

# User Manual

Revision 1.001  
English

## M-Bus Wireless / Ethernet - Converter

(Order Code: HD67084-B2-169MHz-0, HD67084-B2-868MHz)

For Website information:

[www.adfweb.com?Product=HD67084](http://www.adfweb.com?Product=HD67084)

For Price information:

[www.adfweb.com?Price=HD67083-B2-169MHz](http://www.adfweb.com?Price=HD67083-B2-169MHz)

[www.adfweb.com?Price=HD67083-B2-868MHz](http://www.adfweb.com?Price=HD67083-B2-868MHz)

### Benefits and Main Features:

- ✦ Very easy to configure
- ✦ Triple electrical isolation
- ✦ 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 Wireless to

[www.adfweb.com?Product=HD67082](http://www.adfweb.com?Product=HD67082)

**(Modbus Slave)**

[www.adfweb.com?Product=HD67083](http://www.adfweb.com?Product=HD67083)

**(Modbus TCP Slave)**

#### 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)**

#### Analyzer / Scanner / Sniffer M-Bus

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

#### Isolator/Repeater M-Bus

[www.adfweb.com?Product=HD67032M](http://www.adfweb.com?Product=HD67032M)

#### Gateway M-Bus / Modbus RTU

[www.adfweb.com?Product=HD67029M-232](http://www.adfweb.com?Product=HD67029M-232)

**(on RS232)**

[www.adfweb.com?Product=HD67029M-485](http://www.adfweb.com?Product=HD67029M-485)

**(on RS485)**

#### Gateway M-Bus / Modbus TCP

[www.adfweb.com?Product=HD67044](http://www.adfweb.com?Product=HD67044)

#### Gateway M-Bus / PROFIBUS

[www.adfweb.com?Product=HD67053M](http://www.adfweb.com?Product=HD67053M)

#### Gateway M-Bus Concentrator

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

#### Gateway M-Bus Slave / Modbus RTU master

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

Do you have an your customer protocol?  
[www.adfweb.com?Product=HD67003](http://www.adfweb.com?Product=HD67003)

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

[www.adfweb.com?Cmd=helpme](http://www.adfweb.com?Cmd=helpme)

**INDEX:**

	Page
INDEX	2
UPDATED DOCUMENTATION	2
REVISION LIST	2
WARNING	2
TRADEMARKS	2
SECURITY ALERT	3
EXAMPLE OF CONNECTION	4
CONNECTION SCHEME	5
CHARACTERISTICS	6
CONFIGURATION	6
POWER SUPPLY	7
FUNCTION MODES	8
LEDS	9
ETHERNET	10
WM-BUS	10
USE OF COMPOSITOR SW67084	11
NEW CONFIGURATION / OPEN CONFIGURATION	12
SOFTWARE OPTIONS	13
SET COMMUNICATION	14
wM-BUS ACCESS	15
UPDATE DEVICE	16
ETHERNET COMMUNICATION	18
MECHANICAL DIMENSIONS	19
ORDERING INFORMATIONS	20
ACCESSORIES	20
DISCLAIMER	21
OTHER REGULATIONS AND STANDARDS	21
WARRANTIES AND TECHNICAL SUPPORT	22
RETURN POLICY	22

**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.

**REVISION LIST:**

Revision	Date	Author	Chapter	Description
1.000	25/03/2015	Ff	All	First Release
1.001	08/04/2015	Ff	All	Revision

**WARNING:**

ADFweb.com reserves the right to change information in this manual about our product without warning. ADFweb.com is not responsible for any error this manual may contain.

**TRADEMARKS:**

All trademarks mentioned in this document belong to their respective owners.

