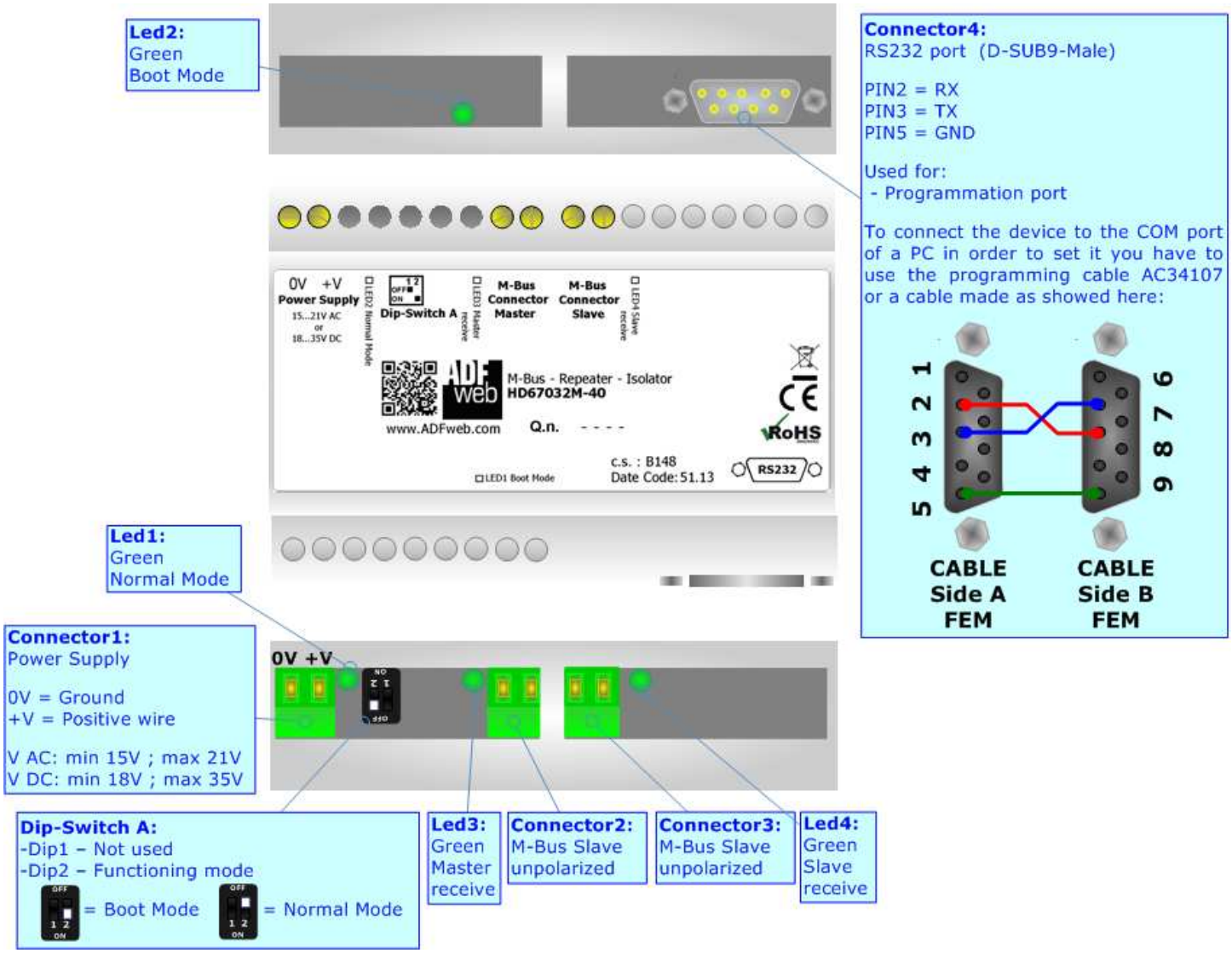


Figure 1b: Connection scheme for HD67032M-40, HD67032M-80, HD67032M-160, HD67032M-250

CHARACTERISTICS:

The HD67032M-xxx serie is a M-Bus - Repeater- Isolator.
The M-Bus - Repeater - Isolator has the following characteristics:

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

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

- HD67032M support up to 20 M-Bus devices;
- HD67032M-40 support up to 40 M-Bus devices;
- HD67032M-80 support up to 80 M-Bus devices;
- HD67032M-160 support up to 160 M-Bus devices;
- HD67032M-250 support up to 250 M-Bus devices.

 In the case of HD67032M-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 HD67032M-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.

