User Manual

Revision 2.020
English

M-Bus / Ethernet - Converter

(Order Code: HD67030-B2-20, HD67030-B2-40, HD67030-B2-80, HD67030-B2-160, HD67030-B2-250)

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

For Price information:
www.adfweb.com?Price=HD67030-B2-20
www.adfweb.com?Price=HD67030-B2-40
www.adfweb.com?Price=HD67030-B2-80
www.adfweb.com?Price=HD67030-B2-160
www.adfweb.com?Price=HD67030-B2-250

Benefits and Main Features:

- TCP/UDP messages allowed
- Microprocessor for queue data control
- Temperature range: -40°C/85°C (-40°F/185°F)

User Manual

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

Converter M-Bus Master /
www.adfweb.com?Product=HD67021 **(RS232)**
www.adfweb.com?Product=HD67022 **(RS485)**
www.adfweb.com?Product=HD67024 **(USB)**

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

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

Converter M-Bus /
www.adfweb.com?Product=HD67029M-232 **(Modbus RTU on RS232)**
www.adfweb.com?Product=HD67029M-485 **(Modbus RTU on RS485)**
www.adfweb.com?Product=HD67044 **(Modbus TCP)**
www.adfweb.com?Product=HD67051-B2 **(CANopen)**
www.adfweb.com?Product=HD67053 **(PROFIBUS)**
www.adfweb.com?Product=HD67056 **(BACnet)**
www.adfweb.com?Product=HD67058 **(DeviceNet)**
www.adfweb.com?Product=HD67077 **(EtherNet/IP)**
www.adfweb.com?Product=HD67078 **(PROFINET)**

M-Bus – Concentrator - Datalogger
www.adfweb.com?Product=HD67054M
www.adfweb.com?Product=HD67057-B2-xxx

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

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

INDEX:

UPDATED DOCUMENTATION:

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- 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.

REVISION LIST:

Revision	Date	Author	Chapter	Description
2.000	01/08/2012	FI	All	New hardware version
2.010	03/12/2012	FI	All	Software changed (v1.500)
2.011	29/03/2013	FI	All	Added new chapters
2.020	13/05/2015	FI	All	Software changed (v2.000)

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

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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

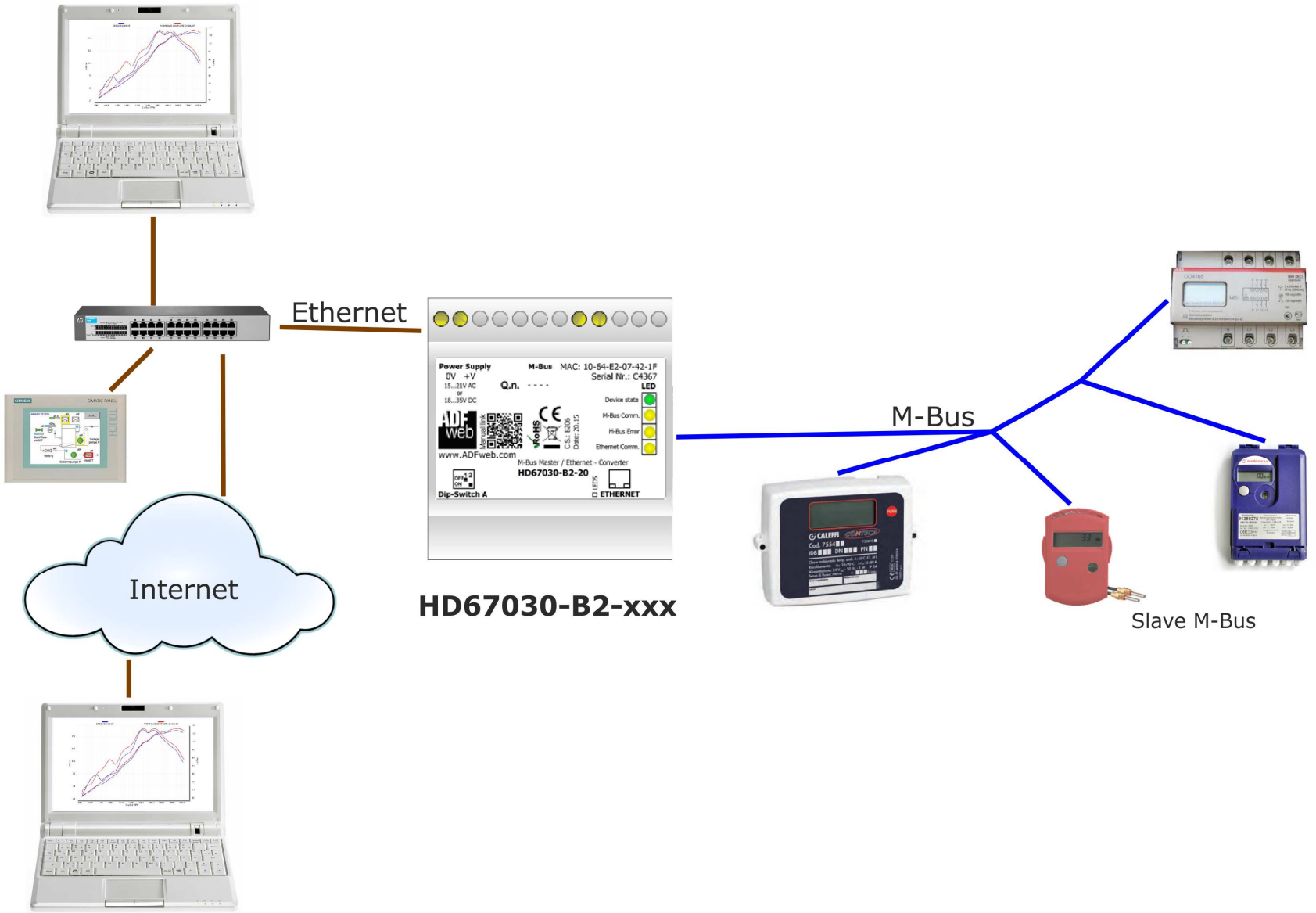
The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