**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:

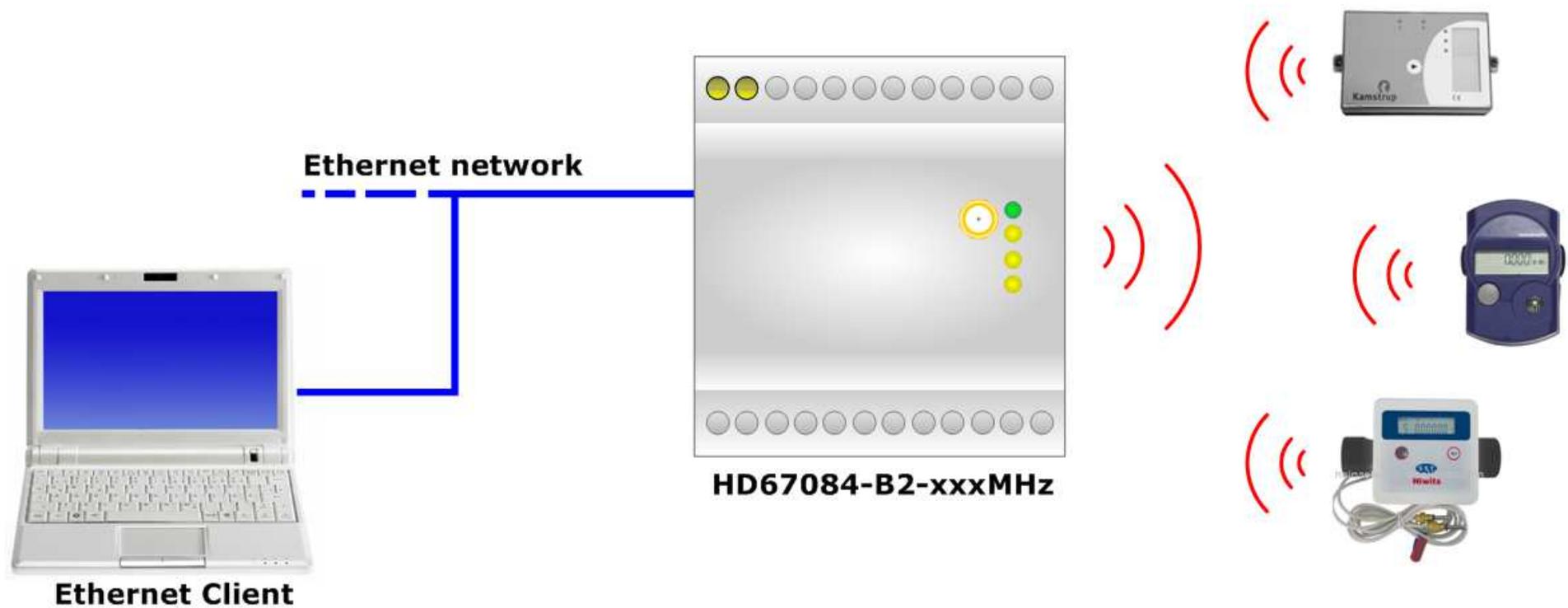


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

**CE CONFORMITY**

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

**EXAMPLE OF CONNECTION:**



**CONNECTION SCHEME:**

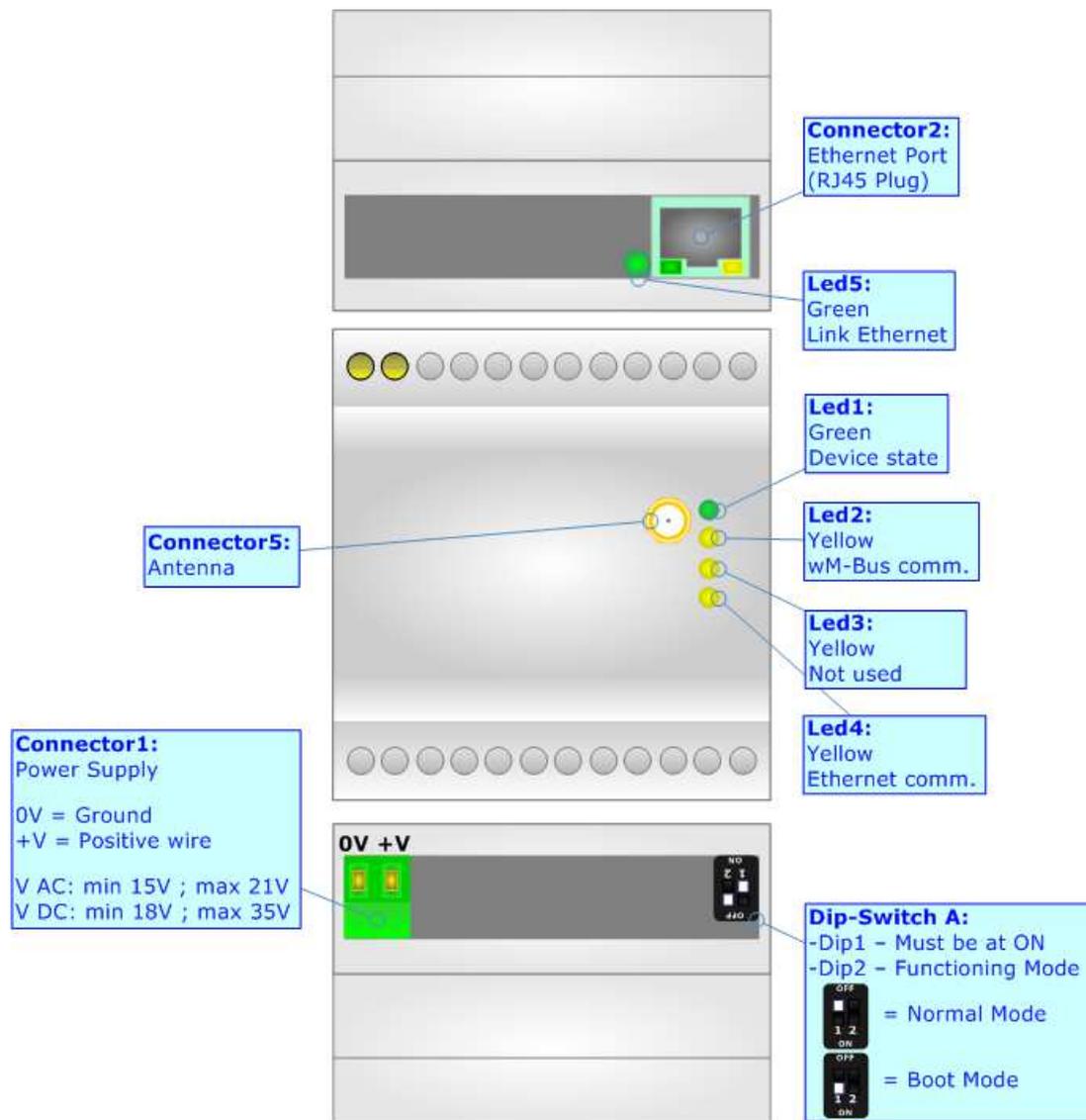


Figure 1: Connection scheme for HD67084-B2-xxxMHz

**CHARACTERISTICS:**

The HD67084-B2-xxxMHz are converters from wM-Bus to Ethernet and vice-versa.

They allow the following characteristics:

- Electrical isolation between Ethernet and M-Bus;
- Possibility to filter the wM-Bus meters to read;