CONFIGURATION:

You need Compositor SW67032 software on your PC in order to perform the following:

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

POWER SUPPLY:

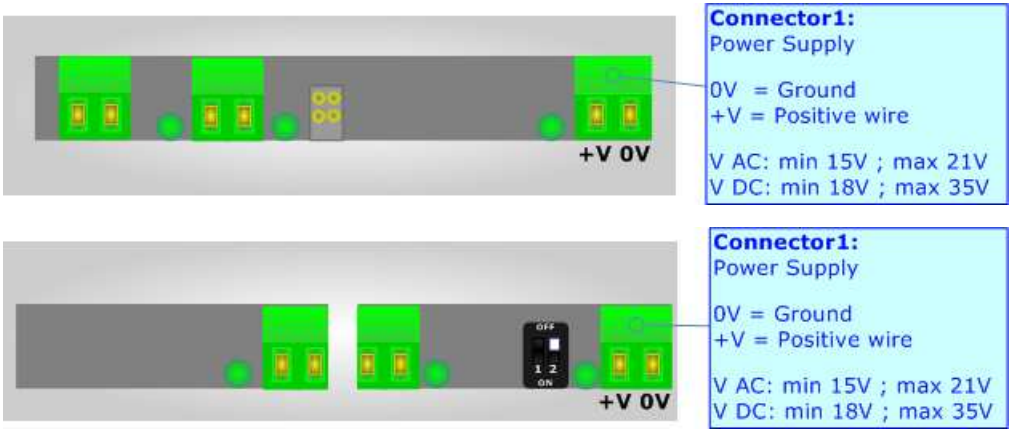
The devices can be powered at 15…21V AC and 18…35V DC. The consumption depends to the code of the device. For more details see the two tables below.

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

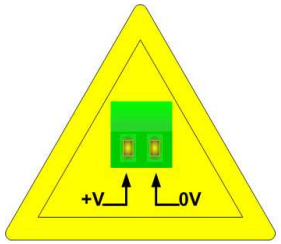
Consumption at 24V DC:

Device	No Load [W/VA]	Full Load [W/VA]*
HD67032M	3.5	4
HD67032M-40		5
HD67032M-80		8
HD67032M-160		14
HD67032M-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: Do not reverse the polarity power



HD67032M-xxx

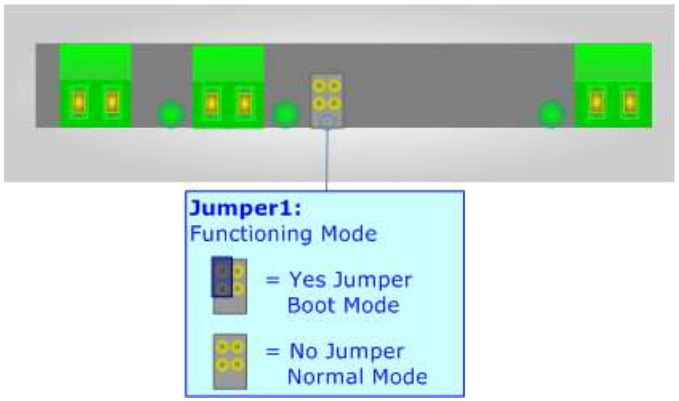
FUNCTION MODES:

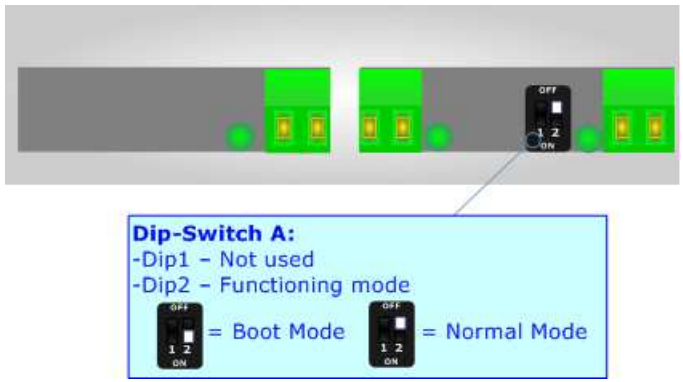
The device has got two functions mode depending of the position of the 'Dip2 of Dip-Switch A' of HD67032M-xxx or 'Jumper1' of HD6732M-20:

- The first, with 'Dip2 of Dip-Switch A' at "OFF" position (for HD67032M-xxx series) or without any jumper inserted (for HD67032M-20), is used for the normal working of the device.
- The second, with 'Dip2 of Dip-Switch A' at "ON" position (for HD67032M-xxx series) or with the jumper inserted (for HD67032M-20), is used for upload the Project.

For the operations to follow for the updating, see 'UPDATE DEVICE' section.