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.

EXAMPLE OF CONNECTION:



CONNECTION SCHEME:

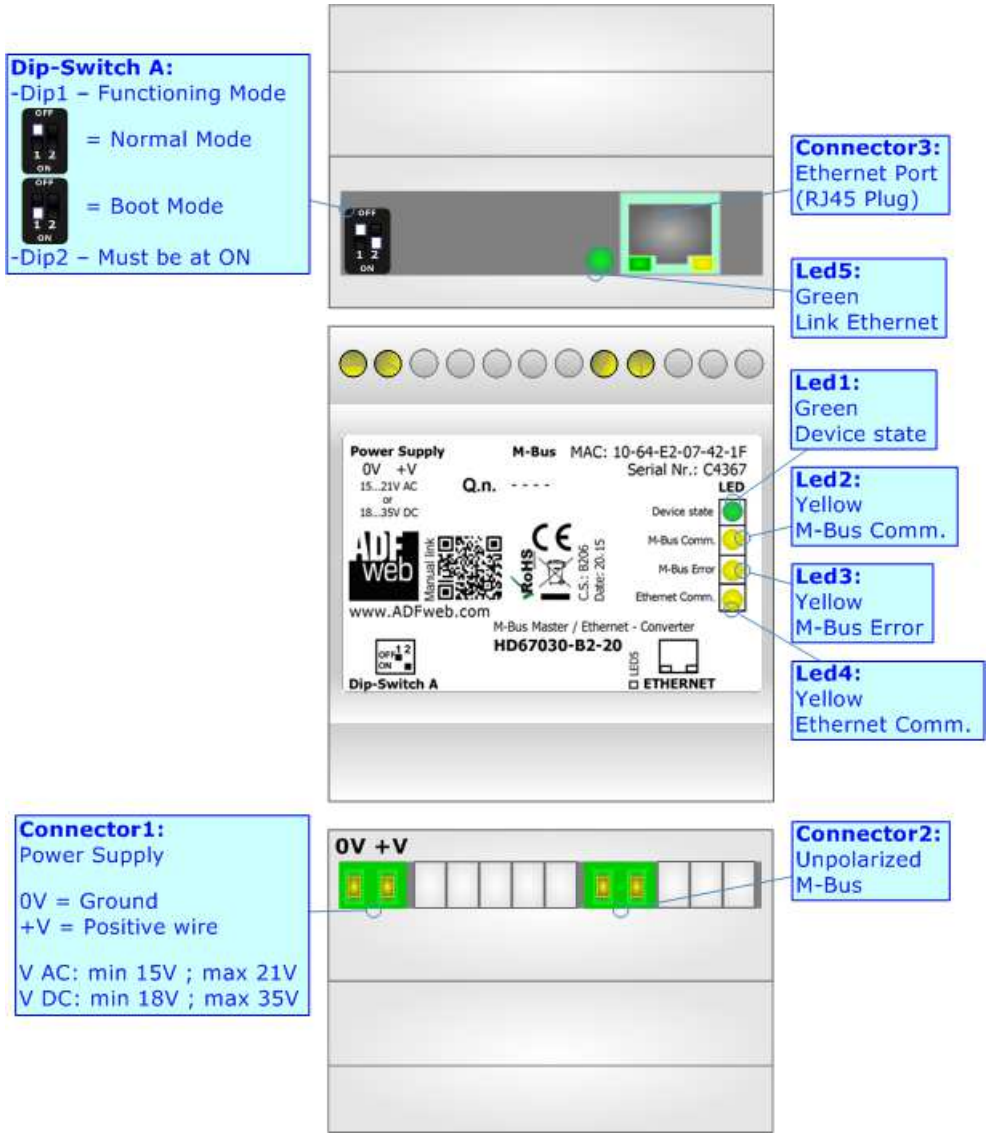


Figure 1: Connection scheme for HD67030-B2-xxx

CHARACTERISTICS:

The "HD67030-B2-xxx" is Converter M-Bus from/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 / Ethernet Converter 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 -40°C to 85°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:

- HD67030-B2-20 support up to 20 M-Bus devices;
- HD67030-B2-40 support up to 40 M-Bus devices;
- HD67030-B2-80 support up to 80 M-Bus devices;
- HD67030-B2-160 support up to 160 M-Bus devices;
- HD67030-B2-250 support up to 250 M-Bus devices.