- Available wM-Bus frequency: 169 MHz or 868 MHz (in relation to the order code);
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 15...21V AC or 18...35V DC;
- Wide temperature range: -40°C / 85°C [-40°F / +185°F].

**CONFIGURATION:**

You need Compositor SW67084 software on your PC in order to perform the following:

- Define the parameter of Ethernet;
- Define the parameter of wM-Bus line;
- Define which wM-Bus nodes are readable on Ethernet;
- Update the device.

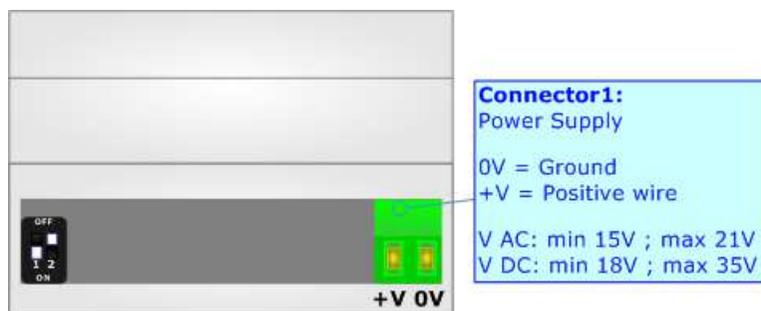
**POWER SUPPLY:**

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.