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



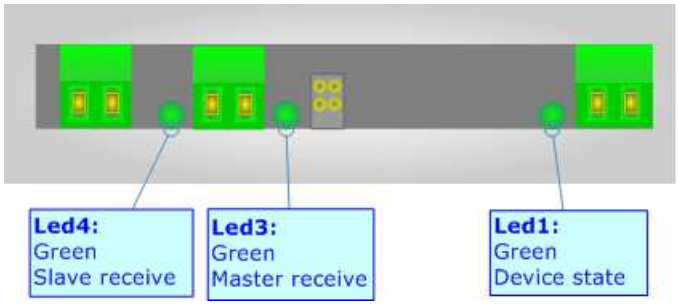


LEDS:

HD67032M-20:

The HD67053-B2 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.

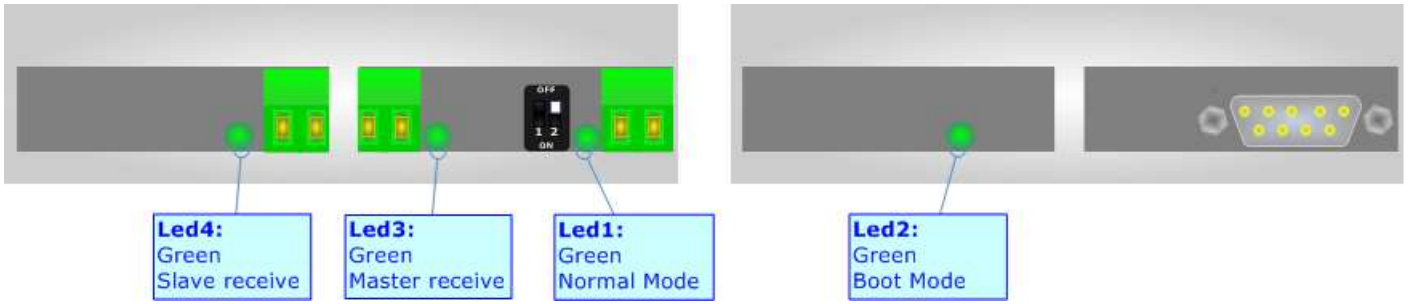
LED	Normal Mode	Boot Mode
1: Device state	Blinks slowly (~1Hz)	Blinks quickly
3: Master receive	Blinks when receive M-Bus data from Master port	Off
4: Slave receive	Blinks when receive M-Bus data from Slave port	Off



HD67032M-40, HD67032M-80, HD67032M-160, HD67032M-250:

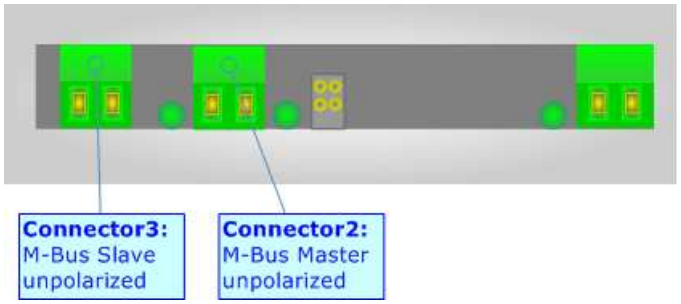
The HD67053M device has got four LEDs that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

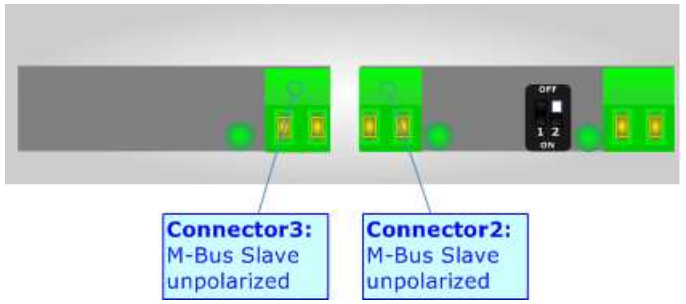
LED	Normal Mode	Boot Mode
1: Normal Mode	Blinks slowly (~1Hz)	Off
2: Boot Mode	Off	Blinks quickly
3: Master receive	Blinks when receive M-Bus data from Master port	Off
4: Slave receive	Blinks when receive M-Bus data from Slave port	Off



M-BUS:

The M-Bus is a unpolarized 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)*

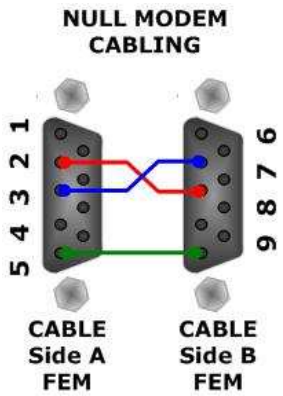




RS232:

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.