In the case of HD67030-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 HD67030-B2-250 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:

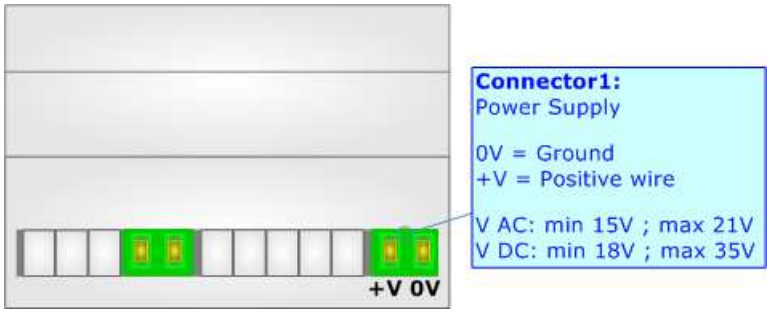
The devices can be powered at 15…21V AC and 18…35V DC. The consumption depends to the code of the device. For more details see the two tables below.

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

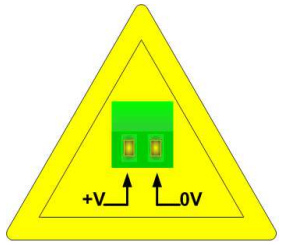
Consumption at 24V DC:

Device	No Load [W/VA]	Full Load [W/VA]*
HD67030-B2-20	3.5	4
HD67030-B2-40		5
HD67030-B2-80		8
HD67030-B2-160		14
HD67030-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



HD67030M-B2-xxx

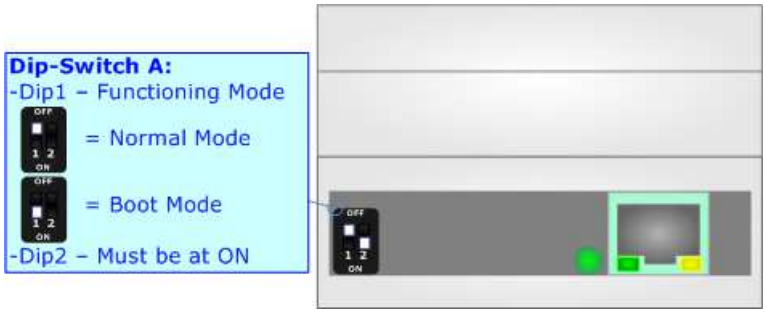
FUNCTION MODES:

The device has got two functions mode depending of the position of the 'Dip1 of Dip-Switch A' of HD67030-B2-xxx:

- The first, with 'Dip1 of Dip-Switch A' at "OFF" position, is used for the normal working of the device;
- The second, with 'Dip1 of Dip-Switch A' at "ON" position, is used for upload the Project and/or Firmware.

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.

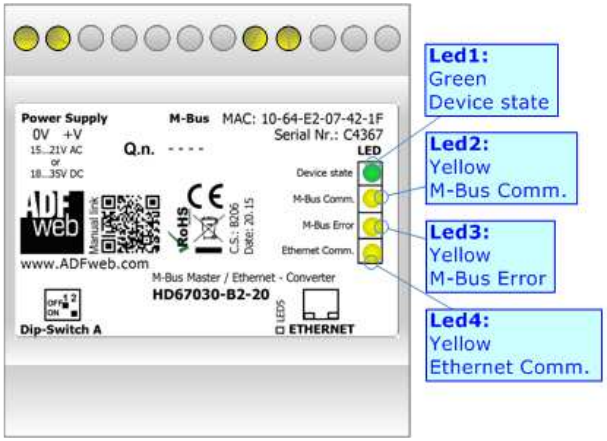


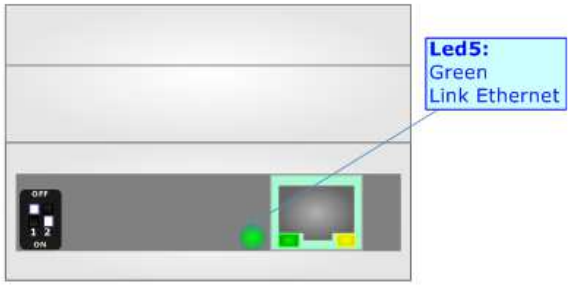
Warning:
Dip2 of 'Dip-Switch A' must be at ON position for working even if the Ethernet cable isn't inserted.