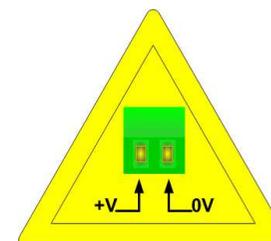
VAC 		VDC 	
Vmin	Vmax	Vmin	Vmax
15V	21V	18V	35V

Consumption at 24V DC:

Device	[W/VA]
HD67084-B2-xxxMHz	3.5



**Caution: Not reverse the polarity power**



HD67084-B2-xxxMHz

**FUNCTION MODES:**

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

- 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 uploading 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.

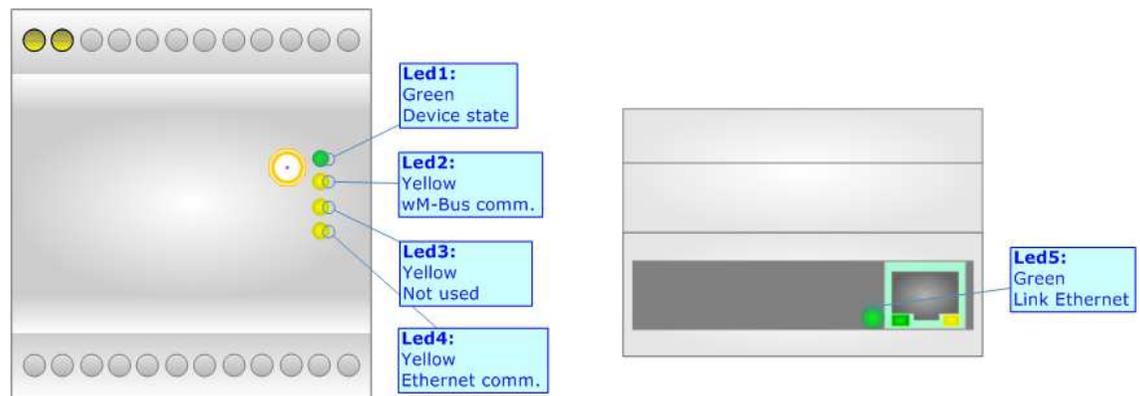
**Warning:**

Dip2 of 'Dip-Switch A' must be at ON position to work 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.

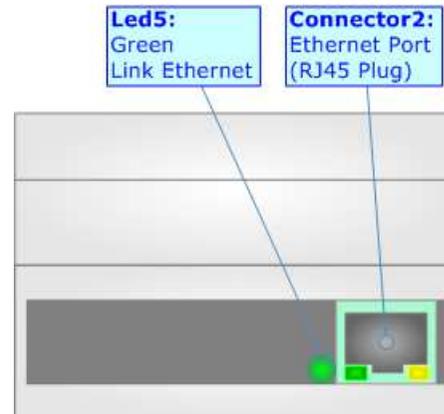
LED	Normal Mode	Boot Mode
1: Device state (green)	Blinks slowly (~1Hz)	Blinks quickly
2: wM-Bus comm. (green)	Blinks quickly when data on wM-Bus arrives	Blinks quickly
3: Not used (green)	OFF	Blinks quickly
4: Ethernet comm.	Blinks quickly when data on Ethernet is transmitted	Blinks quickly
5: Link Ethernet (green)	<b>ON:</b> Ethernet cable connected <b>OFF:</b> Ethernet cable disconnected	<b>ON:</b> Ethernet cable connected <b>OFF:</b> Ethernet cable disconnected



**ETHERNET:**

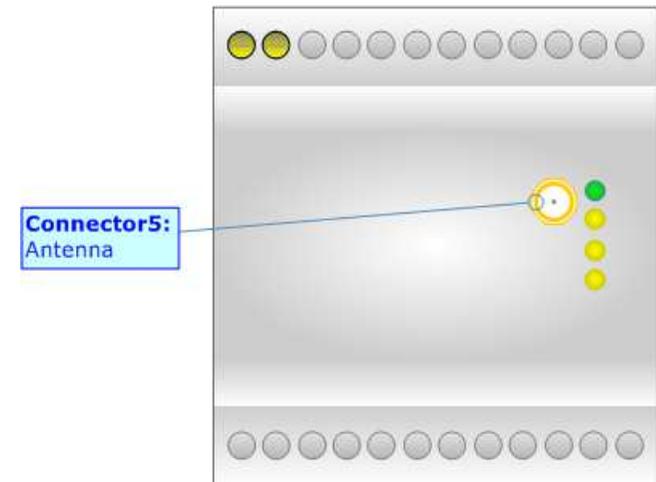
The Ethernet port is used for the Ethernet communication and for programming the device.