The serial port is used for programming the device.



USE OF SW67032:

To configure the Converter, use the available software that runs with Windows called SW67032. It is downloadable on the site 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 (MS 2000, XP, Vista, Seven, 8; 32/64bit).

When launching the SW67032, the window on the right appears (Fig. 2).

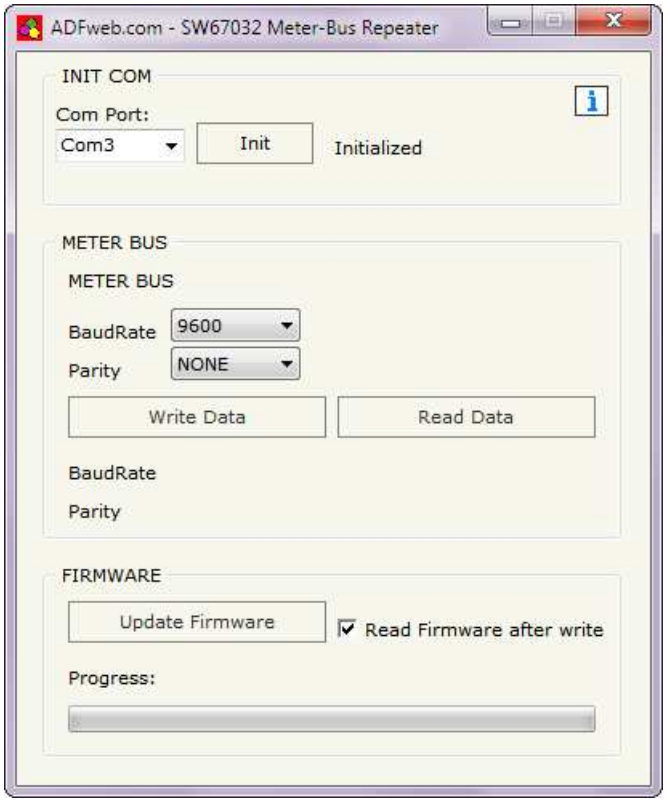


Figure 2: Main window for SW67032

The window is divided in three sections, one for the INIT COM, another for the METER BUS and the other for the FIRMWARE.

In the field "**Com Port**" the COM Port of the PC where the serial cable is connected must be selected. When the "**Init**" button is pressed, it creates the connection between Personal Computer and HD67032M-xxx.

The means of the fields for METER BUS are:

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

When the button "**Write Data**" is pressed, the parameters are written into the HD67032M-xxx Microprocessor.
When the button "**Read Data**" is pressed, the paramaters in the Microprocessor are read and written in the two fields under the button.

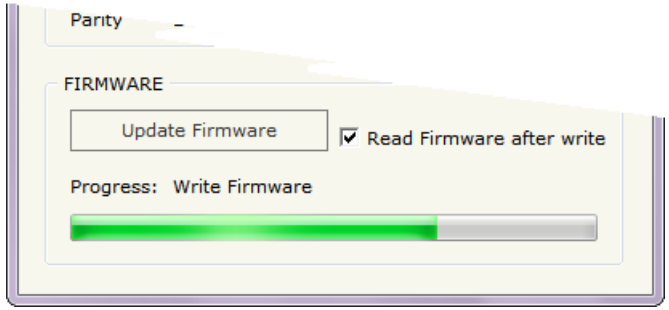
The functions described above shall be made when the device is in Boot Mode. For more details about Boot Mode see "FUNCTION MODE" section.

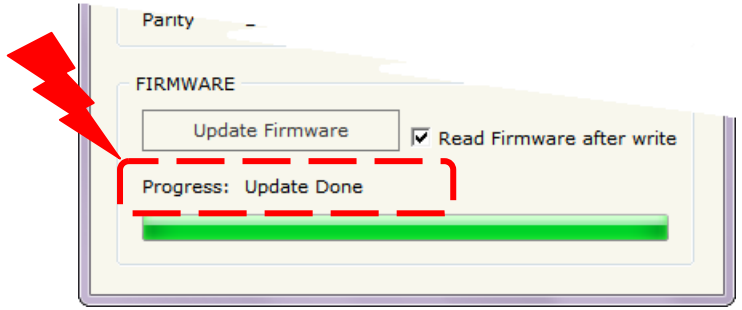
If it is necessary to update the firmware, the button "**Update Firmware**" must be pressed.