LEDS:

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

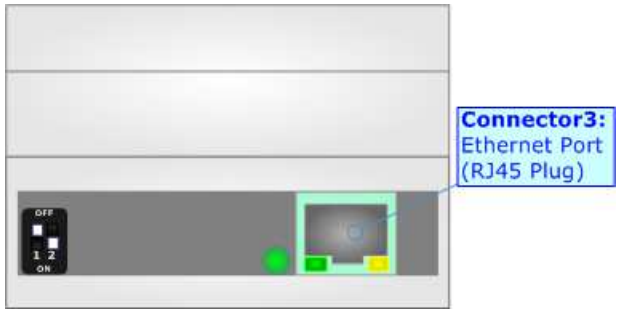
LED	Normal Mode	Boot Mode
1: Device state (green)	Blinks slowly (~1Hz)	Blinks quickly
2: M-Bus Comm. (yellow)	Blinks quickly when receive M-Bus data	Blinks quickly
3: M-Bus Error (yellow)	Changes state when the reply to the command isn't arrived	Blinks quickly
4: Ethernet Comm. (yellow)	Changes state when receive a Ethernet frame	Blinks quickly
5: Ethernet Link (green)	**ON:** Ethernet cable connected **OFF:** Ethernet cable disconnected	**ON:** Ethernet cable connected **OFF:** Ethernet cable disconnected





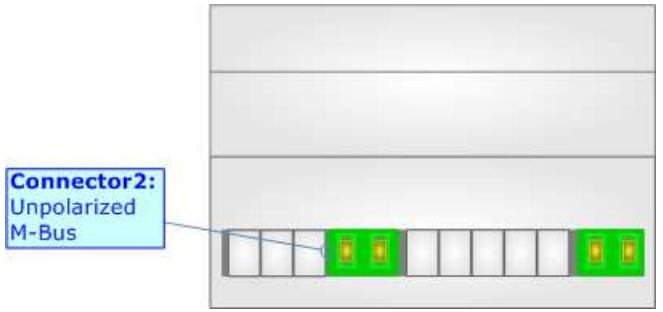
ETHERNET:

The Ethernet connection must be made using Connector3 of HD67030-B2 with at least a Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform to the T568 norms relative to connections in cat.5 up to 100 Mbps. To connect the device to an Hub/Switch is recommended the use of a straight cable, to connect the device to a PC/PLC/other is recommended the use of a cross cable.



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)*



USE OF COMPOSITOR SW67030:

To configure the Converter, 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. *(This manual is referenced to the last version of the software present on our web site)*. The software works with MSWindows (XP, Vista, Seven, 8; 32/64bit).

When launching the SW67030, the window below appears (Fig. 2).

Note:
It is necessary to have installed .Net Framework 4.

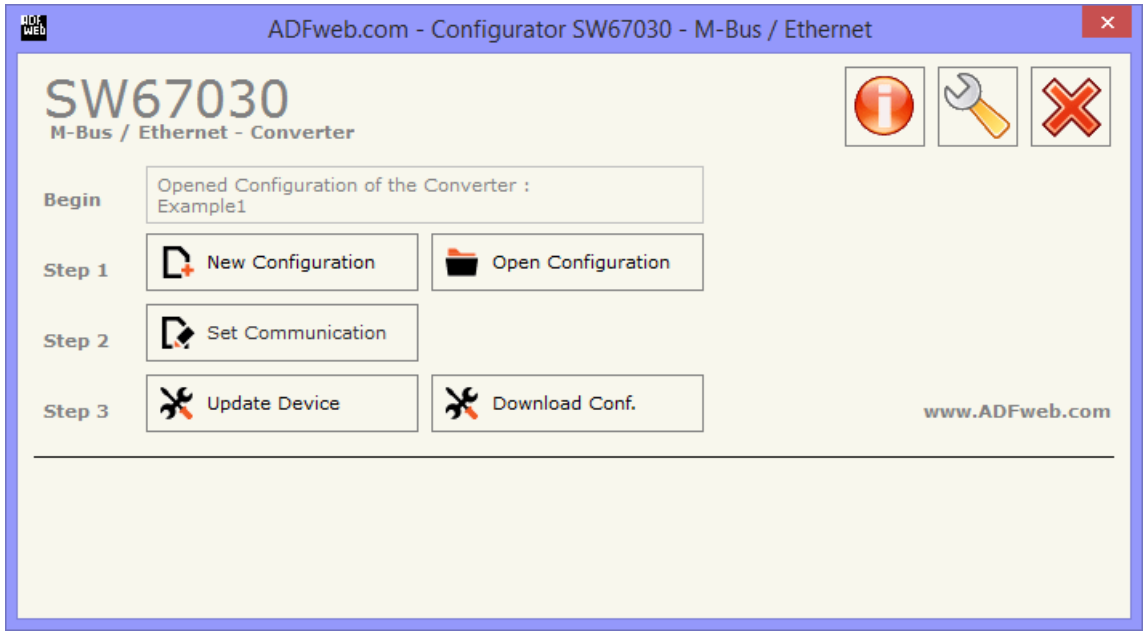
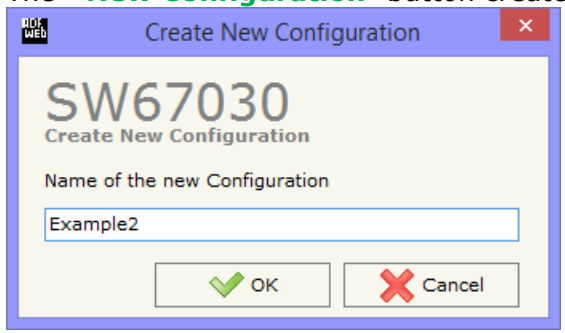