The Ethernet connection must be made using Connector2 of HD67084-B2-xxxMHz 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.



**WM-BUS:**

The standards of wM-Bus are specified in EN 13757-4. The signal is @ 868MHz or 169 MHz (in relation to the order code). Our converter supports wM-Bus Mode S1 and Mode T1. The Antenna connector is a SMA Female ('Female Outer Shell' and 'Female Receptacle') so the Antenna must have a SMA Male connector.



**USE OF COMPOSITOR SW67084:**

To configure the Converter, use the available software that runs with Windows called SW67084. It is downloadable from the site [www.adfweb.com](http://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 SW67084, the window below appears (Fig. 2).

**Note:**

It is necessary to have installed .Net Framework 4.



Figure 2: Main window for SW67084

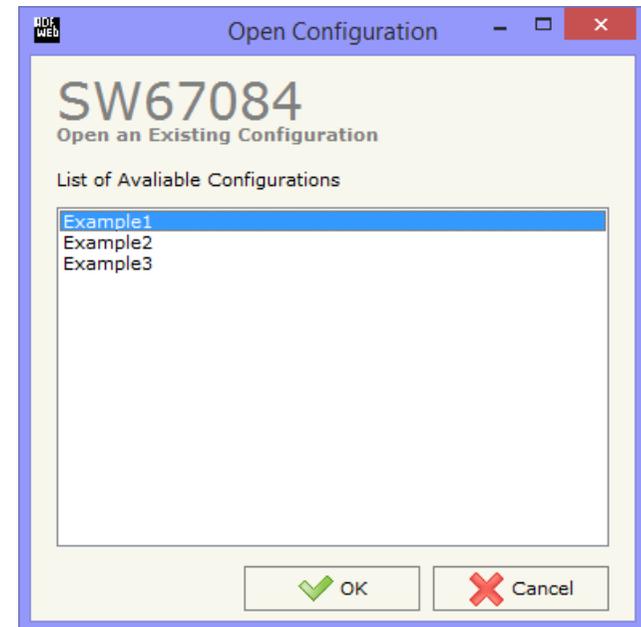
**NEW CONFIGURATION / OPEN CONFIGURATION:**

The “**New Configuration**” button creates the folder which contains the entire device’s configuration.



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

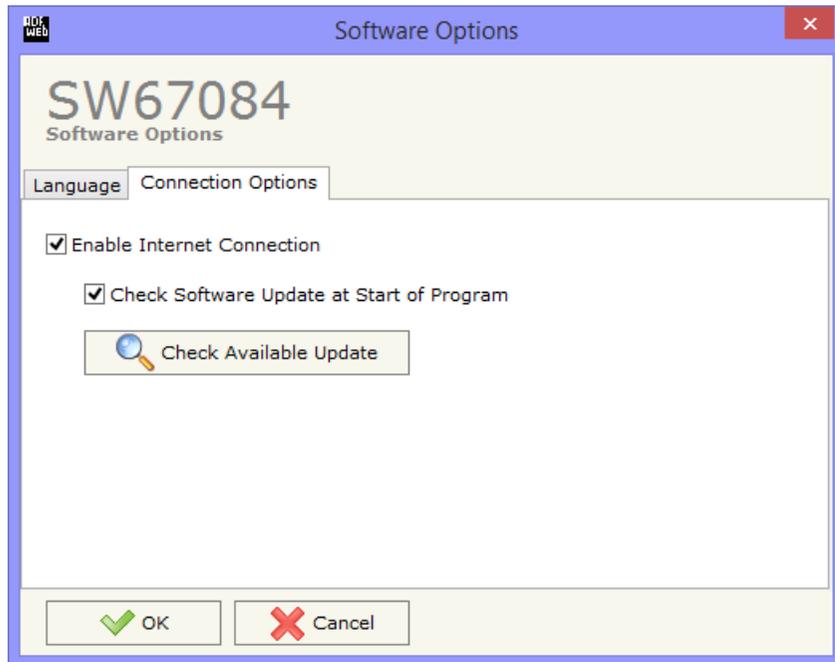
- To clone the configurations of a Programmable “M-Bus Wireless / Ethernet - Converter” in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to 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 SW67084 check automatically if there are updatings when it is launched.