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

- Turn off the device;
- Put Dip2 of Dip-Switch A in "ON" position or insert the Boot jumper (see "FUNCTION MODES" section);
- Turn on the device;
- Press the "**Update Firmware**" button to start the upload;
- When the progress is "Update Done" turn off the device;
- Put Dip2 of Dip-Switch A in "OFF" or disconnect the Boot jumper;
- Turn on the Device.

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





Note:
When you install a new version of the software, if it is the first time it is better you do the update of the Firmware in the HD67032M-xxx device.

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD6703M-xxx device.

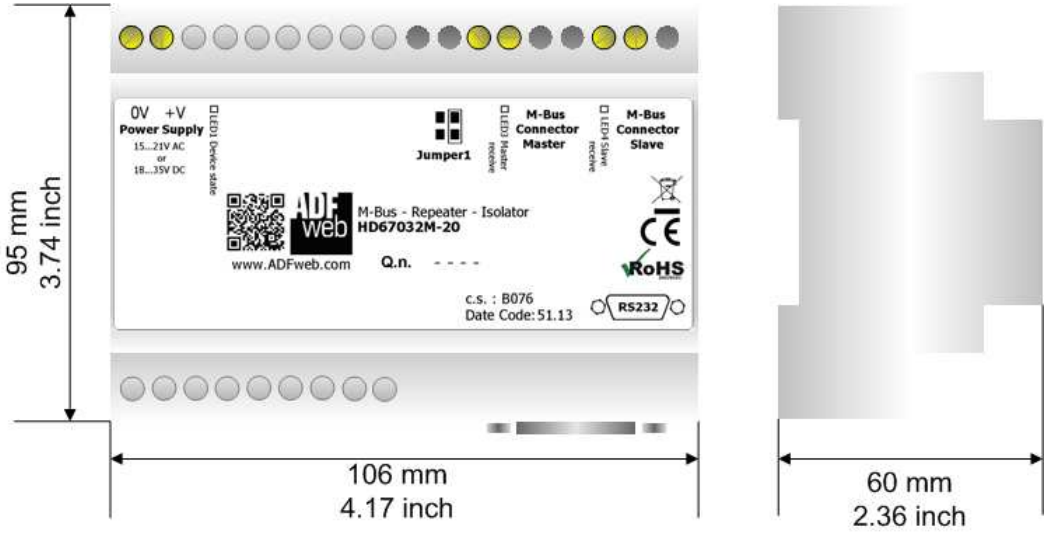
Warning:
If you aren't able to complete the Update try these points before seeking assistance:

- 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 USB←→RS232 try with a native COM port or change the converter;
- 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, make sure that you have the administrator privileges;
- Take attention at Firewall lock.

In the case of HD67032M you have to use the software "SW67032": www.adfweb.com/download/filefold/SW67032.zip.

In the case of HD67032M-40, HD67032M-80, HD67032M-160, HD67032M-250 you have to use the software "SW67032 40 80 160 250": www.adfweb.com/download/filefold/SW67032_40_80_160_250.zip.

MECHANICAL DIMENSIONS:



Housing: PVC
Weight: 200g (Approx)

Figure 3: Mechanical dimensions scheme for HD67032M-20

Figure 3: Mechanical dimensions scheme for HD67032M-40, HD67032M-80, HD67032M-160, HD67032M-250

Housing: PVC
Weight: 200g (Approx)

ORDERING INFORMATIONS:

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

HD67032 M - xxx

Maximum number of slaves supported
20: up to 20 standard slaves (1.5mA consumption) connected to M-Bus
40: up to 40 standard slaves (1.5mA consumption) connected to M-Bus
80: up to 80 standard slaves (1.5mA consumption) connected to M-Bus
160: up to 160 standard slaves (1.5mA consumption) connected to M-Bus
250: up to 250 standard slaves (1.5mA consumption) connected to M-Bus

Enclosure Type
M: 6M, 35mm DIN Rail mounting

Device Family
HD67032: M-Bus - Repeater - Isolator

Order Code:	**HD67032M-20**	**-**	M-Bus - Repeater - Isolator (up to 20 slaves connected to M-Bus)
Order Code:	**HD67032M-40**	**-**	M-Bus - Repeater - Isolator (up to 40 slaves connected to M-Bus)
Order Code:	**HD67032M-80**	**-**	M-Bus - Repeater - Isolator (up to 80 slaves connected to M-Bus)
Order Code:	**HD67032M-160**	**-**	M-Bus - Repeater - Isolator (up to 160 slaves connected to M-Bus)
Order Code:	**HD67032M-250**	**-**	M-Bus - Repeater - Isolator (up to 250 slaves connected to M-Bus)

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

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.
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:

- 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.
- 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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