Figure 2: Main window for SW67030

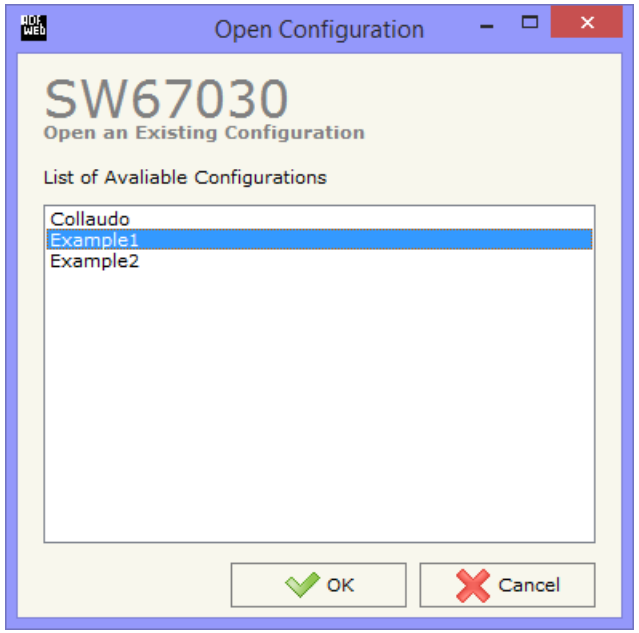
NEW CONFIGURATION / OPEN CONFIGURATION:

The "**New Configuration**" button creates the folder which contains the entire device's configuration.



A device's configuration can also be imported or exported:

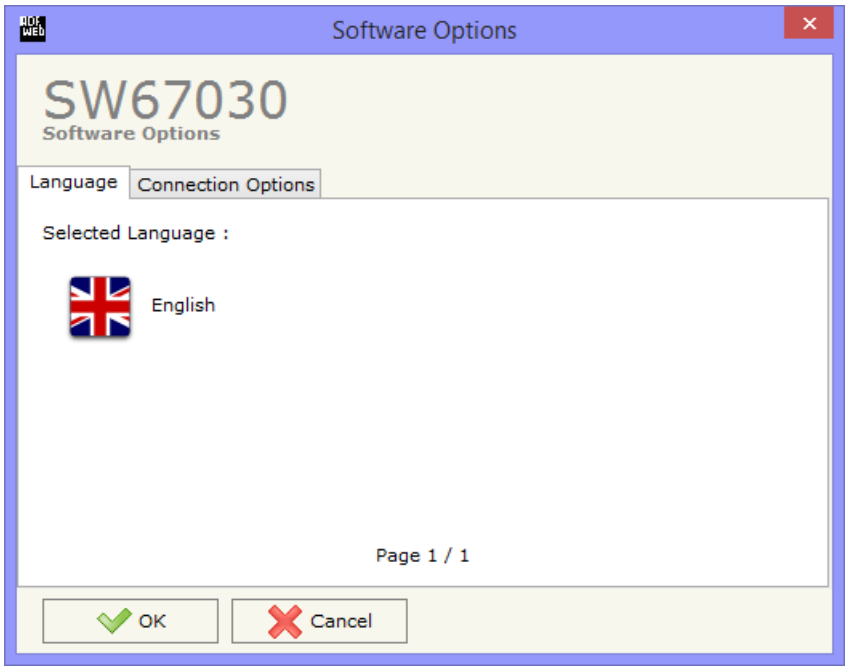
- To clone the configurations of a Programmable "M-Bus / Ethernet - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button "**Open Configuration**".

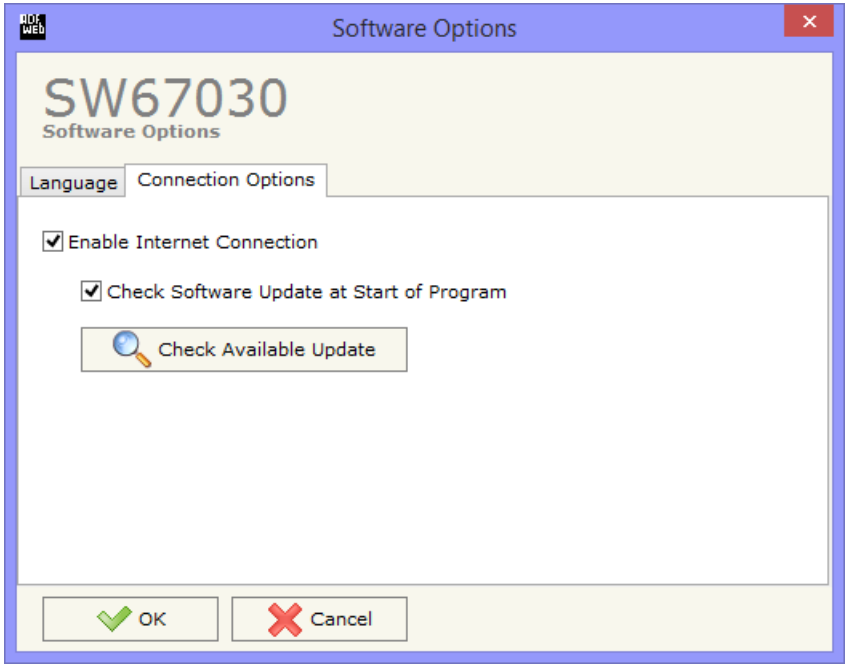


SOFTWARE OPTIONS:

By pressing the "**Settings**" ( ) button there is the possibility to change the language of the software and check the updatings for the compositor.