## SET COMMUNICATION:

This section define the fundamental communication parameters of the two buses, Ethernet and wM-Bus.

By Pressing the **"Set Communication"** button from the main window for SW67084 (Fig. 2) the window "Set Communication" appears (Fig. 3). The window is divided in two sections.

The means of the fields for "wM-Bus" are:

- In the field **"Mode"** it is possible to select the Communication Mode (S1 or T1 for 868 MHz version and N1 or N2 for 169 MHz version) used for the M-Wireless Communication;
- In the field **"Radio Channel"** it is possible to define the Radio Channel used for the wM-Bus communication (only for 169 MHz version).
- If the field **"Enable Filtering"** is checked, it is possible to filter the data, sending on Ethernet only the data defined in the section "wM-Bus Access" (See page 15);
- If the field **"Received Signal Strenght Indication"** is checked, it is possible to add a byte at the end of the Ethernet frame to indicate the Strenght of the wM-Bus signal (dBm);
- If the field **"Link Quality Indication"** is checked, it is possible to add a byte at the end of the Ethernet frame to indicate the quality of the wM-Bus signal (1, 2 or 3):
  - 1: Low Quality
  - 2: Middle Quality
  - 3: High Quality
- If the field **"Lenght"** is checked, it is possible to add a byte at the start of the Ethernet frame to indicate the lenght of the frame (only wM-Bus data).

The means of the fields for "Ethernet" are:

- In the field **"IP ADDRESS"** insert the IP address that you want to give to the Converter;
- In the field **"SUBNET Mask"** insert the SubNet Mask;
- In the field **"GATEWAY"** insert the default gateway that you want to use. This feature can be enabled of disabled pressing the Check Box field;
- In the field **"Port"** insert the TCP port used for the Ethernet communication;
- In the field **"IP Companion"** insert the IP Address of the device to send the informations from wM-Bus.

The screenshot shows the 'Set Communication' window for device SW67084. It is divided into two main sections: 'wM-Bus' and 'Ethernet'.  
The 'wM-Bus' section contains:  
- Mode: S1 (dropdown menu)  
- Radio Channel: 1a @ 4800 bps (dropdown menu)  
- Enable Filtering: checked checkbox  
- Received Signal Strength Indication: checked checkbox  
- Link Quality Indication: checked checkbox  
- Length: checked checkbox  
The 'Ethernet' section contains:  
- IP ADDRESS: 192.168.0.5 (four input fields)  
- SUBNET Mask: 255.255.255.0 (four input fields)  
- GATEWAY: unchecked checkbox, with IP address 192.168.0.1 (four input fields)  
- Port: 10001 (input field)  
- IP Companion: 192.168.0.10 (four input fields)  
At the bottom, there are 'OK' and 'Cancel' buttons.

Figure 3: "Set Communication" window



**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 Dip2 of 'Dip-Switch A' at ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP **“192.168.2.205”**;
- Press the **“Ping”** button, **“Device Found!”** must appear”;
- 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 Dip2 of 'Dip-Switch A' at OFF position;
- Turn on the device.

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

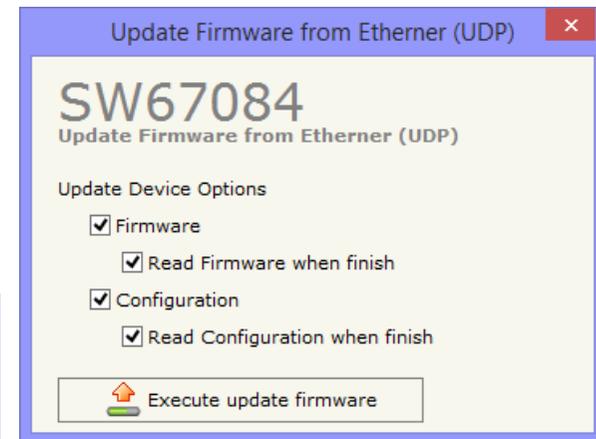
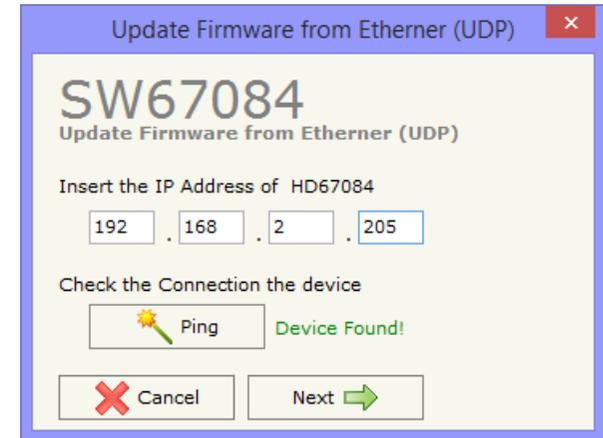


Figure 5: "Update device" windows

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.

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 HD67084 device.



Note:

When you receive the device, for the first time, you also have to update the Firmware in the HD67084 device.



Warning:

If Fig. 6 appears when you try to do the Update try these points before seeking assistance:

- Try to repeat the operations for the updating;
- 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.



In the case of HD67084 you have to use the software "SW67084": [www.adfweb.com/download/filefold/SW67084.zip](http://www.adfweb.com/download/filefold/SW67084.zip).

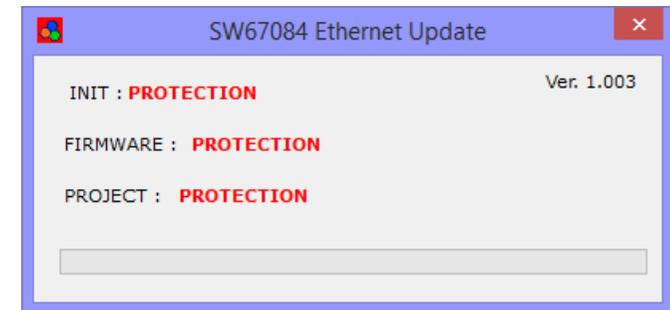


Figure 6: "Protection" window

## ETHERNET COMMUNICATION

The Bytes that compose the frame are these:

Byte Number	Description	
1	wM-Bus Data Lenght (*)	
2 ÷ n	wM-Bus Data	
(2 ÷ n) + 1	LQI (**)	
(2 ÷ n) + 2	RSSI (***)	

(\*) present if "Lenght" option is checked

(\*\*) present if "Link Quality Indication" option is checked

(\*\*\*) present if "Received Signal Strenght Indication" option is checked

### Example

In the section "Set Communication" they are enabled the fields "Lenght", "Received Signal Strenght Indication" and "Link Quality Indication". The frame sent by the wM-Bus node is: 44 A2 05 26 01 00 26 01 1B 7A F6 00 00 20 2F 2F 02 66 ED 00 01 FB 1B 2F 2F 2F 2F 2F 2F 2F (hex).

The converter will send this Ethernet frame:

**1E** 44 A2 05 26 01 00 26 01 1B 7A F6 00 00 20 2F 2F 02 66 ED 00 01 FB 1B 2F 2F 2F 2F 2F 2F 2F 01 **A4**

### Example

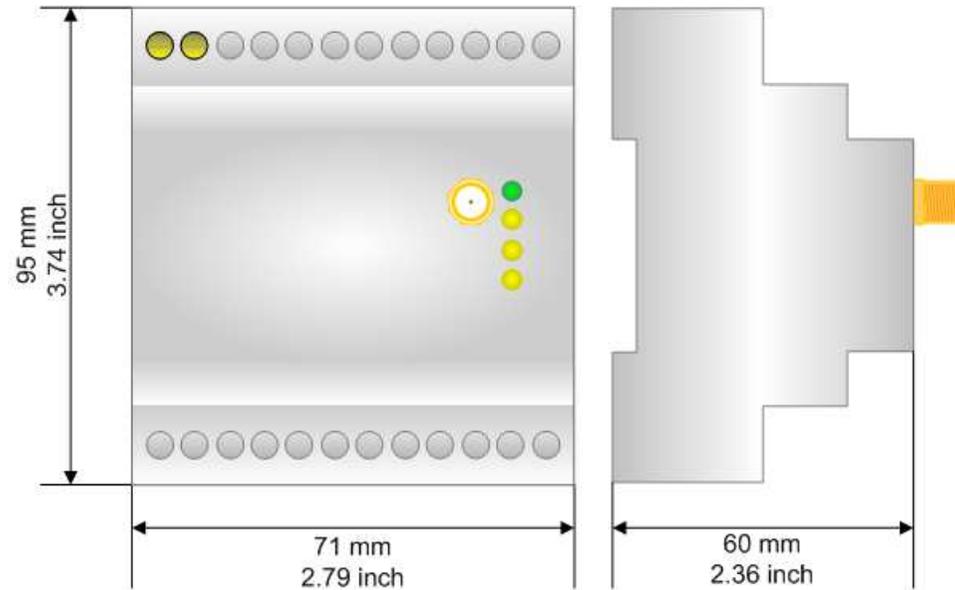
In the section "Set Communication" they are enabled the fields "Lenght" and "Received Signal Strenght Indication".