In the section "Language" it is possible to change the language of the software.





In the section "Connection Options", it is possible to check if there are some updatings of the software compositor in ADFweb.com website.
Checking the option "**Check Software Update at Start of Program**", the SW67030 check automatically if there are updatings when it is launched.

SET COMMUNICATION:

By Pressing the "**Set Communication**" button from the main window for SW67030 (Fig. 2), the window "Set Communication" appears (Fig. 3).

The window is divided in two section, one for the parameters of M-Bus line and the other for the parameters of Ethernet.

The means of the fields for M-Bus are:

- In the field "**Baudrate**" it is possible to select the baudrate of the M-Bus line;
- In the field "**Parity**" it is possible to select the parity of the line;
- In the field "TimeOut" there is the possibility to set the "M-Bus TimeOut". There are two ways:
  - By selecting the field "**Use M-Bus Specifics**" the value is the default one; calculated with this formula: (330000/Baudrate)+50 [ms];
  - By selecting "**Manual Value**" is possible to insert in the value (expressed in milliseconds) manually.

The parameters of Ethernet are:

- "**IP address**", where is specified the IP address assigned to the device;
- "**SubNet Mask**", where is specified SubNet Mask where the device is located;
- 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;

There is the possibility to use two special functions with the device: the possibility to send a PING in the network to a specific device; and the possibility to open a TCP connection.

For sending a PING is necessary to check the field "**Enable Ping Command**"; then is possible to select when send the PING Type in the field "**Ping Type**":

- "**Forever**", when is necessary to send a PING continuously;
- "**Until response**", the PING is sent until a reply is received by the device;
- "**Number PINGs**", the PING is sent for the number of times expressed in the field below the command.

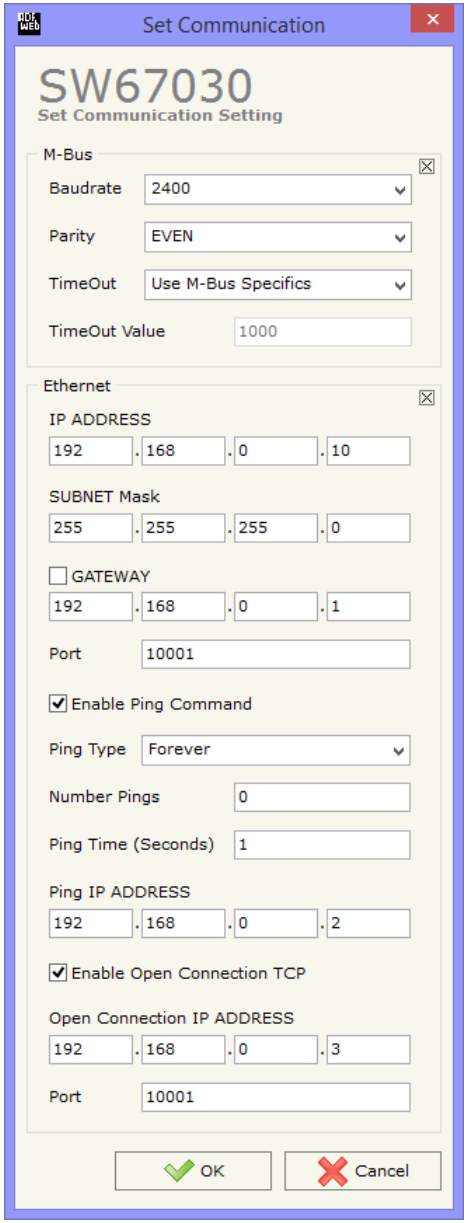


Fig. 3: "Set Communication"window

In the field "**PING Time Seconds**" is necessary to specify the interval time between to requests. This time can be set from 1 to 65535 seconds. This time is used by all types of PING.
In the field "**PING IP Address**" is necessary to insert the IP address of the device that the PING is addressed to.

If the Client cannot open the connection to the HD67030-B2, when using TCP, is possible to configure the HD67030-B2 to open the connection to the client.
For doing this is necessary to check the field "**Enable Open Connection TCP**", then insert the IP of the Client in the field "**IP Destination**" and in the field "**Port Destination**" the Port used for the communication.

Note:
This functionality is only available for TCP connections.

Note:
If the Client closes the connection, automatically the HD67030-B2 tries to reopen it at regular intervals.

Note:
For the HD67030-B2 there isn't the selection of "TCP" or "UDP" for the Ethernet communication, both are available at the same time.

UPDATE DEVICE:

By pressing the "**Update Device**" button, it is possible to load the created Configuration into the device; and also the Firmware, if necessary.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn off the Device;
- Put Dip1 of 'Dip-Switch A' at ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP "**192.168.0.88**";
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" turn off the Device;
- Put Dip1 of 'Dip-Switch A' at OFF position;
- Turn on the device.

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

If you know the actual IP address of the device you have to use this procedure:

- Turn on the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" the device automatically goes at Normal Mode.

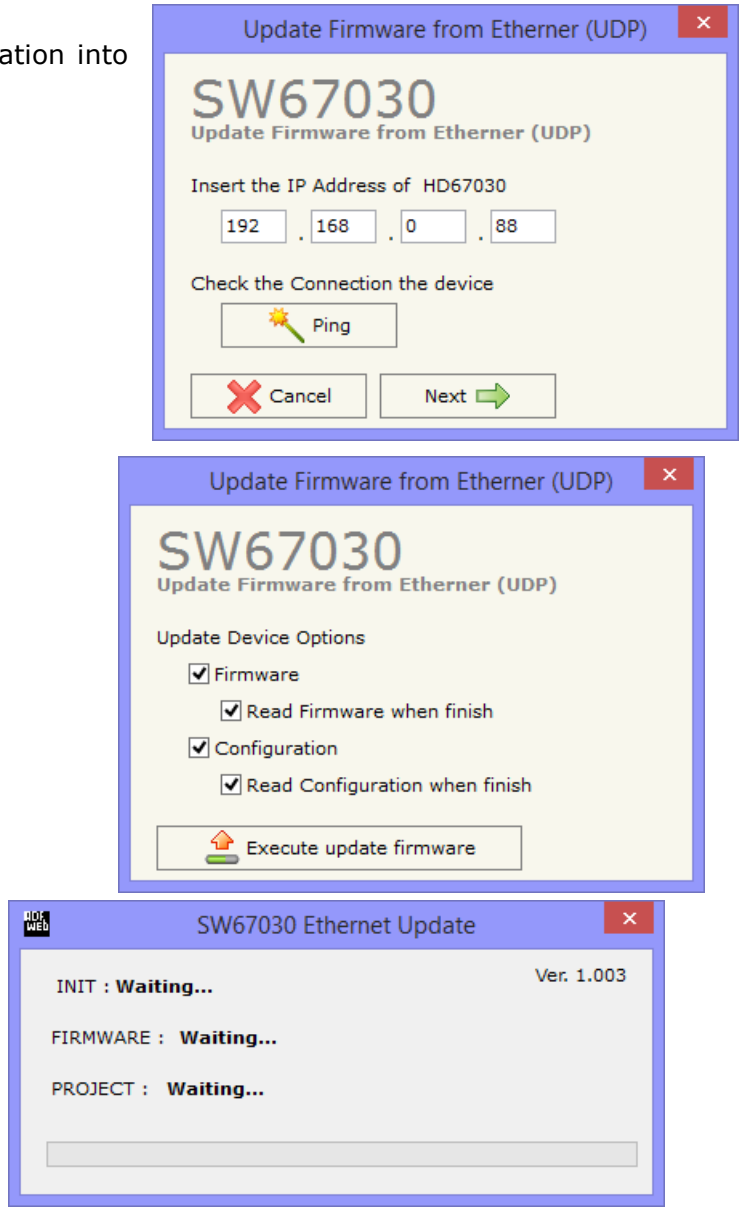


Figure 4: "Update device" windows

At this point the configuration/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 HD67030-B2-xxx device.

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67030-B2-xxx device.

Warning:
If the Fig. 5 appears when you try to do the Update try these points before seeking assistance:

- Try to repeat the operations for the update;
- 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 or 8, make sure that you have the administrator privileges;
- Take attention at Firewall lock;
- Check the LAN settings.

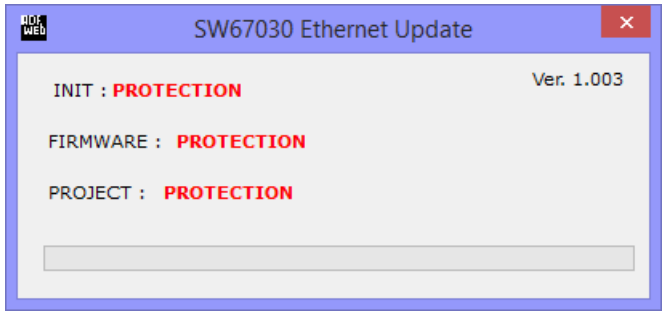


Figure 5: "Protection" window

In the case of HD67030-B2-xxx you have to use the software "SW67030": www.adfweb.com\download\filefold\SW67030.zip.

Note:
To download the old version of the manual (the one where is present only the HD67030M device) please follow this link: www.adfweb.com/download/filefold/Adapter_M-Bus_to_Ethernet_MN67030_ENG.pdf.

Note:
To download the old version of the software (the one where is possible to update the HD67030M) please follow this link: www.adfweb.com/download/filefold/SW67030_1.201.zip.

DOWNLOAD CONF.:

By pressing the "**Download Conf.**" button, it is possible to download the Configuration that is inside the device into the opened project.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn off the Device;
- Put Dip1 of 'Dip-Switch A' at ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP "**192.168.0.88**";
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Press the "**Execute update firmware**" button to start the download;
- When all the operations are "OK" turn off the Device;
- Put Dip1 of 'Dip-Switch A' at OFF position;
- Turn on the device.

At this point the configuration of the device is correctly downloaded.

If you know the actual IP address of the device you have to use this procedure:

- Turn on the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" the device automatically goes at Normal Mode.