The frame sent by the wM-Bus node is: 44 C5 14 37 07 50 31 00 07 7A 8A 2B 00 20 2F 2F 04 6D 2E 2F FF 13 04 13 38 30 00 00 01 FD 17 48 04 78 C1 A9 E0 01 (hex).

The converter will send this Ethernet frame:

**26** 44 C5 14 37 07 50 31 00 07 7A 8A 2B 00 20 2F 2F 04 6D 2E 2F FF 13 04 13 38 30 00 00 01 FD 17 48 04 78 C1 A9 E0 01 **C2**

**MECHANICAL DIMENSIONS:**



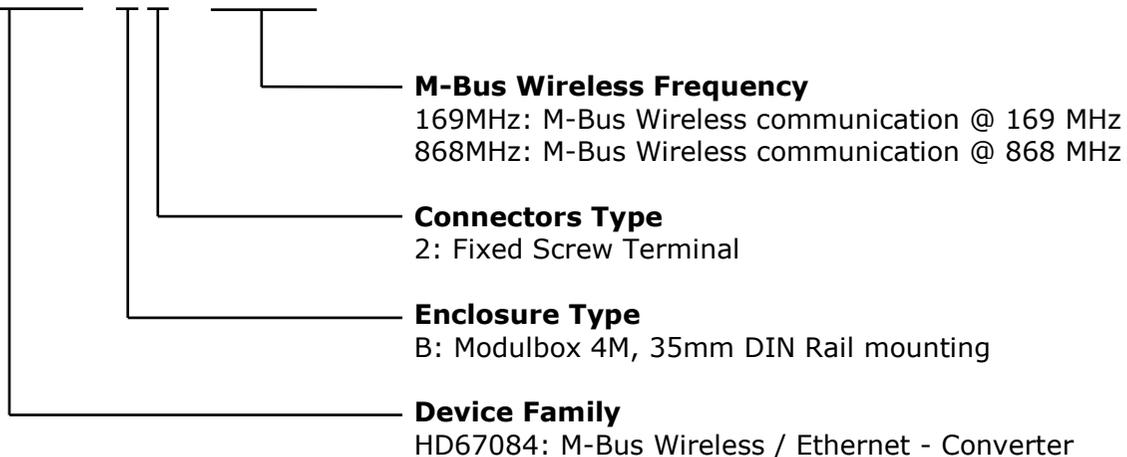
Housing: PVC  
 Weight: 200g (Approx)

*Figure 7: Mechanical dimensions scheme for HD67084-B2-xxxMHz*

**ORDERING INFORMATIONS:**

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

**HD67084 – B 2 – xxxMHz**



- Order Code: **HD67084-B2-169MHz** - M-Bus Wireless / Ethernet – Converter (@ 169 MHz)
- Order Code: **HD67084-B2-868MHz** - M-Bus Wireless / Ethernet – Converter (@ 868 MHz)

**ACCESSORIES:**

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

**DISCLAIMER:**

All technical content within this document can be modified without notice. The content of the document is a under continual renewal. For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com S.r.l. shall not be liable for consequences of improper use.

**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](http://www.adfweb.com).  
Otherwise contact us at the address [support@adfweb.com](mailto: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](http://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.



**ADFweb.com S.r.l.**  
Via Strada Nuova, 17  
IT-31010 Mareno di Piave  
TREVISO (Italy)  
Phone +39.0438.30.91.31  
Fax +39.0438.49.20.99  
[www.adfweb.com](http://www.adfweb.com)