At this point the configuration of the device is correctly downloaded.

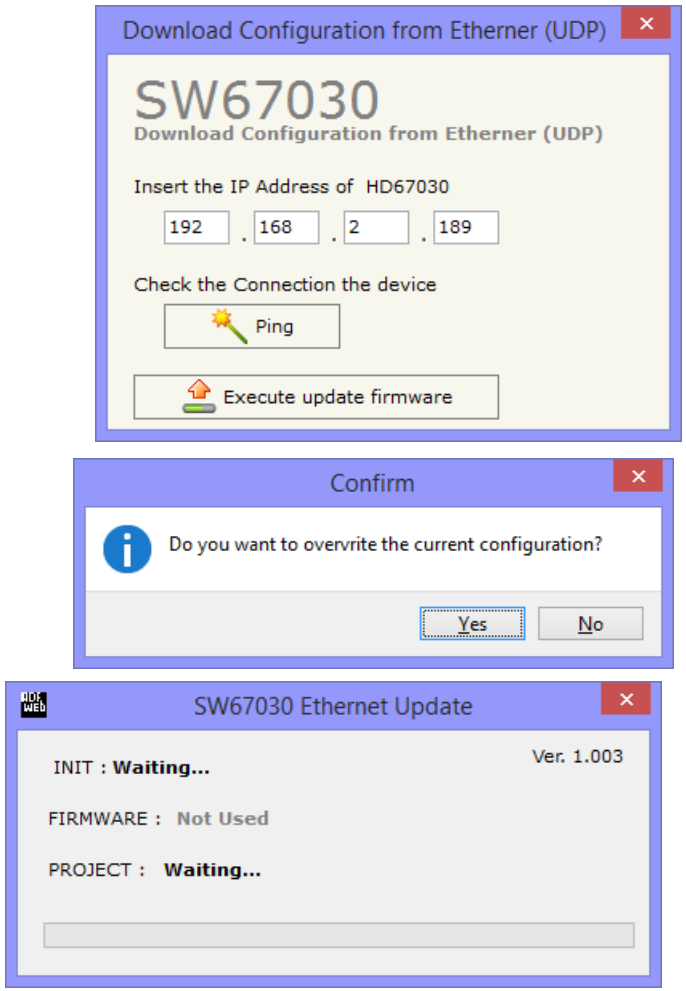
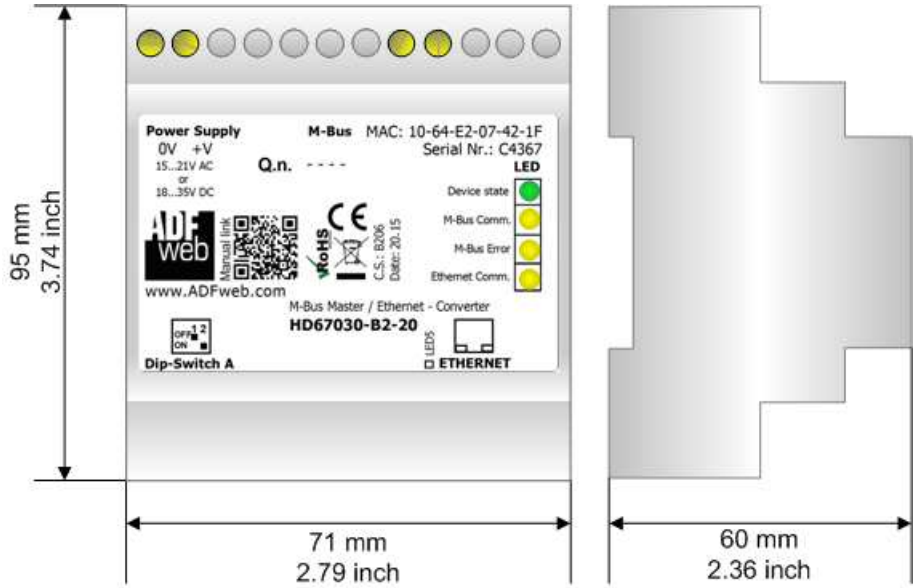


Figure 6: "Download Conf." windows

MECHANICAL DIMENSIONS:



Housing: PVC
Weight: 200g (Approx)

Figure 7: Mechanical dimensions scheme for HD67030-B2-xxx

ORDERING INFORMATIONS:

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

HD67030 – B 2 – 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

Connectors Type
2: Fixed Screw Terminal

Enclosure Type
B: Modulbox 4M DIN Rail mounting

Device Family
HD67030: M-Bus Master / Ethernet - Converter

Order Code:	**HD67030-B2-20**	**-**	Converter M-Bus Master / Ethernet (up to 20 slaves connected to M-Bus)
Order Code:	**HD67030-B2-40**	**-**	Converter M-Bus Master / Ethernet (up to 40 slaves connected to M-Bus)
Order Code:	**HD67030-B2-80**	**-**	Converter M-Bus Master / Ethernet (up to 80 slaves connected to M-Bus)
Order Code:	**HD67030-B2-160**	**-**	Converter M-Bus Master / Ethernet (up to 160 slaves connected to M-Bus)
Order Code:	**HD67030-B2-250**	**-**	Converter M-Bus Master / 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

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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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